

ASSESSMENT OF CORRECTIVE MEASURES REPORT
POND E
SOLID WASTE PERMIT NO. 617
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

by
Haley & Aldrich, Inc.
Greenville, South Carolina

for
Dominion Energy Services, Inc.
Richmond, Virginia

File No. 134660-002
August 2020



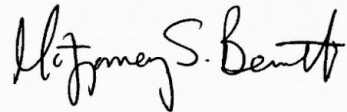
SIGNATURE PAGE FOR**ASSESSMENT OF CORRECTIVE MEASURES REPORT
POND E****SOLID WASTE PERMIT NO. 617
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA****PREPARED FOR
DOMINION ENERGY SERVICES, INC.
RICHMOND, VIRGINIA**

PREPARED BY:



Erin Wright
Senior Project Manager
Haley & Aldrich, Inc.

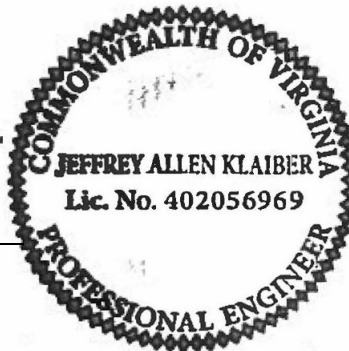
REVIEWED AND APPROVED BY:



Montgomery Bennett, P.G.
Senior Client Leader
Haley & Aldrich, Inc.



Jeffrey Klaiber, P.E.
Principal Consultant
Haley & Aldrich, Inc.



8/26/2020

Executive Summary

Haley & Aldrich, Inc., (Haley & Aldrich) prepared this Assessment of Corrective Measures Report (ACM Report) 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 located in Dumfries, Virginia (Site or Station). Dominion Energy maintains a groundwater monitoring program for Pond E consistent with the requirements of U.S. Environmental Protection Agency's (EPA) "Disposal of Coal Combustion Residuals from Electric Utilities" (CCR Rule; 40 CFR 257 *et seq.*) as well as the adoption of the CCR Rule by reference to Virginia Solid Waste Management Regulations (Title 9 Virginia Administrative Code Agency 20, Chapter 81, Section 800 *et seq.*; 9VAC20-81-800). The groundwater monitoring program is also conducted consistent with the requirements of Solid Waste Permit (SWP) No. 617 issued by the Virginia Department of Environmental Quality (VDEQ) on 13 June 2019.

An evaluation of analytical data collected during the second semiannual assessment monitoring event of 2019 identified CCR Rule (federal) Groundwater Protection Standard (GWPS) exceedances for cobalt in several compliance wells (ES-3D, ES-1609, ES-1613, and T-1615S). Dominion Energy therefore initiated an Assessment of Corrective Measures (ACM) on 29 March 2020. An evaluation of analytical data collected during the first semiannual assessment monitoring event of 2020 identified federal GWPS and SWP GPS exceedances for cobalt in these same compliance wells, SWP GPS exceedances for boron and nickel (in compliance wells ES-3D, ES-1609, ES-1613, and T-1615S), and an SWP GPS exceedance for zinc (in compliance well ES-3D).

A field investigation (Nature and Extent Study [NES]) was completed for Pond E in April 2020 to evaluate the extent of groundwater concentrations for constituents that exceed federal GWPS and SWP GPS. To fulfill the requirements of the ACM and delineate the extent of cobalt, boron, nickel, and zinc exceedances in the vicinity of Pond E, the following field activities were conducted:

- Three new groundwater monitoring wells (ES-1D, ES-7, and ES-7D) were installed downgradient of Pond E to further delineate the horizontal and vertical extent of GWPS/GPS exceedances and confirm groundwater flow direction. The monitoring wells are also located in proximity to the Site boundary.
 - A protective eagle's nest buffer (radius of 660 feet) is located in the area downgradient of Pond E. As such, new monitoring wells could not be installed within the boundaries of the eagle's nest buffer. Due to these access limitations, the NES wells were installed as close to downgradient of existing compliance wells as possible, without encroaching upon the eagle's nest buffer boundary.
- Once the new wells were developed, the three new monitoring wells, seven existing compliance wells, two existing VSWMR sentinel wells, and one existing observation well were sampled in accordance with the "Groundwater Monitoring Plan" for Ponds ABC, D, and E (Golder Associates, Inc. [Golder], 2019a); and
- A comprehensive round of groundwater elevation measurements was collected to produce potentiometric surface maps.

Analytical data generated as part of the NES indicated that cobalt, boron, nickel, and zinc impacts in the vicinity of Pond E exist in select monitoring wells. The results confirmed that cobalt impacts (exceedances of the federal GWPS and SWP background-based GPS of 6 micrograms per liter [$\mu\text{g/L}$] and

5 µg/L, respectively) continue to be detected at compliance wells ES-1609, ES-3D, and T-1615S. During the NES, the cobalt concentration detected in compliance well ES-1613 was below both the GWPS and the SWP GPS. Cobalt was detected above the federal GWPS and SWP GPS in NES well ES-7 and above the SWP GPS but below the federal GWPS in NES well ES-1. It is noted that the cobalt concentration detected in NES well ES-7 (89.2 µg/L) may be a result of the limited saturated thickness of the shallow aquifer and thin water column. Cobalt was not detected above the GWPS/GPS in the remaining compliance wells, VSWMR sentinel wells, or NES wells.

Boron was detected at concentrations above the SWP background-based GPS of 250 µg/L at compliance wells ES-1609, ES-3D, ES-1613, and T-1615S and at concentrations slightly exceeding the GPS in NES wells ES-1 and ES-7. Boron was not detected above the SWP GPS in the remaining compliance wells, VSWMR sentinel wells, or NES wells. It should be noted that the SWP GPS for boron is not a risk-based concentration, but rather a background-based concentration that is not intended to be protective of environmental risk. The EPA has classified boron as a non-carcinogenic constituent and established a risk-based concentration for boron in tapwater (drinking water), referred to as the Tapwater Regional Screening Level (RSL). The Tapwater RSL for boron is 4,000 µg/L (based on a hazard quotient of 1.0). The RSL represents the level of a constituent below which there is no known or expected risk to human health. None of the detected boron concentrations exceed the EPA's risk based Tapwater RSL of 4,000 µg/L.

Nickel was detected at concentrations above the SWP background-based GPS of 5 µg/L at compliance wells ES-1609, ES-3D, ES-1613; NES wells ES-1 and ES-7; and VSWMR sentinel well ED-22RA. The nickel concentration detected in NES well ES-7 may be a result of the limited saturated thickness of the shallow aquifer and thin water column. Nickel was not detected above the GWPS/GPS in the remaining compliance wells, VSWMR sentinel well, or NES wells. It is noted that the laboratory analytical result for the sample collected from compliance well T-1615S was reported as non-detect with a laboratory method detection limit (MDL) and reporting limit (RL) above the SWP GPS. The elevated MDL/RL was a result of laboratory dilution (200x) required due to high sodium and calcium content in the sample. Similar to boron, the SWP GPS for nickel is not a risk-based concentration, but rather a background-based concentration. The Tapwater RSL for nickel is 390 µg/L (based on a hazard quotient of 1.0). None of the detected nickel concentrations (or the MDL/RL reported for T-1615S) exceed the EPA's risk-based Tapwater RSL.

Zinc was detected during the NES at a concentration above the SWP background-based GPS (50 µg/L) in compliance well ES-3D and NES well ES-1. Zinc was not detected above the SWP GPS in the remaining compliance wells, VSWMR sentinel wells, or NES wells. The SWP GPS for nickel is not a risk-based concentration, but rather a background-based concentration. The Tapwater RSL for nickel is 6,000 µg/L (based on a hazard quotient of 1.0). None of the detected nickel concentrations exceed the EPA's risk-based Tapwater RSL.

A review of historical groundwater trends for cobalt, boron, nickel, and zinc indicate that the groundwater constituent concentrations have generally remained stable and/or decreased since CCR material removal began in 2016. It is noted that cobalt concentrations in compliance well ES-1613 were historically detected at concentrations above 20 µg/L; however, since source removal activities began in 2016, concentrations have steadily decreased. During the NES, the cobalt concentration detected in well ES-1613 (4.8 µg/L) was below both the GWPS (6 µg/L) and the SWP background-based GPS (5 µg/L) and represents the lowest reported concentration since 2016. Additionally, nickel concentrations in compliance well ES-1613 were historically detected at concentrations ranging from approximately 20

µg/L to 30 µg/L; however, since source removal activities began in 2016, concentrations have steadily decreased. During the NES, the nickel concentration detected in well ES-1613 (6.3 µg/L) was only slightly above the background based SWP background-based GPS of 5 µg/L.

CCR material was removed from Pond E beginning in 2016. In August 2019, the VDEQ confirmed CCR removal and an over excavation of a minimum of 6 inches was completed consistent with the Unit's closure plan and SWP No. 617. As such, for purposes of this ACM, source removal alternatives were not evaluated, and the focus of the assessment is groundwater. Groundwater represented by the compliance wells, VSWMR sentinel wells, and NES wells is not used for any potable or non-potable purposes in the vicinity of Pond E. Thus, there are no complete exposure pathways to groundwater. The closest private water supply wells located downgradient from Pond E are over 1 mile from the Unit and located across another hydraulic divide (i.e., Quantico Creek). There are a few existing private water supply wells west of Pond E; however, they are sidegradient of the Site, and across another hydraulic divide (i.e., unnamed creek that flows to Quantico Creek). Potable water is supplied to the facility and surrounding properties by a municipal water supply system. Based on this information, there is no human exposure risk to groundwater at the Site or in the surrounding area.

Supporting these findings are recent data collected for surface water monitoring conducted in accordance with SWP No. 617. Specifically, surface water analytical data collected from four sample locations downgradient of Pond E indicate no exceedances of applicable surface water quality criteria for cobalt, boron, nickel, or zinc. The surface water analytical results were also less than the respective GPS. These data indicate that surrounding surface water is not being impacted above relevant screening levels because of potential groundwater to surface water exchange.

The results from the NES indicate that residual impacts in groundwater are limited horizontally and vertically to Dominion property and, with the exception of cobalt, are present at concentrations less than EPA risk-based tapwater screening values. In addition, no off-site migration of cobalt, boron, nickel, or zinc has been detected. This ACM Report evaluates the following three remedial alternatives to address residual impacts in groundwater downgradient of Pond E:

- Alternative 1 – Natural Recovery;
- Alternative 2 – In-situ Groundwater Treatment; and
- Alternative 3 – Hydraulic Control with Ex-situ Treatment.

Given the lack of groundwater receptors, negligible risk to human health and the environment, the removal of CCR material (along with an over excavation of a minimum of 6 inches), and the groundwater quality trends following CCR removal, the evaluation of remedial alternatives suggests that natural recovery (e.g., concentration attenuation via natural diffusion and dispersion controlled mechanisms) is likely the most appropriate remedial alternative. Future studies prior to formal remedy selection may be necessary to validate natural recovery mechanisms and timeframes.

Given the elevated cobalt detections and limited aquifer thickness observed in NES well ES-7, additional sampling is recommended to confirm the detections and evaluate water quality for cobalt over time. Additional wells within the eagle's nest buffer outside of the breeding season may also provide additional information regarding the water quality to the southwest of Pond E.

Prior to selecting a formal remedy, Dominion Energy will arrange a public meeting with interested and affected parties to discuss the results of this report and solicit comments. The meeting will be conducted at least 30 days prior to selecting a formal remedy in accordance with the CCR Rule. Following the public

meeting, Dominion Energy will prepare a revised or amended ACM Report (in accordance with 9VAC20-81-260) to include public participation information.

Table of Contents

(continued)

Page

Executive Summary	i
List of Tables	viii
List of Figures	viii
List of Abbreviations	ix
1. Introduction	1
1.1 PURPOSE	2
1.2 CCR RULE AND VSWMR REQUIREMENTS	2
2. Background	3
2.1 SITE DESCRIPTION AND SITE HISTORY	3
2.2 LAND USE	3
2.3 GEOLOGY	4
2.4 HYDROGEOLOGY	4
2.4.1 Potentiometric Surface Evaluation	5
3. Groundwater Monitoring and Quality	7
4. Nature and Extent Study	10
4.1 WELL INSTALLATION	10
4.2 GROUNDWATER SAMPLING	11
4.3 GROUNDWATER LEVEL MONITORING	12
4.4 INVESTIGATION-DERIVED WASTE MANAGEMENT	12
4.5 DATA USABILITY AND QA/QC RESULTS	13
4.6 DATA EVALUATION	14
5. Nature and Extent of Constituents of Concern	16
5.1 BORON	16
5.1.1 Nature of Boron	16
5.1.2 Extent of Boron	17
5.2 COBALT	18
5.2.1 Nature of Cobalt	18
5.2.2 Extent of Cobalt	19
5.3 NICKEL	20
5.3.1 Nature of Nickel	20
5.3.2 Extent of Nickel	21
5.4 ZINC	22
5.4.1 Nature of Zinc	22

Table of Contents

(continued)

	Page
5.4.2 Extent of Zinc	23
6. Identification and Screening of Technologies	25
6.1 CORRECTIVE ACTION OBJECTIVES	25
6.2 CCR REMOVAL	25
6.3 GROUNDWATER REMEDIAL ALTERNATIVES	26
6.3.1 Alternative 1 – Natural Recovery	26
6.3.2 Alternative 2 – In-situ Groundwater Treatment	27
6.3.3 Alternative 3 – Hydraulic Control with Ex-situ Treatment	27
7. Corrective Measure Evaluation	28
7.1 THRESHOLD CRITERIA - 40 CFR PART 257.97(B)	28
7.1.1 Human Health and Environment Protection - 40 CFR Part 257.97(b)(1)	28
7.1.2 GWPS/GPS Attainment- 40 CFR Part 257.97(b)(2)	29
7.1.3 Source Control - 40 CFR Part 257.97(b)(3)	29
7.1.4 Contaminated Material Removal - 40 CFR Part 257.97(b)(4)	29
7.1.5 Waste Management - 40 CFR Part 257.97(b)(5)	29
7.2 BALANCING CRITERION 1 - 40 CFR PART 257.97(C)(1)	30
7.2.1 Risk Reduction - 40 CFR Part 257.97 (c)(1)(i)	30
7.2.2 Residual Risks - 40 CFR Part 257.97 (c)(1)(ii)	30
7.2.3 Long-Term Management - 40 CFR Part 257.97 (c)(1)(iii)	31
7.2.4 Short-term Risks - 40 CFR Part 257.97 (c)(1)(iv)	31
7.2.5 Time to Full Protection - 40 CFR Part 257.97 (c)(1)(v)	31
7.2.6 Potential for Exposure - 40 CFR Part 257.97 (c)(1)(vi)	32
7.2.7 Long-term Reliability - 40 CFR Part 257.97(c)(1)(vii)	32
7.2.8 Remedy Replacement Potential 40 CFR Part 257.97(c)(1)(viii)	33
7.3 BALANCING CRITERION 2 - 40 CFR PART 257.97(C)(2)	33
7.3.1 Release Reduction – 40 CFR Part 257.97(c)(2)(i)	33
7.3.2 Treatment Technologies - 40 CFR Part 257.97(c)(2)(ii)	33
7.4 BALANCING CRITERION 3 - 40 CFR PART 257.97(C)(3)	34
7.4.1 Technology Difficulty - 40 CFR Part 257.97(c)(3)(i)	34
7.4.2 Technology Reliability - 40 CFR Part 257.97(c)(3)(ii)	34
7.4.3 Permitting - 40 CFR Part 257.97(c)(3)(iii)	35
7.4.4 Equipment and Specialist Availability - 40 CFR Part 257.97(c)(3)(iv)	35
7.4.5 Treatment, Storage, and Disposal Capacity - 40 CFR Part 257.97(c)(3)(iv)	35
7.5 BALANCING CRITERION 4 - 40 CFR PART 257.97(D)	36
7.6 ORDER OF MAGNITUDE COST EVALUATION	36
8. Summary and Conclusions	38
References	39

Table of Contents

(continued)

Appendix A – Boring Logs and Well Construction Logs

Appendix B – Field Documentation

Appendix C – Laboratory Analytical Reports

Appendix D – Investigation Derived Waste Disposal Documentation

Appendix E – Data Usability Summary Reports

Appendix F – Groundwater Trend Graphs

List of Tables

Table No.	Title
1	Groundwater Elevation Data Summary
2	Well Construction Details Summary
3	Summary of Nature and Extent Study Groundwater Results
4	Summary of First Quarter and Second Quarter 2020 Surface Water Results – Boron, Cobalt, Nickel, Zinc
5	Corrective Measures Evaluation Summary

List of Figures

Figure No.	Title
1	Site Locus
2	Surrounding Land Use
3	Geologic Cross-Section A-A'
4	Groundwater Contour Map
5	Boron Groundwater Isoconcentration Map
6	Cobalt Groundwater Isoconcentration Map
7	Nickel Groundwater Isoconcentration Map
8	Zinc Groundwater Isoconcentration Map
9	Conceptual Overview of Corrective Measures Alternative 2 and Alternative 3 Locations

List of Abbreviations

Abbreviation	Definition
$\mu\text{g/L}$	micrograms per liter
ACM	Assessment of Corrective Measures
ACM Report	Assessment of Corrective Measures Report
AMSL	above mean sea level
AWS	Air, Water, & Soil Laboratories, Inc.
bgs	below ground surface
cm/s	centimeters per second
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
DMME	Virginia Department of Mines, Minerals and Energy
Dominion Energy	Virginia Electric and Power Company d/b/a Dominion Energy Virginia
Eh	electro-potential
EPA	United States Environmental Protection Agency
GMP	Groundwater Monitoring Plan
Golder	Golder Associates, Inc.
GWPS or GPS	groundwater protection standard
Haley & Aldrich	Haley & Aldrich, Inc.
h_L	head loss
i_{gw}	gradient
IDW	investigation-derived waste
K	hydraulic conductivity
Kd	adsorption constant
L	length
L/Kg	Liter per kilogram
MCL	Maximum Contaminant Level
MDL	method detection limit
MS/MSD	matrix spike/matrix spike duplicate
mV	millivolt
n_e	effective porosity
NES	Nature and Extent Study
NTU	nephelometric turbidity unit
Pace	Pace Analytical, LLC

POTW	publicly owned treatment works
PRB	permeable reactive barrier
QA/QC	quality assurance/quality control
RL	reporting limit
RSL	U.S. EPA Regional Screening Level
Site or Station	Possum Point Power Station
SSI	Statistically Significant Increase
SWP	Solid Waste Permit
VAWQS	Virginia Water Quality Standards
Unit	Pond E
V	volt
VDEQ	Virginia Department of Environmental Quality
VELAP	Virginia Environmental Laboratory Accreditation Program
V_{gw}	groundwater velocity
VPDES	Virginia Pollutant Discharge Elimination System
VSWMR	Virginia Solid Waste Management Regulations

1. Introduction

Haley & Aldrich, Inc. (Haley & Aldrich) prepared this Assessment of Corrective Measures Report (ACM Report) 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, Solid Waste Permit (SWP) No. 617, located in Dumfries, Virginia (Site or Station). A Site location map is included as Figure 1. Pond E (referred to as Unit in this report) is considered an inactive Coal Combustion Residuals (CCR) surface impoundment and is therefore subject to the following regulations:

- Applicable provisions of the U.S. Environmental Protection Agency's (EPA) "Disposal of Coal Combustion Residuals from Electric Utilities" (CCR Rule; Federal Register Vol. 80, No. 74, 2302-21501), as published on 17 April 2015 (40 CFR 257 *et seq.*);
- Applicable provisions of EPA's CCR Rule amendment (Federal Register Vol. 81, No. 151, 51802-51808), as published on 5 August 2016;
- Applicable provisions of EPA's CCR Rule amendment (Federal Register Vol. 83, No. 146, 36435-36456), as published on 30 July 2018; and
- Adoption of the CCR Rule by reference to Virginia Solid Waste Management Regulations (VSWMR) January 27, 2016 (Title 9 Virginia Administrative Code Agency 20, Chapter 81, Section 800 *et seq.*; 9VAC20-81-800).

As an inactive CCR surface impoundment in Virginia, the Unit is also subject to regulation under the VSWMR (9VAC20-81) and is operated by Dominion Energy under SWP No. 617, which was issued by the Virginia Department of Environmental Quality (VDEQ) on 13 June 2019.

Cobalt was detected in compliance wells at concentrations exceeding the established CCR Rule (federal) Groundwater Protection Standard (GWPS) during the second semiannual assessment monitoring event of 2019, as reported in the "2019 CCR and VSWMR Annual Groundwater Monitoring and Corrective Action Report, Possum Point Power Station, Pond E" (Golder Associates, Inc. [Golder], 2020). As a result of this GWPS exceedance, Dominion Energy conducted a nature and extent field investigation (hereinafter referred to as the Nature and Extent Study [NES]) in accordance with 40 CFR Part 257.95(g)(1) and an assessment of corrective measures (ACM) in accordance with 40 CFR Part 257.96. The NES and ACM were also conducted in accordance with SWP No. 617 and 9VAC81-260. The CCR Rule requires that the ACM be completed within 90 days unless a demonstration of need for additional time based on Site-specific conditions or circumstances. Pursuant to 40 CFR Part 257.96(a), a demonstration of need for a 60-day extension was completed for Pond E on 24 June 2020. A copy of the extension certification will be included in the Unit's 2020 annual groundwater monitoring and corrective action report.

Cobalt was also detected at concentrations exceeding the federal GWPS and the SWP Groundwater Protection Standard (GPS) (established on 2 April 2020) during the first semiannual assessment monitoring event of 2020. Boron, nickel, and zinc were detected at concentrations exceeding the SWP GPS (established on 2 April 2020), as reported to VDEQ on 1 May 2020. The boron, nickel, and zinc SWP GPS are based on Site-specific background values. As a result of the SWP GPS exceedances, the NES also evaluated the extent of boron, nickel, and zinc groundwater concentrations, and an ACM was initiated in accordance with SWP No. 617 and 9VAC20-81-260.

Corrective measures must be assessed and taken to prevent further releases, to remediate any releases, and to restore affected areas to their original condition in accordance with the CCR Rule. In 2016, excavation of the contents of Pond E began. In August 2019, the VDEQ confirmed all CCR was removed and a minimum of 6 inches of subsurface soils excavated in conformance with the Unit's closure plan and SWP No. 617.

1.1 PURPOSE

The purpose of this ACM Report is to summarize the results of the NES and evaluate potential corrective measures for addressing the Site's reported GWPS/GPS exceedances.

1.2 CCR RULE AND VSWMR REQUIREMENTS

In accordance with 40 CFR Part 257.95(g)(1), the NES conducted at the Site in April 2020 included the following elements:

- Installing three additional monitoring wells in proximity to the property boundary and for delineation purposes;
- Collecting data on the nature and extent of the release, including information on the constituents detected at concentrations exceeding the GWPS and the levels at which they are present; and
- Sampling the seven existing compliance wells, two existing VSWMR sentinel wells, one existing observation well, and three new wells installed/sampled as part of the determination of the nature and extent of contamination.

The NES was also conducted pursuant to the requirements in SWP No. 617 and consistent with VDEQ NES and ACM guidance for addressing GPS exceedances at solid waste facilities.

As noted above, source removal and an over excavation of a minimum of 6 inches at Pond E has already been completed as confirmed by VDEQ in August 2019. Several common corrective measures alternatives (such as hydraulic control, in-situ treatment, and natural recovery) were considered to address residual groundwater impacts associated with the Unit (further detail is provided in Sections 6 and 7). In general accordance with 40 CFR 257.96, each of the corrective measures alternatives presented in this ACM Report have been evaluated in light of the following elements:

- An analysis of the effectiveness of the corrective measures alternative based on the performance, reliability, ease of implementation, and potential impacts of the alternative;
- A discussion of the time required to complete the corrective measures alternative; and
- A discussion of the institutional requirements, such as permits that may be required, to implement the corrective measures alternative.

To comply with the requirements of the CCR Rule, as well as SWP No. 617, Haley & Aldrich has prepared this combined CCR and VSWMR ACM Report on behalf of Dominion Energy. This version of the report has been prepared in accordance with existing CCR Rule requirements and deadlines. Given current COVID-19 public gathering restrictions, the VSWMR requirement to hold a public meeting prior to submitting the ACM Report is unachievable at this time. Once the public meeting has been held, this ACM Report will be revised or amended to include the required public participation information.

2. Background

2.1 SITE DESCRIPTION AND SITE HISTORY

The Site is owned and operated by Dominion Energy and is located at 19000 Possum Point Road in Prince William County, Dumfries, Virginia. As shown on Figure 1, the Station is located immediately north of the confluence of Quantico Creek and the Potomac River. The Unit is located on the Station property north of Quantico Creek and Possum Point Road, west of its intersection with Cockpit Point Road.

Throughout the Station's operational timeline, it has operated up to six power generating units. Two units are currently active: Unit 5 (heavy oil) and Unit 6 (combined cycle). Two of the former coal-powered generating units (Units 3 and 4) that were converted from coal to natural gas in 2003, and the two former coal-powered generating units (Units 1 and 2) have been retired. Historically, the Station stored CCR in one clay-lined impoundment (Pond D) and four unlined impoundments (Ponds A, B, C, and E).

Pond E construction began in 1967 and covered approximately 35.6 acres. Beginning in 1968, Pond E was used as a water treatment pond to manage low-volume wastewaters including CCR. In the late 1970s, the eastern portion of Pond E was modified to accommodate the construction of a new Metals Pond. The first Metals Pond was constructed in 1979. A second Metals Pond was constructed north of the first Metals Pond in the early 1990s. The placement of CCR into Pond E ended in 2003 and in 2016, contents of former Pond E began to be excavated and consolidated into Pond D. The excavation effort was completed in 2017 and VDEQ confirmed removal of CCR and over-excavation of a minimum of 6 inches of subsurface soils in a letter dated 30 August 2019.

2.2 LAND USE

The Station property is used for industrial purposes. The land use of the eastern portion of the Station property is zoned as "M-1 Heavy Industrial" and the western portion of the Station property is zoned as "A-1 Agricultural." The Pond E area is classified as "A-1 Agricultural." As shown on Figure 2, surrounding properties immediately north and west of the Site consist of land zoned as "PMR Planned Mixed Residential" and generally consist of undeveloped parcels or private residential developments. More residential properties exist further west of the Site, across Quantico Creek. Land south of the Site, across Quantico Creek, is classified as "FED Federal" and falls under the jurisdiction of the federal government.

Surrounding surface water bodies include the Potomac River to the east of the Site, Quantico Creek to the south, and Possum Point Creek west of the Site. Stream channels in the area flow in a general easterly direction towards the Potomac River. The tidal range for Potomac River at the mouth of Quantico Creek adjacent to the Site is variable and averages approximately 1.5 feet with a typical river elevation range of 0.0 feet above mean sea level (AMSL) at low tide to 1.5 feet AMSL at high tide (NOAA, 2020). Based on a review of the Virginia Department of Mines, Minerals and Energy (DMME) interactive geologic map, one industrial water supply well is located at the Station. The well was installed in 1946 and is located approximately 4,200 feet south-southeast of Pond E. Information provided for the well indicates that it was installed to a total depth of 601.5 feet with a recorded water level of 56 feet below grade. According to Station personnel, this well is inactive (Golder, 2019a).

The Site and its immediate surrounding area are serviced by a municipal water supply. The closest residential water supply wells located downgradient from Pond E are over 1 mile west of the Unit, across a hydraulic divide (i.e., Quantico Creek). There are a few existing private water supply wells west of Pond E; however, they are sidegradient of the Site, and across another hydraulic divide (i.e., unnamed creek that flows to Quantico Creek). Based on this information, none of the identified potable wells are expected to be affected by Pond E.

2.3 GEOLOGY

The Station is situated in the northwestern portion of the Virginia Coastal Plain Physiographic Province and as documented in the “Groundwater Monitoring Plan” for Ponds ABC, D, and E:

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 (Kp) Formation and Tertiary (Tl) to Quaternary (Q) fluvial-deltaic sediments mapped as lower Tertiary terrace deposits (Tl), and the Charles City (Q), Shirley (Q), and Tabb (Q) 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. (Golder, 2019a, pg. 6)

Geologic drilling activities performed at the Station have produced multiple soil boring logs that assist with the understanding of the sediment deposition. The top of the Potomac Confining Unit, described as a hard-desiccated clay with very low permeability, has been observed in many of the boring locations. This sediment layer is considered to be a confining unit that underlies the upper Potomac Aquifer and is understood to be present across the entire study area, as shown on the cross-section A-A’ of Figure 3. Therefore, the upper aquifer beneath the study area is physically and hydrologically separated from the lower Potomac Aquifer. Portions of the Site, specifically north of Possum Point Road, have shown thicker deposits of the Cretaceous Potomac Formation sands overlying the confining unit.

2.4 HYDROGEOLOGY

The Site hydrogeology consists of one primary water-bearing unit comprised of interbedded materials generally reflecting a fluvial/estuarine depositional environment. These Quaternary/Tertiary and Cretaceous sediments make up the unconfined upper Potomac Aquifer that overlies the Potomac Confining Unit. The Pond E compliance groundwater monitoring network currently monitors this granular soil within the upper Potomac Aquifer. As documented in the in the “Groundwater Monitoring Plan” for Ponds ABC, D, and E:

Locally, perched water tables are present in the upper sections of the uppermost aquifer sediments. These perched water tables are not hydraulically connected by saturated sediments in the uppermost aquifer. Because the perched water tables (where observed) are present at a higher elevation than the impoundments, monitoring of these perched water tables is not required under the CCR Rule or the VSWMR. (Golder, 2019a, pg. 7)

The groundwater in the uppermost aquifer beneath Pond E generally flows in a south-southwest direction. Groundwater measurements collected in April 2020 from wells screened in the uppermost aquifer in the vicinity of Pond E indicate that the depth to groundwater is between 51 and 17 feet depending on topographic elevation. The saturated thickness of the uppermost aquifer is observed to lessen as it flows downgradient, ranging from approximately 40 to 20 feet throughout the Pond E study area.

2.4.1 Potentiometric Surface Evaluation

Static water level data collected on 15 April 2020 are summarized in Table 1. Using the groundwater contours presented on Figure 4, the average hydraulic gradient for Pond E's compliance network formation in the study area was calculated using the algorithm below. Two flow directions were averaged in the upper Potomac Aquifer to calculate a representative gradient. The spatial distribution of groundwater elevations in the Potomac Formation is indicative of a generally low gradient across Pond E.

Area	Starting Head (Elevation feet AMSL)	Ending Head (Elevation feet AMSL)	Distance (feet)	Calculated Gradient (unitless)	Average Gradient (unitless)
NES, April 2020					
Pond E - Upper Potomac	30	1	1595	0.0182	0.0176
	20	1	1112	0.0171	

$$i_{gw} = (h_L / L)$$

Where: i_{gw} = gradient

h_L = head loss (elevation difference)

L = length (horizontal distance)

The algorithm below was used to calculate the average rate of groundwater flow (V_{gw}) in the compliance network formation beneath Pond E. An estimated average effective porosity value of 20% is representative for the sediments comprising the Potomac Formation (USEPA, 2000). The estimated average hydraulic conductivity value for the formation (Golder, 2019a) along with the calculated gradient is shown in the following table.

Area	Average Gradient (unitless)	Effective Porosity	Hydraulic Conductivity (cm/s)	Groundwater Velocity (feet/year)
NES, April 2020				
Pond E - Upper Potomac	0.0176	0.20	2.01E-04	18.3

Notes: cm/s = centimeter per second
feet/year = feet per year

$$V_{gw} = K i (1/n_e)$$

Where: V_{gw} = Groundwater velocity
 K = Hydraulic conductivity
 i = Hydraulic gradient
 n_e = Effective porosity

As indicated, the estimated average groundwater flow rate in the upper Potomac Aquifer beneath Pond E is approximately 18.3 feet per year. The calculated flow rates for the NES sampling event conducted in 2020 are consistent with previous calculations for the area.

3. Groundwater Monitoring and Quality

Groundwater monitoring occurs in compliance with applicable sections of the CCR Rule (40 CFR Part 257) and VSWMR (9VAC20-81). The following sections provide an overview of the CCR and VSWMR groundwater monitoring program activities conducted to date for Pond E.

Golder prepared a “Groundwater Monitoring Plan” (GMP) for Ponds ABC, D, and E on behalf of Dominion Energy to satisfy the requirements of the CCR Rule and the SWP (Golder, 2019a). The GMP presents the design of the groundwater monitoring system, groundwater sampling and analysis procedures, and groundwater statistical analysis methods.

The Pond E groundwater monitoring compliance network consists of two upgradient/background wells (ED-24R and ED-26) and five downgradient monitoring wells (ES-3D, ES-1609, ES-1613, T-1615D, and T-1615S) designed to monitor the uppermost aquifer beneath the Unit. The Station also maintains two VSWMR wells (ED-22RA and ED-23R) that are used as sentinel wells. The monitoring well locations are shown on Figure 4.

The CCR Detection Monitoring Program for Pond E was initiated in November 2016. Thirteen rounds of baseline/background samples were collected by December 2018 in accordance with 40 CFR Part 257.94(b). The initial Detection Monitoring Program compliance sampling event was conducted in March 2019.

SWP No. 617 was issued by the VDEQ on 13 June 2019 and included 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 VDEQ on 25 June 2019.

The results of the baseline sampling events were compared to background values, using statistical methods to determine if downgradient concentrations were present at levels above background, called Statistically Significant Increases (SSIs). The results of this analysis indicated SSIs and a notification of SSI over the CCR Unit’s background concentrations under the Detection Monitoring Program were placed in the operating record in July 2019. The SSIs triggered the transition to the Assessment Monitoring Program.

A copy of the “Initial CCR Groundwater Monitoring and Corrective Action Report” (Golder, 2019b) was placed in the operating record on 30 August 2019. During the Assessment Monitoring phase, CCR groundwater monitoring well samples were collected and subsequently analyzed for parameters listed in Appendix III and Appendix IV of the CCR Rule and the constituents and parameters listed in the Unit’s solid waste permit. On 30 December 2019, the federal GWPS for the Unit were established.

The “Pond E Facility Background Determination Report” (Golder, 2019c) and proposed SWP GPS were submitted to the VDEQ on 15 August 2019. The VDEQ issued a letter on 30 August 2019 verifying source removal and an over excavation of a minimum of 6 inches was conducted in accordance with the Unit’s closure plan. In April 2020, SWP GPS were approved by VDEQ for detected Appendix IV constituents in accordance with 40 CFR Part 257.95(h) and for boron and constituents listed in Permit Module XI.F.2 of the Unit’s solid waste permit. Because the Commonwealth of Virginia adopted by reference the 4 October 2016 version of 40 CFR Part 257 into 9VAC20-81-800 of the VSWMR, amendments to 40 CFR Part 257 Subpart D after 4 October 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. Two sets of groundwater protection standards were therefore established (Federal GWPS and SWP GPS) as follows:

1. For constituents with an established Maximum Contaminant Level (MCL), the MCL was used.
2. For constituents for which a health-based GWPS has been adopted under the 30 July 2018 Phase 1, Part 1 amendment to the CCR Rule, the health-based GWPS was used for the Federal CCR Rule GWPS.
3. Under 9VAC20-81-800, for constituents for which an MCL has not been established, the background concentration for the constituent was used for GPS.
4. For constituents with background levels higher than the MCL or health-based GWPS, the background concentration was used for GWPS/GPS.

The following constituent was detected in Pond E groundwater monitoring program wells at concentrations exceeding the established GWPS/GPS during the 2019 second semiannual sampling event:

Pond E 2019 2nd Semi-Annual Sampling Event Appendix IV Constituents Exceeding GWPS/GPS	
Well ID	Cobalt
ES-3D	X
ES-1609	X
ES-1613	X
T-1615S	X

The federal GWPS exceedances were documented in the CCR Rule required Groundwater Protection Exceedance Notification which was placed in the operating record in January 2020.

Accordingly, Dominion Energy initiated an NES to characterize the release of cobalt in groundwater in accordance with 40 CFR Part 257.95(g)(1) and initiated an assessment of corrective measures for cobalt per 40 CFR Part 257.96. The NES for cobalt in Pond E is presented and discussed in Section 4 of this ACM Report.

The following constituents were detected in Pond E groundwater monitoring program wells at concentrations exceeding the established GWPS/GPS during the 2020 first semi-annual sampling event:

Pond E 2020 1st Semi-Annual Sampling Event				
Appendix IV Constituents, VSWMR Metals (and Boron) Exceeding GWPS/GPS				
Well ID	Boron	Cobalt	Nickel	Zinc
ES-3D	X	X	X	X
ES-1609	X	X	X	
ES-1613	X	X	X	
T-1615S	X	X	X	

As a result of the SWP GPS exceedances, Dominion Energy submitted an exceedance of GPS notification to the VDEQ on 1 May 2020. The GWPS exceedances were documented in the CCR Rule required Groundwater Protection Standard Exceedance Notification which was placed in the operating record in May 2020.

As previously mentioned, an NES and assessment of corrective measures was initiated for cobalt under the CCR Rule and in accordance with SWP No. 617. In accordance with 9VAC20-81-260, Dominion Energy also initiated an NES to characterize the concentrations of boron, nickel, and zinc in groundwater and initiated an assessment of corrective measures for boron, nickel, and zinc. A discussion of the NES for boron, nickel, and zinc in Pond E is provided in Section 4 of this ACM Report.

4. Nature and Extent Study

This section summarizes field activities conducted in April 2020 to characterize the nature and extent of impacts from constituents listed in Section 3 that exceeded federal GWPS and/or SWP GPS in the Pond E groundwater monitoring program network wells. The NES was conducted in accordance with 40 CFR 257.95(g)(1) and 9VAC20-81-260. The scope of work for this investigation included the following:

- Three new groundwater monitoring wells (ES-1D, ES-7, and ES-7D) were installed downgradient of Pond E to further delineate the horizontal and vertical extent of GWPS/GPS exceedances and confirm groundwater flow direction. The monitoring wells are also located in close proximity to the Site boundary.
- Once the new wells were developed, the three new monitoring wells, seven existing compliance wells, two existing VSWMR sentinel wells, and one existing observation well were sampled.
- A comprehensive round of groundwater elevation measurements was collected from the 13 existing and new wells to produce potentiometric surface maps.

The following sections summarize the investigation activities and results.

4.1 WELL INSTALLATION

Based on a review of historical characterization information, compliance monitoring data, and location accessibility, three new groundwater monitoring wells were installed as part of the NES for Pond E. The new well locations are shown on Figure 4. It should be noted that new monitoring wells could not be installed within the boundaries of the protective eagle's nest buffer (radius of 660 feet) in the area downgradient of Pond E. Due to these access limitations, the NES wells were installed as close to downgradient of existing compliance wells as possible, without encroaching upon the eagle's nest buffer boundary.

- Monitoring well ES-1D was installed downgradient of Pond E, sidegradient of compliance well ES-1613, and adjacent to existing observation well ES-1 to provide vertical delineation of boron, cobalt, nickel, and zinc. The well was screened approximately 12 feet into the uppermost confining layer, below the saturated sands in which ES-1 is screened.
- Monitoring well ES-7 was installed downgradient of Pond E, as close to downgradient of compliance wells ES-3D, ES-1609, and ES-1613 as possible to provide horizontal delineation of boron, cobalt, nickel, and zinc. The well was screened in sand deposit above the Potomac confining layer.
- Monitoring well ES-7D was installed adjacent to new monitoring well ES-7 to provide vertical delineation of boron, cobalt, nickel, and zinc. The well was screened approximately 10 feet into the uppermost confining layer, below the sand stratum in which ES-7 is screened.

Monitoring wells ES-7/7D were installed just upgradient of a small swale that discharges directly into Quantico Creek.

Haley & Aldrich subcontracted Cascade Drilling, LP, of New Ellington, South Carolina, to advance the three well locations using sonic drilling techniques. Continuous soil samples were collected to the terminal depth at each location to ensure that any water-bearing zones could be identified, and screened intervals appropriately designed. Soil samples were described using visual-manual methods

and classified in general accordance with the Unified Soils Classification System. The boring logs and well installation logs for the NES wells are presented in Appendix A. Well construction details are summarized in Table 2. Additional details regarding the well installations are provided below.

ES-1D was installed to a total depth of 50 feet below ground surface (bgs) with a screened interval from 45 feet bgs to 50 feet bgs. The well is located adjacent to ES-1, near the southeastern boundary of Pond E and on the opposite side of Possum Point Road as shown on Figure 4. The upper portion of the lithology was observed to include interbedded alluvial sediments to approximately 28.5 feet bgs. A gray-green clay representative of the Potomac confining unit was observed to a depth of approximately 47.5 feet bgs. The lower portion of the screen interval consists of clayey sand lenses within the confining unit.

ES-7 was installed to a total depth of 22 feet bgs with a screened interval from 17 feet bgs to 22 feet bgs. The well is located approximately 500 feet west of ES-1, south of the Pond E boundary, and adjacent to the eagle's nest protective buffer as shown on Figure 4. The lithology was observed to include interbedded alluvial sediments to approximately 20.5 feet bgs. A gray clay layer was observed through the lower portion of the screen interval.

ES-7D was installed to a total depth of 48 feet bgs with a screened interval from 43 feet bgs to 48 feet bgs. The well is located adjacent to ES-7, approximately 500 feet west of ES-1, and adjacent to the eagle's nest protective buffer as shown on Figure 4. The upper portion of the lithology was observed to include interbedded alluvial sands, silts, and clays to approximately 34.0 feet bgs. A gray-green clay representative of the Potomac confining unit was observed to a depth of approximately 60.0 feet bgs and the screen interval was installed within this confining unit.

Monitoring wells ES-1D, ES-7, and ES-7D were developed using a submersible pump to remove any fine sediment from the well and to connect the well screen to the formation. Development at ES-1D was continued until the water flowing from the well was sediment free and non-turbid. Approximately 50 gallons of purge water were removed from ES-1D during development. Due to the lithology's low permeability, monitoring wells ES-7 and ES-7D did not produce as much water during the development process as ES-1D. Approximately 30 gallons of purge water were removed from the combined wells. The development water from all three monitoring wells was containerized in two 55-gallon drums for offsite disposal.

Following installation and development of ES-1D, ES-7, and ES-7D, the well locations were surveyed by D&M Surveyors, PC, a Virginia-licensed surveyor based in Tappahannock, Virginia. Survey information is included in Table 2.

4.2 GROUNDWATER SAMPLING

From 7 April through 16 April 2020, the Pond E compliance monitoring wells and VSWMR sentinel wells were sampled as part of the NES in accordance with 40 CFR Part 257.95(g)(1)(iv) and the VSWMR. In addition, the newly installed groundwater monitoring wells ES-1D, ES-7, and ES-7D were sampled to characterize the nature and extent of GWPS/GPS exceedances identified in the Pond E compliance monitoring wells.

Samples were collected using low-flow/low stress sampling methodology. The compliance monitoring wells were purged and sampled using dedicated bladder pumps. The newly installed monitoring wells do not have dedicated bladder pumps; therefore, a submersible bladder pump was used for sampling.

Proper decontamination procedures were implemented when a submersible pump was used. Prior to purging, the depth to water in each well was measured using an electronic water level meter. Each sample collected was field analyzed for general water quality parameters (pH, specific conductivity, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity) using calibrated multiparameter water quality meters. The low-flow sampling logs for the sampling event are provided in Appendix B.

All compliance wells and VSWMR sentinel wells were sampled for the analysis of Appendix III and Appendix IV list constituents in accordance with 40 CFR Part 257.95(d)(1) as well as the VSWMR and Virginia Pollutant Discharge Elimination System (VPDES) constituents listed in the Unit's SWP. Existing observation well ES-1 and newly installed well ES-1D were analyzed for the same suite of constituents. Substantial drawdown was observed at new wells ES-7 and ES-7D during the low-flow purging process resulting in very low sample volume and turbid discharge. Given the low volume of water produced at these two well locations, sufficient bottleware was collected for the analysis of total boron, cobalt, nickel, and zinc only. Given the elevated turbidities associated with ES-7 and ES-7D (371 and 477 nephelometric units [NTUs], respectively), samples were also collected for the analysis of dissolved boron, cobalt, nickel, and zinc (field filtered for ES-7 and lab-filtered for ES-7D). At the time of sample collection, the well screens at these two locations were not fully submerged.

Quality assurance/quality control (QA/QC) samples (1 matrix spike/matrix spike duplicate [MS/MSD], 1 field blank, and 1 equipment blank) were collected as well. Samples were packed on ice in coolers and submitted for analysis under standard chain of custody protocol to Pace Analytical Services (Pace) of Greensburg, Pennsylvania, and Asheville, North Carolina, and Air, Water, & Soil Laboratories, Inc., (AWS) of Richmond, Virginia. Both analytical laboratories are Virginia Environmental Laboratory Accreditation Program (VELAP)-accredited laboratories for the analyses – Pace (VELAP ID Nos. 9526 and 460222) and AWS (VELAP ID. No 460021). The laboratory analytical reports are provided in Appendix C. The groundwater analytical results are presented in Table 3.

4.3 GROUNDWATER LEVEL MONITORING

A synoptic round of water levels was collected from Pond E wells during the NES to support groundwater flow estimates. A summary of the groundwater elevation data is provided in Table 1.

Groundwater generally flows in a south-southwesterly direction from the Unit to the surface water body (Quantico Creek) along the Stations' southern property boundary. Groundwater contours and flow directions in the upper aquifer are presented on Figure 4.

4.4 INVESTIGATION-DERIVED WASTE MANAGEMENT

Solid and liquid investigation-derived waste (IDW) generated during the assessment process was containerized in 55-gallon drums, labelled, and staged in a Station-designated location near Pond D. Five drums containing soil-cuttings and two drums containing groundwater were generated. Two waste characterization samples were collected to profile the IDW. The IDW was loaded and transported to Giant Resource Recovery of Sumter, South Carolina on 15 June 2020. The waste characterization results, profile, and disposal manifest are included in Appendix D.

4.5 DATA USABILITY AND QA/QC RESULTS

Following receipt of the laboratory analytical data, the analytical results were validated in accordance with the following EPA guidance:

- National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA, 2017); and
- Evaluation of Radiochemical Data Usability (Paar, 1997).

In summary, the validated analytical data were used herein according to the qualifiers presented. The analytical laboratory results were found to comply with the data quality objectives for the project and the guidelines specified by analytical method. Based on a review of the analytical reports, the data are 100% useable. The data usability summary reports are provided in Appendix E. Any qualifiers applied to analytical results based on validation are included in the project data table (Table 3).

The reported phenolics concentration in sentinel well ED-22RA and the lead and boron concentrations in sentinel well ED-24R were qualified based on matrix spike recovery being outside of the acceptance limits. MS/MSD data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The phenolics, lead, and boron results were UJ qualified, indicating that the compounds were not detected above the reported sample quantitation limits; however, the reported limits are estimated. The sulfate concentrations in both ED-22RA and ED-24R and the chloride and fluoride concentrations in ED-24R were J-qualified (indicating that that results were estimated) based on MS recovery being outside the acceptance limits. Barium and calcium concentrations in ED-24R were also qualified (J-, indicating the result is estimated but may be biased low) due to MS recovery outside of acceptance limits.

The boron concentration from compliance well ED-26 and the tin concentration from compliance well T-1615S were U-qualified during data validation because of method blank contamination. Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Based on boron and tin detections in the method blank, the compliance well sample results were U-qualified, indicating that the compounds were analyzed for but not detected.

The nickel and zinc concentrations from well ED-26 were U-qualified because of equipment blank contamination. Equipment blanks are prepared in the field to identify contamination that may have been introduced while decontaminating sampling equipment. Based on nickel and zinc detections in the equipment blank, the compliance well sample results were U-qualified, indicating that the compounds were analyzed for but not detected. It is noted that the original laboratory results reported for nickel and zinc were all below the applicable SWP GPS.

Data validation for the dissolved nickel concentrations reported for NES wells ES-7 and ES-7D resulted in qualified data (J-, indicating the result is estimated but may be biased low) due to low MSD percent recovery. The dissolved zinc concentrations reported for ES-7 and ES-7D were also qualified (J- and UJ, respectively) due to low MSD percent recovery. The UJ-qualifier indicates that the compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated.

The combined radium-226 and -228 results for compliance wells ES-1613, ES-3D, T-1615D and NES well ES-1 were J-qualified (indicating results are estimated) during data validation to account for corrected combined isotope calculations.

The laboratory analytical reports for the sample collected from compliance well T-1615S included several non-detect results for select Appendix IV and VSWMR constituents with laboratory MDLs and/or RLs above the applicable SWP GPS and/or federal GWPS. The elevated MDLs/RLs were a result of laboratory dilution (200x) required due to high sodium and calcium content in the sample. Of the constituents with GWPS/GPS exceedances (boron, cobalt, and nickel) reported previously from this well, the laboratory dilution only affected the result for nickel.

As outlined in Section 4.2, given the low volume of water produced and elevated turbidities observed at NES wells ES-7 and ES-7D during sampling, samples were collected for totals metals analysis in addition to dissolved analysis (field filtered for ES-7 and lab-filtered for ES-7D). The reported laboratory analytical concentrations for the dissolved metals from each of the wells were similar to the reported totals concentrations.

Field QA/QC samples for the sampling event included one field blank, one equipment blank, and one MS/MSD. The QA/QC samples were analyzed for the same constituents as the groundwater samples and validated. The analytical results for the field blank and equipment blank are provided in Table 3, along with the field sample results. The MS/MSD results are provided in the analytical laboratory reports included as Appendix C.

4.6 DATA EVALUATION

The following GWPS/GPS exceedances were identified in Pond E monitoring wells as outlined in the following table:

Pond E Nature and Extent Study			
Detected Constituent	GWPS/GPS (µg/L)	Monitoring Well ID	Concentration (µg/L)
Boron	QL (250)	ES-1609	1,160
		ES-1613	2,200
		ES-3D	732
		T-1615S	767 J
		ES-1	288
		ES-7	264 (total) 261 (dissolved)
Cobalt	6 / QL (5)	ES-1609	21.8
		ES-3D	35.3
		T-1615S	22.4
		ES-1	5.8
		ES-7	89.2 (total) 82.3 (dissolved)

Pond E Nature and Extent Study			
Detected Constituent	GWPS/GPS (µg/L)	Monitoring Well ID	Concentration (µg/L)
Nickel	QL (5)	ES-1609	15.5
		ES-1613	6.3
		ES-3D	26.4
		ES-1	21.1
		ES-7	69.4 (total) 60.7 J- (dissolved)
		ED-22RA	5.6
Zinc	QL (50)	ES-3D	203
		ES-1	75.3

Notes:

µg/L = micrograms per liter

QL = quantitation limit

J = value is estimated

J- = result is an estimated quantity, but the result may be biased low.

No GWPS/GPS exceedances were identified in the upgradient compliance wells ED-24R and ED-26, downgradient compliance well T-1615D, NES wells ES-1D and ES-7D, or VSWMR sentinel well ED-23R.

5. Nature and Extent of Constituents of Concern

The following summarizes the chemical nature and extent of the detected CCR Appendix IV constituents and VSWMR constituents that exceeded their respective federal GWPS or SWP background-based GPS for the Unit.

As detailed above, boron, cobalt, nickel, and zinc were detected in select Pond E wells above their respective GWPS/GPS. Plan view isoconcentration maps for each constituent are provided as Figures 5, 6, 7, and 8, respectively. The cross-section provided on Figure 3 depicts the vertical concentration of each constituent as well.

5.1 BORON

5.1.1 Nature of Boron

Boron is a naturally occurring element that can be found extensively in nature. Boron is classified as a nonmetal and is typically found in the environment combined with oxygen in compounds called borates. The main uses of borates in the United States include glass and ceramics, soaps, bleaches, detergents, fire retardants, and pesticides. Boron is mined and produced globally and in the United States, primarily in California. Biologically, boron plays an important role as an essential micronutrient in plants. Exposure to large amounts of boron over short periods of time can affect the stomach, intestines, liver, kidney, and brain. Animal studies have shown effects of boron on the male reproductive system. No evidence of cancer was found in a study in which mice were given boric acid in the diet throughout their lifetime (ATSDR, 2010).

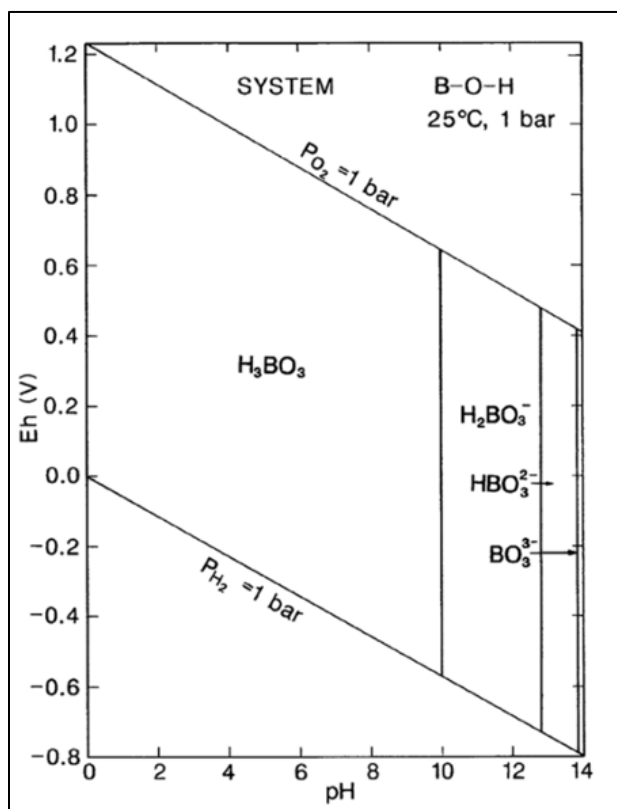


Figure A: Boron Eh-pH diagram for boron species Brookins 1988.

Boron is one of the most mobile metals associated with CCR material in groundwater. The various species of boron throughout the pH and electro-potential (Eh) range found in most aquifer systems is presented in Figure A. Within pH ranges of 6 to 8 (the pH range of most groundwater) the predominate form of boron is relatively inert boric acid. Boron can adsorb to many different mineral and soil surfaces (such as kaolinite and illite clay) forming weak, labile bonds (Parks and Edwards, 2005). The mobility of boron in groundwater is generally a function of the amount of fine-grained materials and the presence of certain iron and aluminum oxides, which decrease mobility (Bouwer, 1973).

5.1.2 Extent of Boron

Boron was detected during the NES at concentrations exceeding the SWP background-based GPS in compliance wells ES-1609, ES-1613, ES-3D, and T-1615S. The boron concentrations detected in these wells were generally consistent with the assessment monitoring results from 2019. No boron SWP GPS exceedances were detected in any of the remaining compliance wells or VSWMR sentinel wells. Boron was detected at concentrations slightly exceeding the SWP GPS in shallow NES wells ES-1 and ES-7 (which were installed as close to downgradient of the compliance wells as possible and close to Dominion Energy's southern property boundary as shown on Figure 5). Boron was not detected above the SWP GPS in the collocated deep NES wells ES-1D and ES-7D, respectively.

A summary of historical detections of boron in groundwater samples collected from Pond E wells is presented in Appendix F-1. The SWP background-based GPS for boron of 250 µg/L became effective on 2 April 2020. The SWP GPS was exceeded at four compliance wells and the two shallow NES wells. It should be noted that the GPS for boron is not a risk-based concentration, but rather a background-based concentration that is not intended to be protective of actual risk. The EPA has classified boron as a non-carcinogenic constituent and established a risk-based concentration for boron in tapwater (drinking water), referred to as the Tapwater Regional Screening Level (RSL). The Tapwater RSL for boron is 4,000 µg/L (based on a hazard quotient of 1.0). The RSL represents the level of a constituent below which there is no known or expected risk to health. As shown in Appendix F-1, all historical boron concentrations in Pond E wells have been below the Tapwater RSL value.

A review of surface water analytical data collected by others in accordance with SWP No. 617 from Quantico Creek was conducted to further evaluate the extent of boron concentrations in the vicinity of Pond E. Quantico Creek is located south of and downgradient of Pond E. The solid waste permit requires sampling of four locations (PP-01 through PP-04) downgradient of Pond E and a comparison of analytical data to applicable Virginia Water Quality Standards (VAWQS) or to SWP GPS where VAWQS do not exist. Samples were collected by EnviroScience, Inc. on 24 March 2020 and the results were reported to the VDEQ in the First Quarter 2020 Surface Water Monitoring Report (EnviroScience, 2020). A second round of samples was collected on 23 June 2020 and the results will be reported to the VDEQ in the forthcoming Second Quarter 2020 Surface Water Monitoring Report. A summary table is included as Table 4. The surface water sample locations and reported boron concentrations are shown on Figure 5. As shown on the figure, boron was not detected in any of the surface water sample locations downgradient of Pond E during either sampling event.

While exceedances of the SWP background-based GPS for boron have been observed in Pond E wells, none of the reported concentrations exceed the EPA risk-based Tapwater RSL of 4,000 µg/L. This information, coupled with the lack of boron detections in surface water immediately downgradient of the Unit, indicate that the extent of boron in the uppermost aquifer beneath Pond E has been adequately delineated and off-site impacts are not a concern.

5.2 COBALT

5.2.1 Nature of Cobalt

Cobalt is a naturally occurring element that can be found extensively in nature in water, air, rocks, plants, and soil. Cobalt is classified as a transition metal and is typically found in the environment combined with other elements like oxygen, sulfur and arsenic. Cobalt is primarily used in combination with other metals to form alloys used in industrial and military applications, including gas turbine aircraft engines. In the United States, cobalt is imported or obtained from scrap recycling. Biologically, cobalt as a component of cyanocobalamin (vitamin B12) plays an essential role in the health of animals and humans. The Recommended Dietary Allowance of vitamin B12 is 2.4 micrograms per day, which contains 0.1 micrograms of cobalt. Short- and long-term exposure of rats to high levels of cobalt in food or drinking water results in effects on the blood, liver, kidneys, and heart (ATSDR, 2004).

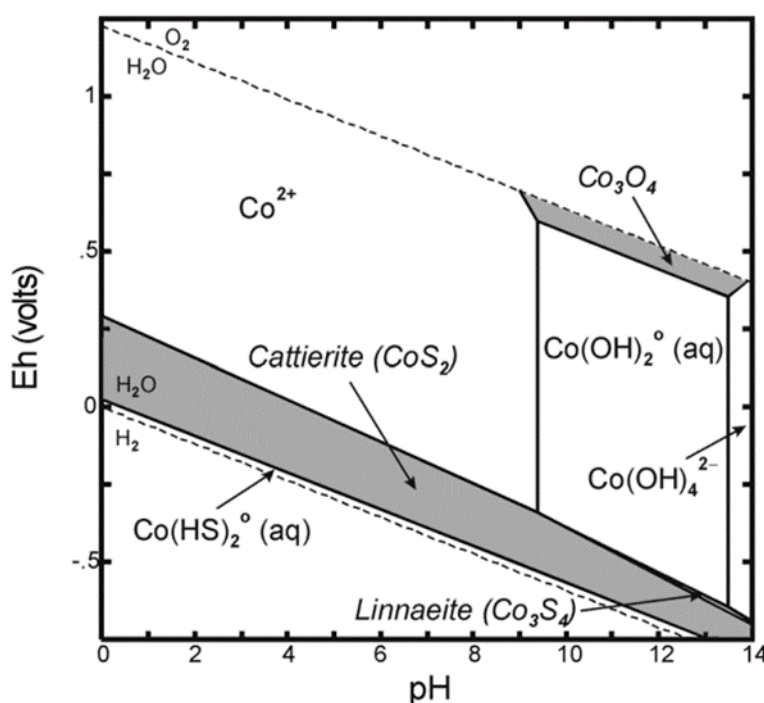


Figure B: Eh-pH diagram showing dominant aqueous species of cobalt (Co) and Eh-pH region (shaded areas) where the solubilities of cobalt solids have been exceeded [diagram was calculated at 25 °C and a concentration of 10^{-12} mol/L total dissolved cobalt in the presence of dissolved chloride, nitrate, carbonate, and sulfate.]; adopted from Krupka and Serne (2002).

The aqueous speciation of cobalt and potential formation of cobalt-related minerals under a spectrum of the Eh, pH, and sulfide-producing conditions are shown in Figure B. Under neutral pH (pH between 6 and 8) and non-sulfidogenic conditions, Co^{2+} is expected to be the dominated species in the aqueous phase. Under sulfide-producing conditions, cobalt sulfide minerals (e.g., CoS_2) may form and precipitate. Cobalt has also been reported to adsorb to sulfide minerals or form co-precipitation in sulfide minerals (EPRI, 2015).

The adsorption of cobalt in sediments and soils is largely controlled by the presence of iron and manganese oxide and clay minerals. The adsorption behavior of cobalt is closely linked to its oxidation state, and the environmental availability of natural and man-made organic complexants. Under cobalt adsorption, studies show that cobalt is moderately to highly adsorbed on minerals in the absence of organic complexants. At near neutral and basic pH environments and absence of organic complexants, cobalt exhibits high adsorption affinity for oxidized minerals. The adsorption constant (K_d) values commonly reported in the literature range from 10^3 to 10^5 Liter/Kilogram (L/Kg). Sheppard et al. (2009) evaluated a large set of cobalt sorption and desorption data and summarized the geometric mean K_d values for various soil types and conditions as follows: sand K_d = 260 L/Kg, loam K_d = 810 L/Kg, clay K_d = 3,800 L/Kg, organic matter K_d = 87 L/Kg, and K_d for soils with $pH \leq 5$ = 12 L/Kg. The extent of adsorption is greatly influenced by pH; generally, the degree of adsorption increases with pH.

Cobalt adsorption due to surface bound humic acid is weak and dominated by ion exchange (Zachara et al., 1994). It has also been found that the surface-bound humic acid functional moieties on aquifer solids increased cobalt adsorption on all mineral sorbents by 10 to 60%. The largest increase in cobalt adsorption occurs in the pH range from 4.5 to 6.5, where the humic acid adsorption is the greatest.

5.2.2 Extent of Cobalt

Cobalt was detected during the NES at concentrations exceeding the federal GWPS and SWP GPS in compliance wells ES-1609, ES-3D, and T-1615S and NES well ES-7. Cobalt was detected at a concentration exceeding the SWP background-based GPS but below the federal GWPS in NES well ES-1. The cobalt concentrations detected in the compliance wells were generally consistent with the assessment monitoring results from 2019. The cobalt concentrations detected in NES well ES-7 (89.2 $\mu\text{g/L}$ total, 82.3 $\mu\text{g/L}$ dissolved) may be a result of the limited saturated thickness of the shallow aquifer and thin water column. No cobalt GWPS/GPS exceedances were detected in any of the remaining compliance wells and VSWMR sentinel wells or in deep NES wells ES-1D and ES-7D.

A summary of historical detections of cobalt in groundwater samples collected from Pond E wells is presented in Appendix F-2. The federal GWPS (based on the health-based Tapwater RSL) for cobalt became effective on 30 December 2019. The background-based SWP GPS for cobalt became effective on 2 April 2020. A review of the historical cobalt concentrations indicates that the GWPS/GPS has been exceeded in compliance wells ES-1609, ES-1613, ES-3D, and T-1615S. As shown in Appendix F-2, concentrations in compliance well ES-1613 were historically detected at concentrations above 20 $\mu\text{g/L}$; however, since source removal activities began in 2016, concentrations have steadily decreased. During the NES, the cobalt concentration detected in well ES-1613 (4.8 $\mu\text{g/L}$) was below both the GWPS (6 $\mu\text{g/L}$) and the background based SWP GPS (5 $\mu\text{g/L}$). Cobalt concentrations in the other compliance wells have remained relatively stable since source removal activities were completed.

A review of the available surface water analytical data collected from locations PP-01 through PP-04 in accordance with SWP No. 617 from Quantico Creek was conducted to further evaluate the extent of cobalt concentrations in the uppermost aquifer beneath Pond E. The surface water sample locations and reported cobalt concentrations are shown on Figure 6, and the analytical results are summarized in Table 4. As shown on the figure, cobalt was detected in each of the surface water sample locations at concentrations less than laboratory reporting limit, which is well below the applicable VAWQS of 5 $\mu\text{g/L}$ (based on the SWP GPS).

Based on the groundwater results presented herein, coupled with the low level concentrations reported in downgradient surface water samples, the vertical and horizontal extent of cobalt in the uppermost aquifer beneath Pond E has been adequately delineated, and the data do not indicate any off-Site cobalt

impacts associated with the on-Site cobalt groundwater concentrations. While the highest cobalt concentration detected during the NES was reported in NES well ES-7, the reported concentration may be a result of the limited saturated thickness of the shallow aquifer and thin water column.

5.3 NICKEL

5.3.1 Nature of Nickel

Nickel is a naturally occurring element that can be found extensively in nature, including in soils and volcanic dust. Nickel is classified as a transition metal and is typically found in the environment combined with oxygen or sulfur as oxides or sulfides. Nickel compounds that are soluble in water include nickel chloride, nickel nitrate, and nickel sulfate; less-soluble nickel compounds include nickel oxide and nickel subsulfide. Nickel is primarily used in combination with other metals to form alloys used to make stainless steel, coins, jewelry, and for industrial uses, including heat exchangers and valves. Nickel in the United States is obtained from recycling nickel alloys or is imported primarily from Canada and Russia. Biologically, nickel plays an important role as an essential micronutrient in animals. Oral exposure of humans to high levels of soluble nickel compounds through the environment is extremely unlikely. Because humans have only rarely been exposed to high levels of nickel in water or food, most of the data on harmful effects of nickel is based on animal studies. Eating or drinking levels of nickel much greater than the levels typically found in food and water have been reported to produce lung disease in dogs and rats and to affect the stomach, liver, kidneys, blood, and immune system in rats and mice, as well as their reproduction and development (ATSDR, 2005a).

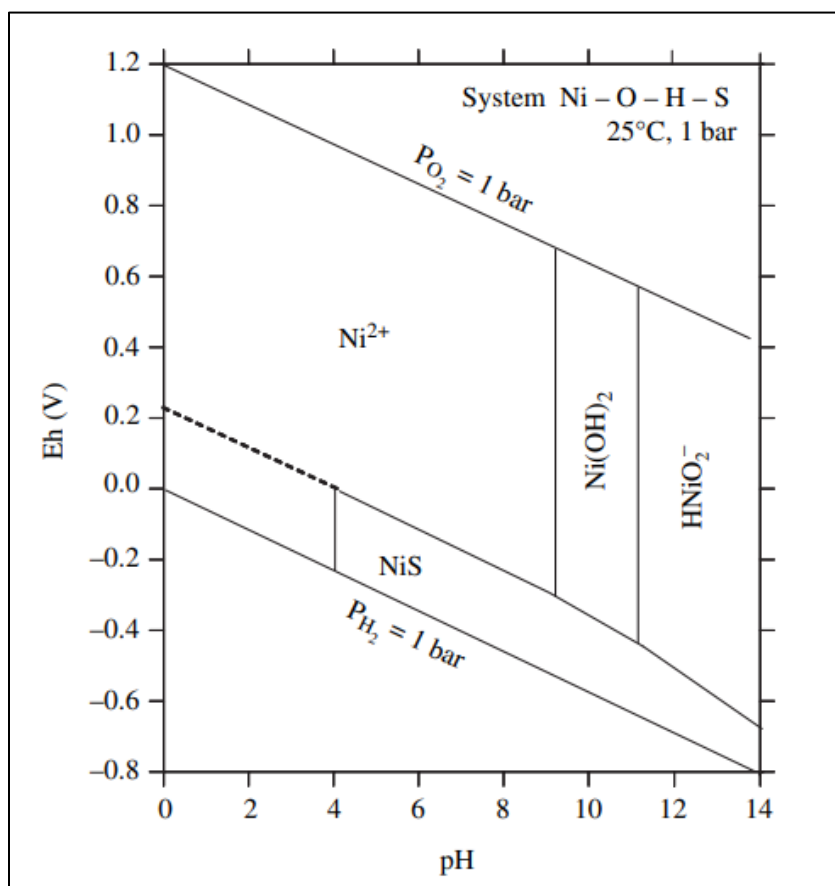


Figure C: Nickel Eh-pH diagram for Ni-O-H-S system Nieminen et al. 2007.

The various species of nickel throughout the pH and Eh range are presented in Figure C. Groundwater pH range is generally between 6 and 8, and the range of oxidation-reduction potential is generally negative and above -200 millivolts (mV) (-0.2 volts [V] in Figure C). These conditions would be consistent with low dissolved oxygen concentrations and high dissolved iron concentrations in groundwater. In most soils, nickel is bound to ion exchange sites, is specifically adsorbed, or adsorbed on or coprecipitated with aluminum and iron oxyhydroxides (Nieminen et al., 2007). Within these environments, nickel is generally immobile. In the presence of organic-rich soils, where humic acids are formed by the decomposition of organic materials, nickel may be quite mobile because of the formation of nickel-ligand complexes in the aqueous phase (Nieminen et al., 2007).

5.3.2 Extent of Nickel

Nickel was detected during the NES at concentrations above the SWP background-based GPS in compliance wells ES-1609, ES-1613, and ES-3D and VSWMR sentinel well ED-22RA. The nickel concentrations detected in these wells were generally consistent with the assessment monitoring results from 2019. Nickel was also detected at concentrations above the SWP GPS in NES wells ES-1 and ES-7. The nickel concentrations detected in NES well ES-7 (69.4 µg/L total, 60.7 µg/L dissolved) may be a result of the limited saturated thickness of the shallow aquifer and thin water column. Nickel was not detected above the SWP background-based GPS in the remaining compliance wells, VSWMR sentinel well, or deep NES wells.

A summary of historical detections of nickel in groundwater samples collected from Pond E wells is presented in Appendix F-3. The SWP background-based GPS for nickel of 5 µg/L became effective on 2 April 2020. The GPS for nickel is not a risk-based concentration, but rather a background-based concentration that is not intended to be protective of actual risk. The EPA has classified nickel as a non-carcinogenic constituent and established a risk based Tapwater RSL for nickel. The Tapwater RSL for nickel is 390 µg/L (based on a hazard quotient of 1.0). The RSL represents the level of a constituent below which there is no known or expected risk to health. As shown in Appendix F-3, all historical nickel concentrations in Pond E wells have been well below the Tapwater RSL value. Additionally, concentrations in compliance well ES-1613 were historically detected at concentrations ranging from approximately 20 µg/L to 30 µg/L; however, since source removal activities began in 2016, concentrations have steadily decreased. During the NES, the nickel concentration detected in well ES-1613 (6.3 µg/L) was only slightly above the background based SWP GPS (5 µg/L). Nickel concentrations in the other compliance wells have remained relatively stable since source removal activities were completed.

A review of the available surface water analytical data collected by others from locations PP-01 through PP-04 in accordance with SWP No. 617 from Quantico Creek was conducted to further evaluate the extent of nickel concentrations in the uppermost aquifer beneath Pond E. The surface water sample locations and reported nickel concentrations are shown on Figure 7, and the analytical results are summarized in Table 4. As shown on the figure, nickel was detected in each of the surface water sample locations at concentrations less than the laboratory reporting limit, which is well below the applicable VAWQS (based on the Aquatic Life Freshwater Criteria and ranging from 12 µg/L to 24 µg/L, depending on specific hardness). The reported surface water results are also below the established SWP background-based GPS of 5 µg/L.

