2019 CCR Annual Groundwater Monitoring and Corrective Action Report

Mount Storm Power Station
Phase B Landfill

Prepared for:

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EXECUTIVE SUMMARY

This *2019 CCR Annual Groundwater Monitoring and Corrective Action Report* (Report) was prepared on behalf of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) for the Mt. Storm Power Station (Station) Phase B Landfill (Unit) located in Mt. Storm, West Virginia. The Station is located at 436 Dominion Boulevard in Mt. Storm, West Virginia approximately 40 miles south-southwest of Cumberland, Maryland. The Unit is located approximately 2,500 feet to the southwest of the Station on the east side of West Virginia Highway 93 (Power Station Highway). The Unit is an active industrial landfill that accepts CCR and is therefore considered an existing landfill under Title 40 Code of Federal Regulations (CCR) Part 257.50 *et seq.* [*Disposal of Coal Combustion Residuals* (CCR) *from Electric Utilities* (Final Rule; Federal Register Vol. 80, No. 74, 21302-21501 on April 17, 2015, and Federal Register Vol. 81, No. 151, 51802-51808 on August 5, 2016, as amended Federal Register Vol. 83 No. 146, 36435-36456 on July 30, 2018)]. Pursuant to the CCR Rule, the Station operator is required to complete an *Annual Groundwater Monitoring and Corrective Action Report* (Report) by January 31 annually.

The Report documents the status of the CCR groundwater monitoring program for the Unit, summarizes key actions completed, describes issues encountered, actions taken to resolve identified concerns, and projected key activities for calendar year 2020. More specifically, this Report describes the results of the CCR Rule Assessment Monitoring Program (AMP) activities performed in 2019 to comply with CCR Rule requirements, and the progression of future sampling activities pursuant to the CCR Rule and the Unit's *Groundwater Monitoring Plan* (GMP). Consistent with the CCR Rule, after transitioning to the AMP in March 2018, Dominion Energy established Groundwater Protection Standards (GWPS) for the Unit in October 2018. Based on the evaluation of the second semi-annual 2018 AMP groundwater monitoring program data there were no confirmed GWPS exceedances. Comparison of the first semi-annual 2019 AMP groundwater monitoring program data to established GWPS did not identify any GWPS exceedances. Results from the second semi-annual 2019 AMP event are being evaluated pursuant to CCR Rule timeframes and will be reported accordingly.

Based on the results of 2019 data evaluations, Dominion Energy intends to continue with groundwater monitoring activities in 2020 that are consistent with the provisions in the CCR Rule [Part 257.95] and the Unit's GMP.

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1.0 INTRODUCTION

This *2019 CCR Annual Groundwater Monitoring and Corrective Action Report* (Report) was prepared on behalf of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) for the Mt. Storm Power Station (Station) Phase B Industrial Landfill (Unit), located in Mt. Storm, West Virginia. The existing Unit is subject to the groundwater monitoring requirements in Title 40 Code of Federal Regulations (CFR) Part 257.50 *et seq.* [Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule; Federal Register Vol. 80, No. 74, 21302-21501 on April 17, 2015, and Federal Register Vol. 81, No. 151, 51802-51808 on August 5, 2016, as amended Federal Register Vol. 83 No. 146, 36435-36456 on July 30, 2018)]. Pursuant to the CCR Rule, no later than January 31 annually, the owner or operator of a CCR Unit must prepare an annual groundwater monitoring and corrective action report for the CCR Unit documenting the status of groundwater monitoring and corrective action programs for the preceding year.

Golder Associates Inc. (Golder) has prepared this Report for the Unit on behalf of Dominion Energy in accordance with CCR Rule Part 257.90(e). This Report provides the data evaluations for the second semi-annual 2018 compliance event as well as the monitoring data and required data evaluations for the first and second semi-annual CCR monitoring compliance events performed in April and October 2019, respectively.

1.1 Site Location

The Station is located at 436 Dominion Boulevard in Mt. Storm, West Virginia approximately 40 miles south-southwest of Cumberland, Maryland. The Unit is located approximately 2,500 feet to the southwest of the Station on the east side of West Virginia Highway 93 (Power Station Highway). A Site Location Map is presented as Drawing 1.

1.2 Site History

The Station and adjoining 1,200-acre Mt. Storm Lake were constructed in 1965. Currently, the CCR generated by the 1,600-megawatt Station is disposed of in the Unit and the adjacent Phase A Landfill, which is addressed in a separate report. The Phase B Landfill was permitted in 1986 as a 155-acre unit for disposal of FGD solids. Groundwater monitoring at the Unit, required under the CCR Rule, was initiated in 2016.

1.3 Key Actions

Key actions for this Facility to date are as follows:

- Permitted for management of CCR by the West Virginia Department of Environmental Protection (DEP) under Solid Waste/National Discharge Elimination System (NPDES) permit No. WV0110256;

- Initiated the Detection Monitoring Program (DMP) on March 15, 2016, with the collection of eight baseline/background samples and completed the background monitoring activities on August 23, 2017, pursuant to the CCR Rule [257.94(b)];
- Conducted the initial DMP compliance sampling event between October 4 and October 12, 2017 and completed the sample analyses on October 23, 2017, pursuant to the CCR Rule [257.94];
- Placed a copy of the Unit's Groundwater Monitoring Plan (GMP) documenting the design information for the monitoring wells pursuant to the CCR Rule [257.91(e)(1)] in the Station's operating record on October 17, 2017, pursuant to the CCR Rule [257.105(h)(2)];
- Certified the groundwater monitoring system pursuant to the CCR Rule [257.91(e)(1) and posted the Certification in the Station's operating record on October 17, 2017, pursuant to the CCR Rule [257.105(h)(3)]; and
- Certified the selection of a statistical method pursuant to the CCR Rule [257.93(f)(6)] and posted the Certification in the Station's operating record on October 17, 2017, pursuant to the CCR Rule [257.105(h)(4)].
- Following the October 2017 DMP event, placed a notification of a Statistically Significant Increase (SSI) over the Unit's background concentrations under the DMP in the Station's operating record on January 21, 2018;
- Established groundwater protection standards (GWPS) for detected constituents in Appendix IV of Part 257 on October 17, 2018, pursuant to the CCR Rule [257.95(d)(2)];
- Conducted the first semi-annual 2019 AMP compliance sampling event on April 16, 2019, and completed the sample analyses on July 25, 2019, pursuant to the CCR Rule [257.95(d)(1)]; and
- Conducted the second semi-annual 2019 AMP compliance sampling event on October 29, 2019, and completed the sample analyses on December 3, 2019, pursuant to the CCR Rule [257.95(d)(1)].

1.4 Monitoring Program Concerns

There were no monitoring program concerns identified during the semi-annual AMP compliance events conducted in 2019.

2.0 SITE INFORMATION

The first power generation turbine at the Station went online in September 1965 and was followed by the second turbine in June 1966. The third turbine went online December 1973. The Station is a coal-fired power station with a generating capacity of approximately 1,600 megawatts. The Unit is located on the Station property to the southwest of the power generation facility on the southern side of West Virginia Route 48. The Unit encompasses an approximate permitted disposal area of 155 acres. The Unit is regulated under the provisions of NPDES permit No. WV0110256.

As part of the Station operations, Dominion Energy operates the Unit for CCR storage. The Unit was subject to the groundwater monitoring provisions of the CCR Rule by October 17, 2017.

2.1 Monitoring Well Network

The Unit's GMP (AECOM, 2017a) details the design of the CCR Rule groundwater monitoring network. As presented in the GMP, the monitoring network is comprised of two (2) upgradient/background wells (MW-22 and MWFGDW2) and six (6) downgradient monitoring wells (MW-6R, MW-7, MW-10, MW-12R, MW-13, and MW-14) designed to monitor the uppermost aquifer beneath the Unit. The groundwater monitoring well locations relative to the Unit are shown on Drawing 2.

2.1.1 Monitoring Well Installation and Decommissioning Activities

No groundwater monitoring wells associated with the Unit's CCR well network were installed or decommissioned in calendar year 2019.

2.2 Geology and Hydrogeology

A summary of the geology and hydrogeology for the Unit and surrounding area is presented in the following sections.

2.2.1 Geology

As presented on the West Virginia geologic map, the Station is located within the high plateau region of the Appalachian High Plateau physiographic province (Cardwell, 1968). The high plateau area is underlain by Paleozoic sedimentary rocks (Ordovician to Mississippian age) and the rocks are folded into a sequence of north-easterly trending parallel anticlines and synclines. Locally the area is referred to as the Allegheny Mountains. The Station is located on the eastern limb of the Blackwater Anticline which parallels the Little Blackwater River.

The area is underlain by formations of the Pennsylvanian-age Conemaugh and Allegheny Groups, which include, in descending order:

- Conemaugh Group
  - Buffalo Sandstone
  - Brush Creek shale and sandstone
  - Upper and Lower Mahoning Sandstones
  - Uffington Shale
- Allegheny Group
  - Upper Freeport Coal
  - Bolivar Claystone
  - Upper Freeport Sandstone
  - Lower Freeport Coal

The near surface geology is comprised of unconsolidated colluvium sediments that locally overlie decomposed (saprolitic) sandstone and shale transitioning to fractured competent sandstone and shale interbedded with coal beds. At the Station, the upper Brush Creek and Mahoning coal beds of the Conemaugh Group are absent, while the Upper Freeport and Lower Freeport coal beds of the Allegheny Group are present. The Upper Freeport coal bed is reported to have been mined using a combination of open pit and longwall mining technology, while the Lower Freeport coal bed is reported to be unmined.

2.2.2 Hydrogeology

The uppermost aquifer beneath the Unit is present within the weathered sedimentary rocks and colluvial deposits, generally within 9 to 30 feet below ground surface (bgs). The uppermost aquifer is unconfined and extends vertically into the lowered fractured bedrock formations with the uppermost shale formation acting as an aquitard. The groundwater gradient and approximate groundwater flow directions in the uppermost aquifer beneath the Unit are towards the east.

2.2.3 Potentiometric Surface Evaluation

Historical static water level data for the Unit are summarized in Table 1. Consistent with the requirements of the CCR Rule, the rate and direction of groundwater flow within the uppermost aquifer beneath the Unit was determined after each sampling event. The Potentiometric Surface Maps presented as Drawings 2 and 3 were prepared using static water level data obtained during the first and second semi-annual AMP events on April 16 and

October 28, 2019, respectively. The interpreted data indicates that the hydraulic gradient and estimated groundwater flow direction remains consistent with previous interpretations. Based on network review and regulatory requirements, Golder believes that the groundwater monitoring wells continue to be operated and maintained so that they perform to the design specifications in the Groundwater Monitoring System Certification for the Unit (AECOM, 2017b) consistent with 40CFR Part 257.91(e)(2) of the CCR Rule.

Using the groundwater contours presented as an overlay on Drawings 2 and 3, the average hydraulic gradient for the uppermost aquifer in the study area was calculated for each monitoring event using the following equations.

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

$$i = {}^{h_L}\!/_{L}$$

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

The groundwater flow rate was calculated using the following formula:

$$V = {}^{ki}\!/_{\theta}$$

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

Using the estimated effective porosity value of 10%, the estimated average hydraulic conductivity value of 1.41E-05 cm/s, and the calculated gradient, the average rate of groundwater flow (V_{gw}) for the weathered and fractured bedrock comprising the uppermost aquifer beneath the Unit was calculated and is summarized in the following table.

Groundwater Flow	Hydraulic Conductivity (k, cm/s)	Contour lines (feet amsl)	Flow Length (feet)	Average Gradient (i)	Assumed Porosity (Ø)	Estimated Groundwater Velocity	
						(cm/s)	(feet/year)
1st Semi-Annual Assessment Monitoring Program Event (April 2019)							
Vgw	1.41E-05	3540-3280	3,658	7.11E-02	0.10	1.0E-05	10
2nd Semi-Annual Assessment Monitoring Program Event (October 2019)							
Vgw	1.41E-05	3540-3280	3,658	7.11E-02	0.10	1.0E-05	10

As presented, the estimated average groundwater flow rate in the uppermost aquifer beneath the Unit is approximately 10 feet per year. The calculated flow rate for the events conducted in 2019 is consistent with previous calculations for the Unit.

3.0 FIELD ACTIVITIES

CCR-related groundwater sampling activities that occurred during 2019 are summarized in the following sections.

3.1 Compliance Monitoring Program Sampling Activities

Pursuant to the requirements in 40 CFR 257.95(d)(1) two semi-annual AMP events were completed for the Unit for the constituents and parameters listed in Appendix III of the CCR Rule and constituents and parameters listed in Appendix IV of the CCR Rule. Summaries of the AMP sampling events are presented below.

Monitoring Event	Sample Dates	Final Laboratory Package Receipt Date
1st Semi-Annual Assessment Monitoring Program Event	April 16, 2019	July 25, 2019
2nd Semi-Annual Assessment Monitoring Program Event	October 29, 2019	December 3, 2019

During each of the AMP sampling events, the compliance monitoring wells were sampled in accordance with the procedures presented in the Station's GMP (AECOM, 2017a).

Samples collected during each of the sampling events were shipped via FedEx on ice in secured coolers under chain-of-custody control to Eurofins TestAmerica Laboratories Inc. (TestAmerica) in Canton, Ohio (#210). Total dissolved solids and radium samples were then shipped to the Pittsburgh, Pennsylvania (#142) and St. Louis, Missouri (#381) locations of TestAmerica. The three TestAmerica locations are DEP accredited laboratories for CCR Rule Appendix III and IV constituents analyzed.

4.0 LABORATORY ANALYTICAL RESULTS

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

4.1 1st Semi-Annual Assessment Monitoring Program Event

The groundwater samples collected during the first semi-annual 2019 AMP event were analyzed by TestAmerica for the presence of concentrations of the constituents and parameters listed in Appendix III and Appendix IV of the CCR Rule. The laboratory certificates of analysis, chain-of-custody forms, and field logs for the sampling event are presented in Appendix A. A summary of the CCR sampling data for the Unit is presented in Table 3.

4.2 2nd Semi-Annual Assessment Monitoring Program Event

The groundwater samples collected during the second semi-annual 2019 AMP event were analyzed by TestAmerica for the presence of concentrations of the constituents and parameters listed in Appendix III of the CCR rule and previously detected constituents and parameters of Appendix IV of the CCR rule. The current list of Appendix IV detects is as follows:

- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Molybdenum
- Selenium
- Thallium
- Total Radium

The laboratory certificates of analysis, chain-of-custody forms, and field logs for the sampling event are presented in Appendix B. A summary of the CCR sampling data for the Unit is presented in Table 4.

5.0 DATA QUALITY VALIDATION

The Quality Assurance (QA) and quality control (QC) data provided by the laboratory for the AMP sampling events were reviewed to ensure that the analytical results met the project's data quality objectives as outlined in the Station's GMP (AECOM, 2017a). The review process was performed in general accordance with procedures outlined in the following EPA and Department of Energy (DOE) guidance documents:

- National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA, 2017); and
- *Evaluation of Radiochemical Data Usability.* 1997. Department of Energy (Paar, G. *et al,* April 1997); and
- Sampling and Analysis Plan for US Department of Energy Office of Legacy Management Sites (DOE, 2017).

5.1 1st Semi-Annual Compliance Event Findings

The laboratory and field QA/QC data for the first semi-annual 2019 compliance monitoring event samples collected on April 16, 2019, were reviewed in accordance with EPA/DOE Protocol. Field QA/QC samples for this event included a field blank and a duplicate sample that was collected from compliance well MWFGDW2 that were collected at the Unit on April 16, 2019. These QA/QC samples were analyzed for the same constituents as the groundwater samples. Based on review of the laboratory-provided QC data and EPA/DOE guidance recommendations, the data for this sampling event were determined to meet the data quality objectives for the project. It is noted that one reported sample result (chromium) was qualified as estimated per EPA protocol due to similar analyte detections in one or more sample-group associated QC samples (method blank, equipment blank, trip blank, and/or field blank). A copy of the data validation record is included in Appendix A.

5.2 2nd Semi-Annual Compliance Event Findings

The laboratory and field QA/QC data for the second semi-annual 2019 compliance monitoring event samples collected October 29, 2019, were reviewed in accordance with EPA/DOE Protocol. Field QA/QC samples for this event included a field blank and a duplicate sample that was collected from compliance well MW-10 that were collected at the Unit on October 29, 2019. These QA/QC samples were analyzed for the same constituents as the groundwater samples. Based on review of the laboratory-provided QC data and EPA/DOE guidance recommendations, the data for this sampling event were determined to meet the data quality objectives for the project. A copy of the data validation record is included in Appendix B.

6.0 STATISTICAL EVALUATION OF GROUNDWATER DATA

Statistical evaluations completed in 2019 are summarized in the following sections.

6.1 Assessment Monitoring Program Data Evaluations

Per 40 CFR Part 257.94(e)(1), the Unit advanced into the AMP in March 2018. Consistent with the CCR Rule requirements the 2019 monitoring results were compared to Facility background concentrations and GWPS established on October 17, 2018.

6.1.1 2nd Semi-Annual 2018 Assessment Monitoring Data Evaluations

Pursuant to 40 CFR Subpart 257.95(e,f,g), using statistical methods certified by a professional engineer as presented in the October 17, 2017, Statistical Method Certification, the results from the Unit's monitoring wells were compared to established background concentrations and SSIs were identified over the Unit's background for the first semi-annual AMP sampling event. Concentrations above background are identified in Table 2.

There were no GWPS exceedances identified for the second semi-annual 2018 AMP sampling event.

6.1.2 1st Semi-Annual 2019 Assessment Monitoring Data Evaluations

Pursuant to 40 CFR Subpart 257.95(e,f,g), using statistical methods certified by a professional engineer as presented in the October 17, 2017, Statistical Method Certification, the results from the Unit's monitoring wells were compared to established background concentrations and SSIs were identified over the Unit's background for the first semi-annual AMP sampling event. Concentrations above background are identified in Table 3.

There were no Federal GWPS exceedances identified for the first semi-annual 2019 AMP sampling event.

6.1.3 2nd Semi-Annual 2019 Assessment Monitoring Data Evaluations

The data for the second semi-annual AMP sampling event are being evaluated against the established GWPS for the Unit and the Facility background concentrations in accordance with the CCR Rule timeframes in 2019. The results from those evaluations will be presented in the *2020 Annual Groundwater Monitoring and Corrective Action Report*.

7.0 CONCLUSIONS

7.1 Findings

The first semi-annual 2019 AMP compliance sampling event was completed on April 16, 2019, with sample analyses completed on July 25, 2019. The second semi-annual 2019 AMP compliance sampling event was completed on October 29, 2019, with sample analyses complete on December 3, 2019. These groundwater sampling and analysis activities were conducted in general accordance with the requirements of the Unit's GMP for the CCR network.

Comparisons of the laboratory analytical results from the 2018 second semi-annual and 2019 first semi-annual sampling events established GWPS identified no GWPS exceedances. Monitoring results from the second semi-annual 2019 AMP event conducted in October 2019 are being evaluated against site-specific GWPS in accordance with the applicable CCR Rule timeframe.

7.2 Planned Activities

Dominion Energy intends to complete the required data evaluations for the second semi-annual 2019 AMP sampling event within the CCR Rule prescribed timeframe and continue semi-annual groundwater monitoring activities in 2020 that are consistent with the provisions in the CCR Rule [part 257.95 *et. seq*] and the Unit's GMP.

8.0 REFERENCES

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9.0 SIGNATURE PAGE

This *2019 Annual CCR Groundwater Monitoring and Corrective Action Report* (Report) has been prepared by a qualified groundwater scientist on behalf of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) for the Mt. Storm Power Station Phase B Industrial Landfill. This Report satisfies the reporting requirements specified in Title 40 Code of Federal Regulations (CFR) Part 257.90(e) *et seq.* [*Disposal of Coal Combustion Residuals* (CCR) *from Electric Utilities* (CCR Rule; Federal Register Vol. 80, No. 74, 21302-21501 on April 17, 2015, and Federal Register Vol. 81, No. 151, 51802-51808 on August 5, 2016, as amended Federal Register Vol. 83 No. 146, 36435-36456 on July 30, 2018)].

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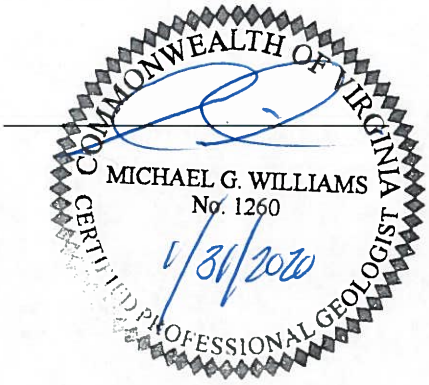

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https://golderassociates.sharepoint.com/sites/104589/reports/phase b ccr/2020-01-31 msps phase b ccr amr/2020-01-31 mount storm phase b ccr amr.docx

TABLES

TABLE 1

SUMMARY OF HISTORICAL CCR STATIC WATER LEVEL DATA
MOUNT STORM POWER STATION PHASE B LANDFILL

Monitoring Well	Top of Casing Elevation (ft ASML)	Date	Depth to Water (feet)	Static Water Level Elevation (ft AMSL)
MW-22	3,569.70	3/15/2016	16.96	3,552.74
		6/21/2016	18.72	3,550.98
		8/23/2016	19.11	3,550.59
		10/12/2016	18.55	3,551.15
		4/4/2017	15.97	3,553.73
		5/9/2017	15.82	3,553.88
		6/20/2017	19.48	3,550.22
		8/22/2017	18.79	3,550.91
		10/4/2017	22.29	3,547.41
		10/12/2017	23.00	3,546.70
		3/19/2018	16.85	3,552.85
		6/5/2018	15.74	3,553.96
		10/29/2018	16.59	3,553.11
		4/16/2019	18.40	3,551.30
		10/28/2019	24.89	3,544.81
MWFGDW2	3,519.70	3/15/2016	19.48	3,500.22
		6/21/2016	22.42	3,497.28
		8/23/2016	20.75	3,498.95
		10/12/2016	19.54	3,500.16
		4/4/2017	18.43	3,501.27
		5/9/2017	18.92	3,500.78
		6/20/2017	22.70	3,497.00
		8/22/2017	23.38	3,496.32
		10/12/2017	NM	NM
		3/19/2018	19.21	3,500.49
		6/5/2018	18.40	3,501.30
		10/29/2018	19.55	3,500.15
		4/16/2019	19.59	3,500.11
		10/28/2019	20.18	3,499.52
MW-6R	3,327.70	3/15/2016	61.00	3,266.70
		6/21/2016	61.10	3,266.60
		8/23/2016	61.20	3,266.50
		10/12/2016	61.18	3,266.52
		4/4/2017	61.05	3,266.65
		5/9/2017	61.12	3,266.58
		6/21/2017	61.20	3,266.50
		8/22/2017	61.05	3,266.65
		10/4/2017	61.24	3,266.46
		10/11/2017	61.30	3,266.40
		3/19/2018	61.11	3,266.59
		6/5/2018	61.08	3,266.62
		10/29/2018	61.15	3,266.55
		4/15/2019	61.19	3,266.51
		10/28/2019	61.46	3,266.24

TABLE 1

SUMMARY OF HISTORICAL CCR STATIC WATER LEVEL DATA
MOUNT STORM POWER STATION PHASE B LANDFILL

Monitoring Well	Top of Casing Elevation (ft ASML)	Date	Depth to Water (feet)	Static Water Level Elevation (ft AMSL)
MW-7	3,321.86	3/15/2016	26.80	3,295.06
		6/21/2016	27.10	3,294.76
		8/23/2016	27.50	3,294.36
		10/12/2016	26.90	3,294.96
		4/4/2017	26.59	3,295.27
		5/8/2017	26.45	3,295.41
		6/20/2017	27.19	3,294.67
		8/22/2017	27.42	3,294.44
		10/5/2017	27.73	3,294.13
		10/12/2017	27.61	3,294.25
		3/19/2018	27.02	3,294.84
		6/5/2018	26.56	3,295.30
		10/29/2018	26.55	3,295.31
		4/15/2019	26.94	3,294.92
		10/28/2019	27.49	3,294.37
MW-10	3,406.82	3/15/2016	23.18	3,383.64
		6/21/2016	23.70	3,383.12
		8/24/2016	23.73	3,383.09
		10/12/2016	23.41	3,383.41
		4/4/2017	23.33	3,383.49
		5/8/2017	23.22	3,383.60
		6/21/2017	23.64	3,383.18
		8/23/2017	23.75	3,383.07
		10/5/2017	29.88	3,376.94
		10/12/2017	31.56	3,375.26
		3/19/2018	23.59	3,383.23
		6/5/2018	23.22	3,383.60
		10/29/2018	23.85	3,382.97
		4/15/2019	23.24	3,383.58
		10/28/2019	23.80	3,383.02
MW-12R	3,294.21	3/15/2016	9.40	3,284.81
		6/21/2016	10.49	3,283.72
		8/23/2017	17.79	3,276.42
		10/12/2016	10.03	3,284.18
		4/5/2017	8.35	3,285.86
		5/8/2017	7.60	3,286.61
		6/20/2017	17.23	3,276.98
		8/22/2017	19.35	3,274.86
		10/11/2017	21.82	3,272.39
		3/19/2018	11.68	3,282.53
		6/5/2018	7.56	3,286.65
		10/29/2018	7.54	3,286.67
		4/15/2019	10.14	3,284.07
		10/28/2019	12.78	3,281.43

TABLE 1

SUMMARY OF HISTORICAL CCR STATIC WATER LEVEL DATA
MOUNT STORM POWER STATION PHASE B LANDFILL

Monitoring Well	Top of Casing Elevation (ft ASML)	Date	Depth to Water (feet)	Static Water Level Elevation (ft AMSL)
MW-13	3,313.10	3/15/2016	20.41	3,292.69
		6/21/2016	21.85	3,291.25
		8/23/2016	24.36	3,288.74
		10/12/2016	21.58	3,291.52
		4/4/2017	19.63	3,293.47
		5/8/2017	19.62	3,293.48
		6/20/2017	22.79	3,290.31
		8/22/2017	23.11	3,289.99
		10/4/2017	26.10	3,287.00
		10/12/2017	26.14	3,286.96
		3/19/2018	21.73	3,291.37
		6/5/2018	19.75	3,293.35
		10/29/2018	19.63	3,293.47
		4/15/2019	20.23	3,292.87
		10/28/2019	22.78	3,290.32
MW-14	3,304.48	3/15/2016	22.24	3,282.24
		6/21/2016	24.91	3,279.57
		8/23/2016	30.21	3,274.27
		10/12/2016	23.64	3,280.84
		4/5/2017	20.48	3,284.00
		5/8/2017	20.02	3,284.46
		6/20/2017	29.82	3,274.66
		8/22/2017	29.55	3,274.93
		10/4/2017	34.53	3,269.95
		10/12/2017	35.32	3,269.16
		3/19/2018	25.66	3,278.82
		6/5/2018	20.46	3,284.02
		10/29/2018	21.41	3,283.07
		4/15/2019	24.30	3,280.18
		10/28/2019	33.83	3,270.65
Notes:	ft = feet			
	AMSL = Above Mean Sea Level			
	NM = Not measured			
	ATOC = Above Top of Casing			

Table 2
Summary of 2nd Semi-Annual 2018 Assessment Monitoring Program Event Data (October 2018)
Phase B Landfill, Mount Storm Power Station

				Upgradient Wells								Downgradient Wells																				Field Quality Control							
			Sample ID:	MW-22				MWFGDW2				MW-6R				MW-7				MW-10				MW-12R				MW-13				MW-14				MW-22 - DUP				Field Blank			
			Sample Date:	10/30/2018				10/30/2018				10/30/2018				10/30/2018				10/30/2018				10/30/2018				10/30/2018				10/30/2018				10/30/2018				10/30/2018			
Parameter Name	**Units**	**CCR Site-Specific BKGD**	**CCR GWPS**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**
CCR Appendix III Constituents																																									
Boron	mg/L	QL (0.1)	--	< 0.0014		0.0014	0.050	< 0.0014		0.0014	0.050	**0.0046**	J	0.0014	0.050	**0.0049**	J	0.0014	0.050	**0.0028**	J	0.0014	0.050	**0.0049**	J	0.0014	0.050	**0.0025**	J	0.0014	0.050	**0.0029**	J	0.0014	0.050	< 0.0014		0.0014	0.050	< 0.0014		0.0014	0.050
Calcium	mg/L	120	--	**106**		0.020	1.0	**54.1**		0.020	1.0	**69.6**		0.020	1.0	**51.8**		0.020	1.0	**3.3**		0.020	1.0	**0.37**	J	0.020	1.0	**5.8**		0.020	1.0	**9.7**		0.020	1.0	**105**		0.020	1.0	< 0.020		0.020	1.0
Chloride	mg/L	1.9	--	**0.97**		0.45	0.50	**1.0**		0.45	0.50	**0.68**		0.45	0.50	**1.1**		0.45	0.50	**0.83**		0.45	0.50	**0.68**		0.45	0.50	**2.7**		2.2	2.5	**0.80**		0.45	0.50	**0.97**		0.45	0.50	< 0.45		0.45	0.50
Fluoride	mg/L	0.101	4	< 0.0078		0.0078	0.10	**0.11**	J+	0.0078	0.10	< 0.0078		0.0078	0.10	**0.11**		0.0078	0.10	< 0.0078		0.0078	0.10	< 0.0078		0.0078	0.10	**0.13**		0.0078	0.10	**0.13**		0.0078	0.10	< 0.0078		0.0078	0.10	**0.031**	J+	0.0078	0.10
pH	SU	5.57-7.83	--	6.49		0.10	0.10	6.60		0.10	0.10	7.09		0.10	0.10	7.31		0.10	0.10	4.65		0.10	0.10	4.46		0.10	0.10	4.58		0.10	0.10	4.87		0.10	0.10	--		--	--	--		--	--
Sulfate	mg/L	42.3	--	**29.7**		0.46	5.0	**33.6**		0.46	5.0	**12.9**		0.46	5.0	**46.5**		0.46	5.0	**8.7**		0.046	0.50	**7.0**		0.046	0.50	**31.1**		0.23	2.5	**43.0**		0.23	2.5	**29.4**		0.46	5.0	< 0.046		0.046	0.50
Total Dissolved Solids	mg/L	480.8	--	**353**		10.0	10.0	**200**		10.0	10.0	**250**		10.0	10.0	**244**		10.0	10.0	**43.0**		10.0	10.0	**28.0**		10.0	10.0	**70.0**		10.0	10.0	**84.0**		10.0	10.0	**358**		10.0	10.0	< 10.0		10.0	10.0
Detected CCR Appendix IV Constituents																																									
Arsenic	µg/L	QL (5)	10	< 2.7		2.7	5.0	< 2.7		2.7	5.0	< 2.7		2.7	5.0	**3.7**	J	2.7	5.0	**3.0**	J	2.7	5.0	**2.7**	J	2.7	5.0	< 2.7		2.7	5.0	< 2.7		2.7	5.0	< 2.7		2.7	5.0	< 2.7		2.7	5.0
Barium	µg/L	530	2000	**293**		0.76	10.0	**390**		0.76	10.0	**355**		0.76	10.0	**118**		0.76	10.0	**134**		0.76	10.0	**20.7**		0.76	10.0	**79.0**		0.76	10.0	**103**		0.76	10.0	**301**		0.76	10.0	< 0.76		0.76	10.0
Beryllium	µg/L	QL (1)	4	< 0.24		0.24	1.0	< 0.24		0.24	1.0	< 0.24		0.24	1.0	< 0.24		0.24	1.0	**0.37**	J	0.24	1.0	< 0.24		0.24	1.0	**0.53**	J	0.24	1.0	**0.61**	J	0.24	1.0	< 0.24		0.24	1.0	< 0.24		0.24	1.0
Cadmium	µg/L	QL (1)	5	< 0.87		0.87	3.0	< 0.87		0.87	3.0	< 0.87		0.87	3.0	< 0.87		0.87	3.0	< 0.87		0.87	3.0	< 0.87		0.87	3.0	< 0.87		0.87	3.0	< 0.87		0.87	3.0	< 0.87		0.87	3.0	< 0.87		0.87	3.0
Chromium	µg/L	QL (2)	100	< 0.86		0.86	5.0	< 0.86		0.86	5.0	< 0.86		0.86	5.0	< 0.86		0.86	5.0	< 0.86		0.86	5.0	< 0.86		0.86	5.0	< 0.86		0.86	5.0	< 0.86		0.86	5.0	< 0.86		0.86	5.0	< 0.86		0.86	5.0
Cobalt	µg/L	QL (1)	6	< 0.93		0.93	5.0	< 0.93		0.93	5.0	< 0.93		0.93	5.0	< 0.93		0.93	5.0	**3.1**	J	0.93	5.0	**1.8**	J	0.93	5.0	< 0.93		0.93	5.0	< 0.93		0.93	5.0	< 0.93		0.93	5.0	< 0.93		0.93	5.0
Fluoride	mg/L	0.101	4	< 0.0078		0.0078	0.10	**0.11**	J+	0.0078	0.10	< 0.0078		0.0078	0.10	**0.11**		0.0078	0.10	< 0.0078		0.0078	0.10	< 0.0078		0.0078	0.10	**0.13**		0.0078	0.10	**0.13**		0.0078	0.10	< 0.0078		0.0078	0.10	**0.031**	J+	0.0078	0.10
Lead	µg/L	6.3	15	< 1.8		1.8	5.0	< 1.8		1.8	5.0	< 1.8		1.8	5.0	< 1.8		1.8	5.0	< 1.8		1.8	5.0	< 1.8		1.8	5.0	< 1.8		1.8	5.0	< 1.8		1.8	5.0	< 1.8		1.8	5.0	< 1.8		1.8	5.0
Lithium	µg/L	8	40	**9.0**	J	5.0	10	**10**	J	5.0	10	< 5.0		5.0	10	< 5.0		5.0	10	< 5.0		5.0	10	< 5.0		5.0	10	< 5.0		5.0	10	< 5.0		5.0	10	**9.0**	J	5.0	10	< 5.0		5.0	10
Molybdenum	µg/L	20	100	**0.12**	J	0.062	0.50	**0.14**	J	0.062	0.50	**0.15**	J	0.062	0.50	**0.11**	J	0.062	0.50	< 0.062		0.062	0.50	**0.076**	J	0.062	0.50	< 0.062		0.062	0.50	< 0.062		0.062	0.50	**0.10**	J	0.062	0.50	< 0.062		0.062	0.50
Selenium	µg/L	QL (5)	50	< 4.8		4.8	8.0	< 4.8		4.8	8.0	< 4.8		4.8	8.0	< 4.8		4.8	8.0	< 4.8		4.8	8.0	< 4.8		4.8	8.0	< 4.8		4.8	8.0	< 4.8		4.8	8.0	< 4.8		4.8	8.0	< 4.8		4.8	8.0
Thallium	µg/L	QL (1)	2	< 0.026		0.026	0.10	**0.031**	J	0.026	0.10	< 0.026		0.026	0.10	< 0.026		0.026	0.10	< 0.026		0.026	0.10	**0.041**	J	0.026	0.10	**0.027**	J	0.026	0.10	< 0.026		0.026	0.10	< 0.026		0.026	0.10	< 0.026		0.026	0.10
Total Radium	pCi/L	0.58	5	**0.398**	U	1.27	1.27	**0.835**	U	1.14	1.14	**1.38**		1.35	1.35	**0.571**	U	1.44	1.44	**1.20**	U	1.24	1.24	**1.18**	U	1.39	1.39	**0.978**	U	1.32	1.32	**1.79**		1.46	1.46	**1.24**		1.06	1.06	**0.160**	U	1.53	1.53
Field Measurements																																									
Conductivity	µS/cm	--	--	601		0.1	0.1	358.0		0.1	0.1	467.9		0.1	0.1	372.4		0.1	0.1	49.9		0.1	0.1	29.7		0.1	0.1	95.7		0.1	0.1	124.1		0.1	0.1	--		--	--	--		--	--
Depth to Water	ft btoc	--	--	16.59		0.01	0.01	19.55		0.01	0.01	61.15		0.01	0.01	26.55		0.01	0.01	23.85		0.01	0.01	7.54		0.01	0.01	19.63		0.01	0.01	21.41		0.01	0.01	--		--	--	--		--	--
Dissolved Oxygen	mg/L	--	--	3.26		0.01	0.01	3.65		0.01	0.01	2.83		0.01	0.01	0.68		0.01	0.01	0.69		0.01	0.01	6.29		0.01	0.01	2.38		0.01	0.01	6.79		0.01	0.01	--		--	--	--		--	--
Groundwater Elevation	ft msl	--	--	3553.11		0.01	0.01	3500.15		0.01	0.01	3266.55		0.01	0.01	3295.31		0.01	0.01	3382.97		0.01	0.01	3286.67		0.01	0.01	3293.47		0.01	0.01	3283.07		0.01	0.01	--		--	--	--		--	--
Oxidation Reduction Potential	millivolts	--	--	191.0		0.1	0.1	150.9		0.1	0.1	247.7		0.1	0.1	-40.3		0.1	0.1	302.7		0.1	0.1	359.7		0.1	0.1	334.3		0.1	0.1	297.0		0.1	0.1	--		--	--	--		--	--
Temperature	C	--	--	9.0		0.01	0.01	11.6		0.01	0.01	10.5		0.01	0.01	9.2		0.01	0.01	9.9		0.01	0.01	12.1		0.01	0.01	11.7		0.01	0.01	10.4		0.01	0.01	--		--	--	--		--	--
Turbidity	NTU	--	--	5.0		0.1	0.1	3.17		0.1	0.1	5.62		0.1	0.1	3.2		0.1	0.1	1.4		0.1	0.1	8.11		0.1	0.1	1.4		0.1	0.1	0.7		0.1	0.1	--		--	--	--		--	--