While exceedances of the SWP background-based GPS for nickel have been observed in Pond E wells, none of the reported concentrations exceed the EPA risk-based Tapwater RSL of 390 µg/L. This information, coupled with the available surface water data from locations immediately downgradient of the Unit, indicate that the extent of nickel in the uppermost aquifer beneath Pond E has been adequately delineated and off-Site impacts are not a concern.

5.4 ZINC

5.4.1 Nature of Zinc

Zinc is a common naturally occurring element that can be found extensively in nature in water, air, rocks, plants, and soil. It is typically found in the environment combined with other elements like oxygen, sulfur and chlorine to form zinc compounds. Zinc is primarily used in combination with other metals to form alloys for industrial applications, including use as a protective coating for iron and steel. Zinc is mined in the United States as well as imported from other countries. Biologically, zinc plays an important role as an essential nutrient in animals and humans. The Recommended Dietary Allowance of zinc is 11 milligrams per day for men and 8 milligrams per day for women. Exposure to large amounts of zinc can cause stomach cramps, anemia, and changes in cholesterol levels (ATSDR, 2005b).

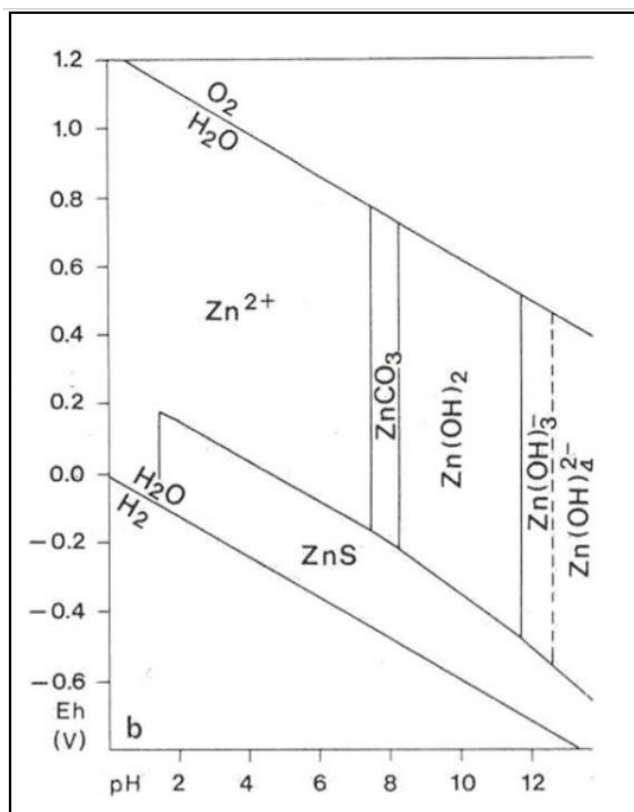


Figure D: Eh-pH diagram for the system of Zn-O₂-CO₂-S-H₂O, at 25°C and 1 atm (Salomans & Förstner, 1984)

The aqueous speciation of zinc and potential formation of zinc-related minerals under a spectrum of Eh and pH conditions are shown above (Figure D). The pH range of typical groundwater is generally between 6 and 8. The range of oxidation-reduction potential is generally above -200 mV. Under anaerobic sulfide-producing conditions, zinc sulfide may form and precipitate. In basic aqueous solution,

zinc hydroxide or zinc carbonate minerals may form and precipitate. Soluble Zn^{2+} is expected in neutral/acidic pH and oxic/mildly reducing environments. In addition, zinc can be removed from the soil solution phase and from groundwater by co-precipitation with iron and manganese oxyhydroxides.

Zinc is known to have high adsorption affinity for metal oxides (iron, manganese, and aluminum oxides). The extent of zinc adsorption to aquifer solids is greatly influenced by pH; generally, the degree of adsorption increases with pH. For example, adsorption to hydrous ferric oxides is negligible below pH 5; adsorption then gradually increases with pH; the efficiency of adsorption is optimal when pH is higher than 7.5 (Gaillardet et al., 2003). The K_d values reported in the literature range widely, from 0.1 to 10^5 L/Kg with a median value of approximately 10^3 (USEPA, 2005). Ohio EPA (2005) suggested that, for groundwater pH between 5 and 9, K_d values for soils with more than 30% fines may be approximately 10^3 or higher; however, when the content of fines is lower than 10%, the representative K_d value may be as low as approximately 10.

5.4.2 Extent of Zinc

Zinc was detected during the NES at a concentration above the SWP background-based GPS in compliance well ES-3D. The nickel concentration detected in this well was generally consistent with the assessment monitoring results from 2019. Nickel was also detected at a concentration above the SWP GPS in NES wells ES-1. Zinc was not detected above the SWP background-based GPS in the remaining compliance wells, VSWMR sentinel wells, or NES wells.

A summary of historical detections of zinc in groundwater samples collected from Pond E wells is presented in Appendix F-4. The SWP background-based GPS for zinc of 50 $\mu\text{g/L}$ became effective on 2 April 2020. The GPS for zinc is not a risk-based concentration, but rather a background-based concentration that is not intended to be protective of actual risk. The EPA has classified nickel as a non-carcinogenic constituent and established a risk based Tapwater RSL for zinc. The Tapwater RSL for zinc is 6,000 $\mu\text{g/L}$ (based on a hazard quotient of 1.0). The RSL represents the level of a constituent below which there is no known or expected risk to health. As shown in Appendix F-4, all historical zinc concentrations in Pond E wells have been well below the Tapwater RSL value.

A review of the available surface water analytical data collected by others from locations PP-01 through PP-04 in accordance with SWP No. 617 from Quantico Creek was conducted to further evaluate the extent of zinc concentrations in the uppermost aquifer beneath Pond E. The surface water sample locations and reported zinc concentrations are shown on Figure 8, and the analytical results are summarized in Table 4. As shown on the figure, zinc was not detected in any of the surface water sample locations.

While limited exceedances of the SWP background-based GPS for zinc have been observed in Pond E wells, none of the reported concentrations exceed the EPA risk-based Tapwater RSL of 6,000 $\mu\text{g/L}$. This information, coupled with the available surface water data from locations immediately downgradient of the Unit, indicate that the extent of zinc in the uppermost aquifer beneath Pond E has been adequately delineated and off-Site impacts are not a concern.

Groundwater represented by the compliance wells, VSWMR sentinel wells, and NES wells is not used for any potable or non-potable purposes in the vicinity of the Unit. Therefore, there are no complete exposure pathways to the groundwater at the wells. As indicated in Section 2.2, the closest private water supply wells located downgradient from Pond E are over 1 mile from the Unit and are located

across a hydraulic divide (i.e., Quantico Creek). There are a few existing private water supply wells located in closer proximity to the Site but they are located to the west of Pond E, sidegradient of the Unit, and across another hydraulic divide (i.e., unnamed creek that flows to Quantico Creek). Potable water is supplied to the facility and surrounding properties by a municipal water supply system. Based on this information, there is no human exposure risk to groundwater ingestion at the Site. In addition, surface water monitoring conducted in accordance with current SWP No. 617 indicate that negligible impact to surrounding surface water is occurring based on potential groundwater to surface water exchange.

Although boron, cobalt, nickel, and zinc were detected in wells at concentrations greater than the GWPS/GPS, there are no complete exposure pathways to groundwater at the Site monitoring wells.

6. Identification and Screening of Technologies

The purpose of this ACM Report is to identify, develop, and evaluate potential corrective measures to be taken at Pond E to prevent further releases and to remediate CCR impacts in groundwater associated with the CCR Unit. Source material has already been removed from the Unit, along with over excavation of a minimum of 6 inches, and removal actions were acknowledged by VDEQ in a letter on 30 August 2019 verifying source removal in accordance with the Unit's closure plan.

6.1 CORRECTIVE ACTION OBJECTIVES

In accordance with 40 CFR Part 267.97(b) and/or 9VAC20-81-260.C.3.c, the groundwater corrective measures to be considered must meet, at a minimum, the following threshold criteria:

1. Be protective of human health and the environment;
2. Attain the GWPS/GPS;
3. Control the source(s) of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents of concern to the environment;
4. Remove as much of the contaminated material from the environment that was released from the CCR unit as is feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems; and,
5. Comply with standards (regulations) for waste management.

The groundwater corrective measures were also evaluated using the following balancing criteria:

1. Long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful;
2. Effectiveness of the remedy in controlling the source to reduce further releases;
3. Technical and logistical challenges required to implement the corrective measures, including practical considerations such as equipment availability and disposal facility capacity; and
4. Degree to which community concerns are addressed by a potential remedy(s).

Balancing criteria 1 through 3 also take into consideration various sub-criteria which are outlined in Sections 7.2, 7.3, and 7.4, respectively.

6.2 CCR REMOVAL

As noted above, the CCR material was removed and over excavation of a minimum of 6 inches was completed (and verified by the VDEQ in 2019) in accordance with the CCR Rule and SWP No. 617. As such, this ACM Report focuses only on the mitigation of residual groundwater impacts.

While acknowledging the significance of the CCR removal (i.e., source material) in the overall corrective measures for the unit, this ACM Report focuses on the groundwater.

6.3 GROUNDWATER REMEDIAL ALTERNATIVES

Corrective measures such as hydraulic control, in-situ treatment, and natural recovery are commonly identified as potential corrective measures alternatives for CCR impacts in groundwater. Natural recovery is evaluated when the source has been removed and groundwater concentrations are steady or decreasing below GWPS/GPS. Hydraulic control and/or in-situ treatment are typically considered if there are ongoing releases (i.e., remaining source material), a complete groundwater pathway or receptors, and/or if current groundwater concentrations exceed the associated risk-based screening values or GWPS/GPS in downgradient locations. As previously indicated, the source (i.e., CCR material) was already removed along with over excavation of a minimum of 6 inches, thereby eliminating the possibility of future releases. In addition, there are no complete exposure pathways to groundwater at the Site monitoring wells and no groundwater receptors are identified downgradient of Pond E. Groundwater trends indicate that the groundwater constituent concentrations have generally remained stable and/or decreased since CCR material removal in 2016. Further, surface water monitoring results indicate that negligible impact to surrounding surface water is occurring based on potential groundwater to surface water exchange.

While there are no impacts to surface water above relevant screening levels and groundwater trends have remained relatively stable since CCR removal, boron, cobalt, nickel, and zinc GWPS/GPS exceedances were detected in several downgradient compliance, VSWMR sentinel, and NES wells. For boron, nickel, and zinc; however, none of the reported concentrations exceed the applicable risk-based EPA Tapwater RSLs. Cobalt has been detected at concentrations exceeding the federal GWPS (based on the risk-based Tapwater RSL) in compliance wells and recently installed NES well ES-7. It should be noted that the cobalt concentrations detected in downgradient NES well ES-7 (89.2 µg/L total, 82.3 µg/L dissolved) may be a result of the limited saturated thickness of the shallow aquifer and thin water column. No cobalt federal GWPS exceedances were detected in any of the remaining compliance wells, VSWRM sentinel wells, or NES wells.

Given the reasons outlined above, this ACM Report specifically evaluates the following alternatives to address the residual groundwater impacts of Appendix IV constituents and the constituents and parameters listed in the Unit's solid waste permit above their established GWPS/GPS:

- Alternative 1 – Natural Recovery;
- Alternative 2 – In-situ Groundwater Treatment; and
- Alternative 3 – Hydraulic Control with Ex-situ Treatment.

The three remedial alternatives are described in the following sections.

6.3.1 Alternative 1 – Natural Recovery

Natural recovery incorporates natural destructive and non-destructive mechanisms to reduce the Site-specific constituents in groundwater. Natural recovery is demonstrated using one or more lines of evidence that the natural capacity of an aquifer can reduce constituent concentrations through a series of biological, chemical, and/or physical subsurface interactions over time without human intervention. Attenuation mechanisms for inorganic constituents generally consist of physical and chemical processes such as dispersion, dilution, sorption, and/or precipitation, and biological processes including microbial oxidation or reduction reactions. Natural recovery can serve as a primary remedial strategy or a secondary strategy following an active in-situ or ex-situ treatment method. Demonstrating natural

recovery involves long-term monitoring of select groundwater monitoring wells for specific constituents of concern.

6.3.2 Alternative 2 – In-situ Groundwater Treatment

In-situ groundwater treatment would address Site-related constituents through in-situ injection of groundwater amendments downgradient of Pond E or through the installation of a permeable reactive barrier (PRB). Since the CCR material has already been removed and depletion of Site-related constituents in groundwater is already anticipated, active remediation (injections or PRB replenishment) would cease in the future. Bench scale and pilot testing would be required to estimate the actual length of time needed for active remediation. Following the installation of in-situ treatment system (via a trench or injection wells), periodic amendment injections or periodic replenishment of the treatment reagents within the PRB, as well as groundwater sampling to monitor system performance, would be expected. Laboratory testing would be required to confirm an effective and appropriate reagent for use in in-situ treatment prior to implementation.

6.3.3 Alternative 3 – Hydraulic Control with Ex-situ Treatment

A shallow (approximately 30 feet deep) collection trench would be installed to hydraulically control the downgradient migration of constituents. The large volume of effluent could require ex-situ treatment (likely ion exchange or reverse osmosis). Both treatment systems are complex with ongoing operation and maintenance and would generate a secondary waste stream – including regeneration/replacement of ion exchange media or concentration of reject water from a reverse osmosis system. Approvals and permitting would be required for discharge of treated groundwater. Implementation of a hydraulic control system would require a detailed design effort with pilot testing, such as pumping tests and additional groundwater modeling, to verify the hydraulic capture zone. Bench scale testing may be required to design the water treatment system.

Once implemented, depletion of Site-related constituents in groundwater would allow the concentration of constituents to attenuate and pumping would cease over time, once constituent levels are less than GWPS/GPS. Following the installation of hydraulic controls and water treatment, operation, and maintenance of the system as well as groundwater sampling to monitor system performance, would be expected.

This assessment meets the requirements promulgated in 40 CFR Part 257.96, which require the assessment to evaluate the effectiveness of potential corrective measures in meeting the requirements and objectives of the remedy as described under 40 CFR Part 257.97.

7. Corrective Measure Evaluation

In accordance with 40 CFR Part 257.97, corrective measures must meet, at a minimum, the five threshold criteria listed in Section 6.1 and the balancing (evaluation) criteria listed in 40 CFR Part 257.97(c), as outlined in the following sections. The threshold criteria listed below (except for that listed in Section 7.1.4) are also required per the VSWMR for remedy selection in 9VAC20-81-260.C.3.c.

Table 5 includes a graphical summary comparing the corrective measures alternatives to the threshold/balancing criteria; green denoting the most favorable result, yellow denoting a neutrally preferred result, and red denoting the least preferred result. Figure 9 depicts the conceptual locations/layout of Alternatives 2 and 3. It is assumed the existing monitoring well network (as shown on Figure 4) and up to two new monitoring well locations would be used for monitoring under all three alternatives.

7.1 THRESHOLD CRITERIA - 40 CFR PART 257.97(B)

7.1.1 Human Health and Environment Protection - 40 CFR Part 257.97(b)(1)

The constituents in groundwater above their GWPS/GPS in their current state are not expected to pose a risk to human health via groundwater ingestion given the Unit's location in an industrial area, the limited access to the area, and the lack of drinking water receptors within the downgradient vicinity of Pond E as documented in Section 2.2 and Section 5. While boron, nickel, and zinc have been detected at concentrations that exceed the background-based GPS, they do not exceed applicable EPA risk-based levels (Tapwater RSLs). Cobalt was detected above the federal GWPS (based on the risk-based Tapwater RSL) but surface water monitoring conducted in accordance with current SWP No. 617 indicates that negligible impact to surrounding surface water is occurring because of potential groundwater to surface water exchange. Accordingly, Alternative 1 meets the threshold criterion of being protective to human health and the environment. Alternatives 2 and 3 would also meet the threshold criterion of being protective to human health and the environment as implementation of those alternatives would provide a further barrier between the uppermost aquifer groundwater and surface water.

If Alternative 1 is selected, periodic groundwater monitoring events to document the natural recovery processes and that the concentrations of Site-related constituents are stable or decreasing will continue. If Site-related constituents are no longer stable or increasing, Alternatives 2 and 3 could be implemented at a later date.

The table below depicts the overall outcome of comparing the alternatives against this criterion, with green denoting the most favorable result, yellow denoting a neutrally preferred result, and red denoting the least preferred result.

Threshold Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Human Health and Environment Protection			

7.1.2 GWPS/GPS Attainment- 40 CFR Part 257.97(b)(2)

Removal of the CCR material eliminated additional CCR-related constituents from entering the subsurface. Under Alternative 1, residual CCR-related constituents present in groundwater will be addressed through concentration attenuation via natural diffusion, bioattenuation, and dispersion over time. Under Alternative 2 or Alternative 3, groundwater treatment or collection followed by treatment will also reduce residual CCR-related constituents present in the groundwater. Therefore, source removal with Alternatives 1, 2 or 3 meets the threshold criterion of attaining the GWPS/GPS.

Threshold Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
GWPS/GPS Attainment			

7.1.3 Source Control - 40 CFR Part 257.97(b)(3)

Complete removal of CCR material (along with over excavation of a minimum of 6 inches) located from within the boundaries Pond E is the ultimate source control measure and has already been completed.

Threshold Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Source Control			

7.1.4 Contaminated Material Removal - 40 CFR Part 257.97(b)(4)

With the removal of the CCR material and over-excavated subsurface soils, additional contamination to the surrounding environment would not occur. Therefore, the closure by removal, with any of the groundwater remedial alternatives presented, meets this threshold requirement.

Threshold Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Contaminated Material Removal			

7.1.5 Waste Management - 40 CFR Part 257.97(b)(5)

The source was already removed; no further waste management is required for Alternative 1. Any waste generated during sampling procedures will be managed in accordance with regulatory requirements as outlined in the Unit's GMP. No additional permits are anticipated for these activities.

Alternative 2 would require limited waste management for cuttings generated during well installation. Alternative 3 would require on-going waste management and treatment, prior to discharge or disposal, to manage the estimated water collection in the trench.

Threshold Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Waste Management			

7.2 BALANCING CRITERION 1 - 40 CFR PART 257.97(C)(1)

This balancing criterion takes into consideration the following sub-criteria relative to the long-term and short-term effectiveness of the remedy, along with the anticipated success of the remedy.

7.2.1 Risk Reduction - 40 CFR Part 257.97 (c)(1)(i)

Given the lack of potable or non-potable wells in the area, coupled with limited access to the area, the constituents in groundwater above their GWPS/GPS in their current state do not currently pose an exposure risk to human health via groundwater ingestion or direct contact. In addition, given the lack of surface water impacts downgradient of the Unit, the residual groundwater impacts do not pose a risk. Alternative 1, which would include periodic groundwater monitoring, will address potential future risks and return the Site to maximum beneficial use.

Alternative 2 may further reduce the risk in groundwater but is less favorable as it would require bench scale tests to confirm proposed amendments would not pose any additional risk. Alternative 3 may also further reduce the risk by addressing potential future risks by intercepting groundwater prior to potential surface water discharges.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Risk Reduction			

7.2.2 Residual Risks - 40 CFR Part 257.97 (c)(1)(ii)

Further releases are not anticipated to occur following Unit closure and implementation of the proposed groundwater remedies because the CCR and a minimum of 6 inches of subsurface soils were removed. Given the lack of potable or non-potable wells in the area, coupled with limited access to the area, the constituents in groundwater above their GWPS/GPS in their current state do not pose a risk to human health via groundwater ingestion or direct contact. In addition, given the lack of surface water impacts downgradient of the Unit, the residual groundwater impacts do not pose a risk.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Residual Risks			

7.2.3 Long-Term Management - 40 CFR Part 257.97 (c)(1)(iii)

Following removal of CCR material and over excavation of 6 inches of subsurface soils, long-term management (including monitoring, operation, and maintenance) for Alternative 1 is the most favorable as it would be limited to periodic groundwater monitoring to verify natural recovery of the CCR-related constituents in groundwater. The concentrations are expected to stabilize and decrease over time. The Unit's SWP No. 617 also includes a requirement for surface water monitoring to determine if there is any impact to surrounding surface water that may be occurring because of potential groundwater to surface water exchange.

Long-term management for Alternative 2 is considered less favorable than Alternative 1 as it would include long-term sampling, like Alternative 1, but could also include additional treatment events during the remediation life cycle. Alternative 3 is considered the least favorable as it would require continuous long-term management while the hydraulic control system operates. This would include maintenance of the trench, pumps, and treatment system.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Long-Term Management			

7.2.4 Short-term Risks - 40 CFR Part 257.97 (c)(1)(iv)

No short-term risks are anticipated based on the current groundwater concentrations as discussed in Section 5 of this report. Alternative 1 is considered the most favorable for short-term risks as there are no other environmental or community risks related to implementing the corrective measure.

Alternative 2 is considered less favorable due to temporary construction risks associated with implementing in-situ treatment, potential adverse effects from treatment amendments (such as changes in groundwater pH), and the potential for multiple rounds of injection or PRB material refresh work within the 660 feet radius eagle's nest buffer at the Site. Alternative 3 is considered the least favorable for short-term risk due to construction required for implementation (noise and emissions from heavy equipment) and the need to conduct work within the 660 feet radius eagle's nest buffer at the Site.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Short-Term Risks			

7.2.5 Time to Full Protection - 40 CFR Part 257.97 (c)(1)(v)

The source removal was completed as documented in the "Pond E Closure by Removal Report" and associated Engineer Certification submitted to VDEQ on 1 August 2019. Following closure and restoration of Pond E, groundwater and surface water monitoring will be performed to verify the groundwater concentrations are stable or decreasing over time under Alternative 1.

Alternative 1 is expected to reduce the concentrations below the GWPS over time. Alternative 2, in-situ treatment, relies on the natural hydraulic gradient to move contaminants through the treatment zone and would be expected to operate for a shorter duration although, depending upon the treatment train, may present other complications and require subsequent treatment events. Alternative 3 would address Site-related constituents in groundwater migrating downgradient from the Unit, ensuring groundwater migrating downgradient is captured prior to reaching the compliance sampling locations (surface water), but would continue to operate over time in order to maintain the control and additional protection.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Time to full Protection			

7.2.6 Potential for Exposure - 40 CFR Part 257.97 (c)(1)(vi)

Given the previously completed CCR and subsurface soils removal and lack of downgradient receptors, no ongoing potential exposure to remaining wastes for humans and the environment is anticipated under Alternative 1. As indicated in Section 2.2, the closest private water supply wells located downgradient of Pond E are located across a hydraulic divide (Quantico Creek). Based on this information, coupled with the fact that potable water is supplied to the Station, and surrounding areas and access to the area is limited, there is no complete human exposure pathway to Site-related constituents via groundwater ingestion.

Alternatives 2 and 3 would further reduce the potential for direct groundwater exposure but are considered less favorable as the pathway is already considered closed and implementation of Alternative 2 or 3 could increase risk of exposure to treatment materials or wastewater.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Potential for Exposure			

7.2.7 Long-term Reliability - 40 CFR Part 257.97(c)(1)(vii)

The long-term reliability is expected to be high because the source of groundwater impacts (i.e., the CCR material) was removed from Ponds E. With the CCR material (and a minimum of 6 inches of subsurface soils) no longer in place, the attenuation of any residual groundwater impacts will continue under Alternative 1. Future studies prior to formal remedy selection may be necessary to validate natural recovery mechanisms and timeframes. No additional engineering and/or institutional controls, apart from post removal monitoring, are anticipated.

Alternative 3 is considered a reliable, proven technology with long-term reliability and thus also considered favorably for this criterion. Implementation of Alternative 2 is considered less favorable and would require bench scale and pilot scale testing to confirm treatability of cobalt and associated long-term reliability.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Long-Term Reliability			

7.2.8 Remedy Replacement Potential 40 CFR Part 257.97(c)(1)(viii)

The extent of residual impacts is limited; therefore, Alternative 1 is considered the most favorable with no need to supplement the natural recovery remedy for groundwater. Periodic monitoring data would be used to document if the impacts are stable or decreasing and to evaluate the need for additional corrective measures over time.

Alternatives 2 and 3 are both considered viable remedial alternatives and with current Site concentrations, the need to replace any of the proposed alternatives is not anticipated.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Remedy Replacement Potential			

7.3 BALANCING CRITERION 2 - 40 CFR PART 257.97(C)(2)

This balancing criterion takes into consideration the ability of the corrective measures to control a future release and the extensive treatment technologies that will be required.

7.3.1 Release Reduction – 40 CFR Part 257.97(c)(2)(i)

No further releases will occur following the already completed removal of the CCR material.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Release Reduction			

7.3.2 Treatment Technologies - 40 CFR Part 257.97(c)(2)(ii)

With the completed removal of CCR material, Alternative 1 is most favorable as it is anticipated to be implemented without any additional groundwater treatment technologies. Periodic monitoring data would be used to document if the impacts are stable or decreasing and to evaluate the need for additional corrective measures over time.

Alternative 2 would include in-situ technology while Alternative 3 would include groundwater collection and treatment technology (as needed to meet discharge or disposal requirements).

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Treatment Technologies			

7.4 BALANCING CRITERION 3 - 40 CFR PART 257.97(C)(3)

This balancing criterion takes into consideration the technical and logistical challenges required to implement the corrective measures, including practical considerations such as equipment availability and disposal facility capacity.

7.4.1 Technology Difficulty - 40 CFR Part 257.97(c)(3)(i)

The CCR was already removed and Dominion Energy has experience with post removal monitoring, implemented following closure of its CCR and solid waste management units. This experience, in combination with the wells already installed at the Site, will reduce difficulty in implementing Alternative 1 as the corrective measure.

Alternatives 2 and 3 are less favorable due to anticipated difficulties implementing the technologies, particularly when compared to Alternative 1. Both Alternatives 2 and 3 would require work to be conducted within the eagle's nest buffer (radius of 660 feet) in the area downgradient of Pond E which could require access and/or time or year limitations. Alternative 2 is further complicated by the need to run a bench scale test and pilot study prior to implementation to confirm the appropriate treatment agents are selected and effective.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Technology Difficulty			

7.4.2 Technology Reliability - 40 CFR Part 257.97(c)(3)(ii)

Alternative 1 is considered a reliable technology as natural recovery mechanisms for the site-specific inorganic constituents involve proven physical mechanisms, including dilution, dispersion, and sorption. Natural recovery has been used at multiple Superfund, Resource Conservation and Recovery Act Corrective Action sites and Underground Storage Tank sites (EPA, 1999). The inherent porous nature of sediments in the aquifer across the Site readily promote dilution and dispersion mechanisms. The lithologic features, coupled with the groundwater flow regime, have already established predictable and reliable mechanisms that contribute to attenuation of inorganic constituents. Additionally, the minimization of continued contaminant mass loading to the aquifer (i.e., CCR removal) would ultimately improve the reliability of a natural recovery remedy.

Alternative 3 is also considered a reliable, proven technology with hydraulic control and treatment used at multiple sites. Implementation of Alternative 2 is considered less favorable and would require bench scale and pilot scale testing to confirm treatability of Site-related constituents.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Technology Reliability			

7.4.3 Permitting - 40 CFR Part 257.97(c)(3)(iii)

No permits are anticipated for Alternative 1 other than a modified SWP to incorporate the corrective action. Post removal groundwater and surface water monitoring will be conducted in accordance with the Unit's GMP (Golder, 2019a) and SWP No. 617.

Alternatives 2 and 3 would likely require additional permits for injection of amendments, installation of a PRB, or and installation of a trench, respectively, both near the eagle's nest buffer and adjacent water bodies.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Permitting			

7.4.4 Equipment and Specialist Availability - 40 CFR Part 257.97(c)(3)(iv)

The removal process has already been completed; no specialty remediation equipment or specialists will be needed for Alternative 1. Alternatives 2 and 3 would both specific equipment and specialists.

Alternative 2 may require specialists for determining amendment quantities and injection procedures or PRB quantities. Alternative 3 may require special equipment for a one-pass trench, collection system, and treatment system installation.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Equipment and Specialist Availability			

7.4.5 Treatment, Storage, and Disposal Capacity - 40 CFR Part 257.97(c)(3)(iv)

The removal process has already been completed; no further need for treatment, storage, or disposal are anticipated for CCR material. Alternative 1 would not require any additional treatment, storage, or disposal capacity. Amendments would need to be stored on-site for Alternative 2. For Alternative 3, the ex-situ treatment system may generate a concentrated waste stream which could require off-site transportation and disposal that the other alternatives would not require.

Balancing Criteria	Alternative 1	Alternative 2	Alternative 3
	Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Treatment, Storage, and Disposal Capacity			

7.5 BALANCING CRITERION 4 - 40 CFR PART 257.97(D)

This balancing criterion takes into consideration the degree to which community concerns are addressed by a potential remedial action. The fourth category, community concerns, was considered as part of the recent legislative process. Specifically, CFR Part 257.96 of the CCR Rule requires a facility to complete a written assessment of corrective measures, place that assessment in the operating record, and then hold a public meeting to discuss the results of the corrective action assessment at least 30 days before selecting a remedy. This ACM Report meets the criterion of the written assessment of corrective measures and will be placed in the operating record as required by the CCR Rule. A revised or amended ACM Report will be submitted following the public meeting to satisfy VSWMR requirements specified in 9VAC20-81-260.

7.6 ORDER OF MAGNITUDE COST EVALUATION

Costs are not considered part of the threshold and balancing criteria in accordance with Parts 257.96-97 of the CCR Rule. However, an understanding of the potential costs associated with the proposed corrective measure is considered helpful for future spend forecasting. Costs for each alternative are currently estimated to be as follows:

- Alternative 1, Natural Recovery: Assuming no additional work related to CCR removal is required and up to two new monitoring locations (within the eagle nest buffer) are installed for monitoring, it is estimated that costs associated over a 30-year time frame will be approximately \$530,000 (using Net Present Value). This cost assumes up to 13 sample locations, sampled two times per year, and associated data summaries.
- Alternative 2, In-Situ Treatment: Over a 30-year time frame this cost would be approximately \$2,200,000 (using Net Present Value). This cost assumes installation of an injected PRB, two amendment applications, and sampling two times per year, and associated data summaries. Costs are estimated for a 30-year time frame as bench scale and pilot testing would be required to confirm active remediation time and monitoring may be required to extend beyond the active remediation time period.
- Alternative 3, Hydraulic Control with Ex-Situ Treatment: Over a 30-year time frame this cost would be approximately \$10,500,000 (using Net Present Value) which accounts for order of magnitude estimates for design, equipment, installation, and annual operations and maintenance costs. This cost assumes installation of a 2,200 feet long trench that would be 2 feet wide by 30 feet deep, a system to convey groundwater to treatment area, and a treatment system. This assumes water needs to be disposed of off-site but costs could be decreased if a permit to discharge to the local publicly owned treatment works (POTW) can be obtained. This alternative would also include sampling two times per year, and associated data summaries.

These costs are considered order of magnitude estimates and intended to be used for planning purposes only.

8. Summary and Conclusions

This ACM Report describes the additional assessment (NES) conducted to evaluate the nature and extent of GWPS/GPS exceedances, and summarizes how the corrective measures alternatives for groundwater presented herein address the threshold and balancing criteria. CCR material and a minimum of 6 inches of subsurface soils in Pond E have already been removed. Following the removal of the source, any residual groundwater impacts that remain above GWPS/GPS could be addressed through the three alternatives presented in this report.

Given the elevated cobalt detections and limited aquifer thickness observed in well ES-7, additional sampling is recommended to confirm the detections and evaluate water quality for cobalt over time. Additional wells within the eagle's nest buffer outside of the breeding season may also provide additional information regarding the water quality to the southwest of Pond E.

Based on the assessment of the alternatives with the available information and given the groundwater concentrations on-site coupled with negligible impact in surface water, Alternative 1 (natural recovery) would address any remaining impacts through concentration attenuation via natural diffusion and dispersion-controlled mechanisms with a high likelihood of reliability and low risk. Future studies prior to formal remedy selection may be necessary to validate natural recovery mechanisms and time frames. Alternatives 2 (in situ groundwater treatment) and 3 (hydraulic control with ex situ treatment) would likely address remaining impacts as well but require additional equipment, technology, permitting, waste management, and treatment/storage capacity. Alternatives 2 and 3 also have additional short-term risks and lower long-term reliability when compared to Alternative 1.

Prior to a formal remedy selection, Dominion Energy will arrange a public meeting with interested and affected parties to discuss the results of this report and solicit comments. The meeting will be conducted at least 30 days prior to selecting a formal remedy in accordance with the CCR Rule. Following the public meeting, Dominion Energy will submit to VDEQ a revised or amended ACM Report (in accordance with 9VAC20-81-260) to include the required public participation information.

References

1. ATSDR. 2004. Toxicological Profile for Cobalt. Agency for Toxic Substances and Disease Registry. April 2004. Available at: <https://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=373&tid=64>
2. ATSDR, 2005a. Toxicological Profile for Nickel. Agency for Toxic Substances and Disease Registry. August 2005. Available at: <https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=245&tid=44>
3. ATSDR. 2005b. Toxicological Profile for Zinc. Agency for Toxic Substances and Disease Registry. August 2005. Available at: <https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=302&tid=54>
4. ATSDR, 2010. Toxicological Profile for Boron. Agency for Toxic Substances and Disease Registry. November 2010. Available at: <https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=453&tid=80>
5. Bouwer, HH. 1973. Renovating secondary effluent by groundwater recharge with infiltration basins. In Recycling treated municipal wastewater and sludge through forest and cropland. Sopper, WE and Kardos, LT., eds. University Park, The Pennsylvania State University Press, p164-175.
6. Brookins, DG.,1988. Boron. In: Eh-pH Diagrams for Geochemistry. Springer, Berlin, Heidelberg.
7. Dominion Energy Services, Inc., 2020. Possum Point Power Station, Solid Waste Permit No. 617: 2020 1st Semi-Annual GPS Statistically Significant Increases (SSI) Notification
8. Electric Power Research Institute (EPRI), 2015. Monitored Natural Attenuation for Inorganic Constituents in Coal Combustion Residuals. Technical Report – 3002006285. August.
9. EnviroScience, Inc., 2020. First Quarter 2020 Surface Water Monitoring Report, Possum Point Power Station, Dumfries, Virginia. June.
10. Gaillardet, J., Viers, J. and Dupré, B. 2003. Trace elements in river waters, pp. 225 - 272. In Surface and Ground water, weathering and soils (ed. J.I. Drever) Vol. 5, Treatise on Geochemistry (eds. H.D. Holland and K.K. Turekian). ElsevierPergamon, Oxford, UK.
11. Golder Associates, Inc., 2019a. Groundwater Monitoring Plan, Possum Point Power Station, CCR Impoundments A, B, C, D, & E. August.
12. Golder Associates, Inc., 2019b. Initial CCR Groundwater Monitoring and Corrective Action Report, Ash Ponds ABC, Possum Point Power Station, Fluvanna County, Virginia. August 1.
13. Golder Associates, Inc., 2019c. Pond E Facility Background Determination Report, Possum Point Power Station, Dumfries, Virginia. August 15.
14. Golder Associates, Inc. 2020. 2019 CCR & VSWMR Annual Groundwater Monitoring and Corrective Action Report, Possum Point Power Station, Ponds ABC, Solid Waste Permit No. 617. January 22.

15. Krupka, K.M. and Serne, R.J., 2002. Geochemical Factors Affecting the Behavior of Antimony, Cobalt, Europium, Technetium, and Uranium in Vadose Zone Sediments (No. PNNL-14126). Pacific Northwest National Lab. (PNNL), Richland, WA (United States). Available at: <https://pdfs.semanticscholar.org/b0bc/b8448bb4509658340bba0ab852c88390acf6.pdf>
16. Nieminen, TM, Ukonmaanaho, LI, Rausch, N, and Shotyk, W., 2007. Biogeochemistry of Nickel and Its Release into the Environment, Metal Ions in Life Sciences, Volume 2.
17. NOAA, 2020. Center for Operational Oceanographic Products and Services, Quantico, VA - Station ID: 8634689. Available at <https://tidesandcurrents.noaa.gov/noaatideannual.html?id=8634689>
18. Ohio Environmental Protection Agency (Ohio EPA). 2005. Vadose Zone Modeling in RCRA Closure. January.
19. Paar, 1997. Paar, J.G., & Porterfield, D.R. (1997). Evaluation of Radiochemical Data Usability. (ES/ER/MS--5). United States
20. Parks, JL. and Edwards, MM. 2005. Boron in the Environment. Critical Reviews in Environmental Science and Technology, v.35, p81-114
21. Salomans, W. and Förstner, U. 1984. Metals in the Hydrocycle. Springer-Verlag, Berlin, Germany. 349pp.
22. Sheppard, S., Long, J., Sanipelli, B. and Sohlenius, G., 2009. Solid/liquid partition coefficients (Kd) for selected soils and sediments at Forsmark and Laxemar-Simpevarp (No. SKB-R--09-27). Swedish Nuclear Fuel and Waste Management Co.
23. U.S. Environmental Protection Agency, 1999. OSWER Directive Number 9200.4-17P. Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites. 21 April 1999.
24. U.S. Environmental Protection Agency, 2000. BIOCHLOR, Natural Attenuation Decision Support System - User's Manual, Version 1.0. January 2000.
25. U.S. Environmental Protection Agency, 2005. Partitioning Coefficients for Metals in Surface Water, Soil, and Waste. EPA/600/R-05/074. July.
26. U.S. Environmental Protection Agency, 2015. EPA, 2015. Federal Register. Volume 80. No. 74. 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. April.
27. U.S. Environmental Protection Agency, 2017. National Functional Guidelines for Inorganic Superfund Methods Data Review. January.
28. VSWMR, 2016. Virginia Solid Waste Management Regulations ((9VAC20-81 et seq.). January.

29. Zachara, J.M., Resch, C.T., and Smith, S.C., 1994. Influence of Humic Substances on Co^{2+} Sorption by a Subsurface Mineral Separate and Its Mineralogic Components. *Geochimica et Cosmochimica Acta*, 58:553-566.

\\haleyaldrich.com\share\CF\Projects\134660\Deliverables\Pond E ACM Report\2020-0826_PP Pond E ACM Report - F.docx

TABLES

TABLE 1
GROUNDWATER ELEVATION DATA SUMMARY
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Well Location/Status	Well ID	Date of Measurement	Reference Point Elevation (ft NAVD 88)	Depth to Water (ft btoc)	Static Water Level Elevation (ft NAVD 88)
Pond E					
Compliance Wells	ED-26	4/15/2020	89.86	51.42	38.44
	ED-24R	4/15/2020	74.96	25.45	49.51
	ES-3D	4/15/2020	22.86	22.69	0.17
	ES-1609	4/15/2020	23.26	22.98	0.28
	ES-1613	4/15/2020	26.01	26.46	-0.45
	T-1615D	4/15/2020	25.81	22.40	3.41
	T-1615S	4/15/2020	25.92	22.58	3.34
VSWMR Sentinel Wells	ED-22RA	4/15/2020	26.89	25.64	1.25
	ED-23R	4/15/2020	27.80	24.12	3.68
NES Wells	ES-1	4/15/2020	27.38	17.17	10.21
	ES-1D	4/15/2020	28.91	21.76	7.15
	ES-7	4/15/2020	25.85	23.80	2.05
	ES-7D	4/15/2020	25.59	47.30	-21.71

Abbreviations and Notes:

1. Well construction details provided in this table are for existing compliance wells, Virginia Solid Waste Management Regulation (VSWMR) sentinel wells, and the new Nature and Extent Study (NES) wells installed in April 2020.

2. Compliance well and sentinel well construction details as provided in Appendix B of the 2019 CCR & VSWMR Annual Groundwater Monitoring and Corrective Action Report, Possum Point Power Station, Pond E (Golder, January 2020).

ID = identification

ft = feet

btoc = below top of casing

NAVD 88 = North American Vertical Datum of 1988

Vertical Datum: Vertical Control provided by client (NAVD88)

TABLE 2
WELL CONSTRUCTION DETAILS SUMMARY
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Well Location/Status	Well ID	Installation Date	Installed By	Well Depth/Boring (ft bgs)	Grout (ft bgs)	Bentonite (ft bgs)	Sand Pack (ft bgs)	Screen Length (ft)	Screen Interval (ft bgs)	Well Diameter (in)	Ground Surface Elevation (ft)	TOC Elevation (ft)	Northing	Easting
Pond E														
Compliance Wells	ED-26	6/3/1987	GAI	82.5	0.0 - 51.0	51.0 - 57.0	57.0 - 82.5	20.0	60.0 - 80.0	2.0	NA	89.86	6,887,418.23	11,828,483.36
	ED-24R	9/12/2006	GES	65.9	0.0 - 46.0	46.0 - 49.0	49.0 - 63.0	10.0	53.0 - 63.0	2.0	NA	74.96	6,888,456.19	11,830,510.56
	ES-3D	10/7/2016	GAI	41.9	0.0 - 3.0	3.0 - 30.0	30.0 - 40.0	5.0	35.0 - 40.0	2.0	NA	22.86	6,885,435.18	11,827,824.58
	ES-1609	10/17/2016	GAI	42.3	0.0 - 3.0	3.0 - 30.0	30.0 - 41.0	5.0	35.0 - 40.0	2.0	20.97	23.26	6,885,370.98	11,828,211.65
	ES-1613	10/14/2016	GAI	45.3	0.0 - 3.0	3.0 - 28.0	28.0 - 44.0	5.0	38.0 - 43.0	2.0	23.76	26.01	6,885,232.43	11,828,557.44
	T-1615D	10/15/2016	GAI	65.8	0.0 - 3.0	3.0 - 43.0	43.0 - 62.6	5.0	57.6 - 62.6	2.0	23.68	25.81	6,886,001.26	11,827,773.70
	T-1615S	10/16/2016	GAI	34.0	0.0 - 3.0	3.0 - 17.0	17.0 - 32.0	5.0	26.0 - 32.0	2.0	23.61	25.92	6,885,991.85	11,827,770.82
VSWMR Sentinel Wells	ED-22RA	9/22/2016	GAI	34.8	0.0 - 3.0	3.0 - 21.0	21.0 - 31.0	5.0	26.0 - 31.0	2.0	23.78	26.89	6,886,088.09	11,827,283.54
	ED-23R	3/8/2004	URS	63.2	NA	NA	NA	10.0	50.0 - 60.0	2.0	27.80	27.80	6,886,089.40	11,827,283.44
Existing NES Well	ES-1	12/26/1984	Law Engineering	28.0	0.0 - 13.0	13.0 - 16.0	16.0 - 28.0	12.0	16.0 - 28.0	2.0	27.38	27.38	6,884,763.13	11,828,936.92
New NES Wells	ES-1D	4/8/2020	Haley & Aldrich	50.0	0.0 - 40.0	40.0 - 43.0	43.0 - 50.0	5.0	45.0 - 50.0	2.0	25.59	28.91	6,884,766.33	11,828,954.94
	ES-7	4/7/2020	Haley & Aldrich	22.0	0.0 - 10.0	10.0 - 15.0	15.0 - 22.0	5.0	17.0 - 22.0	2.0	22.87	25.85	6,884,858.97	11,828,459.12
	ES-7D	4/9/2020	Haley & Aldrich	48.0	0.0 - 35.0	35.0 - 41.0	41.0 - 48.0	5.0	43.0 - 48.0	2.0	22.99	25.59	6,884,865.20	11,828,467.82

Abbreviations and Notes:

1. Well construction details provided in this table are for existing compliance wells, Virginia Solid Waste Management Regulations (VSWMR) sentinel wells, an existing Nature and Extent (NES) well, and the new NES wells installed in April 2020.
2. Compliance well, sentinel well and existing NES well construction details as provided in Table 1 and Appendix A of the Groundwater Monitoring Plan, Possum Point Power Station, CCR Impoundments A, B, C, D, & E (Golder, August 2019) and Appendix B of the 2019 CCR & VSWMR Annual Groundwater Monitoring and Corrective Action Report, Possum Point Power Station, Pond E (Golder, January 2020).
3. New NEW wells ES-1D, ES-7, and ES-7D elevations and Northing and Easting information based on a survey completed by D&M Surveyors on 15 April 2020.
- bgs = below ground surface
- ft = feet
- Horizontal Datum: Horizontal Control provided by client, Virginia State Plan Coordinate System (NAD83)
- ID = identification
- in = inches
- NA = not available
- Vertical Datum: Vertical Control provided by client (NAVD88)

TABLE 3
SUMMARY OF NATURE AND EXTENT STUDY GROUNDWATER RESULTS
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Well ID Sample Name Sample Date	Units	CCR GWPS	SWP GPS	Upgradient Compliance Wells									Downgradient Compliance Wells													
				ED-24R ED-24R-20200413 04/13/2020			ED-26 ED-26-20200414 04/14/2020			ES-1609 ES-1609-20200408 04/08/2020			ES-1613 ES-1613-20200408 04/08/2020			ES-3D ES-3D-20200408 04/08/2020			T-1615S T-1615S-20200410 04/10/2020			T-1615D T-1615D-20200410 04/10/2020				
				MDL		RL		MDL		RL		MDL		RL		MDL		RL		MDL		RL		MDL		RL
Appendix III Compounds																										
Boron, Total	ug/L	NA	QL (250)	125 UJ	12.8	125.	25 U	25.0	250	1160	51.0	500	2200	76.5	750	732	25.5	250	767 J	510	5000	< 51.0	51.0	500		
Calcium, Total	ug/L	NA	NA	1700 J-	103	1000	7470 J	1030	10000	22700	412	4000	36000	619	6000	15000	206	2000	13700 J	4120	40000	18000	412	4000		
Chloride, Total	mg/L	NA	NA	2.3 J	0.60	1.0	2.1	0.60	1.0	190	2.4	4.0	157	1.8	3.0	92.6	0.60	1.0	218	3.0	5.0	77.5	0.60	1.0		
Fluoride, Total	ug/L	4000	4000	60 J	50.0	100	277	50.0	100	74.0 J	50.0	100	144	50.0	100	221	50.0	100	114	50.0	100	210	50.0	100		
pH, Field	pH units	NA	NA	5.04	NA	NA	6.09	NA	NA	5.04	NA	NA	5.28	NA	NA	5.08	NA	NA	5.43	NA	NA	5.60	NA	NA		
Sulfate, Total	mg/L	NA	NA	2.7 J	0.50	1.0	2.0	0.50	1.0	86.1	0.50	1.0	96.6	0.50	1.0	114	1.0	2.0	27.3	0.50	1.0	1.5	0.50	1.0		
Total Dissolved Solids (TDS)	mg/L	NA	NA	58.0	25.0	25.0	89.0	25.0	25.0	504	25.0	25.0	516	25.0	25.0	407	25.0	25.0	492	50.0	50.0	204	25.0	25.0		
Appendix IV Compounds																										
Antimony, Total	ug/L	6	6	< 0.55	0.55	2.5	< 0.11	0.11	0.50	< 0.11	0.11	0.50	< 0.11	0.11	0.50	0.16 J	0.11	0.50	< 22.0	22.0	100	< 2.2	2.2	10.0		
Arsenic, Total	ug/L	10	10	< 0.30	0.30	0.50	0.12	0.060	0.10	0.39	0.060	0.10	0.28	0.060	0.10	0.71	0.060	0.10	< 12.0	12.0	20.0	< 1.2	1.2	2.0		
Barium, Total	ug/L	2000	2000	13.5 J-	0.30	1.5	25.9	0.060	0.30	84.1	0.060	0.30	160	0.060	0.30	47.0	0.060	0.30	133	12.0	60.0	101	1.2	6.0		
Beryllium, Total	ug/L	4	4	< 0.25	0.25	0.50	0.11	0.050	0.10	1.0	0.050	0.10	0.35	0.050	0.10	0.76	0.050	0.10	< 10.0	10.0	20.0	< 1.0	1.0	2.0		
Cadmium, Total	ug/L	5	5	< 0.35	0.35	0.40	< 0.070	0.070	0.080	< 0.070	0.070	0.080	< 0.070	0.070	0.080	0.79	0.070	0.080	< 14.0	14.0	16.0	< 1.4	1.4	1.6		
Chromium, Total	ug/L	100	100	2.7	2.1	2.5	< 0.42	0.42	0.50	< 0.42	0.42	0.50	< 0.42	0.42	0.50	0.55	0.42	0.50	< 84.0	84.0	100	< 8.4	8.4	10.0		
Cobalt, Total	ug/L	6	QL (5)	0.34 J	0.25	0.50	< 0.050	0.050	0.10	21.8	0.050	0.10	4.8	0.050	0.10	35.3	0.050	0.10	22.4	10.0	20.0	< 1.0	1.0	2.0		
Fluoride, Total	ug/L	4000	4000	60 J	50.0	100	277	50.0	100	74.0 J	50.0	100	144	50.0	100	221	50.0	100	114	50.0	100	210	50.0	100		
Lead, Total	ug/L	15	QL (5)	0.50 UJ	0.25	0.50	0.17	0.050	0.10	< 0.050	0.050	0.10	0.078 J	0.050	0.10	0.051 J	0.050	0.10	< 10.0	10.0	20.0	< 1.0	1.0	2.0		
Lithium, Total	ug/L	40	QL (25)	< 2.1	2.1	12.5	12.5	0.42	2.5	13.0	0.42	2.5	20.1	0.42	2.5	16.9	0.42	2.5	< 84.0	84.0	500	15.3 J	8.4	50.0		
Mercury, Total	ug/L	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	< 0.10	0.10	0.20	< 0.10	0.10	0.20		
Molybdenum, Total	ug/L	100	QL (10)	< 0.50	0.50	2.5	< 0.10	0.10	0.50	< 0.10	0.10	0.50	< 0.10	0.10	0.50	0.17 J	0.10	0.50	< 20.0	20.0	100	< 2.0	2.0	10.0		
Selenium, Total	ug/L	50	50	< 0.40	0.40	2.5	< 0.080	0.080	0.50	< 0.080	0.080	0.50	< 0.080	0.080	0.50	0.20 J	0.080	0.50	< 16.0	16.0	100	< 1.6	1.6	10.0		
Thallium, Total	ug/L	2	2	< 0.30	0.30	0.50	< 0.060	0.060	0.10	0.067 J	0.060	0.10	< 0.060	0.060	0.10	< 0.060	0.060	0.10	< 12.0	12.0	20.0	< 1.2	1.2	2.0		
Radium-226 & 228	pCi/L	5	5	0.351 U ± 0.544	1.02	1.02	0.726 U ± 0.579	0.933	0.933	2.85 ± 0.849	0.960	0.960	2.3 J ± 0.868	1.06	1.06	1.93 J ± 0.827	1.31	1.31	3.43 ± 0.945	0.868	0.868	0.905 J ± 0.475	0.634	0.634		
Additional VSWMR Constituents																										
Copper, Total	ug/L	NA	1300	0.96	0.23	0.50	< 0.23	0.23	0.50	< 0.23	0.23	0.50	< 0.23	0.23	0.50	2.4	0.23	0.50	< 46.0	46.0	100	< 4.6	4.6	10.0		
Nickel, Total	ug/L	NA	QL (5)	1.3	0.11	0.50	0.50 U	0.50	0.50	15.5	0.11	0.50	6.3	0.11	0.50	26.4	0.11	0.50	< 22.0	22.0	100	< 2.2	2.2	10.0		
Silver, Total	ug/L	NA	QL (5)	< 0.050	0.050	0.40	< 0.050	0.050	0.40	< 0.050	0.050	0.40	0.61	0.050	0.40	< 0.050	0.050	0.40	< 10.0	10.0	80.0	< 1.0	1.0	8.0		
Tin, Total	ug/L	NA	10.1	< 0.090	0.090	0.50	< 0.090	0.090	0.50	< 0.090	0.090	0.50	< 0.090	0.090	0.50	< 0.090	0.090	0.50	100 U	18.0	100	< 1.8	1.8	10.0		
Vanadium, Total	ug/L	NA	QL (5)	0.28 J	0.12	0.30	< 0.12	0.12	0.30	< 0.12	0.12	0.30	0.15 J	0.12	0.30	1.1	0.12	0.30	< 24.0	24.0	60.0	< 2.4	2.4	6.0		
Zinc, Total	ug/L	NA	QL (50)	4.4 J	1.1	5.0	5.0 U	5.0	5.0	31.6	1.1	5.0	5.5	1.1	5.0	203	1.1	5.0	< 226	226	1000	< 22.6	22.6	100		
Former VPDES Constituents																										
Phenolics, Total	mg/L	NA	NA	< 0.0050	0.0050	0.020	< 0.0050	0.0050	0.020	< 0.0050	0.0050	0.020	< 0.0050	0.0050	0.020	< 0.0050	0.0050	0.020	< 0.0050	0.0050	0.020	< 0.0050	0.0050	0.020		
Potassium, Total	ug/L	NA	NA	2400	61.9	500	5240	310	2500	6620	6.2	50.0	6210	6.2	50.0	3590	6.2	50.0	3880 J	1240	10000	11900	124	1000		
Iron, Total	ug/L	NA	NA	109	7.5	50.0	2790	374	2500	19500	7.5	50.0	35700	7.5	50.0	5540	7.5	50.0	9440 J	1500	10000	11200	150	1000		
Manganese, Total	ug/L	NA	NA	9.7	0.14	0.50	78.3	0.14	0.50	774	14.0	50.0	917	7.0	25.0	857	14.0	50.0	234	28.0	100	297	2.8	10.0		
Hardness, Total	ug/L	NA	NA	9070	70.1	541	10200 J	3500	27000	120000	7010	54100	175000	3500	27000	53000 J	7010	54100	36000 J	14000	108000	96700	1400	10800		
Sodium, Total	ug/L	NA	NA	1990 J	143	2500	1880 J	714	12500	107000	1430	25000	55200	714	12500	75600	1430	25000	142000	2850	50000	8870	285	5000		
Total Organic Carbon (TOC)	mg/L	NA	NA	< 0.50	0.50	1.0	< 0.50	0.50	1.0	< 0.50	0.50	1.0	0.73 J	0.50	1.0	0.80 J	0.50	1.0	2.8	0.50	1.0	< 0.50	0.50	1.0		
Chromium VI (Hexavalent), Total	mg/L	NA	NA	< 0.005	0.005	0.005	< 0.005	0.005	0.005	< 0.005	0.005	0.005	< 0.005	0.005	0.005	< 0.005	0.005	0.005	< 0.005	0.005	0.005	< 0.005	0.005	0.005		
Inorganics, Dissolved																										
Boron, Dissolved	ug/L	NA	250	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA		
Cobalt, Dissolved	ug/L	6	5	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA		
Nickel, Dissolved	ug/L	NA	5	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA		
Zinc, Dissolved	ug/L	NA	50	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA	-	NA	NA		

TABLE 3
SUMMARY OF NATURE AND EXTENT STUDY GROUNDWATER RESULTS
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Well ID Sample Name Sample Date		CCR GWPS	SWP GPS	Upgradient Compliance Wells									Downgradient Compliance Wells																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
				ED-24R ED-24R-20200413 04/13/2020			ED-26 ED-26-20200414 04/14/2020			ES-1609 ES-1609-20200408 04/08/2020			ES-1613 ES-1613-20200408 04/08/2020			ES-3D ES-3D-20200408 04/08/2020			T-1615S T-1615S-20200410 04/10/2020			T-1615D T-1615D-20200410 04/10/2020																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Units																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

ABBREVIATIONS AND NOTES:
<: not detected, value is the method detection limit; any method detection limits above GWPS/GPS are due to matrix interference as reported by the laboratory
J: value is estimated
J-: result is an estimated quantity, but the result may be biased low
U: Not detected
UJ: Not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation
CCR: Coal Combustion Residuals
GWPS/GPS: Groundwater Protection Standard
MDL: Method Detection Limit
NA: Not Applicable/Not Available
ORP: Oxidation Reduction Potential
QA/QC: Quality Assurance/Quality Control
RL: Reporting Limit (laboratory)
QL: Quantitation limit
VPDES: Virginia Pollutant Discharge Elimination System
Deg C: Degrees Celsius
mg/L: milligrams per liter
mS/cm: milliSiemens per centimeter
mv: millivolts
NTU: Nephelometric Turbidity Unit
pCi/L: picoCuries per liter
ug/L: micrograms per liter
SWP: Solid Waste Permit No. 617
VSWMR: Virginia Solid Waste Management Regulations

Bold indicates a detected concentration.
Blue shading indicates a concentration greater than the CCR GWPS and the SWP GPS.
Green shading indicates a concentration greater than the SWP GPS.

TABLE 3
SUMMARY OF NATURE AND EXTENT STUDY GROUNDWATER RESULTS
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Well ID Sample Name Sample Date	Units	CCR GWPS	SWP GPS	Nature & Extent Wells									VSWMR Sentinel Wells								
				ES-1 ES-1-20200415 04/15/2020			ES-1D ES-1D-20200415 04/15/2020			ES-7 ES-7-20200416 04/16/2020			ES-7D ES-7D-20200416 04/16/2020			ED-22RA ED-22RA-20200407 04/07/2020			ED-23R ED-23R-20200408 04/08/2020		
				MDL	RL		MDL	RL		MDL	RL		MDL	RL		MDL	RL		MDL	RL	
Appendix III Compounds																					
Boron, Total	ug/L	NA	QL (250)	288	12.8	125	18.9 J	2.60	25.0	264	12.8	125	67.5 J	12.8	125	188	2.6	25.0	18.1 J	2.6	25.0
Calcium, Total	ug/L	NA	NA	9090	206	2000	18200	412	4000	-	NA	NA	-	NA	NA	3700	20.6	200	3660	20.6	200
Chloride, Total	mg/L	NA	NA	76.7	0.60	1.0	10.0	0.60	1.0	-	NA	NA	-	NA	NA	27.1	0.60	1.0	2.8	0.60	1.0
Fluoride, Total	ug/L	4000	4000	< 50.0	50.0	100	75.0 J	50.0	100	-	NA	NA	-	NA	NA	< 50.0	50.0	100	315	50.0	100
pH, Field	pH units	NA	NA	4.46	NA	NA	6.52	NA	NA	6.03	NA	NA	6.81	NA	NA	5.06	NA	NA	5.69	NA	NA
Sulfate, Total	mg/L	NA	NA	79.8	0.50	1.0	8.6	0.50	1.0	-	NA	NA	-	NA	NA	60.5 J	0.50	1.0	5.6	0.50	1.0
Total Dissolved Solids (TDS)	mg/L	NA	NA	268	25.0	25.0	169	25.0	25.0	-	NA	NA	-	NA	NA	178	25.0	25.0	100	25.0	25.0
Appendix IV Compounds																					
Antimony, Total	ug/L	6	6	< 0.11	0.11	0.50	< 0.11	0.11	0.50	-	NA	NA	-	NA	NA	0.16 J	0.11	0.50	< 0.11	0.11	0.50
Arsenic, Total	ug/L	10	10	0.18	0.060	0.10	0.14	0.060	0.10	-	NA	NA	-	NA	NA	0.27	0.060	0.10	0.14	0.060	0.10
Barium, Total	ug/L	2000	2000	26.9	0.060	0.30	74.6	0.060	0.30	-	NA	NA	-	NA	NA	25.5	0.060	0.30	27.7	0.060	0.30
Beryllium, Total	ug/L	4	4	1.6	0.050	0.10	< 0.050	0.050	0.10	-	NA	NA	-	NA	NA	0.33	0.050	0.10	0.11	0.050	0.10
Cadmium, Total	ug/L	5	5	0.15	0.070	0.080	< 0.070	0.070	0.080	-	NA	NA	-	NA	NA	< 0.070	0.070	0.080	< 0.070	0.070	0.080
Chromium, Total	ug/L	100	100	< 0.42	0.42	0.50	< 0.42	0.42	0.50	-	NA	NA	-	NA	NA	< 0.42	0.42	0.50	< 0.42	0.42	0.5
Cobalt, Total	ug/L	6	QL (5)	5.8	0.050	0.10	0.39	0.050	0.10	89.2	0.25	0.50	2.2	0.25	0.50	5.0	0.050	0.10	0.054 J	0.050	0.10
Fluoride, Total	ug/L	4000	4000	< 50.0	50.0	100	75.0 J	50.0	100	-	NA	NA	-	NA	NA	< 50.0	50.0	100	315	50.0	100
Lead, Total	ug/L	15	QL (5)	< 0.050	0.050	0.10	< 0.050	0.050	0.10	-	NA	NA	-	NA	NA	0.065 J	0.050	0.10	< 0.050	0.050	0.10
Lithium, Total	ug/L	40	QL (25)	2.9	0.42	2.5	13.4	0.42	2.5	-	NA	NA	-	NA	NA	2.4 J	0.42	2.5	8.2	0.42	2.5
Mercury, Total	ug/L	2	2	< 0.10	0.10	0.20	< 0.10	0.10	0.20	-	NA	NA	-	NA	NA	< 0.10	0.10	0.20	< 0.10	0.10	0.20
Molybdenum, Total	ug/L	100	QL (10)	< 0.10	0.10	0.50	1.3	0.10	0.50	-	NA	NA	-	NA	NA	< 0.10	0.10	0.50	< 0.10	0.10	0.50
Selenium, Total	ug/L	50	50	0.17 J	0.080	0.50	< 0.080	0.080	0.50	-	NA	NA	-	NA	NA	< 0.080	0.080	0.50	< 0.080	0.080	0.50
Thallium, Total	ug/L	2	2	0.077 J	0.060	0.10	< 0.060	0.060	0.10	-	NA	NA	-	NA	NA	< 0.060	0.060	0.10	< 0.060	0.060	0.10
Radium-226 & 228	pCi/L	5	5	1.88 J ± 0.772	0.968	0.968	0.651 U ± 0.556	0.854	0.854	-	NA	NA	-	NA	NA	0.852 U ± 0.861	1.44	1.44	0.807 ± 0.475	0.620	0.620
Additional VSWMR Constituents																					
Copper, Total	ug/L	NA	1300	24.4	0.23	0.50	0.47 J	0.23	0.50	-	NA	NA	-	NA	NA	1.4	0.23	0.50	0.49 J	0.23	0.50
Nickel, Total	ug/L	NA	QL (5)	21.1	0.11	0.50	0.87	0.11	0.50	69.4	0.11	0.50	5.0	0.55	2.5	5.6	0.11	0.50	0.48 J	0.11	0.50
Silver, Total	ug/L	NA	QL (5)	< 0.050	0.050	0.40	< 0.050	0.050	0.40	-	NA	NA	-	NA	NA	0.59	0.050	0.40	1.2	0.050	0.40
Tin, Total	ug/L	NA	10.1	< 0.090	0.090	0.50	0.35 J	0.090	0.50	-	NA	NA	-	NA	NA	< 0.090	0.090	0.50	0.093 J	0.090	0.50
Vanadium, Total	ug/L	NA	QL (5)	1.9	0.12	0.30	0.86	0.12	0.30	-	NA	NA	-	NA	NA	0.19 J	0.12	0.30	< 0.12	0.12	0.30
Zinc, Total	ug/L	NA	QL (50)	75.3	1.1	5.0	2.7 J	1.1	5.0	33.4	1.1	5.0	13.7 J	5.6	25.0	24.4	1.1	5.0	2.2 J	1.1	5.0
Former VPDES Constituents																					
Phenolics, Total	mg/L	NA	NA	< 0.0050	0.0050	0.020	< 0.0050	0.0050	0.020	-	NA	NA	-	NA	NA	0.020 UJ	0.0050	0.020	< 0.0050	0.0050	0.020
Potassium, Total	ug/L	NA	NA	3820	61.9	500	8330	61.9	500	-	NA	NA	-	NA	NA	1680	6.2	50.0	5530	6.2	50.0
Iron, Total	ug/L	NA	NA	974	7.5	50.0	3510	74.8	500	-	NA	NA	-	NA	NA	1150	7.5	50.0	5120	7.5	50.0
Manganese, Total	ug/L	NA	NA	164	1.4	5.0	261	1.4	5.0	-	NA	NA	-	NA	NA	82.1	0.14	0.50	68.3	0.14	0.50
Hardness, Total	ug/L	NA	NA	39000	701	5410	77500	1400	10800	-	NA	NA	-	NA	NA	17800	70.1	541	17900	70.1	541
Sodium, Total	ug/L	NA	NA	63100	1430	25000	10900	143	2500	-	NA	NA	-	NA	NA	44200	285	5000	4530	14.3	250
Total Organic Carbon (TOC)	mg/L	NA	NA	0.84 J	0.50	1.0	0.65 J	0.50	1.0	-	NA	NA	-	NA	NA	1.0	0.50	1.0	< 0.50	0.50	1.0
Chromium VI (Hexavalent), Total	mg/L	NA	NA	< 0.005	0.005	0.005	< 0.005	0.005	0.005	-	NA	NA	-	NA	NA	< 0.005	0.005	0.005	< 0.005	0.005	0.005
Inorganics, Dissolved																					
Boron, Dissolved	ug/L	NA	250	-	NA	NA	-	NA	NA	261	12.8	125	59.7 J	12.8	125	-	NA	NA	-	NA	NA
Cobalt, Dissolved	ug/L	6	5	-	NA	NA	-	NA	NA	82.3	0.25	0.50	0.88	0.25	0.50	-	NA	NA	-	NA	NA
Nickel, Dissolved	ug/L	NA	5	-	NA	NA	-	NA	NA	60.7 J-	0.55	2.5	2.2 J-	0.55	2.5	-	NA	NA	-	NA	NA
Zinc, Dissolved	ug/L	NA	50	-	NA	NA	-	NA	NA	30.3 J-	5.6	25.0	5.6 UJ	5.6	25.0	-	NA	NA	-	NA	NA

TABLE 3
SUMMARY OF NATURE AND EXTENT STUDY GROUNDWATER RESULTS
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Well ID Sample Name Sample Date		CCR GWPS	SWP GPS	Nature & Extent Wells												VSWMR Sentinel Wells					
				ES-1 ES-1-20200415 04/15/2020			ES-1D ES-1D-20200415 04/15/2020			ES-7 ES-7-20200416 04/16/2020			ES-7D ES-7D-20200416 04/16/2020			ED-22RA ED-22RA-20200407 04/07/2020			ED-23R ED-23R-20200408 04/08/2020		
Field Parameters																					
Temperature	Deg C	NA	NA	13.82	NA	NA	15.27	NA	NA	12.51	NA	NA	13.69	NA	NA	14.30	NA	NA	14.47	NA	NA
Dissolved Oxygen, Field	mg/L	NA	NA	1.20	NA	NA	0.75	NA	NA	5.79	NA	NA	3.99	NA	NA	4.17	NA	NA	2.15	NA	NA
Conductivity, Field	mS/cm	NA	NA	0.472	NA	NA	0.241	NA	NA	0.513	NA	NA	0.383	NA	NA	0.267	NA	NA	0.083	NA	NA
ORP, Field	mv	NA	NA	221.9	NA	NA	-72.6	NA	NA	210.6	NA	NA	88.0	NA	NA	256.0	NA	NA	133.2	NA	NA
Turbidity, Field	NTU	NA	NA	4.39	NA	NA	11.6	NA	NA	371	NA	NA	477	NA	NA	5.70	NA	NA	9.3	NA	NA

ABBREVIATIONS AND NOTES:

<: not detected, value is the method detection limit; any method detection limits above GWPS/GPS are due to matrix interference as reported by the laboratory

J: value is estimated

J-: result is an estimated quantity, but the result may be biased low

U: Not detected

UJ: Not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation

CCR: Coal Combustion Residuals	Deg C: Degrees Celsius
GWPS/GPS: Groundwater Protection Standard	mg/L: milligrams per liter
MDL: Method Detection Limit	mS/cm: milliSiemens per centimeter
NA: Not Applicable/Not Available	mv: millivolts
ORP: Oxidation Reduction Potential	NTU: Nephelometric Turbidity Unit
QA/QC: Quality Assurance/Quality Control	pCi/L: picoCuries per liter
RL: Reporting Limit (laboratory)	ug/L: micrograms per liter
QL: Quantitation limit	SWP: Solid Waste Permit No. 617
VPDES: Virginia Pollutant Discharge Elimination System	VSWMR: Virginia Solid Waste Management Regulations

Bold indicates a detected concentration.

Blue shading indicates a concentration greater than the CCR GWPS and the SWP GPS.

Green shading indicates a concentration greater than the SWP GPS.

TABLE 3
SUMMARY OF NATURE AND EXTENT STUDY GROUNDWATER RESULTS
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Well ID Sample Name Sample Date	Units	CCR GWPS	SWP GPS	Field QA/QC					
				QA/QC EB-01-20200414 04/14/2020			QA/QC FB-01-20200409 04/09/2020		
				MDL	RL		MDL	RL	
Appendix III Compounds									
Boron, Total	ug/L	NA	QL (250)	3.1 J	2.6	25.0	< 2.6	2.6	25.0
Calcium, Total	ug/L	NA	NA	< 20.6	20.6	200	< 20.6	20.6	200
Chloride, Total	mg/L	NA	NA	< 0.60	0.60	1.0	< 0.60	0.60	1.0
Fluoride, Total	ug/L	4000	4000	< 50.0	50.0	100	< 50.0	50.0	100
pH, Field	pH units	NA	NA	-	NA	NA	-	NA	NA
Sulfate, Total	mg/L	NA	NA	< 0.50	0.50	1.0	0.50 UJ	0.50	1.0
Total Dissolved Solids (TDS)	mg/L	NA	NA	< 25.0	25.0	25.0	< 25.0	25.0	25.0
Appendix IV Compounds									
Antimony, Total	ug/L	6	6	0.14 J	0.11	0.50	< 0.11	0.11	0.50
Arsenic, Total	ug/L	10	10	< 0.060	0.060	0.10	< 0.060	0.06	0.10
Barium, Total	ug/L	2000	2000	0.062 J	0.060	0.30	< 0.060	0.060	0.30
Beryllium, Total	ug/L	4	4	< 0.050	0.050	0.10	< 0.050	0.050	0.10
Cadmium, Total	ug/L	5	5	< 0.070	0.070	0.080	< 0.070	0.070	0.080
Chromium, Total	ug/L	100	100	< 0.42	0.42	0.50	< 0.42	0.42	0.50
Cobalt, Total	ug/L	6	QL (5)	< 0.050	0.050	0.10	< 0.050	0.050	0.10
Fluoride, Total	ug/L	4000	4000	< 50.0	50.0	100	< 50.0	50.0	100
Lead, Total	ug/L	15	QL (5)	< 0.050	0.050	0.10	< 0.050	0.050	0.10
Lithium, Total	ug/L	40	QL (25)	< 0.42	0.42	2.5	< 0.42	0.42	2.5
Mercury, Total	ug/L	2	2	< 0.10	0.10	0.20	< 0.10	0.10	0.20
Molybdenum, Total	ug/L	100	QL (10)	< 0.10	0.10	0.50	< 0.10	0.10	0.5
Selenium, Total	ug/L	50	50	< 0.080	0.080	0.50	< 0.080	0.080	0.50
Thallium, Total	ug/L	2	2	< 0.060	0.060	0.10	< 0.060	0.060	0.10
Radium-226 & 228	pCi/L	5	5	0.706 U ± 0.555	0.984	0.984	0.174 U ± 0.482	0.941	0.941
Additional VSWMR Constituents									
Copper, Total	ug/L	NA	1300	< 0.23	0.23	0.50	< 0.23	0.23	0.50
Nickel, Total	ug/L	NA	QL (5)	0.24 J	0.11	0.50	0.50 U	0.11	0.50
Silver, Total	ug/L	NA	QL (5)	< 0.050	0.050	0.40	< 0.050	0.050	0.40
Tin, Total	ug/L	NA	10.1	< 0.090	0.090	0.50	< 0.090	0.090	0.50
Vanadium, Total	ug/L	NA	QL (5)	< 0.12	0.12	0.30	< 0.12	0.12	0.30
Zinc, Total	ug/L	NA	QL (50)	1.7 J	1.1	5.0	1.7 J	1.1	5.0
Former VPDES Constituents									
Phenolics, Total	mg/L	NA	NA	< 0.0050	0.0050	0.020	< 0.0050	0.0050	0.020
Potassium, Total	ug/L	NA	NA	< 6.2	6.2	50.0	< 6.2	6.2	50.0
Iron, Total	ug/L	NA	NA	< 7.5	7.5	50.0	< 7.5	7.5	50.0
Manganese, Total	ug/L	NA	NA	< 0.14	0.14	0.50	< 0.14	0.14	0.50
Hardness, Total	ug/L	NA	NA	< 70.1	70.1	541	< 70.1	70.1	541
Sodium, Total	ug/L	NA	NA	< 14.3	14.3	250	< 14.3	14.3	250
Total Organic Carbon (TOC)	mg/L	NA	NA	< 0.50	0.5	1.0	< 0.50	0.50	1.0
Chromium VI (Hexavalent), Total	mg/L	NA	NA	< 0.005	0.005	0.005	< 0.005	0.005	0.005
Inorganics, Dissolved									
Boron, Dissolved	ug/L	NA	250	-	NA	NA	-	NA	NA
Cobalt, Dissolved	ug/L	6	5	-	NA	NA	-	NA	NA
Nickel, Dissolved	ug/L	NA	5	-	NA	NA	-	NA	NA
Zinc, Dissolved	ug/L	NA	50	-	NA	NA	-	NA	NA

TABLE 3
SUMMARY OF NATURE AND EXTENT STUDY GROUNDWATER RESULTS
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Well ID Sample Name Sample Date	Units	CCR GWPS	SWP GPS	Field QA/QC					
				QA/QC EB-01-20200414 04/14/2020			QA/QC FB-01-20200409 04/09/2020		
Field Parameters									
Temperature	Deg C	NA	NA	-	NA	NA	-	NA	NA
Dissolved Oxygen, Field	mg/L	NA	NA	-	NA	NA	-	NA	NA
Conductivity, Field	mS/cm	NA	NA	-	NA	NA	-	NA	NA
ORP, Field	mv	NA	NA	-	NA	NA	-	NA	NA
Turbidity, Field	NTU	NA	NA	-	NA	NA	-	NA	NA

ABBREVIATIONS AND NOTES:

<: not detected, value is the method detection limit; any method detection limits above GWPS/GPS are due to matrix interference as reported by the laboratory

J: value is estimated

J-: result is an estimated quantity, but the result may be biased low

U: Not detected

UJ: Not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation

CCR: Coal Combustion Residuals
GWPS/GPS: Groundwater Protection Standard
MDL: Method Detection Limit
NA: Not Applicable/Not Available
ORP: Oxidation Reduction Potential
QA/QC: Quality Assurance/Quality Control
RL: Reporting Limit (laboratory)
QL: Quantitation limit
VPDES: Virginia Pollutant Discharge Elimination System

Deg C: Degrees Celsius
mg/L: milligrams per liter
mS/cm: milliSiemens per centimeter
mv: millivolts
NTU: Nephelometric Turbidity Unit
pCi/L: picoCuries per liter
ug/L: micrograms per liter
SWP: Solid Waste Permit No. 617
VSWMR: Virginia Solid Waste Management Regulations

Bold indicates a detected concentration.