Notes:
MDL = Method Detection Limit
RL = Reporting Limit
mg/L = Milligram per liter
µg/L = Microgram per liter
pCi/L = picoCurie per liter
µS/cm = MicroSiemen per centimeter
SU = Standard Units
C = Degrees Celsius
NTU = Nephelometric Turbidity Unit
ft btoc = feet below top of casing
ft msl = feet above mean sea level
MDC = Minimum Detection Concentration
BKGD = Background
CCR = Coal Combustion Residuals
QL = Laboratory quantitation limit (value shown in parentheses is a recent QL and is subject to change)
Future QL values are subject to change; however, GPS cannot be less than values in parentheses
GWPS = Groundwater Protection Standards
Bold font = Detected constituent

Qualifiers (Qual):
J = Estimated Result
J+ = Potential bias high
U = Radiological sample not detected above the Miniumum Detection Concentration

= Concentration greater than site-specific background

= Concentration greater than CCR GWPS and site background

Table 3
Summary of 1st Semi-Annual 2019 Assessment Monitoring Program Event Data (April 2019)
Phase B Landfill, Mount Storm Power Station

				Upgradient Wells								Downgradient Wells																				Field Quality Control							
			Sample ID:	MW-22				MWFGDW2				MW-6R				MW-7				MW-10				MW-12R				MW-13				MW-14				MWFGDW2 DUP				Field Blank			
			Sample Date:	04/16/2019				04/16/2019				04/16/2019				04/16/2019				04/16/2019				04/16/2019				04/16/2019				04/16/2019				04/16/2019				04/16/2019			
Parameter Name	**Units**	**CCR Site Specific BKGD**	**CCR GWPS**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**
CCR Appendix III Constituents																																										
Boron	mg/L	QL (0.1)	--	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1
Calcium	mg/L	120	--	**110**		0.58	1	**53**		0.58	1	**75**		0.58	1	**51**		0.58	1	**3.2**		0.58	1	< 0.58		0.58	1	**6.4**		0.58	1	**11**		0.58	1	**50**		0.58	1	< 0.58		0.58	1
Chloride	mg/L	1.9	--	**0.81**	J	0.28	1	**2.3**		0.28	1	**0.4**	J	0.28	1	**0.89**	J	0.28	1	**0.62**	J	0.28	1	**0.33**	J	0.28	1	**0.8**	J	0.28	1	**0.5**	J	0.28	1	**2.3**		0.28	1	< 0.28		0.28	1
Fluoride	mg/L	0.101	4	**0.059**		0.024	0.05	**0.082**		0.024	0.05	**0.081**		0.024	0.05	**0.12**		0.024	0.05	**0.034**	J	0.024	0.05	**0.025**	J	0.024	0.05	< 0.024		0.024	0.05	**0.045**	J	0.024	0.05	**0.062**		0.024	0.05	< 0.024		0.024	0.05
pH	SU	5.57-7.83	--	8.52		0.01	0.01	6.56		0.01	0.01	7.04		0.01	0.01	7.9		0.01	0.01	3.1		0.01	0.01	4.54		0.01	0.01	7.41		0.01	0.01	4.1		0.01	0.01	--		--	--	--		--	--
Sulfate	mg/L	42.3	--	**31**		0.35	1	**43**		0.35	1	**12**		0.35	1	**48**		0.35	1	**6.4**		0.35	1	**3.7**		0.35	1	**31**		0.35	1	**47**		0.35	1	**45**		0.35	1	< 0.35		0.35	1
Total Dissolved Solids	mg/L	480.8	--	**350**		7.8	10	**190**		7.8	10	**250**		7.8	10	**240**		7.8	10	**90**		7.8	10	**53**		7.8	10	**78**		7.8	10	**91**		7.8	10	**210**		7.8	10	**21**		7.8	10
CCR Appendix IV Constituents																																										
Antimony	µg/L	QL (2)	--	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0
Arsenic	µg/L	QL (5)	10	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	**0.76**	J	0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0
Barium	µg/L	530	2,000	**320**		2.2	5.0	**360**		2.2	5.0	**400**		2.2	5.0	**110**		2.2	5.0	**120**		2.2	5.0	**16**		2.2	5.0	**81**		2.2	5.0	**88**		2.2	5.0	**340**		2.2	5.0	< 2.2		2.2	5.0
Beryllium	µg/L	QL (1)	4	**1.0**		0.31	1.0	**1.6**		0.31	1.0	< 0.31		0.31	1.0	< 0.31		0.31	1.0	**0.51**	J	0.31	1.0	< 0.31		0.31	1.0	**0.77**	J	0.31	1.0	**0.62**	J	0.31	1.0	< 0.31		0.31	1.0	< 0.31		0.31	1.0
Cadmium	µg/L	QL (1)	5	< 0.21		0.21	1.0	**0.25**	J	0.21	1.0	< 0.21		0.21	1.0	< 0.21		0.21	1.0	< 0.21		0.21	1.0	< 0.21		0.21	1.0	**0.43**	J	0.21	1.0	**0.31**	J	0.21	1.0	< 0.21		0.21	1.0	< 0.21		0.21	1.0
Chromium	µg/L	QL (2)	100	< 0.98		0.98	2.0	< 0.98		0.98	2.0	**1.5**	J+	0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0
Cobalt	µg/L	QL (1)	6	**0.64**	J	0.19	1.0	**0.24**	J	0.19	1.0	**0.53**	J	0.19	1.0	**0.39**	J	0.19	1.0	**3.0**		0.19	1.0	**1.7**		0.19	1.0	**1.1**		0.19	1.0	< 0.19		0.19	1.0	< 0.19		0.19	1.0	< 0.19		0.19	1.0
Fluoride	mg/L	0.101	4	**0.059**		0.024	0.05	**0.082**		0.024	0.05	**0.081**		0.024	0.05	**0.12**		0.024	0.05	**0.034**	J	0.024	0.05	**0.025**	J	0.024	0.05	< 0.024		0.024	0.05	**0.045**	J	0.024	0.05	**0.062**		0.024	0.05	< 0.024		0.024	0.05
Lead	µg/L	6.3	15	**0.45**	J	0.45	1.0	< 0.45		0.45	1.0	**1.3**		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0
Lithium	µg/L	8	40	**9.2**		1.7	8.0	**8.2**		1.7	8.0	**3.2**	J	1.7	8.0	**1.7**	J	1.7	8.0	< 1.7		1.7	8.0	< 1.7		1.7	8.0	**3.6**	J	1.7	8.0	**4.0**	J	1.7	8.0	**7.9**	J	1.7	8.0	< 1.7		1.7	8.0
Mercury	µg/L	QL (0.2)	--	< 0.13		0.13	0.20	< 0.13		0.13	0.20	< 0.13		0.13	0.20	< 0.13		0.13	0.20	< 0.13		0.13	0.20	< 0.13		0.13	0.20	< 0.13		0.13	0.20	< 0.13		0.13	0.20	< 0.13		0.13	0.20	< 0.13		0.13	0.20
Molybdenum	µg/L	20	100	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10
Selenium	µg/L	QL (5)	50	**0.92**	J	0.89	5.0	**1.2**	J	0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0
Thallium	µg/L	QL (1)	2	< 0.20		0.20	1.0	**0.25**	J	0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0
Total Radium	pCi/L	0.58	5	**0.345**	U	0.521	0.521	**0.520**		0.382	0.382	**0.622**		0.563	0.563	**0.256**	U	0.461	0.461	**0.323**	U	0.567	0.567	**0.394**	U	0.474	0.474	**0.694**		0.446	0.446	**0.400**	U	0.421	0.421	**0.367**	U	0.438	0.438	**0.0582**	U	0.430	0.430
Field Parameters																																										
Conductivity	µS/cm	--	--	587		0.1	0.1	315.7		0.1	0.1	410.9		0.1	0.1	346.4		0.1	0.1	42.7		0.1	0.1	25.0		0.1	0.1	88.2		0.1	0.1	123.3		0.1	0.1	--		--	--	--		--	--
Depth to Water	ft btoc	--	--	18.40		0.01	0.01	19.59		0.01	0.01	61.19		0.01	0.01	26.94		0.01	0.01	23.24		0.01	0.01	10.14		0.01	0.01	20.23		0.01	0.01	24.30		0.01	0.01	--		--	--	--		--	--
Dissolved Oxygen	mg/L	--	--	2.06		0.01	0.01	5.65		0.01	0.01	1.63		0.01	0.01	0.45		0.01	0.01	3.21		0.01	0.01	8.76		0.01	0.01	3.65		0.01	0.01	7.32		0.01	0.01	--		--	--	--		--	--
Groundwater Elevation	ft msl	--	--	3551.30		0.01	0.01	3500.11		0.01	0.01	3266.51		0.01	0.01	3294.92		0.01	0.01	3383.58		0.01	0.01	3284.07		0.01	0.01	3292.87		0.01	0.01	3280.18		0.01	0.01	--		--	--	--		--	--
Oxidation Reduction Potential	millivolts	--	--	189.4		0.1	0.1	166.5		0.1	0.1	101.3		0.1	0.1	-89.1		0.1	0.1	184.2		0.1	0.1	344.1		0.1	0.1	317.3		0.1	0.1	294.1		0.1	0.1	--		--	--	--		--	--
Temperature	C	--	--	7.9		0.01	0.01	7.1		0.01	0.01	9.9		0.01	0.01	9.3		0.01	0.01	9.9		0.01	0.01	6.8		0.01	0.01	9.1		0.01	0.01	10.0		0.01	0.01	--		--	--	--		--	--
Turbidity	NTU	--	--	5.24		0.1	0.1	2.3		0.1	0.1	4.8		0.1	0.1	4.69		0.1	0.1	4.91		0.1	0.1	9.9		0.1	0.1	4.87		0.1	0.1	4.74		0.1	0.1	--		--	--	--		--	--

Notes:
MDL = Method Detection Limit
RL = Reporting Limit
mg/L = Milligram per liter
µg/L = Microgram per liter
pCi/L = picoCurie per liter
µS/cm = MicroSiemen per centimeter
SU = Standard Units
C = Degrees Celsius
NTU = Nephelometric Turbidity Unit
ft btoc = feet below top of casing
ft msl = feet above mean sea level
MDC = Minimum Detection Concentration
BKGD = Background
CCR = Coal Combustion Residuals
QL = Laboratory quantitation limit (value shown in parentheses is a recent QL and is subject to change)
Future QL values are subject to change; however, GPS cannot be less than values in parentheses
GWPS = Groundwater Protection Standards
Bold font = Detected constituent

Qualifiers (Qual):
J = Estimated Result
J+ = Potential bias high
U = Radiological sample not detected above the Miniumum Detection Concentration

= Concentration greater than site-specific background

= Concentration greater than CCR GWPS and site background

Table 4
Summary of 2nd Semi-Annual 2019 Assessment Monitoring Program Event Data (October 2019)
Phase B Landfill, Mount Storm Power Station

		Upgradient Wells								Downgradient Wells																				Field Quality Control							
Sample ID:		**MW-22**				**MWFGDW2**				**MW-6R**				**MW-7**				**MW-10**				**MW-12R**				**MW-13**				**MW-14**				**MW-10 DUP**				**Field Blank**			
Sample Date:		**10/29/2019**				**10/29/2019**				**10/29/2019**				**10/29/2019**				**10/29/2019**				**10/29/2019**				**10/29/2019**				**10/29/2019**				**10/29/2019**				**10/29/2019**			
Parameter Name	**Units**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**
CCR Appendix III Constituents																																							
Boron	mg/L	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1	< 0.023		0.023	0.1
Calcium	mg/L	**120**		0.58	1	**58**		0.58	1	**71**		0.58	1	**52**		0.58	1	**3.6**		0.58	1	**0.62**	J	0.58	1	**6.0**		0.58	1	**11**		0.58	1	**3.2**		0.58	1	< 0.58		0.58	1
Chloride	mg/L	**1.0**		0.28	1	**1.5**		0.28	1	**0.37**	J	0.28	1	**0.92**	J	0.28	1	**0.76**	J	0.28	1	**0.38**	J	0.28	1	**0.72**	J	0.28	1	**0.51**	J	0.28	1	**0.81**	J	0.28	1	< 0.28		0.28	1
Fluoride	mg/L	**0.056**		0.024	0.05	**0.069**		0.024	0.05	**0.079**		0.024	0.05	**0.12**		0.024	0.05	**0.027**	J	0.024	0.05	**0.049**	J	0.024	0.05	**0.035**	J	0.024	0.05	**0.047**	J	0.024	0.05	< 0.024		0.024	0.05	< 0.024		0.024	0.05
pH	SU	6.31		0.01	0.01	6.52		0.01	0.01	7.12		0.01	0.01	7.05		0.01	0.01	4.67		0.01	0.01	4.56		0.01	0.01	4.65		0.01	0.01	4.63		0.01	0.01	--		--	--	--		--	--
Sulfate	mg/L	**26**		0.35	1	**50**		0.35	1	**13**		0.35	1	**50**		0.35	1	**6.9**		0.35	1	**3.2**		0.35	1	**29**		0.35	1	**50**		0.35	1	**6.0**		0.35	1	< 0.35		0.35	1
Total Dissolved Solids	mg/L	**250**		10	10	**110**		10	10	**190**		10	10	**150**		10	10	< 10		10	10	< 10		10	10	< 10		10	10	**14**		10	10	< 10		10	10	< 10		10	10
Detected CCR Appendix IV Constituents																																							
Arsenic	µg/L	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0	< 0.75		0.75	5.0
Barium	µg/L	**260**		2.2	5.0	**350**		2.2	5.0	**350**		2.2	5.0	**100**		2.2	5.0	**130**		2.2	5.0	**27**		2.2	5.0	**76**		2.2	5.0	**35**		2.2	5.0	**120**		2.2	5.0	< 2.2		2.2	5.0
Beryllium	µg/L	< 0.31		0.31	1.0	< 0.31		0.31	1.0	< 0.31		0.31	1.0	< 0.31		0.31	1.0	**0.50**	J	0.31	1.0	< 0.31		0.31	1.0	**0.57**	J	0.31	1.0	**0.75**	J	0.31	1.0	**0.32**	J	0.31	1.0	< 0.31		0.31	1.0
Cadmium	µg/L	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	**0.40**	J	0.20	1.0	< 0.20		0.20	1.0	**0.38**	J	0.20	1.0	**0.32**	J	0.20	1.0	**0.28**	J	0.20	1.0	< 0.20		0.20	1.0
Chromium	µg/L	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	**1.7**	J	0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0	< 0.98		0.98	2.0
Cobalt	µg/L	< 0.19		0.19	1.0	**0.27**	J	0.19	1.0	**0.47**	J	0.19	1.0	**0.27**	J	0.19	1.0	**2.4**		0.19	1.0	**2.5**		0.19	1.0	**0.98**	J	0.19	1.0	**4.3**		0.19	1.0	**3.0**		0.19	1.0	< 0.19		0.19	1.0
Fluoride	mg/L	**0.056**		0.024	0.05	**0.069**		0.024	0.05	**0.079**		0.024	0.05	**0.12**		0.024	0.05	**0.027**	J	0.024	0.05	**0.049**	J	0.024	0.05	**0.035**	J	0.024	0.05	**0.047**	J	0.024	0.05	< 0.024		0.024	0.05	< 0.024		0.024	0.05
Lead	µg/L	< 0.45		0.45	1.0	< 0.45		0.45	1.0	**0.90**	J	0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0	< 0.45		0.45	1.0
Lithium	µg/L	**7.3**	J	1.7	8.0	**8.9**		1.7	8.0	**3.0**	J	1.7	8.0	< 1.7		1.7	8.0	< 1.7		1.7	8.0	< 1.7		1.7	8.0	**2.8**	J	1.7	8.0	**5.2**	J	1.7	8.0	< 1.7		1.7	8.0	< 1.7		1.7	8.0
Molybdenum	µg/L	< 1.1		1.1	10	< 1.1		1.1	10	**1.6**	J	1.1	10	< 1.1		1.1	10	**6.1**	J	1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10	< 1.1		1.1	10
Selenium	µg/L	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0	< 0.89		0.89	5.0
Thallium	µg/L	< 0.20		0.20	1.0	< 0.20		0.20	1.0	**0.48**	J	0.20	1.0	**0.30**	J	0.20	1.0	**0.93**	J	0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0
Total Radium	pCi/L	**0.448**	U	0.449	0.449	**0.211**	U	0.416	0.416	**0.368**	U	0.474	0.474	**0.105**	U	0.457	0.457	**0.508**		0.432	0.432	**0.0177**	U	0.376	0.376	**0.332**	U	0.384	0.384	**-0.113**	U	0.527	0.527	**0.531**		0.348	0.348	**-0.0839**	U	0.345	0.345
Field Parameters																																							
Conductivity	µS/cm	590		0.1	0.1	283.9		0.1	0.1	338.3		0.1	0.1	346.2		0.1	0.1	52.4		0.1	0.1	23.2		0.1	0.1	87.8		0.1	0.1	132.7		0.1	0.1	--		--	--	--		--	--
Depth to Water	ft btoc	24.89		0.01	0.01	20.18		0.01	0.01	61.46		0.01	0.01	27.49		0.01	0.01	23.80		0.01	0.01	12.78		0.01	0.01	22.78		0.01	0.01	33.83		0.01	0.01	--		--	--	--		--	--
Dissolved Oxygen	mg/L	1.96		0.01	0.01	3.90		0.01	0.01	3.00		0.01	0.01	0.84		0.01	0.01	0.83		0.01	0.01	5.66		0.01	0.01	3.16		0.01	0.01	5.61		0.01	0.01	--		--	--	--		--	--
Groundwater Elevation	ft msl	3544.81		0.01	0.01	3499.52		0.01	0.01	3266.24		0.01	0.01	3294.37		0.01	0.01	3383.02		0.01	0.01	3281.43		0.01	0.01	3290.32		0.01	0.01	3270.65		0.01	0.01	--		--	--	--		--	--
Oxidation Reduction Potential	millivolts	174.9		0.1	0.1	252.9		0.1	0.1	220.4		0.1	0.1	41.0		0.1	0.1	273.9		0.1	0.1	395.5		0.1	0.1	279.0		0.1	0.1	265.8		0.1	0.1	--		--	--	--		--	--
Temperature	C	9.5		0.01	0.01	11.5		0.01	0.01	10.4		0.01	0.01	9.9		0.01	0.01	11.5		0.01	0.01	11.4		0.01	0.01	11.3		0.01	0.01	10.7		0.01	0.01	--		--	--	--		--	--
Turbidity	NTU	9.8		0.1	0.1	4.08		0.1	0.1	6.08		0.1	0.1	9.8		0.1	0.1	8.9		0.1	0.1	6.95		0.1	0.1	9.7		0.1	0.1	9.0		0.1	0.1	--		--	--	--		--	--

Notes:
MDL = Method Detection Limit
RL = Reporting Limit
mg/L = Milligram per liter
µg/L = Microgram per liter
pCi/L = picoCurie per liter
µS/cm = MicroSiemen per centimeter
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QL = Laboratory quantitation limit (value shown in parentheses is a recent QL and is subject to change)
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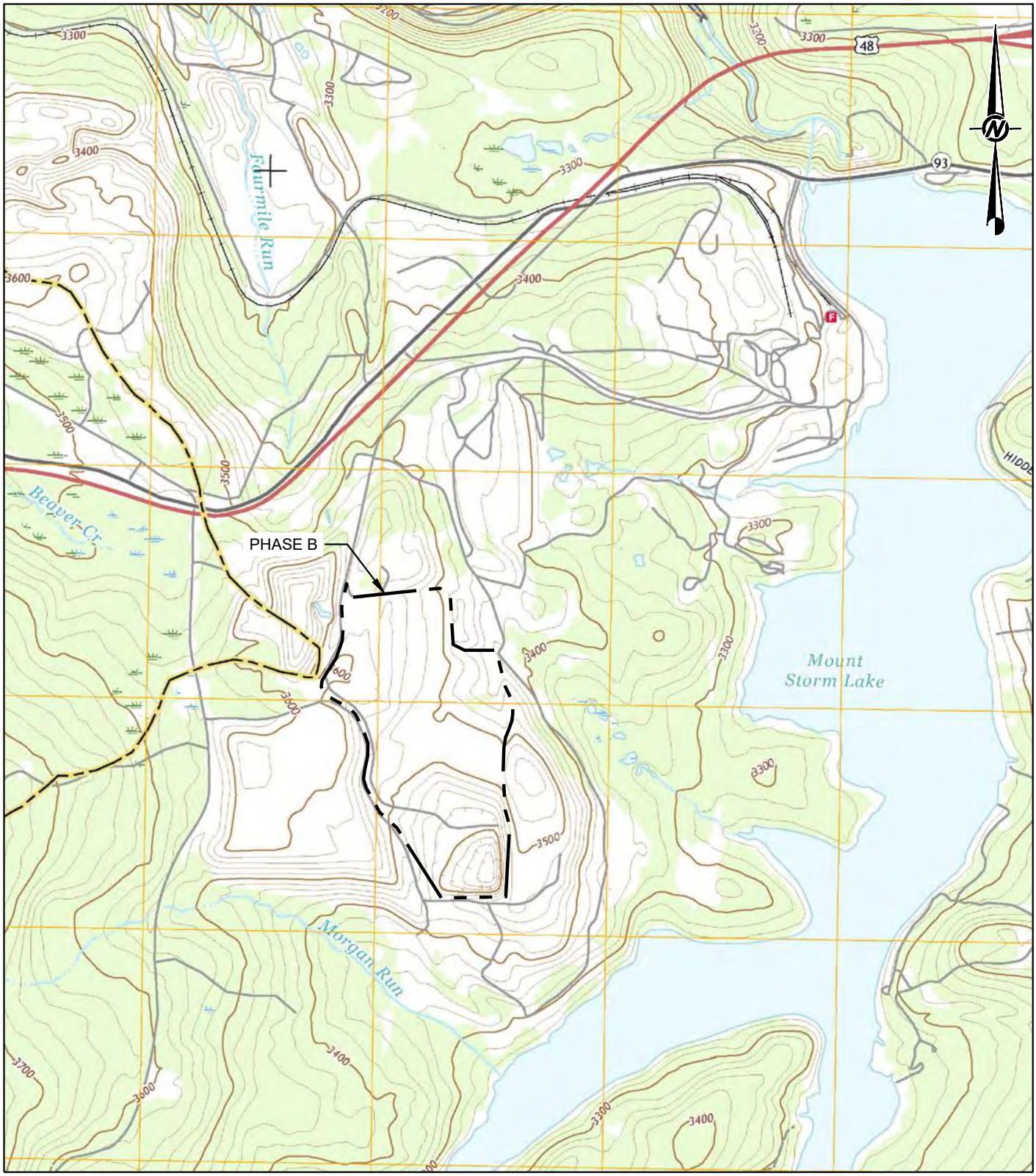
GWPS = Groundwater Protection Standards
Bold font = Detected constituent

Qualifiers (Qual):
J = Estimated Result
U = Radiological sample not detected above the Miniumum Detection Concentration

DRAWINGS



REFERENCE

BASE MAP CONSISTS OF USGS TOPOGRAPHIC QUADRANGLES
MOUNT STORM LAKE AND GREENLAND GAP, WEST VIRGINIA, DATED 2016.

2000 0 2000
SCALE FEET

CLIENT
DOMINION ENERGY

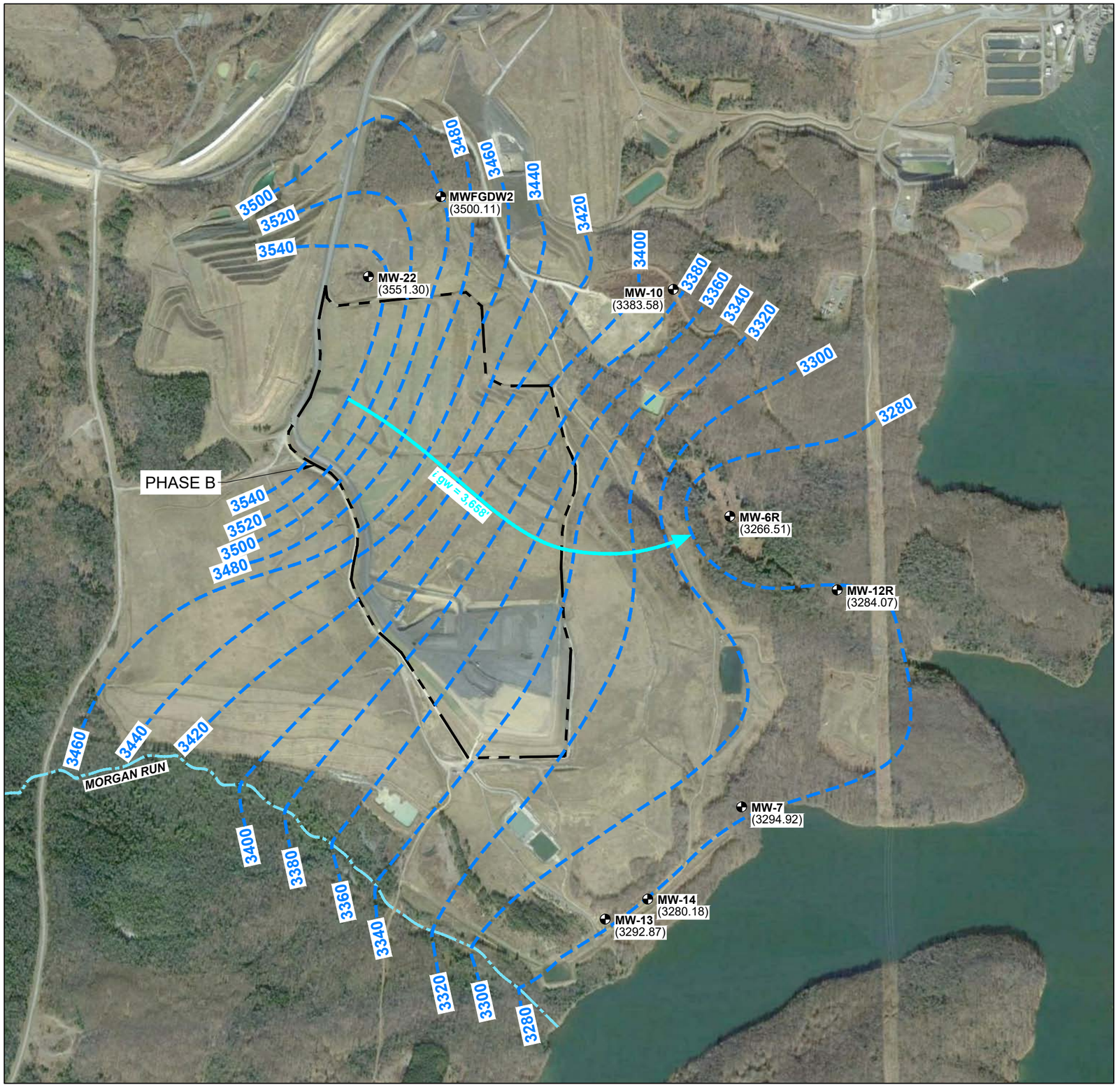
PROJECT
MOUNT STORM POWER STATION
PHASE B LANDFILL

CONSULTANT
GOLDER

YYYY-MM-DD	2018-12-28
DESIGNED	-
PREPARED	BPG
REVIEWED	MGW
APPROVED	MGW

TITLE
SITE LOCATION MAP

PROJECT NO. 19117239 | REV. 0 | DRAWING 1

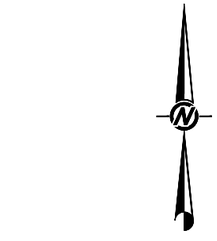


LEGEND

- APPROXIMATE LANDFILL BOUNDARY
- 3300 — POTENTIOMETRIC SURFACE CONTOUR
- APPROXIMATE GROUNDWATER FLOW LINE
- *i* gw = 3,813' — GROUNDWATER FLOW PATH LENGTH (FEET)
- MW-22 — EXISTING GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION
- (3293.47) — STATIC GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)

REFERENCE

1. AERIAL IMAGE TAKEN FROM GOOGLE EARTH PRO ON 05/14/2018. MAP DATA BY: GOOGLE, IMAGERY DATE: 11/19/2013
2. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
3. GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.