Blue shading indicates a concentration greater than the CCR GWPS and the SWP GPS.

Green shading indicates a concentration greater than the SWP GPS.

TABLE 4
SUMMARY OF FIRST QUARTER AND SECOND QUARTER 2020 SURFACE WATER RESULTS - BORON, COBALT, NICKEL, ZINC
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

Location Name Sample Name Sample Date	Units	Comparison		PP-01-20									PP-02-20									PP-03-20									PP-04-20					
		Standard Value	Comparison Standard Source	PP-01-20-Q1 03/24/2020			PP-01-20-Q2 06/23/2020			PP-01-20-Q2-FD 06/23/2020			PP-02-20-Q1 03/24/2020			PP-02-20-Q2 06/23/2020			PP-03-20-Q1 03/24/2020			PP-03-20-Q1-FD 03/24/2020			PP-03-20-Q2 06/23/2020			PP-04-20-Q1 03/24/2020			PP-04-20-Q2 06/23/2020					
Inorganic Compounds (ug/L) Boron, Dissolved Cobalt, Dissolved Nickel, Dissolved Zinc, Dissolved	ug/L	250 5.0 12 - 24 * 68 - 140 *	GPS GPS AL FW Chronic AL FW Chronic	MDL RL			MDL RL			MDL RL			MDL RL			MDL RL			MDL RL			MDL RL			MDL RL			MDL RL			MDL RL					
				< 63 U	63	100	< 63 U	63	100	< 63 U	63	100	< 63 U	63	100	< 63 U	63	100	< 63 U	63	100	< 63 U	63	100	< 63 U	63	100	< 63 U	63	100	< 63 U	63	100			
				0.38 J	0.20	2.0	0.28 J	0.20	2.0	0.28 J	0.20	2.0	0.26 J	0.20	2.0	0.38 J	0.20	2.0	0.24 J	0.20	2.0	0.24 J	0.20	2.0	0.25 J	0.20	2.0	0.30 J	0.20	2.0	0.32 J	0.20	2.0			
				1.6 J	0.20	2.0	1.4 J	0.20	2.0	3.4	0.20	2.0	1.1 J	0.20	2.0	1.5 J	0.20	2.0	1.1 J	0.20	2.0	2.1	0.20	2.0	1.4 J	0.20	2.0	2.8	0.20	2.0	1.9 J	0.20	2.0			
				< 5.2 U	5.2	5.2	< 5.9 U	5.9	5.9	< 5.0 U	5.0	5.0	< 4.0 U	4.0	4.0	< 5.1 U	5.1	5.1	< 5.3 U	5.3	5.3	< 5.1 U	5.1	5.1	< 4.8 U	4.8	4.8	< 5.5 U	5.5	5.5	< 5.0 U	5.0	5.0			
Other Hardness (mg/L)	ug/L	NA	NA	81.7	0.17	1.3	52.0	0.17	1.3	51.8	1.3	1.3	117	0.17	1.3	73.0	0.17	1.3	119	0.17	1.3	120	0.17	1.3	73.3	0.17	1.3	120	0.17	1.3	75.3	0.17	1.3			

ABBREVIATIONS AND NOTES:
Samples collected by EnviroScience, Inc.; analytical results as provided by Dominion Energy.
<: not detected, value is the method detection limit
J: value is estimated
U: indicates a result < method detection limit

MDL: Method Detection Limit
RL: Reporting Limit (laboratory)
ug/L: microgram per liter
GPS = Groundwater Protection Standard (Virginia Solid Waste Permit #618)
AL FW = Aquatic Life Freshwater Criteria
* hardness-specific criteria (range based on criteria calculated from both March and June 2020 sampling events)
Bold = detected concentration

TABLE 5
CORRECTIVE MEASURES EVALUATION SUMMARY
POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

DRAFT

Page 1 of 1

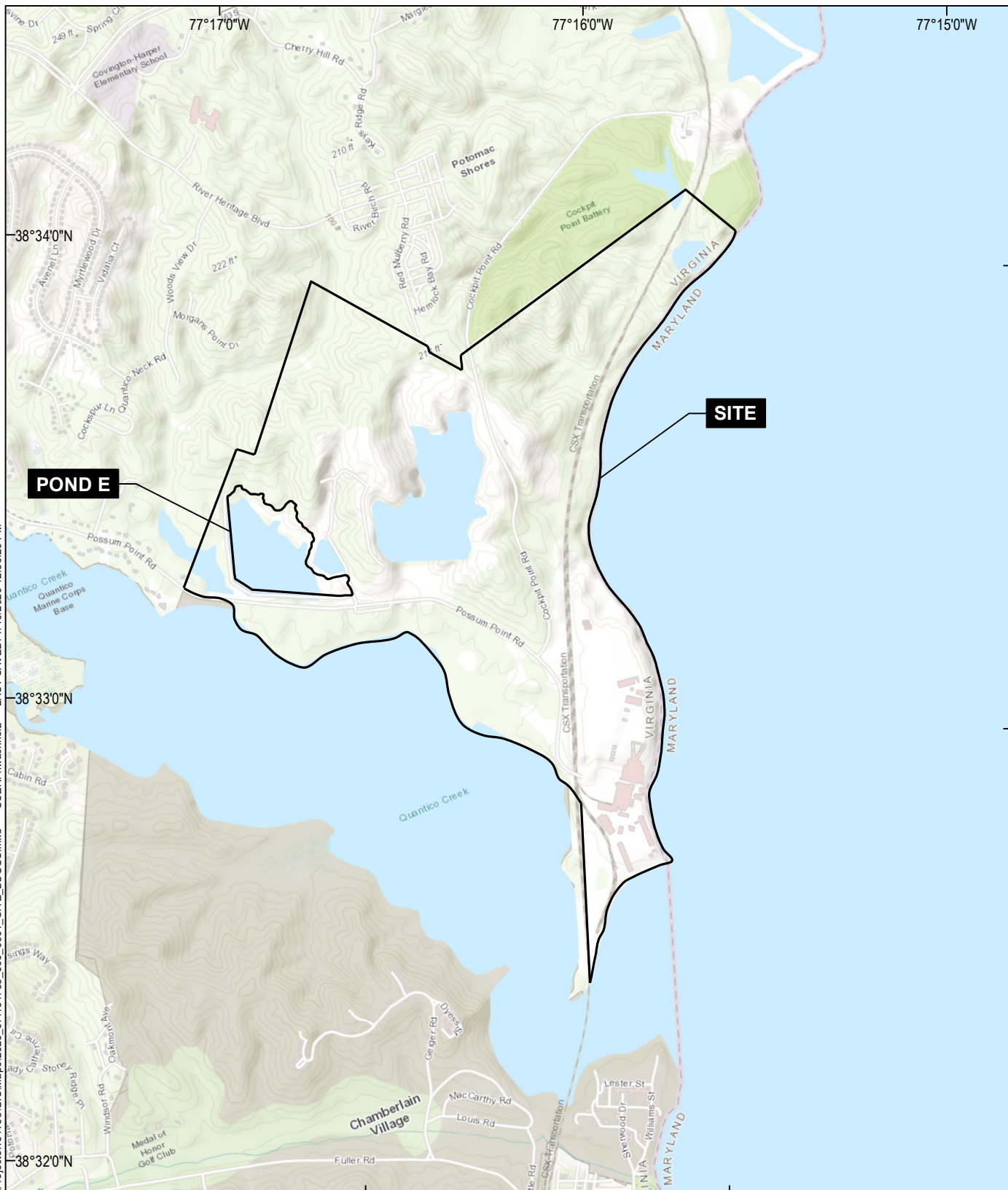
Criteria		Alternative 1	Alternative 2	Alternative 3
		Natural Recovery	In-situ Groundwater Treatment	Hydraulic Control with Ex-situ Treatment
Threshold Criteria 40 CFR PART 257.97(B)	Human Health and Environment Protection			
	GWPS/GPS Attainment			
	Source Control			
	Contaminated Material Removal			
	Waste Management			
Balancing Criterion 1 40 CFR Part 257.97(C)(1)	Risk Reduction			
	Residual Risks			
	Long-Term Management			
	Short-Term Risks			
	Time to Full Protection			
	Potential for Exposure			
	Long-Term Reliability			
	Remedy Replacement Potential			
Balancing Criterion 2 40 CFR Part 257.97(C)(2)	Release Reduction			
	Treatment Technologies			
Balancing criterion 3 40 CFR Part 257.97(C)(3)	Technology Difficulty			
	Technology Reliability			
	Permitting			
	Equipment and Specialist Availability			
	Treatment, Storage, and Disposal Capacity			

Note:

Green denotes the most preferred result, yellow a neutrally preferred result, and red the least preferred result.

FIGURES

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\134758\GIS\Maps\2020_07\134758_000_0001_SITE_LOCUS.mxd — USER: hwachholz — LAST SAVED: 7/10/2020 12:56:29 PM



MAP SOURCE: ESRI
SITE COORDINATES: 38°32'55"N, 77°17'11"W

**HALEY
ALDRICH**

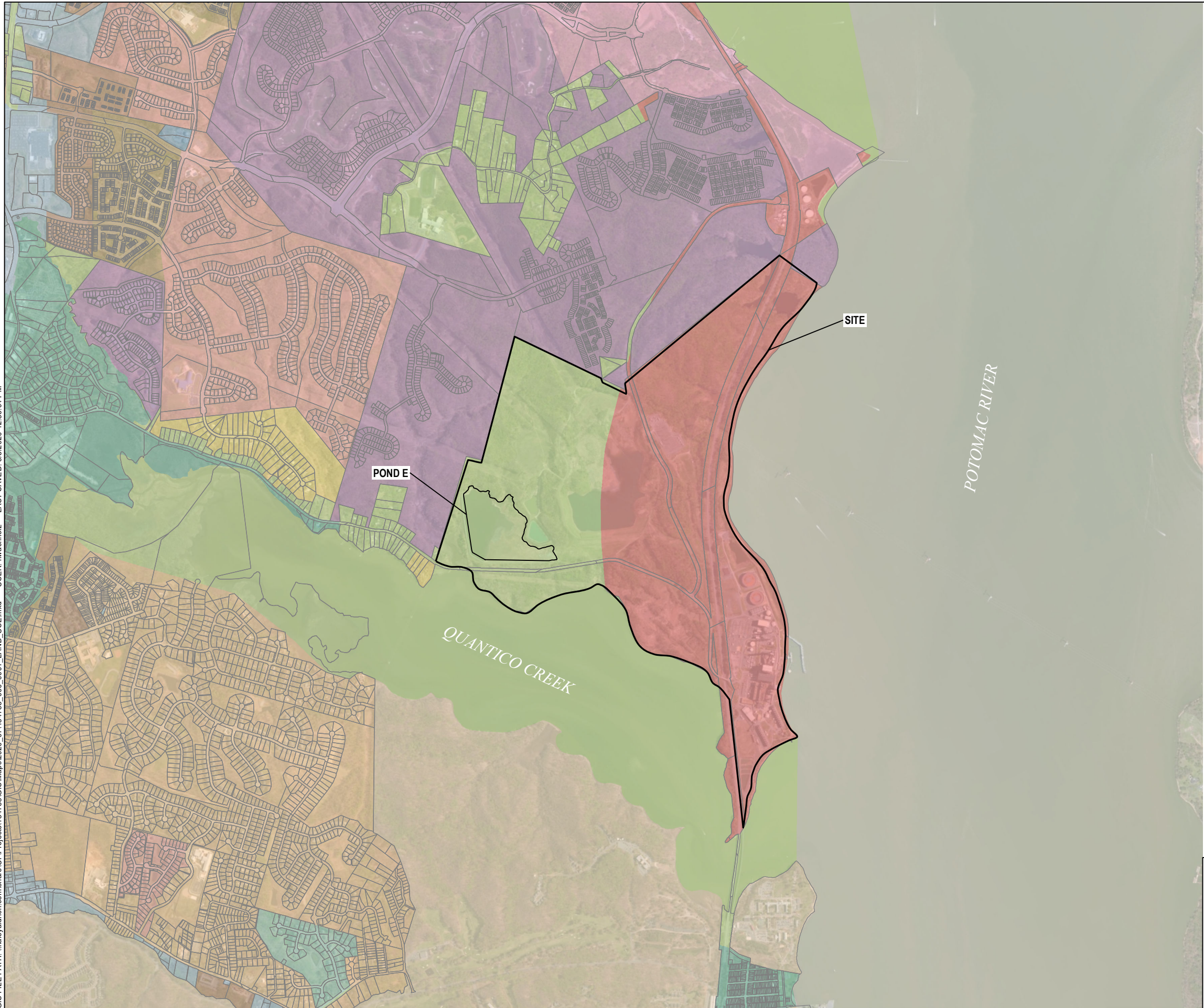
DOMINION ENERGY POSSUM POINT POWER STATION
POND E
19000 POSSUM POINT ROAD
DUMFRIES, VIRGINIA

SITE LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
JULY 2020

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\CR\Projects\134758\GIS\Maps\2020_07\134758_000_0001_LAND_USE.mxd — USER: hwachholz — LAST SAVED: 6/6/2020 12:36:04 PM



LEGEND

- PROPERTY BOUNDARY
- POND BOUNDARY
- PARCEL BOUNDARY
- ZONING DISTRICT
 - A-1 AGRICULTURAL
 - FED FEDERAL
 - M-1 HEAVY INDUSTRIAL
 - B-1 GENERAL BUSINESS
 - O(M) MID-RISE OFFICE
 - PMD PLANNED MIXED DISTRICT
 - PMR PLANNED MIXED RESIDENTIAL
 - R-2 RESIDENTIAL LOW
 - R-4 RESIDENTIAL MODERATE
 - R-4C SUBURBAN RESIDENTIAL CLUSTER
 - R-6 SUBURBAN RESIDENTIAL MEDIUM
 - R-16 SUBURBAN RESIDENTIAL HIGH
 - SR-1C SUBURBAN RESIDENTIAL CLUSTER
 - TWN TOWN

NOTES

- ALL LOCATIONS ARE APPROXIMATE.
- PARCEL AND ZONING DATA SOURCE: PRINCE WILLIAM COUNTY
- AERIAL IMAGERY SOURCE: ESRI



0 2,000 4,000
SCALE IN FEET



DOMINION ENERGY POSSUM POINT POWER STATION
POND E
19000 POSSUM POINT ROAD
DUMFRIES, VIRGINIA

SURROUNDING LAND USE

JULY 2020

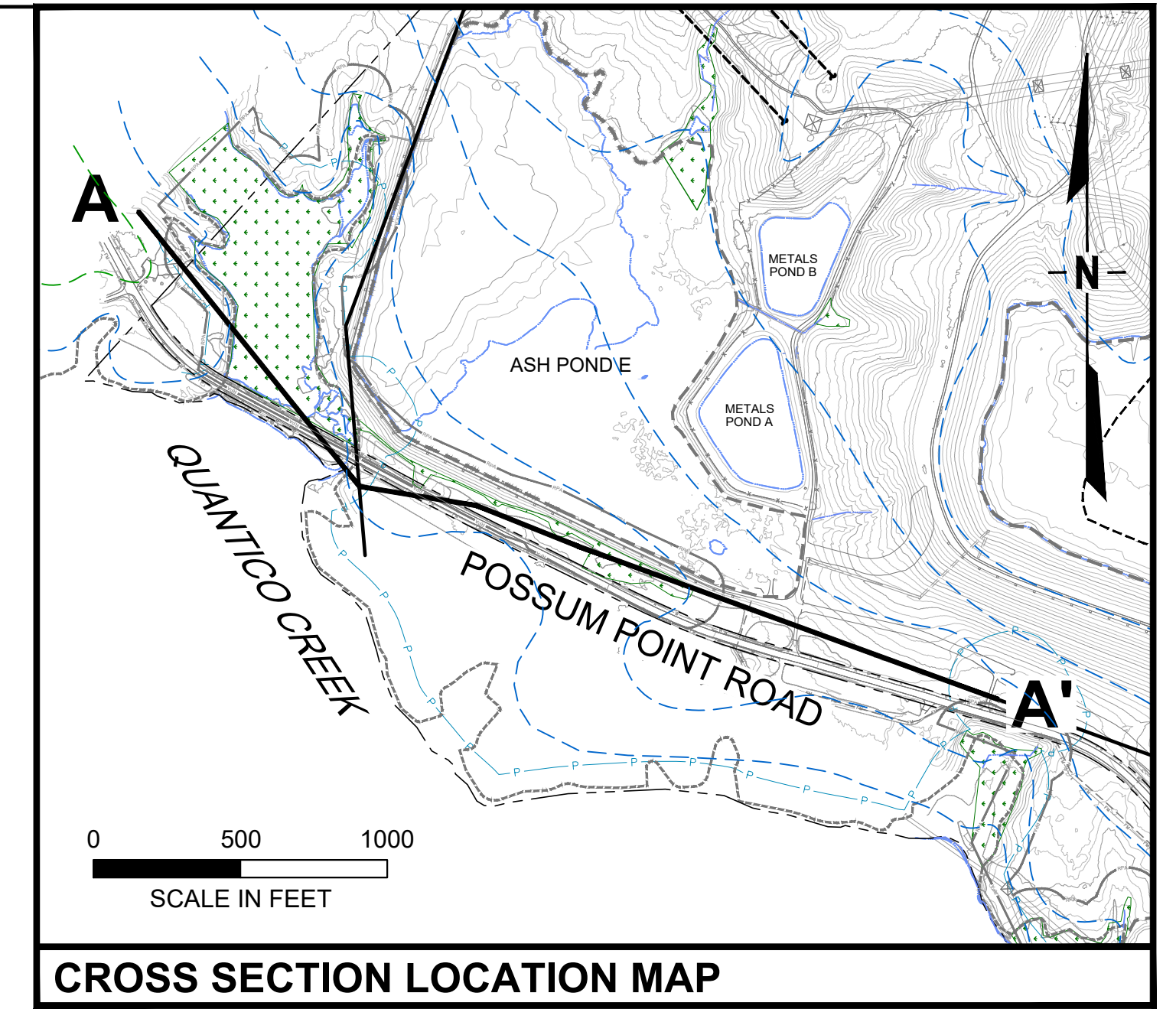
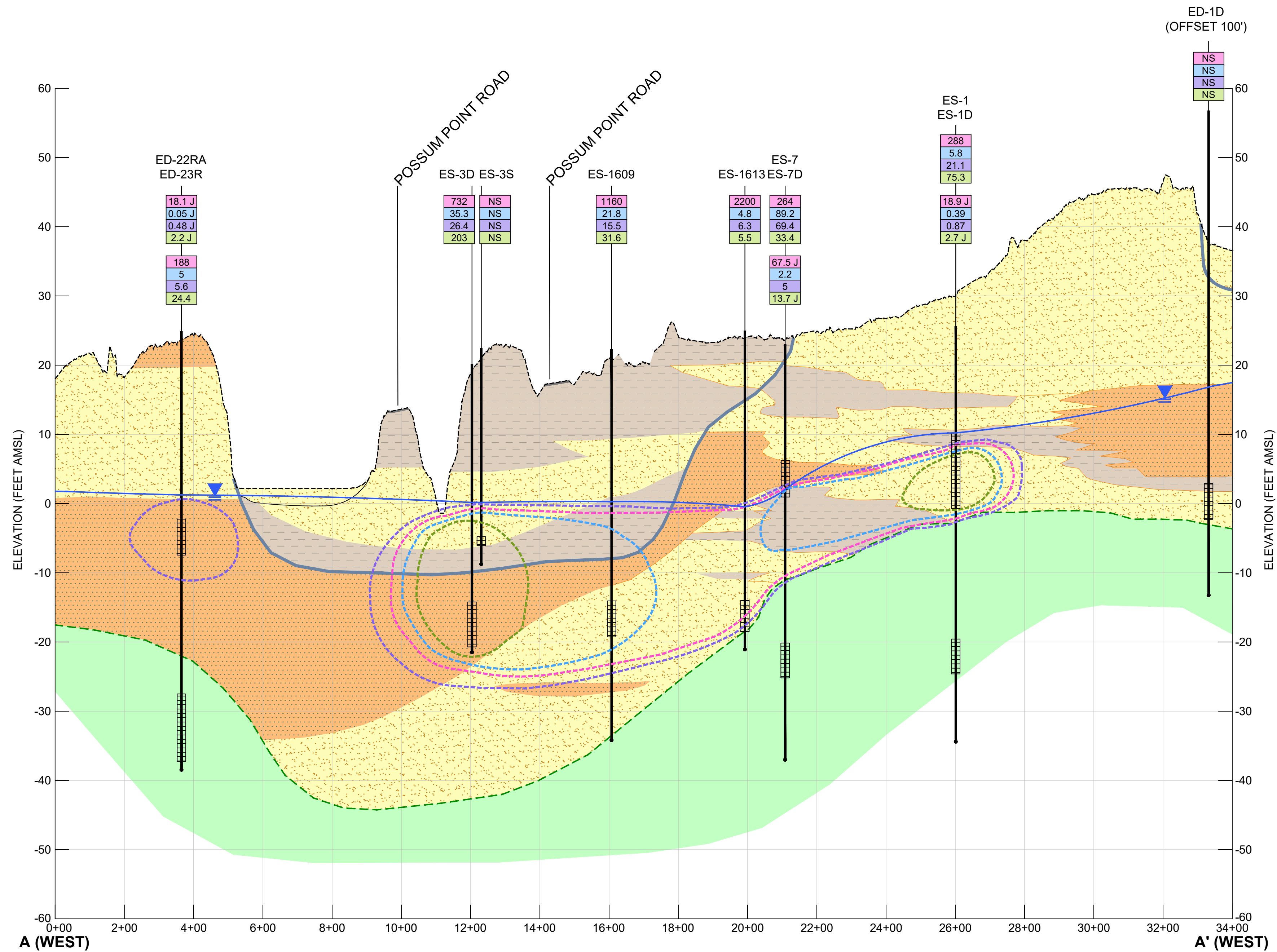
FIGURE 2

J:\graphics\134660-002-D002.dwg, D002, 8/6/2020 12:10:09 PM, TAY, 1:1

Sheet: D002

Printed: 8/6/2020 12:10 PM
J:\graphics\134660-002-D002.dwg

Saved by: TAM
J:\graphics\134660-002-D002.dwg



NOTES

- CROSS SECTION, LEGEND AND KEY PLAN CREATED FROM DRAWING TITLED "GEOLOGIC CROSS SECTION A-A", DATED 12 OCTOBER 2017, DRAWING 7 BY GOLDER ASSOCIATES OF RICHMOND, VIRGINIA.
- GROUNDWATER ELEVATIONS CALCULATED FROM SYNOPSIS WATER LEVEL ROUND CONDUCTED BY HALEY & ALDRICH ON 15 APRIL 2020.
- SUBSURFACE PROFILES DEPICT THE GENERAL GEOLOGIC CONDITIONS AT THE SITE AND ARE BASED ON INTERPRETATION OF DATA ENCOUNTERED IN THE EXPLORATIONS. LINES REPRESENTING INTERFACES BETWEEN STRATA ON THE PROFILE ARE BASED ON INTERPOLATION BETWEEN ADJACENT BORINGS. THE BORING STICK SHOWS THE INTERPRETED SEQUENCE OF STRATA ENCOUNTERED AT THAT LOCATION. ACTUAL SOIL CONDITIONS AND INTERFACES BETWEEN EXPLORATIONS MAY VARY SIGNIFICANTLY FROM THOSE INDICATED ON THE PROFILES.

**HALEY
ALDRICH**

POSSUM POINT POWER STATION
DUMFRIES, VIRGINIA

GEOLOGIC CROSS SECTION A-A'

SCALE: AS SHOWN
AUGUST 2020

FIGURE 3

GIS FILE PATH: \\haleyaldrich.com\share\CRP\Project\134758\GIS\Maps\2020_07\134758_000_00MB_ISOCONTOUR_POND_E.mxd — USER: hwachholz — LAST SAVED: 7/22/2020 9:28:12 AM



LEGEND

- COMPLIANCE WELL
- OBSERVATION WELL
- NEW OBSERVATION WELL INSTALLED AS PART OF THE NATURE AND EXTENT INVESTIGATION
- CROSS SECTION
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL
- PROPERTY BOUNDARY
- 660-FT EAGLE'S NEST BUFFER
- POND E BOUNDARY

NOTES

- ALL LOCATIONS ARE APPROXIMATE.
- GROUNDWATER ELEVATIONS CALCULATED FROM SYNOPTIC WATER LEVEL ROUND CONDUCTED BY HALEY & ALDRICH ON 15 APRIL 2020.
- AERIAL IMAGERY SOURCE: ESRI



0 450 900
SCALE IN FEET

HALEY
ALDRICH

DOMINION ENERGY POSSUM POINT POWER STATION
POND E
19000 POSSUM POINT ROAD
DUMFRIES, VIRGINIA

GROUNDWATER CONTOUR MAP

JULY 2020

FIGURE 4

GIS FILE PATH: \\haleyaldrich.com\share\CR\Projects\134758\GIS\Maps\2020_07\134758_000_00MB_ISOCONTOUR_POND_E.mxd — USER: hwachholz — LAST SAVED: 8/4/2020 3:34:20 PM



LEGEND

COMPLIANCE WELL

OBSERVATION WELL

SURFACE WATER SAMPLE

NEW OBSERVATION WELL INSTALLED AS PART OF THE NATURE AND EXTENT INVESTIGATION

BORON IN MICROGRAMS PER LITER (µg/L)

GROUNDWATER WELL WITH SOLID WASTE PERMIT GROUNDWATER PROTECTION STANDARD (250 µg/L) EXCEEDED

BORON ISOCONCENTRATION CONTOUR IN MICROGRAMS PER LITER (µg/L)

APPROXIMATE GROUNDWATER FLOW DIRECTION

GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL

PROPERTY BOUNDARY

660-FT EAGLE'S NEST BUFFER

POND E BOUNDARY

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.

2. ABBREVIATIONS:
J = INDICATES VALUE IS ESTIMATED
U = INDICATES WELL VALUE IS A NON-DETECT
UJ = INDICATES VALUE NOT DETECTED ABOVE THE REPORTED SAMPLE QUANTITATION LIMIT; HOWEVER, THE REPORTED LIMIT IS ESTIMATED AND MAY OR MAY NOT REPRESENT THE ACTUAL LIMIT OF QUANTITATION

3. GROUNDWATER ELEVATIONS CALCULATED FROM SYNOPTIC WATER LEVEL ROUND CONDUCTED BY HALEY & ALDRICH ON 15 APRIL 2020.

4. CONCENTRATIONS FOR ALL MONITORING WELLS ARE FROM GROUNDWATER SAMPLES COLLECTED BY HALEY & ALDRICH ON 7 THROUGH 16 APRIL 2020.

5. BORON SURFACE WATER CONCENTRATIONS WERE PROVIDED BY DOMINION ENERGY (SAMPLES COLLECTED BY EA ENGINEERING, INC. ON 22 JUNE 2020)

6. AERIAL IMAGERY SOURCE: ESRI

0450900

SCALE IN FEET

HALEY
ALDRICH

DOMINION ENERGY POSSUM POINT POWER STATION
POND E
19000 POSSUM POINT ROAD
DUMFRIES, VIRGINIA

BORON GROUNDWATER
ISOCONCENTRATION MAP

AUGUST 2020

FIGURE 5

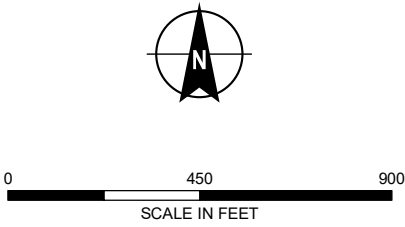
GIS FILE PATH: \\haleyaldrich.com\share\CR\Projects\134758\GIS\Maps\2020_07\134758_000_00MB_ISOCONTOUR_POND_E.mxd — USER: hwachholz — LAST SAVED: 8/4/2020 3:17:20 PM



LEGEND

- COMPLIANCE WELL
- OBSERVATION WELL
- SURFACE WATER SAMPLE
- NEW OBSERVATION WELL INSTALLED AS PART OF THE NATURE AND EXTENT INVESTIGATION
- ES-7 89.2 COBALT IN MICROGRAMS PER LITER (µg/L)
- GROUNDWATER WELL WITH COAL COMBUSTION RESIDUAL GROUNDWATER PROTECTION STANDARD (6 µg/L) AND SOLID WASTE PERMIT GROUNDWATER PROTECTION STANDARD (5 µg/L) EXCEEDED
- GROUNDWATER WELL WITH SOLID WASTE PERMIT GROUNDWATER PROTECTION STANDARD (5 µg/L) EXCEEDED
- COBALT ISOCONCENTRATION CONTOUR IN MICROGRAMS PER LITER (µg/L)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL
- PROPERTY BOUNDARY
- 660-FT EAGLE'S NEST BUFFER
- POND E BOUNDARY

- NOTES**
- ALL LOCATIONS ARE APPROXIMATE.
 - ABBREVIATION:
J = INDICATES VALUE IS ESTIMATED
 - GROUNDWATER ELEVATIONS CALCULATED FROM SYNOPTIC WATER LEVEL ROUND CONDUCTED BY HALEY & ALDRICH ON 15 APRIL 2020.
 - CONCENTRATIONS FOR ALL MONITORING WELLS ARE FROM GROUNDWATER SAMPLES COLLECTED BY HALEY & ALDRICH ON 7 THROUGH 16 APRIL 2020.
 - COBALT SURFACE WATER CONCENTRATIONS WERE PROVIDED BY DOMINION ENERGY (SAMPLES COLLECTED BY EA ENGINEERING, INC. ON 22 JUNE 2020)
 - AERIAL IMAGERY SOURCE: ESRI



HALEY ALDRICH DOMINION ENERGY POSSUM POINT POWER STATION
POND E
19000 POSSUM POINT ROAD
DUMFRIES, VIRGINIA

COBALT GROUNDWATER ISOCONCENTRATION MAP

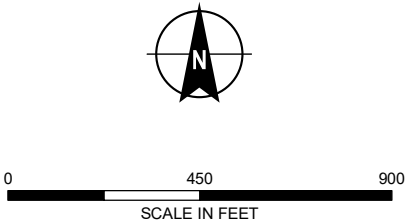
GIS FILE PATH: \\haleyaldrich.com\share\CR\Project\134758\GIS\Maps\2020_07\134758_000_00MB_ISOCONTOUR_POND_E.mxd — USER: hwachholz — LAST SAVED: 8/4/2020 3:17:20 PM



LEGEND

- COMPLIANCE WELL
- OBSERVATION WELL
- SURFACE WATER SAMPLE
- NEW OBSERVATION WELL INSTALLED AS PART OF THE NATURE AND EXTENT INVESTIGATION
- ES-7
69.4
NICKEL IN MICROGRAMS PER LITER (µg/L)
- GROUNDWATER WELL WITH SOLID WASTE PERMIT GROUNDWATER PROTECTION STANDARD (5 µg/L) EXCEEDED
- NICKEL IN MICROGRAMS PER LITER (µg/L)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL
- PROPERTY BOUNDARY
- 660-FT EAGLE'S NEST BUFFER
- POND E BOUNDARY

- NOTES**
- ALL LOCATIONS ARE APPROXIMATE.
 - ABBREVIATION:
J = INDICATES VALUE IS ESTIMATED
U = INDICATES WELL VALUE IS A NON-DETECT
 - GROUNDWATER ELEVATIONS CALCULATED FROM SYNOPTIC WATER LEVEL ROUND CONDUCTED BY HALEY & ALDRICH ON 15 APRIL 2020.
 - CONCENTRATIONS FOR ALL MONITORING WELLS ARE FROM GROUNDWATER SAMPLES COLLECTED BY HALEY & ALDRICH ON 7 THROUGH 16 APRIL 2020.
 - NICKEL SURFACE WATER CONCENTRATIONS WERE PROVIDED BY DOMINION ENERGY (SAMPLES COLLECTED BY EA ENGINEERING, INC. ON 22 JUNE 2020)
 - AERIAL IMAGERY SOURCE: ESRI



HALEY ALDRICH DOMINION ENERGY POSSUM POINT POWER STATION
POND E
19000 POSSUM POINT ROAD
DUMFRIES, VIRGINIA

NICKEL GROUNDWATER ISOCONCENTRATION MAP

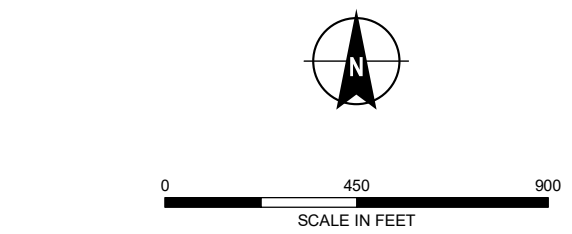
GIS FILE PATH: \\haleyaldrich.com\share\CR\Projects\134758\GIS\Maps\2020_07\134758_000_00MB_ISOCONTOUR_POND_E.mxd — USER: hwachholz — LAST SAVED: 8/4/2020 3:34:20 PM



LEGEND

- COMPLIANCE WELL
- OBSERVATION WELL
- SURFACE WATER SAMPLE
- NEW OBSERVATION WELL INSTALLED AS PART OF THE NATURE AND EXTENT INVESTIGATION
- ES-7 33.4 ZINC IN MICROGRAMS PER LITER (µg/L)
- GROUNDWATER WELL WITH SOLID WASTE PERMIT GROUNDWATER PROTECTION STANDARD (50 µg/L) EXCEEDED
- ZINC IN MICROGRAMS PER LITER (µg/L)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION CONTOUR, 10-FT INTERVAL
- PROPERTY BOUNDARY
- 660-FT EAGLE'S NEST BUFFER
- POND E BOUNDARY

- NOTES**
- ALL LOCATIONS ARE APPROXIMATE.
 - ABBREVIATION:
J = INDICATES VALUE IS ESTIMATED
U = INDICATES WELL VALUE IS A NON-DETECT
 - GROUNDWATER ELEVATIONS CALCULATED FROM SYNOPTIC WATER LEVEL ROUND CONDUCTED BY HALEY & ALDRICH ON 15 APRIL 2020.
 - CONCENTRATIONS FOR ALL MONITORING WELLS ARE FROM GROUNDWATER SAMPLES COLLECTED BY HALEY & ALDRICH ON 7 THROUGH 16 APRIL 2020.
 - ZINC SURFACE WATER CONCENTRATIONS WERE PROVIDED BY DOMINION ENERGY (SAMPLES COLLECTED BY EA ENGINEERING, INC. ON 22 JUNE 2020)
 - AERIAL IMAGERY SOURCE: ESRI



HALEY ALDRICH DOMINION ENERGY POSSUM POINT POWER STATION
POND E
19000 POSSUM POINT ROAD
DUMFRIES, VIRGINIA

ZINC GROUNDWATER ISOCONCENTRATION MAP

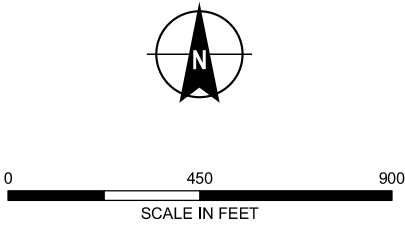
GIS FILE PATH: \\haleyaldrich.com\share\CHP\Project\134756\GIS\Maps\2020_07\134756_000_00MB_ISOCONTOUR_POND_E.mxd — USER: hwachindz — LAST SAVED: 8/4/2020 3:17:20 PM



LEGEND

- COMPLIANCE WELL
- OBSERVATION WELL
- SURFACE WATER SAMPLE
- NEW OBSERVATION WELL INSTALLED AS PART OF THE NATURE AND EXTENT INVESTIGATION
- ES-7 89.2 COBALT IN MICROGRAMS PER LITER (µg/L)
- PROPERTY BOUNDARY
- 660-FT EAGLE'S NEST BUFFER
- POND E BOUNDARY
- PROPOSED LOCATION FOR CORRECTIVE MEASURES ALTERNATIVE 2 AND ALTERNATIVE 3

- NOTES**
- ALL LOCATIONS ARE APPROXIMATE.
 - ABBREVIATION:
J = INDICATES VALUE IS ESTIMATED
 - CONCENTRATIONS FOR ALL MONITORING WELLS ARE FROM GROUNDWATER SAMPLES COLLECTED BY HALEY & ALDRICH ON 7 THROUGH 16 APRIL 2020.
 - COBALT SURFACE WATER CONCENTRATIONS WERE PROVIDED BY DOMINION ENERGY (SAMPLES COLLECTED BY EA ENGINEERING, INC. ON 22 JUNE 2020)
 - AERIAL IMAGERY SOURCE: ESRI



HALEY
ALDRICH

DOMINION ENERGY POSSUM POINT POWER STATION
POND E
19000 POSSUM POINT ROAD
DUMFRIES, VIRGINIA

**CONCEPTUAL OVERVIEW OF
CORRECTIVE MEASURES
ALTERNATIVE 2 AND ALTERNATIVE
3 LOCATIONS**

AUGUST 2020

FIGURE 9

APPENDIX A

Boring Logs and Well Construction Logs

TEST BORING REPORT

Boring No. ES-1D

Project Possum Point ACM, Dumfries, VA
 Client Dominion Energy, Inc.
 Contractor Cascade Drilling LP

File No. 134660-002
 Sheet No. 1 of 2
 Start 08 April 2020
 Finish 08 April 2020
 Driller Chris Ruffer
 H&A Rep. A. Gerringer

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Override	Sonic	--	Rig Make & Model: Track-Mounted TSi 150cc
Inside Diameter (in.)	--	4	--	Bit Type:
Hammer Weight (lb)	--	--	-	Drill Mud: None
Hammer Fall (in.)	--	--	-	Casing: Driven
			-	Hoist/Hammer: -- --
			-	PID Make & Model: N/A

Elevation 25.6
 Datum NAVD88
 Location See Plan
 N 6,884,766
 E 11,828,955

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
0		CR1 84	0.0 10.0		25.1 0.5	Topsoil	Topsoil - 6 inches													
						SM	Loose, tan-orange, silty SAND (SM), mps=<0.25 mm, no structure, no odor, moist					70	30							
						22.6 3.0	SC	Medium dense, tan-orange, clayey SAND (SC), mps=<0.25 mm, no structure, no odor, moist					75	25						
5						20.1 5.5	SP	loose, orange, poorly graded SAND (SP), mps=<0.25 mm, no structure, no odor, moist				20	70	10						
						18.1 7.5	SM	Medium dense, tan-orange, silty SAND (SM), mps=<0.25 mm, no structure, no odor, moist					70	30						
						16.6 9.0	CL	Medium stiff, gray, lean CLAY with sand (CL), mps=<0.25 mm, no structure, no odor, moist					35	65						
10		CR2 108	10.0 20.0		14.6 11.0	SC	Medium dense, gray-orange, clayey SAND (SC), mps=<0.25 mm, no structure, no odor, moist					60	40							
					10.6 15.0	CL	Medium stiff, gray, gravelly lean CLAY with sand (CL), mps=3", no structure, no odor, moist, sub-rounded gravel					20	50							
					8.6 17.0	SC	Medium dense, tan-gray and orange, clayey SAND (SC), mps=<0.25 mm, no structure, no odor, moist					70	30							
20																				

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		 Riser Pipe  Screen  Filter Sand  Cuttings  Grout  Concrete  Bentonite Seal		Overburden (ft)	60
			Bottom of Casing	Bottom of Hole	Water					Rock Cored (ft)	N/A
4/15/20	0723				18.47					Samples	
										Boring No.	ES-1D

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. ES-1D

File No. 134660-002

Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Fines		Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20		CR3 120	20.0 30.0				Similar to above										
25							Similar to above, except light tan lense										
28.5					-2.9 28.5	CL	Very stiff, gray-green to brown, sandy lean CLAY (CL), mps=<0.25 mm, no structure, no odor, moist					30	70				
30		CR4 120	30.0 40.0				Note: Sand grains lessen in size with depth										
35							Note: Lots of mica, gray-green and brown mottled										
40		CR5 120	40.0 50.0				Note: Fine grains are predominately mica										
47.5					-21.9 47.5	SC	Dense, gray-green, clayey SAND (SC), mps=<0.25 mm, no structure, no odor, wet					60	40				

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. ES-1D



TEST BORING REPORT

Boring No. ES-1D

File No. 134660-002

Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50		CR6 120	50.0 60.0		-24.4 50.0	CL	Hard, brown and mottled gray, lean CLAY (CL), mps=<0.25 mm, no structure, no odor, moist						100				
55																	
60					-34.4 60.0		Bottom of Exploration at 60 ft										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. ES-1D

HALEY ALDRICH OBSERVATION WELL INSTALLATION REPORT Well No. ES-1D Boring No. ES-1D																		
PROJECT	Possum Point ACM	H&A FILE NO.	134660															
LOCATION	Dumfries, Va	PROJECT MGR.	E. Wright															
CLIENT	Dominion Energy	FIELD REP.	A. Gerringer															
CONTRACTOR	Cascade Drilling	DATE INSTALLED	4/8/2020															
DRILLER	Chris Ruffer	WATER LEVEL	21.76 (DTW 4/15/2020)															
Ground El.	<u>25.59</u> ft	Location	<u>Alongside ES-1</u>															
El. Datum	<u>NAVD88</u>	☒ Guard Pipe ☐ Roadway Box																
SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Type of protective cover/lock <u>PADLOCK</u> Height/Depth of top of guard pipe/roadway box above/below ground surface <u>41.5</u> in Height/Depth of top of riser pipe above/below ground surface <u>39.5</u> in Type of protective casing: <u>Steel Stick-Up</u> Length <u>5.0</u> ft Inside Diameter <u>4x4</u> in Depth of bottom of guard pipe/roadway box <u>18.5</u> in <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="text-align: left;">Type of Seals</th> <th>Top of Seal (ft)</th> <th>Thickness (ft)</th> </tr> </thead> <tbody> <tr> <td>Grout</td> <td>0.0</td> <td>40.0</td> </tr> <tr> <td>Bentonite</td> <td>40.0</td> <td>3.0</td> </tr> <tr> <td>Sand</td> <td>43.0</td> <td>7.0</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> Type of riser pipe: <u>Sch. 40 PVC</u> Inside diameter of riser pipe <u>2.0</u> in Type of backfill around riser <u>Grout, Bentonite, Sand</u> Diameter of borehole <u>6.0</u> in Depth to top of well screen <u>45.0</u> ft Type of screen <u>Machine Slotted Sch. 40 PVC</u> Screen gauge or size of openings <u>0.01</u> in Diameter of screen <u>2.0</u> in Type of backfill around screen <u>#2 Filter Sand</u> Depth of bottom of well screen <u>50.0</u> ft Bottom of Silt trap <u>50.3</u> ft Depth of bottom of borehole <u>50.3</u> ft		Type of Seals	Top of Seal (ft)	Thickness (ft)	Grout	0.0	40.0	Bentonite	40.0	3.0	Sand	43.0	7.0			
Type of Seals	Top of Seal (ft)	Thickness (ft)																
Grout	0.0	40.0																
Bentonite	40.0	3.0																
Sand	43.0	7.0																
See Boring Log	See Boring Log	(Bottom of Exploration) (Numbers refer to depth from ground surface in feet) (Not to Scale)																
<u>45</u> ft + <u>5</u> ft + <u>0.3</u> ft = <u>50.3</u> ft Riser Pay Length (L1) Length of screen (L2) Length of silt trap (L3) Pay length																		
COMMENTS: <u>Northing: 6884766.33, Easting: 11828954.94, TOC: 28.91</u>																		

TEST BORING REPORT

Boring No. ES-7

Project Possum Point ACM, Dumfries, VA
 Client Dominion Energy, Inc.
 Contractor Cascade Drilling LP

File No. 134660-002
 Sheet No. 1 of 2
 Start 07 April 2020
 Finish 07 April 2020
 Driller Chris Ruffer
 H&A Rep. A. Gerringer

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Override	Sonic	--	Rig Make & Model: Track-Mounted TSi 150cc
Inside Diameter (in.)	--	4	--	Bit Type:
Hammer Weight (lb)	--	--	-	Drill Mud: None
Hammer Fall (in.)	--	--	-	Casing: Driven
			-	Hoist/Hammer: -- --
			-	PID Make & Model: N/A

Elevation 22.9
 Datum NAVD88
 Location See Plan
 N 6,884,859
 E 11,828,459

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand		Field Test								
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
0		CR1 96	0.0 10.0		22.4 0.5	Topsoil	Topsoil - 6 inches													
						SM	Very loose, orange, silty SAND (SM), mps=<0.25 mm, no structure, no odor, moist						70	30						
5					17.9 5.0	CL	Similar to above, except less sand Medium stiff, light gray to orange, lean CLAY (CL), mps=<0.25 mm, no structure, no odor, moist						100							
10		CR2 84	10.0 20.0		12.4 10.5	SM	Loose, tan to orange, silty SAND (SM), mps=<0.25 mm, no structure, no odor, moist						60	40						
15					6.9 16.0	SP	Loose, gray, poorly graded SAND (SP), mps=<0.25 mm, no structure, no odor, dry					15	80	5						
20					3.9 19.0	SC	Similar to above, except orange SAND lense Medium dense, gray to orange, clayey SAND (SC), mps=<0.25 mm, no structure, no odor, moist					10	70	20						

Water Level Data						Sample ID	Well Diagram	Summary			
Date	Time	Elapsed Time (hr.)	Depth (ft) to:		Water	O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		Riser Pipe	Overburden (ft)	40	
			Bottom of Casing	Bottom of Hole				Screen			Rock Cored (ft)
4/15/20	0737				20.80			Filter Sand	Samples	Boring No.	
								Cuttings			
								Grout			
							Concrete				
							Bentonite Seal				

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. ES-7

File No. 134660-002

Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			% Fines	Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine		Dilatancy	Toughness	Plasticity	Strength
20		CR3 120	20.0 30.0		2.4 20.5	CH	Medium stiff, dark gray, fat CLAY (CH), mps=0.25 mm, no structure, no odor, moist						100				
					-6.6 29.5	CL	Very stiff, dark red-orange, lean CLAY with sand (CL), mps=<0.25 mm, no structure, no odor, dry to moist				10	20	70				
		CR4 120	30.0 40.0		-8.1 31.0	SC	Medium dense, orange-tan, clayey SAND with gravel (SC), mps=0.75 mm, no structure, no odor, wet		15		5	60	20				
					-10.1 33.0	GC	Medium dense, green-gray, clayey GRAVEL (GC), mps=2.0 mm, no structure, no odor, moist		55				45				
					-12.1 35.0	CL	Very stiff, green-gray and brown, lean CLAY (CL), mps=<0.25 mm, no structure, no odor, moist						100				
40					-17.1 40.0	Bottom of Exploration at 40 ft											

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. ES-7

		OBSERVATION WELL INSTALLATION REPORT		Well No. ES-7																
				Boring No. ES-7																
PROJECT	Possum Point ACM		H&A FILE NO.	134660																
LOCATION	Dumfries, Va		PROJECT MGR.	E. Wright																
CLIENT	Dominion Energy		FIELD REP.	A. Gerringer																
CONTRACTOR	Cascade Drilling		DATE INSTALLED	4/7/2020																
DRILLER	Chris Ruffer		WATER LEVEL	23.80 (DTW 4/15/2020)																
Ground El. <u>22.87</u> ft		Location <u>Downgradient of ES-1613</u>		☒ Guard Pipe ☐ Roadway Box																
El. Datum <u>NAVD88</u>																				
SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Type of protective cover/lock <u>PADLOCK</u>																		
See Boring Log	See Boring Log	Height/Depth of top of guard pipe/roadway box above/below ground surface <u>38.0</u> in																		
		Height/Depth of top of riser pipe above/below ground surface <u>36.0</u> in																		
		Type of protective casing: <u>Steel Stick-Up</u>																		
		Length <u>5.0</u> ft																		
		Inside Diameter <u>4x4</u> in																		
		Depth of bottom of guard pipe/roadway box <u>22.0</u> in																		
		<table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: center;">Type of Seals</th> <th style="text-align: center;">Top of Seal (ft)</th> <th style="text-align: center;">Thickness (ft)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Grout</td> <td style="text-align: center;">0.0</td> <td style="text-align: center;">10.0</td> </tr> <tr> <td style="text-align: center;">Bentonite</td> <td style="text-align: center;">10.0</td> <td style="text-align: center;">5.0</td> </tr> <tr> <td style="text-align: center;">Sand</td> <td style="text-align: center;">15.0</td> <td style="text-align: center;">7.0</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> </tbody> </table>				Type of Seals	Top of Seal (ft)	Thickness (ft)	Grout	0.0	10.0	Bentonite	10.0	5.0	Sand	15.0	7.0			
		Type of Seals	Top of Seal (ft)	Thickness (ft)																
		Grout	0.0	10.0																
		Bentonite	10.0	5.0																
		Sand	15.0	7.0																
		Type of riser pipe: <u>Sch. 40 PVC</u>																		
		Inside diameter of riser pipe <u>2.0</u> in																		
		Type of backfill around riser <u>Grout, Bentonite, Sand</u>																		
Diameter of borehole <u>6.0</u> in																				
Depth to top of well screen <u>17.0</u> ft																				
Type of screen <u>Machine Slotted Sch. 40 PVC</u>																				
Screen gauge or size of openings <u>0.01</u> in																				
Diameter of screen <u>2.0</u> in																				
Type of backfill around screen <u>#2 Filter Sand</u>																				
Depth of bottom of well screen <u>22.0</u> ft																				
Bottom of Silt trap <u>22.3</u> ft																				
Depth of bottom of borehole <u>22.3</u> ft																				
(Bottom of Exploration) (Numbers refer to depth from ground surface in feet)		(Not to Scale)																		
<u>17</u> ft		<u>5</u> ft		<u>0.3</u> ft																
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)																
+ + + =		+ + + =		+ + + =																
22.3		22.3		22.3																
ft		ft		ft																
COMMENTS: <u> Northing: 6884858.97, Easting: 11828459.12, TOC: 25.85 </u>																				

TEST BORING REPORT

Boring No. ES-7D

Project Possum Point ACM, Dumfries, VA
 Client Dominion Energy, Inc.
 Contractor Cascade Drilling LP

File No. 134660-002
 Sheet No. 1 of 3
 Start 09 April 2020
 Finish 09 April 2020
 Driller Chris Ruffer
 H&A Rep. A. Gerringer

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	Override	Sonic	--	Rig Make & Model: Track-Mounted TSi 150cc Bit Type:
Inside Diameter (in.)	--	4	--	Drill Mud: None
Hammer Weight (lb)	--	--	-	Casing: Driven
Hammer Fall (in.)	--	--	-	Hoist/Hammer: -- -- PID Make & Model: N/A

Elevation 23.0
 Datum NAVD88
 Location See Plan
 N 6,884,865
 E 11,828,468

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel						Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength				
0		CR1 109	0.0 10.0		22.5 0.5	Topsoil SM	Topsoil - 6 inches Loose, orange, silty SAND (SM), mps=<0.25 mm, no structure, no odor, moist														
					20.0 3.0	CL	Medium stiff, orange to gray, lean CLAY with sand (CL), mps=<0.25 mm, no structure, no odor, moist							15	85						
5							Note: Less sand with depth														
							Note: Gray dominat, very little orange														
10		CR2 102	10.0 20.0		12.5 10.5	SM	Loose, tan-gray to orange, silty SAND (SM), mps=<0.25 mm, no structure, no odor, dry to moist							60	40						
					5.0 18.0	SP	Loose, gray, poorly graded SAND (SP), mps=<0.25 mm, no structure, no odor, dry							15	80	5					
20					3.5 19.5	SC	Medium dense, gray to orange, clayey SAND (SC), mps=<0.25 mm,							10	70	20					

Water Level Data						Sample ID		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:		Water	O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		 Riser Pipe  Screen  Filter Sand  Cuttings  Grout  Concrete  Bentonite Seal		Overburden (ft)	60
			Bottom of Casing	Bottom of Hole						Rock Cored (ft)	N/A
4/15/20	0738				44.42					Boring No. ES-7D	

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. ES-7D

File No. 134660-002

Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			% Fines	Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine		Dilatancy	Toughness	Plasticity	Strength
20		CR3 120	20.0 30.0		2.5 20.5	CH	no structure, no odor, moist Medium stiff, gray, fat CLAY (CH), mps<0.25 mm, no structure, no odor, moist						100				
30		CR4 114	30.0 40.0		-7.5 30.5	SC	Medium dense, orange-tan, clayey SAND with gravel (SC), mps=0.75 mm, no structure, no odor, moist		15		5	60	20				
					-9.5 32.5	GC	Medium dense, green-gray and orange, clayey GRAVEL (GC), mps=2.0 mm, no structure, no odor, moist		55				45				
35					-11.0 34.0	CL	Very stiff, green-gray and mottled brown, lean CLAY (CL), mps=<0.25 mm, no structure, no odor, moist, contains lots of mica						100				
40		CR5 120	40.0 50.0				Similar to above Note: 4" gravel lense, mps=0.19mm Note: fine mica grains increase in size with depth (43-46 ft) Note: Mottled green-gray and brown		10				100 90				

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. ES-7D

TEST BORING REPORT

Boring No. ES-7D

File No. 134660-002

Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50		CR6 120	50.0 60.0														
55																	
60					-37.0 60.0		Bottom of Exploration at 60 ft										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. ES-7D

HALEY ALDRICH OBSERVATION WELL INSTALLATION REPORT Well No. ES-7D Boring No. ES-7D															
PROJECT	Possum Point ACM	H&A FILE NO.	134660												
LOCATION	Dumfries, Va	PROJECT MGR.	E. Wright												
CLIENT	Dominion Energy	FIELD REP.	A. Gerringer												
CONTRACTOR	Cascade Drilling	DATE INSTALLED	4/9/2020												
DRILLER	Chris Ruffer	WATER LEVEL	47.80 (DTW 4/15/2020)												
Ground El.	22.99 ft	Location	Downgradient of ES-1613												
El. Datum	NAVD88	☒ Guard Pipe ☐ Roadway Box													
SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Type of protective cover/lock <u>PADLOCK</u> Height/Depth of top of guard pipe/roadway box above/below ground surface <u>32.5</u> in Height/Depth of top of riser pipe above/below ground surface <u>31.0</u> in Type of protective casing: <u>Steel Stick-Up</u> Length <u>5.0</u> ft Inside Diameter <u>4x4</u> in Depth of bottom of guard pipe/roadway box <u>27.5</u> in <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>Type of Seals</th> <th>Top of Seal (ft)</th> <th>Thickness (ft)</th> </tr> </thead> <tbody> <tr> <td>Grout</td> <td>0.0</td> <td>35.0</td> </tr> <tr> <td>Bentonite</td> <td>35.0</td> <td>6.0</td> </tr> <tr> <td>Sand</td> <td>41.0</td> <td>7.0</td> </tr> </tbody> </table> Type of riser pipe: <u>Sch. 40 PVC</u> Inside diameter of riser pipe <u>2.0</u> in Type of backfill around riser <u>Grout, Bentonite, Sand</u> Diameter of borehole <u>6.0</u> in Depth to top of well screen <u>43.0</u> ft Type of screen <u>Machine Slotted Sch. 40 PVC</u> Screen gauge or size of openings <u>0.01</u> in Diameter of screen <u>2.0</u> in Type of backfill around screen <u>#2 Filter Sand</u> Depth of bottom of well screen <u>48.0</u> ft Bottom of Silt trap <u>48.3</u> ft Depth of bottom of borehole <u>48.3</u> ft		Type of Seals	Top of Seal (ft)	Thickness (ft)	Grout	0.0	35.0	Bentonite	35.0	6.0	Sand	41.0	7.0
Type of Seals	Top of Seal (ft)	Thickness (ft)													
Grout	0.0	35.0													
Bentonite	35.0	6.0													
Sand	41.0	7.0													
See Boring Log	See Boring Log														
(Bottom of Exploration) (Numbers refer to depth from ground surface in feet)		(Not to Scale)													
43 ft + 5 ft + 0.3 ft = 48.3 ft Riser Pay Length (L1) Length of screen (L2) Length of silt trap (L3) Pay length															
COMMENTS: Northing: 6884865.2, Easting: 11828467.82, TOC: 25.59															

APPENDIX B

Field Documentation

LOW FLOW SAMPLING FORM

ED-22RA

Page 1 of 1

PROJECT ACM Groundwater Monitoring
LOCATION Possum Point Power Station
CLIENT Dominion Energy
CONTRACTOR N/A

H&A FILE NO. 134660
PROJECT MGR. E. Wright
FIELD REP Ryan Blaylock
DATE 04-07-2020

Sampling Data: ED-22RA Well Depth as Built: Approx. 35 ft Well Diameter: 2.0 in Purging Device: Dedicated Bladder
 Well ID: Well Depth Measured: - ft Initial Depth To Water: 25.23 ft Field Parameter Device: YSI / Hach Turb.
 Start time: 0830 Depth To Top Of Screen: - ft Depth Of Pump Intake: - ft Tubing Present In Well: ☒ Yes ☐ No
 Finish Time: 1630 Depth To Bottom Of Screen: - ft Measuring Point: Top of Casing Tubing Type: Polyethylene

Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (mL/min) or (gal/min)	Purge Rate (mL/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp- erature (°F) or (°C)	pH	Conduct- ivity (mS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mV)	Comments
Stabilized within →		[100 mL/min] to [500 mL/min]		--	N/A	[+/- 0.1]	[+/- 3%]	[+/- 10%]	[+/- 10%]	[+/- 10]	
0831	25.95	15 psi	200		13.28	4.30	0.276	6.79	5.65	292.7	No odor, clear
0836	28.31	15 psi	200		13.92	4.76	0.264	6.15	8.12	285.7	
0841			Well	Dry							
0908	27.62	15 psi	200		14.00	5.02	0.264	5.22	7.54	283.6	
0915			Well	Dry							
0948	28.35	15 psi	200		14.20	5.06	0.267	4.13	6.39	262.3	
			Well	Dry							
1010	28.20	15 psi	200		14.30	5.06	0.267	4.17	5.70	256.0	
1015			Sample								ED-22RA-20200408 @ 1015
1045			Well Dry								
1110			Resume Sampling								
1135			Well Dry								
1200			Resume Sampling								
1305			Well Dry								
1335			Resume Sampling								
1445			Well Dry								
1505			Resume Sampling								
											Sampling concluded @ 1630
											Purge vol. ~1.5 gal

well volume = 3.14 (PI) x radius² x height of water column. 2 in well = 0.163 gal/ft, 3 in = 0.367 gal/ft, 4 in = 0.653 gal/ft, 6 in = 1.469 gal/ft, 1 cu. ft. = 7.48 gal, 1 gal = 3.785 L, 1L = 0.264 gal, 0.5L/min = 0.132 gal/min

LOW FLOW SAMPLING FORM

Page 1 of 1

PROJECT	ACM Groundwater Monitoring
LOCATION	Possum Point Power Station
CLIENT	Dominion Energy
CONTRACTOR	N/A

H&A FILE NO. 134660
PROJECT MGR. E. Wright
FIELD REP. A. Gerringer
DATE 4-13-2005

Sampling Data:		Well Depth as Built:	<u>Approx. 66</u>	ft	Well Diameter:	<u>2.0</u>	in	Purging Device:	<u>Dedicated Bladder</u>
Well ID:	<u>ED-24R</u>	Well Depth Measured:	<u>-</u>	ft	Initial Depth To Water:	<u>25.46</u>	ft	Field Parameter Device:	<u>YSI / Hach Turb.</u>
Start time:	<u>1415</u>	Depth To Top Of Screen:	<u>-</u>	ft	Depth Of Pump Intake:	<u>—</u>	ft	Tubing Present In Well:	☒ Yes ☐ No
Finish Time:	<u>1620</u>	Depth To Bottom Of Screen:	<u>-</u>	ft	Measuring Point:	<u>Top of Casing</u>		Tubing Type:	<u>Polyethylene</u>

[illegible]

well volume = $3.14 (\text{PI}) \times \text{radius}^2 \times \text{height of water column}$. 2 in well = 0.163 gal/ft, 3 in = 0.367 gal/ft 4 in = 0.653 gal/ft, 6 in = 1.469 gal/ft, 1 cu. ft. = 7.48 gal, 1 gal = 3.785 L, 1L = 0.264 gal, 0.5L/min = 0.132 gal/min

LOW FLOW SAMPLING FORM

Page 1 of 1

PROJECT	ACM Groundwater Monitoring
LOCATION	Possum Point Power Station
CLIENT	Dominion Energy
CONTRACTOR	N/A

H&A FILE NO.	134660
PROJECT MGR.	E. Wright
FIELD REP	A. Geringer
DATE	4-14-20

Sampling Data:		Well Depth as Built:	<u>Approx. 82.5</u>	ft	Well Diameter:	<u>2.0</u>	in	Purging Device:	<u>Dedicated Bladder</u>
Well ID:	<u>ED-26</u>	Well Depth Measured:	<u>-</u>	ft	Initial Depth To Water:	<u>51.0</u>	ft	Field Parameter Device:	<u>YSI / Hach Turb.</u>
Start time:	<u>1000</u>	Depth To Top Of Screen:	<u>-</u>	ft	Depth Of Pump Intake:	<u>-</u>	ft	Tubing Present In Well:	☒ Yes ☐ No
Finish Time:	<u>1200</u>	Depth To Bottom Of Screen:	<u>-</u>	ft	Measuring Point:	<u>Top of Casing</u>		Tubing Type:	<u>Polyethylene</u>

[illegible]

well volume = 3.14 (PI) x radius² x height of water column. 2 in well = 0.163 gal/ft, 3 in = 0.367 gal/ft 4 in = 0.653 gal/ft, 6 in = 1.469 gal/ft, 1 cu. ft. = 7.48 gal, 1 gal = 3.785 L, 1L = 0.264 gal, 0.5L/min = 0.132 gal/min

LOW FLOW SAMPLING FORM

Page 1 of 1

PROJECT	ACM Groundwater Monitoring
LOCATION	Possum Point Power Station
CLIENT	Dominion Energy
CONTRACTOR	N/A

H&A FILE NO.	134660
PROJECT MGR.	E. Wright
FIELD REP	A. Gerringer
DATE	4-15-20

Sampling Data:		Well Depth as Built:	<u>Approx. 30</u>	ft	Well Diameter:	<u>2.0</u>	in	Purging Device:	<u>Dedicated Bladder</u>
Well ID:	<u>ES-1</u>	Well Depth Measured:	<u>-</u>	ft	Initial Depth To Water:	<u>17.14</u>	ft	Field Parameter Device:	<u>YSI / Hach Turb.</u>
Start time:	<u>1110</u>	Depth To Top Of Screen:	<u>-</u>	ft	Depth Of Pump Intake:	<u></u>	ft	Tubing Present In Well:	☒ Yes ☐ No
Finish Time:	<u>1230</u>	Depth To Bottom Of Screen:	<u>-</u>	ft	Measuring Point:	<u>Top of Casing</u>		Tubing Type:	<u>Polyethylene</u>

[illegible]

well volume = $3.14 (\text{PI}) \times \text{radius}^2 \times \text{height of water column}$. 2 in well = 0.163 gal/ft, 3 in = 0.367 gal/ft 4 in = 0.653 gal/ft, 6 in = 1.469 gal/ft, 1 cu. ft. = 7.48 gal, 1 gal = 3.785 L, 1L = 0.264 gal, 0.5L/min = 0.132 gal/min



LOW FLOW SAMPLING FORM

Page 1 of 1

PROJECT ACM Groundwater Monitoring
LOCATION Possum Point Power Station
CLIENT Dominion Energy
CONTRACTOR N/A

H&A FILE NO. 134660
PROJECT MGR. E. Wright
FIELD REP A. Geringer
DATE 4-15-20

Sampling Data: Well Depth as Built: _____ ft Well Diameter: 2 in Purging Device: Bladder
Well ID: ES-10 Well Depth Measured: 53.31 ft Initial Depth To Water: 21.72 ft Field Parameter Device: YSI
Start time: 1240 Depth To Top Of Screen: _____ ft Depth Of Pump Intake: 50 ft Tubing Present In Well: ☐ Yes ☒ No
Finish Time: 1500 Depth To Bottom Of Screen: _____ ft Measuring Point: Top of Casing Tubing Type: Poly

Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (mL/min) or (gal/min)	Purge Rate (mL/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp- erature (°F) or (°C)	pH	Conduct- ivity (mS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mV)	Comments
Stabilized within →		100 mL/min to	500 mL/min	--	N/A	[+/- 0.1]	[+/- 3%]	[+/- 10%]	[+/- 10%]	[+/- 10]	
1250	23.13	34	200	initial	15.80	6.26	0.265	2.43	16.6	142.0	
1255	24.10	↓	↓	1.0	15.61	6.56	0.266	2.24	14.6	118.0	
1300	25.0	↓	↓	2.0	15.28	6.55	0.270	2.18	27.6	105.0	
1305	25.8	30	150	2.75	15.44	6.66	0.274	2.02	47.9	91.9	
1310	26.4			3.50	15.41	6.42	0.275	1.85	51.2	79.8	
1315	26.95			4.25	15.47	6.68	0.272	1.60	54.4	55.1	
1320	27.3			5.00	15.53	6.66	0.270	1.45	48.3	34.2	
1325	27.7			5.75	15.48	6.41	0.267	1.26	54.6	0.1	
1330	28.1			6.50	15.46	6.49	0.265	1.17	38.4	-12.4	
1335	28.4			7.25	15.46	6.53	0.263	1.11	40.2	-22.6	
1340	28.65			8.00	15.50	6.48	0.259	1.00	32.2	-32.1	
1345	28.90			8.75	15.34	6.52	0.254	0.92	26.8	-43.4	
1350	29.10			9.50	15.27	6.49	0.252	0.86	20.6	-49.0	
1355	29.40			10.25	15.10	6.53	0.247	0.82	17.0	-56.4	
1400	29.60			11.00	15.28	6.47	0.246	0.81	14.4	-63.9	
1405	29.80	↓	↓	11.75	15.45	6.46	0.244	0.78	13.3	-68.5	
1410	30.00			12.50	15.27	6.52	0.241	0.75	11.6	-72.6	
1415	Sample										

well volume = 3.14 (PI) x radius² x height of water column. 2 in well = 0.163 gal/ft, 3 in = 0.367 gal/ft, 4 in = 0.653 gal/ft, 6 in = 1.469 gal/ft, 1 cu. ft. = 7.48 gal, 1 gal = 3.785 L, 1L = 0.264 gal, 0.5L/min = 0.132 gal/min

LOW FLOW SAMPLING FORM

Page 1 of 1

PROJECT ACM Groundwater Monitoring
LOCATION Possum Point Power Station
CLIENT Dominion Energy
CONTRACTOR N/A

H&A FILE NO. 134660
PROJECT MGR. E. Wright
FIELD REP A. Geringer
DATE 4-15-20

Sampling Data: Well Depth as Built: _____ ft Well Diameter: 2 in Purging Device: Bladder
Well ID: ES-7D Well Depth Measured: 52.83 ft Initial Depth To Water: 47.17 ft Field Parameter Device: ysi
Start time: 0830 1515 Depth To Top Of Screen: _____ ft Depth Of Pump Intake: 52 ft Tubing Present In Well: ☐ Yes ☒ No
Finish Time: 1845 4110 Depth To Bottom Of Screen: _____ ft Measuring Point: Top of Casing Tubing Type: Poly

Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (mL/min) or (gal/min)	Purge Rate (mL/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp- erature (°F) or (°C)	pH	Conduct- ivity (mS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mV)	Comments
Stabilized within →		[100 mL/min] to [500 mL/min]		--	N/A	[+/- 0.1]	[+/- 3%]	[+/- 10%]	[+/- 10%]	[+/- 10]	
1530	47.50	27psi	100	initial	14.16	7.20	0.432	6.53	414	101.2	
1535	47.70			500	13.99	7.27	0.428	4.86	401	44.4	
1540	47.90			1000	13.91	7.28	0.422	5.18	391	35.2	
1545	48.10			1.5	13.89	7.28	0.414	5.31	395	33.6	
1550	48.30			2.0	13.79	7.25	0.400	5.71	380	37.1	
1555	48.60			2.5	13.74	7.16	0.385	5.87	361	47.7	
1600	48.95			3.0	13.70	6.99	0.350	6.00	339	46.6	
1605	49.10			3.5	13.68	6.90	0.334	5.73	315	72.4	
1610	49.30			4.0	13.62	6.77	0.325	5.64	213	88.3	
1615	49.40			4.5	13.60	6.75	0.325	5.16	189	99.4	
1620	49.70			5.0	13.66	6.75	0.338	4.67	184	102.3	
1625	49.90	↓	↓	5.5	13.75	6.77	0.369	4.51	304	100.0	
1630	50.10			6.0	13.69	6.81	0.383	3.99	477	88.0	Stop purge; return next day (4-16-20) and take a grab sample.
1000	Begin Sampling; very slow 50ml rate then just trickles										
1050	Dry; stop purge only fill two bottles - total + dissolved metals										Grab sample on 4-16-20 @ 1000
											Filter metals bottle added to suite for boron, nickel, cobalt

well volume = 3.14 (PI) x radius² x height of water column. 2 in well = 0.163 gal/ft, 3 in = 0.367 gal/ft, 4 in = 0.653 gal/ft, 6 in = 1.469 gal/ft, 1 cu. ft. = 7.48 gal, 1 gal = 3.785 L, 1L = 0.264 gal, 0.5L/min = 0.132 gal/min

SUMMARY OF WATER LEVEL DATA
 POSSUM POINT POWER STATION - ACM
 DUMFRIES, VIRGINIA
 MEASUREMENT DATE: 4/15/2020

Well Type	Well Identification	Depth to Water (feet below top of casing)	Time Well Gauged	Remarks	Measured By
POND E					
Compliance Wells	ED-26	51.42	0830		AG
	ED-24R	25.45	1120		AG
	ES-3D	22.49	0805		AG
	ES-1609	22.98	0848		AG
	ES-1613	26.46	0844		AG
	T-1615D	22.40	0815		AG
	T-1615S	22.58	0814		AG
VSWMR Sentinel Wells	ED-22RA	25.64	0756 0711		AG
	ED-23R	24.12	0758		AG
N&E Wells	ES-1	17.17	0730		AG
	ES-1D	21.76	0733		AG
	ES-7	23.80	0737		AG
	ES-7D	47.30	0738		AG

APPENDIX C

Laboratory Analytical Reports

April 15, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy VSWMR
Pace Project No.: 92472806

Dear Andy Gerringer:

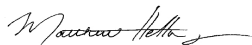
Enclosed are the analytical results for sample(s) received by the laboratory on April 08, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Matthew Helton for
Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy VSWMR

Pace Project No.: 92472806

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy VSWMR

Pace Project No.: 92472806

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92472806001	ED-22RA-20200407	Water	04/07/20 10:15	04/08/20 09:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy VSWMR

Pace Project No.: 92472806

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92472806001	ED-22RA-20200407	EPA 6020B	BG2	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy VSWMR

Pace Project No.: 92472806

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92472806001	ED-22RA-20200407					
EPA 6020B	Copper	1.4	ug/L	0.50	04/09/20 19:21	
EPA 6020B	Iron	1150	ug/L	50.0	04/09/20 19:21	
EPA 6020B	Manganese	82.1	ug/L	0.50	04/09/20 19:21	
EPA 6020B	Nickel	5.6	ug/L	0.50	04/09/20 19:21	
EPA 6020B	Potassium	1680	ug/L	50.0	04/09/20 19:21	
EPA 6020B	Silver	0.59	ug/L	0.40	04/09/20 19:21	
EPA 6020B	Sodium	44200	ug/L	5000	04/09/20 20:55	
EPA 6020B	Hardness, Total(SM 2340B)	17800	ug/L	541	04/09/20 19:21	
EPA 6020B	Vanadium	0.19J	ug/L	0.30	04/09/20 19:21	
EPA 6020B	Zinc	24.4	ug/L	5.0	04/09/20 19:21	
SM 5310B-2011	Nonpurgeable Organic Carbon	1.0	mg/L	1.0	04/10/20 17:47	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92472806

Sample: ED-22RA-20200407 Lab ID: 92472806001 Collected: 04/07/20 10:15 Received: 04/08/20 09:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Copper	1.4	ug/L	0.50	0.23	1	04/09/20 00:31	04/09/20 19:21	7440-50-8	
Iron	1150	ug/L	50.0	7.5	1	04/09/20 00:31	04/09/20 19:21	7439-89-6	
Manganese	82.1	ug/L	0.50	0.14	1	04/09/20 00:31	04/09/20 19:21	7439-96-5	
Nickel	5.6	ug/L	0.50	0.11	1	04/09/20 00:31	04/09/20 19:21	7440-02-0	
Potassium	1680	ug/L	50.0	6.2	1	04/09/20 00:31	04/09/20 19:21	7440-09-7	
Silver	0.59	ug/L	0.40	0.050	1	04/09/20 00:31	04/09/20 19:21	7440-22-4	
Sodium	44200	ug/L	5000	285	20	04/09/20 00:31	04/09/20 20:55	7440-23-5	
Tin	ND	ug/L	0.50	0.090	1	04/09/20 00:31	04/09/20 19:21	7440-31-5	
Hardness, Total(SM 2340B)	17800	ug/L	541	70.1	1	04/09/20 00:31	04/09/20 19:21		
Vanadium	0.19J	ug/L	0.30	0.12	1	04/09/20 00:31	04/09/20 19:21	7440-62-2	
Zinc	24.4	ug/L	5.0	1.1	1	04/09/20 00:31	04/09/20 19:21	7440-66-6	
420.4 Phenolics, Total Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville									
Phenol	ND	mg/L	0.020	0.0050	1	04/15/20 07:50	04/15/20 16:39	108-95-2	M1,R1
5310B WVA Nonpurgeable Organic Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville									
Nonpurgeable Organic Carbon	1.0	mg/L	1.0	0.50	1		04/10/20 17:47	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR
Pace Project No.: 92472806

QC Batch:	535206	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92472806001

METHOD BLANK: 2855912 Matrix: Water

Associated Lab Samples: 92472806001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Copper	ug/L	ND	0.50	0.23	04/10/20 16:40	
Hardness, Total(SM 2340B)	ug/L	ND	541	70.1	04/10/20 16:40	
Iron	ug/L	ND	50.0	7.5	04/10/20 16:40	
Manganese	ug/L	0.38J	0.50	0.14	04/10/20 16:40	BC
Nickel	ug/L	ND	0.50	0.11	04/10/20 16:40	
Potassium	ug/L	ND	50.0	6.2	04/10/20 16:40	
Silver	ug/L	ND	0.40	0.050	04/10/20 16:40	
Sodium	ug/L	ND	250	14.3	04/10/20 16:40	
Tin	ug/L	ND	0.50	0.090	04/10/20 16:40	
Vanadium	ug/L	ND	0.30	0.12	04/10/20 16:40	
Zinc	ug/L	ND	5.0	1.1	04/10/20 16:40	

LABORATORY CONTROL SAMPLE: 2855913

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	50	51.3	103	80-120	
Hardness, Total(SM 2340B)	ug/L		4370			
Iron	ug/L	625	658	105	80-120	
Manganese	ug/L	50	51.6	103	80-120	
Nickel	ug/L	50	52.0	104	80-120	
Potassium	ug/L	625	657	105	80-120	
Silver	ug/L	25	26.0	104	80-120	
Sodium	ug/L	625	662	106	80-120	
Tin	ug/L	50	53.0	106	80-120	
Vanadium	ug/L	50	51.9	104	80-120	
Zinc	ug/L	50	52.4	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2855914 2855915

Parameter	Units	92472115001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	372	250	250	603	617	92	98	75-125	2	20	
Hardness, Total(SM 2340B)	ug/L	ND			20700	21400				3	20	
Iron	ug/L	ND	3120	3120	3120	3180	99	101	75-125	2	20	
Manganese	ug/L	ND	250	250	249	259	99	103	75-125	4	20	
Nickel	ug/L	383	250	250	613	630	92	99	75-125	3	20	
Potassium	ug/L	ND	3120	3120	3160	3210	101	103	75-125	2	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92472806

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2855914 2855915												
Parameter	Units	92472115001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Silver	ug/L	109	125	125	231	237	98	102	75-125	2	20	
Sodium	ug/L	ND	3120	3120	3160	3220	101	102	75-125	2	20	
Tin	ug/L	ND	250	250	251	259	100	104	75-125	3	20	
Vanadium	ug/L	ND	250	250	249	254	99	102	75-125	2	20	
Zinc	ug/L	404	250	250	635	649	92	98	75-125	2	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR
Pace Project No.: 92472806

QC Batch: 536101	Analysis Method: EPA 420.4 Rev 1.0 1993
QC Batch Method: EPA 420.4 Rev 1.0 1993	Analysis Description: 420.4 Phenolics
	Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92472806001

METHOD BLANK: 2860123 Matrix: Water
Associated Lab Samples: 92472806001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenol	mg/L	ND	0.020	0.0050	04/15/20 16:37	

LABORATORY CONTROL SAMPLE: 2860124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	mg/L	0.05	0.048	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860125 2860126

Parameter	Units	92472806001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.044	0.049	87	98	90-110	12	10	M1, R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860127 2860128

Parameter	Units	92473016001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.049	0.051	90	94	90-110	3	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92472806

QC Batch: 535285

Analysis Method: SM 5310B-2011

QC Batch Method: SM 5310B-2011

Analysis Description: 5310B WVA Nonpurgeable Organic Carbon

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92472806001

METHOD BLANK: 2856098

Matrix: Water

Associated Lab Samples: 92472806001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nonpurgeable Organic Carbon	mg/L	ND	1.0	0.50	04/10/20 13:26	

LABORATORY CONTROL SAMPLE: 2856099

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nonpurgeable Organic Carbon	mg/L	25	23.6	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2856100 2856101

Parameter	Units	92472270001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	1.9	25	25	25.4	25.6	94	95	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.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy VSWMR
Pace Project No.: 92472806

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.