1000 0 1000
SCALE FEET

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER

YYYY-MM-DD	2019-12-12
DESIGNED	RIP
PREPARED	RIP
REVIEWED	MGW
APPROVED	MGW

PROJECT
MOUNT STORM POWER STATION
PHASE B LANDFILL

TITLE
POTENTIOMETRIC SURFACE MAP
UPPERMOST AQUIFER
APRIL 16, 2019

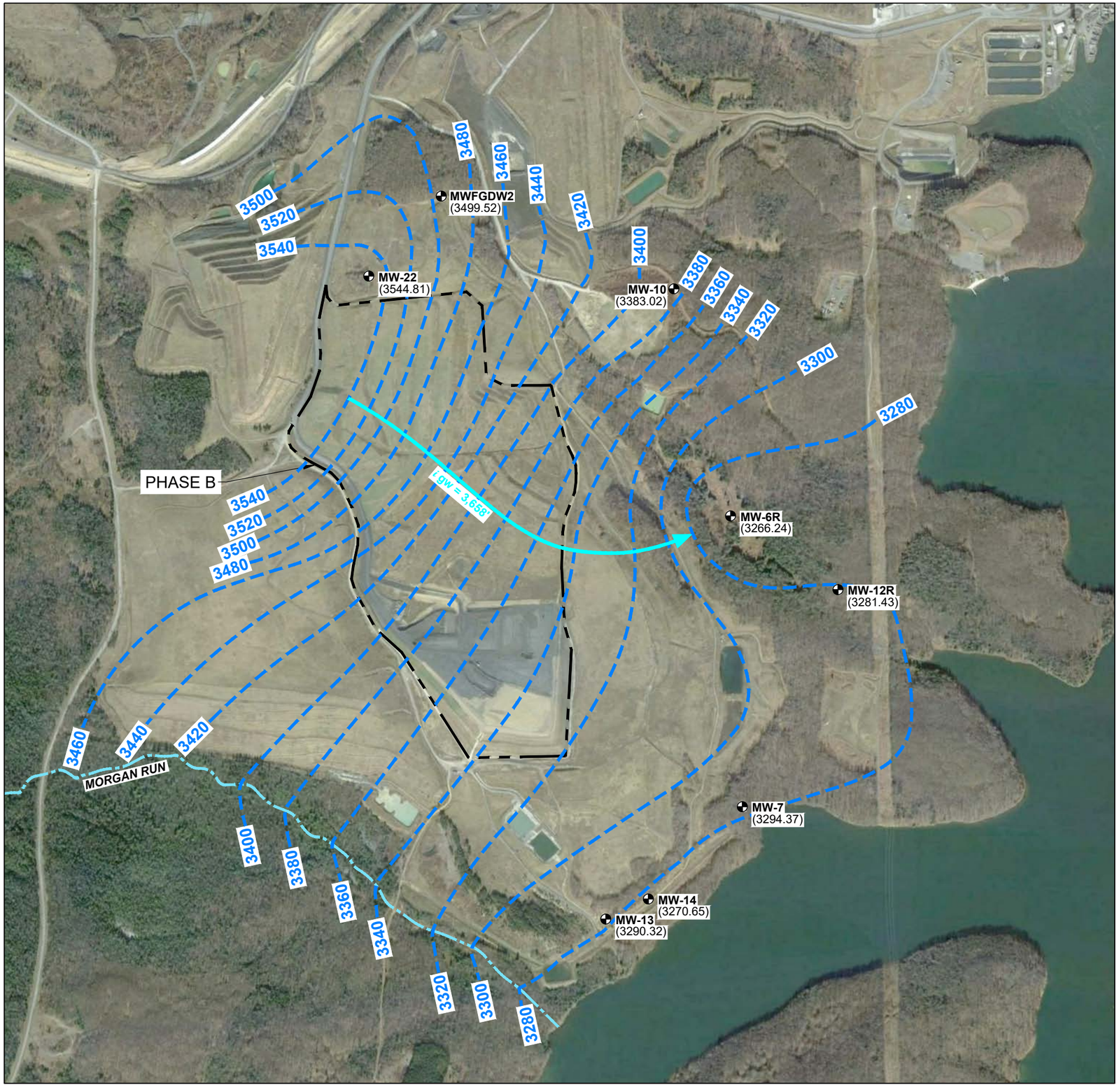
PROJECT NO.
19-117239

REV. 0

DRAWING 2

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

Path: G:\Plan Production Data Files\Drawing Data Files\19-117239\E - 2019 PHASE B CCR AMR\Active Drawings\19117239E03.dwg

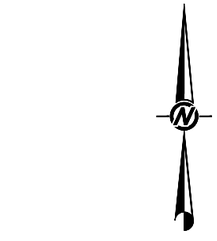


LEGEND

- APPROXIMATE LANDFILL BOUNDARY
- 3300 — POTENTIOMETRIC SURFACE CONTOUR
- APPROXIMATE GROUNDWATER FLOW LINE
- *i* gw = 3,813' — GROUNDWATER FLOW PATH LENGTH (FEET)
- MW-22 — EXISTING GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION
- (3293.47) — STATIC GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)

REFERENCE

1. AERIAL IMAGE TAKEN FROM GOOGLE EARTH PRO ON 05/14/2018. MAP DATA BY: GOOGLE, IMAGERY DATE: 11/19/2013
2. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
3. GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.



1000 0 1000
SCALE FEET

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER

YYYY-MM-DD	2019-12-12
DESIGNED	RIP
PREPARED	RIP
REVIEWED	MGW
APPROVED	MGW

PROJECT
MOUNT STORM POWER STATION
PHASE B LANDFILL

TITLE
POTENTIOMETRIC SURFACE MAP
UPPERMOST AQUIFER
OCTOBER 28, 2019

PROJECT NO.
19-117239

REV.
0

DRAWING
3

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

0 1 in

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APPENDIX A

FIRST SEMI-ANNUAL ASSESSMENT MONITORING PROGRAM EVENT FIELD DATA SHEETS, LABORATORY CERTIFICATES OF ANALYSIS, CHAIN-OF-CUSTODY FORMS, AND DATA VALIDATION FORMS

Date: 4-15-2019 – 4-16-2019

GOLDER

WELL GAUGING LOG

Project Name: MSPS - 1SA19 NPDES/Phase A+B CCR Project No./Task No.: 19117239

Sampler(s): P. Trout, M. Taylor

Equipment: WL Indicator

Well ID	Personnel (initials)	Time	DTW (feet)	DTB (feet)	Well Condition Summary				
					Protective Casing	Well Casing	Label	Lock	Pad Condition
MW-5	MT/PT	1600	36.82	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MW-6R	MT/PT	1627	61.19	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MW-7	MT/PT	1527	26.94	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MW-8	MT/PT	1556	18.75	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MW-10	MT/PT	1535	23.24	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MW-12R	MT/PT	1622	10.14	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MW-13	MT/PT	1513	20.23	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MW-14	MT/PT	1518	24.30	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
4-16-19 MW-22	MT	0826	18.40	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
4-16-19 MWFGDW-2	PT	0824	19.59	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MWFGDW-3	MT/PT	1615	13.27	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MWFGDW-4	MT/PT	1609	18.73	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MWFGDW-5	MT/PT	1604	0.9	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
MWFGDW-6	MT/PT	1606	18.51	—	OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged

Observations/Notes: _____

Signature: Moira Taylor Date: 4-16-19

QA/QC Signature: _____ Date: 4/17/19

GOLDER

MICROPURGE SAMPLING LOG

Date: 4/16/19
Weather: Sun, 40s

Project Name: MSPS
Project No./Task No.: 19117239 ~~10227230~~ PM
Event: NPDES + CCR, ~~A&B~~ PM
Sampler(s): P. Trout
Well ID: MW-6R
Field Calibration Completed: 0800 on 4/16/19
Well Diameter: 2.0 inches
Initial Depth to Water: 61.19 feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- [x] WL Indicator
- [x] YSI 17M102880
- [ ] In-Situ
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] Dedicated Bladder Pump
- [ ] Non-dedicated BP
- [ ] _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1021	6.70	422.1	3.9	2.92	9.9	228.7	61.95	~450
1024	6.95	421.3	4.0	3.26	9.9	219.6	61.96	~450
1027	6.94	419.5	4.1	3.06	9.9	192.2	61.96	~450
1030	7.01	414.1	4.6	1.86	9.9	111.1	61.97	~450
1033	7.01	413.4	4.7	1.74	9.9	105.3	62.05	~450
1036	7.04	410.9	4.8	1.63	9.9	~~100~~ 101.3 PM	62.15	~450
1037	— SAMPLED —							
1050	7.16	408.9	4.9	1.27	9.9	74.2	62.15	~450

Purge Cycle (End): 15.5/4.5sec @ 40 psi
Flow Rate (ml/min End): ~450
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.45
Total Purge Volume (Gallons): ~3.0
Purge Water Management: GW Separator On-Site
Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample
Purge Start @ 1016
Sample Time: 1037
Field Filtered (0.45um): [x] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [x] CCR Appendix III
- [x] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [ ] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [x] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: _____ Date: 4/16/19
QA/QC Signature: Moira Kaylor Date: 4-17-19

FIELD SAMPLING LOG

GOLDER

Date: 4-16-19
Weather: Sun, 50s

Project Name: Mt. Storm P.S. (Dominion)
Project No./Task No.: 1911-7239
Event: ISA19 NPDES / Phase B CCR
Sampler(s): M. Taylor
Well ID: MW-7
Field Calibration Completed: 1042 4-16-19 YSI, 1050 4-16-19 pC test 35 2570365
Well Diameter: 4.0 inches
Initial Depth to Water: 26.85 feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- [x] WL Indicator
- [x] YSI ProDSS 16M103153
- [ ] In Situ Troll 9500
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [ ] Disposable Bailer
- [ ] Non-dedicated BP
- [x] Other Dedicated B.P., pC test 35 2570365

Time	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Gallons	DTW (ft)	flow rate mL/min
1202	8.20 MT	345.9	4.93	0.62	9.3	-26.2	~0.5	27.47	~500
1205	8.1	346.5	4.78	0.46	9.3	-72.3	~1.0	27.60	500
1208	7.9	346.4	4.72	0.43	9.2	-78.2	~1.3	27.81	500
1211	7.9	346.3	4.67	0.41	9.3	-78.9	~1.6	27.98	500
1214	7.9	346.4	4.69	~~0.35~~ 0.45 MT	9.3	-89.1	~2.0	28.18	500
1215	—	SAMPLED	—	—	—	—	—	—	
1223	7.8	346.0	4.77	0.73	9.3	-104.3	~2.1	28.74	500

Calculated Well Vol. (Gallons): pre-purge = 0.50
Total Calculated Purge Volume (Gallons): ~2.1
Purge Water Management: O.W.S.
flow rate: ~500mL/min, 22/8 sec @ 25 PSI
Purge Observations (product observed, color, odor, turbidity, sheen): clear grab sample
purge Start: 1158
Sample Date/Time: 1215 4-16-19
Field Filtered (0.45um): [x] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [x] CCR Appendix III
- [x] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl], Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [ ] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [x] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: Monica Taylor Date: 4-16-19 Page 1 of 1
QA/QC Signature: Date: 4/16/19

FIELD SAMPLING LOG

GOLDER

Date: 4-16-2019
Weather: Sun, 60s

Project Name: Mt. Storm P.S. (Dominion)
Project No./Task No.: 1911 · 7239
Event: ISA19 NPDES / A+B CCR
Sampler(s): M. Taylor
Well ID: MW-10
Field Calibration Completed: 1042 (YSI), 1050 (pCTestr35) both 4-16
Well Diameter: 2.0 inches
Initial Depth to Water: 23.24 feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- [X] WL Indicator
- [X] YSI ProDSS 16M103153
- [ ] In Situ Troll 9500
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [X] MP-15 Controller Box
- [ ] Disposable Bailer
- [ ] Non-dedicated BP
- [X] Other Dedicated BP, pCTestr35 (25706) 0365 m

Time	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Gallons	DTW (ft)	flow rate mL/m
1339	4.4	48.6	5.87	1.97	9.9	152.3	~0.5	23.82	200
1344	3.3	47.0	6.40	0.73	9.9	133.6	~0.75	24.63	200
1349	3.3	44.1	5.35	0.62	9.9	146.3	~1.0	24.94	200
1354	3.2	43.2	5.06	0.79	9.9	150.2	~1.25	25.18	200
1359	3.2	43.0	5.09	1.78	9.8	174.7	~1.50	25.56	200
1404	3.1	42.8	5.00	2.68	9.9	178.2	~1.75	25.82	200
1409	3.1 MT	42.7	4.91	3.21	9.9	184.2	~2.0	26.14	200
1410	—	—	SAMPLED	—	—	—	—	—	
1430	3.0	43.1	4.83	2.43	9.9	198.1	~2.1	27.03	200

Calculated Well Vol. (Gallons): pre-purge = ~0.50 gal
Total Calculated Purge Volume (Gallons): ~2.1
Purge Water Management: O.W.S. flow rate: ~200 mL/min, 25 15 sec @ 30 PSI
Purge Observations (product observed, color, odor, turbidity, sheen): Clear grab sample, some light orange suspended particles
purge start: 1330
Sample Date/Time: 4-16-2019 1410
Field Filtered (0.45um): [X] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [✓] CCR Appendix III
- [✓] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [X] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl], Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [X] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [X] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: Moira Taylor Date: 4-16-19 Page 1 of 1
QA/QC Signature: Date: 4/16/19

GOLDER

MICROPURGE SAMPLING LOG

Date: 4/16/19
Weather: Sun, 40s

Project Name: MSPS
Project No./Task No.: 19117239 ~~19227239~~ PW
Event: NPDES + CCR, ~~A&B~~ PW
Sampler(s): P. Trout
Well ID: MW-17R
Field Calibration Completed: 0800 on 4/16/19
Well Diameter: 2.0 inches
Initial Depth to Water: 8.50 feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- [x] WL Indicator
- [x] YSI 17M102880
- [ ] In-Situ _____
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] Dedicated Bladder Pump
- [ ] Non-dedicated BP
- [ ] _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (^{o}C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0942	4.66	25.0	17.0	8.65	7.3	288.6	8.61	400
0945	4.54	24.9	9.3	8.67	6.9	314.3	8.63	400
0948	4.54	25.0	7.4	8.73	6.8	332.7	8.65	400
0951	4.54	25.0	9.9	8.76	6.8	344.1	8.63	400
0952		SAMPLED @						
1004	4.56	25.1	7.4	9.13	6.7	330.6	8.61	400

Purge Cycle (End): 16/4sec @ 20 psi
Flow Rate (ml/min End): 400
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.20
Total Purge Volume (Gallons): ~2.5
Purge Water Management: O/W Separator On-Site
Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample
Purge Started @ 0939
Sample Time: 0952
Field Filtered (0.45um): [x] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [x] CCR Appendix III
- [ ] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [ ] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [x] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: _____ Date: 4/16/19
QA/QC Signature: Moira Mayer Date: 4-17-19

FIELD SAMPLING LOG

GOLDER

Date: 4-16-19
Weather: Sun, 30s

Project Name: Mt. Storm P.S. (Dominion)
Project No./Task No.: 1911-7239
Event: ISA19 NPDES, Phase B CCR
Sampler(s): M. Taylor
Well ID: MW-13
Field Calibration Completed: 0800 4-16-19
Well Diameter: 2.0 inches
Initial Depth to Water: 20.21 feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- [X] WL Indicator
- [X] YSI ProDSS 16M103153
- [ ] In Situ Troll 9500
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [X] MP-15 Controller Box
- [ ] Disposable Bailer
- [ ] Non-dedicated BP
- [X] Other Dedicated BP

Time	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Gallons	DTW (ft)	Flow rate mL/min
0949	7.38	91.7	4.45	4.34	8.5	253.3	~0.4	21.31	350
0952	8.62	89.5	4.81	3.83	8.9	287.1	~0.6	21.62	350
0955	8.34	88.6	4.84	3.74	9.0	299.4	~0.9	21.90	350
0958	7.80	88.6	4.78	3.72	9.0	306.0	~1.3	22.06	350
1001	7.51	88.5	4.76	3.67	9.0	310.9	~1.5	22.24	350
1004	7.46	88.3	4.99	3.66	9.0	315.9	~1.7	22.39	350
1007	7.41	88.2	4.87	3.65	9.1	317.3	~1.9	22.52	350
1010	—	—	SAMPLED	—	—	—	—	—	
1020	7.37	87.8	4.71	3.94	9.0	326.8	~2.0	23.22	350

Calculated Well Vol. (Gallons): pre purge: ~0.4 gal
Total Calculated Purge Volume (Gallons): ~2.0
Purge Water Management: O.W.S.
Flow rate, ~350 mL/min, 10/5 sec @ 25 psi
Purge Observations (product observed, color, odor, turbidity, sheen): clear grab sample
purge start: 0945
Sample Date/Time: 4-16-19 1010
Field Filtered (0.45um): [X] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [✓] CCR Appendix III
- [✓] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [X] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [ ] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [X] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: Moira Taylor Date: 4-16-2019
QA/QC Signature: Patrick [illegible] Date: 4/16/2019

GOLDER

FIELD SAMPLING LOG

Date: 4-16-19
Weather: sun, 50s

Project Name: Mt. Storm P.S. (Dominion)
Project No./Task No.: 1911-7239
Event: 1SA19 NPDES/Phase B CCR
Sampler(s): M. Taylor
Well ID: MW-14
Field Calibration Completed: 1042 YSI pro DSS, 1050 pCTestr 35 (both 4-16-19)
Well Diameter: 2.0 inches
Initial Depth to Water: 22.75 feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- [X] WL Indicator
- [X] YSI Pro DSS 16M103153
- [ ] In Situ Troll 9500
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [X] MP-15 Controller Box
- [ ] Disposable Bailer
- [ ] Non-dedicated BP
- [X] Other dedicated B.P, pCTestr 35 2570365

Time	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Gallons	DTW (ft)	flow rate mL/
1056	4.2	124.6	4.76	7.41	10.0	262.8	~0.5	24.12	40
1059	4.1	124.3	4.70	7.37	10.0	285.8	~0.75	24.31	40
1102	4.1	124.0	4.79	~~8~~ 7.35	10.0	287.6	~1.0	24.45	40
1105	4.1	123.3	4.74	7.32	10.0	294.1	~1.25	24.60	40
1107	—	SAMPLED	—						
1120	4.1	122.0	4.83	7.69	10.1	302.8	~1.3	24.77	40

Calculated Well Vol. (Gallons): pre purge: ~0.45
Total Calculated Purge Volume (Gallons): ~1.3
Purge Water Management: O.W.S. flow rate: ~400mL/min - 25/5 sec @ 30PSI
Purge Observations (product observed, color, odor, turbidity, sheen): clear grab sample
purge start: 1036
Sample Date/Time: 1107 4-16-19
Field Filtered (0.45um): [X] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [✓] CCR Appendix III
- [✓] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [X] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl], Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [ ] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [X] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems: recalibrate YSI Pro DSS @ 1042, calibrate pCTestr 35 S/N 2570365 pH on YSI not reading correctly

Sampler Signature: Moira Taylor Date: 4-16-19 Page 1 of 1
QA/QC Signature: Date: 4-16-19

GOLDER

FIELD SAMPLING LOG

Date: 4-16-19
Weather: clear, 30s

Project Name: Mt. Storm P.S.
Project No./Task No.: 1911-7239
Event: Phase A+B CCR / 2SAIG NPDES
Sampler(s): M. Taylor
Well ID: MW-22
Field Calibration Completed: 0800 4-16-19
Well Diameter: 2.0 inches
Initial Depth to Water: 18.40 feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- [X] WL Indicator
- [X] YSI ProDSS 16A103153
- [ ] In Situ Troll 9500
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [X] MP-15 Controller Box
- [ ] Disposable Bailer
- [ ] Non-dedicated BP
- [X] Other dedicated BP

Time	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Gallons (~)	DTW (ft)	mL/min (flow rate)
0831	7.70	560	5.51	2.74	7.8	221.9	~0.5	18.71	250
0834	8.21	587	7.76	2.30	7.9	203.2	~0.9	18.74	250
0837	8.53	589	5.00	2.23	7.9	197.1	~1.3	18.81	250
0840	8.59	592	5.46	2.32	7.9	191.6	~1.5	18.83	250
0843	8.52	587	5.24	2.06	7.9	189.4	~2.0	18.87	250
0845	—	—	SAMPLED	—	—	—	—	—	
0920	8.47	573	5.06	3.12	7.8	178.3	~2.1	19.03	250

Calculated Well Vol. (Gallons): pre-purge: 0.5gal
Total Calculated Purge Volume (Gallons): ~2.1
Purge Water Management: onsite O/W sep.
Purge Observations (product observed, color, odor, turbidity, sheen): 22/8 sec @25 PSI, clear grab sample, flowrate ~250mL/min
purge start: 0827
Sample Date/Time: 4-16-19 0845
Field Filtered (0.45um): [X] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [ ] CCR Appendix III
- [ ] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [X] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl], Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [X] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [X] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems: MS/MSD sampled here

Sampler Signature: Moira Taylor Date: 4-16-19
QA/QC Signature: Patrick [illegible] Date: 4/16/19

GOLDER

MICROPURGE SAMPLING LOG

Date: 4/16/19
Weather: Sun, 40s

Project Name: MSPS
Project No./Task No.: 19117239 ~~10227239~~ RJS
Event: NPDES + CCR, A&B
Sampler(s): P. Trat
Well ID: MWFGD-W2
Field Calibration Completed: 0800 on 4/16/19
Well Diameter: 2.0 inches
Initial Depth to Water: 19.59 feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used:
- ~~☐ WL Indicator~~
- ☑ YSI 17H102880
- ☐ In-Situ
- ☐ Turbidity Meter
- ☐ Peristaltic Pump
- ☐ MP-10 Controller Box
- ☐ Air Tank
- ☐ Compressor
- ☑ MP-15 Controller Box
- ☑ Dedicated Bladder Pump
- ☐ Non-dedicated BP
- ☐ _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0830	6.40	315.8	8.4	6.85	7.0	172.2	19.65	400
0833	6.48	315.5	~~5.9~~ 4.5	5.91	7.1	169.8	19.72	400
0836	6.53	316.2	~~5.7~~ 2.6	5.71	7.1	167.9	19.81	400
0839	6.56	315.7	~~5.6~~ 2.3	5.65	7.1	166.5	19.81	400
0842	—	SAMPLED	—	—	—	—	—	—
0920	6.75	315.9	1.7	5.67	7.9	165.8	19.79	400

Purge Cycle (End): 25/5 sec @ 10 psi
Flow Rate (ml/min End): 400
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~ 0.15
Total Purge Volume (Gallons): ~2.0
Purge Water Management: o/s Separator
Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample
Purge Start @ 0826
Sample Time: 0842
Field Filtered (0.45um): ☑ Yes ☐ No

Sample Parameters/Analyte(s):
- ☐ Petro (DRO)
- ☑ CCR Appendix III
- ☑ CCR Appendix IV
- ☐ Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- ☑ Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- ☐ Variance (Diss [Be, Cd, Cr, Pb, Ni])
- ☐ LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- ☑ Phase A IV Detects (As, Ba, Be, ☑ Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- * Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:
* Duplicate Sampled Here

Sampler Signature: [signature] Date: 4/16/19
QA/QC Signature: Moira Mayer Date: 4-17-19

GOLDER

MICROPURGE SAMPLING LOG

Date: 4/16/19

Weather: Sun, 70s

Project Name: MSPS

Project No./Task No.: 19117239 ~~10227239~~ PA

Event: NPDES & CCR, A&B

Sampler(s): P. Trout

Well ID: Duplicate

Field Calibration Completed: 0800 on 4/16/19

Well Diameter: — inches

Initial Depth to Water: — feet

Depth to Bottom: — feet

Water Column Thickness: — feet

Equipment Used: ☐ WL Indicator ☐ Turbidity Meter ☐ Air Tank ☐ Dedicated Bladder Pump

☐ YSI _____ ☐ Peristaltic Pump ☐ Compressor ☐ Non-dedicated BP

☐ In-Situ _____ ☐ MP-10 Controller Box ☐ MP-15 Controller Box ☐ _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)[oC]	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0915	—	SAMPLED						

Purge Cycle (End): — @ — psi Flow Rate (ml/min End): —

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

Total Purge Volume (Gallons): — Purge Water Management: —

Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample

Sample Time: 0915 Field Filtered (0.45um): ☑ Yes ☐ No

Sample Parameters/Analyte(s): ☐ Petro (DRO) ☑ CCR Appendix III ☑ CCR Appendix IV

☐ Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS) ☑ Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)

☐ Variance (Diss [Be, Cd, Cr, Pb, Ni]) ☐ LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228) ☑ Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228) ☑ Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems: Sampled @ MWFGD-W2

Sampler Signature: [signature] Date: 4/16/19 Page 1 of 1

QA/QC Signature: Moira Taylor Date: 4-17-19

GOLDER

FIELD SAMPLING LOG

Date: 4-16-19
Weather: Sun, 60s

Project Name: Mt. Storm P.S. (Dominion) Project No./Task No.: 1911 7239
Event: ISA19 NPDES/A+BCCR Sampler(s): M. Taylor
Well ID: Field Blank (NPDES/A+BCCR) Field Calibration Completed: —
Well Diameter: — inches Initial Depth to Water: — feet
Depth to Bottom: — feet Water Column Thickness: — feet

Equipment Used: ☐ WL Indicator ☐ Turbidity Meter ☐ Air Tank ☐ Disposable Bailer
☐ YSI — ☐ Peristaltic Pump ☐ Compressor ☐ Non-dedicated BP
☐ In Situ Troll 9500 ☐ MP-10 Controller Box ☐ MP-15 Controller Box ☐ Other —

Time	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Gallons	DTW (ft)
1445	—	— SAMPLED	—	—	—	—	—	—

Calculated Well Vol. (Gallons): — Total Calculated Purge Volume (Gallons): —
Purge Water Management: —
Purge Observations (product observed, color, odor, turbidity, sheen): Clear grab sample taken near MW-10 using lab-supplied D.I. water

Sample Date/Time: 1445 4-16-19 Field Filtered (0.45um): ☐ Yes ☒ No

Sample Parameters/Analyte(s): ☐ Petro (DRO) ☑ CCR Appendix III ☑ CCR Appendix IV

☐ Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS) ☒ Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl], Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)

☐ Variance (Diss [Be, Cd, Cr, Pb, Ni]) ☐ LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228) ☒ Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228) ☒ Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: Moira Mayfield Date: 4-16-19 Page 1 of 1

QA/QC Signature: [signature] Date: 4-16-19

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-111152-2
Client Project/Site: Mount Storm Phase B CCR - (G)

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
7/25/2019 7:40:34 AM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc. Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

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

Glossary

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

Case Narrative

Client: Golder Associates Inc.
Project/Site: Mount Storm Phase B CCR - (G)

Job ID: 240-111152-2

Job ID: 240-111152-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-111152-2

Comments
No additional comments.

Receipt
The samples were received on 4/18/2019 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 9 coolers at receipt time were 1.4º C, 2.0º C, 2.0º C, 2.4º C, 2.8º C, 3.0º C, 3.8º C, 4.0º C and 4.8º C.

RAD
No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
300.0	Anions, Ion Chromatography	MCAWW	TAL CAN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CAN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396
TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-111152-1	MW-22	Water	04/16/19 08:45	04/18/19 09:45	
240-111152-2	MWFGDW2	Water	04/16/19 08:42	04/18/19 09:45	
240-111152-4	MW-6R	Water	04/16/19 10:37	04/18/19 09:45	
240-111152-5	MW-7	Water	04/16/19 12:15	04/18/19 09:45	
240-111152-7	MW-10	Water	04/16/19 14:10	04/18/19 09:45	
240-111152-8	MW-12R	Water	04/16/19 09:52	04/18/19 09:45	
240-111152-9	MW-13	Water	04/16/19 10:10	04/18/19 09:45	
240-111152-10	MW-14	Water	04/16/19 11:07	04/18/19 09:45	
240-111152-15	FIELD BLANK	Water	04/16/19 14:45	04/18/19 09:45	
240-111152-16	DUPLICATE	Water	04/16/19 09:15	04/18/19 09:45	

Detection Summary

Client: Golder Associates Inc.
Project/Site: Mount Storm Phase B CCR - (G)

Job ID: 240-111152-2

Client Sample ID: MW-22 — Lab Sample ID: 240-111152-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	320		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	1.0		1.0	0.31	ug/L	1		6020A	Total Recoverable
Calcium	110000		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	0.64	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
Lead	0.45	J	1.0	0.45	ug/L	1		6020A	Total Recoverable
Lithium	9.2		8.0	1.7	ug/L	1		6020A	Total Recoverable
Selenium	0.92	J	5.0	0.89	ug/L	1		6020A	Total Recoverable
Chloride	810	J	1000	280	ug/L	1		300.0	Total/NA
Fluoride	59		50	24	ug/L	1		300.0	Total/NA
Sulfate	31000		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	350000		10000	7800	ug/L	1		SM 2540C	Total/NA

Client Sample ID: MWFGDW2 — Lab Sample ID: 240-111152-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	360		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	1.6		1.0	0.31	ug/L	1		6020A	Total Recoverable
Cadmium	0.25	J	1.0	0.21	ug/L	1		6020A	Total Recoverable
Calcium	53000		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	0.24	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
Lithium	8.2		8.0	1.7	ug/L	1		6020A	Total Recoverable
Selenium	1.2	J	5.0	0.89	ug/L	1		6020A	Total Recoverable
Thallium	0.25	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
Chloride	2300		1000	280	ug/L	1		300.0	Total/NA
Fluoride	82		50	24	ug/L	1		300.0	Total/NA
Sulfate	43000		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	190000		10000	7800	ug/L	1		SM 2540C	Total/NA

Client Sample ID: MW-6R — Lab Sample ID: 240-111152-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	400		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	75000		1000	580	ug/L	1		6020A	Total Recoverable
Chromium	1.5	J B	2.0	0.98	ug/L	1		6020A	Total Recoverable
Cobalt	0.53	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
Lead	1.3		1.0	0.45	ug/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Project/Site: Mount Storm Phase B CCR - (G)

Job ID: 240-111152-2

Client Sample ID: MW-6R (Continued)

Lab Sample ID: 240-111152-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	3.2	J	8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	400	J	1000	280	ug/L	1		300.0	Total/NA
Fluoride	81		50	24	ug/L	1		300.0	Total/NA
Sulfate	12000		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	250000		10000	7800	ug/L	1		SM 2540C	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 240-111152-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.76	J	5.0	0.75	ug/L	1		6020A	Total Recoverable
Barium	110		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	51000		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	0.39	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
Lithium	1.7	J	8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	890	J	1000	280	ug/L	1		300.0	Total/NA
Fluoride	120		50	24	ug/L	1		300.0	Total/NA
Sulfate	48000		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	240000		10000	7800	ug/L	1		SM 2540C	Total/NA

Client Sample ID: MW-10

Lab Sample ID: 240-111152-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	120		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	0.51	J	1.0	0.31	ug/L	1		6020A	Total Recoverable
Calcium	3200		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	3.0		1.0	0.19	ug/L	1		6020A	Total Recoverable
Chloride	620	J	1000	280	ug/L	1		300.0	Total/NA
Fluoride	34	J	50	24	ug/L	1		300.0	Total/NA
Sulfate	6400		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	90000		10000	7800	ug/L	1		SM 2540C	Total/NA

Client Sample ID: MW-12R

Lab Sample ID: 240-111152-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	16		5.0	2.2	ug/L	1		6020A	Total Recoverable
Cobalt	1.7		1.0	0.19	ug/L	1		6020A	Total Recoverable
Chloride	330	J	1000	280	ug/L	1		300.0	Total/NA
Fluoride	25	J	50	24	ug/L	1		300.0	Total/NA
Sulfate	3700		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	53000		10000	7800	ug/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Project/Site: Mount Storm Phase B CCR - (G)

Job ID: 240-111152-2

Client Sample ID: MW-13 — Lab Sample ID: 240-111152-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	81		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	0.77	J	1.0	0.31	ug/L	1		6020A	Total Recoverable
Cadmium	0.43	J	1.0	0.21	ug/L	1		6020A	Total Recoverable
Calcium	6400		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	1.1		1.0	0.19	ug/L	1		6020A	Total Recoverable
Lithium	3.6	J	8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	800	J	1000	280	ug/L	1		300.0	Total/NA
Sulfate	31000		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	78000		10000	7800	ug/L	1		SM 2540C	Total/NA

Client Sample ID: MW-14 — Lab Sample ID: 240-111152-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	88		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	0.62	J	1.0	0.31	ug/L	1		6020A	Total Recoverable
Cadmium	0.31	J	1.0	0.21	ug/L	1		6020A	Total Recoverable
Calcium	11000		1000	580	ug/L	1		6020A	Total Recoverable
Lithium	4.0	J	8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	500	J	1000	280	ug/L	1		300.0	Total/NA
Fluoride	45	J	50	24	ug/L	1		300.0	Total/NA
Sulfate	47000		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	91000		10000	7800	ug/L	1		SM 2540C	Total/NA

Client Sample ID: FIELD BLANK — Lab Sample ID: 240-111152-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	21000		10000	7800	ug/L	1		SM 2540C	Total/NA

Client Sample ID: DUPLICATE — Lab Sample ID: 240-111152-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	340		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	50000		1000	580	ug/L	1		6020A	Total Recoverable
Lithium	7.9	J	8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	2300		1000	280	ug/L	1		300.0	Total/NA
Fluoride	62		50	24	ug/L	1		300.0	Total/NA
Sulfate	45000		1000	350	ug/L	1		300.0	Total/NA
Total Dissolved Solids	210000		10000	7800	ug/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-22
Lab Sample ID: 240-111152-1

Date Collected: 04/16/19 08:45
Matrix: Water
Date Received: 04/18/19 09:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 11:44	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:01	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:01	1
Barium	**320**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:01	1
Beryllium	**1.0**		1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:01	1
Cadmium	<0.21		1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:01	1
Calcium	**110000**		1000	580	ug/L		04/19/19 14:00	04/26/19 01:01	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:01	1
Cobalt	**0.64**	**J**	1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:01	1
Lead	**0.45**	**J**	1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:01	1
Lithium	**9.2**		8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:01	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:01	1
Selenium	**0.92**	**J**	5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:01	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:01	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/22/19 18:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**810**	**J**	1000	280	ug/L			04/23/19 22:58	1
Fluoride	**59**		50	24	ug/L			04/23/19 22:58	1
Sulfate	**31000**		1000	350	ug/L			04/23/19 22:58	1
Total Dissolved Solids	**350000**		10000	7800	ug/L			04/22/19 10:40	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.145**		0.0785	0.0796	1.00	0.0969	pCi/L	06/05/19 09:32	07/22/19 21:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.9*		*40 - 110*	*06/05/19 09:32*	*07/22/19 21:18*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.200	U	0.310	0.310	1.00	0.521	pCi/L	06/05/19 11:06	07/08/19 09:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.9*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:43*	*1*
Y Carrier	*80.7*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:43*	*1*

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-22
Lab Sample ID: 240-111152-1
Date Collected: 04/16/19 08:45
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.345	U	0.320	0.320	5.00	0.521	pCi/L		07/24/19 10:56	1

Client Sample ID: MWFGDW2
Lab Sample ID: 240-111152-2

Date Collected: 04/16/19 08:42
Matrix: Water

Date Received: 04/18/19 09:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 12:05	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:12	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:12	1
Barium	**360**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:12	1
Beryllium	**1.6**		1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:12	1
Cadmium	**0.25**	**J**	1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:12	1
Calcium	**53000**		1000	580	ug/L		04/19/19 14:00	04/26/19 01:12	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:12	1
Cobalt	**0.24**	**J**	1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:12	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:12	1
Lithium	**8.2**		8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:12	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:12	1
Selenium	**1.2**	**J**	5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:12	1
Thallium	**0.25**	**J**	1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:12	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/22/19 18:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2300**		1000	280	ug/L			04/23/19 23:59	1
Fluoride	**82**		50	24	ug/L			04/23/19 23:59	1
Sulfate	**43000**		1000	350	ug/L			04/23/19 23:59	1
Total Dissolved Solids	**190000**		10000	7800	ug/L			04/22/19 10:40	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0678	U	0.0612	0.0615	1.00	0.0928	pCi/L	06/05/19 09:32	07/22/19 21:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*06/05/19 09:32*	*07/22/19 21:21*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.452**		0.256	0.260	1.00	0.382	pCi/L	06/05/19 11:06	07/08/19 09:44	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:44*	*1*
Y Carrier	*87.5*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:44*	*1*

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MWFGDW2
Lab Sample ID: 240-111152-2
Date Collected: 04/16/19 08:42
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.520		0.263	0.267	5.00	0.382	pCi/L		07/24/19 10:56	1

Client Sample ID: MW-6R
Date Collected: 04/16/19 10:37
Date Received: 04/18/19 09:45

Lab Sample ID: 240-111152-4
Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 12:38	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:21	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:21	1
Barium	**400**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:21	1
Beryllium	<0.31		1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:21	1
Cadmium	<0.21		1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:21	1
Calcium	**75000**		1000	580	ug/L		04/19/19 14:00	04/26/19 01:21	1
Chromium	**1.5**	**J B**	2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:21	1
Cobalt	**0.53**	**J**	1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:21	1
Lead	**1.3**		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:21	1
Lithium	**3.2**	**J**	8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:21	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:21	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:21	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:21	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/22/19 18:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**400**	**J**	1000	280	ug/L			04/24/19 00:39	1
Fluoride	**81**		50	24	ug/L			04/24/19 00:39	1
Sulfate	**12000**		1000	350	ug/L			04/24/19 00:39	1
Total Dissolved Solids	**250000**		10000	7800	ug/L			04/22/19 10:40	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.184**		0.0915	0.0929	1.00	0.109	pCi/L	06/05/19 09:32	07/22/19 21:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.5*		*40 - 110*	*06/05/19 09:32*	*07/22/19 21:22*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.437	U	0.352	0.354	1.00	0.563	pCi/L	06/05/19 11:06	07/08/19 09:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.5*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:49*	*1*
Y Carrier	*84.1*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:49*	*1*

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-6R
Lab Sample ID: 240-111152-4
Date Collected: 04/16/19 10:37
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.622		0.364	0.366	5.00	0.563	pCi/L		07/24/19 10:56	1

Client Sample ID: MW-7
Lab Sample ID: 240-111152-5

Date Collected: 04/16/19 12:15
Matrix: Water
Date Received: 04/18/19 09:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 12:42	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:24	1
Arsenic	**0.76**	**J**	5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:24	1
Barium	**110**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:24	1
Beryllium	<0.31		1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:24	1
Cadmium	<0.21		1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:24	1
Calcium	**51000**		1000	580	ug/L		04/19/19 14:00	04/26/19 01:24	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:24	1
Cobalt	**0.39**	**J**	1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:24	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:24	1
Lithium	**1.7**	**J**	8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:24	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:24	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:24	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:24	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/23/19 12:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**890**	**J**	1000	280	ug/L			04/24/19 00:59	1
Fluoride	**120**		50	24	ug/L			04/24/19 00:59	1
Sulfate	**48000**		1000	350	ug/L			04/24/19 00:59	1
Total Dissolved Solids	**240000**		10000	7800	ug/L			04/22/19 10:40	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0795	U	0.0659	0.0663	1.00	0.0967	pCi/L	06/05/19 09:32	07/22/19 21:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.6*		*40 - 110*	*06/05/19 09:32*	*07/22/19 21:22*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.176	U	0.274	0.275	1.00	0.461	pCi/L	06/05/19 11:06	07/08/19 09:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.6*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:49*	*1*
Y Carrier	*86.4*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:49*	*1*

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-7
Lab Sample ID: 240-111152-5
Date Collected: 04/16/19 12:15
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.256	U	0.282	0.283	5.00	0.461	pCi/L		07/24/19 10:56	1

Client Sample ID: MW-10
Date Collected: 04/16/19 14:10
Date Received: 04/18/19 09:45

Lab Sample ID: 240-111152-7
Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 12:50	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:29	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:29	1
Barium	**120**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:29	1
Beryllium	**0.51**	**J**	1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:29	1
Cadmium	<0.21		1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:29	1
Calcium	**3200**		1000	580	ug/L		04/19/19 14:00	04/26/19 01:29	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:29	1
Cobalt	**3.0**		1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:29	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:29	1
Lithium	<1.7		8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:29	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:29	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:29	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:29	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/23/19 12:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**620**	**J**	1000	280	ug/L			04/24/19 02:20	1
Fluoride	**34**	**J**	50	24	ug/L			04/24/19 15:28	1
Sulfate	**6400**		1000	350	ug/L			04/24/19 02:20	1
Total Dissolved Solids	**90000**		10000	7800	ug/L			04/22/19 10:40	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.184**		0.0965	0.0979	1.00	0.122	pCi/L	06/05/19 09:32	07/22/19 21:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.0*		*40 - 110*	*06/05/19 09:32*	*07/22/19 21:30*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.139	U	0.333	0.333	1.00	0.567	pCi/L	06/05/19 11:06	07/08/19 09:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.0*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:49*	*1*
Y Carrier	*84.1*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:49*	*1*

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-10
Lab Sample ID: 240-111152-7

Date Collected: 04/16/19 14:10
Matrix: Water

Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.323	U	0.347	0.347	5.00	0.567	pCi/L		07/24/19 10:56	1

Client Sample ID: MW-12R
Lab Sample ID: 240-111152-8

Date Collected: 04/16/19 09:52
Matrix: Water
Date Received: 04/18/19 09:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 12:55	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:31	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:31	1
Barium	**16**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:31	1
Beryllium	<0.31		1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:31	1
Cadmium	<0.21		1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:31	1
Calcium	<580		1000	580	ug/L		04/19/19 14:00	04/26/19 01:31	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:31	1
Cobalt	**1.7**		1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:31	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:31	1
Lithium	<1.7		8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:31	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:31	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:31	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:31	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/23/19 12:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**330**	**J**	1000	280	ug/L			04/24/19 02:40	1
Fluoride	**25**	**J**	50	24	ug/L			04/24/19 15:49	1
Sulfate	**3700**		1000	350	ug/L			04/24/19 02:40	1
Total Dissolved Solids	**53000**		10000	7800	ug/L			04/22/19 10:40	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.132**		0.0706	0.0716	1.00	0.0816	pCi/L	06/05/19 09:32	07/22/19 21:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.8*		*40 - 110*	*06/05/19 09:32*	*07/22/19 21:31*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.262	U	0.289	0.290	1.00	0.474	pCi/L	06/05/19 11:06	07/08/19 09:50	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.8*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:50*	*1*
Y Carrier	*87.5*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:50*	*1*

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-12R
Lab Sample ID: 240-111152-8
Date Collected: 04/16/19 09:52
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.394	U	0.297	0.299	5.00	0.474	pCi/L		07/24/19 10:56	1

Client Sample ID: MW-13
Lab Sample ID: 240-111152-9

Date Collected: 04/16/19 10:10
Matrix: Water
Date Received: 04/18/19 09:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 12:59	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:33	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:33	1
Barium	**81**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:33	1
Beryllium	**0.77**	**J**	1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:33	1
Cadmium	**0.43**	**J**	1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:33	1
Calcium	**6400**		1000	580	ug/L		04/19/19 14:00	04/26/19 01:33	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:33	1
Cobalt	**1.1**		1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:33	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:33	1
Lithium	**3.6**	**J**	8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:33	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:33	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:33	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:33	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/23/19 12:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**800**	**J**	1000	280	ug/L			04/24/19 03:00	1
Fluoride	<24		50	24	ug/L			04/24/19 16:10	1
Sulfate	**31000**		1000	350	ug/L			04/24/19 03:00	1
Total Dissolved Solids	**78000**		10000	7800	ug/L			04/22/19 14:46	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.286**		0.111	0.114	1.00	0.125	pCi/L	06/05/19 09:32	07/22/19 21:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.9*		*40 - 110*	*06/05/19 09:32*	*07/22/19 21:31*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.408	U	0.287	0.289	1.00	0.446	pCi/L	06/05/19 11:06	07/08/19 09:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.9*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:51*	*1*
Y Carrier	*89.3*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:51*	*1*

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-13
Lab Sample ID: 240-111152-9
Date Collected: 04/16/19 10:10
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.694		0.308	0.311	5.00	0.446	pCi/L		07/24/19 10:56	1

Client Sample ID: MW-14
Date Collected: 04/16/19 11:07
Date Received: 04/18/19 09:45

Lab Sample ID: 240-111152-10
Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 13:11	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:36	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:36	1
Barium	**88**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:36	1
Beryllium	**0.62**	**J**	1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:36	1
Cadmium	**0.31**	**J**	1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:36	1
Calcium	**11000**		1000	580	ug/L		04/19/19 14:00	04/26/19 01:36	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:36	1
Cobalt	<0.19		1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:36	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:36	1
Lithium	**4.0**	**J**	8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:36	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:36	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:36	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:36	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/23/19 12:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**500**	**J**	1000	280	ug/L			04/24/19 03:20	1
Fluoride	**45**	**J**	50	24	ug/L			04/24/19 16:30	1
Sulfate	**47000**		1000	350	ug/L			04/24/19 03:20	1
Total Dissolved Solids	**91000**		10000	7800	ug/L			04/22/19 14:46	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.155**		0.0868	0.0879	1.00	0.113	pCi/L	06/05/19 09:32	07/22/19 21:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.0*		*40 - 110*	*06/05/19 09:32*	*07/22/19 21:31*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.245	U	0.258	0.259	1.00	0.421	pCi/L	06/05/19 11:06	07/08/19 09:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.0*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:51*	*1*
Y Carrier	*83.7*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:51*	*1*

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-14
Lab Sample ID: 240-111152-10
Date Collected: 04/16/19 11:07
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.400	U	0.272	0.274	5.00	0.421	pCi/L		07/24/19 10:56	1

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-111152-15

Date Collected: 04/16/19 14:45
Matrix: Water
Date Received: 04/18/19 09:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 13:33	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:40	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:40	1
Barium	<2.2		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:40	1
Beryllium	<0.31		1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:40	1
Cadmium	<0.21		1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:40	1
Calcium	<580		1000	580	ug/L		04/19/19 14:00	04/26/19 01:40	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:40	1
Cobalt	<0.19		1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:40	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:40	1
Lithium	<1.7		8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:40	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:40	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:40	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:40	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/23/19 12:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<280		1000	280	ug/L			04/25/19 20:09	1
Fluoride	<24		50	24	ug/L			04/25/19 20:09	1
Sulfate	<350		1000	350	ug/L			04/25/19 20:09	1
Total Dissolved Solids	**21000**		10000	7800	ug/L			04/22/19 14:46	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00905	U	0.0464	0.0465	1.00	0.102	pCi/L	06/05/19 09:32	07/23/19 06:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.6*		*40 - 110*	*06/05/19 09:32*	*07/23/19 06:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0672	U	0.246	0.246	1.00	0.430	pCi/L	06/05/19 11:06	07/08/19 09:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.6*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:52*	*1*
Y Carrier	*83.0*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:52*	*1*

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-111152-15
Date Collected: 04/16/19 14:45
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0582	U	0.250	0.250	5.00	0.430	pCi/L		07/24/19 10:56	1

Client Sample ID: DUPLICATE
Lab Sample ID: 240-111152-16

Date Collected: 04/16/19 09:15
Matrix: Water
Date Received: 04/18/19 09:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 13:37	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 01:43	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 01:43	1
Barium	**340**		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 01:43	1
Beryllium	<0.31		1.0	0.31	ug/L		04/19/19 14:00	04/26/19 01:43	1
Cadmium	<0.21		1.0	0.21	ug/L		04/19/19 14:00	04/26/19 01:43	1
Calcium	**50000**		1000	580	ug/L		04/19/19 14:00	04/26/19 01:43	1
Chromium	<0.98		2.0	0.98	ug/L		04/19/19 14:00	04/26/19 01:43	1
Cobalt	<0.19		1.0	0.19	ug/L		04/19/19 14:00	04/26/19 01:43	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 01:43	1
Lithium	**7.9**	**J**	8.0	1.7	ug/L		04/19/19 14:00	04/26/19 01:43	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 01:43	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 01:43	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 01:43	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/23/19 12:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2300**		1000	280	ug/L			04/25/19 20:30	1
Fluoride	**62**		50	24	ug/L			04/25/19 20:30	1
Sulfate	**45000**		1000	350	ug/L			04/25/19 20:30	1
Total Dissolved Solids	**210000**		10000	7800	ug/L			04/22/19 14:46	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.116	U	0.0925	0.0931	1.00	0.140	pCi/L	06/05/19 09:32	07/23/19 06:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.5*		*40 - 110*	*06/05/19 09:32*	*07/23/19 06:59*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.251	U	0.268	0.269	1.00	0.438	pCi/L	06/05/19 11:06	07/08/19 09:52	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.5*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:52*	*1*
Y Carrier	*86.0*		*40 - 110*	*06/05/19 11:06*	*07/08/19 09:52*	*1*

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: DUPLICATE
Lab Sample ID: 240-111152-16
Date Collected: 04/16/19 09:15
Matrix: Water
Date Received: 04/18/19 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.367	U	0.284	0.285	5.00	0.438	pCi/L		07/24/19 10:56	1

Tracer/Carrier Summary

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Method: 9315 - Radium-226 (GFPC)

Matrix: Water
Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
240-111152-1	MW-22	87.9
240-111152-1 MS	MW-22	86.2
240-111152-1 MSD	MW-22	92.1
240-111152-2	MWFGDW2	93.8
240-111152-4	MW-6R	93.5
240-111152-5	MW-7	98.6
240-111152-7	MW-10	91.0
240-111152-8	MW-12R	95.8
240-111152-9	MW-13	87.9
240-111152-10	MW-14	96.0
240-111152-15	FIELD BLANK	94.6
240-111152-16	DUPLICATE	95.5
LCS 160-430886/1-A	Lab Control Sample	101
MB 160-430886/24-A	Method Blank	96.3

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water
Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
240-111152-1	MW-22	87.9	80.7
240-111152-1 MS	MW-22	86.2	86.0
240-111152-1 MSD	MW-22	92.1	82.2
240-111152-2	MWFGDW2	93.8	87.5
240-111152-4	MW-6R	93.5	84.1
240-111152-5	MW-7	98.6	86.4
240-111152-7	MW-10	91.0	84.1
240-111152-8	MW-12R	95.8	87.5
240-111152-9	MW-13	87.9	89.3
240-111152-10	MW-14	96.0	83.7
240-111152-15	FIELD BLANK	94.6	83.0
240-111152-16	DUPLICATE	95.5	86.0
LCS 160-430946/1-A	Lab Control Sample	101	87.5
MB 160-430946/24-A	Method Blank	96.3	83.4

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-377329/1-A
Matrix: Water
Analysis Batch: 377736

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		04/19/19 14:00	04/22/19 11:36	1

Lab Sample ID: LCS 240-377329/2-A
Matrix: Water
Analysis Batch: 377736

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	1030		ug/L		103	80 - 120

Lab Sample ID: 240-111152-1 MS
Matrix: Water
Analysis Batch: 377736

Client Sample ID: MW-22
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	<23		1000	1090		ug/L		109	75 - 125

Lab Sample ID: 240-111152-1 MSD
Matrix: Water
Analysis Batch: 377736

Client Sample ID: MW-22
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	<23		1000	1090		ug/L		109	75 - 125	1	20

Lab Sample ID: 240-111152-2 MS
Matrix: Water
Analysis Batch: 377736

Client Sample ID: MWFGDW2
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	<23		1000	1050		ug/L		105	75 - 125

Lab Sample ID: 240-111152-2 MSD
Matrix: Water
Analysis Batch: 377736

Client Sample ID: MWFGDW2
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	<23		1000	1080		ug/L		108	75 - 125	3	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-377329/1-A
Matrix: Water
Analysis Batch: 378408

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		04/19/19 14:00	04/26/19 00:56	1
Arsenic	<0.75		5.0	0.75	ug/L		04/19/19 14:00	04/26/19 00:56	1
Barium	<2.2		5.0	2.2	ug/L		04/19/19 14:00	04/26/19 00:56	1
Beryllium	<0.31		1.0	0.31	ug/L		04/19/19 14:00	04/26/19 00:56	1
Cadmium	<0.21		1.0	0.21	ug/L		04/19/19 14:00	04/26/19 00:56	1
Calcium	<580		1000	580	ug/L		04/19/19 14:00	04/26/19 00:56	1

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

Lab Sample ID: MB 240-377329/1-A
Matrix: Water
Analysis Batch: 378408

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	1.74	J	2.0	0.98	ug/L		04/19/19 14:00	04/26/19 00:56	1
Cobalt	<0.19		1.0	0.19	ug/L		04/19/19 14:00	04/26/19 00:56	1
Lead	<0.45		1.0	0.45	ug/L		04/19/19 14:00	04/26/19 00:56	1
Lithium	<1.7		8.0	1.7	ug/L		04/19/19 14:00	04/26/19 00:56	1
Molybdenum	<1.1		10	1.1	ug/L		04/19/19 14:00	04/26/19 00:56	1
Selenium	<0.89		5.0	0.89	ug/L		04/19/19 14:00	04/26/19 00:56	1
Thallium	<0.20		1.0	0.20	ug/L		04/19/19 14:00	04/26/19 00:56	1

Lab Sample ID: LCS 240-377329/3-A
Matrix: Water
Analysis Batch: 378408

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	100	96.4		ug/L		96	80 - 120
Arsenic	1000	977		ug/L		98	80 - 120
Barium	1000	1010		ug/L		101	80 - 120
Beryllium	1000	1040		ug/L		104	80 - 120
Cadmium	1000	958		ug/L		96	80 - 120
Calcium	10000	9610		ug/L		96	80 - 120
Chromium	1000	969		ug/L		97	80 - 120
Cobalt	1000	986		ug/L		99	80 - 120
Lead	1000	999		ug/L		100	80 - 120
Molybdenum	100	99.8		ug/L		100	80 - 120
Selenium	1000	964		ug/L		96	80 - 120
Thallium	250	250		ug/L		100	80 - 120

Lab Sample ID: 240-111152-1 MS
Matrix: Water
Analysis Batch: 378408

Client Sample ID: MW-22
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	<0.57		100	102		ug/L		102	75 - 125
Arsenic	<0.75		1000	998		ug/L		100	75 - 125
Barium	320		1000	1360		ug/L		104	75 - 125
Beryllium	1.0		1000	1080		ug/L		108	75 - 125
Cadmium	<0.21		1000	985		ug/L		98	75 - 125
Calcium	110000		10000	121000	4	ug/L		78	75 - 125
Chromium	<0.98		1000	990		ug/L		99	75 - 125
Cobalt	0.64	J	1000	995		ug/L		99	75 - 125
Lead	0.45	J	1000	1030		ug/L		103	75 - 125
Molybdenum	<1.1		100	105		ug/L		105	75 - 125
Selenium	0.92	J	1000	996		ug/L		99	75 - 125
Thallium	<0.20		250	256		ug/L		102	75 - 125

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

Lab Sample ID: 240-111152-1 MSD
Matrix: Water
Analysis Batch: 378408

Client Sample ID: MW-22
Prep Type: Total Recoverable
Prep Batch: 377329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	<0.57		100	104		ug/L		104	75 - 125	1	20
Arsenic	<0.75		1000	1030		ug/L		103	75 - 125	3	20
Barium	320		1000	1420		ug/L		110	75 - 125	4	20
Beryllium	1.0		1000	1110		ug/L		111	75 - 125	4	20
Cadmium	<0.21		1000	999		ug/L		100	75 - 125	1	20
Calcium	110000		10000	124000	4	ug/L		109	75 - 125	3	20
Chromium	<0.98		1000	1030		ug/L		103	75 - 125	4	20
Cobalt	0.64	J	1000	1030		ug/L		103	75 - 125	3	20
Lead	0.45	J	1000	1020		ug/L		102	75 - 125	0	20
Molybdenum	<1.1		100	108		ug/L		108	75 - 125	3	20
Selenium	0.92	J	1000	990		ug/L		99	75 - 125	1	20
Thallium	<0.20		250	256		ug/L		102	75 - 125	0	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-377338/1-A
Matrix: Water
Analysis Batch: 377744

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 377338

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.13		0.20	0.13	ug/L		04/19/19 12:00	04/22/19 17:56	1

Lab Sample ID: LCS 240-377338/2-A
Matrix: Water
Analysis Batch: 377744

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 377338

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.16		ug/L		103	80 - 120

Lab Sample ID: 240-111152-1 MS
Matrix: Water
Analysis Batch: 377744

Client Sample ID: MW-22
Prep Type: Total/NA
Prep Batch: 377338

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	<0.13		1.00	1.11		ug/L		111	80 - 120

Lab Sample ID: 240-111152-1 MSD
Matrix: Water
Analysis Batch: 377744

Client Sample ID: MW-22
Prep Type: Total/NA
Prep Batch: 377338

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	<0.13		1.00	1.07		ug/L		107	80 - 120	4	20

Lab Sample ID: 240-111152-2 MS
Matrix: Water
Analysis Batch: 377744

Client Sample ID: MWFGDW2
Prep Type: Total/NA
Prep Batch: 377338

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	<0.13		1.00	1.11		ug/L		111	80 - 120

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

Lab Sample ID: 240-111152-2 MSD
Matrix: Water
Analysis Batch: 377744

Client Sample ID: MWFGDW2
Prep Type: Total/NA
Prep Batch: 377338

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	<0.13		1.00	0.988		ug/L		99	80 - 120	11	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-377904/3
Matrix: Water
Analysis Batch: 377904

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<280		1000	280	ug/L			04/23/19 22:18	1
Fluoride	<24		50	24	ug/L			04/23/19 22:18	1
Sulfate	<350		1000	350	ug/L			04/23/19 22:18	1

Lab Sample ID: LCS 240-377904/4
Matrix: Water
Analysis Batch: 377904

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50000	50300		ug/L		101	90 - 110
Fluoride	2500	2640		ug/L		106	90 - 110
Sulfate	50000	51300		ug/L		103	90 - 110

Lab Sample ID: 240-111152-1 MS
Matrix: Water
Analysis Batch: 377904

Client Sample ID: MW-22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	810	J	50000	53400		ug/L		105	80 - 120
Fluoride	59		2500	2750		ug/L		108	80 - 120
Sulfate	31000		50000	82600		ug/L		102	80 - 120

Lab Sample ID: 240-111152-1 MSD
Matrix: Water
Analysis Batch: 377904

Client Sample ID: MW-22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	810	J	50000	53900		ug/L		106	80 - 120	1	15
Fluoride	59		2500	2790		ug/L		109	80 - 120	1	15
Sulfate	31000		50000	83300		ug/L		104	80 - 120	1	15

Lab Sample ID: 240-111152-10 MS
Matrix: Water
Analysis Batch: 377904

Client Sample ID: MW-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	500	J	50000	53400		ug/L		106	80 - 120
Sulfate	47000		50000	98900		ug/L		103	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 240-111152-10 MSD
Matrix: Water
Analysis Batch: 377904

Client Sample ID: MW-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	500	J	50000	53800		ug/L		107	80 - 120	1	15
Sulfate	47000		50000	99000		ug/L		103	80 - 120	0	15

Lab Sample ID: MB 240-378092/3
Matrix: Water
Analysis Batch: 378092

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<280		1000	280	ug/L			04/24/19 14:47	1
Fluoride	<24		50	24	ug/L			04/24/19 14:47	1
Sulfate	<350		1000	350	ug/L			04/24/19 14:47	1

Lab Sample ID: LCS 240-378092/4
Matrix: Water
Analysis Batch: 378092

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50000	50600		ug/L		101	90 - 110
Fluoride	2500	2470		ug/L		99	90 - 110
Sulfate	50000	51600		ug/L		103	90 - 110

Lab Sample ID: 240-111152-10 MS
Matrix: Water
Analysis Batch: 378092

Client Sample ID: MW-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	520	J	50000	53700		ug/L		106	80 - 120
Fluoride	45	J	2500	2470		ug/L		97	80 - 120
Sulfate	48000		50000	100000		ug/L		104	80 - 120

Lab Sample ID: 240-111152-10 MSD
Matrix: Water
Analysis Batch: 378092

Client Sample ID: MW-14
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	520	J	50000	54000		ug/L		107	80 - 120	1	15
Fluoride	45	J	2500	2540		ug/L		100	80 - 120	3	15
Sulfate	48000		50000	100000		ug/L		104	80 - 120	0	15

Lab Sample ID: MB 240-378331/3
Matrix: Water
Analysis Batch: 378331

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<280		1000	280	ug/L			04/25/19 18:46	1
Fluoride	<24		50	24	ug/L			04/25/19 18:46	1
Sulfate	<350		1000	350	ug/L			04/25/19 18:46	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 240-378331/4
Matrix: Water
Analysis Batch: 378331

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			50000	51200		ug/L		102	90 - 110		
Fluoride			2500	2400		ug/L		96	90 - 110		
Sulfate			50000	52100		ug/L		104	90 - 110		

Lab Sample ID: 240-111152-16 MS
Matrix: Water
Analysis Batch: 378331

Client Sample ID: DUPLICATE
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	2300		50000	54700		ug/L		105	80 - 120		
Fluoride	62		2500	2600		ug/L		101	80 - 120		
Sulfate	45000		50000	95900		ug/L		101	80 - 120		

Lab Sample ID: 240-111152-16 MSD
Matrix: Water
Analysis Batch: 378331

Client Sample ID: DUPLICATE
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	2300		50000	54500		ug/L		104	80 - 120	0	15
Fluoride	62		2500	2620		ug/L		102	80 - 120	1	15
Sulfate	45000		50000	95700		ug/L		101	80 - 120	0	15

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

Lab Sample ID: MB 240-377612/1
Matrix: Water
Analysis Batch: 377612

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<7800		10000	7800	ug/L			04/22/19 10:40	1

Lab Sample ID: LCS 240-377612/2
Matrix: Water
Analysis Batch: 377612

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			201000	187000		ug/L		93	80 - 120		

Lab Sample ID: 240-111152-1 DU
Matrix: Water
Analysis Batch: 377612

Client Sample ID: MW-22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	350000			363000		ug/L				3	20

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

Lab Sample ID: MB 240-377663/1
Matrix: Water
Analysis Batch: 377663

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<7800		10000	7800	ug/L			04/22/19 14:46	1

Lab Sample ID: LCS 240-377663/2
Matrix: Water
Analysis Batch: 377663

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			201000	217000		ug/L		108	80 - 120		

Lab Sample ID: 240-111152-B-13 DU
Matrix: Water
Analysis Batch: 377663

Client Sample ID: 240-111152-B-13 DU
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	190000			177000		ug/L				8	20

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-430886/24-A
Matrix: Water
Analysis Batch: 436097

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430886

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04720	U	0.0661	0.0662	1.00	0.112	pCi/L	06/05/19 09:32	07/23/19 10:14	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.3*		*40 - 110*	*06/05/19 09:32*	*07/23/19 10:14*	*1*

Lab Sample ID: LCS 160-430886/1-A
Matrix: Water
Analysis Batch: 435773

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430886

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.093		0.947	1.00	0.0720	pCi/L	80	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*

Lab Sample ID: 240-111152-1 MS
Matrix: Water
Analysis Batch: 435773

Client Sample ID: MW-22
Prep Type: Total/NA
Prep Batch: 430886

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226	0.145		11.3	9.764		1.02	1.00	0.0913	pCi/L	85	75 - 138		

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

Lab Sample ID: 240-111152-1 MS
Matrix: Water
Analysis Batch: 435773

Client Sample ID: MW-22
Prep Type: Total/NA
Prep Batch: 430886

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	86.2		40 - 110

Lab Sample ID: 240-111152-1 MSD
Matrix: Water
Analysis Batch: 435774

Client Sample ID: MW-22
Prep Type: Total/NA
Prep Batch: 430886

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.145		11.3	9.050		0.949	1.00	0.106	pCi/L	78	75 - 138	0.36	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	92.1		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-430946/24-A
Matrix: Water
Analysis Batch: 434008

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430946

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2219	U	0.269	0.270	1.00	0.445	pCi/L	06/05/19 11:06	07/08/19 09:46	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	96.3		40 - 110	06/05/19 11:06	07/08/19 09:46	1
Y Carrier	83.4		40 - 110	06/05/19 11:06	07/08/19 09:46	1

Lab Sample ID: LCS 160-430946/1-A
Matrix: Water
Analysis Batch: 434009

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430946

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.04	8.616		1.02	1.00	0.375	pCi/L	95	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	101		40 - 110
Y Carrier	87.5		40 - 110

Lab Sample ID: 240-111152-1 MS
Matrix: Water
Analysis Batch: 434009

Client Sample ID: MW-22
Prep Type: Total/NA
Prep Batch: 430946

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228	0.200	U	9.04	10.24		1.22	1.00	0.489	pCi/L	111	45 - 150		

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

Lab Sample ID: 240-111152-1 MS
Matrix: Water
Analysis Batch: 434009

Client Sample ID: MW-22
Prep Type: Total/NA
Prep Batch: 430946

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	86.2		40 - 110
Y Carrier	86.0		40 - 110

Lab Sample ID: 240-111152-1 MSD
Matrix: Water
Analysis Batch: 434009

Client Sample ID: MW-22
Prep Type: Total/NA
Prep Batch: 430946

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.200	U	9.04	9.149		1.11	1.00	0.425	pCi/L	99	45 - 150	0.47	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	92.1		40 - 110
Y Carrier	82.2		40 - 110

Metals

Prep Batch: 377329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total Recoverable	Water	3005A	
240-111152-2	MWFGDW2	Total Recoverable	Water	3005A	
240-111152-4	MW-6R	Total Recoverable	Water	3005A	
240-111152-5	MW-7	Total Recoverable	Water	3005A	
240-111152-7	MW-10	Total Recoverable	Water	3005A	
240-111152-8	MW-12R	Total Recoverable	Water	3005A	
240-111152-9	MW-13	Total Recoverable	Water	3005A	
240-111152-10	MW-14	Total Recoverable	Water	3005A	
240-111152-15	FIELD BLANK	Total Recoverable	Water	3005A	
240-111152-16	DUPLICATE	Total Recoverable	Water	3005A	
MB 240-377329/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-377329/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-377329/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-111152-1 MS	MW-22	Total Recoverable	Water	3005A	
240-111152-1 MS	MW-22	Total Recoverable	Water	3005A	
240-111152-1 MSD	MW-22	Total Recoverable	Water	3005A	
240-111152-1 MSD	MW-22	Total Recoverable	Water	3005A	
240-111152-2 MS	MWFGDW2	Total Recoverable	Water	3005A	
240-111152-2 MSD	MWFGDW2	Total Recoverable	Water	3005A	