ANALYTE QUALIFIERS

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.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy VSWMR

Pace Project No.: 92472806

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92472806001	ED-22RA-20200407	EPA 3010A	535206	EPA 6020B	535223
92472806001	ED-22RA-20200407	EPA 420.4 Rev 1.0 1993	536101	EPA 420.4 Rev 1.0 1993	536271
92472806001	ED-22RA-20200407	SM 5310B-2011	535285		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

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

Laboratory receiving samples:

Asheville ☐Eden ☐Greenwood ☐Huntersville ☒Raleigh ☐Mechanicsville ☐Sample Condition
Upon Receipt

Client Name:

Heley + Aldrich

Project #

WO#: 92472806



92472806

Courier:

☐ Commercial☒ Fed Ex☐ UPS☐ USPS☐ Client☐ Pace☐ Other: _____

Custody Seal Present?

☐ Yes☒ No

Seals Intact?

☐ Yes☐ NoDate/Initials Person Examining Contents: mb 4-8-20

Packing Material:

☐ Bubble Wrap☒ Bubble Bags☐ None☐ Other

Thermometer:

☒ IR Gun ID: 92T061

Type of Ice:

☒ Wet☐ Blue☐ None

Biological Tissue Frozen?

☐ Yes☐ No☐ N/ACooler Temp (°C): 2.4Correction 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 begunUSDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

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

Comments/Discrepancy:

Chain of Custody Present?

☒ Yes☐ No☐ N/A

1.

Samples Arrived within Hold Time?

☒ Yes☐ No☐ N/A

2.

Short Hold Time Analysis (<72 hr.)?

☐ Yes☒ No☐ N/A

3.

Rush Turn Around Time Requested?

☐ Yes☒ No☐ N/A

4.

Sufficient Volume?

☒ Yes☐ No☐ N/A

5.

Correct Containers Used?

☒ Yes☐ No☐ N/A

6.

-Pace Containers Used?

☒ Yes☐ No☐ N/A

Containers Intact?

☐ Yes☐ No☐ N/A

7.

Dissolved analysis: Samples Field Filtered?

☐ Yes☐ No☒ N/A

8.

Sample Labels Match COC?

☒ Yes☐ No☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: mb

Headspace in VOA Vials (>5-6mm)?

☐ Yes☒ No☐ N/A

10.

Trip Blank Present?

☐ Yes☐ No☐ N/A

11.

Trip Blank Custody Seals Present?

☐ Yes☐ No☐ 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: _____

Date: _____

Project Manager SRF Review: _____

Date: _____

*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 #

W0# : 92472806

PM: PTE

Due Date: 04/22/20

CLIENT: 92-Haley VA

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)	SPST-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	X																											
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.



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: Section B Required Project Information: Section C Invoice Information:

Company: Haley & Aldrich, Inc. Report To: Wright, Erin Attention:

Address: 1 Park West Circle Copy To: Chatterton, Kelly Company Name:

Suite 208, Midlothian, VA 23114 kchatterton@halevaldrich.com Address:

Email To: ewright@halevaldrich.com BSA #: 2019-22-Pace Pace Quote:

Phone: 804-419-0012 Fax: H&A Client Name: Dominion Energy: Possum Point Reference:

Requested Due Date/TAT: Standard H&A Project #: 134660 Pace Profile #: TBD (93622) 7362-2

Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.

Section D Required Client Information Matrix Codes MATRIX / CODE DIV WT WW P SL OL WP AR TS OT

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

SAMPLE ID (A-Z, 0-9 /, -) Sample IDs MUST BE UNIQUE

ITEM # 1 ED-22RA-20200407 WT 5 4/17/20 1015

MATRIX CODE (see valid codes to left) SAMPLE TYPE (G=GRAB C=COMP) DATE TIME

COLLECTED Collection Info Sample Depth Start Depth (Circle: feet or inches) End Depth (Circle: feet or inches)

SAMPLE TEMP AT COLLECTION # OF CONTAINERS Unpreserved H2SO4 HNO3 HCl NaOH Na2S2O3 Methanol Other

Preservatives Analysis Test VSWMR Metals List VWCW Water Quality Pollutant List Total Organic Carbon (TOC)

Requested Analysis Filtered (Y/N) Residual Chlorine (Y/N) Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS RELINQUISHED BY / AFFILIATION DATE TIME ACCEPTED BY / AFFILIATION DATE TIME

VSWMR Metals List: copper, nickel, silver, tin, vanadium, and zinc

VWCW Water Quality Pollutant List: phenolics, potassium, iron, manganese, hardness, and sodium.

SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Ryan Beaunegeat DATE Signed (MM/DD/YY): 4-7-20

SIGNATURE of SAMPLER: Ryan Beaunegeat Temp in °C Custody Sealed Cooler (Y/N) Samples Intact (Y/N)

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

20 July 2016

April 15, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92472807

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 08, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92472807

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92472807

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92472807001	ED-22RA-20200407	Water	04/07/20 10:15	04/08/20 09:00

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92472807

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92472807001	ED-22RA-20200407	EPA 6020B	BG2	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	RED	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92472807

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92472807001	ED-22RA-20200407					
EPA 6020B	Antimony	0.16J	ug/L	0.50	04/09/20 15:37	
EPA 6020B	Arsenic	0.27	ug/L	0.10	04/09/20 15:37	
EPA 6020B	Barium	25.5	ug/L	0.30	04/09/20 15:37	
EPA 6020B	Beryllium	0.33	ug/L	0.10	04/09/20 15:37	
EPA 6020B	Boron	188	ug/L	25.0	04/09/20 15:37	
EPA 6020B	Calcium	3700	ug/L	200	04/09/20 15:37	
EPA 6020B	Cobalt	5.0	ug/L	0.10	04/09/20 15:37	
EPA 6020B	Lead	0.065J	ug/L	0.10	04/09/20 15:37	
EPA 6020B	Lithium	2.4J	ug/L	2.5	04/09/20 15:37	
SM 2540C-2011	Total Dissolved Solids	178	mg/L	25.0	04/10/20 16:26	
EPA 9056A	Chloride	27.1	mg/L	1.0	04/11/20 16:53	
EPA 9056A	Sulfate	60.5	mg/L	1.0	04/11/20 16:53	M1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92472807

Sample: ED-22RA-20200407 Lab ID: 92472807001 Collected: 04/07/20 10:15 Received: 04/08/20 09:00 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Antimony	0.16J	ug/L	0.50	0.11	1	04/09/20 00:31	04/09/20 15:37	7440-36-0	
Arsenic	0.27	ug/L	0.10	0.060	1	04/09/20 00:31	04/09/20 15:37	7440-38-2	
Barium	25.5	ug/L	0.30	0.060	1	04/09/20 00:31	04/09/20 15:37	7440-39-3	
Beryllium	0.33	ug/L	0.10	0.050	1	04/09/20 00:31	04/09/20 15:37	7440-41-7	
Boron	188	ug/L	25.0	2.6	1	04/09/20 00:31	04/09/20 15:37	7440-42-8	
Cadmium	ND	ug/L	0.080	0.070	1	04/09/20 00:31	04/09/20 15:37	7440-43-9	
Calcium	3700	ug/L	200	20.6	1	04/09/20 00:31	04/09/20 15:37	7440-70-2	
Chromium	ND	ug/L	0.50	0.42	1	04/09/20 00:31	04/09/20 15:37	7440-47-3	
Cobalt	5.0	ug/L	0.10	0.050	1	04/09/20 00:31	04/09/20 15:37	7440-48-4	
Lead	0.065J	ug/L	0.10	0.050	1	04/09/20 00:31	04/09/20 15:37	7439-92-1	
Lithium	2.4J	ug/L	2.5	0.42	1	04/09/20 00:31	04/09/20 15:37	7439-93-2	
Molybdenum	ND	ug/L	0.50	0.10	1	04/09/20 00:31	04/09/20 15:37	7439-98-7	
Selenium	ND	ug/L	0.50	0.080	1	04/09/20 00:31	04/09/20 15:37	7782-49-2	
Thallium	ND	ug/L	0.10	0.060	1	04/09/20 00:31	04/09/20 15:37	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville									
Mercury	ND	ug/L	0.20	0.10	1	04/13/20 12:47	04/14/20 18:39	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville									
Total Dissolved Solids	178	mg/L	25.0	25.0	1		04/10/20 16:26		
9056 IC anions 28 Days Analytical Method: EPA 9056A Pace Analytical Services - Asheville									
Chloride	27.1	mg/L	1.0	0.60	1		04/11/20 16:53	16887-00-6	
Fluoride	ND	ug/L	100	50.0	1		04/11/20 16:53	16984-48-8	M1
Sulfate	60.5	mg/L	1.0	0.50	1		04/11/20 16:53	14808-79-8	M1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92472807

QC Batch: 535804

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92472807001

METHOD BLANK: 2858652

Matrix: Water

Associated Lab Samples: 92472807001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	04/14/20 18:34	

LABORATORY CONTROL SAMPLE: 2858653

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.6	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2858654 2858655

Parameter	Units	92472807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.5	2.4	101	98	75-125	3	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR
Pace Project No.: 92472807

QC Batch:	535206	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92472807001

METHOD BLANK: 2855912 Matrix: Water

Associated Lab Samples: 92472807001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	0.50	0.11	04/10/20 16:40	
Arsenic	ug/L	ND	0.10	0.060	04/10/20 16:40	
Barium	ug/L	ND	0.30	0.060	04/10/20 16:40	
Beryllium	ug/L	ND	0.10	0.050	04/10/20 16:40	
Boron	ug/L	ND	25.0	2.6	04/10/20 16:40	
Cadmium	ug/L	ND	0.080	0.070	04/10/20 16:40	
Calcium	ug/L	ND	200	20.6	04/10/20 16:40	
Chromium	ug/L	ND	0.50	0.42	04/10/20 16:40	
Cobalt	ug/L	ND	0.10	0.050	04/10/20 16:40	
Lead	ug/L	ND	0.10	0.050	04/10/20 16:40	
Lithium	ug/L	ND	2.5	0.42	04/10/20 16:40	
Molybdenum	ug/L	ND	0.50	0.10	04/10/20 16:40	
Selenium	ug/L	ND	0.50	0.080	04/10/20 16:40	
Thallium	ug/L	ND	0.10	0.060	04/10/20 16:40	

LABORATORY CONTROL SAMPLE: 2855913

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	53.8	108	80-120	
Arsenic	ug/L	10	10.6	106	80-120	
Barium	ug/L	50	51.9	104	80-120	
Beryllium	ug/L	10	10.5	105	80-120	
Boron	ug/L	50	56.1	112	80-120	
Cadmium	ug/L	10	10.5	105	80-120	
Calcium	ug/L	625	665	106	80-120	
Chromium	ug/L	50	51.6	103	80-120	
Cobalt	ug/L	10	10.3	103	80-120	
Lead	ug/L	50	52.0	104	80-120	
Lithium	ug/L	50	52.7	105	80-120	
Molybdenum	ug/L	50	51.3	103	80-120	
Selenium	ug/L	50	53.4	107	80-120	
Thallium	ug/L	10	10.4	104	80-120	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92472807

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2855914 2855915												
Parameter	Units	92472115001		MS	MSD	MS		MS	MSD	% Rec	Max	
		Result	Conc.	Spike	Spike	Result	Result	% Rec	% Rec	Limits	RPD	RPD
Antimony	ug/L	ND	250	250	250	256	263	102	105	75-125	3	20
Arsenic	ug/L	ND	50	50	50	49.2	51.0	98	102	75-125	4	20
Barium	ug/L	ND	250	250	250	250	257	100	103	75-125	3	20
Beryllium	ug/L	ND	50	50	50	50.5	51.6	101	103	75-125	2	20
Boron	ug/L	ND	250	250	250	258	290	98	111	75-125	12	20
Cadmium	ug/L	ND	50	50	50	49.5	50.6	99	101	75-125	2	20
Calcium	ug/L	ND	3120	3120	3120	3090	3220	99	103	75-125	4	20
Chromium	ug/L	345	250	250	250	576	591	92	99	75-125	3	20
Cobalt	ug/L	ND	50	50	50	49.6	50.4	99	101	75-125	2	20
Lead	ug/L	ND	250	250	250	247	256	99	103	75-125	4	20
Lithium	ug/L	ND	250	250	250	256	262	102	105	75-125	2	20
Molybdenum	ug/L	ND	250	250	250	241	249	97	100	75-125	3	20
Selenium	ug/L	ND	250	250	250	246	256	98	102	75-125	4	20
Thallium	ug/L	ND	50	50	50	48.9	51.0	98	102	75-125	4	20

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92472807

QC Batch:	535634	Analysis Method:	SM 2540C-2011
QC Batch Method:	SM 2540C-2011	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Asheville
Associated Lab Samples:	92472807001		

METHOD BLANK: 2857992 Matrix: Water

Associated Lab Samples: 92472807001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	04/10/20 16:21	

LABORATORY CONTROL SAMPLE: 2857993

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	251	254	101	90-110	

SAMPLE DUPLICATE: 2857994

Parameter	Units	92472619001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	193	201	4	25	

SAMPLE DUPLICATE: 2857995

Parameter	Units	92472792004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1720	1710	0	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR
Pace Project No.: 92472807

QC Batch:	535714	Analysis Method:	EPA 9056A
QC Batch Method:	EPA 9056A	Analysis Description:	9056 IC anions 28 Days
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92472807001

METHOD BLANK: 2858402 Matrix: Water

Associated Lab Samples: 92472807001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/11/20 16:23	
Fluoride	ug/L	ND	100	50.0	04/11/20 16:23	
Sulfate	mg/L	ND	1.0	0.50	04/11/20 16:23	

LABORATORY CONTROL SAMPLE: 2858403

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	49.2	98	90-110	
Fluoride	ug/L	2500	2600	104	90-110	
Sulfate	mg/L	50	50.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2858404 2858405

Parameter	Units	92472807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	27.1	50	50	77.9	79.7	102	105	90-110	2	10	
Fluoride	ug/L	ND	2500	2500	3010	3100	119	123	90-110	3	10	M1
Sulfate	mg/L	60.5	50	50	102	103	83	86	90-110	1	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2858406 2858407

Parameter	Units	2630821006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.8	50	50	54.3	54.6	105	106	90-110	0	10	
Fluoride	ug/L	ND	2500	2500	2930	2960	114	115	90-110	1	10	M1
Sulfate	mg/L	3.7	50	50	57.2	57.3	107	107	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92472807

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.

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy CCR

Pace Project No.: 92472807

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92472807001	ED-22RA-20200407	EPA 3010A	535206	EPA 6020B	535223
92472807001	ED-22RA-20200407	EPA 7470A	535804	EPA 7470A	535863
92472807001	ED-22RA-20200407	SM 2540C-2011	535634		
92472807001	ED-22RA-20200407	EPA 9056A	535714		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	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:

Hickory Aldrich

Project #:

WO# : 92472807



92472807

Date/Initials Person Examining Contents: *mg 4-8-20*

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other:

Custody Seal Present? ☐ Yes ☐ No ☒ No
 Seals Intact? ☐ Yes ☒ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer:

☒ IR Gun ID: 92T061

Type of Ice: ☒ Wet ☐ Blue ☐ None

Biological Tissue Frozen?

☐ Yes ☐ No ☒ N/A

Cooler Temp (°C): 2.4 Correction Factor: Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 2.5

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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? ☒ Yes ☐ No ☐ N/A

1.

Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A

2.

Short Hold Time Analysis (<72 hr.)? ☐ Yes ☒ No ☐ N/A

3.

Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A

4.

Sufficient Volume? ☒ Yes ☐ No ☐ N/A

5.

Correct Containers Used? ☐ Yes ☐ No ☐ N/A

6.

-Pace Containers Used? ☒ Yes ☐ No ☐ N/A

Containers Intact? ☒ Yes ☐ No ☐ N/A

7.

Dissolved analysis: Samples Field Filtered? ☐ Yes ☐ No ☒ N/A

8.

Sample Labels Match CQC? ☒ Yes ☐ No ☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: *WT*

Headspace in VOA Vials (>5.6mm)? ☐ Yes ☐ No ☒ N/A

10.

Trip Blank Present? ☐ Yes ☒ No ☐ N/A

11.

Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ 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:

Date:

Project Manager SRF Review:

Date:

*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# : 92472807

PM: PTE

Due Date: 04/29/20

CLIENT: 92-Haley VA

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 Na2SO3 (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)	SPST-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																												
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.

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A

Required Client Information:

Company: Haley & Aldrich, Inc.

Address: 1 Park West Circle

Suite 208, Midlothian, VA 23114

E-mail to: ewright@haleyaldrich.com

Phone: 804-419-0012 Fax:

Requested Due Date/IAI: Standard

Inc., its subsidiaries and affiliates

lytical Services, Inc.

Requested Analysis Filtered (Y/N)

1

Section C

Invoice Information

Attention:

Company Name:

Address:

Pace Quote
Reference:

Pace Project Manager:

Face Profile: 1

—

[illegible]

Requested Analysis Filtered (Y/N)

1

220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy) b6
b7C

1700 Elm Street SE - Minneapolis, MN 55414

7726 Moller Road - Indianapolis, IN 46268

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER

☐ UST	☐ RCRA
------------------------------	-------------------------------

Site Location

STATE: VA

Analysis Filtered (Y/N)

[illegible]

April 20, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy VSWMR-Revised Report
Pace Project No.: 92473016

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 09, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473016001	ED-23R-20200408	Water	04/08/20 10:36	04/09/20 09:25
92473016002	ES-3D-20200408	Water	04/08/20 12:16	04/09/20 09:25
92473016003	ES-1609-20200408	Water	04/08/20 13:31	04/09/20 09:25
92473016004	ES-1613-20200408	Water	04/08/20 14:46	04/09/20 09:25

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473016001	ED-23R-20200408	EPA 6020B	BG2	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A
92473016002	ES-3D-20200408	EPA 6020B	BG2	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A
92473016003	ES-1609-20200408	EPA 6020B	BG2	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A
92473016004	ES-1613-20200408	EPA 6020B	BG2	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473016001	ED-23R-20200408					
EPA 6020B	Copper	0.49J	ug/L	0.50	04/14/20 23:22	
EPA 6020B	Iron	5120	ug/L	50.0	04/14/20 23:22	
EPA 6020B	Manganese	68.3	ug/L	0.50	04/14/20 23:22	
EPA 6020B	Nickel	0.48J	ug/L	0.50	04/14/20 23:22	
EPA 6020B	Potassium	5530	ug/L	50.0	04/14/20 23:22	
EPA 6020B	Silver	1.2	ug/L	0.40	04/14/20 23:22	
EPA 6020B	Sodium	4530	ug/L	250	04/14/20 23:22	
EPA 6020B	Tin	0.093J	ug/L	0.50	04/14/20 23:22	
EPA 6020B	Hardness, Total(SM 2340B)	17900	ug/L	541	04/14/20 23:22	
EPA 6020B	Zinc	2.2J	ug/L	5.0	04/14/20 23:22	
92473016002	ES-3D-20200408					
EPA 6020B	Copper	2.4	ug/L	0.50	04/14/20 23:27	
EPA 6020B	Iron	5540	ug/L	50.0	04/14/20 23:27	
EPA 6020B	Manganese	857	ug/L	50.0	04/16/20 14:10	
EPA 6020B	Nickel	26.4	ug/L	0.50	04/14/20 23:27	
EPA 6020B	Potassium	3590	ug/L	50.0	04/14/20 23:27	
EPA 6020B	Sodium	75600	ug/L	25000	04/16/20 14:10	
EPA 6020B	Hardness, Total(SM 2340B)	53000J	ug/L	54100	04/16/20 14:10	
EPA 6020B	Vanadium	1.1	ug/L	0.30	04/14/20 23:27	
EPA 6020B	Zinc	203	ug/L	5.0	04/14/20 23:27	
SM 5310B-2011	Nonpurgeable Organic Carbon	0.80J	mg/L	1.0	04/15/20 15:41	
92473016003	ES-1609-20200408					
EPA 6020B	Iron	19500	ug/L	50.0	04/14/20 23:38	
EPA 6020B	Manganese	774	ug/L	50.0	04/16/20 14:16	
EPA 6020B	Nickel	15.5	ug/L	0.50	04/14/20 23:38	
EPA 6020B	Potassium	6620	ug/L	50.0	04/14/20 23:38	
EPA 6020B	Sodium	107000	ug/L	25000	04/16/20 14:16	
EPA 6020B	Hardness, Total(SM 2340B)	120000	ug/L	54100	04/16/20 14:16	
EPA 6020B	Zinc	31.6	ug/L	5.0	04/14/20 23:38	
92473016004	ES-1613-20200408					
EPA 6020B	Iron	35700	ug/L	50.0	04/14/20 23:49	
EPA 6020B	Manganese	917	ug/L	25.0	04/16/20 14:21	
EPA 6020B	Nickel	6.3	ug/L	0.50	04/14/20 23:49	
EPA 6020B	Potassium	6210	ug/L	50.0	04/14/20 23:49	
EPA 6020B	Silver	0.61	ug/L	0.40	04/14/20 23:49	
EPA 6020B	Sodium	55200	ug/L	12500	04/16/20 14:21	
EPA 6020B	Hardness, Total(SM 2340B)	175000	ug/L	27000	04/16/20 14:21	
EPA 6020B	Vanadium	0.15J	ug/L	0.30	04/14/20 23:49	
EPA 6020B	Zinc	5.5	ug/L	5.0	04/14/20 23:49	
SM 5310B-2011	Nonpurgeable Organic Carbon	0.73J	mg/L	1.0	04/15/20 16:35	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Sample: ED-23R-20200408		Lab ID: 92473016001		Collected: 04/08/20 10:36		Received: 04/09/20 09:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	0.49J	ug/L	0.50	0.23	1	04/14/20 00:54	04/14/20 23:22	7440-50-8	
Iron	5120	ug/L	50.0	7.5	1	04/14/20 00:54	04/14/20 23:22	7439-89-6	
Manganese	68.3	ug/L	0.50	0.14	1	04/14/20 00:54	04/14/20 23:22	7439-96-5	
Nickel	0.48J	ug/L	0.50	0.11	1	04/14/20 00:54	04/14/20 23:22	7440-02-0	
Potassium	5530	ug/L	50.0	6.2	1	04/14/20 00:54	04/14/20 23:22	7440-09-7	
Silver	1.2	ug/L	0.40	0.050	1	04/14/20 00:54	04/14/20 23:22	7440-22-4	
Sodium	4530	ug/L	250	14.3	1	04/14/20 00:54	04/14/20 23:22	7440-23-5	
Tin	0.093J	ug/L	0.50	0.090	1	04/14/20 00:54	04/14/20 23:22	7440-31-5	
Hardness, Total(SM 2340B)	17900	ug/L	541	70.1	1	04/14/20 00:54	04/14/20 23:22		
Vanadium	ND	ug/L	0.30	0.12	1	04/14/20 00:54	04/14/20 23:22	7440-62-2	
Zinc	2.2J	ug/L	5.0	1.1	1	04/14/20 00:54	04/14/20 23:22	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/15/20 07:50	04/15/20 16:42	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	ND	mg/L	1.0	0.50	1		04/15/20 14:10	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Sample: ES-3D-20200408		Lab ID: 92473016002		Collected: 04/08/20 12:16		Received: 04/09/20 09:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	2.4	ug/L	0.50	0.23	1	04/14/20 00:54	04/14/20 23:27	7440-50-8	
Iron	5540	ug/L	50.0	7.5	1	04/14/20 00:54	04/14/20 23:27	7439-89-6	
Manganese	857	ug/L	50.0	14.0	100	04/14/20 00:54	04/16/20 14:10	7439-96-5	
Nickel	26.4	ug/L	0.50	0.11	1	04/14/20 00:54	04/14/20 23:27	7440-02-0	
Potassium	3590	ug/L	50.0	6.2	1	04/14/20 00:54	04/14/20 23:27	7440-09-7	
Silver	ND	ug/L	0.40	0.050	1	04/14/20 00:54	04/14/20 23:27	7440-22-4	
Sodium	75600	ug/L	25000	1430	100	04/14/20 00:54	04/16/20 14:10	7440-23-5	
Tin	ND	ug/L	0.50	0.090	1	04/14/20 00:54	04/14/20 23:27	7440-31-5	
Hardness, Total(SM 2340B)	53000J	ug/L	54100	7010	100	04/14/20 00:54	04/16/20 14:10		
Vanadium	1.1	ug/L	0.30	0.12	1	04/14/20 00:54	04/14/20 23:27	7440-62-2	
Zinc	203	ug/L	5.0	1.1	1	04/14/20 00:54	04/14/20 23:27	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/15/20 07:50	04/15/20 16:44	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	0.80J	mg/L	1.0	0.50	1		04/15/20 15:41	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Sample: ES-1609-20200408		Lab ID: 92473016003		Collected: 04/08/20 13:31		Received: 04/09/20 09:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	ND	ug/L	0.50	0.23	1	04/14/20 00:54	04/14/20 23:38	7440-50-8	
Iron	19500	ug/L	50.0	7.5	1	04/14/20 00:54	04/14/20 23:38	7439-89-6	
Manganese	774	ug/L	50.0	14.0	100	04/14/20 00:54	04/16/20 14:16	7439-96-5	
Nickel	15.5	ug/L	0.50	0.11	1	04/14/20 00:54	04/14/20 23:38	7440-02-0	
Potassium	6620	ug/L	50.0	6.2	1	04/14/20 00:54	04/14/20 23:38	7440-09-7	
Silver	ND	ug/L	0.40	0.050	1	04/14/20 00:54	04/14/20 23:38	7440-22-4	
Sodium	107000	ug/L	25000	1430	100	04/14/20 00:54	04/16/20 14:16	7440-23-5	
Tin	ND	ug/L	0.50	0.090	1	04/14/20 00:54	04/14/20 23:38	7440-31-5	
Hardness, Total(SM 2340B)	120000	ug/L	54100	7010	100	04/14/20 00:54	04/16/20 14:16		
Vanadium	ND	ug/L	0.30	0.12	1	04/14/20 00:54	04/14/20 23:38	7440-62-2	
Zinc	31.6	ug/L	5.0	1.1	1	04/14/20 00:54	04/14/20 23:38	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/15/20 07:50	04/15/20 16:47	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	ND	mg/L	1.0	0.50	1		04/15/20 16:05	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Sample: ES-1613-20200408		Lab ID: 92473016004		Collected: 04/08/20 14:46		Received: 04/09/20 09:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	ND	ug/L	0.50	0.23	1	04/14/20 00:54	04/14/20 23:49	7440-50-8	
Iron	35700	ug/L	50.0	7.5	1	04/14/20 00:54	04/14/20 23:49	7439-89-6	
Manganese	917	ug/L	25.0	7.0	50	04/14/20 00:54	04/16/20 14:21	7439-96-5	
Nickel	6.3	ug/L	0.50	0.11	1	04/14/20 00:54	04/14/20 23:49	7440-02-0	
Potassium	6210	ug/L	50.0	6.2	1	04/14/20 00:54	04/14/20 23:49	7440-09-7	
Silver	0.61	ug/L	0.40	0.050	1	04/14/20 00:54	04/14/20 23:49	7440-22-4	
Sodium	55200	ug/L	12500	714	50	04/14/20 00:54	04/16/20 14:21	7440-23-5	
Tin	ND	ug/L	0.50	0.090	1	04/14/20 00:54	04/14/20 23:49	7440-31-5	
Hardness, Total(SM 2340B)	175000	ug/L	27000	3500	50	04/14/20 00:54	04/16/20 14:21		
Vanadium	0.15J	ug/L	0.30	0.12	1	04/14/20 00:54	04/14/20 23:49	7440-62-2	
Zinc	5.5	ug/L	5.0	1.1	1	04/14/20 00:54	04/14/20 23:49	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/15/20 07:50	04/15/20 16:48	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	0.73J	mg/L	1.0	0.50	1		04/15/20 16:35	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

QC Batch:	535965	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473016001, 92473016002, 92473016003, 92473016004

METHOD BLANK: 2859498 Matrix: Water

Associated Lab Samples: 92473016001, 92473016002, 92473016003, 92473016004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Copper	ug/L	ND	0.50	0.23	04/14/20 21:46	
Hardness, Total(SM 2340B)	ug/L	ND	541	70.1	04/14/20 21:46	
Iron	ug/L	ND	50.0	7.5	04/14/20 21:46	
Manganese	ug/L	ND	0.50	0.14	04/14/20 21:46	
Nickel	ug/L	ND	0.50	0.11	04/14/20 21:46	
Potassium	ug/L	9.9J	50.0	6.2	04/14/20 21:46	
Silver	ug/L	ND	0.40	0.050	04/14/20 21:46	
Sodium	ug/L	ND	250	14.3	04/14/20 21:46	
Tin	ug/L	ND	0.50	0.090	04/14/20 21:46	
Vanadium	ug/L	ND	0.30	0.12	04/14/20 21:46	
Zinc	ug/L	ND	5.0	1.1	04/14/20 21:46	

LABORATORY CONTROL SAMPLE: 2859499

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	50	51.0	102	80-120	
Hardness, Total(SM 2340B)	ug/L		4140			
Iron	ug/L	625	637	102	80-120	
Manganese	ug/L	50	49.4	99	80-120	
Nickel	ug/L	50	49.7	99	80-120	
Potassium	ug/L	625	619	99	80-120	
Silver	ug/L	25	24.2	97	80-120	
Sodium	ug/L	625	625	100	80-120	
Tin	ug/L	50	48.9	98	80-120	
Vanadium	ug/L	50	49.9	100	80-120	
Zinc	ug/L	50	50.1	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2859500 2859501

Parameter	Units	92473135001	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual
		Result	Spike Conc.	Spike Conc.							
Copper	ug/L	5.8	50	50	55.1	55.6	99	100	75-125	1	20
Hardness, Total(SM 2340B)	ug/L	40400			42500	42900				1	20
Iron	ug/L	143	625	625	767	771	100	101	75-125	1	20
Manganese	ug/L	3.8	50	50	51.9	51.8	96	96	75-125	0	20
Nickel	ug/L	0.30J	50	50	48.9	49.0	97	97	75-125	0	20
Potassium	ug/L	2250	625	625	2770	2780	83	86	75-125	1	20

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2859500 2859501												
Parameter	Units	92473135001 Result	MS		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.								
Silver	ug/L	ND	25	25	23.5	23.9	94	96	75-125	2	20	
Tin	ug/L	6.7	50	50	53.8	54.3	94	95	75-125	1	20	
Vanadium	ug/L	1.1	50	50	51.0	51.6	100	101	75-125	1	20	
Zinc	ug/L	4.0J	50	50	56.8	54.8	106	102	75-125	4	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

QC Batch:	536101	Analysis Method:	EPA 420.4 Rev 1.0 1993
QC Batch Method:	EPA 420.4 Rev 1.0 1993	Analysis Description:	420.4 Phenolics
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473016001, 92473016002, 92473016003, 92473016004

METHOD BLANK: 2860123 Matrix: Water
Associated Lab Samples: 92473016001, 92473016002, 92473016003, 92473016004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenol	mg/L	ND	0.020	0.0050	04/15/20 16:37	

LABORATORY CONTROL SAMPLE: 2860124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	mg/L	0.05	0.048	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860125 2860126

Parameter	Units	92472806001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.044	0.049	87	98	90-110	12	10	M1, R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860127 2860128

Parameter	Units	92473016001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.049	0.051	90	94	90-110	3	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

QC Batch:	536300	Analysis Method:	SM 5310B-2011
QC Batch Method:	SM 5310B-2011	Analysis Description:	5310B WVA Nonpurgeable Organic Carbon
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473016001, 92473016002, 92473016003, 92473016004

METHOD BLANK: 2860785 Matrix: Water

Associated Lab Samples: 92473016001, 92473016002, 92473016003, 92473016004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nonpurgeable Organic Carbon	mg/L	ND	1.0	0.50	04/15/20 13:21	

LABORATORY CONTROL SAMPLE: 2860786

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nonpurgeable Organic Carbon	mg/L	25	24.4	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860787 2860788

Parameter	Units	92473016001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	ND	25	25	24.4	24.5	97	97	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860789 2860790

Parameter	Units	92473553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	ND	25	25	24.8	24.9	98	99	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy VSWMR-Revised Report
Pace Project No.: 92473016

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.

ANALYTE QUALIFIERS

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

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy VSWMR-Revised Report

Pace Project No.: 92473016

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473016001	ED-23R-20200408	EPA 3010A	535965	EPA 6020B	535984
92473016002	ES-3D-20200408	EPA 3010A	535965	EPA 6020B	535984
92473016003	ES-1609-20200408	EPA 3010A	535965	EPA 6020B	535984
92473016004	ES-1613-20200408	EPA 3010A	535965	EPA 6020B	535984
92473016001	ED-23R-20200408	EPA 420.4 Rev 1.0 1993	536101	EPA 420.4 Rev 1.0 1993	536271
92473016002	ES-3D-20200408	EPA 420.4 Rev 1.0 1993	536101	EPA 420.4 Rev 1.0 1993	536271
92473016003	ES-1609-20200408	EPA 420.4 Rev 1.0 1993	536101	EPA 420.4 Rev 1.0 1993	536271
92473016004	ES-1613-20200408	EPA 420.4 Rev 1.0 1993	536101	EPA 420.4 Rev 1.0 1993	536271
92473016001	ED-23R-20200408	SM 5310B-2011	536300		
92473016002	ES-3D-20200408	SM 5310B-2011	536300		
92473016003	ES-1609-20200408	SM 5310B-2011	536300		
92473016004	ES-1613-20200408	SM 5310B-2011	536300		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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: Haley & Aldrich Project #

WO#: 92473016



92473016

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other: _____

Custody Seal Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Date/Initials Person Examining Contents: EH 4/9/20

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer: ☒ IR Gun ID: 92T061 Type of Ice: ☒ Wet ☐ Blue ☐ None

Biological Tissue Frozen?
☐ Yes ☐ No ☒ N/A

Cooler Temp (°C): 0.3, 1.3 Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): 0.4, 1.4

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

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

	Comments/Discrepancy:
Chain of Custody Present? ☒ Yes ☐ No ☐ N/A	1.
Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A	2.
Short Hold Time Analysis (<72 hr.)? ☐ Yes ☒ No ☐ N/A	3.
Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A	4.
Sufficient Volume? ☒ Yes ☐ No ☐ N/A	5.
Correct Containers Used? ☒ Yes ☐ No ☐ N/A	6.
-Pace Containers Used? ☒ Yes ☐ No ☐ N/A	
Containers Intact? ☒ Yes ☐ No ☐ N/A	7.
Dissolved analysis: Samples Field Filtered? ☐ Yes ☐ No ☒ N/A	8.
Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
Headspace in VOA Vials (>5.6mm)? ☐ Yes ☒ No ☐ N/A	10.
Trip Blank Present? ☐ Yes ☐ No ☒ N/A	11.
Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ 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: _____ Date: _____

Project Manager SRF Review: _____ Date: _____

*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 #

W0# : 92473016

PM: PTE

Due Date: 04/23/20

CLIENT: 92-Haley VA

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)-503S 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)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																												
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.

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

[illegible]

April 17, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92473019

Dear Andy Gerringer:

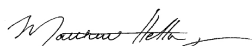
Enclosed are the analytical results for sample(s) received by the laboratory on April 09, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Matthew Helton for
Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92473019

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92473019

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473019001	ED-23R-20200408	Water	04/08/20 10:36	04/09/20 09:25
92473019002	ES-3D-20200408	Water	04/08/20 12:16	04/09/20 09:25
92473019003	ES-1609-20200408	Water	04/08/20 13:31	04/09/20 09:25
92473019004	ES-1613-20200408	Water	04/08/20 14:46	04/09/20 09:25

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92473019

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473019001	ED-23R-20200408	EPA 6020B	BG2	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	NAL	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A
92473019002	ES-3D-20200408	EPA 6020B	BG2, JOR	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	NAL	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A
92473019003	ES-1609-20200408	EPA 6020B	BG2	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	NAL	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A
92473019004	ES-1613-20200408	EPA 6020B	BG2	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	NAL	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92473019

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473019001	ED-23R-20200408					
EPA 6020B	Arsenic	0.14	ug/L	0.10	04/15/20 00:00	
EPA 6020B	Barium	27.7	ug/L	0.30	04/15/20 00:00	
EPA 6020B	Beryllium	0.11	ug/L	0.10	04/15/20 00:00	
EPA 6020B	Boron	18.1J	ug/L	25.0	04/15/20 00:00	
EPA 6020B	Calcium	3660	ug/L	200	04/15/20 00:00	
EPA 6020B	Cobalt	0.054J	ug/L	0.10	04/15/20 00:00	
EPA 6020B	Lithium	8.2	ug/L	2.5	04/15/20 00:00	
SM 2540C-2011	Total Dissolved Solids	100	mg/L	25.0	04/12/20 16:56	
EPA 9056A	Chloride	2.8	mg/L	1.0	04/11/20 17:38	
EPA 9056A	Fluoride	315	ug/L	100	04/11/20 17:38	
EPA 9056A	Sulfate	5.6	mg/L	1.0	04/11/20 17:38	
92473019002	ES-3D-20200408					
EPA 6020B	Antimony	0.16J	ug/L	0.50	04/15/20 00:05	
EPA 6020B	Arsenic	0.71	ug/L	0.10	04/15/20 00:05	
EPA 6020B	Barium	47.0	ug/L	0.30	04/15/20 00:05	
EPA 6020B	Beryllium	0.76	ug/L	0.10	04/15/20 00:05	
EPA 6020B	Boron	732	ug/L	250	04/16/20 14:26	
EPA 6020B	Cadmium	0.79	ug/L	0.080	04/15/20 00:05	
EPA 6020B	Calcium	15000	ug/L	2000	04/16/20 00:18	
EPA 6020B	Chromium	0.55	ug/L	0.50	04/15/20 00:05	
EPA 6020B	Cobalt	35.3	ug/L	0.10	04/15/20 00:05	
EPA 6020B	Lead	0.051J	ug/L	0.10	04/15/20 00:05	
EPA 6020B	Lithium	16.9	ug/L	2.5	04/15/20 00:05	
EPA 6020B	Molybdenum	0.17J	ug/L	0.50	04/15/20 00:05	
EPA 6020B	Selenium	0.20J	ug/L	0.50	04/15/20 00:05	
SM 2540C-2011	Total Dissolved Solids	407	mg/L	25.0	04/12/20 16:56	
EPA 9056A	Chloride	92.6	mg/L	1.0	04/11/20 17:53	
EPA 9056A	Fluoride	221	ug/L	100	04/11/20 17:53	
EPA 9056A	Sulfate	114	mg/L	2.0	04/12/20 09:42	
92473019003	ES-1609-20200408					
EPA 6020B	Arsenic	0.39	ug/L	0.10	04/15/20 00:27	
EPA 6020B	Barium	84.1	ug/L	0.30	04/15/20 00:27	
EPA 6020B	Beryllium	1.0	ug/L	0.10	04/15/20 00:27	
EPA 6020B	Boron	1160	ug/L	500	04/16/20 14:32	
EPA 6020B	Calcium	22700	ug/L	4000	04/16/20 14:32	
EPA 6020B	Cobalt	21.8	ug/L	0.10	04/15/20 00:27	
EPA 6020B	Lithium	13.0	ug/L	2.5	04/15/20 00:27	
EPA 6020B	Thallium	0.067J	ug/L	0.10	04/15/20 00:27	
SM 2540C-2011	Total Dissolved Solids	504	mg/L	25.0	04/12/20 16:56	
EPA 9056A	Chloride	190	mg/L	4.0	04/12/20 09:57	
EPA 9056A	Fluoride	74.0J	ug/L	100	04/11/20 18:08	
EPA 9056A	Sulfate	86.1	mg/L	1.0	04/11/20 18:08	
92473019004	ES-1613-20200408					
EPA 6020B	Arsenic	0.28	ug/L	0.10	04/15/20 00:37	
EPA 6020B	Barium	160	ug/L	0.30	04/15/20 00:37	
EPA 6020B	Beryllium	0.35	ug/L	0.10	04/15/20 00:37	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92473019

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473019004	ES-1613-20200408					
EPA 6020B	Boron	2200	ug/L	750	04/16/20 14:37	
EPA 6020B	Calcium	36000	ug/L	6000	04/16/20 14:37	
EPA 6020B	Cobalt	4.8	ug/L	0.10	04/15/20 00:37	
EPA 6020B	Lead	0.078J	ug/L	0.10	04/15/20 00:37	
EPA 6020B	Lithium	20.1	ug/L	2.5	04/15/20 00:37	
SM 2540C-2011	Total Dissolved Solids	516	mg/L	25.0	04/12/20 16:56	
EPA 9056A	Chloride	157	mg/L	3.0	04/12/20 10:13	
EPA 9056A	Fluoride	144	ug/L	100	04/11/20 18:23	
EPA 9056A	Sulfate	96.6	mg/L	1.0	04/11/20 18:23	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473019

Sample: ED-23R-20200408		Lab ID: 92473019001		Collected: 04/08/20 10:36		Received: 04/09/20 09:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Antimony	ND	ug/L	0.50	0.11	1	04/14/20 00:54	04/15/20 00:00	7440-36-0	
Arsenic	0.14	ug/L	0.10	0.060	1	04/14/20 00:54	04/15/20 00:00	7440-38-2	
Barium	27.7	ug/L	0.30	0.060	1	04/14/20 00:54	04/15/20 00:00	7440-39-3	
Beryllium	0.11	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:00	7440-41-7	
Boron	18.1J	ug/L	25.0	2.6	1	04/14/20 00:54	04/15/20 00:00	7440-42-8	
Cadmium	ND	ug/L	0.080	0.070	1	04/14/20 00:54	04/15/20 00:00	7440-43-9	
Calcium	3660	ug/L	200	20.6	1	04/14/20 00:54	04/15/20 00:00	7440-70-2	
Chromium	ND	ug/L	0.50	0.42	1	04/14/20 00:54	04/15/20 00:00	7440-47-3	
Cobalt	0.054J	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:00	7440-48-4	
Lead	ND	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:00	7439-92-1	
Lithium	8.2	ug/L	2.5	0.42	1	04/14/20 00:54	04/15/20 00:00	7439-93-2	
Molybdenum	ND	ug/L	0.50	0.10	1	04/14/20 00:54	04/15/20 00:00	7439-98-7	
Selenium	ND	ug/L	0.50	0.080	1	04/14/20 00:54	04/15/20 00:00	7782-49-2	
Thallium	ND	ug/L	0.10	0.060	1	04/14/20 00:54	04/15/20 00:00	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville							
Mercury	ND	ug/L	0.20	0.10	1	04/13/20 12:47	04/14/20 19:05	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville							
Total Dissolved Solids	100	mg/L	25.0	25.0	1		04/12/20 16:56		
9056 IC anions 28 Days		Analytical Method: EPA 9056A Pace Analytical Services - Asheville							
Chloride	2.8	mg/L	1.0	0.60	1		04/11/20 17:38	16887-00-6	
Fluoride	315	ug/L	100	50.0	1		04/11/20 17:38	16984-48-8	
Sulfate	5.6	mg/L	1.0	0.50	1		04/11/20 17:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473019

Sample: ES-3D-20200408		Lab ID: 92473019002		Collected: 04/08/20 12:16		Received: 04/09/20 09:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Antimony	0.16J	ug/L	0.50	0.11	1	04/14/20 00:54	04/15/20 00:05	7440-36-0	
Arsenic	0.71	ug/L	0.10	0.060	1	04/14/20 00:54	04/15/20 00:05	7440-38-2	
Barium	47.0	ug/L	0.30	0.060	1	04/14/20 00:54	04/15/20 00:05	7440-39-3	
Beryllium	0.76	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:05	7440-41-7	
Boron	732	ug/L	250	25.5	10	04/14/20 00:54	04/16/20 14:26	7440-42-8	
Cadmium	0.79	ug/L	0.080	0.070	1	04/14/20 00:54	04/15/20 00:05	7440-43-9	
Calcium	15000	ug/L	2000	206	10	04/14/20 00:54	04/16/20 00:18	7440-70-2	
Chromium	0.55	ug/L	0.50	0.42	1	04/14/20 00:54	04/15/20 00:05	7440-47-3	
Cobalt	35.3	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:05	7440-48-4	
Lead	0.051J	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:05	7439-92-1	
Lithium	16.9	ug/L	2.5	0.42	1	04/14/20 00:54	04/15/20 00:05	7439-93-2	
Molybdenum	0.17J	ug/L	0.50	0.10	1	04/14/20 00:54	04/15/20 00:05	7439-98-7	
Selenium	0.20J	ug/L	0.50	0.080	1	04/14/20 00:54	04/15/20 00:05	7782-49-2	
Thallium	ND	ug/L	0.10	0.060	1	04/14/20 00:54	04/15/20 00:05	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville							
Mercury	ND	ug/L	0.20	0.10	1	04/13/20 12:47	04/14/20 19:13	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville							
Total Dissolved Solids	407	mg/L	25.0	25.0	1		04/12/20 16:56		
9056 IC anions 28 Days		Analytical Method: EPA 9056A Pace Analytical Services - Asheville							
Chloride	92.6	mg/L	1.0	0.60	1		04/11/20 17:53	16887-00-6	
Fluoride	221	ug/L	100	50.0	1		04/11/20 17:53	16984-48-8	
Sulfate	114	mg/L	2.0	1.0	2		04/12/20 09:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473019

Sample: ES-1609-20200408 Lab ID: 92473019003 Collected: 04/08/20 13:31 Received: 04/09/20 09:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Antimony	ND	ug/L	0.50	0.11	1	04/14/20 00:54	04/15/20 00:27	7440-36-0	
Arsenic	0.39	ug/L	0.10	0.060	1	04/14/20 00:54	04/15/20 00:27	7440-38-2	
Barium	84.1	ug/L	0.30	0.060	1	04/14/20 00:54	04/15/20 00:27	7440-39-3	
Beryllium	1.0	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:27	7440-41-7	
Boron	1160	ug/L	500	51.0	20	04/14/20 00:54	04/16/20 14:32	7440-42-8	
Cadmium	ND	ug/L	0.080	0.070	1	04/14/20 00:54	04/15/20 00:27	7440-43-9	
Calcium	22700	ug/L	4000	412	20	04/14/20 00:54	04/16/20 14:32	7440-70-2	
Chromium	ND	ug/L	0.50	0.42	1	04/14/20 00:54	04/15/20 00:27	7440-47-3	
Cobalt	21.8	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:27	7440-48-4	
Lead	ND	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:27	7439-92-1	
Lithium	13.0	ug/L	2.5	0.42	1	04/14/20 00:54	04/15/20 00:27	7439-93-2	
Molybdenum	ND	ug/L	0.50	0.10	1	04/14/20 00:54	04/15/20 00:27	7439-98-7	
Selenium	ND	ug/L	0.50	0.080	1	04/14/20 00:54	04/15/20 00:27	7782-49-2	
Thallium	0.067J	ug/L	0.10	0.060	1	04/14/20 00:54	04/15/20 00:27	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville									
Mercury	ND	ug/L	0.20	0.10	1	04/13/20 12:47	04/14/20 19:15	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville									
Total Dissolved Solids	504	mg/L	25.0	25.0	1		04/12/20 16:56		
9056 IC anions 28 Days Analytical Method: EPA 9056A Pace Analytical Services - Asheville									
Chloride	190	mg/L	4.0	2.4	4		04/12/20 09:57	16887-00-6	
Fluoride	74.0J	ug/L	100	50.0	1		04/11/20 18:08	16984-48-8	
Sulfate	86.1	mg/L	1.0	0.50	1		04/11/20 18:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473019

Sample: ES-1613-20200408 Lab ID: 92473019004 Collected: 04/08/20 14:46 Received: 04/09/20 09:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Antimony	ND	ug/L	0.50	0.11	1	04/14/20 00:54	04/15/20 00:37	7440-36-0	
Arsenic	0.28	ug/L	0.10	0.060	1	04/14/20 00:54	04/15/20 00:37	7440-38-2	
Barium	160	ug/L	0.30	0.060	1	04/14/20 00:54	04/15/20 00:37	7440-39-3	
Beryllium	0.35	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:37	7440-41-7	
Boron	2200	ug/L	750	76.5	30	04/14/20 00:54	04/16/20 14:37	7440-42-8	
Cadmium	ND	ug/L	0.080	0.070	1	04/14/20 00:54	04/15/20 00:37	7440-43-9	
Calcium	36000	ug/L	6000	619	30	04/14/20 00:54	04/16/20 14:37	7440-70-2	
Chromium	ND	ug/L	0.50	0.42	1	04/14/20 00:54	04/15/20 00:37	7440-47-3	
Cobalt	4.8	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:37	7440-48-4	
Lead	0.078J	ug/L	0.10	0.050	1	04/14/20 00:54	04/15/20 00:37	7439-92-1	
Lithium	20.1	ug/L	2.5	0.42	1	04/14/20 00:54	04/15/20 00:37	7439-93-2	
Molybdenum	ND	ug/L	0.50	0.10	1	04/14/20 00:54	04/15/20 00:37	7439-98-7	
Selenium	ND	ug/L	0.50	0.080	1	04/14/20 00:54	04/15/20 00:37	7782-49-2	
Thallium	ND	ug/L	0.10	0.060	1	04/14/20 00:54	04/15/20 00:37	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville									
Mercury	ND	ug/L	0.20	0.10	1	04/13/20 12:47	04/14/20 19:18	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville									
Total Dissolved Solids	516	mg/L	25.0	25.0	1		04/12/20 16:56		
9056 IC anions 28 Days Analytical Method: EPA 9056A Pace Analytical Services - Asheville									
Chloride	157	mg/L	3.0	1.8	3		04/12/20 10:13	16887-00-6	
Fluoride	144	ug/L	100	50.0	1		04/11/20 18:23	16984-48-8	
Sulfate	96.6	mg/L	1.0	0.50	1		04/11/20 18:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473019

QC Batch: 535804

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473019001, 92473019002, 92473019003, 92473019004

METHOD BLANK: 2858652

Matrix: Water

Associated Lab Samples: 92473019001, 92473019002, 92473019003, 92473019004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	04/14/20 18:34	

LABORATORY CONTROL SAMPLE: 2858653

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.6	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2858654 2858655

Parameter	Units	92472807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.5	2.4	101	98	75-125	3	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473019

QC Batch: 535965

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020 MET

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473019001, 92473019002, 92473019003, 92473019004

METHOD BLANK: 2859498

Matrix: Water

Associated Lab Samples: 92473019001, 92473019002, 92473019003, 92473019004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	0.50	0.11	04/14/20 21:46	
Arsenic	ug/L	ND	0.10	0.060	04/14/20 21:46	
Barium	ug/L	ND	0.30	0.060	04/14/20 21:46	
Beryllium	ug/L	ND	0.10	0.050	04/14/20 21:46	
Boron	ug/L	ND	25.0	2.6	04/14/20 21:46	
Cadmium	ug/L	ND	0.080	0.070	04/14/20 21:46	
Calcium	ug/L	ND	200	20.6	04/14/20 21:46	
Chromium	ug/L	ND	0.50	0.42	04/14/20 21:46	
Cobalt	ug/L	ND	0.10	0.050	04/14/20 21:46	
Lead	ug/L	ND	0.10	0.050	04/14/20 21:46	
Lithium	ug/L	ND	2.5	0.42	04/14/20 21:46	
Molybdenum	ug/L	ND	0.50	0.10	04/14/20 21:46	
Selenium	ug/L	ND	0.50	0.080	04/14/20 21:46	
Thallium	ug/L	ND	0.10	0.060	04/14/20 21:46	

LABORATORY CONTROL SAMPLE: 2859499

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	51.1	102	80-120	
Arsenic	ug/L	10	10.0	100	80-120	
Barium	ug/L	50	49.8	100	80-120	
Beryllium	ug/L	10	10	100	80-120	
Boron	ug/L	50	50.1	100	80-120	
Cadmium	ug/L	10	9.9	99	80-120	
Calcium	ug/L	625	629	101	80-120	
Chromium	ug/L	50	49.3	99	80-120	
Cobalt	ug/L	10	10	100	80-120	
Lead	ug/L	50	48.9	98	80-120	
Lithium	ug/L	50	49.3	99	80-120	
Molybdenum	ug/L	50	49.4	99	80-120	
Selenium	ug/L	50	49.0	98	80-120	
Thallium	ug/L	10	9.8	98	80-120	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473019

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2859500 2859501												
Parameter	Units	92473135001		MS	MSD	MS		MS	MSD	% Rec	Max	
		Result	Conc.	Spike	Spike	Result	Result	% Rec	% Rec	Limits	RPD	RPD
Antimony	ug/L	0.18J	50	50	50	50.8	50.8	101	101	75-125	0	20
Arsenic	ug/L	0.26	10	10	10	10.5	10.4	102	102	75-125	0	20
Barium	ug/L	16.4	50	50	50	65.5	66.3	98	100	75-125	1	20
Beryllium	ug/L	ND	10	10	10	9.8	10	98	99	75-125	1	20
Boron	ug/L	40.6	50	50	50	80.8	80.1	80	79	75-125	1	20
Cadmium	ug/L	ND	10	10	10	9.8	9.9	98	99	75-125	2	20
Chromium	ug/L	1.5	50	50	50	49.7	49.8	96	97	75-125	0	20
Cobalt	ug/L	0.078J	10	10	10	9.8	9.8	98	98	75-125	0	20
Lead	ug/L	0.21	50	50	50	47.9	48.7	95	97	75-125	2	20
Lithium	ug/L	1.2J	50	50	50	49.2	50.1	96	98	75-125	2	20
Molybdenum	ug/L	0.55	50	50	50	50.5	50.8	100	100	75-125	0	20
Selenium	ug/L	0.080J	50	50	50	47.8	48.1	95	96	75-125	1	20
Thallium	ug/L	ND	10	10	10	9.6	9.7	96	97	75-125	1	20

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473019

QC Batch: 535752

Analysis Method: SM 2540C-2011

QC Batch Method: SM 2540C-2011

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473019001, 92473019002, 92473019003, 92473019004

METHOD BLANK: 2858535

Matrix: Water

Associated Lab Samples: 92473019001, 92473019002, 92473019003, 92473019004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	04/12/20 16:56	

LABORATORY CONTROL SAMPLE: 2858536

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	251	266	106	90-110	

SAMPLE DUPLICATE: 2858537

Parameter	Units	92472792021 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1780	1780	0	25	

SAMPLE DUPLICATE: 2858538

Parameter	Units	92473043001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	640	630	2	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR
Pace Project No.: 92473019

QC Batch: 535714 Analysis Method: EPA 9056A
QC Batch Method: EPA 9056A Analysis Description: 9056 IC anions 28 Days
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92473019001, 92473019002, 92473019003, 92473019004

METHOD BLANK: 2858402 Matrix: Water
Associated Lab Samples: 92473019001, 92473019002, 92473019003, 92473019004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/11/20 16:23	
Fluoride	ug/L	ND	100	50.0	04/11/20 16:23	
Sulfate	mg/L	ND	1.0	0.50	04/11/20 16:23	

LABORATORY CONTROL SAMPLE: 2858403

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	49.2	98	90-110	
Fluoride	ug/L	2500	2600	104	90-110	
Sulfate	mg/L	50	50.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2858404 2858405

Parameter	Units	92472807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	27.1	50	50	77.9	79.7	102	105	90-110	2	10	
Fluoride	ug/L	ND	2500	2500	3010	3100	119	123	90-110	3	10 M1	
Sulfate	mg/L	60.5	50	50	102	103	83	86	90-110	1	10 M1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2858406 2858407

Parameter	Units	2630821006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.8	50	50	54.3	54.6	105	106	90-110	0	10	
Fluoride	ug/L	ND	2500	2500	2930	2960	114	115	90-110	1	10 M1	
Sulfate	mg/L	3.7	50	50	57.2	57.3	107	107	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92473019

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.

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy CCR

Pace Project No.: 92473019

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473019001	ED-23R-20200408	EPA 3010A	535965	EPA 6020B	535984
92473019002	ES-3D-20200408	EPA 3010A	535965	EPA 6020B	535984
92473019003	ES-1609-20200408	EPA 3010A	535965	EPA 6020B	535984
92473019004	ES-1613-20200408	EPA 3010A	535965	EPA 6020B	535984
92473019001	ED-23R-20200408	EPA 7470A	535804	EPA 7470A	535863
92473019002	ES-3D-20200408	EPA 7470A	535804	EPA 7470A	535863
92473019003	ES-1609-20200408	EPA 7470A	535804	EPA 7470A	535863
92473019004	ES-1613-20200408	EPA 7470A	535804	EPA 7470A	535863
92473019001	ED-23R-20200408	SM 2540C-2011	535752		
92473019002	ES-3D-20200408	SM 2540C-2011	535752		
92473019003	ES-1609-20200408	SM 2540C-2011	535752		
92473019004	ES-1613-20200408	SM 2540C-2011	535752		
92473019001	ED-23R-20200408	EPA 9056A	535714		
92473019002	ES-3D-20200408	EPA 9056A	535714		
92473019003	ES-1609-20200408	EPA 9056A	535714		
92473019004	ES-1613-20200408	EPA 9056A	535714		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

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

Laboratory receiving samples:

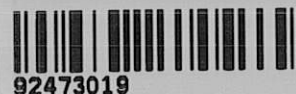
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☒ Raleigh ☐ Mechanicsville ☐

Sample Condition
Upon Receipt

Client Name:

Project #

WO# : 92473019



92473019

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other:

Custody Seal Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Date/Initials Person Examining Contents: EH 4/9/20

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer: ☒ IR Gun ID: 92T061 Type of Ice: ☒ Wet ☐ Blue ☐ None

Biological Tissue Frozen?

☐ Yes ☐ No ☒ N/A

Cooler Temp (°C): 0.3, 1.3 Correction Factor: Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 0.4, 1.4

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on Ice, cooling process has begun

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? ☒ Yes ☐ No ☐ N/A

1.

Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A

2.

Short Hold Time Analysis (<72 hr.)? ☐ Yes ☒ No ☐ N/A

3.

Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A

4.

Sufficient Volume? ☒ Yes ☐ No ☐ N/A

5.

Correct Containers Used? ☒ Yes ☐ No ☐ N/A

6.

-Pace Containers Used? ☒ Yes ☐ No ☐ N/A

Containers Intact? ☒ Yes ☐ No ☐ N/A

7.

Dissolved analysis: Samples Field Filtered? ☐ Yes ☐ No ☒ N/A

8.

Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: WT

Headspace in VOA Vials (>5.6mm)? ☐ Yes ☒ No ☐ N/A

10.

Trip Blank Present? ☐ Yes ☐ No ☒ N/A

11.

Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ 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: _____

Date: _____

Project Manager SRF Review: _____

Date: _____

*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# : 92473019

PM: PTE

Due Date: 04/30/20

CLIENT: 92-Haley VA

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 Na2SO3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-503S 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)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)	
1	/	/		/	/	/	/	/					/	/	/											/			
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.

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A										Section B										Section C									
Required Client Information:										Required Project Information:										Invoice Information:									
Company: Haley & Aldrich, Inc.										Report To: Wright, Erin										Attention:									
Address: 1 Park West Circle										Copy To: Chatterton, Kelly										Company Name:									
Suite 208, Midlothian, VA 23114										kchatterton@haleyvaldrich.com										Address:									
Email To: ewright@haleyvaldrich.com										BSA #: 2019-22-Pace										Pace Quote									
Phone: 804-419-0012 Fax:										H&A Client Name: Dominion Energy: Possum Point										Pace Project Reference:									
Requested Due Date/TAT: Standard										H&A Project #: 134660										Pace Profile #: TBD (9362?)									
Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.																													
Section D Required Client Information										Section E Matrix Codes										Section F Requested Analysis Filtered (Y/N)									
Matrix Codes MATRIX / CODE										MATRIX CODE (see valid codes to left)										SAMPLE TYPE (G=GRAB C=COMP)									
Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other										DW WT WW P SL OL WP AR TS OT																			
SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE										DATE										COLLECTED									
Collection Info										Sample Depth										Preservatives									
Start Depth (Circle: feet or inches)										End Depth (Circle: feet or inches)										Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ SO ₃ Methanol Other									
TIME										TIME										TIME									
DATE										DATE										DATE									
RELINQUISHED BY / AFFILIATION										DATE										DATE									
ADDITIONAL COMMENTS										TIME										TIME									
Appx III Anions & Metals List: boron, calcium, chloride, fluoride, and sulfate.										Haley & Aldrich 4-8-20 1730										Erick Harrison 4/9/20 925									
Appx IV Metals List: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, and molybdenum. and selenium + thallium																													
SAMPLER NAME AND SIGNATURE										DATE SIGNED (MM/DD/YY): 4-8-20										Samples Intact (Y/N)									
PRINT Name of SAMPLER: Andy Gerriener																				Sealed Cooler (Y/N)									
SIGNATURE OF SAMPLER:																				Temp in °C									

April 20, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92473551

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 14, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92473551

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92473551

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473551001	ED-24R-20200413	Water	04/13/20 15:30	04/14/20 09:55

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92473551

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473551001	ED-24R-20200413	EPA 6020B	JOR	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	JNS	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92473551

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473551001	ED-24R-20200413					
EPA 6020B	Barium	13.5	ug/L	1.5	04/16/20 19:50	M1
EPA 6020B	Calcium	1700	ug/L	1000	04/16/20 19:50	M1
EPA 6020B	Chromium	2.7	ug/L	2.5	04/16/20 19:50	
EPA 6020B	Cobalt	0.34J	ug/L	0.50	04/16/20 19:50	
SM 2540C-2011	Total Dissolved Solids	58.0	mg/L	25.0	04/17/20 16:16	
EPA 9056A	Chloride	2.3	mg/L	1.0	04/16/20 04:05	M1, R1
EPA 9056A	Fluoride	60.0J	ug/L	100	04/16/20 04:05	M1, R1
EPA 9056A	Sulfate	2.7	mg/L	1.0	04/16/20 04:05	M1, R1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473551

Sample: ED-24R-20200413 Lab ID: 92473551001 Collected: 04/13/20 15:30 Received: 04/14/20 09:55 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Antimony	ND	ug/L	2.5	0.55	5	04/15/20 01:08	04/16/20 19:50	7440-36-0	
Arsenic	ND	ug/L	0.50	0.30	5	04/15/20 01:08	04/16/20 19:50	7440-38-2	
Barium	13.5	ug/L	1.5	0.30	5	04/15/20 01:08	04/16/20 19:50	7440-39-3	M1
Beryllium	ND	ug/L	0.50	0.25	5	04/15/20 01:08	04/16/20 19:50	7440-41-7	
Boron	ND	ug/L	125	12.8	5	04/15/20 01:08	04/16/20 19:50	7440-42-8	M1
Cadmium	ND	ug/L	0.40	0.35	5	04/15/20 01:08	04/16/20 19:50	7440-43-9	
Calcium	1700	ug/L	1000	103	5	04/15/20 01:08	04/16/20 19:50	7440-70-2	M1
Chromium	2.7	ug/L	2.5	2.1	5	04/15/20 01:08	04/16/20 19:50	7440-47-3	
Cobalt	0.34J	ug/L	0.50	0.25	5	04/15/20 01:08	04/16/20 19:50	7440-48-4	
Lead	ND	ug/L	0.50	0.25	5	04/15/20 01:08	04/16/20 19:50	7439-92-1	M1
Lithium	ND	ug/L	12.5	2.1	5	04/15/20 01:08	04/16/20 19:50	7439-93-2	
Molybdenum	ND	ug/L	2.5	0.50	5	04/15/20 01:08	04/16/20 19:50	7439-98-7	
Selenium	ND	ug/L	2.5	0.40	5	04/15/20 01:08	04/16/20 19:50	7782-49-2	
Thallium	ND	ug/L	0.50	0.30	5	04/15/20 01:08	04/16/20 19:50	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville									
Mercury	ND	ug/L	0.20	0.10	1	04/20/20 10:40	04/20/20 15:55	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville									
Total Dissolved Solids	58.0	mg/L	25.0	25.0	1		04/17/20 16:16		
9056 IC anions 28 Days Analytical Method: EPA 9056A Pace Analytical Services - Asheville									
Chloride	2.3	mg/L	1.0	0.60	1		04/16/20 04:05	16887-00-6	M1,R1
Fluoride	60.0J	ug/L	100	50.0	1		04/16/20 04:05	16984-48-8	M1,R1
Sulfate	2.7	mg/L	1.0	0.50	1		04/16/20 04:05	14808-79-8	M1,R1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473551

QC Batch: 537073

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473551001

METHOD BLANK: 2864577

Matrix: Water

Associated Lab Samples: 92473551001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	04/20/20 15:50	

LABORATORY CONTROL SAMPLE: 2864578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.8	114	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864579 2864580

Parameter	Units	92473551001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.8	2.8	114	111	75-125	2	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR
Pace Project No.: 92473551

QC Batch: 536213	Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A	Analysis Description: 6020 MET
	Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473551001

METHOD BLANK: 2860598 Matrix: Water

Associated Lab Samples: 92473551001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.33J	0.50	0.11	04/16/20 17:06	BC
Arsenic	ug/L	ND	0.10	0.060	04/16/20 17:06	
Barium	ug/L	ND	0.30	0.060	04/16/20 17:06	
Beryllium	ug/L	ND	0.10	0.050	04/16/20 17:06	
Boron	ug/L	ND	25.0	2.6	04/16/20 17:06	
Cadmium	ug/L	ND	0.080	0.070	04/16/20 17:06	
Calcium	ug/L	ND	200	20.6	04/16/20 17:06	
Chromium	ug/L	ND	0.50	0.42	04/16/20 17:06	
Cobalt	ug/L	ND	0.10	0.050	04/16/20 17:06	
Lead	ug/L	ND	0.10	0.050	04/16/20 17:06	
Lithium	ug/L	ND	2.5	0.42	04/16/20 17:06	
Molybdenum	ug/L	ND	0.50	0.10	04/16/20 17:06	
Selenium	ug/L	ND	0.50	0.080	04/16/20 17:06	
Thallium	ug/L	ND	0.10	0.060	04/16/20 17:06	

LABORATORY CONTROL SAMPLE: 2860599

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	53.1	106	80-120	
Arsenic	ug/L	10	10.3	103	80-120	
Barium	ug/L	50	50.9	102	80-120	
Beryllium	ug/L	10	10.0	100	80-120	
Boron	ug/L	50	49.7	99	80-120	
Cadmium	ug/L	10	10.3	103	80-120	
Calcium	ug/L	625	634	102	80-120	
Chromium	ug/L	50	51.0	102	80-120	
Cobalt	ug/L	10	10.1	101	80-120	
Lead	ug/L	50	50.6	101	80-120	
Lithium	ug/L	50	50.3	101	80-120	
Molybdenum	ug/L	50	50.4	101	80-120	
Selenium	ug/L	50	51.5	103	80-120	
Thallium	ug/L	10	10.3	103	80-120	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473551

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:			2860600		2860601								
Parameter	Units	92473551001	MS	MSD	MS	MSD	MS	MSD	% Rec	Limits	RPD	Max	Qual
		Result	Spike	Spike									
Antimony	ug/L	ND	50	50	40.9	43.4	82	87	75-125	6	20		
Arsenic	ug/L	ND	10	10	7.9	8.7	78	86	75-125	10	20		
Barium	ug/L	13.5	50	50	49.8	52.0	73	77	75-125	4	20	M1	
Beryllium	ug/L	ND	10	10	7.6	8.0	75	79	75-125	5	20		
Boron	ug/L	ND	50	50	40.8J	47.0J	73	86	75-125		20	M1	
Cadmium	ug/L	ND	10	10	7.9	8.6	79	86	75-125	8	20		
Calcium	ug/L	1700	625	625	1970	2120	43	66	75-125	7	20	M1	
Chromium	ug/L	2.7	50	50	41.8	43.9	78	83	75-125	5	20		
Cobalt	ug/L	0.34J	10	10	8.3	8.7	79	84	75-125	5	20		
Lead	ug/L	ND	50	50	37.3	39.0	74	78	75-125	4	20	M1	
Lithium	ug/L	ND	50	50	39.1	40.8	76	80	75-125	4	20		
Molybdenum	ug/L	ND	50	50	39.4	41.0	79	82	75-125	4	20		
Selenium	ug/L	ND	50	50	38.2	40.1	76	80	75-125	5	20		
Thallium	ug/L	ND	10	10	7.7	8.1	77	80	75-125	5	20		

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473551

QC Batch:	536807	Analysis Method:	SM 2540C-2011
QC Batch Method:	SM 2540C-2011	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Asheville
Associated Lab Samples:	92473551001		

METHOD BLANK: 2863181 Matrix: Water

Associated Lab Samples: 92473551001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	04/17/20 16:13	

LABORATORY CONTROL SAMPLE: 2863182

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

SAMPLE DUPLICATE: 2863183

Parameter	Units	92473694002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	67.0	63.0	6	25	

SAMPLE DUPLICATE: 2863184

Parameter	Units	92473843004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	449	445	1	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR
Pace Project No.: 92473551

QC Batch:	536463	Analysis Method:	EPA 9056A
QC Batch Method:	EPA 9056A	Analysis Description:	9056 IC anions 28 Days
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473551001

METHOD BLANK: 2861750 Matrix: Water

Associated Lab Samples: 92473551001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/16/20 03:37	
Fluoride	ug/L	ND	100	50.0	04/16/20 03:37	
Sulfate	mg/L	ND	1.0	0.50	04/16/20 03:37	

LABORATORY CONTROL SAMPLE: 2861751

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.8	104	90-110	
Fluoride	ug/L	2500	2270	91	90-110	
Sulfate	mg/L	50	52.7	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2861752 2861753

Parameter	Units	92473551001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.3	50	50	61.0	52.7	117	101	90-110	15	10	M1,R1
Fluoride	ug/L	60.0J	2500	2500	4120	3080	163	121	90-110	29	10	M1,R1
Sulfate	mg/L	2.7	50	50	63.9	54.1	123	103	90-110	17	10	M1,R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2861754 2861755

Parameter	Units	2630891015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.9	50	50	53.1	52.9	100	100	90-110	0	10	
Fluoride	ug/L	ND	2500	2500	2420	2450	96	97	90-110	1	10	
Sulfate	mg/L	2.3	50	50	53.1	52.9	102	101	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92473551

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.

ANALYTE QUALIFIERS

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.

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

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy CCR

Pace Project No.: 92473551

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473551001	ED-24R-20200413	EPA 3010A	536213	EPA 6020B	536222
92473551001	ED-24R-20200413	EPA 7470A	537073	EPA 7470A	537132
92473551001	ED-24R-20200413	SM 2540C-2011	536807		
92473551001	ED-24R-20200413	EPA 9056A	536463		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☒ Raleigh ☐ Mechanicsville ☐

Sample Condition
Upon Receipt

Client Name:

Project #

WO# : 92473551



Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other:

Custody Seal Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No

Date/Initials Person Examining Contents: SR 9-14-20

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer:

☒ IR Gun ID: 92T061

Type of Ice: ☒ Wet ☐ Blue ☐ None

Biological Tissue Frozen?

☐ Yes ☒ No ☐ N/A

Cooler Temp (°C): 1.9 Correction Factor: Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 2.0

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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? ☒ Yes ☐ No ☐ N/A

1.

Samples Arrived within Hold Time? ☐ Yes ☐ No ☐ N/A

2.

Short Hold Time Analysis (<72 hr.)? ☐ Yes ☒ No ☐ N/A

3.

Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A

4.

Sufficient Volume? ☒ Yes ☐ No ☐ N/A

5.

Correct Containers Used? ☒ Yes ☐ No ☐ N/A

6.

-Pace Containers Used? ☒ Yes ☐ No ☐ N/A

Containers Intact? ☒ Yes ☐ No ☐ N/A

7.

Dissolved analysis: Samples Field Filtered? ☐ Yes ☐ No ☒ N/A

8.

Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: W

Headspace in VOA Vials (>5-6mm)? ☐ Yes ☒ No ☐ N/A

10.

Trip Blank Present? ☐ Yes ☒ No ☐ N/A

11.

Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ 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: _____

Date: _____

Project Manager SRF Review: _____

Date: _____

*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 #

W0#: 92473551

PM: PTE

Due Date: 05/05/20

CLIENT: 92-Haley VA

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)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	3	3		3		3																						
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.



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A

Required Client Information:

Company: Haley & Aldrich, Inc.

Address: 1 Park West Circle

Suite 208, Midlothian, VA 23114

Email To: erwright@haleyaldrich.com

Phone: 804-419-0012 Fax:

Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Wright, Erin

Copy To: Chatterton, Kelly

kchatterton@haleyaldrich.com

BSA #: 2019-22-Pace

H&A Client Name: Dominion Energy: Possum Point

H&A Project #: 134860

Section C

Invoice Information:

Attention:

Company Name:

Address:

Pace Quote Reference:

Pace Project Manager: taylor.ezell@paceelabs.com

Pace Profile #: TBD (9382?)

220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)

1700 Elm Street SE - Minneapolis, MN 55414

7726 Moller Road - Indianapolis, IN 46268

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐

Site Location

STATE: VA

Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.

ITEM #	Section D Required Client Information	Matrix Codes MATRIX CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WIP Air AR Tissue TS Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test Y/N	Appx III Anions & Metals List	Appx IV Metals List	Total Dissolved Solids (TDS)	Radium 226 & 228 Combined	Residual Chlorine (Y/N)	I.D.	Pace Project No./ Lab
					Collection Info	Sample Depth			Start Depth (Circle: feet or inches)	End Depth (Circle: feet or inches)	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other								
1	ED-24R-20200413		WT	G	DATE	TIME																001	92473551			
2	ED-24R-20200413MS		WT	G	4-13-20	1530																				
3	ED-24R-20200413MSD		WT	G	4-13-20	1530																				
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		SAMPLE CONDITIONS	
	DATE	TIME	DATE	TIME	DATE	TIME
Appx III Anions & Metals List: boron, calcium, chloride, fluoride, and sulfate.	4-13-20	1730	4-13-20	1730	4-13-20	1730
Appx IV Metals List: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium.	4-13-20	1730	4-13-20	1730	4-13-20	1730
SAMPLER NAME AND SIGNATURE						
PRINT Name of SAMPLER: Andy Giering						
SIGNATURE of SAMPLER: [Signature]						
DATE Signed (MM/DD/YY): 4-13-20						
Temp in °C						
Sealed Cooler (Y/N)						
Custody Cooler (Y/N)						
Samples Intact (Y/N)						

April 23, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy VSWMR
Pace Project No.: 92473553

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 14, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy VSWMR

Pace Project No.: 92473553

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy VSWMR

Pace Project No.: 92473553

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473553001	ED-24R-20200413	Water	04/13/20 15:30	04/14/20 09:55

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy VSWMR

Pace Project No.: 92473553

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473553001	ED-24R-20200413	EPA 6020B	BG2	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy VSWMR

Pace Project No.: 92473553

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473553001	ED-24R-20200413					
EPA 6020B	Copper	0.96	ug/L	0.50	04/22/20 16:33	
EPA 6020B	Iron	109	ug/L	50.0	04/22/20 16:33	
EPA 6020B	Manganese	9.7	ug/L	0.50	04/22/20 16:33	
EPA 6020B	Nickel	1.3	ug/L	0.50	04/22/20 16:33	
EPA 6020B	Potassium	2400	ug/L	500	04/22/20 19:27	
EPA 6020B	Sodium	1990J	ug/L	2500	04/22/20 19:27	
EPA 6020B	Hardness, Total(SM 2340B)	9070	ug/L	541	04/22/20 16:33	
EPA 6020B	Vanadium	0.28J	ug/L	0.30	04/22/20 16:33	
EPA 6020B	Zinc	4.4J	ug/L	5.0	04/22/20 16:33	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92473553

Sample: ED-24R-20200413		Lab ID: 92473553001		Collected: 04/13/20 15:30		Received: 04/14/20 09:55		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	0.96	ug/L	0.50	0.23	1	04/22/20 02:14	04/22/20 16:33	7440-50-8	
Iron	109	ug/L	50.0	7.5	1	04/22/20 02:14	04/22/20 16:33	7439-89-6	
Manganese	9.7	ug/L	0.50	0.14	1	04/22/20 02:14	04/22/20 16:33	7439-96-5	
Nickel	1.3	ug/L	0.50	0.11	1	04/22/20 02:14	04/22/20 16:33	7440-02-0	
Potassium	2400	ug/L	500	61.9	10	04/22/20 02:14	04/22/20 19:27	7440-09-7	
Silver	ND	ug/L	0.40	0.050	1	04/22/20 02:14	04/22/20 16:33	7440-22-4	
Sodium	1990J	ug/L	2500	143	10	04/22/20 02:14	04/22/20 19:27	7440-23-5	
Tin	ND	ug/L	0.50	0.090	1	04/22/20 02:14	04/22/20 16:33	7440-31-5	
Hardness, Total(SM 2340B)	9070	ug/L	541	70.1	1	04/22/20 02:14	04/22/20 16:33		
Vanadium	0.28J	ug/L	0.30	0.12	1	04/22/20 02:14	04/22/20 16:33	7440-62-2	
Zinc	4.4J	ug/L	5.0	1.1	1	04/22/20 02:14	04/22/20 16:33	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/20/20 09:55	04/20/20 13:48	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	ND	mg/L	1.0	0.50	1		04/15/20 22:44	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR
Pace Project No.: 92473553

QC Batch:	537477	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473553001

METHOD BLANK: 2866333 Matrix: Water

Associated Lab Samples: 92473553001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Copper	ug/L	ND	0.50	0.23	04/22/20 12:37	
Hardness, Total(SM 2340B)	ug/L	ND	541	70.1	04/22/20 12:37	
Iron	ug/L	ND	50.0	7.5	04/22/20 12:37	
Manganese	ug/L	ND	0.50	0.14	04/22/20 12:37	
Nickel	ug/L	ND	0.50	0.11	04/22/20 12:37	
Potassium	ug/L	7.2J	50.0	6.2	04/22/20 12:37	
Silver	ug/L	ND	0.40	0.050	04/22/20 12:37	
Sodium	ug/L	ND	250	14.3	04/22/20 12:37	
Tin	ug/L	ND	0.50	0.090	04/22/20 12:37	
Vanadium	ug/L	ND	0.30	0.12	04/22/20 12:37	
Zinc	ug/L	ND	5.0	1.1	04/22/20 12:37	

LABORATORY CONTROL SAMPLE: 2866334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	50	52.8	106	80-120	
Hardness, Total(SM 2340B)	ug/L		4390			
Iron	ug/L	625	626	100	80-120	
Manganese	ug/L	50	52.6	105	80-120	
Nickel	ug/L	50	52.5	105	80-120	
Potassium	ug/L	625	663	106	80-120	
Silver	ug/L	25	25.5	102	80-120	
Sodium	ug/L	625	652	104	80-120	
Tin	ug/L	50	51.4	103	80-120	
Vanadium	ug/L	50	51.7	103	80-120	
Zinc	ug/L	50	51.8	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2866335 2866336

Parameter	Units	92473553001		MSD		MS		MSD		% Rec		Max	
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	% Rec	Limits	RPD	RPD	Qual
Copper	ug/L	0.96	50	50	53.9	54.1	106	106	75-125		0	20	
Hardness, Total(SM 2340B)	ug/L	9070			13800	13600					1	20	
Iron	ug/L	109	625	625	735	739	100	101	75-125		1	20	
Manganese	ug/L	9.7	50	50	61.9	62.3	104	105	75-125		1	20	
Nickel	ug/L	1.3	50	50	53.6	53.6	105	105	75-125		0	20	
Potassium	ug/L	2400	625	625	3010	2970	99	92	75-125		1	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473553

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2866335 2866336												
Parameter	Units	92473553001	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Max	Qual
		Result	Spike Conc.	Spike Conc.								
Silver	ug/L	ND	25	25	26.0	26.1	104	104	75-125	0	20	
Sodium	ug/L	1990J	625	625	2660	2640	108	105	75-125	1	20	
Tin	ug/L	ND	50	50	52.3	52.4	104	105	75-125	0	20	
Vanadium	ug/L	0.28J	50	50	52.8	53.3	105	106	75-125	1	20	
Zinc	ug/L	4.4J	50	50	55.0	56.4	101	104	75-125	2	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR
Pace Project No.: 92473553

QC Batch: 537059	Analysis Method: EPA 420.4 Rev 1.0 1993
QC Batch Method: EPA 420.4 Rev 1.0 1993	Analysis Description: 420.4 Phenolics
	Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473553001

METHOD BLANK: 2864517 Matrix: Water
Associated Lab Samples: 92473553001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenol	mg/L	ND	0.020	0.0050	04/20/20 13:38	

LABORATORY CONTROL SAMPLE: 2864518

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	mg/L	0.05	0.050	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864519 2864520

Parameter	Units	92473041001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.059	0.060	110	111	90-110	1	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864521 2864522

Parameter	Units	92473553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.047	0.051	94	102	90-110	9	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR
Pace Project No.: 92473553

QC Batch:	536300	Analysis Method:	SM 5310B-2011
QC Batch Method:	SM 5310B-2011	Analysis Description:	5310B WVA Nonpurgeable Organic Carbon
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473553001

METHOD BLANK: 2860785 Matrix: Water

Associated Lab Samples: 92473553001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nonpurgeable Organic Carbon	mg/L	ND	1.0	0.50	04/15/20 13:21	

LABORATORY CONTROL SAMPLE: 2860786

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nonpurgeable Organic Carbon	mg/L	25	24.4	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860787 2860788

Parameter	Units	92473016001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	ND	25	25	24.4	24.5	97	97	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860789 2860790

Parameter	Units	92473553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	ND	25	25	24.8	24.9	98	99	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy VSWMR
Pace Project No.: 92473553

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.

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy VSWMR

Pace Project No.: 92473553

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473553001	ED-24R-20200413	EPA 3010A	537477	EPA 6020B	537485
92473553001	ED-24R-20200413	EPA 420.4 Rev 1.0 1993	537059	EPA 420.4 Rev 1.0 1993	537103
92473553001	ED-24R-20200413	SM 5310B-2011	536300		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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:

Haley Aldrich

Project

WO# : 92473553



92473553

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other:

Custody Seal Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No

Date/Initials Person Examining Contents: SR 4-14-20

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer:

☒ IR Gun ID: 92T061

Type of Ice: ☒ Wet ☐ Blue ☐ None

Biological Tissue Frozen?

☐ Yes ☒ No ☐ N/A

Cooler Temp (°C): 1.9 Correction Factor: Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 2.0

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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

Date: _____

Project Manager SRF Review: _____

Date: _____

*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#: 92473553

PM: PTE

Due Date: 04/28/20

CLIENT: 92-Haley VA

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 Na2SO3 (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)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1					3								3					9										
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.

Section A

Required Client Information:

Company: Haley & Aldrich, Inc.

Address: 1 Park West Circle

Suite 208, Midlothian, VA 23114

Email To: ewright@haleyvaldrich.com

Phone: 804-419-0012

Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Wright, Erin

Copy To: Chatterton, Kelly

BSA #: 2019-22-Pace

H&A Client Name: Dominion Energy, Possum Point

H&A Project #: 134660

Section C

Invoice Information:

220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)

1700 Elm Street SE - Minneapolis, MN 55414

7726 Moller Road - Indianapolis, IN 46268

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐

Site Location: VA

STATE: VA

Section D

Required Client Information

SAMPLE ID
(A-Z, 0-9 / -)

Sample IDs MUST BE UNIQUE

MATRIX / CODE

Drinking Water
Water
Waste Water
Product
Soil/Solid
Oil
Wipe
Air
Tissue
Other

MATRIX CODE

DW
WT
WW
P
SL
OL
WP
AR
TS
OT

COLLECTED

Collection Info

DATE

TIME

SAMPLE TYPE (G=GRAB C=COMP)

WT

4-13-20

1530

Start Depth (Circle: feet or inches)

End Depth (Circle: feet or inches)

ADDITIONAL COMMENTS

VSWMR Metals List: copper, nickel, silver, tin, vanadium, and zinc

VWCB Water Quality Pollutant List: phenolics, potassium, iron, manganese, hardness, and sodium.

RELINQUISHED BY / AFFILIATION

Andy Gerriaghe

4-13-20

1730

DATE

TIME

ACCEPTED BY / AFFILIATION

Shelley Pace

4-14-20

955

DATE

TIME

SAMPLE CONDITIONS

Sealed Cooler (Y/N)

Custody (Y/N)

Temp in °C

92473553

Pace Project No./ Lab I.D.

001

Requested Analysis Filtered (Y/N)

Analysis Test

Y/N

Preservatives

H2SO4
HNO3
HCl
NaOH
Na2S2O3
Methanol
Other

OF CONTAINERS

1

VSWMR Metals List

1

VWCB Water Quality Pollutant List

1

Total Organic Carbon (TOC)

1

Residual Chlorine (Y/N)

1

DATE SIGNED

4-13-20

DATE SIGNED

4-13-20

PRINT Name of SAMPLER:

Andy Gerriaghe

SIGNATURE of SAMPLER:

SAMPLER NAME AND SIGNATURE

Andy Gerriaghe

Sealed Cooler (Y/N)

Custody (Y/N)

Temp in °C

#2 Compliance Wells and Sentinel Wells

Page 15 of 15

April 23, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92473799

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 15, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92473799

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92473799

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473799001	ED-26-20200414	Water	04/14/20 11:20	04/15/20 09:30
92473799002	EB-01-20200414	Water	04/14/20 16:30	04/15/20 09:30

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92473799

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473799001	ED-26-20200414	EPA 6020B	BG2	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	JNS	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A
92473799002	EB-01-20200414	EPA 6020B	BG2	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	JNS	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92473799

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473799001	ED-26-20200414					
EPA 6020B	Arsenic	0.12	ug/L	0.10	04/22/20 13:43	
EPA 6020B	Barium	25.9	ug/L	0.30	04/22/20 13:43	
EPA 6020B	Beryllium	0.11	ug/L	0.10	04/22/20 13:43	
EPA 6020B	Boron	9.6J	ug/L	25.0	04/22/20 13:43	
EPA 6020B	Calcium	7470J	ug/L	10000	04/22/20 13:02	
EPA 6020B	Lead	0.17	ug/L	0.10	04/22/20 13:43	
EPA 6020B	Lithium	12.5	ug/L	2.5	04/22/20 13:43	
SM 2540C-2011	Total Dissolved Solids	89.0	mg/L	25.0	04/18/20 10:28	
EPA 9056A	Chloride	2.1	mg/L	1.0	04/16/20 05:01	
EPA 9056A	Fluoride	277	ug/L	100	04/16/20 05:01	
EPA 9056A	Sulfate	2.0	mg/L	1.0	04/16/20 05:01	
92473799002	EB-01-20200414					
EPA 6020B	Antimony	0.14J	ug/L	0.50	04/22/20 12:47	
EPA 6020B	Barium	0.062J	ug/L	0.30	04/22/20 12:47	
EPA 6020B	Boron	3.1J	ug/L	25.0	04/22/20 12:47	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473799

Sample: ED-26-20200414		Lab ID: 92473799001		Collected: 04/14/20 11:20		Received: 04/15/20 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Antimony	ND	ug/L	0.50	0.11	1	04/22/20 02:14	04/22/20 13:43	7440-36-0	
Arsenic	0.12	ug/L	0.10	0.060	1	04/22/20 02:14	04/22/20 13:43	7440-38-2	
Barium	25.9	ug/L	0.30	0.060	1	04/22/20 02:14	04/22/20 13:43	7440-39-3	
Beryllium	0.11	ug/L	0.10	0.050	1	04/22/20 02:14	04/22/20 13:43	7440-41-7	
Boron	9.6J	ug/L	25.0	2.6	1	04/22/20 02:14	04/22/20 13:43	7440-42-8	
Cadmium	ND	ug/L	0.080	0.070	1	04/22/20 02:14	04/22/20 13:43	7440-43-9	
Calcium	7470J	ug/L	10000	1030	50	04/22/20 02:14	04/22/20 13:02	7440-70-2	
Chromium	ND	ug/L	0.50	0.42	1	04/22/20 02:14	04/22/20 13:43	7440-47-3	
Cobalt	ND	ug/L	0.10	0.050	1	04/22/20 02:14	04/22/20 13:43	7440-48-4	
Lead	0.17	ug/L	0.10	0.050	1	04/22/20 02:14	04/22/20 13:43	7439-92-1	
Lithium	12.5	ug/L	2.5	0.42	1	04/22/20 02:14	04/22/20 13:43	7439-93-2	
Molybdenum	ND	ug/L	0.50	0.10	1	04/22/20 02:14	04/22/20 13:43	7439-98-7	
Selenium	ND	ug/L	0.50	0.080	1	04/22/20 02:14	04/22/20 13:43	7782-49-2	
Thallium	ND	ug/L	0.10	0.060	1	04/22/20 02:14	04/22/20 13:43	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville							
Mercury	ND	ug/L	0.20	0.10	1	04/20/20 10:40	04/20/20 16:25	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville							
Total Dissolved Solids	89.0	mg/L	25.0	25.0	1		04/18/20 10:28		
9056 IC anions 28 Days		Analytical Method: EPA 9056A Pace Analytical Services - Asheville							
Chloride	2.1	mg/L	1.0	0.60	1		04/16/20 05:01	16887-00-6	
Fluoride	277	ug/L	100	50.0	1		04/16/20 05:01	16984-48-8	
Sulfate	2.0	mg/L	1.0	0.50	1		04/16/20 05:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473799

Sample: EB-01-20200414		Lab ID: 92473799002		Collected: 04/14/20 16:30		Received: 04/15/20 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Antimony	0.14J	ug/L	0.50	0.11	1	04/22/20 02:14	04/22/20 12:47	7440-36-0	
Arsenic	ND	ug/L	0.10	0.060	1	04/22/20 02:14	04/22/20 12:47	7440-38-2	
Barium	0.062J	ug/L	0.30	0.060	1	04/22/20 02:14	04/22/20 12:47	7440-39-3	
Beryllium	ND	ug/L	0.10	0.050	1	04/22/20 02:14	04/22/20 12:47	7440-41-7	
Boron	3.1J	ug/L	25.0	2.6	1	04/22/20 02:14	04/22/20 12:47	7440-42-8	
Cadmium	ND	ug/L	0.080	0.070	1	04/22/20 02:14	04/22/20 12:47	7440-43-9	
Calcium	ND	ug/L	200	20.6	1	04/22/20 02:14	04/22/20 12:47	7440-70-2	
Chromium	ND	ug/L	0.50	0.42	1	04/22/20 02:14	04/22/20 12:47	7440-47-3	
Cobalt	ND	ug/L	0.10	0.050	1	04/22/20 02:14	04/22/20 12:47	7440-48-4	
Lead	ND	ug/L	0.10	0.050	1	04/22/20 02:14	04/22/20 12:47	7439-92-1	
Lithium	ND	ug/L	2.5	0.42	1	04/22/20 02:14	04/22/20 12:47	7439-93-2	
Molybdenum	ND	ug/L	0.50	0.10	1	04/22/20 02:14	04/22/20 12:47	7439-98-7	
Selenium	ND	ug/L	0.50	0.080	1	04/22/20 02:14	04/22/20 12:47	7782-49-2	
Thallium	ND	ug/L	0.10	0.060	1	04/22/20 02:14	04/22/20 12:47	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville							
Mercury	ND	ug/L	0.20	0.10	1	04/20/20 10:40	04/20/20 16:28	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville							
Total Dissolved Solids	ND	mg/L	25.0	25.0	1		04/18/20 10:28		
9056 IC anions 28 Days		Analytical Method: EPA 9056A Pace Analytical Services - Asheville							
Chloride	ND	mg/L	1.0	0.60	1		04/16/20 05:15	16887-00-6	
Fluoride	ND	ug/L	100	50.0	1		04/16/20 05:15	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		04/16/20 05:15	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473799

QC Batch: 537073

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473799001, 92473799002

METHOD BLANK: 2864577

Matrix: Water

Associated Lab Samples: 92473799001, 92473799002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	04/20/20 15:50	

LABORATORY CONTROL SAMPLE: 2864578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.8	114	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864579 2864580

Parameter	Units	92473551001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.8	2.8	114	111	75-125	2	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473799

QC Batch: 537477

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020 MET

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473799001, 92473799002

METHOD BLANK: 2866333

Matrix: Water

Associated Lab Samples: 92473799001, 92473799002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	0.50	0.11	04/22/20 12:37	
Arsenic	ug/L	ND	0.10	0.060	04/22/20 12:37	
Barium	ug/L	ND	0.30	0.060	04/22/20 12:37	
Beryllium	ug/L	ND	0.10	0.050	04/22/20 12:37	
Boron	ug/L	ND	25.0	2.6	04/22/20 12:37	
Cadmium	ug/L	ND	0.080	0.070	04/22/20 12:37	
Calcium	ug/L	ND	200	20.6	04/22/20 12:37	
Chromium	ug/L	ND	0.50	0.42	04/22/20 12:37	
Cobalt	ug/L	ND	0.10	0.050	04/22/20 12:37	
Lead	ug/L	ND	0.10	0.050	04/22/20 12:37	
Lithium	ug/L	ND	2.5	0.42	04/22/20 12:37	
Molybdenum	ug/L	ND	0.50	0.10	04/22/20 12:37	
Selenium	ug/L	ND	0.50	0.080	04/22/20 12:37	
Thallium	ug/L	ND	0.10	0.060	04/22/20 12:37	

LABORATORY CONTROL SAMPLE: 2866334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	54.4	109	80-120	
Arsenic	ug/L	10	10.5	105	80-120	
Barium	ug/L	50	51.7	103	80-120	
Beryllium	ug/L	10	10.5	105	80-120	
Boron	ug/L	50	52.4	105	80-120	
Cadmium	ug/L	10	10.4	104	80-120	
Calcium	ug/L	625	660	106	80-120	
Chromium	ug/L	50	52.9	106	80-120	
Cobalt	ug/L	10	10.4	104	80-120	
Lead	ug/L	50	51.9	104	80-120	
Lithium	ug/L	50	52.5	105	80-120	
Molybdenum	ug/L	50	52.4	105	80-120	
Selenium	ug/L	50	51.4	103	80-120	
Thallium	ug/L	10	10.3	103	80-120	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473799

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2866335 2866336												
Parameter	Units	92473553001 Result	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD
			Spike Conc.	Spike Conc.	Spike Conc.	Spike Conc.						
Antimony	ug/L	0.14J	50	50	50	50	54.9	54.2	109	108	75-125	1 20
Arsenic	ug/L	ND	10	10	10	10	10.2	10.3	101	103	75-125	1 20
Barium	ug/L	17.2	50	50	50	50	70.0	69.8	106	105	75-125	0 20
Beryllium	ug/L	0.19	10	10	10	10	10.8	10.7	106	105	75-125	1 20
Boron	ug/L	6.1J	50	50	50	50	60.7	64.1	109	116	75-125	5 20
Cadmium	ug/L	ND	10	10	10	10	10.5	10.5	105	105	75-125	0 20
Calcium	ug/L	2140	625	625	625	625	2930	2920	126	123	75-125	1 20 M6
Chromium	ug/L	2.2	50	50	50	50	54.7	55.1	105	106	75-125	1 20
Cobalt	ug/L	0.37	10	10	10	10	11.0	11.0	106	106	75-125	0 20
Lead	ug/L	0.11	50	50	50	50	52.4	52.7	105	105	75-125	0 20
Lithium	ug/L	1.4J	50	50	50	50	54.2	53.5	106	104	75-125	1 20
Molybdenum	ug/L	ND	50	50	50	50	52.3	52.8	105	106	75-125	1 20
Selenium	ug/L	0.19J	50	50	50	50	51.4	51.0	102	102	75-125	1 20
Thallium	ug/L	ND	10	10	10	10	10.4	10.5	104	104	75-125	0 20

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473799

QC Batch: 536983

Analysis Method: SM 2540C-2011

QC Batch Method: SM 2540C-2011

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473799001, 92473799002

METHOD BLANK: 2864284

Matrix: Water

Associated Lab Samples: 92473799001, 92473799002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	04/18/20 10:26	

LABORATORY CONTROL SAMPLE: 2864285

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	251	268	107	90-110	

SAMPLE DUPLICATE: 2864286

Parameter	Units	92472992107 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	115	110	4	25	

SAMPLE DUPLICATE: 2864287

Parameter	Units	92472791014 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	718	740	3	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473799

QC Batch: 536463

Analysis Method: EPA 9056A

QC Batch Method: EPA 9056A

Analysis Description: 9056 IC anions 28 Days

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473799001, 92473799002

METHOD BLANK: 2861750

Matrix: Water

Associated Lab Samples: 92473799001, 92473799002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/16/20 03:37	
Fluoride	ug/L	ND	100	50.0	04/16/20 03:37	
Sulfate	mg/L	ND	1.0	0.50	04/16/20 03:37	

LABORATORY CONTROL SAMPLE: 2861751

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.8	104	90-110	
Fluoride	ug/L	2500	2270	91	90-110	
Sulfate	mg/L	50	52.7	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2861752 2861753

Parameter	Units	92473551001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.3	50	50	61.0	52.7	117	101	90-110	15	10	M1,R1
Fluoride	ug/L	60.0J	2500	2500	4120	3080	163	121	90-110	29	10	M1,R1
Sulfate	mg/L	2.7	50	50	63.9	54.1	123	103	90-110	17	10	M1,R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2861754 2861755

Parameter	Units	2630891015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.9	50	50	53.1	52.9	100	100	90-110	0	10	
Fluoride	ug/L	ND	2500	2500	2420	2450	96	97	90-110	1	10	
Sulfate	mg/L	2.3	50	50	53.1	52.9	102	101	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92473799

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.

ANALYTE QUALIFIERS

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.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy CCR

Pace Project No.: 92473799

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473799001	ED-26-20200414	EPA 3010A	537477	EPA 6020B	537485
92473799002	EB-01-20200414	EPA 3010A	537477	EPA 6020B	537485
92473799001	ED-26-20200414	EPA 7470A	537073	EPA 7470A	537132
92473799002	EB-01-20200414	EPA 7470A	537073	EPA 7470A	537132
92473799001	ED-26-20200414	SM 2540C-2011	536983		
92473799002	EB-01-20200414	SM 2540C-2011	536983		
92473799001	ED-26-20200414	EPA 9056A	536463		
92473799002	EB-01-20200414	EPA 9056A	536463		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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:

Haley Aldrich

Project #:

WO#: 92473799



92473799

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other: _____

Custody Seal Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No

Date/Initials Person Examining Contents: EH 4/15/20

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen?

☐ Yes ☐ No ☒ N/A

Thermometer:

☒ IR Gun ID: 92T061

Type of Ice: ☒ Wet ☐ Blue ☐ None

Cooler Temp (°C): 3.2 Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): 3.3

☐ Samples out of temp criteria. Samples on Ice, cooling process has begun

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

Date: _____

Project Manager SRF Review: _____

Date: _____

*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 #

W0# : 92473799

PM: PTE

Due Date: 05/06/20

CLIENT: 92-Haley VA

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)	SPST-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		1		1																						
2	1	1		1		1																						
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.



CHAIN-OF-CUSTODY / Analytical Request Document

Section A

Required Client Information:

Company: Haley & Aldrich, Inc.
Address: 1 Park West Circle
Suite 208, Midlothian, VA 23114
Email To: ewright@haleyvaldrich.com
Phone: 804-419-0012 Fax:
Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Wright, Erin
Copy To: Chatterton, Kelly
kchatterton@haleyvaldrich.com
BSA #: 2019-22-Pace
H&A Client Name: Dominion Energy: Possum Point
H&A Project #: 134660

Section C

Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager: taylor.ezell@paceelabs.com
Pace Profile #: TBD (9362?)
REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐
Site Location
STATE: VA

Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analysis Test ↑	Y / N ↑	Appx III Anions & Metals List	Appx IV Metals List	Total Dissolved Solids (TDS)	Radium 226 & 228 Combined	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					Collection Info	Sample Depth			Start Depth (Circle: feet or inches)	End Depth (Circle: feet or inches)	Unpreserved	H2SO4	HNO3	HCl	NaOH								
1	ED-26-20200414		WT	G	DATE 4-14-20	TIME 1120										X	X	X	X	X		001	
2	EB-01-20200414		WT	G	DATE 4-14-20	TIME 1630										X	X	X	X	X		002	
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Appx III Anions & Metals List: boron, calcium, chloride, fluoride, and sulfate.	Cl. Andy Carriage H&A	4-14-20	1800	Andy Carriage H&A	4-15-20	930	3.2 N Y
Appx IV Metals List: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium.							
SAMPLER NAME AND SIGNATURE				DATE Signed (MM/DD/YY): 4-14-20			
PRINT Name of SAMPLER: Andy Carriage				Sealed Cooler (Y/N)			
SIGNATURE of SAMPLER: [Signature]				Temp in °C			
				Samples Intact (Y/N)			

April 23, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy VSWMR
Pace Project No.: 92473800

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 15, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473800001	ED-26-20200414	Water	04/14/20 11:20	04/15/20 09:30
92473800002	EB-01-20200414	Water	04/14/20 16:30	04/15/20 09:30

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473800001	ED-26-20200414	EPA 6020B	BG2	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A
92473800002	EB-01-20200414	EPA 6020B	BG2	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473800001	ED-26-20200414					
EPA 6020B	Iron	2790	ug/L	2500	04/22/20 20:13	
EPA 6020B	Manganese	78.3	ug/L	0.50	04/22/20 18:36	
EPA 6020B	Nickel	0.24J	ug/L	0.50	04/22/20 18:36	
EPA 6020B	Potassium	5240	ug/L	2500	04/22/20 20:13	
EPA 6020B	Sodium	1880J	ug/L	12500	04/22/20 20:13	
EPA 6020B	Hardness, Total(SM 2340B)	10200J	ug/L	27000	04/22/20 20:13	
EPA 6020B	Zinc	1.8J	ug/L	5.0	04/22/20 18:36	
92473800002	EB-01-20200414					
EPA 6020B	Nickel	0.24J	ug/L	0.50	04/22/20 12:52	
EPA 6020B	Zinc	1.7J	ug/L	5.0	04/22/20 12:52	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

Sample: ED-26-20200414		Lab ID: 92473800001		Collected: 04/14/20 11:20		Received: 04/15/20 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	ND	ug/L	0.50	0.23	1	04/22/20 02:14	04/22/20 18:36	7440-50-8	
Iron	2790	ug/L	2500	374	50	04/22/20 02:14	04/22/20 20:13	7439-89-6	
Manganese	78.3	ug/L	0.50	0.14	1	04/22/20 02:14	04/22/20 18:36	7439-96-5	
Nickel	0.24J	ug/L	0.50	0.11	1	04/22/20 02:14	04/22/20 18:36	7440-02-0	
Potassium	5240	ug/L	2500	310	50	04/22/20 02:14	04/22/20 20:13	7440-09-7	
Silver	ND	ug/L	0.40	0.050	1	04/22/20 02:14	04/22/20 18:36	7440-22-4	
Sodium	1880J	ug/L	12500	714	50	04/22/20 02:14	04/22/20 20:13	7440-23-5	
Tin	ND	ug/L	0.50	0.090	1	04/22/20 02:14	04/22/20 18:36	7440-31-5	
Hardness, Total(SM 2340B)	10200J	ug/L	27000	3500	50	04/22/20 02:14	04/22/20 20:13		
Vanadium	ND	ug/L	0.30	0.12	1	04/22/20 02:14	04/22/20 18:36	7440-62-2	
Zinc	1.8J	ug/L	5.0	1.1	1	04/22/20 02:14	04/22/20 18:36	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/20/20 09:55	04/20/20 13:54	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	ND	mg/L	1.0	0.50	1		04/20/20 20:38	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

Sample: EB-01-20200414		Lab ID: 92473800002		Collected: 04/14/20 16:30		Received: 04/15/20 09:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	ND	ug/L	0.50	0.23	1	04/22/20 02:14	04/22/20 12:52	7440-50-8	
Iron	ND	ug/L	50.0	7.5	1	04/22/20 02:14	04/22/20 12:52	7439-89-6	
Manganese	ND	ug/L	0.50	0.14	1	04/22/20 02:14	04/22/20 12:52	7439-96-5	
Nickel	0.24J	ug/L	0.50	0.11	1	04/22/20 02:14	04/22/20 12:52	7440-02-0	
Potassium	ND	ug/L	50.0	6.2	1	04/22/20 02:14	04/22/20 12:52	7440-09-7	
Silver	ND	ug/L	0.40	0.050	1	04/22/20 02:14	04/22/20 12:52	7440-22-4	
Sodium	ND	ug/L	250	14.3	1	04/22/20 02:14	04/22/20 12:52	7440-23-5	
Tin	ND	ug/L	0.50	0.090	1	04/22/20 02:14	04/22/20 12:52	7440-31-5	
Hardness, Total(SM 2340B)	ND	ug/L	541	70.1	1	04/22/20 02:14	04/22/20 12:52		
Vanadium	ND	ug/L	0.30	0.12	1	04/22/20 02:14	04/22/20 12:52	7440-62-2	
Zinc	1.7J	ug/L	5.0	1.1	1	04/22/20 02:14	04/22/20 12:52	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/20/20 09:55	04/20/20 13:54	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	ND	mg/L	1.0	0.50	1		04/20/20 21:14	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

QC Batch: 537477

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020 MET

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473800001, 92473800002

METHOD BLANK: 2866333

Matrix: Water

Associated Lab Samples: 92473800001, 92473800002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Copper	ug/L	ND	0.50	0.23	04/22/20 12:37	
Hardness, Total(SM 2340B)	ug/L	ND	541	70.1	04/22/20 12:37	
Iron	ug/L	ND	50.0	7.5	04/22/20 12:37	
Manganese	ug/L	ND	0.50	0.14	04/22/20 12:37	
Nickel	ug/L	ND	0.50	0.11	04/22/20 12:37	
Potassium	ug/L	7.2J	50.0	6.2	04/22/20 12:37	
Silver	ug/L	ND	0.40	0.050	04/22/20 12:37	
Sodium	ug/L	ND	250	14.3	04/22/20 12:37	
Tin	ug/L	ND	0.50	0.090	04/22/20 12:37	
Vanadium	ug/L	ND	0.30	0.12	04/22/20 12:37	
Zinc	ug/L	ND	5.0	1.1	04/22/20 12:37	

LABORATORY CONTROL SAMPLE: 2866334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	50	52.8	106	80-120	
Hardness, Total(SM 2340B)	ug/L		4390			
Iron	ug/L	625	626	100	80-120	
Manganese	ug/L	50	52.6	105	80-120	
Nickel	ug/L	50	52.5	105	80-120	
Potassium	ug/L	625	663	106	80-120	
Silver	ug/L	25	25.5	102	80-120	
Sodium	ug/L	625	652	104	80-120	
Tin	ug/L	50	51.4	103	80-120	
Vanadium	ug/L	50	51.7	103	80-120	
Zinc	ug/L	50	51.8	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2866335 2866336

Parameter	Units	92473553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	0.96	50	50	53.9	54.1	106	106	75-125	0	20	
Hardness, Total(SM 2340B)	ug/L	9070			13800	13600				1	20	
Iron	ug/L	109	625	625	735	739	100	101	75-125	1	20	
Manganese	ug/L	9.7	50	50	61.9	62.3	104	105	75-125	1	20	
Nickel	ug/L	1.3	50	50	53.6	53.6	105	105	75-125	0	20	
Potassium	ug/L	2400	625	625	3010	2970	99	92	75-125	1	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2866335 2866336												
Parameter	Units	92473553001	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Max	Qual
		Result	Spike Conc.	Spike Conc.								
Silver	ug/L	ND	25	25	26.0	26.1	104	104	75-125	0	20	
Sodium	ug/L	1990J	625	625	2660	2640	108	105	75-125	1	20	
Tin	ug/L	ND	50	50	52.3	52.4	104	105	75-125	0	20	
Vanadium	ug/L	0.28J	50	50	52.8	53.3	105	106	75-125	1	20	
Zinc	ug/L	4.4J	50	50	55.0	56.4	101	104	75-125	2	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

QC Batch: 537059

Analysis Method: EPA 420.4 Rev 1.0 1993

QC Batch Method: EPA 420.4 Rev 1.0 1993

Analysis Description: 420.4 Phenolics

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473800001, 92473800002

METHOD BLANK: 2864517

Matrix: Water

Associated Lab Samples: 92473800001, 92473800002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenol	mg/L	ND	0.020	0.0050	04/20/20 13:38	

LABORATORY CONTROL SAMPLE: 2864518

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	mg/L	0.05	0.050	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864519 2864520

Parameter	Units	92473041001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.059	0.060	110	111	90-110	1	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864521 2864522

Parameter	Units	92473553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.047	0.051	94	102	90-110	9	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

QC Batch: 537194

Analysis Method: SM 5310B-2011

QC Batch Method: SM 5310B-2011

Analysis Description: 5310B WVA Nonpurgeable Organic Carbon

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473800001, 92473800002

METHOD BLANK: 2865199

Matrix: Water

Associated Lab Samples: 92473800001, 92473800002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nonpurgeable Organic Carbon	mg/L	ND	1.0	0.50	04/20/20 18:36	

LABORATORY CONTROL SAMPLE: 2865200

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nonpurgeable Organic Carbon	mg/L	25	25.2	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2865201 2865202

Parameter	Units	92473785001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	5.7	25	25	30.2	30.3	98	98	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy VSWMR
Pace Project No.: 92473800

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.

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy VSWMR

Pace Project No.: 92473800

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473800001	ED-26-20200414	EPA 3010A	537477	EPA 6020B	537485
92473800002	EB-01-20200414	EPA 3010A	537477	EPA 6020B	537485
92473800001	ED-26-20200414	EPA 420.4 Rev 1.0 1993	537059	EPA 420.4 Rev 1.0 1993	537103
92473800002	EB-01-20200414	EPA 420.4 Rev 1.0 1993	537059	EPA 420.4 Rev 1.0 1993	537103
92473800001	ED-26-20200414	SM 5310B-2011	537194		
92473800002	EB-01-20200414	SM 5310B-2011	537194		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



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 ☐

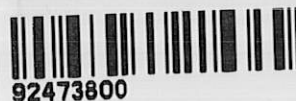
Sample Condition
Upon Receipt

Client Name:

Haley Aldrich

Project #

WO# : 92473800



Courier:

☐ Commercial

☒ Fed Ex

☐ UPS

☐ USPS

☐ Other: _____

☐ Client

Custody Seal Present?

☐ Yes

☒ No

Seals Intact?

☐ Yes

☐ No

Date/Initials Person Examining Contents: EP 4-15-20

Packing Material:

☐ Bubble Wrap

☒ Bubble Bags

☐ None

☐ Other

Thermometer:

☒ IR Gun ID: 92T061

Type of Ice:

☒ Wet

☐ Blue

☐ None

Biological Tissue Frozen?

☐ Yes

☐ No

☒ N/A

Cooler Temp (°C): 3.2

Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): 3.3

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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

Date: _____

Project Manager SRF Review: _____

Date: _____

*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 # **W0# : 92473800**

PM: PTE

Due Date: 04/29/20

CLIENT: 92-Haley VA

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 Na2SO3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-S03S 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																												
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.

Section A

Required Client Information:

Company: HALEY & ALDRICH, Inc.
Address: 1 Park West Circle
Suite 208, Midlothian, VA 23114
Email To: ewright@haleyvaldrich.com
Phone: 804-419-0012 Fax:
Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Wright, Erin
Copy To: Chatterton, Kelly
BSA #: 2019-22-Pace
H&A Client Name: Dominion Energy: Possum Point
H&A Project #: 134660

Section C

Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager: taylor.ezell@pacelabs.com
Pace Profile #: TBD (9362?)

220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)

1700 Elm Street SE - Minneapolis, MN 55414

7726 Moller Road - Indianapolis, IN 46268

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐

Site Location
STATE: VA

Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between HALEY & ALDRICH, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT	COLLECTED		DATE	TIME	Start Depth (Circle: feet or inches)	End Depth (Circle: feet or inches)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Y / N ↑	↑ Analysis Test ↓	VSWMR Metals List	WVCB Water Quality Pollutant List	Total Organic Carbon (TOC)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
			Collection Info	Sample Depth							Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
1	ED-26-20200414				4-14-20	1120																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME		SAMPLE CONDITIONS	
VSWMR Metals List: copper, nickel, silver, tin, vanadium, and zinc		Andy Greining		4-14-20		1800		Back to Pace		4-15-20		930		3.3	
VWCB Water Quality Pollutant List: phenolics, potassium, iron, manganese, hardness, and sodium.															

SAMPLER NAME AND SIGNATURE				DATE Signed (MM/DD/YY)		DATE Signed (MM/DD/YY)		Temp in °C		Custody Sealed (Y/N)		Samples Intact (Y/N)	
Andy Greining				4-14-20		4-14-20							
Andy Greining				4-14-20		4-14-20							

April 23, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92473946

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 16, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92473946

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92473946

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473946001	ES-1-20200415	Water	04/15/20 12:00	04/16/20 09:20
92473946002	ES-1D-20200415	Water	04/15/20 14:15	04/16/20 09:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92473946

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473946001	ES-1-20200415	EPA 6020B	BG2	3	PASI-A
92473946002	ES-1D-20200415	EPA 6020B	BG2	3	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92473946

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473946001	ES-1-20200415					
EPA 6020B	Boron	288	ug/L	125	04/22/20 13:38	
EPA 6020B	Nickel	21.1	ug/L	0.50	04/22/20 18:41	
EPA 6020B	Zinc	75.3	ug/L	5.0	04/22/20 18:41	
92473946002	ES-1D-20200415					
EPA 6020B	Boron	18.9J	ug/L	25.0	04/22/20 13:48	
EPA 6020B	Nickel	0.87	ug/L	0.50	04/22/20 13:48	
EPA 6020B	Zinc	2.7J	ug/L	5.0	04/22/20 13:48	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473946

Sample: ES-1-20200415		Lab ID: 92473946001		Collected: 04/15/20 12:00		Received: 04/16/20 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Boron	288	ug/L	125	12.8	5	04/22/20 02:14	04/22/20 13:38	7440-42-8	
Nickel	21.1	ug/L	0.50	0.11	1	04/22/20 02:14	04/22/20 18:41	7440-02-0	
Zinc	75.3	ug/L	5.0	1.1	1	04/22/20 02:14	04/22/20 18:41	7440-66-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473946

Sample: ES-1D-20200415		Lab ID: 92473946002		Collected: 04/15/20 14:15		Received: 04/16/20 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Boron	18.9J	ug/L	25.0	2.6	1	04/22/20 02:14	04/22/20 13:48	7440-42-8	
Nickel	0.87	ug/L	0.50	0.11	1	04/22/20 02:14	04/22/20 13:48	7440-02-0	
Zinc	2.7J	ug/L	5.0	1.1	1	04/22/20 02:14	04/22/20 13:48	7440-66-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473946

QC Batch:	537477	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473946001, 92473946002

METHOD BLANK: 2866333 Matrix: Water

Associated Lab Samples: 92473946001, 92473946002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	25.0	2.6	04/22/20 12:37	
Nickel	ug/L	ND	0.50	0.11	04/22/20 12:37	
Zinc	ug/L	ND	5.0	1.1	04/22/20 12:37	

LABORATORY CONTROL SAMPLE: 2866334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	50	52.4	105	80-120	
Nickel	ug/L	50	52.5	105	80-120	
Zinc	ug/L	50	51.8	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2866335 2866336

Parameter	Units	92473553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	6.1J	50	50	60.7	64.1	109	116	75-125	5	20	
Nickel	ug/L	1.3	50	50	53.6	53.6	105	105	75-125	0	20	
Zinc	ug/L	4.4J	50	50	55.0	56.4	101	104	75-125	2	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92473946

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.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy CCR

Pace Project No.: 92473946

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473946001	ES-1-20200415	EPA 3010A	537477	EPA 6020B	537485
92473946002	ES-1D-20200415	EPA 3010A	537477	EPA 6020B	537485

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	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: <i>Alex & Adrich</i>	Project
----------------------------------	--	---------

WO# : 92473946

92473946

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other:

Custody Seal Present? ☐ Yes ☒ No
 Seals Intact? ☐ Yes ☒ No

Date/Initials Person Examining Contents: *EH 4/16/20*

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer: ☒ IR Gun ID: 92T061
 Type of Ice: ☒ Wet ☐ Blue ☐ None

Biological Tissue Frozen?

☐ Yes ☐ No ☐ N/A

Cooler Temp (°C): 0-7 Correction Factor: Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 0.8

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on Ice, cooling process has begun

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? ☒ Yes ☐ No ☐ N/A

1.

Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A

2.

Short Hold Time Analysis (<72 hr.)? ☐ Yes ☒ No ☐ N/A

3.

Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A

4.

Sufficient Volume? ☒ Yes ☐ No ☐ N/A

5.

Correct Containers Used? ☒ Yes ☐ No ☐ N/A

6.

-Pace Containers Used? ☒ Yes ☐ No ☐ N/A

Containers Intact? ☒ Yes ☐ No ☐ N/A

7.

Dissolved analysis: Samples Field Filtered? ☐ Yes ☐ No ☒ N/A

8.

Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: *WT*

Headspace in VOA Vials (>5-6mm)? ☐ Yes ☐ No ☒ N/A

10.

Trip Blank Present? ☐ Yes ☐ No ☒ N/A

11.

Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ 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: _____

Date: _____

Project Manager SRF Review: _____

Date: _____

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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.

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

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

Project

WO# : 92473946

PM: PTE

Due Date: 04/23/20

CLIENT: 92-Haley VA

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 Na2SO3 (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																													
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.

Section A				Section B				Section C			
Required Client Information:				Required Project Information:				Invoice Information:			
Company: Haley & Aldrich, Inc.				Report To: Wright, Erin				220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)			
Address: 1 Park West Circle				Copy To: Chatterton, Kelly				1700 Elm Street SE - Minneapolis, MN 55414			
Suite 208, Midlothian, VA 23114				kchatterton@haleyaldrich.com				7726 Moller Road - Indianapolis, IN 46268			
Email To: ewright@haleyaldrich.com				BSA #: 2019-22-Pace				REGULATORY AGENCY			
Phone: 804-419-0012 Fax:				H&A Client Name: Dominion Energy: Possum Point				☐ NPDES ☐ GROUND WATER ☐ DRINKING V			
Requested Due Date/TAT: Standard				H&A Project #: 134660				☐ UST ☐ RCRA ☐			
Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.								Site Location STATE: VA			
Section D Required Client Information				Section E Matrix Codes MATRIX / CODE				Requested Analysis Filtered (Y/N)			
Drinking Water DW				COLLECTED				Preservatives			
Water WT				Collection Info				HCl			
Waste Water WW				Start Depth (Circle: feet or inches)				HNO ₃			
Product P				End Depth (Circle: feet or inches)				H ₂ SO ₄			
Soil/Solid SL				DATE				Unpreserved			
Oil OL				TIME				# OF CONTAINERS			
Wipe WP				SAMPLE TEMP AT COLLECTION				Analysis Test ↑			
Air AR				DATE				Y/N ↑			
Tissue TS				TIME				Other			
Other OT				DATE				Methanol			
				TIME				Na ₂ S ₂ O ₃			
				DATE				NaOH			
				TIME				HCl			
				DATE				HNO ₃			
				TIME				H ₂ SO ₄			
				DATE				Unpreserved			
				TIME				# OF CONTAINERS			
				DATE				Analysis Test ↑			
				TIME				Y/N ↑			
				DATE				Other			
				TIME				Methanol			
				DATE				Na ₂ S ₂ O ₃			
				TIME				NaOH			
				DATE				HCl			
				TIME				HNO ₃			
				DATE				H ₂ SO ₄			
				TIME				Unpreserved			
				DATE				# OF CONTAINERS			
				TIME				Analysis Test ↑			
				DATE				Y/N ↑			
				TIME				Other			
				DATE				Methanol			
				TIME				Na ₂ S ₂ O ₃			
				DATE				NaOH			
				TIME				HCl			
				DATE				HNO ₃			
				TIME				H ₂ SO ₄			
				DATE				Unpreserved			
				TIME				# OF CONTAINERS			
				DATE				Analysis Test ↑			
				TIME				Y/N ↑			
				DATE				Other			
				TIME				Methanol			
				DATE				Na ₂ S ₂ O ₃			
				TIME				NaOH			
				DATE				HCl			
				TIME				HNO ₃			
				DATE				H ₂ SO ₄			
				TIME				Unpreserved			
				DATE				# OF CONTAINERS			
				TIME				Analysis Test ↑			
				DATE				Y/N ↑			
				TIME				Other			
				DATE				Methanol			
				TIME				Na ₂ S ₂ O ₃			
				DATE				NaOH			
				TIME				HCl			
				DATE				HNO ₃			
				TIME				H ₂ SO ₄			
				DATE				Unpreserved			
				TIME				# OF CONTAINERS			
				DATE				Analysis Test ↑			
				TIME				Y/N ↑			
				DATE				Other			
				TIME				Methanol			
				DATE				Na ₂ S ₂ O ₃			
				TIME				NaOH			
				DATE				HCl			
				TIME				HNO ₃			
				DATE				H ₂ SO ₄			
				TIME				Unpreserved			
				DATE				# OF CONTAINERS			
				TIME				Analysis Test ↑			
				DATE				Y/N ↑			
				TIME				Other			
				DATE				Methanol			
				TIME				Na ₂ S ₂ O ₃			
				DATE				NaOH			
				TIME				HCl			
				DATE				HNO ₃			
				TIME				H ₂ SO ₄			
				DATE				Unpreserved			
				TIME				# OF CONTAINERS			
				DATE				Analysis Test ↑			
				TIME				Y/N ↑			
				DATE				Other			
				TIME				Methanol			
				DATE				Na ₂ S ₂ O ₃			
				TIME				NaOH			
				DATE				HCl			
				TIME				HNO ₃			
				DATE				H ₂ SO ₄			
				TIME				Unpreserved			
				DATE				# OF CONTAINERS			
				TIME				Analysis Test ↑			
				DATE				Y/N ↑			
				TIME				Other			
				DATE				Methanol			
				TIME				Na ₂ S ₂ O ₃			
				DATE				NaOH			
				TIME				HCl			

April 22, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92473947

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 16, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92473947

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92473947

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473947001	ES-1-20200415	Water	04/15/20 12:00	04/16/20 09:20
92473947002	ES-1D-20200415	Water	04/15/20 14:15	04/16/20 09:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92473947

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473947001	ES-1-20200415	EPA 6020B	BG2, JOR	13	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	JNS	1	PASI-A
		EPA 9056A	CDC	3	PASI-A
92473947002	ES-1D-20200415	EPA 6020B	BG2, JOR	13	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	JNS	1	PASI-A
		EPA 9056A	CDC	3	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92473947

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473947001	ES-1-20200415					
EPA 6020B	Arsenic	0.18	ug/L	0.10	04/20/20 21:39	
EPA 6020B	Barium	26.9	ug/L	0.30	04/20/20 21:39	
EPA 6020B	Beryllium	1.6	ug/L	0.10	04/20/20 21:39	
EPA 6020B	Cadmium	0.15	ug/L	0.080	04/20/20 21:39	
EPA 6020B	Calcium	9090	ug/L	2000	04/21/20 18:26	
EPA 6020B	Cobalt	5.8	ug/L	0.10	04/20/20 21:39	
EPA 6020B	Lithium	2.9	ug/L	2.5	04/20/20 21:39	
EPA 6020B	Selenium	0.17J	ug/L	0.50	04/20/20 21:39	
EPA 6020B	Thallium	0.077J	ug/L	0.10	04/20/20 21:39	
SM 2540C-2011	Total Dissolved Solids	268	mg/L	25.0	04/19/20 10:07	
EPA 9056A	Chloride	76.7	mg/L	1.0	04/17/20 13:02	
EPA 9056A	Sulfate	79.8	mg/L	1.0	04/17/20 13:02	
92473947002	ES-1D-20200415					
EPA 6020B	Arsenic	0.14	ug/L	0.10	04/20/20 21:50	
EPA 6020B	Barium	74.6	ug/L	0.30	04/20/20 21:50	
EPA 6020B	Calcium	18200	ug/L	4000	04/21/20 18:31	
EPA 6020B	Cobalt	0.39	ug/L	0.10	04/20/20 21:50	
EPA 6020B	Lithium	13.4	ug/L	2.5	04/20/20 21:50	
EPA 6020B	Molybdenum	1.3	ug/L	0.50	04/20/20 21:50	
SM 2540C-2011	Total Dissolved Solids	169	mg/L	25.0	04/19/20 10:07	
EPA 9056A	Chloride	10.0	mg/L	1.0	04/17/20 13:16	
EPA 9056A	Fluoride	75.0J	ug/L	100	04/17/20 13:16	
EPA 9056A	Sulfate	8.6	mg/L	1.0	04/17/20 13:16	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473947

Sample: ES-1-20200415		Lab ID: 92473947001		Collected: 04/15/20 12:00		Received: 04/16/20 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Antimony	ND	ug/L	0.50	0.11	1	04/18/20 01:26	04/20/20 21:39	7440-36-0	
Arsenic	0.18	ug/L	0.10	0.060	1	04/18/20 01:26	04/20/20 21:39	7440-38-2	
Barium	26.9	ug/L	0.30	0.060	1	04/18/20 01:26	04/20/20 21:39	7440-39-3	
Beryllium	1.6	ug/L	0.10	0.050	1	04/18/20 01:26	04/20/20 21:39	7440-41-7	
Cadmium	0.15	ug/L	0.080	0.070	1	04/18/20 01:26	04/20/20 21:39	7440-43-9	
Calcium	9090	ug/L	2000	206	10	04/18/20 01:26	04/21/20 18:26	7440-70-2	
Chromium	ND	ug/L	0.50	0.42	1	04/18/20 01:26	04/20/20 21:39	7440-47-3	
Cobalt	5.8	ug/L	0.10	0.050	1	04/18/20 01:26	04/20/20 21:39	7440-48-4	
Lead	ND	ug/L	0.10	0.050	1	04/18/20 01:26	04/20/20 21:39	7439-92-1	
Lithium	2.9	ug/L	2.5	0.42	1	04/18/20 01:26	04/20/20 21:39	7439-93-2	
Molybdenum	ND	ug/L	0.50	0.10	1	04/18/20 01:26	04/20/20 21:39	7439-98-7	
Selenium	0.17J	ug/L	0.50	0.080	1	04/18/20 01:26	04/20/20 21:39	7782-49-2	
Thallium	0.077J	ug/L	0.10	0.060	1	04/18/20 01:26	04/20/20 21:39	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville							
Mercury	ND	ug/L	0.20	0.10	1	04/20/20 10:40	04/20/20 16:39	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville							
Total Dissolved Solids	268	mg/L	25.0	25.0	1		04/19/20 10:07		
9056 IC anions 28 Days		Analytical Method: EPA 9056A Pace Analytical Services - Asheville							
Chloride	76.7	mg/L	1.0	0.60	1		04/17/20 13:02	16887-00-6	
Fluoride	ND	ug/L	100	50.0	1		04/17/20 13:02	16984-48-8	
Sulfate	79.8	mg/L	1.0	0.50	1		04/17/20 13:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473947

Sample: ES-1D-20200415		Lab ID: 92473947002		Collected: 04/15/20 14:15		Received: 04/16/20 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Antimony	ND	ug/L	0.50	0.11	1	04/18/20 01:26	04/20/20 21:50	7440-36-0	
Arsenic	0.14	ug/L	0.10	0.060	1	04/18/20 01:26	04/20/20 21:50	7440-38-2	
Barium	74.6	ug/L	0.30	0.060	1	04/18/20 01:26	04/20/20 21:50	7440-39-3	
Beryllium	ND	ug/L	0.10	0.050	1	04/18/20 01:26	04/20/20 21:50	7440-41-7	
Cadmium	ND	ug/L	0.080	0.070	1	04/18/20 01:26	04/20/20 21:50	7440-43-9	
Calcium	18200	ug/L	4000	412	20	04/18/20 01:26	04/21/20 18:31	7440-70-2	
Chromium	ND	ug/L	0.50	0.42	1	04/18/20 01:26	04/20/20 21:50	7440-47-3	
Cobalt	0.39	ug/L	0.10	0.050	1	04/18/20 01:26	04/20/20 21:50	7440-48-4	
Lead	ND	ug/L	0.10	0.050	1	04/18/20 01:26	04/20/20 21:50	7439-92-1	
Lithium	13.4	ug/L	2.5	0.42	1	04/18/20 01:26	04/20/20 21:50	7439-93-2	
Molybdenum	1.3	ug/L	0.50	0.10	1	04/18/20 01:26	04/20/20 21:50	7439-98-7	
Selenium	ND	ug/L	0.50	0.080	1	04/18/20 01:26	04/20/20 21:50	7782-49-2	
Thallium	ND	ug/L	0.10	0.060	1	04/18/20 01:26	04/20/20 21:50	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville							
Mercury	ND	ug/L	0.20	0.10	1	04/20/20 10:40	04/20/20 16:47	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville							
Total Dissolved Solids	169	mg/L	25.0	25.0	1		04/19/20 10:07		
9056 IC anions 28 Days		Analytical Method: EPA 9056A Pace Analytical Services - Asheville							
Chloride	10.0	mg/L	1.0	0.60	1		04/17/20 13:16	16887-00-6	
Fluoride	75.0J	ug/L	100	50.0	1		04/17/20 13:16	16984-48-8	
Sulfate	8.6	mg/L	1.0	0.50	1		04/17/20 13:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473947

QC Batch:	537073	Analysis Method:	EPA 7470A
QC Batch Method:	EPA 7470A	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473947001, 92473947002

METHOD BLANK: 2864577 Matrix: Water

Associated Lab Samples: 92473947001, 92473947002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	04/20/20 15:50	

LABORATORY CONTROL SAMPLE: 2864578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.8	114	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864579 2864580

Parameter	Units	92473551001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.8	2.8	114	111	75-125	2	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473947

QC Batch: 536961

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020 MET

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473947001, 92473947002

METHOD BLANK: 2864237

Matrix: Water

Associated Lab Samples: 92473947001, 92473947002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	0.50	0.11	04/20/20 13:39	
Arsenic	ug/L	ND	0.10	0.060	04/20/20 13:39	
Barium	ug/L	ND	0.30	0.060	04/20/20 13:39	
Beryllium	ug/L	ND	0.10	0.050	04/20/20 13:39	
Cadmium	ug/L	ND	0.080	0.070	04/20/20 13:39	
Calcium	ug/L	ND	200	20.6	04/20/20 13:39	
Chromium	ug/L	ND	0.50	0.42	04/20/20 13:39	
Cobalt	ug/L	ND	0.10	0.050	04/20/20 13:39	
Lead	ug/L	ND	0.10	0.050	04/20/20 13:39	
Lithium	ug/L	ND	2.5	0.42	04/20/20 13:39	
Molybdenum	ug/L	ND	0.50	0.10	04/20/20 13:39	
Selenium	ug/L	ND	0.50	0.080	04/20/20 13:39	
Thallium	ug/L	ND	0.10	0.060	04/20/20 13:39	

LABORATORY CONTROL SAMPLE: 2864238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	52.7	105	80-120	
Arsenic	ug/L	10	10.3	103	80-120	
Barium	ug/L	50	52.0	104	80-120	
Beryllium	ug/L	10	9.6	96	80-120	
Cadmium	ug/L	10	10.0	100	80-120	
Calcium	ug/L	625	643	103	80-120	
Chromium	ug/L	50	49.7	99	80-120	
Cobalt	ug/L	10	9.9	99	80-120	
Lead	ug/L	50	51.3	103	80-120	
Lithium	ug/L	50	49.6	99	80-120	
Molybdenum	ug/L	50	50.3	101	80-120	
Selenium	ug/L	50	52.5	105	80-120	
Thallium	ug/L	10	10.2	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864239 2864240

Parameter	Units	92474211005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	50	50	53.0	52.9	106	106	75-125	0	20	
Arsenic	ug/L	0.32	10	10	10.6	10.6	103	103	75-125	0	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473947

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864239 2864240												
Parameter	Units	92474211005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Beryllium	ug/L	ND	10	10	9.7	9.8	97	97	75-125	0	20	
Cadmium	ug/L	ND	10	10	9.9	9.9	99	98	75-125	1	20	
Chromium	ug/L	0.84	50	50	51.5	50.6	101	99	75-125	2	20	
Cobalt	ug/L	ND	10	10	10.2	10.0	99	97	75-125	2	20	
Lead	ug/L	1.0	50	50	53.4	52.7	105	103	75-125	1	20	
Lithium	ug/L	ND	50	50	51.2	51.0	100	100	75-125	0	20	
Molybdenum	ug/L	ND	50	50	50.2	50.3	100	100	75-125	0	20	
Selenium	ug/L	ND	50	50	50.4	50.2	101	100	75-125	0	20	
Thallium	ug/L	ND	10	10	10.5	10.4	105	104	75-125	2	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473947

QC Batch: 537010

Analysis Method: SM 2540C-2011

QC Batch Method: SM 2540C-2011

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473947001, 92473947002

METHOD BLANK: 2864411

Matrix: Water

Associated Lab Samples: 92473947001, 92473947002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	04/19/20 10:03	

LABORATORY CONTROL SAMPLE: 2864412

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	268	107	90-110	

SAMPLE DUPLICATE: 2864413

Parameter	Units	92472791029 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	554	549	1	25	MW

SAMPLE DUPLICATE: 2864414

Parameter	Units	92474026001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	898	902	0	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473947

QC Batch:	536715	Analysis Method:	EPA 9056A
QC Batch Method:	EPA 9056A	Analysis Description:	9056 IC anions 28 Days
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473947001, 92473947002

METHOD BLANK: 2863008 Matrix: Water

Associated Lab Samples: 92473947001, 92473947002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/17/20 10:13	
Fluoride	ug/L	ND	100	50.0	04/17/20 10:13	
Sulfate	mg/L	ND	1.0	0.50	04/17/20 10:13	

LABORATORY CONTROL SAMPLE: 2863009

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.9	104	90-110	
Fluoride	ug/L	2500	2400	96	90-110	
Sulfate	mg/L	50	52.4	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2863010 2863011

Parameter	Units	92474051001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	9.1	50	50	59.6	59.2	101	100	90-110	1	10	
Fluoride	ug/L	ND	2500	2500	2350	2350	93	93	90-110	0	10	
Sulfate	mg/L	2.9	50	50	53.9	53.5	102	101	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.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92473947

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.