Prep Batch: 377338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total/NA	Water	7470A	
240-111152-2	MWFGDW2	Total/NA	Water	7470A	
240-111152-4	MW-6R	Total/NA	Water	7470A	
240-111152-5	MW-7	Total/NA	Water	7470A	
240-111152-7	MW-10	Total/NA	Water	7470A	
240-111152-8	MW-12R	Total/NA	Water	7470A	
240-111152-9	MW-13	Total/NA	Water	7470A	
240-111152-10	MW-14	Total/NA	Water	7470A	
240-111152-15	FIELD BLANK	Total/NA	Water	7470A	
240-111152-16	DUPLICATE	Total/NA	Water	7470A	
MB 240-377338/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-377338/2-A	Lab Control Sample	Total/NA	Water	7470A	
240-111152-1 MS	MW-22	Total/NA	Water	7470A	
240-111152-1 MSD	MW-22	Total/NA	Water	7470A	
240-111152-2 MS	MWFGDW2	Total/NA	Water	7470A	
240-111152-2 MSD	MWFGDW2	Total/NA	Water	7470A	

Analysis Batch: 377736

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total Recoverable	Water	6010C	377329
240-111152-2	MWFGDW2	Total Recoverable	Water	6010C	377329
240-111152-4	MW-6R	Total Recoverable	Water	6010C	377329
240-111152-5	MW-7	Total Recoverable	Water	6010C	377329
240-111152-7	MW-10	Total Recoverable	Water	6010C	377329
240-111152-8	MW-12R	Total Recoverable	Water	6010C	377329
240-111152-9	MW-13	Total Recoverable	Water	6010C	377329
240-111152-10	MW-14	Total Recoverable	Water	6010C	377329
240-111152-15	FIELD BLANK	Total Recoverable	Water	6010C	377329
240-111152-16	DUPLICATE	Total Recoverable	Water	6010C	377329

Metals (Continued)

Analysis Batch: 377736 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-377329/1-A	Method Blank	Total Recoverable	Water	6010C	377329
LCS 240-377329/2-A	Lab Control Sample	Total Recoverable	Water	6010C	377329
240-111152-1 MS	MW-22	Total Recoverable	Water	6010C	377329
240-111152-1 MSD	MW-22	Total Recoverable	Water	6010C	377329
240-111152-2 MS	MWFGDW2	Total Recoverable	Water	6010C	377329
240-111152-2 MSD	MWFGDW2	Total Recoverable	Water	6010C	377329

Analysis Batch: 377744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total/NA	Water	7470A	377338
240-111152-2	MWFGDW2	Total/NA	Water	7470A	377338
240-111152-4	MW-6R	Total/NA	Water	7470A	377338
MB 240-377338/1-A	Method Blank	Total/NA	Water	7470A	377338
LCS 240-377338/2-A	Lab Control Sample	Total/NA	Water	7470A	377338
240-111152-1 MS	MW-22	Total/NA	Water	7470A	377338
240-111152-1 MSD	MW-22	Total/NA	Water	7470A	377338
240-111152-2 MS	MWFGDW2	Total/NA	Water	7470A	377338
240-111152-2 MSD	MWFGDW2	Total/NA	Water	7470A	377338

Analysis Batch: 377989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-5	MW-7	Total/NA	Water	7470A	377338
240-111152-7	MW-10	Total/NA	Water	7470A	377338
240-111152-8	MW-12R	Total/NA	Water	7470A	377338
240-111152-9	MW-13	Total/NA	Water	7470A	377338
240-111152-10	MW-14	Total/NA	Water	7470A	377338
240-111152-15	FIELD BLANK	Total/NA	Water	7470A	377338
240-111152-16	DUPLICATE	Total/NA	Water	7470A	377338

Analysis Batch: 378408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total Recoverable	Water	6020A	377329
240-111152-2	MWFGDW2	Total Recoverable	Water	6020A	377329
240-111152-4	MW-6R	Total Recoverable	Water	6020A	377329
240-111152-5	MW-7	Total Recoverable	Water	6020A	377329
240-111152-7	MW-10	Total Recoverable	Water	6020A	377329
240-111152-8	MW-12R	Total Recoverable	Water	6020A	377329
240-111152-9	MW-13	Total Recoverable	Water	6020A	377329
240-111152-10	MW-14	Total Recoverable	Water	6020A	377329
240-111152-15	FIELD BLANK	Total Recoverable	Water	6020A	377329
240-111152-16	DUPLICATE	Total Recoverable	Water	6020A	377329
MB 240-377329/1-A	Method Blank	Total Recoverable	Water	6020A	377329
LCS 240-377329/3-A	Lab Control Sample	Total Recoverable	Water	6020A	377329
240-111152-1 MS	MW-22	Total Recoverable	Water	6020A	377329
240-111152-1 MSD	MW-22	Total Recoverable	Water	6020A	377329

General Chemistry

Analysis Batch: 377612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 377612 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-2	MWFGDW2	Total/NA	Water	SM 2540C	
240-111152-4	MW-6R	Total/NA	Water	SM 2540C	
240-111152-5	MW-7	Total/NA	Water	SM 2540C	
240-111152-7	MW-10	Total/NA	Water	SM 2540C	
240-111152-8	MW-12R	Total/NA	Water	SM 2540C	
MB 240-377612/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 240-377612/2	Lab Control Sample	Total/NA	Water	SM 2540C	
240-111152-1 DU	MW-22	Total/NA	Water	SM 2540C	

Analysis Batch: 377663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-9	MW-13	Total/NA	Water	SM 2540C	
240-111152-10	MW-14	Total/NA	Water	SM 2540C	
240-111152-15	FIELD BLANK	Total/NA	Water	SM 2540C	
240-111152-16	DUPLICATE	Total/NA	Water	SM 2540C	
MB 240-377663/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 240-377663/2	Lab Control Sample	Total/NA	Water	SM 2540C	
240-111152-B-13 DU	240-111152-B-13 DU	Total/NA	Water	SM 2540C	

Analysis Batch: 377904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total/NA	Water	300.0	
240-111152-2	MWFGDW2	Total/NA	Water	300.0	
240-111152-4	MW-6R	Total/NA	Water	300.0	
240-111152-5	MW-7	Total/NA	Water	300.0	
240-111152-7	MW-10	Total/NA	Water	300.0	
240-111152-8	MW-12R	Total/NA	Water	300.0	
240-111152-9	MW-13	Total/NA	Water	300.0	
240-111152-10	MW-14	Total/NA	Water	300.0	
MB 240-377904/3	Method Blank	Total/NA	Water	300.0	
LCS 240-377904/4	Lab Control Sample	Total/NA	Water	300.0	
240-111152-1 MS	MW-22	Total/NA	Water	300.0	
240-111152-1 MSD	MW-22	Total/NA	Water	300.0	
240-111152-10 MS	MW-14	Total/NA	Water	300.0	
240-111152-10 MSD	MW-14	Total/NA	Water	300.0	

Analysis Batch: 378092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-7	MW-10	Total/NA	Water	300.0	
240-111152-8	MW-12R	Total/NA	Water	300.0	
240-111152-9	MW-13	Total/NA	Water	300.0	
240-111152-10	MW-14	Total/NA	Water	300.0	
MB 240-378092/3	Method Blank	Total/NA	Water	300.0	
LCS 240-378092/4	Lab Control Sample	Total/NA	Water	300.0	
240-111152-10 MS	MW-14	Total/NA	Water	300.0	
240-111152-10 MSD	MW-14	Total/NA	Water	300.0	

Analysis Batch: 378331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-15	FIELD BLANK	Total/NA	Water	300.0	
240-111152-16	DUPLICATE	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 378331 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-378331/3	Method Blank	Total/NA	Water	300.0	
LCS 240-378331/4	Lab Control Sample	Total/NA	Water	300.0	
240-111152-16 MS	DUPLICATE	Total/NA	Water	300.0	
240-111152-16 MSD	DUPLICATE	Total/NA	Water	300.0	

Rad

Prep Batch: 430886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total/NA	Water	PrecSep-21	
240-111152-2	MWFGDW2	Total/NA	Water	PrecSep-21	
240-111152-4	MW-6R	Total/NA	Water	PrecSep-21	
240-111152-5	MW-7	Total/NA	Water	PrecSep-21	
240-111152-7	MW-10	Total/NA	Water	PrecSep-21	
240-111152-8	MW-12R	Total/NA	Water	PrecSep-21	
240-111152-9	MW-13	Total/NA	Water	PrecSep-21	
240-111152-10	MW-14	Total/NA	Water	PrecSep-21	
240-111152-15	FIELD BLANK	Total/NA	Water	PrecSep-21	
240-111152-16	DUPLICATE	Total/NA	Water	PrecSep-21	
MB 160-430886/24-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-430886/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
240-111152-1 MS	MW-22	Total/NA	Water	PrecSep-21	
240-111152-1 MSD	MW-22	Total/NA	Water	PrecSep-21	

Prep Batch: 430946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-111152-1	MW-22	Total/NA	Water	PrecSep_0	
240-111152-2	MWFGDW2	Total/NA	Water	PrecSep_0	
240-111152-4	MW-6R	Total/NA	Water	PrecSep_0	
240-111152-5	MW-7	Total/NA	Water	PrecSep_0	
240-111152-7	MW-10	Total/NA	Water	PrecSep_0	
240-111152-8	MW-12R	Total/NA	Water	PrecSep_0	
240-111152-9	MW-13	Total/NA	Water	PrecSep_0	
240-111152-10	MW-14	Total/NA	Water	PrecSep_0	
240-111152-15	FIELD BLANK	Total/NA	Water	PrecSep_0	
240-111152-16	DUPLICATE	Total/NA	Water	PrecSep_0	
MB 160-430946/24-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-430946/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-111152-1 MS	MW-22	Total/NA	Water	PrecSep_0	
240-111152-1 MSD	MW-22	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-22
Lab Sample ID: 240-111152-1
Date Collected: 04/16/19 08:45
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 11:44	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:01	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377744	04/22/19 18:00	SEM	TAL CAN
Total/NA	Analysis	300.0		1	377904	04/23/19 22:58	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377612	04/22/19 10:40	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	435773	07/22/19 21:18	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434009	07/08/19 09:43	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Client Sample ID: MWFGDW2
Lab Sample ID: 240-111152-2
Date Collected: 04/16/19 08:42
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 12:05	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:12	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377744	04/22/19 18:07	SEM	TAL CAN
Total/NA	Analysis	300.0		1	377904	04/23/19 23:59	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377612	04/22/19 10:40	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	435762	07/22/19 21:21	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434009	07/08/19 09:44	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Client Sample ID: MW-6R
Lab Sample ID: 240-111152-4
Date Collected: 04/16/19 10:37
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 12:38	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:21	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377744	04/22/19 18:15	SEM	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-6R
Lab Sample ID: 240-111152-4
Date Collected: 04/16/19 10:37
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	377904	04/24/19 00:39	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377612	04/22/19 10:40	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	435762	07/22/19 21:22	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434047	07/08/19 09:49	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Client Sample ID: MW-7
Lab Sample ID: 240-111152-5
Date Collected: 04/16/19 12:15
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 12:42	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:24	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377989	04/23/19 12:29	AJC	TAL CAN
Total/NA	Analysis	300.0		1	377904	04/24/19 00:59	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377612	04/22/19 10:40	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	435762	07/22/19 21:22	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434047	07/08/19 09:49	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Client Sample ID: MW-10
Lab Sample ID: 240-111152-7
Date Collected: 04/16/19 14:10
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 12:50	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:29	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377989	04/23/19 12:33	AJC	TAL CAN
Total/NA	Analysis	300.0		1	378092	04/24/19 15:28	JMB	TAL CAN
Total/NA	Analysis	300.0		1	377904	04/24/19 02:20	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377612	04/22/19 10:40	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	435744	07/22/19 21:30	CDR	TAL SL

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-10
Lab Sample ID: 240-111152-7
Date Collected: 04/16/19 14:10
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434047	07/08/19 09:49	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Client Sample ID: MW-12R
Lab Sample ID: 240-111152-8
Date Collected: 04/16/19 09:52
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 12:55	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:31	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377989	04/23/19 12:35	AJC	TAL CAN
Total/NA	Analysis	300.0		1	378092	04/24/19 15:49	JMB	TAL CAN
Total/NA	Analysis	300.0		1	377904	04/24/19 02:40	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377612	04/22/19 10:40	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	435771	07/22/19 21:31	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434047	07/08/19 09:50	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Client Sample ID: MW-13
Lab Sample ID: 240-111152-9
Date Collected: 04/16/19 10:10
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 12:59	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:33	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377989	04/23/19 12:37	AJC	TAL CAN
Total/NA	Analysis	300.0		1	378092	04/24/19 16:10	JMB	TAL CAN
Total/NA	Analysis	300.0		1	377904	04/24/19 03:00	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377663	04/22/19 14:46	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	435771	07/22/19 21:31	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434047	07/08/19 09:51	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: MW-14
Lab Sample ID: 240-111152-10
Date Collected: 04/16/19 11:07
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 13:11	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:36	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377989	04/23/19 12:39	AJC	TAL CAN
Total/NA	Analysis	300.0		1	378092	04/24/19 16:30	JMB	TAL CAN
Total/NA	Analysis	300.0		1	377904	04/24/19 03:20	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377663	04/22/19 14:46	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	435771	07/22/19 21:31	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434047	07/08/19 09:51	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-111152-15
Date Collected: 04/16/19 14:45
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 13:33	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:40	DSH	TAL CAN
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377989	04/23/19 12:56	AJC	TAL CAN
Total/NA	Analysis	300.0		1	378331	04/25/19 20:09	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377663	04/22/19 14:46	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	436097	07/23/19 06:59	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434047	07/08/19 09:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Client Sample ID: DUPLICATE
Lab Sample ID: 240-111152-16
Date Collected: 04/16/19 09:15
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6010C		1	377736	04/22/19 13:37	KLC	TAL CAN
Total Recoverable	Prep	3005A			377329	04/19/19 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020A		1	378408	04/26/19 01:43	DSH	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Client Sample ID: DUPLICATE
Lab Sample ID: 240-111152-16
Date Collected: 04/16/19 09:15
Matrix: Water
Date Received: 04/18/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			377338	04/19/19 12:00	MBB	TAL CAN
Total/NA	Analysis	7470A		1	377989	04/23/19 12:58	AJC	TAL CAN
Total/NA	Analysis	300.0		1	378331	04/25/19 20:30	JWW	TAL CAN
Total/NA	Analysis	SM 2540C		1	377663	04/22/19 14:46	MAC	TAL CAN
Total/NA	Prep	PrecSep-21			430886	06/05/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9315		1	436097	07/23/19 06:59	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430946	06/05/19 11:06	EJQ	TAL SL
Total/NA	Analysis	9320		1	434047	07/08/19 09:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	436182	07/24/19 10:56	SMP	TAL SL

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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

Accreditation/Certification Summary

Client: Golder Associates Inc. Job ID: 240-111152-2
Project/Site: Mount Storm Phase B CCR - (G)

Laboratory: Eurofins TestAmerica, Canton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
West Virginia DEP	State Program	3	210	12-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 2540C		Water	Total Dissolved Solids

Laboratory: Eurofins TestAmerica, St. Louis

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
West Virginia DEP	State Program	3	381	08-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Ra226_Ra228		Water	Combined Radium 226 + 228

Chain of Custody Record 298975

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☒ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Mike Williams	Site Contact: Angela Findley	Date: 4/16/19	COC No:
Company Name: Golder Associates Inc.	Tel/Fax: mwilliams@golder.com	Lab Contact: Eric Long	Carrier: FedEx	1 of 2 COCs
Address: 2108 W. Laburnum Ave. Suite 200	Analysis Turnaround Time			Sampler: P. Trout, M. Taylor
City/State/Zip: Richmond, VA 23227	☐ CALENDAR DAYS ☑ WORKING DAYS			For Lab Use Only:
Phone: (804) 358-7900	TAT if different from Below 10 Days			Walk-in Client:
Fax: (804) 358-2900	☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: Mt. Storm NPDES Phase A&B 15419				Job / SDG No.:
Site: Mt. Storm				
PO # 1911-7239				Analyzed/collected: Time pH cond Temp

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Dissolved Aluminum	Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Lead, Manganese, Mercury, Nickel, Selenium, Thallium	Total Chromium	Chloride, Sulfate	Nitrite + Nitrate N Hazen	TDS	Total Ammonia N Hazen	Sample Specific Notes: Time	pH	cond	Temp
MW-22	4/16/19	0845	G	GW	10 5	Y	Y	X	X	X	X	X	X	X	0843	8.52SU	587 µS/cm	7.9°C
MWFGDW2		0842			5	Y	N	X	X	X	X	X	X	X	0839	6.56SU	315.7 µS/cm	7.1°C
MW-5		1535				Y	N	X	X	X	X	X	X	X	1534	6.15U	171.8 µS/cm	9.5°C
MW-6R		1037				Y	N	X	X	X	X	X	X	X	1036	7.04SU	410.9 µS/cm	9.9°C
MW-7		1215				Y	N	X	X	X	X	X	X	X	1214	7.9SU	316.4 µS/cm	9.5°C
MW-8		1414				Y	N	X	X	X	X	X	X	X	1413	5.47SU	224.9 µS/cm	9.1°C
MW-10		1410				Y	N	X	X	X	X	X	X	X	1409	3.15U	42.7 µS/cm	9.9°C
MW-12R		0952				Y	N	X	X	X	X	X	X	X	0951	4.54SU	25.0 µS/cm	6.8°C
MW-13		1010				Y	N	X	X	X	X	X	X	X	1007	7.41SU	38.2 µS/cm	9.1°C
MW-14		1107				Y	N	X	X	X	X	X	X	X	1105	4.15U	129.3 µS/cm	10.0°C
MWFGDW3		1116				Y	N	X	X	X	X	X	X	X	1115	4.87SU	32.0 µS/cm	8.2°C
MWFGDW4		1153				Y	N	X	X	X	X	X	X	X	1152	4.58SU	30.8 µS/cm	8.3°C

240-111152 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____ | 1,4 | 1,4 | 1,4 | 1,4 | 1,4 | 1,4 | 1,3 | 1,3 |

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Level II Data Package Reporting Group F

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Golder	4/17/19 1000		TAL	04/18/19 945
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Chain of Custody Record

298974

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☒ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Mike Williams	Site Contact: Angela Findley	Date: 4/16/19	COC No:
Company Name: Golder Associates Inc.	Tel/Fax: mwilliams@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	2 of 2 COCs
Address: 2108 W Laburnum Ave Suite 200	Analysis Turnaround Time			Sampler: P. Trout, M. Taylor
City/State/Zip: Richmond, VA 23227	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: (804) 358-7900	TAT if different from Below 10 Days			Walk-in Client:
Fax: (804) 358-2900	☐ 2 weeks			Lab Sampling:
Project Name: Mt. Storm NPDES Phase A&B ISAP	☐ 1 week			
Site: Mt. Storm	☐ 2 days			Job / SDG No.:
P O # 19117239	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Dissolved (Aluminum,	Antimony, Arsenic, Boron	Barium, Beryllium	Cadmium, Copper, Iron	Lead, Manganese, Mercury	Nickel, Selenium	Thallium)	Total Chromium	Chloride, Sulfate	TDS, TSS	Nitrite+Nitrate Nitrogen	Total Ammonia Nitrogen	Analyzed/Collected Time	pH	Cond	Temp
MWFGDW5	4/16/19	1224	G	GW	5	Y	N	X	X	X	X	X	X	X	X	X	X	X	X	1223	4.91su	302.9 us/cm	3.2°C
MWFGDW6	↓	1259	↓	↓	5	Y	N	X	X	X	X	X	X	X	X	X	X	X	X	1258	5.72su	75.9 us/cm	3.7°C
Field Blank	↓	1445	↓	↓	5	N	N	X	X	X	X	X	X	X	X	X	X	X	X	—	—	—	—
Duplicate	↓	0915	↓	↓	5	Y	N	X	X	X	X	X	X	X	X	X	X	X	X	—	—	—	—

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ______ 1,4 | 1,4 | 1,4 | 1,4 | 1,4 | 1,4 | 1,4 | 1,4 | 1 | 1 | 1,3 | 1,3

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for ______ Months

Special Instructions/QC Requirements & Comments: Level II Data Package Reporting Group F

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ______ Corr'd: ______ | Therm ID No.: ______

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Golder	4/17/19 1000	[signature]	TAC	04/18/19 945
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 111152
Canton Facility

Client Golder Site Name

Cooler unpacked by: DD

Cooler Received on 04/18/19 Opened on 04/18/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 14 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: AM

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : 111152

TestAmerica Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	2.6	2.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.0	2.8	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.2	3.0	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.2	4.0	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	1.6	1.4	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	2.2	2.0	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.0	3.8	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	2.2	2.0	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	5.0	4.8	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	~~5.0~~		Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-22	240-111152-A-1	Plastic 250ml - with Sulfuric Acid	<2		
MW-22	240-111152-B-1	Plastic 250ml - with Sulfuric Acid	<2		
MW-22	240-111152-E-1	Plastic 500ml - with Sulfuric Acid	<2		
MW-22	240-111152-F-1	Plastic 500ml - with Sulfuric Acid	<2		
MW-22	240-111152-G-1	Plastic 500ml - with Nitric Acid	<2		
MW-22	240-111152-H-1	Plastic 500ml - with Nitric Acid	<2		
MW-22	240-111152-I-1	Plastic 500ml - with Nitric Acid	<2		
MW-22	240-111152-J-1	Plastic 500ml - with Nitric Acid	<2		
MW-22	240-111152-K-1	Plastic 500ml - w/ Nitric - Dis.	<2		
MW-22	240-111152-L-1	Plastic 500ml - w/ Nitric - Dis.	<2		
MW-22	240-111152-M-1	Plastic 1 liter - Nitric Acid	<2		
MW-22	240-111152-N-1	Plastic 1 liter - Nitric Acid	<2		
MW-22	240-111152-O-1	Plastic 1 liter - Nitric Acid	<2		
MW-22	240-111152-P-1	Plastic 1 liter - Nitric Acid	<2		
MW-22	240-111152-Q-1	Plastic 1 liter - Nitric Acid	<2		
MW-22	240-111152-R-1	Plastic 1 liter - Nitric Acid	<2		
MWFGDW2	240-111152-A-2	Plastic 250ml - with Sulfuric Acid	<2		
MWFGDW2	240-111152-C-2	Plastic 500ml - with Sulfuric Acid	<2		
MWFGDW2	240-111152-D-2	Plastic 500ml - with Nitric Acid	<2		
MWFGDW2	240-111152-E-2	Plastic 500ml - with Nitric Acid	<2		
MWFGDW2	240-111152-F-2	Plastic 500ml - w/ Nitric - Dis.	<2		
MWFGDW2	240-111152-G-2	Plastic 1 liter - Nitric Acid	<2		
MWFGDW2	240-111152-H-2	Plastic 1 liter - Nitric Acid	<2		
MWFGDW2	240-111152-I-2	Plastic 1 liter - Nitric Acid	<2		
MW-5	240-111152-A-3	Plastic 250ml - with Sulfuric Acid	<2		
MW-5	240-111152-C-3	Plastic 500ml - with Sulfuric Acid	<2		
MW-5	240-111152-D-3	Plastic 500ml - with Nitric Acid	<2		
MW-5	240-111152-E-3	Plastic 500ml - with Nitric Acid	<2		
MW-5	240-111152-F-3	Plastic 500ml - w/ Nitric - Dis.	<2		
MW-5	240-111152-G-3	Plastic 1 liter - Nitric Acid	<2		
MW-5	240-111152-H-3	Plastic 1 liter - Nitric Acid	<2		
MW-5	240-111152-I-3	Plastic 1 liter - Nitric Acid	<2		
MW-6R	240-111152-A-4	Plastic 250ml - with Sulfuric Acid	<2		
MW-6R	240-111152-C-4	Plastic 500ml - with Sulfuric Acid	<2		
MW-6R	240-111152-D-4	Plastic 500ml - with Nitric Acid	<2		
MW-6R	240-111152-E-4	Plastic 500ml - with Nitric Acid	<2		
MW-6R	240-111152-F-4	Plastic 500ml - w/ Nitric - Dis.	<2		

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-6R	240-111152-G-4	Plastic 1 liter - Nitric Acid	<2		
MW-6R	240-111152-H-4	Plastic 1 liter - Nitric Acid	<2		
MW-6R	240-111152-I-4	Plastic 1 liter - Nitric Acid	<2		
MW-7	240-111152-A-5	Plastic 250ml - with Sulfuric Acid	<2		
MW-7	240-111152-C-5	Plastic 500ml - with Sulfuric Acid	<2		
MW-7	240-111152-D-5	Plastic 500ml - with Nitric Acid	<2		
MW-7	240-111152-E-5	Plastic 500ml - with Nitric Acid	<2		
MW-7	240-111152-F-5	Plastic 500ml - w/ Nitric - Dis.	<2		
MW-7	240-111152-G-5	Plastic 1 liter - Nitric Acid	<2		
MW-7	240-111152-H-5	Plastic 1 liter - Nitric Acid	<2		
MW-7	240-111152-I-5	Plastic 1 liter - Nitric Acid	<2		
MW-8	240-111152-A-6	Plastic 250ml - with Sulfuric Acid	<2		
MW-8	240-111152-C-6	Plastic 500ml - with Sulfuric Acid	<2		
MW-8	240-111152-D-6	Plastic 500ml - with Nitric Acid	<2		
MW-8	240-111152-E-6	Plastic 500ml - with Nitric Acid	<2		
MW-8	240-111152-F-6	Plastic 500ml - w/ Nitric - Dis.	<2		
MW-8	240-111152-G-6	Plastic 1 liter - Nitric Acid	<2		
MW-8	240-111152-H-6	Plastic 1 liter - Nitric Acid	<2		
MW-8	240-111152-I-6	Plastic 1 liter - Nitric Acid	<2		
MW-10	240-111152-A-7	Plastic 250ml - with Sulfuric Acid	<2		
MW-10	240-111152-C-7	Plastic 500ml - with Sulfuric Acid	<2		
MW-10	240-111152-D-7	Plastic 500ml - with Nitric Acid	<2		
MW-10	240-111152-E-7	Plastic 500ml - with Nitric Acid	<2		
MW-10	240-111152-F-7	Plastic 500ml - w/ Nitric - Dis.	<2		
MW-10	240-111152-G-7	Plastic 1 liter - Nitric Acid	<2		
MW-10	240-111152-H-7	Plastic 1 liter - Nitric Acid	<2		
MW-10	240-111152-I-7	Plastic 1 liter - Nitric Acid	<2		
MW-12R	240-111152-A-8	Plastic 250ml - with Sulfuric Acid	<2		
MW-12R	240-111152-C-8	Plastic 500ml - with Sulfuric Acid	<2		
MW-12R	240-111152-D-8	Plastic 500ml - with Nitric Acid	<2		
MW-12R	240-111152-E-8	Plastic 500ml - with Nitric Acid	<2		
MW-12R	240-111152-F-8	Plastic 500ml - w/ Nitric - Dis.	<2		
MW-12R	240-111152-G-8	Plastic 1 liter - Nitric Acid	<2		
MW-12R	240-111152-H-8	Plastic 1 liter - Nitric Acid	<2		
MW-12R	240-111152-I-8	Plastic 1 liter - Nitric Acid	<2		
MW-13	240-111152-A-9	Plastic 250ml - with Sulfuric Acid	<2		
MW-13	240-111152-C-9	Plastic 500ml - with Sulfuric Acid	<2		
MW-13	240-111152-D-9	Plastic 500ml - with Nitric Acid	<2		
MW-13	240-111152-E-9	Plastic 500ml - with Nitric Acid	<2		

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-13	240-111152-F-9	Plastic 500ml - w/ Nitric - Dis.	<2		
MW-13	240-111152-G-9	Plastic 1 liter - Nitric Acid	<2		
MW-13	240-111152-H-9	Plastic 1 liter - Nitric Acid	<2		
MW-13	240-111152-I-9	Plastic 1 liter - Nitric Acid	<2		
MW-14	240-111152-A-10	Plastic 250ml - with Sulfuric Acid	<2		
MW-14	240-111152-C-10	Plastic 500ml - with Sulfuric Acid	<2		
MW-14	240-111152-D-10	Plastic 500ml - with Nitric Acid	<2		
MW-14	240-111152-E-10	Plastic 500ml - w/ Nitric - Dis.	<2		
MWFGDW3	240-111152-A-11	Plastic 250ml - with Sulfuric Acid	<2		
MWFGDW3	240-111152-C-11	Plastic 500ml - with Sulfuric Acid	<2		
MWFGDW3	240-111152-D-11	Plastic 500ml - with Nitric Acid	<2		
MWFGDW3	240-111152-E-11	Plastic 500ml - w/ Nitric - Dis.	<2		
MWFGDW4	240-111152-A-12	Plastic 250ml - with Sulfuric Acid	<2		
MWFGDW4	240-111152-C-12	Plastic 500ml - with Sulfuric Acid	<2		
MWFGDW4	240-111152-D-12	Plastic 500ml - with Nitric Acid	<2		
MWFGDW4	240-111152-E-12	Plastic 500ml - w/ Nitric - Dis.	<2		
MWFGDW5	240-111152-A-13	Plastic 250ml - with Sulfuric Acid	<2		
MWFGDW5	240-111152-C-13	Plastic 500ml - with Sulfuric Acid	<2		
MWFGDW5	240-111152-D-13	Plastic 500ml - with Nitric Acid	<2		
MWFGDW5	240-111152-E-13	Plastic 500ml - w/ Nitric - Dis.	<2		
MWFGDW6	240-111152-A-14	Plastic 250ml - with Sulfuric Acid	<2		
MWFGDW6	240-111152-C-14	Plastic 500ml - with Sulfuric Acid	<2		
MWFGDW6	240-111152-D-14	Plastic 500ml - with Nitric Acid	<2		
MWFGDW6	240-111152-E-14	Plastic 500ml - with Nitric Acid	<2		
MWFGDW6	240-111152-F-14	Plastic 500ml - w/ Nitric - Dis.	<2		
MWFGDW6	240-111152-G-14	Plastic 1 liter - Nitric Acid	<2		
MWFGDW6	240-111152-H-14	Plastic 1 liter - Nitric Acid	<2		
MWFGDW6	240-111152-I-14	Plastic 1 liter - Nitric Acid	<2		
FIELD BLANK	240-111152-A-15	Plastic 250ml - with Sulfuric Acid	<2		
FIELD BLANK	240-111152-C-15	Plastic 500ml - with Sulfuric Acid	<2		
FIELD BLANK	240-111152-D-15	Plastic 500ml - with Nitric Acid	<2		
FIELD BLANK	240-111152-E-15	Plastic 500ml - with Nitric Acid	<2		
FIELD BLANK	240-111152-F-15	Plastic 500ml - w/ Nitric - Dis.	<2		
FIELD BLANK	240-111152-G-15	Plastic 1 liter - Nitric Acid	<2		
FIELD BLANK	240-111152-H-15	Plastic 1 liter - Nitric Acid	<2		
FIELD BLANK	240-111152-I-15	Plastic 1 liter - Nitric Acid	<2		
DUPLICATE	240-111152-A-16	Plastic 250ml - with Sulfuric Acid	<2		
DUPLICATE	240-111152-C-16	Plastic 500ml - with Sulfuric Acid	<2		
DUPLICATE	240-111152-D-16	Plastic 500ml - with Nitric Acid	<2		

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
DUPLICATE	240-111152-E-16	Plastic 500ml - with Nitric Acid	<2	_____	_____
DUPLICATE	240-111152-F-16	Plastic 500ml - w/ Nitric - Dis.	<2	_____	_____
DUPLICATE	240-111152-G-16	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUPLICATE	240-111152-H-16	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUPLICATE	240-111152-I-16	Plastic 1 liter - Nitric Acid	<2	_____	_____

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

7/25/2019

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-102158.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-111152-1
Address: 13715 Rider Trail North,	Due Date Requested: 4/30/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Mount Storm Power Station	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC	903.0/PrecSep_21 Standard Target List	904.0/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-22 (240-111152-1)	4/16/19	08:45 Eastern		Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	4/18 (552)		MM	4-19-19 08:45	TA SC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-102155.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-111152-1
Address: 13715 Rider Trail North,	Due Date Requested: 4/30/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Mount Storm Power Station	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC	903.0/PrecSep_21 Standard Target List	904.0/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-22 (240-111152-1)	4/16/19	08:45 Eastern		Water			X	X	X	4	
MWFGDW2 (240-111152-2)	4/16/19	08:42 Eastern		Water			X	X	X	3	
MW-5 (240-111152-3)	4/16/19	15:35 Eastern		Water			X	X	X	2	
MW-7 (240-111152-5)	4/16/19	12:15 Eastern		Water			X	X	X	2	
MW-8 (240-111152-6)	4/16/19	14:14 Eastern		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Charles R	4-18-19 1550	240		4-19-19 08:45	TAL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-102157.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-111152-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 4/30/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Mount Storm Power Station	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC	903.0/PrecSep_21 Standard Target List	904.0/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-10 (240-111152-7)	4/16/19	14:10 Eastern		Water			X	X	X	3	
MW-12R (240-111152-8)	4/16/19	09:52 Eastern		Water			X	X	X	3	
MW-13 (240-111152-9)	4/16/19	10:10 Eastern		Water			X	X	X	3	
MW-14 (240-111152-10)	4/16/19	11:07 Eastern		Water			X	X	X	3	
MWFGDW6 (240-111152-14)	4/16/19	12:59 Eastern		Water			X	X	X	3	
FIELD BLANK (240-111152-15)	4/16/19	14:45 Eastern		Water			X	X	X	3	
DUPLICATE (240-111152-16)	4/16/19	09:15 Eastern		Water			X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: Charles Kz	Date/Time: 4-18-19 16:21	Company 240	Received by: Matt
Relinquished by:	Date/Time:	Company	Received by:
Relinquished by:	Date/Time:	Company	Received by:

Date/Time: 4-19-19 08:45	Company TA SL		
Date/Time:	Company		
Date/Time:	Company		

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

7/25/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-102181.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-111152-2
Address: 13715 Rider Trail North, .	Due Date Requested: 5/16/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Mount Storm Phase B CCR - (G)	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC	903.0/PrecSep_21 Standard Target List	904.0/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-22 (240-111152-1)	4/16/19	08:45 Eastern		Water			X	X	X	6	
MW-22 (240-111152-1MS)	4/16/19	08:45 Eastern	MS	Water			X	X	X	1	
MW-22 (240-111152-1MSD)	4/16/19	08:45 Eastern	MSD	Water			X	X	X	1	
MW-6R (240-111152-4)	4/16/19	10:37 Eastern		Water			X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:
Empty Kit Relinquished by:	Date: Time: Method of Shipment:
Relinquished by:	Date/Time: 4/19 1500 Company
Relinquished by:	Date/Time: Company
Relinquished by:	Date/Time: Company
Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:

Received by:	Date/Time:	Company
Michael Thum	4-20-19 08:25	TAL SZ
Received by:	Date/Time:	Company
Received by:	Date/Time:	Company

Cooler Temperature(s) °C and Other Remarks: 10.3c - IR Gun

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-102181.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-111152-3
Address: 13715 Rider Trail North,	Due Date Requested: 5/16/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Mount Storm Phase A CCR - (H)	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC	903.0/PrecSep_21 Standard Target List	904.0/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-22 (240-111152-1)	4/16/19	08:45 Eastern		Water			X	X	X	6	
MW-22 (240-111152-1MS)	4/16/19	08:45 Eastern	MS	Water			X	X	X	1	
MW-22 (240-111152-1MSD)	4/16/19	08:45 Eastern	MSD	Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 4/19 1500	Company	Received by: Michael Flum	Date/Time: 4-20-19 08:25	Company TA STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 10.1 c - IR Gun		

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Golder Associates Inc.