ANALYTE QUALIFIERS

MW Due to matrix interference, achieving a constant weight is not possible.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

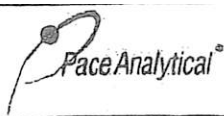
Project: Dominion Energy CCR

Pace Project No.: 92473947

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473947001	ES-1-20200415	EPA 3010A	536961	EPA 6020B	536974
92473947002	ES-1D-20200415	EPA 3010A	536961	EPA 6020B	536974
92473947001	ES-1-20200415	EPA 7470A	537073	EPA 7470A	537132
92473947002	ES-1D-20200415	EPA 7470A	537073	EPA 7470A	537132
92473947001	ES-1-20200415	SM 2540C-2011	537010		
92473947002	ES-1D-20200415	SM 2540C-2011	537010		
92473947001	ES-1-20200415	EPA 9056A	536715		
92473947002	ES-1D-20200415	EPA 9056A	536715		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name:	Document Revised: February 1, 2018
	Sample Condition Upon Receipt (SCUR)	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:

Haley & Aldrich

Project

WO#: 92473947



92473947

Courier:

☐ Commercial

☒ Fed Ex

☐ Pace

☐ UPS

☐ USPS

☐ Other:

☐ Client

Custody Seal Present?

☐ Yes

☒ No

Seals Intact?

☐ Yes

☒ No

Date/Initials Person Examining Contents: EP 4/16/20

Packing Material:

☐ Bubble Wrap

☒ Bubble Bags

☐ None

☐ Other

Thermometer:

☒ IR Gun ID: 92T061

Type of Ice:

☒ Wet

☐ Blue

☐ None

Biological Tissue Frozen?

☐ Yes

☐ No

☒ N/A

Cooler Temp (°C): 0.7

Correction Factor: Add/Subtract (°C)

+0.1

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): 0.8

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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

Date:

Project Manager SRF Review:

Date:

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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.

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

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

Project # **W0# : 92473947**

PM: PTE

Due Date: 05/07/20

CLIENT: 92-Haley VA

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	/	/		/	/	/	/	/		/	/	/	/	/	/									/	/				
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).

April 22, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy VSWMR
Pace Project No.: 92473948

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 16, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473948001	ES-1-20200415	Water	04/15/20 12:00	04/16/20 09:20
92473948002	ES-1D-20200415	Water	04/15/20 14:15	04/16/20 09:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473948001	ES-1-20200415	EPA 6020B	BG2, JOR	9	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A
92473948002	ES-1D-20200415	EPA 6020B	BG2, JOR	9	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473948001	ES-1-20200415					
EPA 6020B	Copper	24.4	ug/L	0.50	04/20/20 21:55	
EPA 6020B	Iron	974	ug/L	50.0	04/20/20 21:55	
EPA 6020B	Manganese	164	ug/L	5.0	04/21/20 18:44	
EPA 6020B	Potassium	3820	ug/L	500	04/21/20 18:44	
EPA 6020B	Sodium	63100	ug/L	25000	04/21/20 18:35	
EPA 6020B	Hardness, Total(SM 2340B)	39000	ug/L	5410	04/21/20 18:44	
EPA 6020B	Vanadium	1.9	ug/L	0.30	04/20/20 21:55	
SM 5310B-2011	Nonpurgeable Organic Carbon	0.84J	mg/L	1.0	04/20/20 21:44	
92473948002	ES-1D-20200415					
EPA 6020B	Copper	0.47J	ug/L	0.50	04/20/20 22:06	
EPA 6020B	Iron	3510	ug/L	500	04/21/20 18:48	
EPA 6020B	Manganese	261	ug/L	5.0	04/21/20 18:48	
EPA 6020B	Potassium	8330	ug/L	500	04/21/20 18:48	
EPA 6020B	Sodium	10900	ug/L	2500	04/21/20 18:48	
EPA 6020B	Tin	0.35J	ug/L	0.50	04/20/20 22:06	
EPA 6020B	Hardness, Total(SM 2340B)	77500	ug/L	10800	04/21/20 18:39	
EPA 6020B	Vanadium	0.86	ug/L	0.30	04/20/20 22:06	
SM 5310B-2011	Nonpurgeable Organic Carbon	0.65J	mg/L	1.0	04/20/20 23:03	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

Sample: ES-1-20200415		Lab ID: 92473948001		Collected: 04/15/20 12:00		Received: 04/16/20 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	24.4	ug/L	0.50	0.23	1	04/18/20 01:26	04/20/20 21:55	7440-50-8	
Iron	974	ug/L	50.0	7.5	1	04/18/20 01:26	04/20/20 21:55	7439-89-6	
Manganese	164	ug/L	5.0	1.4	10	04/18/20 01:26	04/21/20 18:44	7439-96-5	
Potassium	3820	ug/L	500	61.9	10	04/18/20 01:26	04/21/20 18:44	7440-09-7	
Silver	ND	ug/L	0.40	0.050	1	04/18/20 01:26	04/20/20 21:55	7440-22-4	
Sodium	63100	ug/L	25000	1430	100	04/18/20 01:26	04/21/20 18:35	7440-23-5	
Tin	ND	ug/L	0.50	0.090	1	04/18/20 01:26	04/20/20 21:55	7440-31-5	
Hardness, Total(SM 2340B)	39000	ug/L	5410	701	10	04/18/20 01:26	04/21/20 18:44		
Vanadium	1.9	ug/L	0.30	0.12	1	04/18/20 01:26	04/20/20 21:55	7440-62-2	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/20/20 09:55	04/20/20 13:58	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	0.84J	mg/L	1.0	0.50	1		04/20/20 21:44	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

Sample: ES-1D-20200415		Lab ID: 92473948002		Collected: 04/15/20 14:15		Received: 04/16/20 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	0.47J	ug/L	0.50	0.23	1	04/18/20 01:26	04/20/20 22:06	7440-50-8	
Iron	3510	ug/L	500	74.8	10	04/18/20 01:26	04/21/20 18:48	7439-89-6	
Manganese	261	ug/L	5.0	1.4	10	04/18/20 01:26	04/21/20 18:48	7439-96-5	
Potassium	8330	ug/L	500	61.9	10	04/18/20 01:26	04/21/20 18:48	7440-09-7	
Silver	ND	ug/L	0.40	0.050	1	04/18/20 01:26	04/20/20 22:06	7440-22-4	
Sodium	10900	ug/L	2500	143	10	04/18/20 01:26	04/21/20 18:48	7440-23-5	
Tin	0.35J	ug/L	0.50	0.090	1	04/18/20 01:26	04/20/20 22:06	7440-31-5	
Hardness, Total(SM 2340B)	77500	ug/L	10800	1400	20	04/18/20 01:26	04/21/20 18:39		
Vanadium	0.86	ug/L	0.30	0.12	1	04/18/20 01:26	04/20/20 22:06	7440-62-2	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/20/20 09:55	04/20/20 13:59	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	0.65J	mg/L	1.0	0.50	1		04/20/20 23:03	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

QC Batch: 536961

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020 MET

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473948001, 92473948002

METHOD BLANK: 2864237

Matrix: Water

Associated Lab Samples: 92473948001, 92473948002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Copper	ug/L	ND	0.50	0.23	04/20/20 13:39	
Hardness, Total(SM 2340B)	ug/L	ND	541	70.1	04/20/20 13:39	
Iron	ug/L	ND	50.0	7.5	04/20/20 13:39	
Manganese	ug/L	ND	0.50	0.14	04/20/20 13:39	
Potassium	ug/L	ND	50.0	6.2	04/20/20 13:39	
Silver	ug/L	ND	0.40	0.050	04/20/20 13:39	
Sodium	ug/L	ND	250	14.3	04/20/20 13:39	
Tin	ug/L	ND	0.50	0.090	04/20/20 13:39	
Vanadium	ug/L	ND	0.30	0.12	04/20/20 13:39	

LABORATORY CONTROL SAMPLE: 2864238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	50	49.2	98	80-120	
Hardness, Total(SM 2340B)	ug/L		4200			
Iron	ug/L	625	622	100	80-120	
Manganese	ug/L	50	50.6	101	80-120	
Potassium	ug/L	625	647	104	80-120	
Silver	ug/L	25	25.7	103	80-120	
Sodium	ug/L	625	630	101	80-120	
Tin	ug/L	50	51.5	103	80-120	
Vanadium	ug/L	50	51.2	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864239 2864240

Parameter	Units	92474211005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	1.6	50	50	50.1	49.2	97	95	75-125	2	20	
Hardness, Total(SM 2340B)	ug/L	243000			241000	238000				1	20	
Silver	ug/L	ND	25	25	25.5	25.2	102	101	75-125	1	20	
Tin	ug/L	ND	50	50	50.6	50.3	101	100	75-125	1	20	
Vanadium	ug/L	1.6	50	50	52.9	52.2	103	101	75-125	1	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

QC Batch: 537059

Analysis Method: EPA 420.4 Rev 1.0 1993

QC Batch Method: EPA 420.4 Rev 1.0 1993

Analysis Description: 420.4 Phenolics

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473948001, 92473948002

METHOD BLANK: 2864517

Matrix: Water

Associated Lab Samples: 92473948001, 92473948002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenol	mg/L	ND	0.020	0.0050	04/20/20 13:38	

LABORATORY CONTROL SAMPLE: 2864518

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	mg/L	0.05	0.050	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864519 2864520

Parameter	Units	92473041001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.059	0.060	110	111	90-110	1	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864521 2864522

Parameter	Units	92473553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.047	0.051	94	102	90-110	9	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

QC Batch: 537194

Analysis Method: SM 5310B-2011

QC Batch Method: SM 5310B-2011

Analysis Description: 5310B WVA Nonpurgeable Organic Carbon

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473948001, 92473948002

METHOD BLANK: 2865199

Matrix: Water

Associated Lab Samples: 92473948001, 92473948002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nonpurgeable Organic Carbon	mg/L	ND	1.0	0.50	04/20/20 18:36	

LABORATORY CONTROL SAMPLE: 2865200

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nonpurgeable Organic Carbon	mg/L	25	25.2	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2865201 2865202

Parameter	Units	92473785001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	5.7	25	25	30.2	30.3	98	98	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy VSWMR
Pace Project No.: 92473948

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.

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy VSWMR

Pace Project No.: 92473948

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473948001	ES-1-20200415	EPA 3010A	536961	EPA 6020B	536974
92473948002	ES-1D-20200415	EPA 3010A	536961	EPA 6020B	536974
92473948001	ES-1-20200415	EPA 420.4 Rev 1.0 1993	537059	EPA 420.4 Rev 1.0 1993	537103
92473948002	ES-1D-20200415	EPA 420.4 Rev 1.0 1993	537059	EPA 420.4 Rev 1.0 1993	537103
92473948001	ES-1-20200415	SM 5310B-2011	537194		
92473948002	ES-1D-20200415	SM 5310B-2011	537194		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: February 7, 2020 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:

Haley S Aldrich

Project

WO# : 92473948



Courier:

☐ Commercial

☒ Fed Ex

☐ Pace

☐ UPS

☐ USPS

☐ Other:

☐ Client

Custody Seal Present?

☐ Yes

☒ No

Seals Intact?

☐ Yes

☒ No

Date/Initials Person Examining Contents: EP 4/16/20

Packing Material:

☐ Bubble Wrap

☒ Bubble Bags

☐ None

☐ Other

Thermometers:

☒ IR Gun ID: 92T061

Type of Ice:

☒ Wet

☐ Blue

☐ None

Biological Tissue Frozen?

☐ Yes

☐ No

☒ N/A

Cooler Temp (°C):

0.7

Correction Factor: Add/Subtract (°C)

+0.1

Cooler Temp Corrected (°C):

0.8

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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?

☒ Yes

☐ No

☐ N/A

1.

Samples Arrived within Hold Time?

☒ Yes

☐ No

☐ N/A

2.

Short Hold Time Analysis (<72 hr.)?

☐ Yes

☒ No

☐ N/A

3.

Rush Turn Around Time Requested?

☐ Yes

☒ No

☐ N/A

4.

Sufficient Volume?

☒ Yes

☐ No

☐ N/A

5.

Correct Containers Used?

☒ Yes

☐ No

☐ N/A

6.

-Pace Containers Used?

☒ Yes

☐ No

☐ N/A

Containers Intact?

☒ Yes

☐ No

☐ N/A

7.

Dissolved analysis: Samples Field Filtered?

☐ Yes

☐ No

☒ N/A

8.

Sample Labels Match COC?

☒ Yes

☐ No

☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: WT

Headspace in VOA Vials (>5-6mm)?

☐ Yes

☒ No

☐ N/A

10.

Trip Blank Present?

☐ Yes

☐ No

☒ N/A

11.

Trip Blank Custody Seals Present?

☐ Yes

☐ No

☒ 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:

Date:

Project Manager SRF Review:

Date:

*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# : 92473948

PM: PTE

Due Date: 04/30/20

CLIENT: 92-Haley VA

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)	SPST-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																													
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.

Section A

Required Client Information:

Company: HALEY & ALDRICH, Inc.
Address: 1 Park West Circle
Suite 208, Midlothian, VA 23114
Email To: ewright@haleyvaldrich.com
Phone: 804-419-0012 | Fax:
Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Wright, Erin
Copy To: Chatterton, Kelly
BSA #: 2019-22-Pace
H&A Client Name: Dominion Energy: Possum Point
H&A Project #: 134660

Section C

Invoice Information:

Attention: 220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)
1700 Elm Street SE - Minneapolis, MN 55414
7726 Moller Road - Indianapolis, IN 46268
REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐
Site Location: NA
STATE: NA

Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between HALEY & ALDRICH, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water Water Waste Water Product Solid/Solid Oil Wipe Air Tissue Other	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED			SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test ↑ Y/N	VSMR Metals List	WCB Water Quality Pollutant List	Total Organic Carbon (TOC)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					Collection Info	Sample Depth	TIME			Start Depth (Circle: feet or inches)	End Depth (Circle: feet or inches)	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other						
1	ES-1-20200415		WT	G	4-15-20	1200													X	X	X			92473948	
2	ES-1D-20200415		WT	G	4-15-20	1415													X	X	X			001	
3																								002	
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME		SAMPLE CONDITIONS															
	Andy Geringer		H-A		4-15-20		Erick Haringer		4/15/20		1730		0.7 N															
VSMR Metals List: copper, silver, tin, and vanadium																												
VWCB Water Quality Pollutant List: phenolics, potassium, iron, manganese, hardness, and sodium.																												
SAMPLER NAME AND SIGNATURE																												
PRINT Name of SAMPLER: Andy Geringer							DATE Signed (MM/DD/YYYY): 4-15-20																					
SIGNATURE of SAMPLER:																												
Temp in °C																												
Custody (Y/N)																												
Sealed Cooler (Y/N)																												
Samples Intact (Y/N)																												

Analysis Detects Report

Client Name:

Date Issued:

Client Site ID:

Submitted To:

Laboratory Sample ID:

Client Sample ID:

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	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 200409

Client Name: Haley & Aldrich

Date Issued: 5/12/2020 2:23:02PM

1 Park West Circle, Suite 208

Midlothian, VA 23114

Submitted To: Erin Wright

Client Site I.D.: Possum Point Hex Chrome

Purchase Order:

Enclosed are the results of analyses for samples received by the laboratory in sample delivery group Possum Point 200409 . Work orders included in the sample delivery group:

<u>Work Order</u>	<u>Receive Date</u>	<u>Project Number</u>
20D0312	4/8/2020 8:00:00AM	134660
20D0391	4/9/2020 8:00:00AM	134660
20D0471	4/10/2020 7:55:00AM	134660
20D0498	4/10/2020 2:36:00PM	134660
20D0522	4/14/2020 8:00:00AM	134660
20D0590	4/15/2020 8:00:00AM	134660
20D0680	4/16/2020 8:05:00AM	134660

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: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
ED-22RA-20200407	20D0312-01	Ground Water	04/07/2020 10:15	04/08/2020 08:00
ED-23R-20200408	20D0391-01	Ground Water	04/08/2020 10:36	04/09/2020 08:00
ES-3D-20200408	20D0391-02	Ground Water	04/08/2020 12:16	04/09/2020 08:00
ES-1609-20200408	20D0391-03	Ground Water	04/08/2020 13:31	04/09/2020 08:00
ES-1613-20200408	20D0391-04	Ground Water	04/08/2020 14:46	04/09/2020 08:00
T-1615S-20200410	20D0498-02	Ground Water	04/10/2020 11:26	04/10/2020 14:36
T-1615D-20200410	20D0498-03	Ground Water	04/10/2020 12:21	04/10/2020 14:36
ED-24R-20200413	20D0522-01	Ground Water	04/13/2020 15:30	04/14/2020 08:00
ED-26-20200414	20D0590-01	Ground Water	04/14/2020 11:20	04/15/2020 08:00
EB-01-20200414	20D0590-03	Ground Water	04/14/2020 16:30	04/15/2020 08:00
ES-1-20200415	20D0680-01	Ground Water	04/15/2020 12:00	04/16/2020 08:05
ES-1D-20200415	20D0680-02	Ground Water	04/15/2020 14:15	04/16/2020 08:05

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ED-22RA-20200407

Laboratory Sample ID: 20D0312-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	01	18540-29-9	SW7196A	04/08/2020 08:30	04/08/2020 09:45	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ED-23R-20200408

Laboratory Sample ID: 20D0391-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	01	18540-29-9	SW7196A	04/09/2020 08:35	04/09/2020 10:15	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ES-3D-20200408

Laboratory Sample ID: 20D0391-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	02	18540-29-9	SW7196A	04/09/2020 08:35	04/09/2020 10:15	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ES-1609-20200408

Laboratory Sample ID: 20D0391-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	03	18540-29-9	SW7196A	04/09/2020 08:35	04/09/2020 10:15	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ES-1613-20200408

Laboratory Sample ID: 20D0391-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	04	18540-29-9	SW7196A	04/09/2020 08:35	04/09/2020 10:15	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: T-1615S-20200410

Laboratory Sample ID: 20D0498-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	02	18540-29-9	SW7196A	04/10/2020 14:50	04/10/2020 15:30	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: T-1615D-20200410

Laboratory Sample ID: 20D0498-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	03	18540-29-9	SW7196A	04/10/2020 14:50	04/10/2020 15:30	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ED-24R-20200413

Laboratory Sample ID: 20D0522-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	01	18540-29-9	SW7196A	04/14/2020 08:00	04/14/2020 11:20	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ED-26-20200414

Laboratory Sample ID: 20D0590-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	01	18540-29-9	SW7196A	04/15/2020 09:00	04/15/2020 11:00	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: EB-01-20200414

Laboratory Sample ID: 20D0590-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	03	18540-29-9	SW7196A	04/15/2020 09:00	04/15/2020 11:00	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ES-1-20200415

Laboratory Sample ID: 20D0680-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	01	18540-29-9	SW7196A	04/16/2020 10:00	04/16/2020 11:30	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Client Sample ID: ES-1D-20200415

Laboratory Sample ID: 20D0680-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Wet Chemistry Analysis												
Chromium, Hexavalent	02	18540-29-9	SW7196A	04/16/2020 10:00	04/16/2020 11:30	BLOD	U	0.005	0.005	1	mg/L	MWL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

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 BDD0211 - No Prep Wet Chem										
Blank (BDD0211-BLK1)				Prepared & Analyzed: 04/08/2020						
Chromium, Hexavalent	ND	0.005	mg/L							U
LCS (BDD0211-BS1)				Prepared & Analyzed: 04/08/2020						
Chromium, Hexavalent	0.102	0.005	mg/L	0.100		102	80-120			
Matrix Spike (BDD0211-MS1)				Source: 20D0312-01 Prepared & Analyzed: 04/08/2020						
Chromium, Hexavalent	0.082	0.005	mg/L	0.100	BLOD	82.0	80-120			
Matrix Spike Dup (BDD0211-MSD1)				Source: 20D0312-01 Prepared & Analyzed: 04/08/2020						
Chromium, Hexavalent	0.082	0.005	mg/L	0.100	BLOD	82.0	80-120	0.00	20	
Batch BDD0269 - No Prep Wet Chem										
Blank (BDD0269-BLK1)				Prepared & Analyzed: 04/09/2020						
Chromium, Hexavalent	ND	0.005	mg/L							U
LCS (BDD0269-BS1)				Prepared & Analyzed: 04/09/2020						
Chromium, Hexavalent	0.103	0.005	mg/L	0.100		103	80-120			
Matrix Spike (BDD0269-MS1)				Source: 20D0391-01 Prepared & Analyzed: 04/09/2020						
Chromium, Hexavalent	0.089	0.005	mg/L	0.100	BLOD	89.0	80-120			
Matrix Spike Dup (BDD0269-MSD1)				Source: 20D0391-01 Prepared & Analyzed: 04/09/2020						
Chromium, Hexavalent	0.086	0.005	mg/L	0.100	BLOD	86.0	80-120	3.43	20	
Batch BDD0367 - No Prep Wet Chem										
Blank (BDD0367-BLK1)				Prepared & Analyzed: 04/14/2020						
Chromium, Hexavalent	ND	0.005	mg/L							U

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

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 BDD0367 - No Prep Wet Chem										
LCS (BDD0367-BS1)				Prepared & Analyzed: 04/14/2020						
Chromium, Hexavalent	0.101	0.005	mg/L	0.100		101	80-120			
Matrix Spike (BDD0367-MS1)				Source: 20D0522-01		Prepared & Analyzed: 04/14/2020				
Chromium, Hexavalent	0.108	0.005	mg/L	0.100	BLOD	108	80-120			
Matrix Spike Dup (BDD0367-MSD1)				Source: 20D0522-01		Prepared & Analyzed: 04/14/2020				
Chromium, Hexavalent	0.103	0.005	mg/L	0.100	BLOD	103	80-120	4.74	20	
Batch BDD0468 - No Prep Wet Chem										
Blank (BDD0468-BLK1)				Prepared & Analyzed: 04/10/2020						
Chromium, Hexavalent	ND	0.005	mg/L							U
LCS (BDD0468-BS1)				Prepared & Analyzed: 04/10/2020						
Chromium, Hexavalent	0.099	0.005	mg/L	0.100		99.0	80-120			
Matrix Spike (BDD0468-MS1)				Source: 20D0471-03		Prepared & Analyzed: 04/10/2020				
Chromium, Hexavalent	0.094	0.005	mg/L	0.100	BLOD	94.0	80-120			
Matrix Spike (BDD0468-MS2)				Source: 20D0498-01		Prepared & Analyzed: 04/10/2020				
Chromium, Hexavalent	0.090	0.005	mg/L	0.100	BLOD	90.0	80-120			
Matrix Spike Dup (BDD0468-MSD1)				Source: 20D0471-03		Prepared & Analyzed: 04/10/2020				
Chromium, Hexavalent	0.094	0.005	mg/L	0.100	BLOD	94.0	80-120	0.00	20	
Matrix Spike Dup (BDD0468-MSD2)				Source: 20D0498-01		Prepared & Analyzed: 04/10/2020				
Chromium, Hexavalent	0.091	0.005	mg/L	0.100	BLOD	91.0	80-120	1.10	20	

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

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 BDD0480 - No Prep Wet Chem										
Blank (BDD0480-BLK1)				Prepared & Analyzed: 04/15/2020						
Chromium, Hexavalent	ND	0.005	mg/L							U
LCS (BDD0480-BS1)				Prepared & Analyzed: 04/15/2020						
Chromium, Hexavalent	0.099	0.005	mg/L	0.100		99.0	80-120			
Matrix Spike (BDD0480-MS1)				Source: 20D0590-03		Prepared & Analyzed: 04/15/2020				
Chromium, Hexavalent	0.102	0.005	mg/L	0.100	BLOD	102	80-120			
Matrix Spike Dup (BDD0480-MSD1)				Source: 20D0590-03		Prepared & Analyzed: 04/15/2020				
Chromium, Hexavalent	0.105	0.005	mg/L	0.100	BLOD	105	80-120	2.90	20	
Batch BDD0504 - No Prep Wet Chem										
Blank (BDD0504-BLK1)				Prepared & Analyzed: 04/16/2020						
Chromium, Hexavalent	ND	0.005	mg/L							U
LCS (BDD0504-BS1)				Prepared & Analyzed: 04/16/2020						
Chromium, Hexavalent	0.103	0.005	mg/L	0.100		103	80-120			
Matrix Spike (BDD0504-MS1)				Source: 20D0680-01		Prepared & Analyzed: 04/16/2020				
Chromium, Hexavalent	0.093	0.005	mg/L	0.100	BLOD	93.0	80-120			
Matrix Spike Dup (BDD0504-MSD1)				Source: 20D0680-01		Prepared & Analyzed: 04/16/2020				
Chromium, Hexavalent	0.094	0.005	mg/L	0.100	BLOD	94.0	80-120	1.07	20	

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Analysis			Preparation Method:	No Prep Wet Chem	
20D0312-01	100 mL / 100 mL	SW7196A	BDD0211	SDD0191	AD00032
20D0391-01	100 mL / 100 mL	SW7196A	BDD0269	SDD0239	AD00043
20D0391-02	100 mL / 100 mL	SW7196A	BDD0269	SDD0239	AD00043
20D0391-03	100 mL / 100 mL	SW7196A	BDD0269	SDD0239	AD00043
20D0391-04	100 mL / 100 mL	SW7196A	BDD0269	SDD0239	AD00043
20D0522-01	100 mL / 100 mL	SW7196A	BDD0367	SDD0417	AD00075
20D0498-02	100 mL / 100 mL	SW7196A	BDD0468	SDD0405	AD00070
20D0498-03	100 mL / 100 mL	SW7196A	BDD0468	SDD0405	AD00070
20D0590-01	100 mL / 100 mL	SW7196A	BDD0480	SDD0446	AD00076
20D0590-03	100 mL / 100 mL	SW7196A	BDD0480	SDD0446	AD00076
20D0680-01	100 mL / 100 mL	SW7196A	BDD0504	SDD0452	AD00078
20D0680-02	100 mL / 100 mL	SW7196A	BDD0504	SDD0452	AD00078

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Certified Analyses included in this Report

Analyte	Certifications
SW7196A in Non-Potable Water	
Chromium, Hexavalent	VELAP

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2020
NC	North Carolina DENR	495	12/31/2020
NCDOH	North Carolina Department of Health	51714	07/31/2020
NJDEP	New Jersey DEP	VA015	06/30/2020
PADEP	NELAC-Pennsylvania Certificate #005	68-03503	10/31/2020
VELAP	NELAC-Virginia Certificate #10637	460021	06/14/2020
WVDEP	West Virginia DEP	350	11/30/2020

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Qualifiers and Definitions

U	Analyte was not detected and is reported as less than the DL or as defined by the client. The DL has been adjusted for any dilution or concentration of the sample.
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.



LABORATORIES, INC.

1941 REYMET ROAD
RICHMOND, VIRGINIA 23237
(804) 358-8295 PHONE
(804)358-8297 FAX

Chain of Custody
Form #: F1331
Rev. 2.0
Effective: Jun 28, 2016

CHAIN OF CUSTODY

PAGE 1 OF 1

COMPANY NAME: Haley & Aldrich		INVOICE TO: AP	PROJECT NAME: Possum Point Hex Chrome
CONTACT: Erin Wright		INVOICE CONTACT: ap@haleyaldrich.com	SITE NAME:
ADDRESS: 1 Park West Circle, Suite 208		INVOICE ADDRESS:	PROJECT NUMBER:
PHONE #: (804) 419-0010		INVOICE PHONE #:	P.O. #:
FAX #:	EMAIL: ewright@haleyaldrich.com	Pretreatment Program:	
Is sample for compliance reporting? YES NO		Is sample from a chlorinated supply? YES NO	
SAMPLER NAME (PRINT): Ryan Beauregard		SAMPLER SIGNATURE: Ryan Beauregard	
		Turn Around Time:	
		PWS I.D. #:	

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

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
											Cr VI	SW	7196						
1) ED-22RA-20200407	X					4-7-20	1015		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
2)									GW	1	X								PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)
3)									GW	1	X								
4)									GW	1	X								
5)									GW	1	X								
6)									GW	1	X								
7)									GW	1	X								
8)									GW	1	X								
9)									GW	1	X								
10)									GW	1	X								No Seal on Ice

RELINQUISHED: Ryan Beauregard	DATE / TIME: 2020-0407 @ 1717	RECEIVED: LCN	DATE / TIME: 4/8/20 0800	QC Data Package	LAB USE ONLY	COOLER TEMP: 0.2 °C
RELINQUISHED: LCN	DATE / TIME: 2020-0407 PM	RECEIVED: LCN	DATE / TIME: 4/8/20 0800	Level III ☐	Haley & Aldrich	20D0312
				Level IV ☐	Possum Point Hex Chrome	
					Recd: 04/08/2020	Due: 04/16/2020

CHAIN OF CUSTODY

PAGE ____ OF ____

COMPANY NAME: Haley & Aldrich		INVOICE TO: AP		PROJECT NAME: Possum Point Hex Chrome	
CONTACT: Erin Wright		INVOICE CONTACT: ap@haleyaldrich.com		SITE NAME:	
ADDRESS: 1 Park West Circle, Suite 208		INVOICE ADDRESS:		PROJECT NUMBER:	
PHONE #: (804) 419-0010		INVOICE PHONE #:		P.O. #:	
FAX #:		EMAIL: ewright@haleyaldrich.com		Pretreatment Program:	
Is sample for compliance reporting? YES NO		Is sample from a chlorinated supply? YES NO		PWS I.D. #:	
SAMPLER NAME (PRINT): <i>Ryan Bearegard</i>		SAMPLER SIGNATURE: <i>Ryan Bearegard</i>		Turn Around Time:	

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
											Cr VI SW7196								
1) <i>ED-23A-20200408</i>	X					<i>0408-2020</i>	<i>1036</i>		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
2) <i>ES-30-20200408</i>	X					<i>0408-2020</i>	<i>1216</i>		GW	1	X								
3) <i>ES-1609-20200408</i>	X					<i>0408-2020</i>	<i>1331</i>		GW	1	X								
4) <i>ES-1613-20200408</i>	X					<i>0408-2020</i>	<i>1446</i>		GW	1	X								
5)									GW	1	X								
6)									GW	1	X								
7)									GW	1	X								
8)									GW	1	X								
9)									GW	1	X								
10)									GW	1	X								No seal on ice

RELINQUISHED: <i>Alan Quick</i>	DATE / TIME: <i>4/8/20/1705</i>	RECEIVED: <i>Courier</i>	DATE / TIME: <i>4/9/20 0800</i>	QC Data Package	LAB USE ONLY	COOLER TEMP <i>2.2</i> °C
RELINQUISHED:	DATE / TIME:	RECEIVED:	DATE / TIME:	Level III ☐	Haley & Aldrich	20D0391
RELINQUISHED:	DATE / TIME:	RECEIVED:	DATE / TIME:	Level IV ☐	Possum Point Hex Chrome	
				Recd: 04/09/2020 Due: 04/17/20		

CHAIN OF CUSTODY

PAGE ____ OF ____

COMPANY NAME: Haley & Aldrich			INVOICE TO: AP			PROJECT NAME: Possum Point Hex Chrome																																																																																																																																																																																																																			
CONTACT: Erin Wright			INVOICE CONTACT: <u>ap@haleyaldrich.com</u>			SITE NAME:																																																																																																																																																																																																																			
ADDRESS: 1 Park West Circle, Suite 208			INVOICE ADDRESS:			PROJECT NUMBER:																																																																																																																																																																																																																			
PHONE #: (804) 419-0010			INVOICE PHONE #:			P.O. #:																																																																																																																																																																																																																			
FAX #:			EMAIL: <u>ewright@haleyaldrich.com</u>			Pretreatment Program:																																																																																																																																																																																																																			
Is sample for compliance reporting? YES NO			Is sample from a chlorinated supply? YES NO			PWS I.D. #:																																																																																																																																																																																																																			
SAMPLER NAME (PRINT): <u>Ryan Beauregard</u>			SAMPLER SIGNATURE: <u>Ryan Beauregard</u>			Turn Around Time:																																																																																																																																																																																																																			
Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other								COMMENTS 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)																																																																																																																																																																																																																	
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">CLIENT SAMPLE I.D.</th> <th rowspan="2">Grab</th> <th rowspan="2">Composite</th> <th rowspan="2">Field Filtered (Dissolved Metals)</th> <th rowspan="2">Composite Start Date</th> <th rowspan="2">Composite Stop Time</th> <th rowspan="2">Grab Date or Composite Stop Date</th> <th rowspan="2">Grab Time or Composite Stop Time</th> <th rowspan="2">Time Preserved</th> <th rowspan="2">Matrix (See Codes)</th> <th rowspan="2">Number of Containers</th> <th colspan="8">ANALYSIS / (PRESERVATIVE)</th> </tr> <tr> <th>Cr VI SW7196</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1) ABC-1602-20200409</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td>20200409</td> <td>1016</td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2) ABC-1614-20200409</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td>20200409</td> <td>1216</td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3) ABC-1607-20200409</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td>20200409</td> <td>1416</td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4) FD-01-20200409</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td>20200409</td> <td>1001</td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5) FB-01-20200409</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td>20200409</td> <td>1630</td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>GW</td> <td>1</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>									CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Stop Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)								Cr VI SW7196										1) ABC-1602-20200409	X					20200409	1016		GW	1	X								2) ABC-1614-20200409	X					20200409	1216		GW	1	X							3) ABC-1607-20200409	X					20200409	1416		GW	1	X							4) FD-01-20200409	X					20200409	1001		GW	1	X							5) FB-01-20200409	X					20200409	1630		GW	1	X							6)									GW	1	X							7)									GW	1	X							8)									GW	1	X							9)									GW	1	X																GW	1	X					
CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Stop Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved												Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)																																																																																																																																																																																																			
									Cr VI SW7196																																																																																																																																																																																																																
1) ABC-1602-20200409	X					20200409	1016		GW	1	X																																																																																																																																																																																																														
2) ABC-1614-20200409	X					20200409	1216		GW	1	X																																																																																																																																																																																																														
3) ABC-1607-20200409	X					20200409	1416		GW	1	X																																																																																																																																																																																																														
4) FD-01-20200409	X					20200409	1001		GW	1	X																																																																																																																																																																																																														
5) FB-01-20200409	X					20200409	1630		GW	1	X																																																																																																																																																																																																														
6)									GW	1	X																																																																																																																																																																																																														
7)									GW	1	X																																																																																																																																																																																																														
8)									GW	1	X																																																																																																																																																																																																														
9)									GW	1	X																																																																																																																																																																																																														
									GW	1	X																																																																																																																																																																																																														
QUISHED: <u>Ryan Beauregard</u> DATE / TIME: <u>20200409 091700</u>		RECEIVED: <u>[Signature]</u> DATE / TIME: <u>4/9/20 4:05</u>		QUISHED: <u>Logistics</u> DATE / TIME: <u>4/10/20 755</u>		RECEIVED: <u>[Signature]</u> DATE / TIME: <u>4/10/20 755</u>		QC Data Package Level III ☐ Level IV ☐		LAB USE ONLY <u>4277</u> COOLER TEMP <u>0.9 °C</u> Haley & Aldrich 20D0471 Possum Point Hex Chrome Recd: 04/10/2020 Due: 04/20/2020																																																																																																																																																																																																															

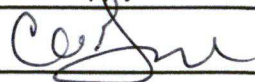
CHAIN OF CUSTODY

PAGE ____ OF ____

COMPANY NAME: Haley & Aldrich				INVOICE TO: AP				PROJECT NAME: Possum Point Hex Chrome										
CONTACT: Erin Wright				INVOICE CONTACT: ap@haleyaldrich.com				SITE NAME:										
ADDRESS: 1 Park West Circle, Suite 208				INVOICE ADDRESS:				PROJECT NUMBER:										
PHONE #: (804) 419-0010				INVOICE PHONE #:				P.O. #:										
FAX #:		EMAIL: ewright@haleyaldrich.com		Pretreatment Program:														
Is sample for compliance reporting? YES NO				Is sample from a chlorinated supply? YES NO				PWS I.D. #:										
SAMPLER NAME (PRINT): <i>Ryan Beauregard</i>				SAMPLER SIGNATURE: <i>Ryan Beauregard</i>				Turn Around Time:										
Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other										COMMENTS								
CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Stop Date	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						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	
											Cr VI SW7196							
1) ABC-1608-20200410	X					20200410	0831		GW	1	X							
2) T-1615S-20200410	X					20200410	1126		GW	1	X							
3) T-1615D-20200410	X					20200410	1221		GW	1	X							
4)									GW	1	X							
5)									GW	1	X							
6)									GW	1	X							
7)									GW	1	X							
8)									GW	1	X							
9)									GW	1	X							
10)									GW	1	X							
RELINQUISHED: <i>Ryan Beauregard</i>		DATE / TIME: 20200410 @ 1255		RECEIVED: <i>Steven White</i>		DATE / TIME: 4/10/20 12:51		QC Data Package		LAB USE ONLY		COOLER TEMP 19.4 °C						
RELINQUISHED: <i>EN</i>		DATE / TIME:		RECEIVED: <i>[Signature]</i>		DATE / TIME: 4/10/20 1430		Level III ☐		Haley & Aldrich		20D0498						
RELINQUISHED:		DATE / TIME:		RECEIVED:		DATE / TIME:		Level IV ☐		Possum Point Hex Chrome								
RELINQUISHED:		DATE / TIME:		RECEIVED:		DATE / TIME:				Recd: 04/10/2020		Due: 04/20/2020		Page 26 of 36				

CHAIN OF CUSTODY

PAGE 1 OF 1

COMPANY NAME: Haley & Aldrich		INVOICE TO: AP		PROJECT NAME: Possum Point Hex Chrome	
CONTACT: Erin Wright		INVOICE CONTACT: ap@haleyaldrich.com		SITE NAME:	
ADDRESS: 1 Park West Circle, Suite 208		INVOICE ADDRESS:		PROJECT NUMBER: 134660	
PHONE #: (804) 419-0010		INVOICE PHONE #:		P.O. #:	
FAX #:		EMAIL: ewright@haleyaldrich.com		Pretreatment Program:	
Is sample for compliance reporting? YES NO		Is sample from a chlorinated supply? YES NO		PWS I.D. #:	
SAMPLER NAME (PRINT): Andy Gerringer		SAMPLER SIGNATURE: 		Turn Around Time: Standard	

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 Stop Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)								COMMENTS
											Cr VI SW7196								
1) ED-24R-20200413	X					4-13-20	1530		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
2) ED-24R-20200413 MS	X					↓	↓		GW	1	X								PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)
3) ED-24R-20200413 MSD	X								GW	1	X								
4)									GW	1	X								
5)									GW	1	X								
6)									GW	1	X								
7)									GW	1	X								
8)									GW	1	X								
9)									GW	1	X								
10)									GW	1	X								No seal on ice

RELINQUISHED: 	DATE / TIME: 4/13/20 17:50	RECEIVED: Steven White	DATE / TIME: 4/13/20 09:09	QC Data Package	LAB USE ONLY	COOLER TEMP: 0.9 °C
RELINQUISHED: Courier	DATE / TIME:	RECEIVED: RJM	DATE / TIME: 4/14/20 0800	Level III ☐	Haley & Aldrich	20D0522
RELINQUISHED:	DATE / TIME:	RECEIVED:	DATE / TIME:	Level IV ☐	Possum Point Hex Chrome	
				Recd: 04/14/2020 Due: 04/21/2020		

CHAIN OF CUSTODY

PAGE 1 OF

COMPANY NAME: Haley & Aldrich			INVOICE TO: AP			PROJECT NAME: Possum Point Hex Chrome		
CONTACT: Erin Wright			INVOICE CONTACT: ap@haleyaldrich.com			SITE NAME:		
ADDRESS: 1 Park West Circle, Suite 208			INVOICE ADDRESS:			PROJECT NUMBER: 134660		
PHONE #: (804) 419-0010			INVOICE PHONE #:			P.O. #:		
FAX #:		EMAIL: ewright@haleyaldrich.com			Pretreatment Program:			
Is sample for compliance reporting? YES NO			Is sample from a chlorinated supply? YES NO			PWS I.D. #:		
SAMPLER NAME (PRINT): Andy Gerringer			SAMPLER SIGNATURE: [Signature]			Turn Around Time:		
Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other								
COMMENTS								
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)								
CLIENT SAMPLE I.D.								
ANALYSIS / (PRESERVATIVE)								
Grab Composite Field Filtered (Dissolved Metals) Composite Start Date Composite Stop Date Grab Date or Composite Stop Date Grab Time or Composite Stop Time Time Preserved Matrix (See Codes) Number of Containers Cr VI SW7196								
1) ED-26-20200414 X 4.14.20 1120 GW 1 X								
2) ABC-1616-20200414 X 4.14.20 1355 GW 1 X								
3) EB-01-20200414 X 4.14.20 1630 GW 1 X								
4) GW 1 X								
5) GW 1 X								
6) GW 1 X								
7) GW 1 X								
8) GW 1 X								
9) GW 1 X								
10) GW 1 X								
RELINQUISHED: [Signature] DATE / TIME 4-14-20 1700 RECEIVED: T. B. [Signature] DATE / TIME 4-14-20								
RELINQUISHED: [Signature] DATE / TIME 4-14-20 RECEIVED: RSM DATE / TIME 4/15/20 0600								
RELINQUISHED: [Signature] DATE / TIME 4-14-20 RECEIVED: [Signature] DATE / TIME 4-14-20								
QC Data Package Level III Level IV								
LAB USE ONLY COOLER TEMP 0.7 °C								
Haley & Aldrich 20D0590 Possum Point Hex Chrome Recd: 04/15/2020 Due: 04/2020								

CHAIN OF CUSTODY

PAGE 1 OF

COMPANY NAME: Haley & Aldrich						INVOICE TO: AP						PROJECT NAME: Possum Point Hex Chrome																			
CONTACT: Erin Wright						INVOICE CONTACT: ap@haleyaldrich.com						SITE NAME:																			
ADDRESS: 1 Park West Circle, Suite 208						INVOICE ADDRESS:						PROJECT NUMBER: 134660																			
PHONE #: (804) 419-0010						INVOICE PHONE #:						P.O. #:																			
FAX #:						EMAIL: ewright@haleyaldrich.com						Pretreatment Program:																			
Is sample for compliance reporting? YES NO						Is sample from a chlorinated supply? YES NO						PWS I.D. #:																			
SAMPLER NAME (PRINT): Andy Cerringer						SAMPLER SIGNATURE: [Signature]						Turn Around Time: Standard																			
Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other														COMMENTS																	
CLIENT SAMPLE I.D.														ANALYSIS / (PRESERVATIVE)														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)			
Grab Composite Field Filtered (Dissolved Metals) Composite Start Date Composite Stop Date Grab Date or Composite Stop Date Grab Time or Composite Stop Time Time Preserved Matrix (See Codes) Number of Containers Cr VI SW7196																															
1) ES-1-20200415 X														GW 1 X																	
2) ES-ID-20200415 X														GW 1 X																	
3)														GW 1 X																	
4)														GW 1 X																	
5)														GW 1 X																	
6)														GW 1 X																	
7)														GW 1 X																	
8)														GW 1 X																	
9)														GW 1 X																	
10)														GW 1 X																	
RELINQUISHED: [Signature] DATE / TIME: 4-15-20 1620						RECEIVED: [Signature] DATE / TIME: 4/15/20 6:22 PM						QC Data Package Level III ☐						LAB USE ONLY COOLER TEMP 3.3 °C													
RELINQUISHED: [Signature] DATE / TIME: 4/15/20 9:08						RECEIVED: [Signature] DATE / TIME: 4/16/20 805						Level IV ☐						Haley & Aldrich 20D0680 Possum Point Hex Chrome Recd: 04/16/2020 Due: 04/23/2020													

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Sample Conditions Checklist

Samples Received at:	0.20°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	No
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

No turn around time selected on chain of custody. Logged as 5 day. Erin Wright notified via email. RJM 04/08/2020 0838.

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Sample Conditions Checklist

Samples Received at:	2.20°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	No
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

5 day TAT as per Erin Wright. SWS 4/9/20

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Sample Conditions Checklist

Samples Received at:	0.90°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	No
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

As per Erin Wright, samples logged on a 5-day TAT. SWS 4/10/20

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Sample Conditions Checklist

Samples Received at:	6.40°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	No
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

As per Erin Wright, samples are to be analyzed on a 5-day TAT. SWS 4/10/20 1439

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Sample Conditions Checklist

Samples Received at:	0.90°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	No
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: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Sample Conditions Checklist

Samples Received at:	0.70°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	No
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

No turn around time selected on chain of custody. Erin Wright notified via email.
RJM 04/15/2020 0848.

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point Hex Chrome
Submitted To: Erin Wright

Date Issued: 5/12/2020 2:23:02PM

Sample Conditions Checklist

Samples Received at:	3.30°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	No
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

April 22, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92474190

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 17, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92474190

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92474190

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92474190001	ES-7D-20200416	Water	04/16/20 10:00	04/17/20 09:09
92474190002	ES-7-20200416	Water	04/16/20 11:25	04/17/20 09:09

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92474190

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92474190001	ES-7D-20200416	EPA 6020B	JOR	4	PASI-A
		EPA 6020B	JOR	4	PASI-A
92474190002	ES-7-20200416	EPA 6020B	JOR	4	PASI-A
		EPA 6020B	JOR	4	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92474190

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92474190001	ES-7D-20200416					
EPA 6020B	Boron	67.5J	ug/L	125	04/20/20 13:50	
EPA 6020B	Cobalt	2.2	ug/L	0.50	04/20/20 13:50	
EPA 6020B	Nickel	5.0	ug/L	2.5	04/20/20 13:50	
EPA 6020B	Zinc	13.7J	ug/L	25.0	04/20/20 13:50	
EPA 6020B	Boron, Dissolved	59.7J	ug/L	125	04/20/20 10:54	
EPA 6020B	Cobalt, Dissolved	0.88	ug/L	0.50	04/20/20 10:54	
EPA 6020B	Nickel, Dissolved	2.2J	ug/L	2.5	04/20/20 10:54	
92474190002	ES-7-20200416					
EPA 6020B	Boron	264	ug/L	125	04/20/20 14:11	
EPA 6020B	Cobalt	89.2	ug/L	0.50	04/20/20 14:11	
EPA 6020B	Nickel	69.4	ug/L	0.50	04/20/20 13:55	
EPA 6020B	Zinc	33.4	ug/L	5.0	04/20/20 13:55	
EPA 6020B	Boron, Dissolved	261	ug/L	125	04/20/20 10:59	M1
EPA 6020B	Cobalt, Dissolved	82.3	ug/L	0.50	04/20/20 10:59	M1
EPA 6020B	Nickel, Dissolved	60.7	ug/L	2.5	04/20/20 10:59	M1
EPA 6020B	Zinc, Dissolved	30.3	ug/L	25.0	04/20/20 10:59	M1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92474190

Sample: ES-7D-20200416		Lab ID: 92474190001		Collected: 04/16/20 10:00		Received: 04/17/20 09:09		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Asheville									
Boron	67.5J	ug/L	125	12.8	5	04/18/20 01:26	04/20/20 13:50	7440-42-8	
Cobalt	2.2	ug/L	0.50	0.25	5	04/18/20 01:26	04/20/20 13:50	7440-48-4	
Nickel	5.0	ug/L	2.5	0.55	5	04/18/20 01:26	04/20/20 13:50	7440-02-0	
Zinc	13.7J	ug/L	25.0	5.6	5	04/18/20 01:26	04/20/20 13:50	7440-66-6	
6020 MET ICPMS, Dissolved									
Analytical Method: EPA 6020B Preparation Method: EPA 3010A									
Pace Analytical Services - Asheville									
Boron, Dissolved	59.7J	ug/L	125	12.8	5	04/19/20 14:11	04/20/20 10:54	7440-42-8	
Cobalt, Dissolved	0.88	ug/L	0.50	0.25	5	04/19/20 14:11	04/20/20 10:54	7440-48-4	
Nickel, Dissolved	2.2J	ug/L	2.5	0.55	5	04/19/20 14:11	04/20/20 10:54	7440-02-0	
Zinc, Dissolved	ND	ug/L	25.0	5.6	5	04/19/20 14:11	04/20/20 10:54	7440-66-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92474190

Sample: ES-7-20200416		Lab ID: 92474190002		Collected: 04/16/20 11:25		Received: 04/17/20 09:09		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Boron	264	ug/L	125	12.8	5	04/18/20 01:26	04/20/20 14:11	7440-42-8	
Cobalt	89.2	ug/L	0.50	0.25	5	04/18/20 01:26	04/20/20 14:11	7440-48-4	
Nickel	69.4	ug/L	0.50	0.11	1	04/18/20 01:26	04/20/20 13:55	7440-02-0	
Zinc	33.4	ug/L	5.0	1.1	1	04/18/20 01:26	04/20/20 13:55	7440-66-6	
6020 MET ICPMS, Dissolved		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Boron, Dissolved	261	ug/L	125	12.8	5	04/19/20 14:11	04/20/20 10:59	7440-42-8	M1
Cobalt, Dissolved	82.3	ug/L	0.50	0.25	5	04/19/20 14:11	04/20/20 10:59	7440-48-4	M1
Nickel, Dissolved	60.7	ug/L	2.5	0.55	5	04/19/20 14:11	04/20/20 10:59	7440-02-0	M1
Zinc, Dissolved	30.3	ug/L	25.0	5.6	5	04/19/20 14:11	04/20/20 10:59	7440-66-6	M1

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92474190

QC Batch: 536961

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020 MET

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92474190001, 92474190002

METHOD BLANK: 2864237

Matrix: Water

Associated Lab Samples: 92474190001, 92474190002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	25.0	2.6	04/20/20 13:39	
Cobalt	ug/L	ND	0.10	0.050	04/20/20 13:39	
Nickel	ug/L	ND	0.50	0.11	04/20/20 13:39	
Zinc	ug/L	ND	5.0	1.1	04/20/20 13:39	

LABORATORY CONTROL SAMPLE: 2864238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	50	49.1	98	80-120	
Cobalt	ug/L	10	9.9	99	80-120	
Nickel	ug/L	50	49.6	99	80-120	
Zinc	ug/L	50	50.1	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864239 2864240

Parameter	Units	92474211005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	ND	50	50	73.6	71.0	99	93	75-125	4	20	
Cobalt	ug/L	ND	10	10	10.2	10.0	99	97	75-125	2	20	
Nickel	ug/L	0.94	50	50	49.5	48.7	97	96	75-125	2	20	
Zinc	ug/L	5.2	50	50	53.9	53.5	97	97	75-125	1	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92474190

QC Batch:	537046	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3010A	Analysis Description:	6020 MET Dissolved
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92474190001, 92474190002

METHOD BLANK: 2864503 Matrix: Water

Associated Lab Samples: 92474190001, 92474190002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron, Dissolved	ug/L	ND	25.0	2.6	04/20/20 10:07	
Cobalt, Dissolved	ug/L	ND	0.10	0.050	04/20/20 10:07	
Nickel, Dissolved	ug/L	ND	0.50	0.11	04/20/20 10:07	
Zinc, Dissolved	ug/L	ND	5.0	1.1	04/20/20 10:07	

LABORATORY CONTROL SAMPLE: 2864504

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron, Dissolved	ug/L	50	47.5	95	80-120	
Cobalt, Dissolved	ug/L	10	9.6	96	80-120	
Nickel, Dissolved	ug/L	50	47.8	96	80-120	
Zinc, Dissolved	ug/L	50	50.4	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864505 2864506

Parameter	Units	92474190002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron, Dissolved	ug/L	261	50	50	279	246	37	-30	75-125	13	20	M1
Cobalt, Dissolved	ug/L	82.3	10	10	86.2	77.6	39	-47	75-125	10	20	M1
Nickel, Dissolved	ug/L	60.7	50	50	101	91.6	80	62	75-125	9	20	M1
Zinc, Dissolved	ug/L	30.3	50	50	72.3	67.5	84	74	75-125	7	20	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,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92474190

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.

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy CCR

Pace Project No.: 92474190

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92474190001	ES-7D-20200416	EPA 3010A	536961	EPA 6020B	536974
92474190002	ES-7-20200416	EPA 3010A	536961	EPA 6020B	536974
92474190001	ES-7D-20200416	EPA 3010A	537046	EPA 6020B	537049
92474190002	ES-7-20200416	EPA 3010A	537046	EPA 6020B	537049

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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:

Holey + Aldrich

Project #

WO#: 92474190



92474190

Courier:

☐ Commercial

☒ Fed Ex

☐ Pace

☐ UPS

☐ USPS

☐ Other: _____

☐ Client

Custody Seal Present?

☐ Yes

☒ No

Seals Intact?

☐ Yes

☒ No

Date/Initials Person Examining Contents: *July 4-7-18*

Packing Material:

☐ Bubble Wrap

☐ Bubble Bags

☒ None

☐ Other

Thermometer:

☐ IR Gun ID: 92T061

Type of Ice:

☐ Wet

☐ Blue

☐ None

Biological Tissue Frozen?

☐ Yes

☐ No

☐ N/A

Cooler Temp (°C):

1.7

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):

1.6

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?

☒ Yes

☐ No

☐ N/A

1.

Samples Arrived within Hold Time?

☒ Yes

☐ No

☐ N/A

2.

Short Hold Time Analysis (<72 hr.)?

☐ Yes

☒ No

☐ N/A

3.

Rush Turn Around Time Requested?

☐ Yes

☒ No

☐ N/A

4.

Sufficient Volume?

☒ Yes

☐ No

☐ N/A

5.

Correct Containers Used?

☒ Yes

☐ No

☐ N/A

6.

-Pace Containers Used?

☒ Yes

☐ No

☐ N/A

Containers Intact?

☐ Yes

☐ No

☐ N/A

7.

Dissolved analysis: Samples Field Filtered?

☐ Yes

☐ No

☐ N/A

8.

Sample Labels Match COC?

☒ Yes

☐ No

☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: *W*

Headspace in VOA Vials (>5-6mm)?

☐ Yes

☐ No

☒ N/A

10.

Trip Blank Present?

☐ Yes

☒ No

☐ N/A

11.

Trip Blank Custody Seals Present?

☐ Yes

☐ No

☐ 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: _____

Date: _____

Project Manager SRF Review: _____

Date: _____

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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.

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

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

Project #

WO# : 92474190

PM: PTE

Due Date: 04/24/20

CLIENT: 92-Haley VA

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 Na2SO3 (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																												
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.

Section A

Required Client Information:

Company: Haley & Aldrich, Inc.

Address: 1 Park West Circle

Suite 208, Midlothian, VA 23114

Email To: ewright@haleyaldrich.com

Phone: 804-419-0012 Fax:

Requested Due Date/AT: Standard

Section B

Required Project Information:

Report To: Wright, Erin

Copy To: Chatterton, Kelly

kchatterton@haleyaldrich.com

BSA #: 2019-22-Pace

H&A Client Name: Dominion Energy: Possum Point

H&A Project #: 134660

Section C

Invoice Information:

Attention:

Company Name:

Address:

Pace Quote

Reference: taylor.ezell@pacelabs.com

Pace Project Manager: TBD (93627)

220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)

1700 Elm Street SE - Minneapolis, MN 55414

7726 Moller Road - Indianapolis, IN 46268

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA

Site Location STATE: VA

Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED			SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Analysis Test ↓	Y/N ↓	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					Collection Info	Sample Depth	Start Depth (Circle: feet or inches)			End Depth (Circle: feet or inches)	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol					Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1	ES-7D-20200416	WT	WT	G	4-16-20	1000			2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION		DATE	TIME	ACCEPTED BY / AFFILIATION		DATE	TIME	SAMPLE CONDITIONS					
The dissolved metals bottle for ES-7D-20200416 needs to be lab filtered. *		Andy Geringer		4-16-20	1730	MDG		4-16-20	9:08	No					
SAMPLER NAME AND SIGNATURE															
PRINT Name of SAMPLER: Andy Geringer						DATE Signed (MM/DD/YY): 4-16-20									
SIGNATURE of SAMPLER: [Signature]						Temp in °C									
						Custody Sealed Cooler (Y/N)									
						Samples Intact (Y/N)									

May 11, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92472859

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory between April 08, 2020 and April 16, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92472859

Pace Analytical Services Pennsylvania

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

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92472859001	ED-22RA-20200407	Water	04/07/20 10:15	04/08/20 09:00
92473024001	ED-23R20200408	Water	04/08/20 10:36	04/09/20 09:25
92473024002	ES-3D-20200408	Water	04/08/20 12:16	04/09/20 09:25
92473024003	ES-1609-20200408	Water	04/08/20 13:31	04/09/20 09:25
92473024004	ES-1613-20200408	Water	04/08/20 14:46	04/09/20 09:25
92473420003	T-1615D-20200410	Water	04/10/20 12:21	04/11/20 10:26
92473420002	T-1615S-20200410	Water	04/10/20 11:26	04/11/20 10:26
92473542001	ED-24R-20200413	Water	04/13/20 15:30	04/14/20 09:55
92473787001	ED-26-20200414	Water	04/14/20 11:20	04/15/20 09:30
92473787002	EB-01-20200414	Water	04/14/20 16:30	04/15/20 09:30
92473949001	ES-1-20200415	Water	04/15/20 12:00	04/16/20 09:20
92473949002	ES-1D-20200415	Water	04/15/20 14:15	04/16/20 09:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92472859

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92472859001	ED-22RA-20200407	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473024001	ED-23R20200408	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473024002	ES-3D-20200408	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473024003	ES-1609-20200408	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473024004	ES-1613-20200408	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473420003	T-1615D-20200410	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473420002	T-1615S-20200410	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473542001	ED-24R-20200413	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473787001	ED-26-20200414	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473787002	EB-01-20200414	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473949001	ES-1-20200415	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92473949002	ES-1D-20200415	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92472859

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
PASI-PA = Pace Analytical Services - Greensburg					

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92472859

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92472859001	ED-22RA-20200407					
EPA 903.1	Radium-226	-0.190 ± 0.480 (1.05) C:NA T:88%	pCi/L		04/28/20 16:52	
EPA 904.0	Radium-228	0.852 ± 0.715 (1.44) C:65% T:70%	pCi/L		04/27/20 17:47	
Total Radium Calculation	Total Radium	0.852 ± 0.861 (1.44)	pCi/L		04/29/20 09:55	
92473024001	ED-23R20200408					
EPA 903.1	Radium-226	0.286 ± 0.338 (0.531) C:NA T:88%	pCi/L		04/29/20 13:53	
EPA 904.0	Radium-228	0.521 ± 0.334 (0.620) C:72% T:87%	pCi/L		04/28/20 12:42	
Total Radium Calculation	Total Radium	0.807 ± 0.475 (0.620)	pCi/L		04/30/20 09:05	
92473024002	ES-3D-20200408					
EPA 903.1	Radium-226	0.106 ± 0.327 (0.634) C:NA T:90%	pCi/L		04/29/20 13:53	
EPA 904.0	Radium-228	1.82 ± 0.760 (1.31) C:75% T:74%	pCi/L		04/28/20 16:38	
Total Radium Calculation	Total Radium	1.93 ± 0.827 (1.31)	pCi/L		04/30/20 09:05	
92473024003	ES-1609-20200408					
EPA 903.1	Radium-226	0.959 ± 0.542 (0.607) C:NA T:87%	pCi/L		04/29/20 13:53	
EPA 904.0	Radium-228	1.89 ± 0.653 (0.960) C:75% T:78%	pCi/L		04/28/20 16:38	
Total Radium Calculation	Total Radium	2.85 ± 0.849 (0.960)	pCi/L		04/30/20 09:05	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92472859

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473024004	ES-1613-20200408					
EPA 903.1	Radium-226	0.727 ± 0.588 (0.854) C:NA T:87%	pCi/L		04/29/20 13:53	
EPA 904.0	Radium-228	1.57 ± 0.639 (1.06) C:74% T:82%	pCi/L		04/28/20 16:38	
Total Radium Calculation	Total Radium	2.30 ± 0.868 (1.06)	pCi/L		04/30/20 09:05	
92473420003	T-1615D-20200410					
EPA 903.1	Radium-226	0.262 ± 0.310 (0.487) C:NA T:102%	pCi/L		05/05/20 13:06	
EPA 904.0	Radium-228	0.643 ± 0.360 (0.634) C:72% T:91%	pCi/L		05/01/20 16:06	
Total Radium Calculation	Total Radium	0.905 ± 0.475 (0.634)	pCi/L		05/05/20 14:46	
92473420002	T-1615S-20200410					
EPA 903.1	Radium-226	1.71 ± 0.718 (0.587) C:NA T:85%	pCi/L		05/05/20 13:06	
EPA 904.0	Radium-228	1.72 ± 0.614 (0.868) C:72% T:75%	pCi/L		05/01/20 16:06	
Total Radium Calculation	Total Radium	3.43 ± 0.945 (0.868)	pCi/L		05/05/20 14:46	
92473542001	ED-24R-20200413					
EPA 903.1	Radium-226	0.258 ± 0.305 (0.479) C:NA T:101%	pCi/L		05/05/20 16:11	
EPA 904.0	Radium-228	0.0929 ± 0.451 (1.02) C:76% T:68%	pCi/L		05/04/20 11:04	
Total Radium Calculation	Total Radium	0.351 ± 0.544 (1.02)	pCi/L		05/05/20 17:27	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92472859

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473787001	ED-26-20200414					
EPA 903.1	Radium-226	0.178 ± 0.349 (0.637) C:NA T:85%	pCi/L		05/07/20 11:39	
EPA 904.0	Radium-228	0.548 ± 0.462 (0.933) C:70% T:80%	pCi/L		05/05/20 16:30	
Total Radium Calculation	Total Radium	0.726 ± 0.579 (0.933)	pCi/L		05/07/20 13:55	
92473787002	EB-01-20200414					
EPA 903.1	Radium-226	0.109 ± 0.262 (0.506) C:NA T:93%	pCi/L		05/07/20 11:59	
EPA 904.0	Radium-228	0.597 ± 0.489 (0.984) C:69% T:78%	pCi/L		05/05/20 16:31	
Total Radium Calculation	Total Radium	0.706 ± 0.555 (0.984)	pCi/L		05/07/20 13:55	
92473949001	ES-1-20200415					
EPA 903.1	Radium-226	-0.0581 ± 0.470 (0.968) C:NA T:88%	pCi/L		05/08/20 14:05	
EPA 904.0	Radium-228	1.88 ± 0.613 (0.822) C:69% T:82%	pCi/L		05/06/20 12:59	
Total Radium Calculation	Total Radium	1.88 ± 0.772 (0.968)	pCi/L		05/08/20 15:14	
92473949002	ES-1D-20200415					
EPA 903.1	Radium-226	0.000 ± 0.340 (0.706) C:NA T:107%	pCi/L		05/08/20 14:05	
EPA 904.0	Radium-228	0.651 ± 0.440 (0.854) C:74% T:87%	pCi/L		05/06/20 12:59	
Total Radium Calculation	Total Radium	0.651 ± 0.556 (0.854)	pCi/L		05/08/20 15:14	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ED-22RA-20200407 **Lab ID:** 92472859001 Collected: 04/07/20 10:15 Received: 04/08/20 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.190 ± 0.480 (1.05) C:NA T:88%	pCi/L	04/28/20 16:52	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.852 ± 0.715 (1.44) C:65% T:70%	pCi/L	04/27/20 17:47	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.852 ± 0.861 (1.44)	pCi/L	04/29/20 09:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ED-23R20200408		Lab ID: 92473024001	Collected: 04/08/20 10:36	Received: 04/09/20 09:25	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.286 ± 0.338 (0.531) C:NA T:88%		pCi/L	04/29/20 13:53	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	0.521 ± 0.334 (0.620) C:72% T:87%		pCi/L	04/28/20 12:42	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	0.807 ± 0.475 (0.620)		pCi/L	04/30/20 09:05	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ES-3D-20200408		Lab ID: 92473024002	Collected: 04/08/20 12:16	Received: 04/09/20 09:25	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.106 ± 0.327 (0.634) C:NA T:90%		pCi/L	04/29/20 13:53	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	1.82 ± 0.760 (1.31) C:75% T:74%		pCi/L	04/28/20 16:38	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	1.93 ± 0.827 (1.31)		pCi/L	04/30/20 09:05	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ES-1609-20200408		Lab ID: 92473024003	Collected: 04/08/20 13:31	Received: 04/09/20 09:25	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	04/29/20 13:53	13982-63-3	
	EPA 903.1	0.959 ± 0.542 (0.607) C:NA T:87%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	04/28/20 16:38	15262-20-1	
	EPA 904.0	1.89 ± 0.653 (0.960) C:75% T:78%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	04/30/20 09:05	7440-14-4	
	Total Radium Calculation	2.85 ± 0.849 (0.960)					

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ES-1613-20200408 **Lab ID: 92473024004** Collected: 04/08/20 14:46 Received: 04/09/20 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.727 ± 0.588 (0.854) C:NA T:87%	pCi/L	04/29/20 13:53	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.57 ± 0.639 (1.06) C:74% T:82%	pCi/L	04/28/20 16:38	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	2.30 ± 0.868 (1.06)	pCi/L	04/30/20 09:05	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: T-1615D-20200410		Lab ID: 92473420003	Collected: 04/10/20 12:21	Received: 04/11/20 10:26	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.262 ± 0.310 (0.487) C:NA T:102%		pCi/L	05/05/20 13:06	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	0.643 ± 0.360 (0.634) C:72% T:91%		pCi/L	05/01/20 16:06	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	0.905 ± 0.475 (0.634)		pCi/L	05/05/20 14:46	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: T-1615S-20200410		Lab ID: 92473420002	Collected: 04/10/20 11:26	Received: 04/11/20 10:26	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	05/05/20 13:06	13982-63-3	
	EPA 903.1	1.71 ± 0.718 (0.587) C:NA T:85%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	05/01/20 16:06	15262-20-1	
	EPA 904.0	1.72 ± 0.614 (0.868) C:72% T:75%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	05/05/20 14:46	7440-14-4	
	Total Radium Calculation	3.43 ± 0.945 (0.868)					

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ED-24R-20200413		Lab ID: 92473542001	Collected: 04/13/20 15:30	Received: 04/14/20 09:55	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.258 ± 0.305 (0.479) C:NA T:101%		pCi/L	05/05/20 16:11	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	0.0929 ± 0.451 (1.02) C:76% T:68%		pCi/L	05/04/20 11:04	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	0.351 ± 0.544 (1.02)		pCi/L	05/05/20 17:27	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ED-26-20200414		Lab ID: 92473787001	Collected: 04/14/20 11:20	Received: 04/15/20 09:30	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	05/07/20 11:39	13982-63-3	
	EPA 903.1	0.178 ± 0.349 (0.637) C:NA T:85%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	05/05/20 16:30	15262-20-1	
	EPA 904.0	0.548 ± 0.462 (0.933) C:70% T:80%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	05/07/20 13:55	7440-14-4	
	Total Radium Calculation	0.726 ± 0.579 (0.933)					

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: EB-01-20200414		Lab ID: 92473787002	Collected: 04/14/20 16:30	Received: 04/15/20 09:30	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	05/07/20 11:59	13982-63-3	
	EPA 903.1	0.109 ± 0.262 (0.506) C:NA T:93%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	05/05/20 16:31	15262-20-1	
	EPA 904.0	0.597 ± 0.489 (0.984) C:69% T:78%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	05/07/20 13:55	7440-14-4	
	Total Radium Calculation	0.706 ± 0.555 (0.984)					

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ES-1-20200415		Lab ID: 92473949001	Collected: 04/15/20 12:00	Received: 04/16/20 09:20	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	05/08/20 14:05	13982-63-3	
	EPA 903.1	-0.0581 ± 0.470 (0.968) C:NA T:88%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	05/06/20 12:59	15262-20-1	
	EPA 904.0	1.88 ± 0.613 (0.822) C:69% T:82%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	05/08/20 15:14	7440-14-4	
	Total Radium Calculation	1.88 ± 0.772 (0.968)					

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

Sample: ES-1D-20200415		Lab ID: 92473949002	Collected: 04/15/20 14:15	Received: 04/16/20 09:20	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	05/08/20 14:05	13982-63-3	
	EPA 903.1	0.000 ± 0.340 (0.706) C:NA T:107%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	05/06/20 12:59	15262-20-1	
	EPA 904.0	0.651 ± 0.440 (0.854) C:74% T:87%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	05/08/20 15:14	7440-14-4	
	Total Radium Calculation	0.651 ± 0.556 (0.854)					

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch:	392068	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	92473024001, 92473024002, 92473024003, 92473024004		

METHOD BLANK:	1898462	Matrix:	Water
---------------	---------	---------	-------

Associated Lab Samples: 92473024001, 92473024002, 92473024003, 92473024004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.414 ± 0.359 (0.717) C:65% T:79%	pCi/L	04/28/20 12:40	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch: 391988

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92472859001

METHOD BLANK: 1897906

Matrix: Water

Associated Lab Samples: 92472859001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.167 ± 0.476 (0.884) C:NA T:76%	pCi/L	04/28/20 16:52	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch:	392067	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	92473024001, 92473024002, 92473024003, 92473024004		

METHOD BLANK: 1898454 Matrix: Water

Associated Lab Samples: 92473024001, 92473024002, 92473024003, 92473024004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.165 ± 0.418 (0.917) C:NA T:74%	pCi/L	04/29/20 13:53	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch: 392492

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92473420002, 92473420003

METHOD BLANK: 1900828

Matrix: Water

Associated Lab Samples: 92473420002, 92473420003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.607 ± 0.452 (0.891) C:75% T:81%	pCi/L	05/01/20 16:03	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch:	393049	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92473787001, 92473787002

METHOD BLANK: 1903869 Matrix: Water

Associated Lab Samples: 92473787001, 92473787002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.463 ± 0.385 (0.770) C:74% T:84%	pCi/L	05/05/20 16:31	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch:	393048	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92473787001, 92473787002

METHOD BLANK: 1903868 Matrix: Water

Associated Lab Samples: 92473787001, 92473787002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0499 ± 0.353 (0.749) C:NA T:88%	pCi/L	05/07/20 11:39	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch: 392954

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92473542001

METHOD BLANK: 1903554

Matrix: Water

Associated Lab Samples: 92473542001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.04 ± 0.475 (0.800) C:78% T:76%	pCi/L	05/04/20 11:03	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch:	393072	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92473949001, 92473949002

METHOD BLANK: 1903893 Matrix: Water

Associated Lab Samples: 92473949001, 92473949002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.527 ± 0.340 (0.636) C:76% T:87%	pCi/L	05/06/20 12:56	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch: 391989

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92472859001

METHOD BLANK: 1897907

Matrix: Water

Associated Lab Samples: 92472859001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.343 ± 0.371 (0.770) C:65% T:79%	pCi/L	04/27/20 12:52	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch: 392952

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 92473542001

METHOD BLANK: 1903552

Matrix: Water

Associated Lab Samples: 92473542001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.383 (0.775) C:NA T:82%	pCi/L	05/05/20 15:40	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch:	393067	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92473949001, 92473949002

METHOD BLANK: 1903889 Matrix: Water

Associated Lab Samples: 92473949001, 92473949002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.366 (0.750) C:NA T:84%	pCi/L	05/08/20 13:37	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: Dominion Energy CCR

Pace Project No.: 92472859

QC Batch:	392491	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 92473420002, 92473420003

METHOD BLANK: 1900827 Matrix: Water

Associated Lab Samples: 92473420002, 92473420003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.201 ± 0.395 (0.709) C:NA T:85%	pCi/L	05/05/20 12:25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92472859

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.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy CCR

Pace Project No.: 92472859

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92472859001	ED-22RA-20200407	EPA 903.1	391988		
92473024001	ED-23R20200408	EPA 903.1	392067		
92473024002	ES-3D-20200408	EPA 903.1	392067		
92473024003	ES-1609-20200408	EPA 903.1	392067		
92473024004	ES-1613-20200408	EPA 903.1	392067		
92473420002	T-1615S-20200410	EPA 903.1	392491		
92473420003	T-1615D-20200410	EPA 903.1	392491		
92473542001	ED-24R-20200413	EPA 903.1	392952		
92473787001	ED-26-20200414	EPA 903.1	393048		
92473787002	EB-01-20200414	EPA 903.1	393048		
92473949001	ES-1-20200415	EPA 903.1	393067		
92473949002	ES-1D-20200415	EPA 903.1	393067		
92472859001	ED-22RA-20200407	EPA 904.0	391989		
92473024001	ED-23R20200408	EPA 904.0	392068		
92473024002	ES-3D-20200408	EPA 904.0	392068		
92473024003	ES-1609-20200408	EPA 904.0	392068		
92473024004	ES-1613-20200408	EPA 904.0	392068		
92473420002	T-1615S-20200410	EPA 904.0	392492		
92473420003	T-1615D-20200410	EPA 904.0	392492		
92473542001	ED-24R-20200413	EPA 904.0	392954		
92473787001	ED-26-20200414	EPA 904.0	393049		
92473787002	EB-01-20200414	EPA 904.0	393049		
92473949001	ES-1-20200415	EPA 904.0	393072		
92473949002	ES-1D-20200415	EPA 904.0	393072		
92472859001	ED-22RA-20200407	Total Radium Calculation	394149		
92473024001	ED-23R20200408	Total Radium Calculation	394379		
92473024002	ES-3D-20200408	Total Radium Calculation	394379		
92473024003	ES-1609-20200408	Total Radium Calculation	394379		
92473024004	ES-1613-20200408	Total Radium Calculation	394379		
92473420002	T-1615S-20200410	Total Radium Calculation	394972		
92473420003	T-1615D-20200410	Total Radium Calculation	394972		
92473542001	ED-24R-20200413	Total Radium Calculation	394990		
92473787001	ED-26-20200414	Total Radium Calculation	395368		
92473787002	EB-01-20200414	Total Radium Calculation	395368		
92473949001	ES-1-20200415	Total Radium Calculation	395575		
92473949002	ES-1D-20200415	Total Radium Calculation	395575		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

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

Laboratory receiving samples:

Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☒ Raleigh ☐ Mechanicsville ☐

Sample Condition
Upon Receipt

Client Name:

Hickory Aldrich

Project #:

WO# : 92472807



92472807

Date/Initials Person Examining Contents: *mg 4-8-20*

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other: _____

Custody Seal Present? ☐ Yes ☐ No Seals Intact? ☐ Yes ☒ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer:

☒ IR Gun ID: 92T061

Type of Ice: ☒ Wet ☐ Blue ☐ None

Biological Tissue Frozen?