Job Number: 240-111152-2

Login Number: 111152
List Number: 3
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 04/22/19 11:31 AM

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

Project Name: Mount Storm Power Station - Phase B - CCR Appendix III & IV

Project Reference Number: 19117239

Sampling Event Date: April 16, 2019

Review Date: 12/12/2019 *Initials:* RIP

Review Date: 12/26/2019 *Initials:* ALR

Person(s) performing the review are to initial each item on this form as acknowledgement of data acceptance, or as acknowledgement of a review issue. In the case of the latter, a brief explanation should follow the applicable item.

Golder Associates Inc. has reviewed the laboratory certificates of analysis, chain-of-custody form, and laboratory provided sample group quality assurance and quality control data for the above referenced sample group to identify potential bias or inaccuracy, in general accordance with the following United States Environmental Protection Agency (EPA) and Department of Energy (DOE) documents:

- National Functional Guidelines for Organic Superfund Methods Data Review, January 2017;
- National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017;
- Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, July 1988;
- US Department of Energy Evaluation of Radiochemical Data Usability, April 1997; and
- Sampling and Analysis Plan for US Department of Energy Office of Legacy Management Sites.

COMMON ACRONYMS:

- MS = matrix spike
- MSD = matrix spike duplicate
- LCS = laboratory control spike
- RPD = relative percent difference
- MB = method blank
- DUP = duplicate
- FB = field blank
- VSWMR = Virginia Solid Waste Management Regulations
- J = estimated
- ND and/or U= not detected
- COC = chain of custody
- QC = quality control
- µg/L = micrograms per liter
- mg/L = milligrams per liter
- EPA = United States Environmental Protection Agency
- pCi/L = picocuries per liter

COMPLIANCE ANALYTE LIST

☐ Historical VPDES Parameters

☒ CCR Appendix III to Part 257

☒ CCR Appendix IV to Part 257

☐ VSWMR Phase II Parameters: _____

☐ Other: _____

Note: TestAmerica Job No.: 240-111152-2

Golder
2108 West Laburnum Ave, Suite 200
Richmond, Virginia, USA 23227
T: +1 804 358-7900 | F: +1 804 358-2900

1.0 CHAIN OF CUSTODY (COC) REVIEW

Yes COC was properly signed by all parties.

Yes Correct project name and number are on the form.

Yes Sample receipt condition at laboratory was acceptable.

Yes Each sample and blank submitted for analysis appears in the data report.

Note: _____

2.0 SAMPLE HOLDING TIMES

Yes Holding times for extraction *and/or* analysis were met for each analytical method.

Review Criteria		
Method	**Analytes**	**Holding Time**
EPA 300.0	Chloride, Fluoride, Sulfate	28 days
EPA 9315 EPA 9320	Radium 226 Radium 228	6 months
EPA 6000 series	Metals	6 months
SM2540	Total Dissolved Solids	7 days

Notes:_____

3.0 LABORATORY QUALITY CONTROL REVIEW

Yes Laboratory analyzed at least one internal blank for each method, where applicable.

See Note Laboratory blanks were interference free.

Notes: The following table presents method blank detections and their associated sample delivery groups (SDG; batch). In accordance with EPA guidance, associated samples within the same batch have been evaluated using professional judgement. Inorganic data less than 10X the blank concentration may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data (i.e. the highest concentration reported over the last 8 sampling events). Organic data corresponding to blank contamination may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data. Additionally, associated samples for organic common lab contaminants (acetone, MC, and MEK) may be qualified if the results are 2X greater than the detected blank concentration. Associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ) or unusable (R). As presented below, data qualification is recommended.

For radiochemistry data, if the reported absolute value of the method blank is above the minimum detectable concentration (MDC) and no other deficiencies are noted in the associated dataset, detections above the MDC and less than 5 times the concentration reported in the

method blank may be blank qualified "J" in accordance with qualification guidance. As presented below, data qualification was not required.

Parameter	Method Blank Detection (µg/L)	Batch	Associated Qualified Sample(s)	Validator Qualifier
Chromium	1.74 J	378408	MW-6R	J+

NA Surrogate recoveries are provided for each analytical method, where applicable.

NA Surrogate recoveries for each method are within the acceptable limits.

Notes: _____

Yes Tracer and carrier yields are provided for each analytical method, where applicable (Radiochemical Data Only).

Yes Tracer and carrier yields for each method are within the acceptable limits (Radiochemical Data Only).

Notes: _____

Yes MS/MSD/LCS/RPD data results are provided for each analytical method.

Yes MS/MSD/LCS/RPD recoveries for each method are within the acceptable limits.

Notes: _____

Parameter	Recovery Outside QC Limits	Batch	Associated Qualified Sample(s)
--	--	--	--

Yes Minimum Detectable Concentrations (MDCs) are provided for radiological samples.

Yes Radiological samples reported below their respective MDC have been qualified with a “U.”

Notes: _____

Parameter	Associated Samples Below MDC
Radium-226	MWFGDW2, MW-7, FIELD BLANK, DUPLICATE
Radium-228	MW-22, MW-6R, MW-7, MW-10, MW-12R, MW-13, MW-14, FIELD BLANK, DUPLICATE
Total Radium	MW-22, MW-7, MW-10, MW-12R, MW-14, FIELD BLANK, DUPLICATE

4.0 ANALYTE LISTS/METHODS

Yes The proper number of constituents are present for each analyte list as identified above (including detects where applicable).

Yes Proper EPA SW-846 analytical methods were used for analysis.

Notes: _____

5.0 OUTLIER EVALUATION

Yes Analytical results have been evaluated for variances +/- 25% compared to the average of the most recent 8 data points.

Yes Analytical results with variances >25% have been evaluated for trends.

NA If no trends were identified for analytical results with variances >25%, a data quality review (DQR) was conducted for suspect analytical results identified as possible outliers. DQR results summarized below.

Analyte	Location	DQR identified issues?	Re-analysis requested?	Outlier Identification
TDS	Field Blank	Elevated concentration reported. No issues with associated blanks.	No	None

6.0 DATA REPORTING

See Note Trip; field and/or equipment; and laboratory blank results have all been reported and the detected constituents in these blanks, if any, have been qualified using professional judgement where detected in other samples.

Notes: The following table presents field blank detections and associated samples that have been qualified. In accordance with EPA guidance, associated samples have been evaluated using professional judgement. Inorganic data less than 10X the blank concentration may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data (i.e. the highest concentration reported over the last 8 sampling events). Organic data corresponding to blank contamination may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data. Additionally, associated samples for organic common lab contaminants (acetone, MC, and MEK) may be qualified if the results are 2X greater than the detected blank concentration. Associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ) or unusable (R). As presented below, data qualification is not recommended.

Sample ID	Parameter	Blank Detection (µg/L)	Associated Qualified Sample(s)	Validator Qualifier
Field Blank	TDS	21,000	--	--

Yes It is clear from the laboratory report that samples have or have not been diluted during analysis, and if the samples have been diluted, the result is reported as a multiple of the dilution (*e.g.*, a

sample diluted 10x resulting in an analytical detection of 1.0 should be reported as 10).

Yes The report provides the reporting limit for each constituent.

Yes The proper reporting limits have been used (*e.g*. NC Solid Waste Section approved PQLs, or VA DEQ Permit approved detection limits, as appropriate).

Notes: _____

7.0 FIELD DUPLICATE PRECISION

Yes Field duplicate sample results were within control limits of 20% relative percent difference for sample results greater than 5 times the quantitation limit. When one or both results were less than 5 times the quantitation limit, the difference between the two results was less than twice the reporting limit.

Notes: The following table presents field duplicates and their associaed parent samples that were not within control limits. In accordance with EPA guidance, sample results with field duplicate imprecison may be qualified estimated (J) or non-detect estimated (UJ). As presented below, data qualification is not recommended.

Parameter	Associated Samples	Parent Sample Result (ug/L)	Duplicate Sample Result (ug/L)	Renalysis requested?	Outlier Indentification
--	--	--	--	--	--

APPENDIX B

SECOND SEMI-ANNUAL ASSESSMENT MONITORING PROGRAM EVENT FIELD DATA SHEETS, LABORATORY CERTIFICATES OF ANALYSIS, CHAIN-OF-CUSTODY FORMS, AND DATA VALIDATION FORMS

Date: 10/28/19

GOLDER

WELL GAUGING LOG

Project Name: Mt. Storm Power Station Phase A+B Project No./Task No.: 19117239

Sampler(s): P. Trout / K. Weissgerber

Equipment: Water Level Indicator

Well ID	Personnel (initials)	Time	DTW (feet)	DTB (feet)	Well Condition Summary				
					Protective Casing	Well Casing	Label	Lock	Pad Condition
MW-5	KW	1535	38.45	54.25	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☐ Yes ☐ No	☑ OK ☐ Damaged
MW-6R	PT	1408	61.46	74.00	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MW-7	KW	1417	27.49	62.20	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MW-8	PT	1455	51.11	63.53	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MW-10	KW	1432	23.80	64.70	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MW-12R	PT	1414	12.78	30.05	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MW-13	KW	1407	22.78	51.10	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MW-14	KW	1411	33.83	58.85	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MW-22	KW	1350	24.89	65.00	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MWFGDW-2	PT	1351	20.18	28.26	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MWFGDW-3	PT	1424	19.02	—	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MWFGDW-4	PT	1432	30.33	—	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MWFGDW-5	PT	1439	13.91	—	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
MWFGDW-6	PT	1445	20.49	40.23	☑ OK ☐ Damaged	☑ OK ☐ Damaged	☑ OK ☐ Inadequate	☑ Yes ☐ No	☑ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged
					☐ OK ☐ Damaged	☐ OK ☐ Damaged	☐ OK ☐ Inadequate	☐ Yes ☐ No	☐ OK ☐ Damaged

Observations/Notes: _____

Signature: _____ Date: 10/28/19

QA/QC Signature: _____ Date: 11/01/19

GOLDER

MICROPURGE SAMPLING LOG

Date: 10/29/19

Weather: Sun 50s

Project Name: Mt. Storm P.S. Dominion

Project No./Task No.: 19227239

Event: 2SA19 GW Phase A+B CR

Sampler(s): K Wessling

Well ID: MW-22 NPDES

Field Calibration Completed: @ 725 1/29/19

Well Diameter: 2.0 inches

Initial Depth to Water: 24.80 feet

Depth to Bottom: 65.00 feet

Water Column Thickness: _____ feet

Equipment Used:
- [x] WL Indicator
- [x] YSI ProDSS 16M103 53
- [ ] In-Situ _____
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] Dedicated Bladder Pump
- [ ] Non-dedicated BP
- [ ] _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0815	6.16	593	10.2	2.67	9.5	225.0	25.10	200
0820	6.23	592	10.3	2.16	9.5	195.0	25.15	200
0825	6.27	591	10.2	2.03	9.5	183.	25.15	200
0830	6.31	590	9.8	1.96	9.5	174.9	25.15	200
0831				SAMPLED				
0900	6.57	582	9.6	1.90	9.9	139.8	25.18	200

Purge Cycle (End): 22sec/8sec @ 25 psi

Flow Rate (ml/min End): 200

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): 0

Total Purge Volume (Gallons): ~15

Purge Water Management: 0 SI 0/W to CCR or

Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample

Purge Start at 0807

Sample Time: 0831

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

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [x] CCR Appendix III
- [x] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [x] Phase A IV Detects (As, Ba, [illegible] Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems: _____

Sampler Signature: Kevin Wessling Date: 10/29/19

QA/QC Signature: _____ Date: 10/29/19

FIELD SAMPLING LOG

GOLDER

Date: 10/29/19
Weather:

Project Name: Mt. Storm Power Station
Project No./Task No.: ~~444~~ 19227239
Event: 2SA19 NPDES/CCR
Sampler(s): P. Trout
Well ID: MWFGDW2
Field Calibration Completed: 0725 on 10/29/19
Well Diameter: 2.0 inches
Initial Depth to Water: 19.89 feet
Depth to Bottom: - feet
Water Column Thickness: - feet

Equipment Used:
- [x] WL Indicator
- [x] YSI Pro DSS 19K101420
- [ ] In Situ Troll 9500
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] ~~Disposable Bailer~~ PLS
- [ ] Non-dedicated BP
- [x] Other Dedicated Bladder Pump

Time	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	~~Gallons~~	DTW (ft)	Flow mL/min
0806	6.38	278.3	6.69	4.74	11.6	226.5	—	19.95	400
0809	6.47	282.0	3.86	4.04	11.6	229.0	-	19.95	400
0812	6.50	282.7	3.51	3.95	11.6	243.5	-	19.95	400
0815	6.52	283.9	4.08	3.90	11.5	252.9	-	19.95	400
0816	—	SAMPLED							
0833	6.54	282.4	1.97	4.09	11.6	250.3	-	19.95	400

~~Calculated Well Vol. (Gallons):~~ Purge cycle 20/10 sec @ 18 psig
Total Calculated Purge Volume (Gallons): Pump
~~Purge Water Management:~~ ~1.5 gal purged
Purge rate 0.15 gpm
Purge Observations (product observed, color, odor, turbidity, sheen): Clear Grab Sample
Purge Start @ 0802
purge water discharged to ground
Sample Date/Time: 10/29/19 816
Field Filtered (0.45um): [x] Yes [ ] ~~No~~ PLS

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [x] CCR Appendix III
- [x] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [x] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [x] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:
DTP = 25.03'

Sampler Signature: Patrick Trout Date: 10/29/19 Page 1 of 1

QA/QC Signature: Kevin Weisgerber Date: 10/29/19

MICROPURGE SAMPLING LOG

GOLDER

Date: 10/29/19

Weather:

Project Name: M. Storm Power Station

Project No./Task No.: 19227239

Event: 25A19 NPDES/CCR Phase B

Sampler(s): P. Trout

Well ID: MW-603

Field Calibration Completed: 0725 on 10/29/19

Well Diameter: 2.0 inches

Initial Depth to Water: 61.79 feet

Depth to Bottom: — feet

Water Column Thickness: — feet

Equipment Used:
- [x] WL Indicator
- [x] YSI Pro DSS 19K101 420
- [ ] In-Situ
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] Dedicated Bladder Pump
- [ ] Non-dedicated BP
- [ ] —

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0905	6.80	339.0	9.47	2.54	10.4	298.9	62.01	~450
0911	7.08	341.4	4.46	3.17	10.3	295.1	62.19	~450
0914	7.11	340.0	4.98	3.34	10.3	271.1	62.21	~450
MS/MSD 0917	7.12	339.3	6.08	3.00	10.4	220.4	62.25	~450
0918	—	SAMPLED						
0928	7.24	337.5	9.98	4.37	10.4	220.7	62.49	~450

Purge Cycle (End): 20/10 sec @ 40 psi

Flow Rate (ml/min End): ~450

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.5

Total Purge Volume (Gallons): ~2.5

Purge Water Management: On Site Oil/Water Separator

Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample

Purge Start @ 0905

Sample Time: 0918

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

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [x] CCR Appendix III
- [x] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [ ] Phase A IV Detects (As, Ba, [x] Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: [signature] Date: 10/29/19

QA/QC Signature: Kevin Weisgerber Date: 10/29/19

GOLDER

MICROPURGE SAMPLING LOG

Date: 10/29/19

Weather: Sun 60s

Project Name: Mount Storm power Station

Project No./Task No.: 19227239

Event: 2SA19 Phase ~~AFB~~ CCR/NPDES

Sampler(s): K. Weissgold

Well ID: MW-7

Field Calibration Completed: @ 0725 on 10/29/19

Well Diameter: 4.0 inches

Initial Depth to Water: 27.40 feet

Depth to Bottom: 62.20 feet

Water Column Thickness: — feet

Equipment Used:
- [x] WL Indicator
- [x] YSI ProDSS16M103153
- [ ] In-Situ —
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] Dedicated Bladder Pump
- [ ] Non-dedicated BP
- [ ] —

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1155	6.33	346.6	13.1	2.15	10.6	167.0	27.90	~400
1158	6.60	345.8	10.5	1.30	9.9	148.0	27.98	~400
1201	6.77	345.8	10.8	1.23	10.0	124.0	28.05	~400
1204	6.87	345.6	10.3	1.01	9.9	100.1	28.10	~400
1207	6.96	346.2	9.9	0.93	10.0	70.0	28.10	~400
1210	7.03	346.1	9.9	0.90	9.9	53.0	28.10	~400
1213	7.05	346.2	9.8	0.84	9.9	41.0	28.11	~400
1215	—	—	—	SAMPLED	—	—	—	—
1240	7.31	353.5	9.9	1.80	11.2	16.0	27.85	~400

Purge Cycle (End): 22sec / 8sec @ 25 psi

Flow Rate (ml/min End): ~400

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.50

Total Purge Volume (Gallons): ~3.0

Purge Water Management: On site O/W Seperator

Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample

1150 purge start

Sample Time: 1215

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

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [ ] CCR Appendix III
- [ ] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [x] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [ ] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: K. Weissgold Date: 10/29/19

QA/QC Signature: [signature] Date: 10/29/19

MICROPURGE SAMPLING LOG

GOLDER

Date: 10/29/19

Weather: Sun 60s

Project Name: Mount Storm power Station

Project No./Task No.: 19227239

Event: 2SA19 Phase A+B CCR/NPDES

Sampler(s): K. Weissgold

Well ID: MW-10

Field Calibration Completed: @0725 on 10/29/19

Well Diameter: 2.0 inches

Initial Depth to Water: 23.86 feet

Depth to Bottom: — feet

Water Column Thickness: — feet

Equipment Used: ☒ WL Indicator ☐ Turbidity Meter ☐ Air Tank ☒ Dedicated Bladder Pump

☒ YSI ProDSS16M103153 ☐ Peristaltic Pump ☐ Compressor ☐ Non-dedicated BP

☐ In-Situ _____ ☐ MP-10 Controller Box ☒ MP-15 Controller Box ☐ _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1314	5.33	54.9	9.5	1.84	12.4	190.0	24.60	200
1319	4.68	51.4	4.0	1.07	11.6	249.7	24.95	200
1324	4.68	52.0	8.9	0.90	11.6	265.8	25.40	200
1329	4.67	52.3	8.8	0.86	11.6	270.2	25.81	200
1334	4.67	52.4	8.9	0.83	11.5	273.9	26.10	200
1335	—	—	— SAMPLED					
1500	4.75	47.7	9.1	1.48	11.7	209.9	35 41	200

Purge Cycle (End): 25 sec / 5 sec @ 30 psi Flow Rate (ml/min End): ~200

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.35

Total Purge Volume (Gallons): ~1.5 Purge Water Management: on site O/W Seperator

Purge Observations (color, odor, turbidity, sheen): Clear Grab Samples

Purge Start 1307

Sample Time: 1335 Field Filtered (0.45um): ☒ Yes ☐ No

Sample Parameters/Analyte(s): ☐ Petro (DRO) ☐ CCR Appendix III ☐ CCR Appendix IV

☐ Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS) ☒ Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)

☐ Variance (Diss [Be, Cd, Cr, Pb, Ni]) ☐ LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228) ☒ Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228) Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems: MS/MSD taken Hose, Duplicate taken Hose

Sampler Signature: Kevin Weissgold Date: 10/29/19 Page 1 of 1

QA/QC Signature: Robert Date: 10/29/19

MICROPURGE SAMPLING LOG

GOLDER

Date: 10/29/19

Weather: Sun, 50s

Project Name: Mt. Storm Power Station

Project No./Task No.: 19227239

Event: 2SA19 NPDES/CCR Phase B

Sampler(s): P. Trout

Well ID: MW-12B

Field Calibration Completed: 0725 on 10/29/19

Well Diameter: 2.0 inches

Initial Depth to Water: 12.12 feet

Depth to Bottom: _____ feet

Water Column Thickness: _____ feet

Equipment Used:
- [x] WL Indicator
- [x] YSI PODS 19K101 420
- [ ] In-Situ _____
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] Dedicated Bladder Pump
- [ ] Non-dedicated BP
- [ ] _____

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0952	4.68	22.6	11.19	5.49	10.7	361.8	12.38	~450
0955	4.64	23.0	7.50	5.71	11.1	374.1	12.38	~450
0958	4.62	23.2	7.35	5.71	11.4	389.5	12.45	~450
1001	4.56	23.2	6.95	5.66	11.4	395.5	12.45	~450
1002	— SAMPLED —							
1015	4.56	23.3	12.97	5.86	11.5	406.1	12.71	~450

Purge Cycle (End): ~~20/10 sec~~ 23/7 sec @ 20 psi

Flow Rate (ml/min End): ~450

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.20

Total Purge Volume (Gallons): ~1.5

Purge Water Management: On Site O.I. Water Separator

Purge Observations (color, odor, turbidity, sheen): Clear grab sample, some small particulates

Purge Start @ 0950

Sample Time: 1002

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

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [x] CCR Appendix III
- [ ] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [ ] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [x] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: _____ Date: 10/29/19

QA/QC Signature: Kevin Weisgerber Date: 10/29/19

MICROPURGE SAMPLING LOG

GOLDER

Date: 10/29/19
Weather: Sun 50s

Project Name: Mt Storm Power Station
Project No./Task No.: 19227239
Event: 2SA19 Phase A&B CCR/NPDES
Sampler(s): K. Weissgold
Well ID: MW-13
Field Calibration Completed: @ 0725 on 10/29/19
Well Diameter: 2.0 inches
Initial Depth to Water: 22.86 feet
Depth to Bottom: 51.10 feet
Water Column Thickness: — feet

Equipment Used:
- [x] WL Indicator
- [x] YSI PODSS16M10315
- [ ] In-Situ —
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [ ] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] Dedicated Bladder Pump
- [ ] Non-dedicated BP
- [ ] —

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm) °C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
0936	6.01	90.1	9.8	3.59	11.4	230.0	24.60	~400
0939	5.23	88.5	9.7	3.31	11.3	261.9	25.00	~400
0942	4.91	88.2	9.6	3.25	11.3	275.0	25.05	~400
0943	call PM to ask about pH values / noting unusual							
0950	4.72	87.8	10.2	3.28	12.0	275.0	24.60	~400
0953	4.67	88.0	9.9	3.12	11.7	276.9	24.80	~400
0956	4.65	87.8	9.7	3.16	11.3	279.0	25.20	~400
0957	—	—	— SAMPLED	—	—	—	—	—
1013	4.67	87.2	9.6	3.15	11.4	272.2	25.75	~400

Purge Cycle (End): 10sec/5sec @ 25 psi
Flow Rate (ml/min End): ~406
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.30
Total Purge Volume (Gallons): ~3.0
Purge Water Management: On site O/W seperator
Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample
0931 purge start

Sample Time: 0957
Field Filtered (0.45um): [x] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [ ] CCR Appendix III
- [ ] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [x] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- [x] Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems: 0943 pause purge to call project Manager

Sampler Signature: Kevin Weissgold Date: 10/29/19
QA/QC Signature: [signature] Date: 10/29/19

MICROPURGE SAMPLING LOG

GOLDER

Date: 10/29/19
Weather: Sun 60s

Project Name: Mt Storm Power Station
Project No./Task No.: 19227239
Event: 2SA19 Phase AFB CCR
Sampler(s): K. Weissgold
Well ID: MW-14
Field Calibration Completed: at 0725 on 10/29/19
Well Diameter: 2.0 inches
Initial Depth to Water: 31.66 feet
Depth to Bottom: 58.85 feet
Water Column Thickness: feet

Equipment Used:
- [x] WL Indicator
- [x] YSI Pro DSS 16M103155
- [ ] In-Situ
- [ ] Turbidity Meter
- [ ] Peristaltic Pump
- [ ] MP-10 Controller Box
- [x] Air Tank
- [ ] Compressor
- [x] MP-15 Controller Box
- [x] Dedicated Bladder Pump
- [ ] Non-dedicated BP
- [ ]

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)°C	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1050	4.77	133.3	9.1	5.85	11.1	237.7	33.22	~300
1053	4.71	133.2	9.2	5.71	11.1	244.0	33.28	~300
1056	4.66	133.0	9.0	5.63	11.0	253.5	33.30	~300
1059	4.64	132.7	8.9	5.60	10.8	260.8	33.40	~300
1102	4.63	132.7	9.0	5.61	10.7	265.8	33.53	~300
1103			SAMPLED					
1128	4.68	133.7	9.1	5.75	11.1	262.0	33.75	~300

Purge Cycle (End): 25 sec / 5sec @ 30 psi
Flow Rate (ml/min End): ~300
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.32
Total Purge Volume (Gallons): ~2.5
Purge Water Management: on site O/W Separator
Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample
1036 purge start
Sample Time: 1103
Field Filtered (0.45um): [x] Yes [ ] No

Sample Parameters/Analyte(s):
- [ ] Petro (DRO)
- [x] CCR Appendix III
- [x] CCR Appendix IV
- [ ] Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- [x] Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- [ ] Variance (Diss [Be, Cd, Cr, Pb, Ni])
- [ ] LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- [x] Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems: 1105 Air tank empties in the middle of Sampling Change air tank, 1108 resume Sampling

Sampler Signature: Kevin Weissgold Date: 10/29/19 Page 1 of 1
QA/QC Signature: Date: 10/29/19

GOLDER

MICROPURGE SAMPLING LOG

Date: 10/29/19
Weather: Sun 60s

Project Name: MSPS
Project No./Task No.: 19227239
Event: 2SA19 Phase A+B CCR/NPDES
Sampler(s): K. Weissgold
Well ID: Duplicate
Field Calibration Completed: 0725 on 10/29/19
Well Diameter: — inches
Initial Depth to Water: — feet
Depth to Bottom: — feet
Water Column Thickness: — feet

Equipment Used: ☐ WL Indicator ☐ Turbidity Meter ☐ Air Tank ☐ Dedicated Bladder Pump
☐ YSI ProDSS 16M103153 ☐ Peristaltic Pump ☐ Compressor ☐ Non-dedicated BP
☐ In-Situ — ☐ MP-10 Controller Box ☐ MP-15 Controller Box ☐ —

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1435	—	—	— SAMPLED		—			

Purge Cycle (End): — @ — psi Flow Rate (ml/min End): —

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

Total Purge Volume (Gallons): — Purge Water Management: —

Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample
Sampled at MW-10

Sample Time: 1435 Field Filtered (0.45um): ☑ Yes ☐ No

Sample Parameters/Analyte(s): ☐ Petro (DRO) ☑ CCR Appendix III ☑ CCR Appendix IV

☐ Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)

☑ Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)

☐ Variance (Diss [Be, Cd, Cr, Pb, Ni])

☐ LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)

☑ Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)

☐ Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: Kevin Weissgold Date: 10/29/19 Page 1 of 1

QA/QC Signature: [signature] Date: 10/29/19

GOLDER

MICROPURGE SAMPLING LOG

Date: 10/29/19

Weather: Sun 60s

Project Name: M.S.P.S

Project No./Task No.: 19227239

Event: 2SA19 Phase A+B CCR

Sampler(s): K. Weissgold

Well ID: Field Blank

Field Calibration Completed: @ 0725 on 10/29/19

Well Diameter: — inches

Initial Depth to Water: — feet

Depth to Bottom: — feet

Water Column Thickness: — feet

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

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm)^{oC}	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1515	—	—	—	SAMPLED	—	—	—	—

Purge Cycle (End): — @ — psi Flow Rate (ml/min End): —

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

Total Purge Volume (Gallons): — Purge Water Management: —

Purge Observations (color, odor, turbidity, sheen): Clear Grab Sample taken near MW-10 using lab supplied DI Water

Sample Time: 1515 Field Filtered (0.45um): ☐ Yes ☒ No

Sample Parameters/Analyte(s):
- ☐ Petro (DRO)
- ☑ CCR Appendix III
- ☑ CCR Appendix IV
- ☐ Closed 5-year NPDES (Diss [Ba, Bo, Fe, Mn], SO4, TDS, TSS)
- ☒ Phase A&B NPDES (Diss [Al, Sb, As, Ba, Be, Bo, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Se, Tl],Cl, Cr Tot, NO2+NO3 N, SO4, NH3-N Tot, TDS, TSS)
- ☐ Variance (Diss [Be, Cd, Cr, Pb, Ni])
- ☐ LVWSP IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Mo, Tl, Rad 226-228)
- ☒ Phase A IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Se, Rad 226-228)
- ☒ Phase B IV Detects (As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, Rad 226-228)

Other Observations / Equipment Operation Problems:

Sampler Signature: Kevin Weissgold Date: 10/29/19 Page 1 of 1

QA/QC Signature: [signature] Date: 10/29/19

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-121563-3
Client Project/Site: Phase B CCR (Canton)

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
11/14/2019 4:07:39 PM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 240-121563-3
Project/Site: Phase B CCR (Canton)

Qualifiers

Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Case Narrative

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Job ID: 240-121563-3

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-121563-3

Comments
No additional comments.

Receipt
The samples were received on 10/31/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.7º C, 2.2º C, 2.7º C, 3.2º C, 3.6º C, 4.3º C, 4.7º C and 4.9º C.

Metals
Method 6020A: The continuing calibration verification (CCV) associated with batch 240-409645 recovered above the upper control limit for lithium and beryllium. The samples associated with this CCV were below the requested reporting limit for the affected analytes; therefore, the data have been reported. The following samples are impacted: MW-6R (240-121563-2), MW-7 (240-121563-3), MW-12R (240-121563-6), MW-13 (240-121563-7), MW-14 (240-121563-8), MW-22 (240-121563-9), FIELD BLANK (240-121563-15) and DUPLICATE (240-121563-16).