☐ Yes ☐ No ☒ N/A

Cooler Temp (°C): 2.4 Correction Factor: Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 2.5

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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?	☒ Yes ☐ No ☐ N/A	1.	
Samples Arrived within Hold Time?	☒ Yes ☐ No ☐ N/A	2.	
Short Hold Time Analysis (<72 hr.)?	☐ Yes ☒ No ☐ N/A	3.	
Rush Turn Around Time Requested?	☐ Yes ☒ No ☐ N/A	4.	
Sufficient Volume?	☒ Yes ☐ No ☐ N/A	5.	
Correct Containers Used?	☐ Yes ☐ No ☐ N/A	6.	
-Pace Containers Used?	☒ Yes ☐ No ☐ N/A		
Containers Intact?	☒ Yes ☐ No ☐ N/A	7.	
Dissolved analysis: Samples Field Filtered?	☐ Yes ☐ No ☐ N/A	8.	
Sample Labels Match CQC?	☒ Yes ☐ No ☐ N/A	9.	
-Includes Date/Time/ID/Analysis Matrix: <i>WT</i>			
Headspace in VOA Vials (>5.6mm)?	☐ Yes ☐ No ☒ N/A	10.	
Trip Blank Present?	☐ Yes ☒ No ☐ N/A	11.	
Trip Blank Custody Seals Present?	☐ Yes ☐ No ☒ 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: _____

Date: _____

Project Manager SRF Review: _____

Date: _____

*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# : 92472807

PM: PTE

Due Date: 04/29/20

CLIENT: 92-Haley VA

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 Na2SO3 (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)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																											
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.

Section A

Required Client Information:

Company: Haley & Aldrich, Inc.

Address: 1 Park West Circle

Suite 208, Midlothian, VA 23114

Email To: ewright@haleyaldrich.com

Phone: 804-419-0012 Fax:

Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Wright, Erin

Copy To: Chatterton, Kelly

Address: kchatterton@haleyaldrich.com

BSA #: 2019-22-Pace

H&A Client Name: Dominion Energy, Possum Point

H&A Project #: 134660

Section C

Invoice Information:

Attention:

Company Name:

Address:

Pace Quote

Reference: tjavor.azell@pacelabs.com

Manager:

Pace Project

Pace Profile #: TBD (93627)

220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)
1700 Elm Street SE - Minneapolis, MN 55414
7726 Moller Road - Indianapolis, IN 46268

REGULATORY AGENCY

NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐

UST ☐ RCRA ☐

Site Location

STATE: VA

Requested Analysis Filtered (Y/N)

Residual Chlorine (Y/N)

Section D
Required Client Information

Matrix Codes
MATRIX / CODE

Drinking Water
Water
Waste Water
Product
Soil/Solid
Oil
Wipe
Air
Tissue
Other

SAMPLE ID
(A-Z, 0-9 / -)

Sample IDs MUST BE UNIQUE

ITEM #
1 ED-22RA-20200407
2
3
4
5
6
7
8
9
10
11
12

MATRIX CODE (see valid codes to left)

SAMPLE TYPE (G=GRAB C=COMP)

DATE 4-7-20

TIME 1015

COLLECTED

Collection Info

Sample Depth

Start Depth (Circle: feet or inches)

End Depth (Circle: feet or inches)

SAMPLE TEMP AT COLLECTION

OF CONTAINERS

Unpreserved

H₂SO₄

HNO₃

HCl

NaOH

Na₂S₂O₈

Methanol

Other

Analysis Test

Appx III Anions & Metals List

Appx IV Metals List

Total Dissolved Solids (TDS)

Radium 226 & 228 Combined

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

ADDITIONAL COMMENTS

Appx III Anions & Metals List: boron, calcium, chloride, fluoride, and sulfate.

Appx IV Metals List: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, and molybdenum.

RELINQUISHED BY / AFFILIATION
Edna Haley & Aldrich

DATE 4-7-20

TIME 1000

ACCEPTED BY / AFFILIATION

DATE 4-8-20

TIME 09:00

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ryan Bean Regard

SIGNATURE of SAMPLER: Ryan Bean Regard

DATE Signed (MM/DD/YY): 4-7-20

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

Temp in °C

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)

April 17, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy VSWMR
Pace Project No.: 92473415

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 11, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473415001	ABC-1608-20200410	Water	04/10/20 08:31	04/11/20 10:26
92473415002	T-1615S-20200410	Water	04/10/20 11:26	04/11/20 10:26
92473415003	T-1615D-20200410	Water	04/10/20 12:21	04/11/20 10:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473415001	ABC-1608-20200410	EPA 6020B	JOR	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A
92473415002	T-1615S-20200410	EPA 6020B	JOR	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A
92473415003	T-1615D-20200410	EPA 6020B	JOR	11	PASI-A
		EPA 420.4 Rev 1.0 1993	KDF1	1	PASI-A
		SM 5310B-2011	ECH	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473415001	ABC-1608-20200410					
EPA 6020B	Iron	5350	ug/L	1500	04/16/20 19:17	
EPA 6020B	Manganese	171	ug/L	15.0	04/16/20 19:17	
EPA 6020B	Nickel	19.2	ug/L	15.0	04/16/20 19:17	B
EPA 6020B	Potassium	3740	ug/L	1500	04/16/20 19:17	
EPA 6020B	Sodium	33200	ug/L	7500	04/16/20 19:17	
EPA 6020B	Hardness, Total(SM 2340B)	95100	ug/L	16200	04/16/20 19:17	
SM 5310B-2011	Nonpurgeable Organic Carbon	1.3	mg/L	1.0	04/15/20 20:19	
92473415002	T-1615S-20200410					
EPA 6020B	Iron	9440J	ug/L	10000	04/16/20 19:23	
EPA 6020B	Manganese	234	ug/L	100	04/16/20 19:23	
EPA 6020B	Potassium	3880J	ug/L	10000	04/16/20 19:23	
EPA 6020B	Sodium	142000	ug/L	50000	04/16/20 19:23	
EPA 6020B	Tin	26.2J	ug/L	100	04/16/20 19:23	B
EPA 6020B	Hardness, Total(SM 2340B)	36000J	ug/L	108000	04/16/20 19:23	
SM 5310B-2011	Nonpurgeable Organic Carbon	2.8	mg/L	1.0	04/15/20 21:44	
92473415003	T-1615D-20200410					
EPA 6020B	Iron	11200	ug/L	1000	04/16/20 19:28	
EPA 6020B	Manganese	297	ug/L	10.0	04/16/20 19:28	
EPA 6020B	Potassium	11900	ug/L	1000	04/16/20 19:28	
EPA 6020B	Sodium	8870	ug/L	5000	04/16/20 19:28	
EPA 6020B	Hardness, Total(SM 2340B)	96700	ug/L	10800	04/16/20 19:28	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

Sample: ABC-1608-20200410		Lab ID: 92473415001		Collected: 04/10/20 08:31		Received: 04/11/20 10:26		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	ND	ug/L	15.0	6.9	30	04/15/20 01:08	04/16/20 19:17	7440-50-8	
Iron	5350	ug/L	1500	224	30	04/15/20 01:08	04/16/20 19:17	7439-89-6	
Manganese	171	ug/L	15.0	4.2	30	04/15/20 01:08	04/16/20 19:17	7439-96-5	
Nickel	19.2	ug/L	15.0	3.3	30	04/15/20 01:08	04/16/20 19:17	7440-02-0	B
Potassium	3740	ug/L	1500	186	30	04/15/20 01:08	04/16/20 19:17	7440-09-7	
Silver	ND	ug/L	12.0	1.5	30	04/15/20 01:08	04/16/20 19:17	7440-22-4	
Sodium	33200	ug/L	7500	428	30	04/15/20 01:08	04/16/20 19:17	7440-23-5	
Tin	ND	ug/L	15.0	2.7	30	04/15/20 01:08	04/16/20 19:17	7440-31-5	
Hardness, Total(SM 2340B)	95100	ug/L	16200	2100	30	04/15/20 01:08	04/16/20 19:17		
Vanadium	ND	ug/L	9.0	3.6	30	04/15/20 01:08	04/16/20 19:17	7440-62-2	
Zinc	ND	ug/L	150	33.9	30	04/15/20 01:08	04/16/20 19:17	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/15/20 07:50	04/15/20 17:02	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	1.3	mg/L	1.0	0.50	1		04/15/20 20:19	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

Sample: T-1615S-20200410		Lab ID: 92473415002		Collected: 04/10/20 11:26		Received: 04/11/20 10:26		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville							
Copper	ND	ug/L	100	46.0	200	04/15/20 01:08	04/16/20 19:23	7440-50-8	
Iron	9440J	ug/L	10000	1500	200	04/15/20 01:08	04/16/20 19:23	7439-89-6	
Manganese	234	ug/L	100	28.0	200	04/15/20 01:08	04/16/20 19:23	7439-96-5	
Nickel	ND	ug/L	100	22.0	200	04/15/20 01:08	04/16/20 19:23	7440-02-0	
Potassium	3880J	ug/L	10000	1240	200	04/15/20 01:08	04/16/20 19:23	7440-09-7	
Silver	ND	ug/L	80.0	10.0	200	04/15/20 01:08	04/16/20 19:23	7440-22-4	
Sodium	142000	ug/L	50000	2850	200	04/15/20 01:08	04/16/20 19:23	7440-23-5	
Tin	26.2J	ug/L	100	18.0	200	04/15/20 01:08	04/16/20 19:23	7440-31-5	B
Hardness, Total(SM 2340B)	36000J	ug/L	108000	14000	200	04/15/20 01:08	04/16/20 19:23		
Vanadium	ND	ug/L	60.0	24.0	200	04/15/20 01:08	04/16/20 19:23	7440-62-2	
Zinc	ND	ug/L	1000	226	200	04/15/20 01:08	04/16/20 19:23	7440-66-6	
420.4 Phenolics, Total		Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville							
Phenol	ND	mg/L	0.020	0.0050	1	04/15/20 07:50	04/15/20 17:03	108-95-2	
5310B WVA Nonpurgeable Organic		Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville							
Nonpurgeable Organic Carbon	2.8	mg/L	1.0	0.50	1		04/15/20 21:44	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

Sample: T-1615D-20200410 Lab ID: 92473415003 Collected: 04/10/20 12:21 Received: 04/11/20 10:26 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Copper	ND	ug/L	10.0	4.6	20	04/15/20 01:08	04/16/20 19:28	7440-50-8	
Iron	11200	ug/L	1000	150	20	04/15/20 01:08	04/16/20 19:28	7439-89-6	
Manganese	297	ug/L	10.0	2.8	20	04/15/20 01:08	04/16/20 19:28	7439-96-5	
Nickel	ND	ug/L	10.0	2.2	20	04/15/20 01:08	04/16/20 19:28	7440-02-0	
Potassium	11900	ug/L	1000	124	20	04/15/20 01:08	04/16/20 19:28	7440-09-7	
Silver	ND	ug/L	8.0	1.0	20	04/15/20 01:08	04/16/20 19:28	7440-22-4	
Sodium	8870	ug/L	5000	285	20	04/15/20 01:08	04/16/20 19:28	7440-23-5	
Tin	ND	ug/L	10.0	1.8	20	04/15/20 01:08	04/16/20 19:28	7440-31-5	
Hardness, Total(SM 2340B)	96700	ug/L	10800	1400	20	04/15/20 01:08	04/16/20 19:28		
Vanadium	ND	ug/L	6.0	2.4	20	04/15/20 01:08	04/16/20 19:28	7440-62-2	
Zinc	ND	ug/L	100	22.6	20	04/15/20 01:08	04/16/20 19:28	7440-66-6	
420.4 Phenolics, Total Analytical Method: EPA 420.4 Rev 1.0 1993 Preparation Method: EPA 420.4 Rev 1.0 1993 Pace Analytical Services - Asheville									
Phenol	ND	mg/L	0.020	0.0050	1	04/15/20 07:50	04/15/20 17:03	108-95-2	
5310B WVA Nonpurgeable Organic Analytical Method: SM 5310B-2011 Pace Analytical Services - Asheville									
Nonpurgeable Organic Carbon	ND	mg/L	1.0	0.50	1		04/15/20 22:20	7440-44-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

QC Batch: 536213

Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A

Analysis Description: 6020 MET

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473415001, 92473415002, 92473415003

METHOD BLANK: 2860598

Matrix: Water

Associated Lab Samples: 92473415001, 92473415002, 92473415003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Copper	ug/L	ND	0.50	0.23	04/16/20 17:06	
Hardness, Total(SM 2340B)	ug/L	ND	541	70.1	04/16/20 17:06	
Iron	ug/L	ND	50.0	7.5	04/16/20 17:06	
Manganese	ug/L	ND	0.50	0.14	04/16/20 17:06	
Nickel	ug/L	0.18J	0.50	0.11	04/16/20 17:06	
Potassium	ug/L	ND	50.0	6.2	04/16/20 17:06	
Silver	ug/L	ND	0.40	0.050	04/16/20 17:06	
Sodium	ug/L	ND	250	14.3	04/16/20 17:06	
Tin	ug/L	0.19J	0.50	0.090	04/16/20 17:06	
Vanadium	ug/L	ND	0.30	0.12	04/16/20 17:06	
Zinc	ug/L	ND	5.0	1.1	04/16/20 17:06	

LABORATORY CONTROL SAMPLE: 2860599

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	50	50.8	102	80-120	
Hardness, Total(SM 2340B)	ug/L		4230			
Iron	ug/L	625	640	102	80-120	
Manganese	ug/L	50	50.5	101	80-120	
Nickel	ug/L	50	50.5	101	80-120	
Potassium	ug/L	625	643	103	80-120	
Silver	ug/L	25	25.3	101	80-120	
Sodium	ug/L	625	648	104	80-120	
Tin	ug/L	50	51.4	103	80-120	
Vanadium	ug/L	50	51.4	103	80-120	
Zinc	ug/L	50	51.8	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860600 2860601

Parameter	Units	92473551001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	1.4J	50	50	41.4	43.2	80	84	75-125	4	20	
Hardness, Total(SM 2340B)	ug/L	7630			9870	10500				6	20	
Iron	ug/L	390	625	625	845	882	73	79	75-125	4	20 M1	
Manganese	ug/L	10.3	50	50	48.4	50.5	76	80	75-125	4	20	
Nickel	ug/L	1.2J	50	50	41.5	43.6	81	85	75-125	5	20	
Potassium	ug/L	2140	625	625	2320	2450	29	50	75-125	6	20 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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860600 2860601												
Parameter	Units	92473551001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	ug/L	ND	25	25	18.4	19.1	73	76	75-125	4	20	M1
Sodium	ug/L	1820	625	625	2050	2160	36	54	75-125	5	20	M1
Tin	ug/L	ND	50	50	35.4	36.9	70	73	75-125	4	20	M1
Vanadium	ug/L	0.66J	50	50	40.6	42.6	80	84	75-125	5	20	
Zinc	ug/L	ND	50	50	43.5	46.5	77	83	75-125	7	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

QC Batch:	536101	Analysis Method:	EPA 420.4 Rev 1.0 1993
QC Batch Method:	EPA 420.4 Rev 1.0 1993	Analysis Description:	420.4 Phenolics
		Laboratory:	Pace Analytical Services - Asheville

Associated Lab Samples: 92473415001, 92473415002, 92473415003

METHOD BLANK: 2860123 Matrix: Water

Associated Lab Samples: 92473415001, 92473415002, 92473415003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenol	mg/L	ND	0.020	0.0050	04/15/20 16:37	

LABORATORY CONTROL SAMPLE: 2860124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	mg/L	0.05	0.048	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860125 2860126

Parameter	Units	92472806001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.044	0.049	87	98	90-110	12	10	M1, R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860127 2860128

Parameter	Units	92473016001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	ND	0.05	0.05	0.049	0.051	90	94	90-110	3	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy VSWMR
Pace Project No.: 92473415

QC Batch: 536300 Analysis Method: SM 5310B-2011
QC Batch Method: SM 5310B-2011 Analysis Description: 5310B WVA Nonpurgeable Organic Carbon
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92473415001, 92473415002, 92473415003

METHOD BLANK: 2860785 Matrix: Water
Associated Lab Samples: 92473415001, 92473415002, 92473415003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nonpurgeable Organic Carbon	mg/L	ND	1.0	0.50	04/15/20 13:21	

LABORATORY CONTROL SAMPLE: 2860786

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nonpurgeable Organic Carbon	mg/L	25	24.4	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860787 2860788

Parameter	Units	92473016001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	ND	25	25	24.4	24.5	97	97	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2860789 2860790

Parameter	Units	92473553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nonpurgeable Organic Carbon	mg/L	ND	25	25	24.8	24.9	98	99	90-110	0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy VSWMR
Pace Project No.: 92473415

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.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy VSWMR

Pace Project No.: 92473415

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473415001	ABC-1608-20200410	EPA 3010A	536213	EPA 6020B	536222
92473415002	T-1615S-20200410	EPA 3010A	536213	EPA 6020B	536222
92473415003	T-1615D-20200410	EPA 3010A	536213	EPA 6020B	536222
92473415001	ABC-1608-20200410	EPA 420.4 Rev 1.0 1993	536101	EPA 420.4 Rev 1.0 1993	536271
92473415002	T-1615S-20200410	EPA 420.4 Rev 1.0 1993	536101	EPA 420.4 Rev 1.0 1993	536271
92473415003	T-1615D-20200410	EPA 420.4 Rev 1.0 1993	536101	EPA 420.4 Rev 1.0 1993	536271
92473415001	ABC-1608-20200410	SM 5310B-2011	536300		
92473415002	T-1615S-20200410	SM 5310B-2011	536300		
92473415003	T-1615D-20200410	SM 5310B-2011	536300		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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:

Haley + Aldrich

Project:

WO# : 92473415



92473415

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other: _____

Custody Seal Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No

Date/Initials Person Examining Contents: 4-13-20 AMP

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer:

☐ IR Gun ID: 92T061

Type of Ice: ☒ Wet ☐ Blue ☐ None

Biological Tissue Frozen?

☐ Yes ☐ No ☒ N/A

Cooler Temp (°C): 3.2 Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): 3.3

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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? ☒ Yes ☐ No ☐ N/A

1.

Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A

2.

Short Hold Time Analysis (<72 hr.)? ☐ Yes ☒ No ☐ N/A

3.

Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A

4.

Sufficient Volume? ☒ Yes ☐ No ☐ N/A

5.

Correct Containers Used? ☒ Yes ☐ No ☐ N/A

6.

-Pace Containers Used? ☒ Yes ☐ No ☐ N/A

Containers Intact? ☒ Yes ☐ No ☐ N/A

7.

Dissolved analysis: Samples Field Filtered? ☐ Yes ☐ No ☒ N/A

8.

Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: WT

Headspace in VOA Vials (>5-6mm)? ☐ Yes ☒ No ☐ N/A

10.

Trip Blank Present? ☐ Yes ☒ No ☐ N/A

11.

Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ 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: _____

Date: _____

Project Manager SRF Review: _____

Date: _____

*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# : 92473415

PM: PTE

Due Date: 04/27/20

CLIENT: 92-Haley VA

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)	SPST-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																												
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.



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A

Required Client Information:

Company: HALEY & ALDRICH, Inc.
Address: 1 Park West Circle
Suite 208, Midlothian, VA 23114
Email To: ewright@haleyaldrich.com
Phone: 804-419-0012 Fax:
Requested Due Date/TAT: Standard

Section B

Required Project Information:

Report To: Wright, Erin
Copy To: Chatterton, Kelly
BSA #: 2019-22-Pace
H&A Client Name: Dominion Energy: Possum Point
H&A Project #: 134660

Section C

Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager: taylor.ezell@pacelabs.com
Pace Profile #: TBD (9362?)

220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)
1700 Elm Street SE - Minneapolis, MN 55414
7726 Moller Road - Indianapolis, IN 46288

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING
☐ UST ☐ RCRA ☐

Site Location

STATE: VA

Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	Matrix CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Residual Chlorine (Y/N)	I.D.
1	ABC-1608-20200410		WT G	4-10-20 0831	Andy Gieringer H&A	4-10-20	1630	Backhaus Pace	4-10-20	1026	33	N	Y
2	T-1615S-20200410		↓	1126									001
3	T-1615D-20200410		↓	1221									002
4													003
5													
6													
7													
8													
9													
10													
11													
12													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Temp in °C	Custody (Y/N)	Sealed Cooler (Y/N)	Samples Intact (Y/N)
VSWMR Metals List: copper, nickel, silver, tin, vanadium, and zinc	Andy Gieringer H&A	4-10-20	1630	Backhaus Pace	4-10-20	1026	33	N	Y		
VWCB Water Quality Pollutant List: phenolics, potassium, iron, manganese, hardness, and sodium.											

SAMPLER NAME AND SIGNATURE		DATE Signed (MM/DD/YY)	20 July 2015
PRINT Name of SAMPLER:	Andy Gieringer		
SIGNATURE of SAMPLER:		4-10-20	

April 20, 2020

Andy Gerringer
Haley & Aldrich
1 Park West Circle
Suite 208
Midlothian, VA 23114

RE: Project: Dominion Energy CCR
Pace Project No.: 92473417

Dear Andy Gerringer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 11, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Kelly Chatterton, Haley & Aldrich
Erin Write, Haley & Aldrich



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Dominion Energy CCR

Pace Project No.: 92473417

Pace Analytical Services Asheville

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: Dominion Energy CCR

Pace Project No.: 92473417

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92473417001	ABC-1608-20200410	Water	04/10/20 08:31	04/11/20 10:26
92473417002	T-1615S-20200410	Water	04/10/20 11:26	04/11/20 10:26
92473417003	T-1615D-20200410	Water	04/10/20 12:21	04/11/20 10:26

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: Dominion Energy CCR

Pace Project No.: 92473417

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92473417001	ABC-1608-20200410	EPA 6020B	JOR	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	RED	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A
92473417002	T-1615S-20200410	EPA 6020B	JOR	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	RED	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A
92473417003	T-1615D-20200410	EPA 6020B	JOR	14	PASI-A
		EPA 7470A	SOO	1	PASI-A
		SM 2540C-2011	RED	1	PASI-A
		EPA 9056A	BRJ	3	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: Dominion Energy CCR

Pace Project No.: 92473417

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92473417001	ABC-1608-20200410					
EPA 6020B	Arsenic	1.9J	ug/L	2.0	04/16/20 19:33	
EPA 6020B	Barium	46.3	ug/L	6.0	04/16/20 19:33	
EPA 6020B	Boron	158J	ug/L	500	04/16/20 19:33	
EPA 6020B	Calcium	16400	ug/L	4000	04/16/20 19:33	
EPA 6020B	Cobalt	18.8	ug/L	2.0	04/16/20 19:33	
EPA 6020B	Lithium	11.2J	ug/L	50.0	04/16/20 19:33	
EPA 7470A	Mercury	0.14J	ug/L	0.20	04/20/20 16:02	
SM 2540C-2011	Total Dissolved Solids	229	mg/L	25.0	04/14/20 17:42	
EPA 9056A	Chloride	53.1	mg/L	1.0	04/14/20 02:45	
EPA 9056A	Fluoride	73.0J	ug/L	100	04/14/20 02:45	
EPA 9056A	Sulfate	30.3	mg/L	1.0	04/14/20 02:45	
92473417002	T-1615S-20200410					
EPA 6020B	Barium	133	ug/L	60.0	04/16/20 19:39	
EPA 6020B	Boron	767J	ug/L	5000	04/16/20 19:39	
EPA 6020B	Calcium	13700J	ug/L	40000	04/16/20 19:39	
EPA 6020B	Cobalt	22.4	ug/L	20.0	04/16/20 19:39	
SM 2540C-2011	Total Dissolved Solids	492	mg/L	50.0	04/14/20 17:42	
EPA 9056A	Chloride	218	mg/L	5.0	04/14/20 15:13	
EPA 9056A	Fluoride	114	ug/L	100	04/14/20 03:30	
EPA 9056A	Sulfate	27.3	mg/L	1.0	04/14/20 03:30	
92473417003	T-1615D-20200410					
EPA 6020B	Barium	101	ug/L	6.0	04/16/20 19:44	
EPA 6020B	Calcium	18000	ug/L	4000	04/16/20 19:44	
EPA 6020B	Lithium	15.3J	ug/L	50.0	04/16/20 19:44	
SM 2540C-2011	Total Dissolved Solids	204	mg/L	25.0	04/14/20 17:42	
EPA 9056A	Chloride	77.5	mg/L	1.0	04/14/20 03:44	
EPA 9056A	Fluoride	210	ug/L	100	04/14/20 03:44	
EPA 9056A	Sulfate	1.5	mg/L	1.0	04/14/20 03:44	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473417

Sample: ABC-1608-20200410 Lab ID: 92473417001 Collected: 04/10/20 08:31 Received: 04/11/20 10:26 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Antimony	ND	ug/L	10.0	2.2	20	04/15/20 01:08	04/16/20 19:33	7440-36-0	
Arsenic	1.9J	ug/L	2.0	1.2	20	04/15/20 01:08	04/16/20 19:33	7440-38-2	
Barium	46.3	ug/L	6.0	1.2	20	04/15/20 01:08	04/16/20 19:33	7440-39-3	
Beryllium	ND	ug/L	2.0	1.0	20	04/15/20 01:08	04/16/20 19:33	7440-41-7	
Boron	158J	ug/L	500	51.0	20	04/15/20 01:08	04/16/20 19:33	7440-42-8	
Cadmium	ND	ug/L	1.6	1.4	20	04/15/20 01:08	04/16/20 19:33	7440-43-9	
Calcium	16400	ug/L	4000	412	20	04/15/20 01:08	04/16/20 19:33	7440-70-2	
Chromium	ND	ug/L	10.0	8.4	20	04/15/20 01:08	04/16/20 19:33	7440-47-3	
Cobalt	18.8	ug/L	2.0	1.0	20	04/15/20 01:08	04/16/20 19:33	7440-48-4	
Lead	ND	ug/L	2.0	1.0	20	04/15/20 01:08	04/16/20 19:33	7439-92-1	
Lithium	11.2J	ug/L	50.0	8.4	20	04/15/20 01:08	04/16/20 19:33	7439-93-2	
Molybdenum	ND	ug/L	10.0	2.0	20	04/15/20 01:08	04/16/20 19:33	7439-98-7	
Selenium	ND	ug/L	10.0	1.6	20	04/15/20 01:08	04/16/20 19:33	7782-49-2	
Thallium	ND	ug/L	2.0	1.2	20	04/15/20 01:08	04/16/20 19:33	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville									
Mercury	0.14J	ug/L	0.20	0.10	1	04/20/20 10:40	04/20/20 16:02	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville									
Total Dissolved Solids	229	mg/L	25.0	25.0	1		04/14/20 17:42		
9056 IC anions 28 Days Analytical Method: EPA 9056A Pace Analytical Services - Asheville									
Chloride	53.1	mg/L	1.0	0.60	1		04/14/20 02:45	16887-00-6	
Fluoride	73.0J	ug/L	100	50.0	1		04/14/20 02:45	16984-48-8	
Sulfate	30.3	mg/L	1.0	0.50	1		04/14/20 02:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473417

Sample: T-1615S-20200410 Lab ID: 92473417002 Collected: 04/10/20 11:26 Received: 04/11/20 10:26 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Antimony	ND	ug/L	100	22.0	200	04/15/20 01:08	04/16/20 19:39	7440-36-0	
Arsenic	ND	ug/L	20.0	12.0	200	04/15/20 01:08	04/16/20 19:39	7440-38-2	
Barium	133	ug/L	60.0	12.0	200	04/15/20 01:08	04/16/20 19:39	7440-39-3	
Beryllium	ND	ug/L	20.0	10.0	200	04/15/20 01:08	04/16/20 19:39	7440-41-7	
Boron	767J	ug/L	5000	510	200	04/15/20 01:08	04/16/20 19:39	7440-42-8	
Cadmium	ND	ug/L	16.0	14.0	200	04/15/20 01:08	04/16/20 19:39	7440-43-9	
Calcium	13700J	ug/L	40000	4120	200	04/15/20 01:08	04/16/20 19:39	7440-70-2	
Chromium	ND	ug/L	100	84.0	200	04/15/20 01:08	04/16/20 19:39	7440-47-3	
Cobalt	22.4	ug/L	20.0	10.0	200	04/15/20 01:08	04/16/20 19:39	7440-48-4	
Lead	ND	ug/L	20.0	10.0	200	04/15/20 01:08	04/16/20 19:39	7439-92-1	
Lithium	ND	ug/L	500	84.0	200	04/15/20 01:08	04/16/20 19:39	7439-93-2	
Molybdenum	ND	ug/L	100	20.0	200	04/15/20 01:08	04/16/20 19:39	7439-98-7	
Selenium	ND	ug/L	100	16.0	200	04/15/20 01:08	04/16/20 19:39	7782-49-2	
Thallium	ND	ug/L	20.0	12.0	200	04/15/20 01:08	04/16/20 19:39	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville									
Mercury	ND	ug/L	0.20	0.10	1	04/20/20 10:40	04/20/20 16:04	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville									
Total Dissolved Solids	492	mg/L	50.0	50.0	1		04/14/20 17:42		
9056 IC anions 28 Days Analytical Method: EPA 9056A Pace Analytical Services - Asheville									
Chloride	218	mg/L	5.0	3.0	5		04/14/20 15:13	16887-00-6	
Fluoride	114	ug/L	100	50.0	1		04/14/20 03:30	16984-48-8	
Sulfate	27.3	mg/L	1.0	0.50	1		04/14/20 03:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: Dominion Energy CCR

Pace Project No.: 92473417

Sample: T-1615D-20200410 Lab ID: 92473417003 Collected: 04/10/20 12:21 Received: 04/11/20 10:26 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Asheville									
Antimony	ND	ug/L	10.0	2.2	20	04/15/20 01:08	04/16/20 19:44	7440-36-0	
Arsenic	ND	ug/L	2.0	1.2	20	04/15/20 01:08	04/16/20 19:44	7440-38-2	
Barium	101	ug/L	6.0	1.2	20	04/15/20 01:08	04/16/20 19:44	7440-39-3	
Beryllium	ND	ug/L	2.0	1.0	20	04/15/20 01:08	04/16/20 19:44	7440-41-7	
Boron	ND	ug/L	500	51.0	20	04/15/20 01:08	04/16/20 19:44	7440-42-8	
Cadmium	ND	ug/L	1.6	1.4	20	04/15/20 01:08	04/16/20 19:44	7440-43-9	
Calcium	18000	ug/L	4000	412	20	04/15/20 01:08	04/16/20 19:44	7440-70-2	
Chromium	ND	ug/L	10.0	8.4	20	04/15/20 01:08	04/16/20 19:44	7440-47-3	
Cobalt	ND	ug/L	2.0	1.0	20	04/15/20 01:08	04/16/20 19:44	7440-48-4	
Lead	ND	ug/L	2.0	1.0	20	04/15/20 01:08	04/16/20 19:44	7439-92-1	
Lithium	15.3J	ug/L	50.0	8.4	20	04/15/20 01:08	04/16/20 19:44	7439-93-2	
Molybdenum	ND	ug/L	10.0	2.0	20	04/15/20 01:08	04/16/20 19:44	7439-98-7	
Selenium	ND	ug/L	10.0	1.6	20	04/15/20 01:08	04/16/20 19:44	7782-49-2	
Thallium	ND	ug/L	2.0	1.2	20	04/15/20 01:08	04/16/20 19:44	7440-28-0	
7470 Mercury Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Asheville									
Mercury	ND	ug/L	0.20	0.10	1	04/20/20 10:40	04/20/20 16:06	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C-2011 Pace Analytical Services - Asheville									
Total Dissolved Solids	204	mg/L	25.0	25.0	1		04/14/20 17:42		
9056 IC anions 28 Days Analytical Method: EPA 9056A Pace Analytical Services - Asheville									
Chloride	77.5	mg/L	1.0	0.60	1		04/14/20 03:44	16887-00-6	
Fluoride	210	ug/L	100	50.0	1		04/14/20 03:44	16984-48-8	
Sulfate	1.5	mg/L	1.0	0.50	1		04/14/20 03:44	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473417

QC Batch: 537073

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473417001, 92473417002, 92473417003

METHOD BLANK: 2864577

Matrix: Water

Associated Lab Samples: 92473417001, 92473417002, 92473417003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	04/20/20 15:50	

LABORATORY CONTROL SAMPLE: 2864578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.8	114	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864579 2864580

Parameter	Units	92473551001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.8	2.8	114	111	75-125	2	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR
Pace Project No.: 92473417

QC Batch: 536213 Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92473417001, 92473417002, 92473417003

METHOD BLANK: 2860598 Matrix: Water
Associated Lab Samples: 92473417001, 92473417002, 92473417003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.33J	0.50	0.11	04/16/20 17:06	BC
Arsenic	ug/L	ND	0.10	0.060	04/16/20 17:06	
Barium	ug/L	ND	0.30	0.060	04/16/20 17:06	
Beryllium	ug/L	ND	0.10	0.050	04/16/20 17:06	
Boron	ug/L	ND	25.0	2.6	04/16/20 17:06	
Cadmium	ug/L	ND	0.080	0.070	04/16/20 17:06	
Calcium	ug/L	ND	200	20.6	04/16/20 17:06	
Chromium	ug/L	ND	0.50	0.42	04/16/20 17:06	
Cobalt	ug/L	ND	0.10	0.050	04/16/20 17:06	
Lead	ug/L	ND	0.10	0.050	04/16/20 17:06	
Lithium	ug/L	ND	2.5	0.42	04/16/20 17:06	
Molybdenum	ug/L	ND	0.50	0.10	04/16/20 17:06	
Selenium	ug/L	ND	0.50	0.080	04/16/20 17:06	
Thallium	ug/L	ND	0.10	0.060	04/16/20 17:06	

LABORATORY CONTROL SAMPLE: 2860599

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	53.1	106	80-120	
Arsenic	ug/L	10	10.3	103	80-120	
Barium	ug/L	50	50.9	102	80-120	
Beryllium	ug/L	10	10.0	100	80-120	
Boron	ug/L	50	49.7	99	80-120	
Cadmium	ug/L	10	10.3	103	80-120	
Calcium	ug/L	625	634	102	80-120	
Chromium	ug/L	50	51.0	102	80-120	
Cobalt	ug/L	10	10.1	101	80-120	
Lead	ug/L	50	50.6	101	80-120	
Lithium	ug/L	50	50.3	101	80-120	
Molybdenum	ug/L	50	50.4	101	80-120	
Selenium	ug/L	50	51.5	103	80-120	
Thallium	ug/L	10	10.3	103	80-120	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473417

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:			2860600		2860601							
Parameter	Units	92473551001	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Max	Qual
		Result	Spike	Spike								
Antimony	ug/L	ND	50	50	40.9	43.4	82	87	75-125	6	20	
Arsenic	ug/L	ND	10	10	7.9	8.7	78	86	75-125	10	20	
Barium	ug/L	13.5	50	50	49.8	52.0	73	77	75-125	4	20	M1
Beryllium	ug/L	ND	10	10	7.6	8.0	75	79	75-125	5	20	
Boron	ug/L	ND	50	50	40.8J	47.0J	73	86	75-125		20	M1
Cadmium	ug/L	ND	10	10	7.9	8.6	79	86	75-125	8	20	
Calcium	ug/L	1700	625	625	1970	2120	43	66	75-125	7	20	M1
Chromium	ug/L	2.7	50	50	41.8	43.9	78	83	75-125	5	20	
Cobalt	ug/L	0.34J	10	10	8.3	8.7	79	84	75-125	5	20	
Lead	ug/L	ND	50	50	37.3	39.0	74	78	75-125	4	20	M1
Lithium	ug/L	ND	50	50	39.1	40.8	76	80	75-125	4	20	
Molybdenum	ug/L	ND	50	50	39.4	41.0	79	82	75-125	4	20	
Selenium	ug/L	ND	50	50	38.2	40.1	76	80	75-125	5	20	
Thallium	ug/L	ND	10	10	7.7	8.1	77	80	75-125	5	20	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR

Pace Project No.: 92473417

QC Batch: 536140

Analysis Method: SM 2540C-2011

QC Batch Method: SM 2540C-2011

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92473417001, 92473417002, 92473417003

METHOD BLANK: 2860277

Matrix: Water

Associated Lab Samples: 92473417001, 92473417002, 92473417003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	04/14/20 17:42	

LABORATORY CONTROL SAMPLE: 2860278

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	256	102	90-110	

SAMPLE DUPLICATE: 2860279

Parameter	Units	92473325004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	131	131	0	25	

SAMPLE DUPLICATE: 2860280

Parameter	Units	92472791004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	409	372	9	25	

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,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: Dominion Energy CCR
Pace Project No.: 92473417

QC Batch: 535951 Analysis Method: EPA 9056A
QC Batch Method: EPA 9056A Analysis Description: 9056 IC anions 28 Days
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92473417001, 92473417002, 92473417003

METHOD BLANK: 2859446 Matrix: Water
Associated Lab Samples: 92473417001, 92473417002, 92473417003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/14/20 00:39	
Fluoride	ug/L	ND	100	50.0	04/14/20 00:39	
Sulfate	mg/L	ND	1.0	0.50	04/14/20 00:39	

LABORATORY CONTROL SAMPLE: 2859447

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.0	104	90-110	
Fluoride	ug/L	2500	2390	95	90-110	
Sulfate	mg/L	50	52.3	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2859448 2859449

Parameter	Units	92473325001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.7	50	50	53.7	53.5	102	102	90-110	1	10	
Fluoride	ug/L	ND	2500	2500	2630	2720	105	108	90-110	3	10	
Sulfate	mg/L	57.6	50	50	95.4	96.4	76	78	90-110	1	10 M1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2859450 2859451

Parameter	Units	2630891006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	5.3	50	50	56.4	61.1	102	112	90-110	8	10 M1	
Fluoride	ug/L		2500	2500	3300	3780	131	150	90-110	14	10 M1, R1	
Sulfate	mg/L		50	50	59.9	65.7	107	119	90-110	9	10 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,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: Dominion Energy CCR

Pace Project No.: 92473417

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.

ANALYTE QUALIFIERS

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.

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

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Dominion Energy CCR

Pace Project No.: 92473417

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92473417001	ABC-1608-20200410	EPA 3010A	536213	EPA 6020B	536222
92473417002	T-1615S-20200410	EPA 3010A	536213	EPA 6020B	536222
92473417003	T-1615D-20200410	EPA 3010A	536213	EPA 6020B	536222
92473417001	ABC-1608-20200410	EPA 7470A	537073	EPA 7470A	537132
92473417002	T-1615S-20200410	EPA 7470A	537073	EPA 7470A	537132
92473417003	T-1615D-20200410	EPA 7470A	537073	EPA 7470A	537132
92473417001	ABC-1608-20200410	SM 2540C-2011	536140		
92473417002	T-1615S-20200410	SM 2540C-2011	536140		
92473417003	T-1615D-20200410	SM 2540C-2011	536140		
92473417001	ABC-1608-20200410	EPA 9056A	535951		
92473417002	T-1615S-20200410	EPA 9056A	535951		
92473417003	T-1615D-20200410	EPA 9056A	535951		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	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:

Project:

WO# : 92473417



92473417

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Other: _____

Custody Seal Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No

Date/Initials Person Examining Contents: 4-13-20 AMP

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen?

☐ Yes ☐ No ☒ N/A

Thermometer:

☐ IR Gun ID: 92T061

Type of Ice: ☒ Wet ☐ Blue ☐ None

Cooler Temp (°C): 3.2 Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): 3.3

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

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? ☒ Yes ☐ No ☐ N/A

1.

Samples Arrived within Hold Time? ☒ Yes ☐ No ☐ N/A

2.

Short Hold Time Analysis (<72 hr.)? ☐ Yes ☒ No ☐ N/A

3.

Rush Turn Around Time Requested? ☐ Yes ☒ No ☐ N/A

4.

Sufficient Volume? ☒ Yes ☐ No ☐ N/A

5.

Correct Containers Used? ☒ Yes ☐ No ☐ N/A

6.

-Pace Containers Used? ☒ Yes ☐ No ☐ N/A

Containers Intact? ☒ Yes ☐ No ☐ N/A

7.

Dissolved analysis: Samples Field Filtered? ☐ Yes ☐ No ☒ N/A

8.

Sample Labels Match COC? ☒ Yes ☐ No ☐ N/A

9.

-Includes Date/Time/ID/Analysis Matrix: W1

Headspace in VOA Vials (>5-6mm)? ☐ Yes ☐ No ☒ N/A

10.

Trip Blank Present? ☐ Yes ☐ No ☒ N/A

11.

Trip Blank Custody Seals Present? ☐ Yes ☐ No ☒ N/A

Field Data Required? ☐ Yes ☐ No

COMMENTS/SAMPLE DISCREPANCY

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: _____

Date: _____

Project Manager SRF Review: _____

Date: _____

*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# : 92473417**

PM: PTE

Due Date: 05/04/20

CLIENT: 92-Haley VA

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 Na2SO3 (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)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																												
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.

Section A

Required Client Information:

Company: **Haley & Aldrich, Inc.**
Address: **1 Park West Circle**
Suite 208, Midlothian, VA 23114
Email To: **ewright@haleyaldrich.com**
Phone: **804-419-0012** Fax:
Requested Due Date/TAT: **Standard**

Section B

Required Project Information:

Report To: **Wright, Erin**
Copy To: **Chatterton, Kelly**
BSA #: **2019-22-Pace**
H&A Client Name: **Dominion Energy: Possum Point**
H&A Project #: **134860**

Section C

Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: **TBD (9362?)**

220 William Pitt Way, Pittsburgh, PA 15238 (Pace Energy)
1700 Elm Street SE - Minneapolis, MN 55414
7728 Moller Road - Indianapolis, IN 46268

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐

Site Location

STATE: **VA**

Pace's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement #2019-22-Pace by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Pace Analytical Services, Inc.

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information	Matrix Codes MATRIX CODE Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	COLLECTED	Collection Info	Sample Depth	Start Depth (Circle: feet or inches)	End Depth (Circle: feet or inches)	# OF CONTAINERS	Preservatives	Analysis Test	Y/N	Appx III Anions & Metals List	Appx IV Metals List	Total Dissolved Solids (TDS)	Radium 226 & 228 Combined	Residual Chlorine (Y/N)	I.D.
1	ABC-1608-20200410		WT	G	4-10-20										X	X	X	X		001
2	T-1615S-20200410		↓	↓	↓										X	X	X	X		002
3	T-1615D-20200410		↓	↓	↓										X	X	X	X		003
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Appx III Anions & Metals List: boron, calcium, chloride, fluoride, and sulfate.	Andy Geringer	4-10-20	1630	Erin Chatterton	4-11-20	1026	33 N Y
Appx IV Metals List: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, and molybdenum, and selenium, and thallium							

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: **Andy Geringer**
SIGNATURE of SAMPLER: *Andy Geringer*
DATE Signed (MM/DD/YY): **4-10-20**
Temp in °C
Sealed Cooler (Y/N)
Samples Intact (Y/N)

APPENDIX D

Investigation Derived Waste Disposal Documentation

Analysis Detects Report

Client Name: Haley & Aldrich
Client Site ID: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Laboratory Sample ID: 20D0761-01 **Client Sample ID: IDW-Soil-20200416**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
TCLP Extraction Fluid, Metals	01	SW1311	1		0	0	1	#

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".



an Enthalpy Analytical Laboratory

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

Certificate of Analysis

Final Report

Laboratory Order ID 20D0761

Client Name: Haley & Aldrich
1 Park West Circle, Suite 208
Midlothian, VA 23114

Date Received: April 17, 2020 9:00
Date Issued: April 24, 2020 17:23
Project Number: [none]
Purchase Order: 134660

Submitted To: Erin Wright

Client Site I.D.: Possum Point IDW

Enclosed are the results of analyses for samples received by the laboratory on 04/17/2020 09:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

A handwritten signature in black ink that reads "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: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
IDW-Soil-20200416	20D0761-01	Solids	04/16/2020 07:45	04/17/2020 09:00
IDW-Water-20200416	20D0761-02	Ground Water	04/16/2020 08:00	04/17/2020 09:00
Trip Blank	20D0761-03	Ground Water	04/15/2020 10:40	04/17/2020 09:00

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Client Sample ID: IDW-Soil-20200416

Laboratory Sample ID: 20D0761-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
TCLP Metals by 6000/7000 Series Methods												
TCLP Silver	01	7440-22-4	SW6010C	04/21/2020 09:30	04/22/2020 12:15	BLOD		0.100	0.100	1	mg/L	SNL
TCLP Arsenic	01	7440-38-2	SW6010C	04/21/2020 09:30	04/22/2020 12:15	BLOD		0.100	0.100	1	mg/L	SNL
TCLP Barium	01	7440-39-3	SW6010C	04/21/2020 09:30	04/22/2020 12:15	BLOD		1.00	5.00	1	mg/L	SNL
TCLP Cadmium	01	7440-43-9	SW6010C	04/21/2020 09:30	04/22/2020 12:15	BLOD		0.0200	0.0400	1	mg/L	SNL
TCLP Chromium	01	7440-47-3	SW6010C	04/21/2020 09:30	04/22/2020 12:15	BLOD		0.100	0.100	1	mg/L	SNL
TCLP Mercury	01	7439-97-6	SW7470A	04/21/2020 10:24	04/21/2020 14:35	BLOD		0.008	0.008	1	mg/L	MWL
TCLP Lead	01	7439-92-1	SW6010C	04/21/2020 09:30	04/22/2020 12:15	BLOD		0.100	0.100	1	mg/L	SNL
TCLP Selenium	01	7782-49-2	SW6010C	04/21/2020 09:30	04/22/2020 12:15	BLOD		0.250	0.250	1	mg/L	SNL
TCLP Extraction Fluid, Metals	01	NA	SW1311	04/20/2020 15:30	04/20/2020 15:30	1		0	0	1	#	ESW
Volatile Hydrocarbons by GC												
TPH-Volatiles (GRO)	01RE1	NA	SW8015C	04/20/2020 11:19	04/20/2020 11:19	BLOD		0.48	0.48	1	mg/kg	HLM
<i>Surr: 2,5-Dibromotoluene (Surr FID)</i>	<i>01RE1</i>	<i>98.7 %</i>	<i>80-120</i>	<i>04/20/2020 11:19</i>	<i>04/20/2020 11:19</i>							
Semivolatile Hydrocarbons by GC												
TPH-Semi-Volatiles (DRO)	01	NA	SW8015C	04/20/2020 15:15	04/21/2020 22:16	BLOD		9.8	10.0	1	mg/kg	LBH2
<i>Surr: Pentacosane (Surr)</i>	<i>01</i>	<i>61.5 %</i>	<i>45-160</i>	<i>04/20/2020 15:15</i>	<i>04/21/2020 22:16</i>							

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Client Sample ID: IDW-Water-20200416

Laboratory Sample ID: 20D0761-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
TCLP Metals by 6000/7000 Series Methods												
TCLP Silver	02	7440-22-4	SW6010C	04/21/2020 09:30	04/22/2020 11:49	BLOD		0.100	0.100	1	mg/L	SNL
TCLP Arsenic	02	7440-38-2	SW6010C	04/21/2020 09:30	04/22/2020 11:50	BLOD		0.100	0.100	1	mg/L	SNL
TCLP Barium	02	7440-39-3	SW6010C	04/21/2020 09:30	04/22/2020 11:50	BLOD		1.00	5.00	1	mg/L	SNL
TCLP Cadmium	02	7440-43-9	SW6010C	04/21/2020 09:30	04/22/2020 11:50	BLOD		0.0200	0.0400	1	mg/L	SNL
TCLP Chromium	02	7440-47-3	SW6010C	04/21/2020 09:30	04/22/2020 11:50	BLOD		0.100	0.100	1	mg/L	SNL
TCLP Mercury	02	7439-97-6	SW7470A	04/21/2020 10:22	04/21/2020 14:12	BLOD		0.008	0.008	1	mg/L	MWL
TCLP Lead	02	7439-92-1	SW6010C	04/21/2020 09:30	04/22/2020 11:50	BLOD		0.100	0.100	1	mg/L	SNL
TCLP Selenium	02	7782-49-2	SW6010C	04/21/2020 09:30	04/22/2020 11:50	BLOD		0.250	0.250	1	mg/L	SNL

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Client Sample ID: IDW-Water-20200416

Laboratory Sample ID: 20D0761-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Volatile Hydrocarbons by GC												
TPH-Volatiles (GRO)	02	NA	SW8015C	04/17/2020 16:32	04/17/2020 16:32	BLOD		0.10	0.10	1	mg/L	HLM
Surr: 2,5-Dibromotoluene (Surr FID)	02	95.2 %	80-120	04/17/2020 16:32	04/17/2020 16:32							

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Client Sample ID: IDW-Water-20200416

Laboratory Sample ID: 20D0761-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Semivolatile Hydrocarbons by GC												
TPH-Semi-Volatiles (DRO)	02	NA	SW8015C	04/22/2020 14:10	04/23/2020 10:31	BLOD		0.510	0.510	1	mg/L	LBH2
Surr: Pentacosane (Surr)	02	59.1 %	50-125	04/22/2020 14:10	04/23/2020 10:31							

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Client Sample ID: Trip Blank

Laboratory Sample ID: 20D0761-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
Volatile Hydrocarbons by GC												
TPH-Volatiles (GRO)	03	NA	SW8015C	04/17/2020 16:10	04/17/2020 16:10	BLOD		0.10	0.10	1	mg/L	HLM
Surr: 2,5-Dibromotoluene (Surr FID)	03	98.3 %	80-120	04/17/2020 16:10	04/17/2020 16:10							

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

Batch BDD0582 - SW1311 Metals

Blank (BDD0582-BLK1)

Prepared & Analyzed: 04/20/2020

Extraction Fluid, Metals	1	0	#
--------------------------	---	---	---

Batch BDD0590 - SW3010A

Blank (BDD0590-BLK1)

Prepared: 04/21/2020 Analyzed: 04/22/2020

Arsenic	ND	0.100	mg/L
Barium	ND	5.00	mg/L
Cadmium	ND	0.0400	mg/L
Chromium	ND	0.100	mg/L
Lead	ND	0.100	mg/L
Selenium	ND	0.250	mg/L
Silver	ND	0.100	mg/L

LCS (BDD0590-BS1)

Prepared: 04/21/2020 Analyzed: 04/22/2020

Arsenic	2.26	0.100	mg/L	2.50	90.3	80-120
Barium	2.30	5.00	mg/L	2.50	92.1	80-120
Cadmium	2.30	0.0400	mg/L	2.50	92.0	80-120
Chromium	2.26	0.100	mg/L	2.50	90.5	80-120
Lead	2.36	0.100	mg/L	2.50	94.3	80-120
Selenium	2.15	0.250	mg/L	2.50	85.9	80-120
Silver	0.437	0.100	mg/L	0.500	87.5	80-120

LCS Dup (BDD0590-BSD1)

Prepared: 04/21/2020 Analyzed: 04/22/2020

Arsenic	2.25	0.100	mg/L	2.50	90.1	80-120	0.231	20
Barium	2.22	5.00	mg/L	2.50	88.7	80-120	3.79	20
Cadmium	2.24	0.0400	mg/L	2.50	89.7	80-120	2.56	20
Chromium	2.21	0.100	mg/L	2.50	88.3	80-120	2.50	20

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

Batch BDD0590 - SW3010A

LCS Dup (BDD0590-BSD1)

Prepared: 04/21/2020 Analyzed: 04/22/2020

Lead	2.35	0.100	mg/L	2.50		93.9	80-120	0.444	20	
Selenium	2.17	0.250	mg/L	2.50		86.7	80-120	0.958	20	
Silver	0.439	0.100	mg/L	0.500		87.9	80-120	0.456	20	

Matrix Spike (BDD0590-MS1)

Source: 20D0761-02

Prepared: 04/21/2020 Analyzed: 04/22/2020

Arsenic	2.36	0.100	mg/L	2.50	BLOD	94.2	75-125			
Barium	2.56	5.00	mg/L	2.50	BLOD	102	75-125			
Cadmium	2.30	0.0400	mg/L	2.50	BLOD	92.1	75-125			
Chromium	2.29	0.100	mg/L	2.50	BLOD	91.5	75-125			
Lead	2.39	0.100	mg/L	2.50	BLOD	95.6	75-125			
Selenium	2.23	0.250	mg/L	2.50	BLOD	89.4	75-125			
Silver	0.456	0.100	mg/L	0.500	BLOD	91.3	75-125			

Matrix Spike Dup (BDD0590-MSD1)

Source: 20D0761-02

Prepared: 04/21/2020 Analyzed: 04/22/2020

Arsenic	2.39	0.100	mg/L	2.50	BLOD	95.7	75-125	1.60	20	
Barium	2.68	5.00	mg/L	2.50	BLOD	107	75-125	4.69	20	
Cadmium	2.40	0.0400	mg/L	2.50	BLOD	95.8	75-125	4.02	20	
Chromium	2.38	0.100	mg/L	2.50	BLOD	95.3	75-125	4.03	20	
Lead	2.45	0.100	mg/L	2.50	BLOD	98.0	75-125	2.48	20	
Selenium	2.29	0.250	mg/L	2.50	BLOD	91.4	75-125	2.25	20	
Silver	0.453	0.100	mg/L	0.500	BLOD	90.6	75-125	0.733	20	

Batch BDD0591 - SW3010A

Blank (BDD0591-BLK1)

Prepared: 04/21/2020 Analyzed: 04/22/2020

Arsenic	ND	0.100	mg/L							
Barium	ND	5.00	mg/L							

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BDD0591 - SW3010A										
Blank (BDD0591-BLK1)				Prepared: 04/21/2020 Analyzed: 04/22/2020						
Cadmium	ND	0.0400	mg/L							
Chromium	ND	0.100	mg/L							
Lead	ND	0.100	mg/L							
Selenium	ND	0.250	mg/L							
Silver	ND	0.100	mg/L							
LCS (BDD0591-BS1)				Prepared: 04/21/2020 Analyzed: 04/22/2020						
Arsenic	2.36	0.100	mg/L	2.50		94.5	80-120			
Barium	2.38	5.00	mg/L	2.50		95.3	80-120			
Cadmium	2.30	0.0400	mg/L	2.50		92.0	80-120			
Chromium	2.24	0.100	mg/L	2.50		89.5	80-120			
Lead	2.33	0.100	mg/L	2.50		93.1	80-120			
Selenium	2.26	0.250	mg/L	2.50		90.2	80-120			
Silver	0.431	0.100	mg/L	0.500		86.3	80-120			
LCS Dup (BDD0591-BSD1)				Prepared: 04/21/2020 Analyzed: 04/22/2020						
Arsenic	2.44	0.100	mg/L	2.50		97.4	80-120	3.07	20	
Barium	2.45	5.00	mg/L	2.50		98.0	80-120	2.71	20	
Cadmium	2.35	0.0400	mg/L	2.50		94.1	80-120	2.30	20	
Chromium	2.29	0.100	mg/L	2.50		91.7	80-120	2.39	20	
Lead	2.41	0.100	mg/L	2.50		96.4	80-120	3.47	20	
Selenium	2.31	0.250	mg/L	2.50		92.5	80-120	2.47	20	
Silver	0.458	0.100	mg/L	0.500		91.5	80-120	5.90	20	
Matrix Spike (BDD0591-MS1)				Prepared: 04/21/2020 Analyzed: 04/22/2020						
				Source: 20D0778-01						
Arsenic	2.37	0.100	mg/L	2.50	BLOD	94.6	75-125			
Barium	2.41	5.00	mg/L	2.50	BLOD	96.4	75-125			

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

Batch BDD0591 - SW3010A

Matrix Spike (BDD0591-MS1)		Source: 20D0778-01		Prepared: 04/21/2020 Analyzed: 04/22/2020						
Cadmium	2.33	0.0400	mg/L	2.50	BLOD	93.3	75-125			
Chromium	2.41	0.100	mg/L	2.50	0.130	91.1	75-125			
Lead	2.33	0.100	mg/L	2.50	BLOD	93.3	75-125			
Selenium	2.32	0.250	mg/L	2.50	BLOD	92.9	75-125			
Silver	0.447	0.100	mg/L	0.500	BLOD	89.5	75-125			

Matrix Spike Dup (BDD0591-MSD1)		Source: 20D0778-01		Prepared: 04/21/2020 Analyzed: 04/22/2020						
Arsenic	2.30	0.100	mg/L	2.50	BLOD	92.0	75-125	2.79	20	
Barium	2.37	5.00	mg/L	2.50	BLOD	94.8	75-125	1.69	20	
Cadmium	2.26	0.0400	mg/L	2.50	BLOD	90.5	75-125	3.11	20	
Chromium	2.34	0.100	mg/L	2.50	0.130	88.2	75-125	3.10	20	
Lead	2.27	0.100	mg/L	2.50	BLOD	90.8	75-125	2.72	20	
Selenium	2.25	0.250	mg/L	2.50	BLOD	90.0	75-125	3.10	20	
Silver	0.453	0.100	mg/L	0.500	BLOD	90.6	75-125	1.26	20	

Batch BDD0597 - SW7470A

Blank (BDD0597-BLK1)		Prepared & Analyzed: 04/21/2020								
Mercury	ND	0.008	mg/L							
LCS (BDD0597-BS1)		Prepared & Analyzed: 04/21/2020								
Mercury	0.048	0.008	mg/L	0.0500		96.1	80-120			
LCS Dup (BDD0597-BSD1)		Prepared & Analyzed: 04/21/2020								
Mercury	0.047	0.008	mg/L	0.0500		93.6	80-120	2.66	20	
Matrix Spike (BDD0597-MS1)		Source: 20D0761-02		Prepared & Analyzed: 04/21/2020						
Mercury	0.044	0.008	mg/L	0.0500	BLOD	88.2	80-120			

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BDD0597 - SW7470A										
Matrix Spike Dup (BDD0597-MSD1)			Source: 20D0761-02		Prepared & Analyzed: 04/21/2020					
Mercury	0.044	0.008	mg/L	0.0500	BLOD	89.0	80-120	0.842	20	
Batch BDD0598 - SW7470A										
Blank (BDD0598-BLK1)			Prepared & Analyzed: 04/21/2020							
Mercury	ND	0.008	mg/L							
LCS (BDD0598-BS1)			Prepared & Analyzed: 04/21/2020							
Mercury	0.042	0.008	mg/L	0.0500		84.3	80-120			
LCS Dup (BDD0598-BSD1)			Prepared & Analyzed: 04/21/2020							
Mercury	0.044	0.008	mg/L	0.0500		87.3	80-120	3.53	20	
Matrix Spike (BDD0598-MS1)			Source: 20D0761-01		Prepared & Analyzed: 04/21/2020					
Mercury	0.048	0.008	mg/L	0.0500	BLOD	95.6	80-120			
Matrix Spike Dup (BDD0598-MSD1)			Source: 20D0761-01		Prepared & Analyzed: 04/21/2020					
Mercury	0.046	0.008	mg/L	0.0500	BLOD	92.8	80-120	2.98	20	

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Volatile Hydrocarbons by GC - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BDD0524 - SW5030B										
Blank (BDD0524-BLK1)				Prepared & Analyzed: 04/17/2020						
TPH-Volatiles (GRO)	ND	0.10	mg/L							
Surr: 2,5-Dibromotoluene (Surr FID)	92.8		ug/L	100		92.8	80-120			
LCS (BDD0524-BS1)				Prepared & Analyzed: 04/17/2020						
TPH-Volatiles (GRO)	1.02	0.10	mg/L	1.00		102	70-130			
Surr: 2,5-Dibromotoluene (Surr FID)	88.9		ug/L	100		88.9	80-120			
Matrix Spike (BDD0524-MS1)				Source: 20D0720-11	Prepared & Analyzed: 04/17/2020					
TPH-Volatiles (GRO)	1.04	0.10	mg/L	1.00	BLOD	104	70-130			
Surr: 2,5-Dibromotoluene (Surr FID)	96.3		ug/L	100		96.3	80-120			
Matrix Spike Dup (BDD0524-MSD1)				Source: 20D0720-11	Prepared & Analyzed: 04/17/2020					
TPH-Volatiles (GRO)	1.05	0.10	mg/L	1.00	BLOD	105	70-130	0.831	20	
Surr: 2,5-Dibromotoluene (Surr FID)	89.9		ug/L	100		89.9	80-120			
Batch BDD0532 - SW5030B										
Blank (BDD0532-BLK1)				Prepared & Analyzed: 04/17/2020						
TPH-Volatiles (GRO)	ND	0.10	mg/kg							
Surr: 2,5-Dibromotoluene (Surr FID)	97.2		ug/L	100		97.2	80-120			
LCS (BDD0532-BS1)				Prepared & Analyzed: 04/17/2020						
TPH-Volatiles (GRO)	0.90	0.10	mg/kg	1.00		90.3	70-130			
Surr: 2,5-Dibromotoluene (Surr FID)	95.9		ug/L	100		95.9	80-120			
Matrix Spike (BDD0532-MS1)				Source: 20D0750-01	Prepared & Analyzed: 04/17/2020					
TPH-Volatiles (GRO)	4.68	0.48	mg/kg	4.76	BLOD	98.2	70-130			

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Volatile Hydrocarbons by GC - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BDD0532 - SW5030B										
Matrix Spike (BDD0532-MS1)		Source: 20D0750-01		Prepared & Analyzed: 04/17/2020						
Surr: 2,5-Dibromotoluene (Surr FID)	132		ug/L	100		132	80-120			S
Matrix Spike Dup (BDD0532-MSD1)		Source: 20D0750-01		Prepared & Analyzed: 04/17/2020						
TPH-Volatiles (GRO)	4.39	0.45	mg/kg	4.50	BLOD	97.4	70-130	6.39	20	
Surr: 2,5-Dibromotoluene (Surr FID)	112		ug/L	100		112	80-120			
Batch BDD0578 - SW5030B										
Blank (BDD0578-BLK1)		Prepared & Analyzed: 04/20/2020								
TPH-Volatiles (GRO)	ND	0.10	mg/kg							
Surr: 2,5-Dibromotoluene (Surr FID)	92.9		ug/L	100		92.9	80-120			
LCS (BDD0578-BS1)		Prepared & Analyzed: 04/20/2020								
TPH-Volatiles (GRO)	0.95	0.10	mg/kg	1.00		95.3	70-130			
Surr: 2,5-Dibromotoluene (Surr FID)	101		ug/L	100		101	80-120			
Matrix Spike (BDD0578-MS1)		Source: 20D0761-01RE1		Prepared & Analyzed: 04/20/2020						
TPH-Volatiles (GRO)	3.88	0.43	mg/kg	4.35	BLOD	89.2	70-130			
Surr: 2,5-Dibromotoluene (Surr FID)	99.9		ug/L	100		99.9	80-120			
Matrix Spike Dup (BDD0578-MSD1)		Source: 20D0761-01RE1		Prepared & Analyzed: 04/20/2020						
TPH-Volatiles (GRO)	3.94	0.45	mg/kg	4.46	BLOD	88.2	70-130	1.51	20	
Surr: 2,5-Dibromotoluene (Surr FID)	95.7		ug/L	100		95.7	80-120			

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Semivolatile Hydrocarbons by GC - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BDD0586 - SW3550C										
Blank (BDD0586-BLK1)				Prepared: 04/20/2020 Analyzed: 04/21/2020						
TPH-Semi-Volatiles (DRO)	ND	10.0	mg/kg							
Surr: Pentacosane (Surr)	2.98		mg/kg	5.00		59.5	45-160			
LCS (BDD0586-BS1)				Prepared: 04/20/2020 Analyzed: 04/21/2020						
TPH-Semi-Volatiles (DRO)	82.8	10.0	mg/kg	99.6		83.1	40-160			
Surr: Pentacosane (Surr)	2.83		mg/kg	4.98		56.7	45-160			
Matrix Spike (BDD0586-MS1)				Source: 20D0772-02		Prepared: 04/20/2020 Analyzed: 04/21/2020				
TPH-Semi-Volatiles (DRO)	20400	998	mg/kg	99.8	17400	3020	40-160			M2
Surr: Pentacosane (Surr)	37.4		mg/kg	4.99		749	45-160			DS
Matrix Spike Dup (BDD0586-MSD1)				Source: 20D0772-02		Prepared: 04/20/2020 Analyzed: 04/21/2020				
TPH-Semi-Volatiles (DRO)	19700	990	mg/kg	99.0	17400	2320	40-160	3.60	20	M2
Surr: Pentacosane (Surr)	36.1		mg/kg	4.95		729	45-160			DS
Batch BDD0655 - SW3510C										
Blank (BDD0655-BLK1)				Prepared: 04/22/2020 Analyzed: 04/23/2020						
TPH-Semi-Volatiles (DRO)	ND	0.500	mg/L							
Surr: Pentacosane (Surr)	0.153		mg/L	0.250		61.3	50-125			
LCS (BDD0655-BS1)				Prepared: 04/22/2020 Analyzed: 04/23/2020						
TPH-Semi-Volatiles (DRO)	3.7	0.500	mg/L	5.00		73.6	50-110			
Surr: Pentacosane (Surr)	0.135		mg/L	0.250		54.2	50-125			
Matrix Spike (BDD0655-MS1)				Source: 20D0895-03		Prepared: 04/22/2020 Analyzed: 04/23/2020				
TPH-Semi-Volatiles (DRO)	4.2	0.515	mg/L	5.15	BLOD	82.1	40-110			

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Semivolatile Hydrocarbons by GC - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BDD0655 - SW3510C										
Matrix Spike (BDD0655-MS1)		Source: 20D0895-03		Prepared: 04/22/2020 Analyzed: 04/23/2020						
<i>Surr: Pentacosane (Surr)</i>	0.136		mg/L	0.258		52.7	50-125			
Matrix Spike Dup (BDD0655-MSD1)		Source: 20D0895-03		Prepared: 04/22/2020 Analyzed: 04/23/2020						
TPH-Semi-Volatiles (DRO)	4.5	0.515	mg/L	5.15	BLOD	87.7	40-110	6.63	20	
<i>Surr: Pentacosane (Surr)</i>	0.166		mg/L	0.258		64.6	50-125			

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
TCLP Metals by 6000/7000 Series Methods			Preparation Method:	SW1311 Metals	
20D0761-02	100 mL / 2000 mL	SW1311	BDD0580	SDD0509	
20D0761-01	100 g / 2000 mL	SW1311	BDD0582	SDD0512	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
TCLP Metals by 6000/7000 Series Methods			Preparation Method:	SW3010A	
20D0761-02	10.0 mL / 50.0 mL	SW6010C	BDD0590	SDD0581	AD00102
20D0761-01	10.0 mL / 50.0 mL	SW6010C	BDD0591	SDD0581	AD00102
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Hydrocarbons by GC			Preparation Method:	SW3510C	
20D0761-02	980 mL / 1.00 mL	SW8015C	BDD0655	SDD0657	AA00116
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Semivolatile Hydrocarbons by GC			Preparation Method:	SW3550C	
20D0761-01	50.9 g / 1.00 mL	SW8015C	BDD0586	SDD0541	AA00116
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Hydrocarbons by GC			Preparation Method:	SW5030B	
20D0761-02	5.00 mL / 5.00 mL	SW8015C	BDD0524	SDD0466	AD00030
20D0761-03	5.00 mL / 5.00 mL	SW8015C	BDD0524	SDD0466	AD00030
20D0761-01	5.05 g / 5.00 mL	SW8015C	BDD0532	SDD0473	AD00066
20D0761-01RE1	1.04 g / 5.00 mL	SW8015C	BDD0578	SDD0508	AD00066

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
TCLP Metals by 6000/7000 Series Methods			Preparation Method:	SW7470A	
20D0761-02	1.00 mL / 20.0 mL	SW7470A	BDD0597	SDD0537	AD00096
20D0761-01	1.00 mL / 20.0 mL	SW7470A	BDD0598	SDD0537	AD00096

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Certified Analyses included in this Report

Analyte	Certifications
SW1311 in Solids	
Extraction Fluid, Metals	VELAP
SW6010C in Non-Potable Water	
Arsenic	VELAP,WVDEP
Barium	VELAP,WVDEP
Cadmium	VELAP,WVDEP
Chromium	VELAP,WVDEP
Lead	VELAP,WVDEP
Selenium	VELAP,WVDEP
Silver	VELAP,WVDEP
SW7470A in Non-Potable Water	
Mercury	VELAP,WVDEP
SW8015C in Non-Potable Water	
TPH-Semi-Volatiles (DRO)	VELAP,NC,WVDEP
TPH-Volatiles (GRO)	VELAP,NC,WVDEP
SW8015C in Solids	
TPH-Semi-Volatiles (DRO)	VELAP,NC,WVDEP
TPH-Volatiles (GRO)	VELAP,NC,WVDEP

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2020
NC	North Carolina DENR	495	12/31/2020
NCDOH	North Carolina Department of Health	51714	07/31/2020
NJDEP	New Jersey DEP	VA015	06/30/2020
PADEP	NELAC-Pennsylvania Certificate #005	68-03503	10/31/2020
VELAP	NELAC-Virginia Certificate #10637	460021	06/14/2020
WVDEP	West Virginia DEP	350	11/30/2020

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Qualifiers and Definitions

DS	Surrogate concentration reflects a dilution factor.
J	The reported result is an estimated value.
M2	Sample was diluted due to matrix interference.
S	Surrogate recovery was outside acceptance criteria
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>Haley + Aldrich</u>			INVOICE TO: <u>AP</u>			PROJECT NAME/Quote #: <u>Possum Point IDW</u>																																																																																																																																																																																																																										
CONTACT: <u>Erin Wright</u>			INVOICE CONTACT: <u>ap@haleyaldrich.com</u>			SITE NAME:																																																																																																																																																																																																																										
ADDRESS: <u>1 Park West Circle, Ste 208</u>			INVOICE ADDRESS:			PROJECT NUMBER:																																																																																																																																																																																																																										
PHONE #: <u>804-419-0010</u>			INVOICE PHONE #:			P.O. #: <u>134660</u>																																																																																																																																																																																																																										
FAX #:			EMAIL: <u>ewright@haleyaldrich.com</u>			Pretreatment Program:																																																																																																																																																																																																																										
Is sample for compliance reporting? YES NO			Regulatory State:			Is sample from a chlorinated supply? YES NO																																																																																																																																																																																																																										
PWS I.D. #:			SAMPLER NAME (PRINT): <u>Andy Gerringer</u>			SAMPLER SIGNATURE: <u>[Signature]</u>																																																																																																																																																																																																																										
Turn Around Time: Circle: <u>10</u> <u>5 Days</u> or <u> </u> 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								COMMENTS																																																																																																																																																																																																																								
CLIENT SAMPLE I.D.								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)																																																																																																																																																																																																																								
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2">Grab</th> <th rowspan="2">Composite</th> <th rowspan="2">Field Filtered (Dissolved Metals)</th> <th rowspan="2">Composite Start Date</th> <th rowspan="2">Composite Stop Time</th> <th rowspan="2">Grab Date or Composite Stop Date</th> <th rowspan="2">Grab Time or Composite Stop Time</th> <th rowspan="2">Time Preserved</th> <th rowspan="2">Matrix (See Codes)</th> <th rowspan="2">Number of Containers</th> <th colspan="6">ANALYSIS / (PRESERVATIVE)</th> </tr> <tr> <th>TCLP - 8 RCRA Metals</th> <th>TPH - DRO</th> <th>TPH - GRO</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1) IDW - SOIL - 20200416</td> <td></td> <td>X</td> <td></td> <td>4-16-20</td> <td>5145</td> <td></td> <td></td> <td></td> <td>S</td> <td>3</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2) IDW - WATER - 20200416</td> <td></td> <td>X</td> <td></td> <td>4-16-20</td> <td>0800</td> <td></td> <td></td> <td></td> <td>GW</td> <td>5</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr><td>3)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>6)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>7)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>9)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>10)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>										Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Stop Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						TCLP - 8 RCRA Metals	TPH - DRO	TPH - GRO							1) IDW - SOIL - 20200416		X		4-16-20	5145				S	3	X	X	X						2) IDW - WATER - 20200416		X		4-16-20	0800				GW	5	X	X	X						3)																			4)																			5)																			6)																			7)																			8)																			9)																			10)																		
	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Stop Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time													Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)																																																																																																																																																																																																									
									TCLP - 8 RCRA Metals	TPH - DRO	TPH - GRO																																																																																																																																																																																																																					
1) IDW - SOIL - 20200416		X		4-16-20	5145					S	3	X	X	X																																																																																																																																																																																																																		
2) IDW - WATER - 20200416		X		4-16-20	0800					GW	5	X	X	X																																																																																																																																																																																																																		
3)																																																																																																																																																																																																																																
4)																																																																																																																																																																																																																																
5)																																																																																																																																																																																																																																
6)																																																																																																																																																																																																																																
7)																																																																																																																																																																																																																																
8)																																																																																																																																																																																																																																
9)																																																																																																																																																																																																																																
10)																																																																																																																																																																																																																																
RELINQUISHED: <u>[Signature]</u>		DATE / TIME: <u>4-17-20 0900</u>		RECEIVED: <u>ESM</u>		DATE / TIME: <u>4/17/20 0900</u>		QC Data Package		LAB USE ONLY Therm ID: <u>271</u>		COOLER TEMP <u>1.1</u> °C																																																																																																																																																																																																																				
RELINQUISHED:		DATE / TIME:		RECEIVED:		DATE / TIME:		Level III ☐		Custody Seals used and intact? ☒ (Y/N)		Received on ice? ☒ (Y/N)																																																																																																																																																																																																																				
RELINQUISHED:		DATE / TIME:		RECEIVED:		DATE / TIME:		Level IV ☐		Haley & Aldrich		20D0761																																																																																																																																																																																																																				
RELINQUISHED:		DATE / TIME:		RECEIVED:		DATE / TIME:				Spoils Characterization		Recd: 04/17/2020 Due: 04/24 Page 23 of 25																																																																																																																																																																																																																				



Sample Preservation Log
Form #: F1301
Rev # 9.0
Effective: Nov 13, 2018
Page 1 of 1

Certificate of Analysis

Client Name: Haley & Aldrich
Client Site I.D.: Possum Point IDW
Submitted To: Erin Wright

Date Issued: 4/24/2020 5:23:44PM

Sample Conditions Checklist

Samples Received at:	1.80°C
How were samples received?	Walk In
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	No
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?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
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.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Received Trip Blank (15 April 2020/10.40) added to work order, Erin Wright notified by email. THM 17 April 2020/15.35

FACILITY PROFILE FORM

Giant Resource Recovery

The Best Solution - Recycling & Resource Recovery

Giant Resource Recovery - Sumter, Inc. ♦ 755 Industrial Road ♦ PO Box 1755 ♦ Sumter, SC 29151
Phone: (803) 773-1400 ♦ Fax: (803) 775-4145 ♦ S C D 0 3 6 2 7 5 6 2 6

Facility Use Only:

PROFILE NUMBER _____

Date: _____ Account #: _____

Sales # / Broker # _____

Classification: ☐ New Customer
☐ New S/A

☒ New ☐ Amendment

TREATMENT
METHOD

A. GENERATOR INFORMATION

GENERATOR STATUS: ☐ Conditionally Exempt ☒ Small Quantity ☐ Large Quantity

Generator Name: Possum Point Power Station EPA ID# VAD000620476

Primary Contact: Kevin Bishoff Phone #: 540-259-0384 Fax#: _____

Location Address: 19000 Possum Point Road City: Dumfries State: VA Zip: 22026 County: _____

Mailing Address: Dominion Energy 600 East Canal Street City: Richmond State: VA Zip: 23219 County: _____

Billing Name: Potomac Environmental, Inc. Phone #: 540-659-1894 Contact: Dan Kalil

Billing Address: PO Box 1836 City: Stafford State: VA Zip: 22555 County: _____

E-mail Information: Generator Primary Contact: dkalil@potomacenv.com Billing Contact: Dan Kalil

B. WASTE DESCRIPTION

Waste Name: IDW Soil

Description of Process Generating Waste: IDW Drilling

EPA Waste Code(s): N/A

C. WASTE CHARACTERISTICS (@ 70°F)

Physical State: ☒ Solid ☐ Liquid ☐ Sludge Thousands of BTU's/lb: <2000 Halogens (Cl, F, Br): _____ % or _____ ppm

Viscosity: ☐ Low(Thin) ☐ Medium ☐ High Specific Gravity: >1 Flash Point: ☒ None ☐ <140 ☐ >140

Layering: ☒ None ☐ Bilayer ☐ Multilayer Total Solids: >90 % pH: 3 to 12 If solid or no water present, pH of 50/50 aqueous slurry

D. CHEMICAL COMPOSITION

Chemical Constituents:

Water (if present) 0-10 % _____ %

Soil 90-100 % _____ %

_____ % _____ %

_____ % _____ %

_____ % _____ %

_____ % _____ %

_____ % _____ %

Toxins: Cyanides _____ ppm Pesticides _____ ppm PCB's _____ ppm Beryllium _____ ppm Antimony _____ ppm

Nickel _____ ppm Thallium _____ ppm Zinc _____ ppm Dioxins _____ ppm ☒ (None of the above)

E. SHIPPING INFORMATION

Volume (lbs/yr): 4 Drums Shipping Frequency: ☐ One Time ☐ Weekly ☐ Monthly ☐ Quarterly ☒ Yearly

Container Spec: ☒ Drums (size: 55 gal) ☐ Roll-Off (size: _____) ☐ Tanker ☐ Other: _____

Proper DOT Shipping Name: Non-hazardous, non-RCRA, non-DOT regulated material

Hazard Class: N/A UN / NA #: N/A Packaging Group: N/A N.O.S. Information: IDW Soil

PROCEED TO SECTION "I" ON PAGE 3 FOR NON-HAZARDOUS MATERIAL

I. TC CERTIFICATION*

Facility Use Only:

PROFILE NUMBER _____

Complete each section

Regulatory Level
Above BelowRegulatory
Level, ppmActual
RangeRegulatory Level
Above BelowRegulatory
Level, ppmActual
Range

☒	D004	Arsenic	5.0	_____
☒	D005	Barium	100.0	_____
☒	D006	Cadmium	1.0	_____
☒	D007	Chromium	5.0	_____
☒	D008	Lead	5.0	_____
☒	D009	Mercury	0.2	_____
☒	D010	Selenium	1.0	_____
☒	D011	Silver	5.0	_____
☒	D012	Endrin	0.02	_____
☒	D013	Lindane	0.4	_____
☒	D014	Methoxychlor	10.0	_____
☒	D015	Toxaphene	0.5	_____
☒	D016	2,4-D	10.0	_____
☒	D017	2,4,5-TP (Silvex)	1.0	_____
☒	D018	Benzene	0.5	_____
☒	D019	Carbon Tetrachlori	0.5	_____
☒	D020	Chlordane	0.03	_____
☒	D021	Chlorobenzene	100.0	_____
☒	D022	Chloroform	6.0	_____
☒	D023	o-Cresol	200.0	_____

☒	D024	m-Cresol	200.0	_____
☒	D025	p-Cresol	200.0	_____
☒	D026	Cresol	200.0	_____
☒	D027	1,4-Dichlorobenzene	7.5	_____
☒	D028	1,2-Dichloroethane	0.5	_____
☒	D029	1,1-Dichloroethylene	0.7	_____
☒	D030	2,4-Dinitrotoluene	0.13	_____
☒	D031	Heptachlor	0.008	_____
☒	D032	Hexachlorobenzene	0.13	_____
☒	D033	Hexachlorobutadiene	0.5	_____
☒	D034	Hexachloroethane	3.0	_____
☒	D035	Methyl Ethyl Ketone	200.0	_____
☒	D036	Nitrobenzene	2.0	_____
☒	D037	Pentachlorophenol	100.0	_____
☒	D038	Pyridine	5.0	_____
☒	D039	Tetrachloroethylene	0.7	_____
☒	D040	Trichloroethylene	0.5	_____
☒	D041	2,4,5-Trichlorophenol	400.0	_____
☒	D042	2,4,6-Trichlorophenol	2.0	_____
☒	D043	Vinyl Chloride	0.2	_____

*The above TC is based on:

☒

Actual Testing

Generator Knowledge

Both (Attach all applicable analysis)

J. WASTE DETERMINATION (FOR NON-HAZARDOUS WASTE ONLY)

Please check the appropriate box below and provide GRR Sumter with the necessary documentation supporting the statement.

☐ The waste is an un-used or off-specification non-hazardous product where ingredients are known to the generator. (Please provide material safety data sheets or product specification sheets supporting this finding as an attachment)

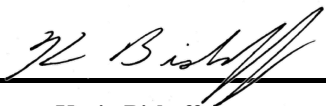
☐ The generator has a documented history of the waste to confirm the classification as non-hazardous. (Please provide a detailed written description of the non-hazardous materials that make up the subject waste stream and also provide information regarding how long the waste stream has been managed by your facility)

☒ The generator has current (preferably no more than 2 years old) analytical data that confirms the classification of the subject waste stream as non-hazardous. (Please attach a copy of your current analytical data (TCLP, EPA Method 8260, EPA Method 8270 or equivalent))

K. CERTIFICATION FOR NON-HAZARDOUS WASTE**Generator Certification**

I hereby certify that all information submitted in association with this document is true, accurate and complete to the best of my knowledge and belief. In addition, I also certify that I am authorized to provide such certification on behalf of my company and that the provided information is representative of every shipment of this waste stream identified with the indicated profile number that will be sent to GRR from this date forward.

Signature: _____



Title: _____

Project Manager

Print Name _____

Kevin Bishoff

Date: _____

5/6/2020**Facility Certification**

I hereby certify that I have reviewed the information provided on this profile form, including all of the information submitted in association with this profile form, and have determined that the subject material meets applicable acceptance criteria for the Giant Resource Recovery Sumter facility to receive and subsequently manage this material as a nonhazardous waste in accordance with applicable facility permits and regulations.

Signature: _____

Title: _____

Print Name _____

Date: _____

FACILITY PROFILE FORM

Giant Resource Recovery

The Best Solution - Recycling & Resource Recovery

Giant Resource Recovery - Sumter, Inc. ♦ 755 Industrial Road ♦ PO Box 1755 ♦ Sumter, SC 29151
Phone: (803) 773-1400 ♦ Fax: (803) 775-4145 ♦ S C D 0 3 6 2 7 5 6 2 6

Facility Use Only:

PROFILE NUMBER _____

Date: _____ Account #: _____

Sales # / Broker # _____

Classification: ☐ New Customer
☐ New S/A

☒ New ☐ Amendment

TREATMENT
METHOD

A. GENERATOR INFORMATION

GENERATOR STATUS: ☐ Conditionally Exempt ☒ Small Quantity ☐ Large Quantity

Generator Name: Possum Point Power Station EPA ID# VAD000620476

Primary Contact: Kevin Bishoff Phone #: 540-259-0384 Fax#: _____

Location Address: 19000 Possum Point Road City: Dumfries State: VA Zip: 22026 County: _____

Mailing Address: Dominion Energy 600 East Canal Street City: Richmond State: VA Zip: 23219 County: _____

Billing Name: Potomac Environmental, Inc. Phone #: 540-659-1894 Contact: Dan Kalil

Billing Address: PO Box 1836 City: Stafford State: VA Zip: 22555 County: _____

E-mail Information: Generator Primary Contact: dkalil@potomacenv.com Billing Contact: Dan Kalil

B. WASTE DESCRIPTION

Waste Name: IDW Purge Water

Description of Process Generating Waste: IDW drilling and purge

EPA Waste Code(s): N/A

C. WASTE CHARACTERISTICS (@ 70°F)

Physical State: ☐ Solid ☒ Liquid ☐ Sludge Thousands of BTU's/lb: <2000 Halogens (Cl, F, Br): _____ % or _____ ppm

Viscosity: ☐ Low(Thin) ☒ Medium ☐ High Specific Gravity: >1 Flash Point: ☐ None ☐ <140 ☒ >140

Layering: ☒ None ☐ Bilayer ☐ Multilayer Total Solids: <10 % pH: 3 to 12 If solid or no water present, pH of 50/50 aqueous slurry

D. CHEMICAL COMPOSITION

Chemical Constituents:

Water (if present) 90-100 % _____ %

Soil and sediment 0-10 % _____ %

_____ % _____ %

_____ % _____ %

_____ % _____ %

_____ % _____ %

_____ % _____ %

Toxins: Cyanides _____ ppm Pesticides _____ ppm PCB's _____ ppm Beryllium _____ ppm Antimony _____ ppm

Nickel _____ ppm Thallium _____ ppm Zinc _____ ppm Dioxins _____ ppm ☒ (None of the above)

E. SHIPPING INFORMATION

Volume (lbs/yr): 6 Drums Shipping Frequency: ☐ One Time ☐ Weekly ☐ Monthly ☐ Quarterly ☒ Yearly

Container Spec: ☒ Drums (size: 55 gal) ☐ Roll-Off (size: _____) ☐ Tanker ☐ Other: _____

Proper DOT Shipping Name: Non-hazardous, non-RCRA, non-DOT regulated material

Hazard Class: N/A UN / NA #: N/A Packaging Group: N/A N.O.S. Information: IDW Purge Water

PROCEED TO SECTION "I" ON PAGE 3 FOR NON-HAZARDOUS MATERIAL

I. TC CERTIFICATION*

Facility Use Only:

PROFILE NUMBER _____

Complete each section

Regulatory Level
Above BelowRegulatory
Level, ppmActual
RangeRegulatory Level
Above BelowRegulatory
Level, ppmActual
Range

☒	D004	Arsenic	5.0	_____
☒	D005	Barium	100.0	_____
☒	D006	Cadmium	1.0	_____
☒	D007	Chromium	5.0	_____
☒	D008	Lead	5.0	_____
☒	D009	Mercury	0.2	_____
☒	D010	Selenium	1.0	_____
☒	D011	Silver	5.0	_____
☒	D012	Endrin	0.02	_____
☒	D013	Lindane	0.4	_____
☒	D014	Methoxychlor	10.0	_____
☒	D015	Toxaphene	0.5	_____
☒	D016	2,4-D	10.0	_____
☒	D017	2,4,5-TP (Silvex)	1.0	_____
☒	D018	Benzene	0.5	_____
☒	D019	Carbon Tetrachlori	0.5	_____
☒	D020	Chlordane	0.03	_____
☒	D021	Chlorobenzene	100.0	_____
☒	D022	Chloroform	6.0	_____
☒	D023	o-Cresol	200.0	_____

☒	D024	m-Cresol	200.0	_____
☒	D025	p-Cresol	200.0	_____
☒	D026	Cresol	200.0	_____
☒	D027	1,4-Dichlorobenzene	7.5	_____
☒	D028	1,2-Dichloroethane	0.5	_____
☒	D029	1,1-Dichloroethylene	0.7	_____
☒	D030	2,4-Dinitrotoluene	0.13	_____
☒	D031	Heptachlor	0.008	_____
☒	D032	Hexachlorobenzene	0.13	_____
☒	D033	Hexachlorobutadiene	0.5	_____
☒	D034	Hexachloroethane	3.0	_____
☒	D035	Methyl Ethyl Ketone	200.0	_____
☒	D036	Nitrobenzene	2.0	_____
☒	D037	Pentachlorophenol	100.0	_____
☒	D038	Pyridine	5.0	_____
☒	D039	Tetrachloroethylene	0.7	_____
☒	D040	Trichloroethylene	0.5	_____
☒	D041	2,4,5-Trichlorophenol	400.0	_____
☒	D042	2,4,6-Trichlorophenol	2.0	_____
☒	D043	Vinyl Chloride	0.2	_____

*The above TC is based on:

☒

Actual Testing

Generator Knowledge

Both (Attach all applicable analysis)

J. WASTE DETERMINATION (FOR NON-HAZARDOUS WASTE ONLY)

Please check the appropriate box below and provide GRR Sumter with the necessary documentation supporting the statement.

☐ The waste is an un-used or off-specification non-hazardous product where ingredients are known to the generator. (Please provide material safety data sheets or product specification sheets supporting this finding as an attachment)

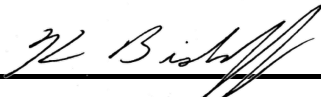
☐ The generator has a documented history of the waste to confirm the classification as non-hazardous. (Please provide a detailed written description of the non-hazardous materials that make up the subject waste stream and also provide information regarding how long the waste stream has been managed by your facility)

☒ The generator has current (preferably no more than 2 years old) analytical data that confirms the classification of the subject waste stream as non-hazardous. (Please attach a copy of your current analytical data (TCLP, EPA Method 8260, EPA Method 8270 or equivalent))

K. CERTIFICATION FOR NON-HAZARDOUS WASTE**Generator Certification**

I hereby certify that all information submitted in association with this document is true, accurate and complete to the best of my knowledge and belief. In addition, I also certify that I am authorized to provide such certification on behalf of my company and that the provided information is representative of every shipment of this waste stream identified with the indicated profile number that will be sent to GRR from this date forward.

Signature: _____



Title: _____

Project Manager

Print Name _____

Kevin Bishoff

Date: _____

5/6/2020**Facility Certification**

I hereby certify that I have reviewed the information provided on this profile form, including all of the information submitted in association with this profile form, and have determined that the subject material meets applicable acceptance criteria for the Giant Resource Recovery Sumter facility to receive and subsequently manage this material as a nonhazardous waste in accordance with applicable facility permits and regulations.

Signature: _____

Title: _____

Print Name _____

Date: _____

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number VAD000620476		2. Page 1 of 1		3. Emergency Response Phone 888-673-8800		4. Waste Tracking Number 061520	
5. Generator's Name and Mailing Address Dominion Possum Point Power Station 600 East Canal Street Richmond, VA 23210				Generator's Site Address (if different than mailing address) 19000 Possum Point Road Dumfries, VA 22026					
Generator's Phone: 703-366-1972									
6. Transporter 1 Company Name Envirofit of Pennsylvania, Inc.				U.S. EPA ID Number PAI0010154045					
7. Transporter 2 Company Name				U.S. EPA ID Number					
8. Designated Facility Name and Site Address Giant Resource Recovery 755 Industrial Road Sumter, SC 29150				U.S. EPA ID Number SCD036275626					
Facility's Phone: 803-773-1400									
9. Waste Shipping Name and Description				10. Containers		11. Total Quantity	12. Unit Wt./Vol.		
				No.	Type				
1. NON-HAZARDOUS, NON-RCRA, NON-DOT REGULATED MATERIAL (IDW SOIL)				006	DM	4200	P	NREG	
2. NON-HAZARDOUS, NON-RCRA, NON-DOT REGULATED MATERIAL (IDW PURGE WATER)				004	DM	2000	P	NREG	
3.									
4.									
13. Special Handling Instructions and Additional Information 1) SE-154743-NREG 2) SE-154744-NREG Certificates of Disposal are Required, Send to PEI Emergency Contact: PEI									
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.									
Generator's/Offor's Printed/Typed Name KRISTIN LONG				Signature Kristin Long for Dominion		Month Day Year 06/15/20			
15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:									
16. Transporter Acknowledgment of Receipt of Materials									
Transporter 1 Printed/Typed Name JAMES E. MILLER JR				Signature J. E. Miller		Month Day Year 06/15/20			
Transporter 2 Printed/Typed Name				Signature		Month Day Year			
17. Discrepancy									
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection									
17b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number:									
Facility's Phone:									
17c. Signature of Alternate Facility (or Generator) Month Day Year									
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a									
Printed/Typed Name Joseph H. Huchingson				Signature Joseph H. Huchingson		Month Day Year 06/17/20			

APPENDIX E

Data Usability Summary Reports

Data Usability Summary Report

Project Name: Dominion Energy VSWMR and CCR

Analytical Laboratory: Pace Analytical Services, LLC – Huntersville, NC

Air Water & Soil, Inc. – Richmond, VA

Validation Performed by: Carly Nemanic, Alexis Rainery

Validation Reviewed by: Katherine Miller

Validation Date: 1 May 2020

Haley & Aldrich, Inc., prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the Dominion Energy VSWMR and CCR groundwater samples collected on 7 April through 15 April 2020 and submitted to Pace Analytical Services, LLC – Huntersville, NC and Air Water & Soil, Inc. – Richmond, VA. The analytical results for the Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability.

This data validation and usability assessment was performed as per the guidance and requirements established by the U.S. Environmental Protection Agency's (EPA) "*National Functional Guidelines for Inorganic Data Review*" and "*National Functional Guidelines for Organic Data Review*" herein referred to as the specified limits. Data in this report have been reviewed against the most recent NFGs. The following quality assurance/quality control (QA/QC) criteria from the analysis of the project samples were reviewed as applicable:

1. Sample Delivery Group Number 92472806 (Pace)
 2. Sample Delivery Group Number 92472807 (Pace)
 3. Sample Delivery Group Number 92473016 (Pace)
 4. Sample Delivery Group Number 92473019 (Pace)
 5. Sample Delivery Group Number 92473551 (Pace)
 6. Sample Delivery Group Number 92473553 (Pace)
 7. Sample Delivery Group Number 92473799 (Pace)
 8. Sample Delivery Group Number 92473800 (Pace)
 9. Sample Delivery Group Number 92473946 (Pace)
 10. Sample Delivery Group Number 92473947 (Pace)
 11. Sample Delivery Group Number 92473948 (Pace)
 12. Sample Delivery Group Number 200409 (Air Water & Soil)
 13. Sample Delivery Group Number 92474190 (Pace)
-
1. Sample Delivery Group Number 92472806 (Pace)
 2. Sample Delivery Group Number 92472807 (Pace)
 3. Sample Delivery Group Number 92473016 (Pace)
 4. Sample Delivery Group Number 92473019 (Pace)
 5. Sample Delivery Group Number 92473551 (Pace)
 6. Sample Delivery Group Number 92473553 (Pace)

7. Sample Delivery Group Number 92473799 (Pace)
8. Sample Delivery Group Number 92473800 (Pace)
9. Sample Delivery Group Number 92473946 (Pace)
10. Sample Delivery Group Number 92473947 (Pace)
11. Sample Delivery Group Number 92473948 (Pace)
12. Sample Delivery Group Number 200409 (Air Water & Soil)
13. Sample Delivery Group Number 92474190 (Pace)

- Holding Times/Preservation
- Reporting Limits and Sample Dilution
- Blank Sample Analysis
- Laboratory Control Samples
- Matrix Spike Samples
- Laboratory and Field Duplicate Sample Analysis
- System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control, matrix spike, or laboratory duplicate analyses performed concurrently with the project samples or based on field duplicates collected at the site.

Data reported in this sampling event were reported to the laboratory method detection limit (MDL). Results found between the MDL and reporting limit (RL) are flagged “J” as estimated.

Sample data were qualified in accordance with laboratory’s standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

1. Sample Delivery Group Number 92472806 (Pace)

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92472806, dated 15 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-22RA-20200407	N	92472806001	4/7/2020	WG	A, B, C

Method Holding Time		
A.	EPA 420.4 (Phenolics, Total)	28 days
B.	SM5310B (Total Organic Carbon (TOC))	28 days
C.	SW6020B (Metals)	180 days

1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 2.5 degrees Celsius.

1.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

1.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Method Blank	535206	Manganese	0.38 J	NA	None, samples are 10x > Method Blank

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

1.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was analyzed, this data set is supported by precision quality control information.

1.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The sample(s) below were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
2855914 2855915	ED-22RA-20200407	EPA 6020B
2860125 2860126		EPA 420.4
2856100 2856101		SM 5310B

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualifier	Affected Samples
MS/RPD	EPA 420.4	ED-22RA-20200407	Phenol	87%,RPD=12	J/UJ	ED-22RA-20200407

1.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

1.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
ED-22RA-20200407	Phenol	0.020 U	0.020 UJ	Matrix Spike outside recovery limits

2. Sample Delivery Group Number 92472807 (Pace)

2.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92472807, dated 15 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-22RA-20200407	N	92472807001	4/7/2020	WG	A, B, C, D

Method Holding Time		
A.	SM2540C (Total Dissolved Solids (TDS))	7 days
B.	SW7470 (Mercury)	28 days
C.	SW9056A	28 days
D.	SW6020B (Metals)	180 days

2.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 2.5 degrees Celsius.

2.3 REPORTING LIMITS AND SAMPLE DILUTION

No dilutions were performed for the analysis of the samples in this report.

2.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

2.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was analyzed, this data set is supported by precision quality control information.

2.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The sample(s) below were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
2858654 2858655	ED-22RA-20200407	EPA 7470A
2855914 2855915		EPA 6020B
2858404 2858405 2858406 2858407		EPA 9056A

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualifier	Affected Samples
MS/MSD	EPA 9056A	ED-22RA-20200407	Fluoride	119%/123%	J/None	ED-22RA-20200407
			Sulfate	83%/86%	J/UJ	

2.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

2.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
ED-22RA-20200407	Sulfate	60.5	60.5 J	Matrix Spike outside recovery limits

3. Sample Delivery Group Number 92473016 (Pace)

3.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473016, dated 20 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-23R-20200408	N	92473016001	4/8/2020	WG	A, B, C
ES-3D-20200408	N	92473016002	4/8/2020	WG	A, B, C
ES-1609-20200408	N	92473016003	4/8/2020	WG	A, B, C
ES-1613-20200408	N	92473016004	4/8/2020	WG	A, B, C

Method Holding Time		
A.	E420.4 (Total Dissolved Solids (TDS))	7 days
B.	SM5310B (Total Organic Carbon (TOC))	28 days
C.	SW6020B (Metals)	180 days

3.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 1.4 – 0.4 degrees Celsius.

3.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

3.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Method Blank	2859498	Potassium	9.9 J	NA	None, samples are 10x > Method Blank

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

3.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was analyzed, this data set is supported by precision quality control information.

3.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The sample(s) below were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
2860127 2860128	ED-23R-20200408	EPA 420.4

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

3.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

3.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

4. Sample Delivery Group Number 92473019 (Pace)

4.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473019, dated 17 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-23R-20200408	N	92473019001	4/8/2020	WG	A, B, C, D
ES-3D-20200408	N	92473019002	4/8/2020	WG	A, B, C, D
ES-1609-20200408	N	92473019003	4/8/2020	WG	A, B, C, D
ES-1613-20200408	N	92473019004	4/8/2020	WG	A, B, C, D

Method Holding Time		
A.	SM2540C (Total Dissolved Solids (TDS))	7 days
B.	SW7470 (Mercury)	28 days
C.	SW9056A	28 days
D.	SW6020B (Metals)	180 days

4.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 1.4 – 0.4 degrees Celsius.

4.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

4.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

4.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was also not analyzed, this data set does not include site-specific precision quality control information.

4.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

4.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

4.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

5. Sample Delivery Group Number 92473551 (Pace)

5.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473551, dated 20 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-24R-20200413	N	92473551001	4/13/2020	WG	A, B, C, D

Method Holding Time	
A. SM2540C (Total Dissolved Solids (TDS))	7 days
B. SW7470 (Mercury)	28 days
C. SW9056A	28 days
D. SW6020B (Metals)	180 days

5.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 2.0 degrees Celsius.

5.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
ED-24R-20200413	92473551001	6020/various metals	5	Dilution required due to high target analyte abundance.

5.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Method Blank	536213	Antimony	0.33 J	NA	None, samples are non-detect

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

5.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was analyzed, this data set is supported by precision quality control information.

5.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The sample(s) below were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
2864579 2864580	ED-24R-20200413	EPA 7470A
2860600 2860601		EPA 6020B
2861752 2861753		EPA 9056A

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualifier	Affected Samples
MS	EPA 6020B	ED-24R-20200413	Barium	73%	J-/UJ	ED-24R-20200413
MS			Boron	73%	J-/UJ	
MS/MSD			Calcium	43%/66%	J-/UJ	
MS			Lead	74%	J-/UJ	
MS	EPA 9056A		Chloride	117%	J/None	
MS/MSD			Fluoride	163%/121%	J/None	
MS			Sulfate	123%	J/None	

5.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

5.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
ED-24R-20200413	Lead	0.50 U	0.50 UJ	Matrix Spike recovery out of acceptance limits
	Barium	13.5	13.5 J-	
	Boron	125 U	125 UJ	
	Calcium	1700	1700 J-	
	Sulfate	2.7	2.7 J	
	Chloride	2.3	2.3 J	
	Fluoride	60 J	60 J	

6. Sample Delivery Group Number 92473553 (Pace)

6.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473553, dated 23 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-24R-20200413	N	92473553001	4/13/2020	WG	A, B, C

Method Holding Time		
A.	EPA 420.4 (Phenolics, Total)	28 days
B.	SM5310B (Total Organic Carbon (TOC))	28 days
C.	SW6020B (Metals)	180 days

6.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 2.0 degrees Celsius.

6.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

6.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Method Blank	537477	Potassium	7.2 J	NA	None, samples are 10x > Method Blank

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

6.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was analyzed, this data set is supported by precision quality control information.

6.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The sample(s) below were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
2866335 2866336	ED-24R-20200413	EPA 6020B
2864521 2864522		EPA 420.4
2860789 2860790		SM 5310B

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

6.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

6.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

7. Sample Delivery Group Number 92473799 (Pace)

7.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473799, dated 23 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-26-20200414	N	92473799001	4/14/2020	WG	A, B, C, D
EB-01-20200414	EB	92473799002	4/14/2020	WQ	A, B, C, D

Method Holding Time		
A.	SM2540C (Total Dissolved Solids (TDS))	7 days
B.	SW7470 (Mercury)	28 days
C.	SW9056A	28 days
D.	SW6020B (Metals)	180 days

7.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 3.3 degrees Celsius.

7.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

7.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. The analysis of the blank samples for field quality control was free of target compounds with the following exceptions:

Blank Type	Date of Blank	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Equipment Blank	4/14/2020	Antimony	0.14 J	NA	None, samples are ND
	4/14/2020	Barium	0.062 J	NA	None, result > 10x blank
	4/14/2020	Boron	3.1 J	RL U	ED-26-20200414

7.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was also not analyzed, this data set does not include site-specific precision quality control information.

7.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

7.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

7.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
ED-26-20200414	Boron	9.6 J	25 U	Equipment blank contamination

8. Sample Delivery Group Number 92473800 (Pace)

8.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92492473800, dated 23 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-26-20200414	N	92473800001	4/14/2020	WG	A, B, C
EB-01-20200414	EB	92473800002	4/14/2020	WQ	A, B, C

Method Holding Time		
A.	EPA 420.4 (Phenolics, Total)	28 days
B.	SM5310B (Total Organic Carbon (TOC))	28 days
C.	SW6020B (Metals)	180 days

8.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 3.3 degrees Celsius.

8.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

8.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Method Blank	537477	Potassium	7.2 J	NA	None, samples >10x detected result

Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. The analysis of the blank samples for field quality control was free of target compounds with the following exceptions:

Blank Type	Date of Blank	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Equipment Blank	4/14/2020	Nickel	0.24 J	RL U	ED-26-20200414
	4/14/2020	Zinc	1.7 J	RL U	ED-26-20200414

8.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was also not analyzed, this data set does not include site-specific precision quality control information.

8.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

8.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

8.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
ED-26-20200414	Nickel	0.24 J	0.50 U	Equipment blank contamination
ED-26-20200414	Zinc	1.8 J	5.0 U	

9. Sample Delivery Group Number 92473946 (Pace)

9.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473946, dated 23 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ES-1-20200415	N	92473946001	4/15/2020	WG	A
ES-1D-20200415	N	92473946002	4/15/2020	WG	A

Method Holding Time	
A. SW6020B (Metals)	180 days

9.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 0.8 degrees Celsius.

9.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

9.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

9.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was also not analyzed, this data set does not include site-specific precision quality control information.

9.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

9.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

9.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

10. Sample Delivery Group Number 92473947 (Pace)

10.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473947, dated 22 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ES-1-20200415	N	92473947001	4/15/2020	WG	A, B, C, D
ES-1D-20200415	N	92473947002	4/15/2020	WG	A, B, C, D

Method Holding Time	
A. SM2540C (Total Dissolved Solids (TDS))	7 days
B. SW7470 (Mercury)	28 days
C. SW9056A (Anions)	28 days
D. SW6020B (Metals)	180 days

10.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 0.8 degrees Celsius.

10.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

10.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

10.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was also not analyzed, this data set does not include site-specific precision quality control information.

10.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

10.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

10.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

11. Sample Delivery Group Number 92473948 (Pace)

11.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473948, dated 22 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ES-1-20200415	N	92473948001	4/15/2020	WG	A, B, C
ES-1D-20200415	N	92473948002	4/15/2020	WG	A, B, C

Method Holding Time		
A.	SM2340B (Hardness, Total)	7 days
B.	EPA 420.4 (Phenolics)	28 days
C.	SW6020B (Metals)	180 days

11.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 0.8 degrees Celsius.

11.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Only detected analytes were reported from a dilution.

11.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

11.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was also not analyzed, this data set does not include site-specific precision quality control information.

11.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

11.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

11.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

12. Sample Delivery Group Number 200409 (Air Water & Soil)

12.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 200409, dated 12 May 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).
- The following samples documented on attached COCs were reported in a separate lab report:
 - ABC-1602-20200409
 - ABC-1607-20200409
 - ABC-1608-20200410
 - ABC-1614-20200409
 - ABC-1616-20200414
 - FB-01-20200409
 - FD-01-20200409

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ED-22RA-20200407	N	20D0312-01	4/7/2020	WG	A
ED-23R-20200408	N	20D0391-01	4/8/2020	WG	A
ES-3D-20200408	N	20D0391-02	4/8/2020	WG	A
ES-1609-20200408	N	20D0391-03	4/8/2020	WG	A
ES-1613-20200408	N	20D0391-04	4/8/2020	WG	A
T-1615S-20200410	N	20D0498-02	4/10/2020	WG	A
T-1615D-20200410	N	20D0498-03	4/10/2020	WG	A
ED-24R-20200413	N	20D0522-01	4/13/2020	WG	A
ED-26-20200414	N	20D0590-01	4/14/2020	WG	A
EB-01-20200414	EB	20D0590-03	4/14/2020	WG	A
ES-1-20200415	N	20D0680-01	4/15/2020	WG	A
ES-1D-20200415	N	20D0680-02	4/15/2020	WG	A

Method Holding Time		
A.	SW 7196 (hexavalent chromium)	24 hours

12.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol with the following exceptions:

Method	Matrix	Holding Time	Preservation	Sample ID, Violation, Qualification
SW 7196	Water	24 hours	Cool to $\leq 4^{\circ}\text{C}$;	The cooler containing the following sample was received warm at 6.4 degrees Celsius ($^{\circ}\text{C}$): T-1615S-20200410 T-1615D-20200410 However, the cooler was delivered same day as sample collection and there is evidence chilling had begun.

Cooler temperature on arrival to the laboratory was: 0.2 – 6.4 degrees Celsius.

12.3 REPORTING LIMITS AND SAMPLE DILUTION

No dilutions were performed for the analysis of the samples in this report.

12.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. The analysis of the blank samples for field quality control was free of target compounds.

12.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was analyzed, this data set is supported by precision quality control information.

12.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The sample(s) below were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
20D0312-01	ED-22RA-20200407	SW 7196
20D0391-01	ED-23R-20200408	SW 7196
20D0522-01	ED-24R-20200413	SW 7196
20D0590-03	EB-01-20200414	SW 7196
20D0680-01	ES-1-20200415	SW 7196

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

12.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

12.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

13. Sample Delivery Group Number 92474190 (Pace)

13.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92474190, dated 22 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ES-7D-20200416	N	92474190001	4/16/2020	WG	A
ES-7-20200416	N	92474190002	4/16/2020	WG	A

Method Holding Time
A. SW6020B (Metals) 180 days

13.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 1.8 degrees Celsius.

13.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
ES-7D-20200416	92474190001	Zinc SW6020B	5	Dilution required due to high target analyte abundance.

13.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

13.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits with the following exceptions:

- An LCSD was not reported for SW6020B Because a site-specific matrix spike duplicate was analyzed, this data set is supported by precision quality control information.

13.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The sample(s) below were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
2864505 2864506	ES-7-20200416	SW6020B

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualifier	Affected Samples
MS/MSD	SW6020B	ES-7-20200416	Boron, Dissolved	37%/-30%	NA	None, native sample > 4x the spiked concentration
MS/MSD			Cobalt, Dissolved	37%/-47%	NA	None, native sample > 4x the spiked concentration
MSD			Nickel, Dissolved	62%	J-/UJ	ES-7D-20200416
MSD			Zinc, Dissolved	74%	J-/UJ	ES-7-20200416

13.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

13.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
ES-7D-20200416	Nickel, Dissolved	2.2 J	2.2 J-	MSD % Recovery Low
ES-7-20200416		60.7	60.7 J-	
ES-7D-20200416	Zinc, Dissolved	ND U	ND UJ	
ES-7-20200416		30.3	30.3 J-	

Glossary

- Sample Types:
 - N Primary Sample
 - FD Field Duplicate Sample
 - FB Field Blank Sample
 - EB Equipment Blank Sample
- Units:
 - µg/L or ug/L micrograms per liter
 - mg/L milligrams per liter
- Matrices:
 - WG Groundwater
 - WQ Water Quality
- Table Footnotes
 - NA Not applicable
 - ND Non-detect
 - NR Not reported
- Abbreviations
 - DUSR Data Usability Summary Report
 - SDG Sample Delivery Group
 - EPA Environmental Protection Agency
 - NFG National Functional Guidelines
 - QA/QC Quality Assurance/Quality Control
 - RL Reporting Limit
 - MDL Method Detection Limit
 - SOP Standard Operating Procedures
 - COC Chain of Custody
 - % Percent
 - %R Percent Recovery
 - RPD Relative Percent Difference
 - LCS/LCSD Laboratory Control Sample/Laboratory Control Sample Duplicate
 - MS/MSD Matrix Spike/Matrix Spike Duplicate

Qualifiers

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or “ND”.
 - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
 - E The compound was quantitated above the calibration range.
 - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
 - NJ The analysis indicated the presence of a compound for which there was presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
 - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

References

1. United States Environmental Protection Agency, 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January.
2. United States Environmental Protection Agency, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

Data Usability Summary Report

Project Name: Dominion Energy VSWMR and CCR

Analytical Laboratory: Pace Analytical Services, LLC – Huntersville, NC

Validation Performed by: Alexis Rainery

Validation Reviewed by: Katherine Miller

Validation Date: 18 May 2020

Haley & Aldrich, Inc., prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the Dominion Energy VSWMR and CCR groundwater samples collected on 7 April through 15 April 2020. The analytical results for Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability.

This data validation and usability assessment was performed as per the guidance and requirements established by the *Evaluation of Radiochemical Data Usability* by J.G. Paar, herein referred to as the specified limits. The following quality assurance/quality control (QA/QC) criteria from the analysis of the project samples were reviewed as applicable:

1. Sample Delivery Group Number 9242859 (Pace)
 - Holding Times/Preservation
 - Reporting Limits and Sample Dilution
 - Blank Sample Analysis
 - Laboratory Control Samples
 - Matrix Spike Samples
 - Radiological Negative Result Check
 - Radiological Chemical Yield - Tracers and Carriers
 - Radiological Combined Isotope Calculations
 - Field and Laboratory Duplicate Samples
 - System Performance and Overall Assessment

Radiological data reported in this sampling event were reported to the Minimum Detectable Concentration (MDC).

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

1. Sample Delivery Group Number 9242859 (Pace)

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92472859, dated 11 May 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- COC includes only a single sample

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
ED-22RA-20200407	N	92472859001	4/7/2020	WG	A, B
ED-23R-20200408	N	92473024001	4/8/2020	WG	A, B
ES-3D-20200408	N	92473024002	4/8/2020	WG	A, B
ES-1609-20200408	N	92473024003	4/8/2020	WG	A, B
ES-1613-20200408	N	92473024004	4/8/2020	WG	A, B
T-1615S-20200410	N	92473420002	4/10/2020	WG	A, B
T-1615D-20200410	N	92473420003	4/10/2020	WG	A, B
ED-24R-20200413	N	92473542001	4/13/2020	WG	A, B
ED-26-20200414	N	92473787001	4/14/2020	WG	A, B
EB-01-20200414	EB	92473787002	4/14/2020	WG	A, B
ES-1-20200415	N	92473949001	4/15/2020	WG	A, B
ES-1D-20200415	N	92473949002	4/15/2020	WG	A, B

Method Holding Time		
A.	EPA 903.1 (Radium-226)	180 days
B.	EPA 904.0 (Radium-228)	180 days

1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per method protocol.

Cooler temperature on arrival to the laboratory was: 2.5 degrees Celsius.

1.3 REPORTING LIMITS AND SAMPLE DILUTION

No dilutions were performed for the analysis of the samples in this report.

1.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. In accordance with cited Paar guidelines, no statistical evaluation of the method blank needs to be performed if either of the following conditions are met:

- Method blank is less than its MDC or less than its 2s counting uncertainty
- Method blank result is greater than its MDC and the sample result less than its MDC

Based on the above conditions, no further evaluation was required, and no data qualification is recommended.

Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. The analysis of the blank samples for field quality control was free of target compounds.

1.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. No LCS/LCSD analysis was evaluated as part of this SDG.

1.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No MS/MSD analysis was evaluated as part of this SDG.

1.7 NEGATIVE RESULT CHECK

Negative results that have absolute values greater than their 2s counting uncertainty are an indication that the instrument background has shifted. The implication of an unstable background is a possible negative bias in the sample result. Negative sample results were reviewed, and their absolute values found to be less than their 2s counting uncertainties. No data qualification was recommended.

1.8 CHEMICAL YIELD – TRACERS AND CARRIERS

Tracers and carriers are used in radiochemical separations methods to evaluate chemical separation. Chemical yield is evaluated by recovering the chemical species spiked into samples. Yield is evaluated radiometrically with a tracer and gravimetrically with a carrier. Each sample is spiked with either a carrier or tracer, and sample results are adjusted for yields greater or less than 100%. A low yield indicates tracer losses and radionuclide of interest through sample separation. A high yield indicates instrumental problems or contamination. There is no tracer recovery reported for this SDG.

1.9 COMBINED ISOTOPE CALCULATIONS

Taking the sum of the individual isotopes for an element does not necessarily give the best representation of the combined radiological concentration. The reviewer took the actions indicated below in the “Combined Result” column depending on the individual isotope activities:

Isotope #1	Isotope #2	Combined Result	Combined Uncertainty	Combined MDC	Samples Affected
ND (positive)	ND (positive)	Summed	Square-root of Sum of Squares	Highest MDC between the two isotopes	EB, ED-23R, ED-24R, ED-26, ES-1D (no change).
ND (negative)	ND (negative)	Zero			None, does not apply.
ND (positive)	ND (negative)	ND (positive)			ED-22RA (no change).
>MDC	ND (negative)	> MDC J			ES-1-20200415
>MDC	ND (positive)	Summed J			T-1615D-20200410 ES-3D-20200408 ES-1613-20200408
>MDC	>MDC	Summed			ES-1609, T-1615S (no change).

The laboratory properly calculates and represents the combined uncertainty and the combined MDC as shown above. The combined result has been adjusted for the above situations for the applicable samples listed. The laboratory report provides a simple summation of the individual activities, but when negative activities are reported, they should not be subtracted from the total.

1.10 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

1.11 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
ES-1-20200415	Combined Ra-226 & 228	1.88	1.88 J	See combined isotope calculation
ES-1613-20200408	Combined Ra-226 & 228	2.3	2.3 J	
ES-3D-20200408	Combined Ra-226 & 228	1.93	1.93 J	
T-1615D-20200410	Combined Ra-226 & 228	0.905	0.905 J	

Glossary

- Sample Types:
 - N Primary Sample
 - FD Field Duplicate Sample
 - FB Field Blank Sample
 - EB Equipment Blank Sample
 - TB Trip Blank Sample
- Units:
 - pCi/L picocuries per liter
- Matrices:
 - SO Soil
 - WG Groundwater
 - SE Sediment
- Table Footnotes
 - NA Not applicable
 - ND Non-detect
 - NR Not reported
- Abbreviations
 - DUSR Data Usability Summary Report
 - SDG Sample Delivery Group
 - EPA Environmental Protection Agency
 - NFG National Functional Guidelines
 - QA/QC Quality Assurance/Quality Control
 - MDC Minimum Detectable Concentration
 - SOP Laboratory Standard Operating Procedures
 - COC Chain of Custody
 - %R Percent Recovery
 - RPD Relative Percent Difference
 - TPU Total Propagated Uncertainty
 - LCS/LCSD Laboratory Control Sample/Laboratory Control Sample Duplicate
 - MS/MSD Matrix Spike/Matrix Spike Duplicate

Qualifiers

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
 - U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or “ND”.
 - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
 - E The compound was quantitated above the calibration range.
 - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
 - NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.
 - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

References

1. Paar, J.G., 1997. Evaluation of Radiochemical Data Usability. April.

Data Usability Summary Report

Project Name: Dominion Energy VSWMR and CCR

Analytical Laboratory: Pace Analytical Services, LLC – Huntersville, NC

Validation Performed by: Carly Nemanic, Alexis Rainery

Validation Reviewed by: Katherine Miller

Validation Date: 1 May 2020

Haley & Aldrich, Inc., prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the Dominion Energy VSWMR and CCR groundwater samples collected on 10 April and submitted to Pace Analytical Services, LLC – Huntersville. The analytical results for the Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability.

This data validation and usability assessment was performed as per the guidance and requirements established by the U.S. Environmental Protection Agency's (EPA) "*National Functional Guidelines for Inorganic Data Review*" herein referred to as the specified limits. Data in this report have been reviewed against the most recent NFGs. The following quality assurance/quality control (QA/QC) criteria from the analysis of the project samples were reviewed as applicable:

1. Sample Delivery Group Number 92473415 (Pace)
 2. Sample Delivery Group Number 92473417 (Pace)
- Holding Times/Preservation
 - Reporting Limits and Sample Dilution
 - Blank Sample Analysis
 - Laboratory Control Samples
 - Matrix Spike Samples
 - Laboratory and Field Duplicate Sample Analysis
 - System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control, matrix spike, or laboratory duplicate analyses performed concurrently with the project samples or based on field duplicates collected at the site.

Data reported in this sampling event were reported to the laboratory method detection limit (MDL). Results found between the MDL and reporting limit (RL) are flagged "J" as estimated.

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

1. Sample Delivery Group Number 92473415 (Pace)

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473415, dated 17 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ABC-1608-20200410	N	92473415001	4/10/2020	WG	A, B, C
T-1615S-20200410	N	92473415002	4/10/2020	WG	A, B, C
T-1615D-20200410	N	92473415003	4/10/2020	WG	A, B, C

Method Holding Time		
A.	EPA 420.4 (Phenolics, Total)	28 days
B.	SM5310B (Total Organic Carbon (TOC))	28 days
C.	SW6020B (Metals)	180 days

1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 3.3 degrees Celsius.

1.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
ABC-1608-20200410	92473415001	6020/various metals	30	Dilution required due to high target analyte abundance.
T-1615S-20200410	92473415002	6020/various metals	200	
T-1615D-20200410	92473415003	6020/various metals	20	

1.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Method Blank	536213	Nickel	0.18 J	U Result	ABC-1608-20200410
		Tin	0.19 J	U RL	T-1615S-20200410

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

1.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was also not analyzed, this data set does not include site-specific precision quality control information.

1.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

1.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

1.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
T-1615S-20200410	Tin	26.2 J	100 U	Method blank contamination
ABC-1608-20200410	Nickel	19.2	19.2 U	

2. Sample Delivery Group Number 92473417 (Pace)

2.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 92473417, dated 20 April 2020. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. COCs were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not used on the sample cooler(s).

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Method(s)
ABC-1608-20200410	N	92473417001	4/10/2020	WG	A, B, C, D
T-1615S-20200410	N	92473417002	4/10/2020	WG	A, B, C, D
T-1615D-20200410	N	92473417003	4/10/2020	WG	A, B, C, D

Method Holding Time		
A.	SM2540C (Total Dissolved Solids (TDS))	7 days
B.	SW7470 (Mercury)	28 days
C.	SW9056A	28 days
D.	SW6020B (Metals)	180 days

2.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified as per each method's protocol.

Cooler temperature on arrival to the laboratory was: 3.3 degrees Celsius.

2.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
ABC-1608-20200410	92473417001	6020/various metals	20	Dilution required due to high target analyte abundance.
T-1615S-20200410	92473417002	6020/various metals	200	
T-1615D-20200410	92473417003	6020/various metals	20	

2.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (ug/L)	Qualifier	Affected Samples
Method Blank	536213	Antimony	0.33 J	NA	None, samples are non-detect

Field blanks are prepared to identify contamination that may have been introduced during field activity. Blank samples for field quality control were not collected in this SDG.

2.5 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

- An LCSD was not reported for this SDG. Because a site-specific matrix spike duplicate, field duplicate, or laboratory duplicate was also not analyzed, this data set does not include site-specific precision quality control information.

2.6 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

2.7 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. No client samples were used for laboratory duplicate analysis in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. No field duplicates were collected in this data set.

2.8 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

Glossary

- Sample Types:
 - N Primary Sample
 - FD Field Duplicate Sample
 - FB Field Blank Sample
 - EB Equipment Blank Sample
- Units:
 - µg/L or ug/L micrograms per liter
 - mg/L milligrams per liter
- Matrices:
 - WG Groundwater
 - WQ Water Quality
- Table Footnotes
 - NA Not applicable
 - ND Non-detect
 - NR Not reported
- Abbreviations
 - DUSR Data Usability Summary Report
 - SDG Sample Delivery Group
 - EPA Environmental Protection Agency
 - NFG National Functional Guidelines
 - QA/QC Quality Assurance/Quality Control
 - RL Reporting Limit
 - MDL Method Detection Limit
 - SOP Standard Operating Procedures
 - COC Chain of Custody
 - % Percent
 - %R Percent Recovery
 - RPD Relative Percent Difference
 - LCS/LCSD Laboratory Control Sample/Laboratory Control Sample Duplicate
 - MS/MSD Matrix Spike/Matrix Spike Duplicate

Qualifiers

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

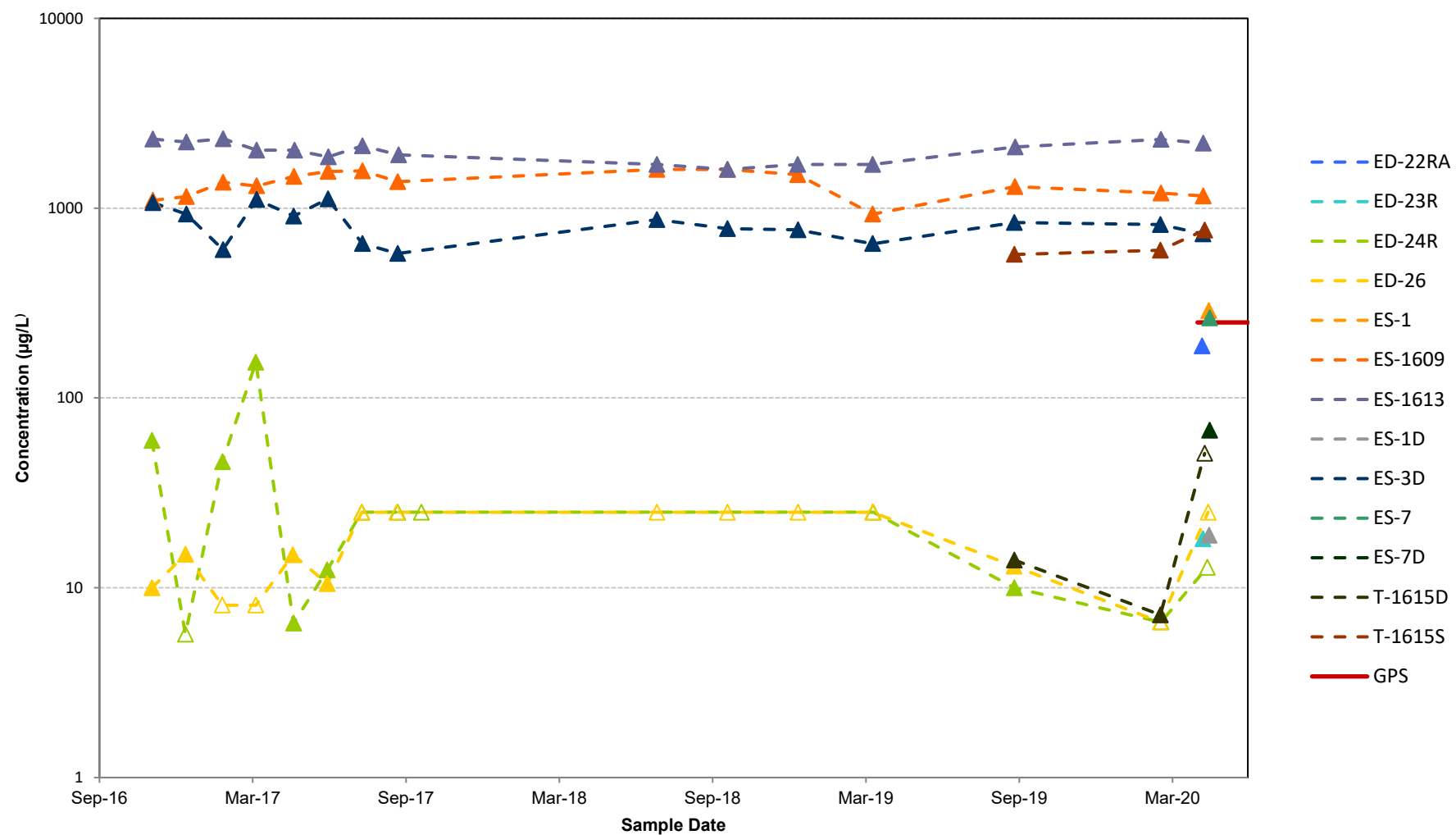
- Concentration (C) Qualifiers:
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or “ND”.
 - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
 - E The compound was quantitated above the calibration range.
 - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
 - NJ The analysis indicated the presence of a compound for which there was presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
 - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

References

1. United States Environmental Protection Agency, 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January.

APPENDIX F

Groundwater Trend Graphs



NOTES:

1. Solid symbol indicates a detected concentration. Open symbol indicates a non-detect, the laboratory method detection limit is graphed.
2. GPS shown is the Solid Waste Permit (SWP) Groundwater Protection Standard (GPS), which is based on background concentrations.

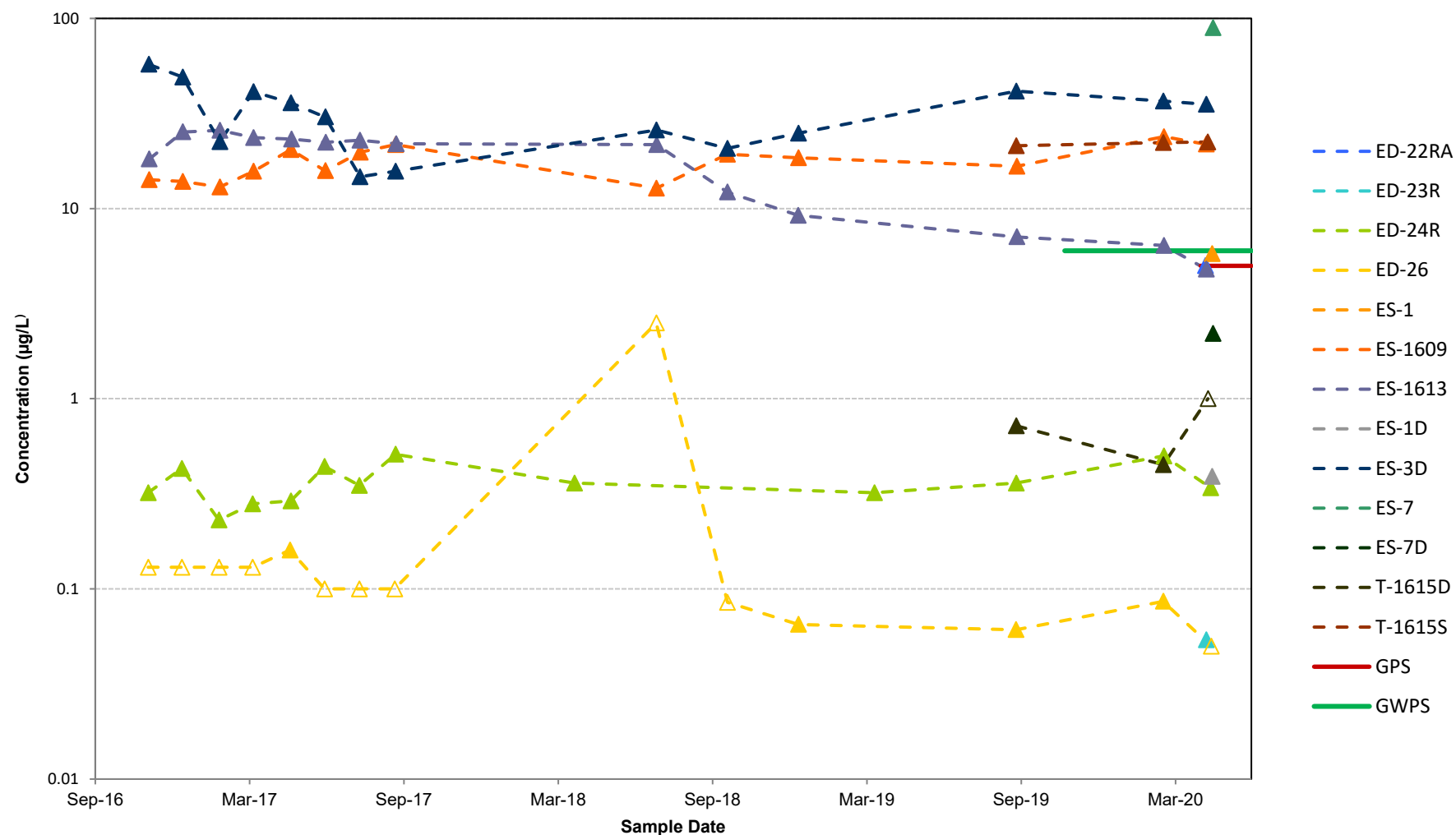
**HALEY
ALDRICH**

POSSUM POINT POWER STATION
PRINCE WILLIAM COUNTY, VIRGINIA

**BORON
CONCENTRATION VS. TIME**

August 2020

Figure F-1



NOTES:

1. Solid symbol indicates a detected concentration. Open symbol indicates a non-detect, the laboratory method detection limit is graphed.
2. GPS shown is the Solid Waste Permit (SWP) Groundwater Protection Standard (GPS), which is based on background concentrations.
3. GWPS shown in the federal CCR Groundwater Protection Standard (GWPS), which is a health based concentration.

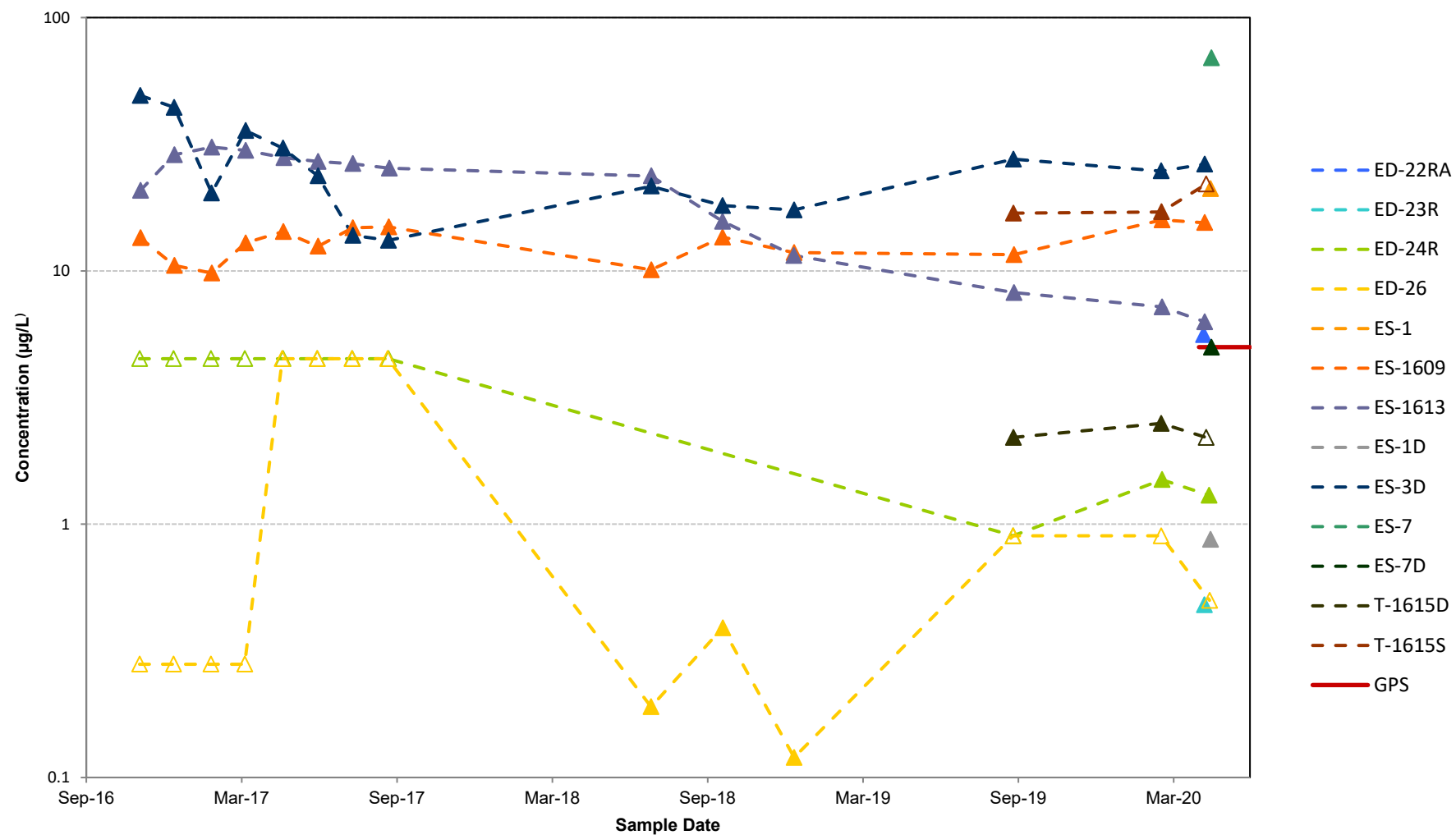
**HALEY
ALDRICH**

POSSUM POINT POWER STATION
PRINCE WILLIAM COUNTY, VIRGINIA

**COBALT
CONCENTRATION VS. TIME**

August 2020

Figure F-2



NOTES:

1. Solid symbol indicates a detected concentration. Open symbol indicates a non-detect, the laboratory method detection limit is graphed.
2. GPS shown is the Solid Waste Permit (SWP) Groundwater Protection Standard (GPS), which is based on background concentrations.

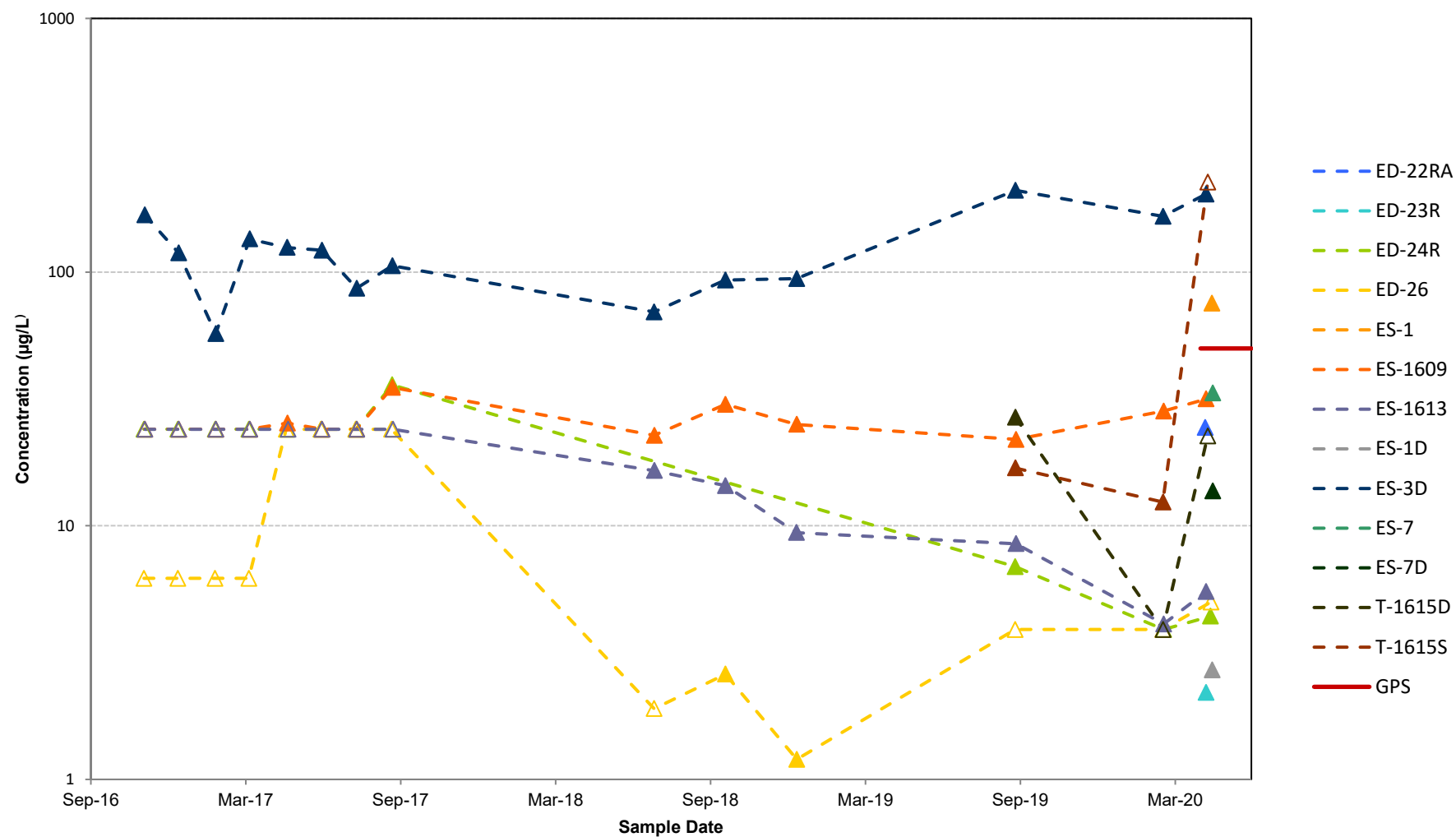
**HALEY
ALDRICH**

POSSUM POINT POWER STATION
PRINCE WILLIAM COUNTY, VIRGINIA

**NICKEL
CONCENTRATION VS. TIME**

August 2020

Figure F-3



NOTES:

1. Solid symbol indicates a detected concentration. Open symbol indicates a non-detect, the laboratory method detection limit is graphed.
2. GPS shown is the Solid Waste Permit (SWP) Groundwater Protection Standard (GPS), which is based on background concentrations.

**HALEY
ALDRICH**

POSSUM POINT POWER STATION
PRINCE WILLIAM COUNTY, VIRGINIA

**ZINC
CONCENTRATION VS. TIME**

August 2020

Figure F-4