Method 6020A: The continuing calibration verification (CCV) associated with batch 240-409645 recovered above the upper control limit for beryllium. The sample associated with this CCV was less than the reporting limit for the affected analyte; therefore, the data have been reported. The following sample is impacted: MWFGDW2 (240-121563-10).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Job ID: 240-121563-3
Project/Site: Phase B CCR (Canton)

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
9056A	Anions, Ion Chromatography	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Golder Associates Inc.
Job ID: 240-121563-3
Project/Site: Phase B CCR (Canton)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-121563-2	MW-6R	Water	10/29/19 09:18	10/31/19 09:30	
240-121563-3	MW-7	Water	10/29/19 12:15	10/31/19 09:30	
240-121563-5	MW-10	Water	10/29/19 13:35	10/31/19 09:30	
240-121563-6	MW-12R	Water	10/29/19 10:02	10/31/19 09:30	
240-121563-7	MW-13	Water	10/29/19 09:43	10/31/19 09:30	
240-121563-8	MW-14	Water	10/29/19 11:03	10/31/19 09:30	
240-121563-9	MW-22	Water	10/29/19 08:31	10/31/19 09:30	
240-121563-10	MWFGDW2	Water	10/29/19 08:16	10/31/19 09:30	
240-121563-15	FIELD BLANK	Water	10/29/19 15:15	10/31/19 09:30	
240-121563-16	DUPLICATE	Water	10/29/19 14:35	10/31/19 09:30	

Detection Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-6R — Lab Sample ID: 240-121563-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	350		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	71000		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	0.47	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
Lead	0.90	J	1.0	0.45	ug/L	1		6020A	Total Recoverable
Lithium	3.0	J ^	8.0	1.7	ug/L	1		6020A	Total Recoverable
Molybdenum	1.6	J	10	1.1	ug/L	1		6020A	Total Recoverable
Thallium	0.48	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
Chloride	370	J	1000	280	ug/L	1		9056A	Total/NA
Fluoride	79		50	24	ug/L	1		9056A	Total/NA
Sulfate	13000		1000	350	ug/L	1		9056A	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 240-121563-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	100		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	52000		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	0.27	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
Thallium	0.30	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
Chloride	920	J	1000	280	ug/L	1		9056A	Total/NA
Fluoride	120		50	24	ug/L	1		9056A	Total/NA
Sulfate	50000		1000	350	ug/L	1		9056A	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 240-121563-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	130		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	0.50	J	1.0	0.31	ug/L	1		6020A	Total Recoverable
Cadmium	0.40	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
Calcium	3600		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	2.4		1.0	0.19	ug/L	1		6020A	Total Recoverable
Molybdenum	6.1	J	10	1.1	ug/L	1		6020A	Total Recoverable
Thallium	0.93	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
Chloride	760	J	1000	280	ug/L	1		9056A	Total/NA
Fluoride	27	J	50	24	ug/L	1		9056A	Total/NA
Sulfate	6900		1000	350	ug/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-12R — Lab Sample ID: 240-121563-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	27		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	620	J	1000	580	ug/L	1		6020A	Total Recoverable
Chromium	1.7	J	2.0	0.98	ug/L	1		6020A	Total Recoverable
Cobalt	2.5		1.0	0.19	ug/L	1		6020A	Total Recoverable
Chloride	380	J	1000	280	ug/L	1		9056A	Total/NA
Fluoride	49	J	50	24	ug/L	1		9056A	Total/NA
Sulfate	3200		1000	350	ug/L	1		9056A	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 240-121563-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	76		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	0.57	J ^	1.0	0.31	ug/L	1		6020A	Total Recoverable
Cadmium	0.38	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
Calcium	6000		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	0.98	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
Lithium	2.8	J ^	8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	720	J	1000	280	ug/L	1		9056A	Total/NA
Fluoride	35	J	50	24	ug/L	1		9056A	Total/NA
Sulfate	29000		1000	350	ug/L	1		9056A	Total/NA

Client Sample ID: MW-14 — Lab Sample ID: 240-121563-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	35		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	0.75	J ^	1.0	0.31	ug/L	1		6020A	Total Recoverable
Cadmium	0.32	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
Calcium	11000		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	4.3		1.0	0.19	ug/L	1		6020A	Total Recoverable
Lithium	5.2	J ^	8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	510	J	1000	280	ug/L	1		9056A	Total/NA
Fluoride	47	J	50	24	ug/L	1		9056A	Total/NA
Sulfate	50000		1000	350	ug/L	1		9056A	Total/NA

Client Sample ID: MW-22 — Lab Sample ID: 240-121563-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	260		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	120000		1000	580	ug/L	1		6020A	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-22 (Continued)

Lab Sample ID: 240-121563-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	7.3	J ^	8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	1000		1000	280	ug/L	1		9056A	Total/NA
Fluoride	56		50	24	ug/L	1		9056A	Total/NA
Sulfate	26000		1000	350	ug/L	1		9056A	Total/NA

Client Sample ID: MWFGDW2

Lab Sample ID: 240-121563-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	350		5.0	2.2	ug/L	1		6020A	Total Recoverable
Calcium	58000		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	0.27	J	1.0	0.19	ug/L	1		6020A	Total Recoverable
Lithium	8.9		8.0	1.7	ug/L	1		6020A	Total Recoverable
Chloride	1500		1000	280	ug/L	1		9056A	Total/NA
Fluoride	69		50	24	ug/L	1		9056A	Total/NA
Sulfate	50000		1000	350	ug/L	1		9056A	Total/NA

Client Sample ID: FIELD BLANK

Lab Sample ID: 240-121563-15

No Detections.

Client Sample ID: DUPLICATE

Lab Sample ID: 240-121563-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	120		5.0	2.2	ug/L	1		6020A	Total Recoverable
Beryllium	0.32	J ^	1.0	0.31	ug/L	1		6020A	Total Recoverable
Cadmium	0.28	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
Calcium	3200		1000	580	ug/L	1		6020A	Total Recoverable
Cobalt	3.0		1.0	0.19	ug/L	1		6020A	Total Recoverable
Chloride	810	J	1000	280	ug/L	1		9056A	Total/NA
Sulfate	6000		1000	350	ug/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-6R

Date Collected: 10/29/19 09:18
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-2

Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 20:51	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 19:55	1
Barium	**350**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 19:55	1
Beryllium	<0.31	^	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 19:55	1
Cadmium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 19:55	1
Calcium	**71000**		1000	580	ug/L		11/05/19 14:00	11/06/19 19:55	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 19:55	1
Cobalt	**0.47**	**J**	1.0	0.19	ug/L		11/05/19 14:00	11/06/19 19:55	1
Lead	**0.90**	**J**	1.0	0.45	ug/L		11/05/19 14:00	11/06/19 19:55	1
Lithium	**3.0**	**J ^**	8.0	1.7	ug/L		11/05/19 14:00	11/06/19 19:55	1
Molybdenum	**1.6**	**J**	10	1.1	ug/L		11/05/19 14:00	11/06/19 19:55	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 19:55	1
Thallium	**0.48**	**J**	1.0	0.20	ug/L		11/05/19 14:00	11/06/19 19:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**370**	**J**	1000	280	ug/L			11/13/19 18:03	1
Fluoride	**79**		50	24	ug/L			11/13/19 18:03	1
Sulfate	**13000**		1000	350	ug/L			11/13/19 18:03	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-7

Date Collected: 10/29/19 12:15
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-3

Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 20:56	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 20:00	1
Barium	**100**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 20:00	1
Beryllium	<0.31	^	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 20:00	1
Cadmium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:00	1
Calcium	**52000**		1000	580	ug/L		11/05/19 14:00	11/06/19 20:00	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 20:00	1
Cobalt	**0.27**	**J**	1.0	0.19	ug/L		11/05/19 14:00	11/06/19 20:00	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 20:00	1
Lithium	<1.7	^	8.0	1.7	ug/L		11/05/19 14:00	11/06/19 20:00	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 20:00	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 20:00	1
Thallium	**0.30**	**J**	1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**920**	**J**	1000	280	ug/L			11/13/19 18:23	1
Fluoride	**120**		50	24	ug/L			11/13/19 18:23	1
Sulfate	**50000**		1000	350	ug/L			11/13/19 18:23	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-10

Date Collected: 10/29/19 13:35
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-5

Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 19:59	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 19:21	1
Barium	**130**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 19:21	1
Beryllium	**0.50**	**J**	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 19:21	1
Cadmium	**0.40**	**J**	1.0	0.20	ug/L		11/05/19 14:00	11/06/19 19:21	1
Calcium	**3600**		1000	580	ug/L		11/05/19 14:00	11/06/19 19:21	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 19:21	1
Cobalt	**2.4**		1.0	0.19	ug/L		11/05/19 14:00	11/06/19 19:21	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 19:21	1
Lithium	<1.7		8.0	1.7	ug/L		11/05/19 14:00	11/06/19 19:21	1
Molybdenum	**6.1**	**J**	10	1.1	ug/L		11/05/19 14:00	11/06/19 19:21	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 19:21	1
Thallium	**0.93**	**J**	1.0	0.20	ug/L		11/05/19 14:00	11/06/19 19:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**760**	**J**	1000	280	ug/L			11/13/19 19:46	1
Fluoride	**27**	**J**	50	24	ug/L			11/13/19 19:46	1
Sulfate	**6900**		1000	350	ug/L			11/13/19 19:46	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-12R

Date Collected: 10/29/19 10:02
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-6

Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 21:05	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 20:08	1
Barium	**27**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 20:08	1
Beryllium	<0.31	^	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 20:08	1
Cadmium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:08	1
Calcium	**620**	**J**	1000	580	ug/L		11/05/19 14:00	11/06/19 20:08	1
Chromium	**1.7**	**J**	2.0	0.98	ug/L		11/05/19 14:00	11/06/19 20:08	1
Cobalt	**2.5**		1.0	0.19	ug/L		11/05/19 14:00	11/06/19 20:08	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 20:08	1
Lithium	<1.7	^	8.0	1.7	ug/L		11/05/19 14:00	11/06/19 20:08	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 20:08	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 20:08	1
Thallium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**380**	**J**	1000	280	ug/L			11/13/19 20:48	1
Fluoride	**49**	**J**	50	24	ug/L			11/13/19 20:48	1
Sulfate	**3200**		1000	350	ug/L			11/13/19 20:48	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-13
Date Collected: 10/29/19 09:43
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-7
Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 21:10	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 20:12	1
Barium	**76**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 20:12	1
Beryllium	**0.57**	**J ^**	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 20:12	1
Cadmium	**0.38**	**J**	1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:12	1
Calcium	**6000**		1000	580	ug/L		11/05/19 14:00	11/06/19 20:12	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 20:12	1
Cobalt	**0.98**	**J**	1.0	0.19	ug/L		11/05/19 14:00	11/06/19 20:12	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 20:12	1
Lithium	**2.8**	**J ^**	8.0	1.7	ug/L		11/05/19 14:00	11/06/19 20:12	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 20:12	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 20:12	1
Thallium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**720**	**J**	1000	280	ug/L			11/13/19 21:09	1
Fluoride	**35**	**J**	50	24	ug/L			11/13/19 21:09	1
Sulfate	**29000**		1000	350	ug/L			11/13/19 21:09	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-14
Date Collected: 10/29/19 11:03
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-8
Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 21:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 20:25	1
Barium	**35**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 20:25	1
Beryllium	**0.75**	**J ^**	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 20:25	1
Cadmium	**0.32**	**J**	1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:25	1
Calcium	**11000**		1000	580	ug/L		11/05/19 14:00	11/06/19 20:25	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 20:25	1
Cobalt	**4.3**		1.0	0.19	ug/L		11/05/19 14:00	11/06/19 20:25	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 20:25	1
Lithium	**5.2**	**J ^**	8.0	1.7	ug/L		11/05/19 14:00	11/06/19 20:25	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 20:25	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 20:25	1
Thallium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**510**	**J**	1000	280	ug/L			11/13/19 21:30	1
Fluoride	**47**	**J**	50	24	ug/L			11/13/19 21:30	1
Sulfate	**50000**		1000	350	ug/L			11/13/19 21:30	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MW-22
Date Collected: 10/29/19 08:31
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-9
Matrix: Water

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 21:28	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 20:30	1
Barium	**260**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 20:30	1
Beryllium	<0.31	^	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 20:30	1
Cadmium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:30	1
Calcium	**120000**		1000	580	ug/L		11/05/19 14:00	11/06/19 20:30	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 20:30	1
Cobalt	<0.19		1.0	0.19	ug/L		11/05/19 14:00	11/06/19 20:30	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 20:30	1
Lithium	**7.3**	**J ^**	8.0	1.7	ug/L		11/05/19 14:00	11/06/19 20:30	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 20:30	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 20:30	1
Thallium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1000**		1000	280	ug/L			11/13/19 21:50	1
Fluoride	**56**		50	24	ug/L			11/13/19 21:50	1
Sulfate	**26000**		1000	350	ug/L			11/13/19 21:50	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: MWFGDW2

Lab Sample ID: 240-121563-10

Date Collected: 10/29/19 08:16

Matrix: Water

Date Received: 10/31/19 09:30

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 21:32	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 20:34	1
Barium	**350**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 20:34	1
Beryllium	<0.31	^	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 20:34	1
Cadmium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:34	1
Calcium	**58000**		1000	580	ug/L		11/05/19 14:00	11/06/19 20:34	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 20:34	1
Cobalt	**0.27**	**J**	1.0	0.19	ug/L		11/05/19 14:00	11/06/19 20:34	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 20:34	1
Lithium	**8.9**		8.0	1.7	ug/L		11/05/19 14:00	11/08/19 18:22	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 20:34	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 20:34	1
Thallium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1500**		1000	280	ug/L			11/13/19 22:11	1
Fluoride	**69**		50	24	ug/L			11/13/19 22:11	1
Sulfate	**50000**		1000	350	ug/L			11/13/19 22:11	1

Client Sample ID: FIELD BLANK

Lab Sample ID: 240-121563-15

Date Collected: 10/29/19 15:15

Matrix: Water

Date Received: 10/31/19 09:30

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 21:55	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 20:43	1
Barium	<2.2		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 20:43	1
Beryllium	<0.31	^	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 20:43	1
Cadmium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:43	1
Calcium	<580		1000	580	ug/L		11/05/19 14:00	11/06/19 20:43	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 20:43	1
Cobalt	<0.19		1.0	0.19	ug/L		11/05/19 14:00	11/06/19 20:43	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 20:43	1
Lithium	<1.7	^	8.0	1.7	ug/L		11/05/19 14:00	11/06/19 20:43	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 20:43	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 20:43	1
Thallium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<280		1000	280	ug/L			11/14/19 00:36	1
Fluoride	<24		50	24	ug/L			11/14/19 00:36	1
Sulfate	<350		1000	350	ug/L			11/14/19 00:36	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Client Sample ID: DUPLICATE

Lab Sample ID: 240-121563-16

Date Collected: 10/29/19 14:35

Matrix: Water

Date Received: 10/31/19 09:30

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 22:00	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 20:47	1
Barium	**120**		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 20:47	1
Beryllium	**0.32**	**J ^**	1.0	0.31	ug/L		11/05/19 14:00	11/06/19 20:47	1
Cadmium	**0.28**	**J**	1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:47	1
Calcium	**3200**		1000	580	ug/L		11/05/19 14:00	11/06/19 20:47	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 20:47	1
Cobalt	**3.0**		1.0	0.19	ug/L		11/05/19 14:00	11/06/19 20:47	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 20:47	1
Lithium	<1.7	^	8.0	1.7	ug/L		11/05/19 14:00	11/06/19 20:47	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 20:47	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 20:47	1
Thallium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 20:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**810**	**J**	1000	280	ug/L			11/14/19 00:57	1
Fluoride	<24		50	24	ug/L			11/14/19 00:57	1
Sulfate	**6000**		1000	350	ug/L			11/14/19 00:57	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-409266/1-A
Matrix: Water
Analysis Batch: 409710

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<23		100	23	ug/L		11/05/19 14:00	11/07/19 19:50	1

Lab Sample ID: LCS 240-409266/2-A
Matrix: Water
Analysis Batch: 409710

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	1060		ug/L		106	80 - 120

Lab Sample ID: 240-121563-5 MS
Matrix: Water
Analysis Batch: 409710

Client Sample ID: MW-10
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	<23		1000	1140		ug/L		114	75 - 125

Lab Sample ID: 240-121563-5 MSD
Matrix: Water
Analysis Batch: 409710

Client Sample ID: MW-10
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	<23		1000	1110		ug/L		111	75 - 125	2	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-409266/1-A
Matrix: Water
Analysis Batch: 409645

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		5.0	0.75	ug/L		11/05/19 14:00	11/06/19 19:12	1
Barium	<2.2		5.0	2.2	ug/L		11/05/19 14:00	11/06/19 19:12	1
Beryllium	<0.31		1.0	0.31	ug/L		11/05/19 14:00	11/06/19 19:12	1
Cadmium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 19:12	1
Calcium	<580		1000	580	ug/L		11/05/19 14:00	11/06/19 19:12	1
Chromium	<0.98		2.0	0.98	ug/L		11/05/19 14:00	11/06/19 19:12	1
Cobalt	<0.19		1.0	0.19	ug/L		11/05/19 14:00	11/06/19 19:12	1
Lead	<0.45		1.0	0.45	ug/L		11/05/19 14:00	11/06/19 19:12	1
Lithium	<1.7		8.0	1.7	ug/L		11/05/19 14:00	11/06/19 19:12	1
Molybdenum	<1.1		10	1.1	ug/L		11/05/19 14:00	11/06/19 19:12	1
Selenium	<0.89		5.0	0.89	ug/L		11/05/19 14:00	11/06/19 19:12	1
Thallium	<0.20		1.0	0.20	ug/L		11/05/19 14:00	11/06/19 19:12	1

Lab Sample ID: LCS 240-409266/3-A
Matrix: Water
Analysis Batch: 409645

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	1000		ug/L		100	80 - 120
Barium	1000	943		ug/L		94	80 - 120

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

Lab Sample ID: LCS 240-409266/3-A
Matrix: Water
Analysis Batch: 409645

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	500	499		ug/L		100	80 - 120
Cadmium	500	477		ug/L		95	80 - 120
Calcium	25000	24100		ug/L		96	80 - 120
Chromium	500	486		ug/L		97	80 - 120
Cobalt	500	506		ug/L		101	80 - 120
Lead	500	504		ug/L		101	80 - 120
Molybdenum	500	460		ug/L		92	80 - 120
Selenium	1000	940		ug/L		94	80 - 120
Thallium	1000	978		ug/L		98	80 - 120

Lab Sample ID: 240-121563-5 MS
Matrix: Water
Analysis Batch: 409645

Client Sample ID: MW-10
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	<0.75		1000	1030		ug/L		103	75 - 125
Barium	130		1000	1120		ug/L		99	75 - 125
Beryllium	0.50	J	500	493	^	ug/L		98	75 - 125
Cadmium	0.40	J	500	486		ug/L		97	75 - 125
Calcium	3600		25000	27800		ug/L		97	75 - 125
Chromium	<0.98		500	497		ug/L		99	75 - 125
Cobalt	2.4		500	537		ug/L		107	75 - 125
Lead	<0.45		500	508		ug/L		102	75 - 125
Molybdenum	6.1	J	500	485		ug/L		96	75 - 125
Selenium	<0.89		1000	945		ug/L		95	75 - 125
Thallium	0.93	J	1000	1010		ug/L		101	75 - 125

Lab Sample ID: 240-121563-5 MSD
Matrix: Water
Analysis Batch: 409645

Client Sample ID: MW-10
Prep Type: Total Recoverable
Prep Batch: 409266

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	<0.75		1000	1020		ug/L		102	75 - 125	1	20
Barium	130		1000	1140		ug/L		101	75 - 125	2	20
Beryllium	0.50	J	500	510	^	ug/L		102	75 - 125	3	20
Cadmium	0.40	J	500	488		ug/L		98	75 - 125	0	20
Calcium	3600		25000	27700		ug/L		96	75 - 125	0	20
Chromium	<0.98		500	510		ug/L		102	75 - 125	3	20
Cobalt	2.4		500	521		ug/L		104	75 - 125	3	20
Lead	<0.45		500	505		ug/L		101	75 - 125	1	20
Molybdenum	6.1	J	500	479		ug/L		95	75 - 125	1	20
Selenium	<0.89		1000	951		ug/L		95	75 - 125	1	20
Thallium	0.93	J	1000	995		ug/L		99	75 - 125	1	20

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 240-410760/3
Matrix: Water
Analysis Batch: 410760

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<280		1000	280	ug/L			11/13/19 15:38	1
Fluoride	<24		50	24	ug/L			11/13/19 15:38	1
Sulfate	<350		1000	350	ug/L			11/13/19 15:38	1

Lab Sample ID: LCS 240-410760/4
Matrix: Water
Analysis Batch: 410760

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50000	49200		ug/L		98	90 - 110
Fluoride	2500	2540		ug/L		102	90 - 110
Sulfate	50000	52200		ug/L		104	90 - 110

Lab Sample ID: 240-121563-5 MS
Matrix: Water
Analysis Batch: 410760

Client Sample ID: MW-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	760	J	50000	52200		ug/L		103	80 - 120
Fluoride	27	J	2500	2480		ug/L		98	80 - 120
Sulfate	6900		50000	61200		ug/L		108	80 - 120

Lab Sample ID: 240-121563-5 MSD
Matrix: Water
Analysis Batch: 410760

Client Sample ID: MW-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	760	J	50000	52900		ug/L		104	80 - 120	1	15
Fluoride	27	J	2500	2570		ug/L		102	80 - 120	4	15
Sulfate	6900		50000	62000		ug/L		110	80 - 120	1	15

Metals

Prep Batch: 409266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-2	MW-6R	Total Recoverable	Water	3005A	
240-121563-3	MW-7	Total Recoverable	Water	3005A	
240-121563-5	MW-10	Total Recoverable	Water	3005A	
240-121563-6	MW-12R	Total Recoverable	Water	3005A	
240-121563-7	MW-13	Total Recoverable	Water	3005A	
240-121563-8	MW-14	Total Recoverable	Water	3005A	
240-121563-9	MW-22	Total Recoverable	Water	3005A	
240-121563-10	MWFGDW2	Total Recoverable	Water	3005A	
240-121563-15	FIELD BLANK	Total Recoverable	Water	3005A	
240-121563-16	DUPLICATE	Total Recoverable	Water	3005A	
MB 240-409266/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-409266/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-409266/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-121563-5 MS	MW-10	Total Recoverable	Water	3005A	
240-121563-5 MS	MW-10	Total Recoverable	Water	3005A	
240-121563-5 MSD	MW-10	Total Recoverable	Water	3005A	
240-121563-5 MSD	MW-10	Total Recoverable	Water	3005A	

Analysis Batch: 409645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-2	MW-6R	Total Recoverable	Water	6020A	409266
240-121563-3	MW-7	Total Recoverable	Water	6020A	409266
240-121563-5	MW-10	Total Recoverable	Water	6020A	409266
240-121563-6	MW-12R	Total Recoverable	Water	6020A	409266
240-121563-7	MW-13	Total Recoverable	Water	6020A	409266
240-121563-8	MW-14	Total Recoverable	Water	6020A	409266
240-121563-9	MW-22	Total Recoverable	Water	6020A	409266
240-121563-10	MWFGDW2	Total Recoverable	Water	6020A	409266
240-121563-15	FIELD BLANK	Total Recoverable	Water	6020A	409266
240-121563-16	DUPLICATE	Total Recoverable	Water	6020A	409266
MB 240-409266/1-A	Method Blank	Total Recoverable	Water	6020A	409266
LCS 240-409266/3-A	Lab Control Sample	Total Recoverable	Water	6020A	409266
240-121563-5 MS	MW-10	Total Recoverable	Water	6020A	409266
240-121563-5 MSD	MW-10	Total Recoverable	Water	6020A	409266

Analysis Batch: 409710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-2	MW-6R	Total Recoverable	Water	6010C	409266
240-121563-3	MW-7	Total Recoverable	Water	6010C	409266
240-121563-5	MW-10	Total Recoverable	Water	6010C	409266
240-121563-6	MW-12R	Total Recoverable	Water	6010C	409266
240-121563-7	MW-13	Total Recoverable	Water	6010C	409266
240-121563-8	MW-14	Total Recoverable	Water	6010C	409266
240-121563-9	MW-22	Total Recoverable	Water	6010C	409266
240-121563-10	MWFGDW2	Total Recoverable	Water	6010C	409266
240-121563-15	FIELD BLANK	Total Recoverable	Water	6010C	409266
240-121563-16	DUPLICATE	Total Recoverable	Water	6010C	409266
MB 240-409266/1-A	Method Blank	Total Recoverable	Water	6010C	409266
LCS 240-409266/2-A	Lab Control Sample	Total Recoverable	Water	6010C	409266
240-121563-5 MS	MW-10	Total Recoverable	Water	6010C	409266
240-121563-5 MSD	MW-10	Total Recoverable	Water	6010C	409266

QC Association Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Canton)

Job ID: 240-121563-3

Metals

Analysis Batch: 410193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-10	MWFGDW2	Total Recoverable	Water	6020A	409266

General Chemistry

Analysis Batch: 410760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-2	MW-6R	Total/NA	Water	9056A	
240-121563-3	MW-7	Total/NA	Water	9056A	
240-121563-5	MW-10	Total/NA	Water	9056A	
240-121563-6	MW-12R	Total/NA	Water	9056A	
240-121563-7	MW-13	Total/NA	Water	9056A	
240-121563-8	MW-14	Total/NA	Water	9056A	
240-121563-9	MW-22	Total/NA	Water	9056A	
240-121563-10	MWFGDW2	Total/NA	Water	9056A	
240-121563-15	FIELD BLANK	Total/NA	Water	9056A	
240-121563-16	DUPLICATE	Total/NA	Water	9056A	
MB 240-410760/3	Method Blank	Total/NA	Water	9056A	
LCS 240-410760/4	Lab Control Sample	Total/NA	Water	9056A	
240-121563-5 MS	MW-10	Total/NA	Water	9056A	
240-121563-5 MSD	MW-10	Total/NA	Water	9056A	

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-121563-3
Project/Site: Phase B CCR (Canton)

Client Sample ID: MW-6R
Lab Sample ID: 240-121563-2
Date Collected: 10/29/19 09:18
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 20:51	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 19:55	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/13/19 18:03	JWW	TAL CAN

Client Sample ID: MW-7
Lab Sample ID: 240-121563-3
Date Collected: 10/29/19 12:15
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 20:56	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 20:00	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/13/19 18:23	JWW	TAL CAN

Client Sample ID: MW-10
Lab Sample ID: 240-121563-5
Date Collected: 10/29/19 13:35
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 19:59	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 19:21	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/13/19 19:46	JWW	TAL CAN

Client Sample ID: MW-12R
Lab Sample ID: 240-121563-6
Date Collected: 10/29/19 10:02
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 21:05	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 20:08	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/13/19 20:48	JWW	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-121563-3
Project/Site: Phase B CCR (Canton)

Client Sample ID: MW-13
Lab Sample ID: 240-121563-7
Date Collected: 10/29/19 09:43
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 21:10	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 20:12	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/13/19 21:09	JWW	TAL CAN

Client Sample ID: MW-14
Lab Sample ID: 240-121563-8
Date Collected: 10/29/19 11:03
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 21:23	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 20:25	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/13/19 21:30	JWW	TAL CAN

Client Sample ID: MW-22
Lab Sample ID: 240-121563-9
Date Collected: 10/29/19 08:31
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 21:28	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 20:30	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/13/19 21:50	JWW	TAL CAN

Client Sample ID: MWFGDW2
Lab Sample ID: 240-121563-10
Date Collected: 10/29/19 08:16
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 21:32	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 20:34	RKT	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	410193	11/08/19 18:22	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/13/19 22:11	JWW	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-121563-3
Project/Site: Phase B CCR (Canton)

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-121563-15

Date Collected: 10/29/19 15:15
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 21:55	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 20:43	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/14/19 00:36	JWW	TAL CAN

Client Sample ID: DUPLICATE
Lab Sample ID: 240-121563-16

Date Collected: 10/29/19 14:35
Matrix: Water
Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010C		1	409710	11/07/19 22:00	WKD	TAL CAN
Total Recoverable	Prep	3005A			409266	11/05/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	409645	11/06/19 20:47	RKT	TAL CAN
Total/NA	Analysis	9056A		1	410760	11/14/19 00:57	JWW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 240-121563-3
Project/Site: Phase B CCR (Canton)

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
West Virginia DEP	State Program	210	12-31-19

Chain of Custody Record

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

eurofins

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Rachel Powell	Site Contact: Rachel Powell	Date: 10/29/2019	COC No: 1 of 1 COCs
Golder Associates Inc.	Email: rpowell@golder.com	Lab Contact: Eric Lang	Carrier: FEDEX	TALS Project #:
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Patrick Trout/ Kevin Weissgold
Richmond/VA/USA	Analysis Turnaround Time			For Lab Use Only:
(804) 358-7900 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
(804) 517-3381 Cell	TAT if different from Below STANDARD			Lab Sampling:
Project Name: Phase B CCR	☐ 2 weeks			Job / SDG No.:
Site: Mt. Storm, WV	☐ 1 week			
P O # 19117239	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	B, Ca, As, Ba, Be, Cd, Cr, Co, Pb, Li	Mo, Se, Tl	Cl-, Fl-, SO4 - 9056A	TDS	Radium 226, 228, Total - 9090	Sample Specific Notes:
MW-6R	10/29/19	0918	G	GW	2	N	N	/	/	/	/	/	
MW-7	10/29/19	1215	G	GW	2	N	N	/	/	/	/	/	
MW-10	10/29/19	1335	G	GW	4	N	Y	/	/	/	/	/	
MW-12R	10/29/19	1002	G	GW	2	N	N	/	/	/	/	/	
MW-13	10/29/19	0957	G	GW	2	N	N	/	/	/	/	/	
MW-14	10/29/19	1103	G	GW	2	N	N	/	/	/	/	/	
MW-22	10/29/19	0831	G	GW	2	N	N	/	/	/	/	/	
MWFGDW2	10/29/19	0816	G	GW	2	N	N	/	/	/	/	/	
Field Blank	10/29/19	1515	G	W	2	N	N	/	/	/	/	/	
Duplicate	10/29/19	1435	G	GW	2	N	N	/	/	/	/	/	
								4	4	1	1	4	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab Archive for Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Level II Data Package requested. Please see reporting group G for additonal details.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:	Corr'd:	Therm ID No.:
Relinquished by: Kevin Weissgold	Company: Golder Associates Inc.	Date/Time: 10/29/19 1600	Received by:	Company: TAL	Date/Time: 10/31/19 930
Relinquished by	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.26, dated 7/25/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 121563**

Canton Facility

Client Golder Site Name

Cooler Received on 10/31/19 Opened on 10/31/19

Cooler unpacked by: DSD

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TAC Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

☒ See Multiple Cooler Form

1. Cooler temperature upon receipt
   IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp.____°C Corrected Cooler Temp.____°C
   IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp.____°C Corrected Cooler Temp.____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC991818
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #____	Yes	No
16. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login # : 121563

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	**IR-10** IR-11	4.2	4.9	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	3.6	4.3	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	2.5	3.2	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	4.0	4.7	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	1.5	2.2	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	2.0	2.7	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	2.9	3.6	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	1.0	1.7	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-121563-7
Client Project/Site: Phase B CCR (Pittsburgh)

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
11/12/2019 10:08:06 AM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Glossary

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

Case Narrative

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Job ID: 240-121563-7

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-121563-7

Comments
No additional comments.

Receipt
The samples were received on 10/31/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.7º C, 2.2º C, 2.7º C, 3.2º C, 3.6º C, 4.3º C, 4.7º C and 4.9º C.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Method	Method Description	Protocol	Laboratory
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT

Protocol References:

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

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Sample Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-121563-2	MW-6R	Water	10/29/19 09:18	10/31/19 09:30	
240-121563-3	MW-7	Water	10/29/19 12:15	10/31/19 09:30	
240-121563-5	MW-10	Water	10/29/19 13:35	10/31/19 09:30	
240-121563-6	MW-12R	Water	10/29/19 10:02	10/31/19 09:30	
240-121563-7	MW-13	Water	10/29/19 09:43	10/31/19 09:30	
240-121563-8	MW-14	Water	10/29/19 11:03	10/31/19 09:30	
240-121563-9	MW-22	Water	10/29/19 08:31	10/31/19 09:30	
240-121563-10	MWFGDW2	Water	10/29/19 08:16	10/31/19 09:30	
240-121563-15	FIELD BLANK	Water	10/29/19 15:15	10/31/19 09:30	
240-121563-16	DUPLICATE	Water	10/29/19 14:35	10/31/19 09:30	

Detection Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-6R — Lab Sample ID: 240-121563-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	190		10	10	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-7 — Lab Sample ID: 240-121563-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	150		10	10	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-10 — Lab Sample ID: 240-121563-5

No Detections.

Client Sample ID: MW-12R — Lab Sample ID: 240-121563-6

No Detections.

Client Sample ID: MW-13 — Lab Sample ID: 240-121563-7

No Detections.

Client Sample ID: MW-14 — Lab Sample ID: 240-121563-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	14		10	10	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-22 — Lab Sample ID: 240-121563-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	250		10	10	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MWFGDW2 — Lab Sample ID: 240-121563-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	110		10	10	mg/L	1		SM 2540C	Total/NA

Client Sample ID: FIELD BLANK — Lab Sample ID: 240-121563-15

No Detections.

Client Sample ID: DUPLICATE — Lab Sample ID: 240-121563-16

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-6R
Date Collected: 10/29/19 09:18
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-2
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	190		10	10	mg/L			11/05/19 13:57	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-7
Date Collected: 10/29/19 12:15
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-3
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	150		10	10	mg/L			11/05/19 13:57	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-10
Date Collected: 10/29/19 13:35
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-5
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			11/05/19 13:57	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-12R
Date Collected: 10/29/19 10:02
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-6
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			11/05/19 13:57	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-13
Date Collected: 10/29/19 09:43
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-7
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			11/05/19 13:57	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-14
Date Collected: 10/29/19 11:03
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-8
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	14		10	10	mg/L			11/05/19 13:57	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-22
Date Collected: 10/29/19 08:31
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-9
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	250		10	10	mg/L			11/05/19 13:57	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MWFGDW2
Date Collected: 10/29/19 08:16
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-10
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	110		10	10	mg/L			11/05/19 13:57	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: FIELD BLANK
Date Collected: 10/29/19 15:15
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-15
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			11/05/19 14:24	1

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: DUPLICATE
Date Collected: 10/29/19 14:35
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-16
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			11/05/19 14:24	1

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

Lab Sample ID: MB 180-297163/2
Matrix: Water
Analysis Batch: 297163

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			11/05/19 13:57	1

Lab Sample ID: LCS 180-297163/1
Matrix: Water
Analysis Batch: 297163

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	188	218		mg/L		116	80 - 120

Lab Sample ID: 240-121563-5 DU
Matrix: Water
Analysis Batch: 297163

Client Sample ID: MW-10
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	<10		<10		mg/L		NC	10

Lab Sample ID: MB 180-297168/2
Matrix: Water
Analysis Batch: 297168

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			11/05/19 14:24	1

Lab Sample ID: LCS 180-297168/1
Matrix: Water
Analysis Batch: 297168

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	188	160		mg/L		85	80 - 120

QC Association Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

General Chemistry

Analysis Batch: 297163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-2	MW-6R	Total/NA	Water	SM 2540C	
240-121563-3	MW-7	Total/NA	Water	SM 2540C	
240-121563-5	MW-10	Total/NA	Water	SM 2540C	
240-121563-6	MW-12R	Total/NA	Water	SM 2540C	
240-121563-7	MW-13	Total/NA	Water	SM 2540C	
240-121563-8	MW-14	Total/NA	Water	SM 2540C	
240-121563-9	MW-22	Total/NA	Water	SM 2540C	
240-121563-10	MWFGDW2	Total/NA	Water	SM 2540C	
MB 180-297163/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-297163/1	Lab Control Sample	Total/NA	Water	SM 2540C	
240-121563-5 DU	MW-10	Total/NA	Water	SM 2540C	

Analysis Batch: 297168

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-15	FIELD BLANK	Total/NA	Water	SM 2540C	
240-121563-16	DUPLICATE	Total/NA	Water	SM 2540C	
MB 180-297168/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-297168/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MW-6R
Date Collected: 10/29/19 09:18
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297163	11/05/19 13:57	AVS	TAL PIT

Client Sample ID: MW-7
Date Collected: 10/29/19 12:15
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297163	11/05/19 13:57	AVS	TAL PIT

Client Sample ID: MW-10
Date Collected: 10/29/19 13:35
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297163	11/05/19 13:57	AVS	TAL PIT

Client Sample ID: MW-12R
Date Collected: 10/29/19 10:02
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297163	11/05/19 13:57	AVS	TAL PIT

Client Sample ID: MW-13
Date Collected: 10/29/19 09:43
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297163	11/05/19 13:57	AVS	TAL PIT

Client Sample ID: MW-14
Date Collected: 10/29/19 11:03
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297163	11/05/19 13:57	AVS	TAL PIT

Client Sample ID: MW-22
Date Collected: 10/29/19 08:31
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297163	11/05/19 13:57	AVS	TAL PIT

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Phase B CCR (Pittsburgh)

Job ID: 240-121563-7

Client Sample ID: MWFGDW2

Lab Sample ID: 240-121563-10

Date Collected: 10/29/19 08:16

Matrix: Water

Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297163	11/05/19 13:57	AVS	TAL PIT

Client Sample ID: FIELD BLANK

Lab Sample ID: 240-121563-15

Date Collected: 10/29/19 15:15

Matrix: Water

Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297168	11/05/19 14:24	AVS	TAL PIT

Client Sample ID: DUPLICATE

Lab Sample ID: 240-121563-16

Date Collected: 10/29/19 14:35

Matrix: Water

Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	297168	11/05/19 14:24	AVS	TAL PIT

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 240-121563-7
Project/Site: Phase B CCR (Pittsburgh)

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
West Virginia DEP	State Program	210	12-31-19

Laboratory: Eurofins TestAmerica, Pittsburgh

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

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-20
California	State	2891	04-30-20
Connecticut	State	PH-0688	09-30-20
Florida	NELAP	E871008	06-30-20
Georgia	State	PA 02-00416	04-30-20
Illinois	NELAP	004375	06-30-20
Kansas	NELAP	E-10350	03-31-20
Kentucky (UST)	State	162013	04-30-20
Kentucky (WW)	State	KY98043	12-31-19
Louisiana	NELAP	04041	06-30-20
Minnesota	NELAP	042-999-482	12-31-19
Nevada	State	PA00164	07-31-20
New Hampshire	NELAP	2030	04-04-20
New Hampshire	NELAP	2030	04-04-20
New Jersey	NELAP	PA005	06-30-20
New York	NELAP	11182	04-01-20
North Carolina (WW/SW)	State	434	12-31-19
North Dakota	State	R-227	04-30-20
Oregon	NELAP	PA-2151	02-06-20
Pennsylvania	NELAP	02-00416	04-30-20
Rhode Island	State	LAO00362	12-30-19
South Carolina	State	89014	04-30-20
Texas	NELAP	T104704528	03-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462019-8	05-31-20
Virginia	NELAP	10043	09-15-20
West Virginia DEP	State	142	01-31-20
Wisconsin	State	998027800	08-31-20

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Rachel Powell	Site Contact: Rachel Powell	Date: 10/29/2019	COC No: 1 of 1 COCs
Golder Associates Inc.	Email: rpowell@golder.com	Lab Contact: Eric Lang	Carrier: FEDEX	TALS Project #:
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Patrick Trout/ Kevin Weissgold
Richmond/VA/USA	Analysis Turnaround Time			For Lab Use Only:
(804) 358-7900 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
(804) 517-3381 Cell	TAT if different from Below STANDARD			Lab Sampling:
Project Name: Phase B CCR	☐ 2 weeks			Job / SDG No.:
Site: Mt. Storm, WV	☐ 1 week			
P O # 19117239	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	B, Ca, As, Ba, Be, Cd, Cr, Co, Pb, Li	Mo, Se, Tl	Cl-, Fl-, SO4 - 9056A	TDS	Radium 226, 228, Total - 9090	Sample Specific Notes:
MW-6R	10/29/19	0918	G	GW	2	N	N	/	/	/	/	/	
MW-7	10/29/19	1215	G	GW	2	N	N	/	/	/	/	/	
MW-10	10/29/19	1335	G	GW	4	N	Y	/	/	/	/	/	
MW-12R	10/29/19	1002	G	GW	2	N	N	/	/	/	/	/	
MW-13	10/29/19	0957	G	GW	2	N	N	/	/	/	/	/	
MW-14	10/29/19	1103	G	GW	2	N	N	/	/	/	/	/	
MW-22	10/29/19	0831	G	GW	2	N	N	/	/	/	/	/	
MWFGDW2	10/29/19	0816	G	GW	2	N	N	/	/	/	/	/	
Field Blank	10/29/19	1515	G	W	2	N	N	/	/	/	/	/	
Duplicate	10/29/19	1435	G	GW	2	N	N	/	/	/	/	/	
								4	4	1	1	4	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab Archive for Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Level II Data Package requested. Please see reporting group G for additonal details.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:	Corr'd:	Therm ID No.:
Relinquished by: Kevin Weissgold	Company: Golder Associates Inc.	Date/Time: 10/29/19 1600	Received by:	Company: TAL	Date/Time: 10/31/19 930
Relinquished by	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.26, dated 7/25/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 121563**

Canton Facility

Client Golder Site Name _____ Cooler unpacked by: DSD

Cooler Received on 10/31/19 Opened on 10/31/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TAC Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt — See Multiple Cooler Form
   IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC991818
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

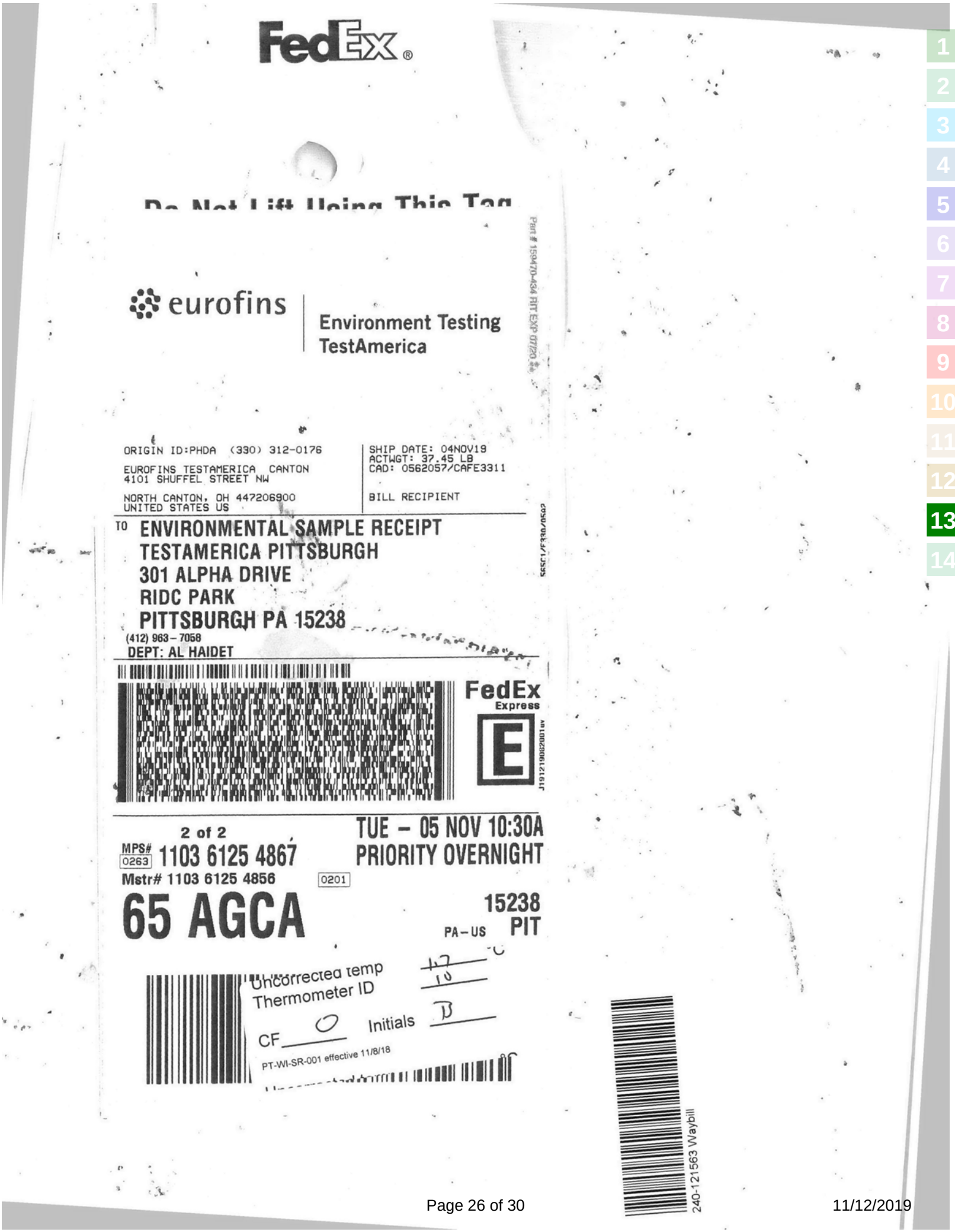
Login # : 121563

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-10 IR-11	4.2	4.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	3.6	4.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	2.5	3.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	4.0	4.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	1.5	2.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	2.0	2.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	2.9	3.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	1.0	1.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers



FedEx

Do Not Lift Using This Tag

Part # 159470-434 REV EXP 07/20

eurofins | Environment Testing TestAmerica

ORIGIN ID:PHDA (330) 312-0176
EUROFINS TESTAMERICA CANTON
4101 SHUFFEL STREET NW
NORTH CANTON, OH 447206900
UNITED STATES US

SHIP DATE: 04NOV19
ACTWGT: 37.45 LB
CAD: 0562057/CAFE3311

BILL RECIPIENT

TO ENVIRONMENTAL SAMPLE RECEIPT
TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
DEPT: AL HAIDET

FedEx Express

J191219082001uv

2 of 2
MPS# 0263 1103 6125 4867
Mstr# 1103 6125 4856 0201

TUE - 05 NOV 10:30A
PRIORITY OVERNIGHT

65 AGCA

15238
PA-US PIT

Uncorrected temp 4.7 °C
Thermometer ID 10
CF 0 Initials JB

PT-WI-SR-001 effective 11/8/18

240-121563 Waybill

eurofins | Environment Testing TestAmerica

ORIGIN ID:PHDA (330) 312-0176
EUROFINS TESTAMERICA CANTON
4101 SHUFFEL STREET NW
NORTH CANTON, OH 447206900
UNITED STATES US

SHIP DATE: 04NOV19
ACTWGT: 37.45 LB
CAD: 0562057/CAFE3311
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TO ENVIRONMENTAL SAMPLE RECEIPT
TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
DEPT: AL HAIDET

FedEx Express

1 of 2
TRK# 0201 1103 6125 4856
MASTER
65 AGCA

TUE - 05 NOV 10:30A
PRIORITY OVERNIGHT
15238
PA-US PIT

Uncorrected temp 2.4 °C
Thermometer ID 16
CF 0 Initials JJ
PT-WI-SR-001 effective 11/8/18

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

fins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	71.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	f 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP	Job #: 240-121563-7
Address: 301 Alpha Drive, RIDC Park,	Due Date Requested: 11/12/2019		
City: Pittsburgh	TAT Requested (days):		
State, Zip: PA, 15238			
Phone: 412-963-7058(Tel) 412-963-2468(Fax)	PO #:		
Email:	WO #:		
Project Name: Phase B CCR (Pittsburgh)	Project #: 24021758		
Site:	SSOW#:		

Preservation Codes:

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

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C_Calcd	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-6R (240-121563-2)	10/29/19	09:18 Eastern		Water			X	2	
MW-7 (240-121563-3)	10/29/19	12:15 Eastern		Water			X	2	
MW-10 (240-121563-5)	10/29/19	13:35 Eastern		Water			X	3	
MW-10 (240-121563-5DU)	10/29/19	13:35 Eastern	DU	Water			X	1	
MW-10 (240-121563-5MS)	10/29/19	13:35 Eastern	MS	Water			X	1	
MW-10 (240-121563-5MSD)	10/29/19	13:35 Eastern	MSD	Water			X	1	
MW-12R (240-121563-6)	10/29/19	10:02 Eastern		Water			X	2	
MW-13 (240-121563-7)	10/29/19	09:43 Eastern		Water			X	2	
MW-14 (240-121563-8)	10/29/19	11:03 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time: 11/4 1600	Company	Received by: D Watson	Date/Time: 11-5-19 9:00	Company TAPIT
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-113171.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-121563-7
Address: 301 Alpha Drive, RIDC Park,	Due Date Requested: 11/12/2019			
City: Pittsburgh	TAT Requested (days):			
State, Zip: PA, 15238				
Phone: 412-963-7058(Tel) 412-963-2468(Fax)	PO #:			
Email:	WO #:			
Project Name: Phase B CCR (Pittsburgh)	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	2540C_Calcd	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-22 (240-121563-9)	10/29/19	08:31 Eastern		Water			X	2	
MWFGDW2 (240-121563-10)	10/29/19	08:16 Eastern		Water			X	2	
FIELD BLANK (240-121563-15)	10/29/19	15:15 Eastern		Water			X	2	
DUPLICATE (240-121563-16)	10/29/19	14:35 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		11/4 1600		D Watson	11-5-19 900	TAL-PIT
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Golder Associates Inc.

Job Number: 240-121563-7

Login Number: 121563
List Number: 3
Creator: Watson, Debbie

List Source: Eurofins TestAmerica, Pittsburgh
List Creation: 11/05/19 12:53 PM

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

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-121563-8
Client Project/Site: Phase B CCR (St Louis)

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
12/3/2019 4:07:27 PM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

Qualifiers

Rad

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

Glossary

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

Case Narrative

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

Job ID: 240-121563-8

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-121563-8

Comments
No additional comments.

Receipt
The samples were received on 10/31/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.7º C, 2.2º C, 2.7º C, 3.2º C, 3.6º C, 4.3º C, 4.7º C and 4.9º C.

RAD
Method PrecSep_0: Radium 228 Prep Batch 160-449333:
The following samples had cloudy discoloration:MW-6R (240-121563-2) and MW-12R (240-121563-6). Sample 240-121563-2 and 240-121563-4 had white cloudy discoloration. Sample 240-121563-6 had cloudiness and light yellow discoloration.

Method PrecSep-21: Radium 226 Prep Batch 160-449331:
The following samples had cloudy discoloration:MW-6R (240-121563-2) and MW-12R (240-121563-6). Sample 240-121563-2 and 240-121563-4 had white cloudy discoloration. Sample 240-121563-6 had cloudiness and light yellow discoloration.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

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

Protocol References:

None = None

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

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

Laboratory References:

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

Sample Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-121563-2	MW-6R	Water	10/29/19 09:18	10/31/19 09:30	
240-121563-3	MW-7	Water	10/29/19 12:15	10/31/19 09:30	
240-121563-5	MW-10	Water	10/29/19 13:35	10/31/19 09:30	
240-121563-6	MW-12R	Water	10/29/19 10:02	10/31/19 09:30	
240-121563-7	MW-13	Water	10/29/19 09:43	10/31/19 09:30	
240-121563-8	MW-14	Water	10/29/19 11:03	10/31/19 09:30	
240-121563-9	MW-22	Water	10/29/19 08:31	10/31/19 09:30	
240-121563-10	MWFGDW2	Water	10/29/19 08:16	10/31/19 09:30	
240-121563-15	FIELD BLANK	Water	10/29/19 15:15	10/31/19 09:30	
240-121563-16	DUPLICATE	Water	10/29/19 14:35	10/31/19 09:30	

Client Sample ID: MW-6R

Date Collected: 10/29/19 09:18
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-2

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.228		0.110	0.112	1.00	0.141	pCi/L	11/06/19 17:39	11/28/19 08:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.1*		*40 - 110*	*11/06/19 17:39*	*11/28/19 08:02*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.139	U	0.279	0.279	1.00	0.474	pCi/L	11/06/19 18:11	11/13/19 08:44	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.1*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:44*	*1*
Y Carrier	*83.7*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:44*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.368	U	0.300	0.301	5.00	0.474	pCi/L		12/02/19 08:47	1

Client Sample ID: MW-7

Date Collected: 10/29/19 12:15
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-3

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0613	U	0.0855	0.0856	1.00	0.144	pCi/L	11/06/19 17:39	11/28/19 08:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.5*		*40 - 110*	*11/06/19 17:39*	*11/28/19 08:02*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0439	U	0.260	0.260	1.00	0.457	pCi/L	11/06/19 18:11	11/13/19 08:44	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.5*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:44*	*1*
Y Carrier	*84.9*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:44*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.105	U	0.274	0.274	5.00	0.457	pCi/L		12/02/19 08:47	1

Client Sample ID: MW-10

Date Collected: 10/29/19 13:35
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-5

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.142**		0.0936	0.0945	1.00	0.135	pCi/L	11/06/19 17:39	11/28/19 08:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.4*		*40 - 110*	*11/06/19 17:39*	*11/28/19 08:02*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.366	U	0.274	0.277	1.00	0.432	pCi/L	11/06/19 18:11	11/13/19 08:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.4*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:45*	*1*
Y Carrier	*83.4*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:45*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.508**		0.290	0.293	5.00	0.432	pCi/L		12/02/19 08:47	1

Client Sample ID: MW-12R

Date Collected: 10/29/19 10:02
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-6

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0359	U	0.0705	0.0706	1.00	0.124	pCi/L	11/06/19 17:39	11/28/19 09:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.3*		*40 - 110*	*11/06/19 17:39*	*11/28/19 09:56*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0182	U	0.206	0.206	1.00	0.376	pCi/L	11/06/19 18:11	11/13/19 08:46	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.3*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:46*	*1*
Y Carrier	*83.0*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:46*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0177	U	0.218	0.218	5.00	0.376	pCi/L		12/02/19 08:47	1

Client Sample ID: MW-13

Date Collected: 10/29/19 09:43
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-7

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.172		0.0903	0.0916	1.00	0.121	pCi/L	11/06/19 17:39	11/28/19 09:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.7*		*40 - 110*	*11/06/19 17:39*	*11/28/19 09:56*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.160	U	0.229	0.230	1.00	0.384	pCi/L	11/06/19 18:11	11/13/19 08:46	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.7*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:46*	*1*
Y Carrier	*84.9*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:46*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.332	U	0.246	0.248	5.00	0.384	pCi/L		12/02/19 08:47	1

Client Sample ID: MW-14

Date Collected: 10/29/19 11:03
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-8

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0170	U	0.0739	0.0739	1.00	0.138	pCi/L	11/06/19 17:39	11/28/19 09:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.5*		*40 - 110*	*11/06/19 17:39*	*11/28/19 09:56*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.130	U	0.286	0.286	1.00	0.527	pCi/L	11/06/19 18:11	11/13/19 08:46	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.5*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:46*	*1*
Y Carrier	*82.6*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:46*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.113	U	0.295	0.295	5.00	0.527	pCi/L		12/02/19 08:47	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

Client Sample ID: MW-22

Date Collected: 10/29/19 08:31
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-9

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0433	U	0.0835	0.0836	1.00	0.147	pCi/L	11/06/19 17:39	11/28/19 09:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*75.1*		*40 - 110*	*11/06/19 17:39*	*11/28/19 09:56*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.405	U	0.289	0.291	1.00	0.449	pCi/L	11/06/19 18:11	11/13/19 08:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*75.1*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:45*	*1*
Y Carrier	*85.6*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:45*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.448	U	0.301	0.303	5.00	0.449	pCi/L		12/02/19 08:47	1

Client Sample ID: MWFGDW2

Date Collected: 10/29/19 08:16
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-10

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0424	U	0.0733	0.0734	1.00	0.127	pCi/L	11/06/19 17:39	11/28/19 09:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.5*		*40 - 110*	*11/06/19 17:39*	*11/28/19 09:56*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.168	U	0.248	0.248	1.00	0.416	pCi/L	11/06/19 18:11	11/13/19 08:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.5*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:45*	*1*
Y Carrier	*86.0*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:45*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.211	U	0.259	0.259	5.00	0.416	pCi/L		12/02/19 08:47	1

Client Sample ID: FIELD BLANK

Date Collected: 10/29/19 15:15
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-15

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00368	U	0.0387	0.0387	1.00	0.0840	pCi/L	11/06/19 17:39	11/28/19 09:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*11/06/19 17:39*	*11/28/19 09:56*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0802	U	0.184	0.184	1.00	0.345	pCi/L	11/06/19 18:11	11/13/19 08:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:36*	*1*
Y Carrier	*86.4*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:36*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0839	U	0.188	0.188	5.00	0.345	pCi/L		12/02/19 08:47	1

Client Sample ID: DUPLICATE
Lab Sample ID: 240-121563-16

Date Collected: 10/29/19 14:35
Matrix: Water

Date Received: 10/31/19 09:30

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0970	U	0.0762	0.0767	1.00	0.113	pCi/L	11/06/19 17:39	11/28/19 09:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.7*		*40 - 110*	*11/06/19 17:39*	*11/28/19 09:56*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.434**		0.238	0.242	1.00	0.348	pCi/L	11/06/19 18:11	11/13/19 08:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.7*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:36*	*1*
Y Carrier	*80.7*		*40 - 110*	*11/06/19 18:11*	*11/13/19 08:36*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.531**		0.250	0.254	5.00	0.348	pCi/L		12/02/19 08:49	1

Tracer/Carrier Summary

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
240-121563-2	MW-6R	84.1
240-121563-3	MW-7	80.5
240-121563-5	MW-10	87.4
240-121563-5 MS	MW-10	89.5
240-121563-5 MSD	MW-10	87.7
240-121563-6	MW-12R	94.3
240-121563-7	MW-13	96.7
240-121563-8	MW-14	80.5
240-121563-9	MW-22	75.1
240-121563-10	MWFGDW2	83.5
240-121563-15	FIELD BLANK	97.6
240-121563-16	DUPLICATE	87.7
LCS 160-449331/1-A	Lab Control Sample	78.1
MB 160-449331/17-A	Method Blank	87.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
240-121563-2	MW-6R	84.1	83.7
240-121563-3	MW-7	80.5	84.9
240-121563-5	MW-10	87.4	83.4
240-121563-5 MS	MW-10	89.5	86.4
240-121563-5 MSD	MW-10	87.7	85.2
240-121563-6	MW-12R	94.3	83.0
240-121563-7	MW-13	96.7	84.9
240-121563-8	MW-14	80.5	82.6
240-121563-9	MW-22	75.1	85.6
240-121563-10	MWFGDW2	83.5	86.0
240-121563-15	FIELD BLANK	97.6	86.4
240-121563-16	DUPLICATE	87.7	80.7
LCS 160-449333/1-A	Lab Control Sample	78.1	86.4
MB 160-449333/17-A	Method Blank	87.7	87.5

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-449331/17-A
Matrix: Water
Analysis Batch: 452335

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 449331

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05101	U	0.0489	0.0491	1.00	0.120	pCi/L	11/06/19 17:39	11/28/19 09:56	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.7*		*40 - 110*	*11/06/19 17:39*	*11/28/19 09:56*	*1*

Lab Sample ID: LCS 160-449331/1-A
Matrix: Water
Analysis Batch: 452335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 449331

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	9.821		1.04	1.00	0.125	pCi/L	87	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*78.1*		*40 - 110*

Lab Sample ID: 240-121563-5 MS
Matrix: Water
Analysis Batch: 452335

Client Sample ID: MW-10
Prep Type: Total/NA
Prep Batch: 449331

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226	0.142		11.3	9.820		1.03	1.00	0.124	pCi/L	85	75 - 138		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Ba Carrier	*89.5*		*40 - 110*

Lab Sample ID: 240-121563-5 MSD
Matrix: Water
Analysis Batch: 452335

Client Sample ID: MW-10
Prep Type: Total/NA
Prep Batch: 449331

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.142		11.3	9.768		1.02	1.00	0.122	pCi/L	85	75 - 138	0.03	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Ba Carrier	*87.7*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-449333/17-A
Matrix: Water
Analysis Batch: 450220

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 449333

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1376	U	0.193	0.193	1.00	0.323	pCi/L	11/06/19 18:11	11/13/19 08:36	1

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

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.7		40 - 110	11/06/19 18:11	11/13/19 08:36	1
Y Carrier	87.5		40 - 110	11/06/19 18:11	11/13/19 08:36	1

Lab Sample ID: LCS 160-449333/1-A
Matrix: Water
Analysis Batch: 450217

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 449333

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.40	10.27		1.22	1.00	0.484	pCi/L	109	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	78.1		40 - 110
Y Carrier	86.4		40 - 110

Lab Sample ID: 240-121563-5 MS
Matrix: Water
Analysis Batch: 450217

Client Sample ID: MW-10
Prep Type: Total/NA
Prep Batch: 449333

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228	0.366	U	9.40	10.48		1.20	1.00	0.432	pCi/L	108	45 - 150		

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	89.5		40 - 110
Y Carrier	86.4		40 - 110

Lab Sample ID: 240-121563-5 MSD
Matrix: Water
Analysis Batch: 450217

Client Sample ID: MW-10
Prep Type: Total/NA
Prep Batch: 449333

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.366	U	9.40	9.995		1.17	1.00	0.443	pCi/L	102	45 - 150	0.20	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	87.7		40 - 110
Y Carrier	85.2		40 - 110

Rad

Prep Batch: 449331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-2	MW-6R	Total/NA	Water	PrecSep-21	
240-121563-3	MW-7	Total/NA	Water	PrecSep-21	
240-121563-5	MW-10	Total/NA	Water	PrecSep-21	
240-121563-6	MW-12R	Total/NA	Water	PrecSep-21	
240-121563-7	MW-13	Total/NA	Water	PrecSep-21	
240-121563-8	MW-14	Total/NA	Water	PrecSep-21	
240-121563-9	MW-22	Total/NA	Water	PrecSep-21	
240-121563-10	MWFGDW2	Total/NA	Water	PrecSep-21	
240-121563-15	FIELD BLANK	Total/NA	Water	PrecSep-21	
240-121563-16	DUPLICATE	Total/NA	Water	PrecSep-21	
MB 160-449331/17-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-449331/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
240-121563-5 MS	MW-10	Total/NA	Water	PrecSep-21	
240-121563-5 MSD	MW-10	Total/NA	Water	PrecSep-21	

Prep Batch: 449333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-121563-2	MW-6R	Total/NA	Water	PrecSep_0	
240-121563-3	MW-7	Total/NA	Water	PrecSep_0	
240-121563-5	MW-10	Total/NA	Water	PrecSep_0	
240-121563-6	MW-12R	Total/NA	Water	PrecSep_0	
240-121563-7	MW-13	Total/NA	Water	PrecSep_0	
240-121563-8	MW-14	Total/NA	Water	PrecSep_0	
240-121563-9	MW-22	Total/NA	Water	PrecSep_0	
240-121563-10	MWFGDW2	Total/NA	Water	PrecSep_0	
240-121563-15	FIELD BLANK	Total/NA	Water	PrecSep_0	
240-121563-16	DUPLICATE	Total/NA	Water	PrecSep_0	
MB 160-449333/17-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-449333/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-121563-5 MS	MW-10	Total/NA	Water	PrecSep_0	
240-121563-5 MSD	MW-10	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

Client Sample ID: MW-6R
Date Collected: 10/29/19 09:18
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 08:02	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450217	11/13/19 08:44	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Client Sample ID: MW-7
Date Collected: 10/29/19 12:15
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 08:02	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450217	11/13/19 08:44	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Client Sample ID: MW-10
Date Collected: 10/29/19 13:35
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 08:02	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450217	11/13/19 08:45	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Client Sample ID: MW-12R
Date Collected: 10/29/19 10:02
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 09:56	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450217	11/13/19 08:46	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

Client Sample ID: MW-13
Date Collected: 10/29/19 09:43
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 09:56	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450217	11/13/19 08:46	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Client Sample ID: MW-14
Date Collected: 10/29/19 11:03
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 09:56	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450217	11/13/19 08:46	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Client Sample ID: MW-22
Date Collected: 10/29/19 08:31
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 09:56	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450217	11/13/19 08:45	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Client Sample ID: MWFGDW2
Date Collected: 10/29/19 08:16
Date Received: 10/31/19 09:30

Lab Sample ID: 240-121563-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 09:56	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450217	11/13/19 08:45	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Phase B CCR (St Louis)

Job ID: 240-121563-8

Client Sample ID: FIELD BLANK

Lab Sample ID: 240-121563-15

Date Collected: 10/29/19 15:15

Matrix: Water

Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 09:56	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450220	11/13/19 08:36	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:47	SMP	TAL SL

Client Sample ID: DUPLICATE

Lab Sample ID: 240-121563-16

Date Collected: 10/29/19 14:35

Matrix: Water

Date Received: 10/31/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			449331	11/06/19 17:39	ORM	TAL SL
Total/NA	Analysis	9315		1	452335	11/28/19 09:56	KLS	TAL SL
Total/NA	Prep	PrecSep_0			449333	11/06/19 18:11	ORM	TAL SL
Total/NA	Analysis	9320		1	450220	11/13/19 08:36	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	452595	12/02/19 08:49	SMP	TAL SL

Laboratory References:

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

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 240-121563-8
Project/Site: Phase B CCR (St Louis)

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
West Virginia DEP	State Program	210	12-31-19

Laboratory: Eurofins TestAmerica, St. Louis

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

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Rachel Powell	Site Contact: Rachel Powell	Date: 10/29/2019	COC No: 1 of 1 COCs
Golder Associates Inc.	Email: rpowell@golder.com	Lab Contact: Eric Lang	Carrier: FEDEX	TALS Project #:
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Patrick Trout/ Kevin Weissgold
Richmond/VA/USA	Analysis Turnaround Time			For Lab Use Only:
(804) 358-7900 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
(804) 517-3381 Cell	TAT if different from Below STANDARD			Lab Sampling:
Project Name: Phase B CCR	☐ 2 weeks			Job / SDG No.:
Site: Mt. Storm, WV	☐ 1 week			
P O # 19117239	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	B, Ca, As, Ba, Be, Cd, Cr, Co, Pb, Li	Mo, Se, Tl	Cl-, Fl-, SO4 - 9056A	TDS	Radium 226, 228, Total - 9080	Sample Specific Notes:
MW-6R	10/29/19	0918	G	GW	2	N	N	/	/	/	/	/	
MW-7	10/29/19	1215	G	GW	2	N	N	/	/	/	/	/	
MW-10	10/29/19	1335	G	GW	4	N	Y	/	/	/	/	/	
MW-12R	10/29/19	1002	G	GW	2	N	N	/	/	/	/	/	
MW-13	10/29/19	0957	G	GW	2	N	N	/	/	/	/	/	
MW-14	10/29/19	1103	G	GW	2	N	N	/	/	/	/	/	
MW-22	10/29/19	0831	G	GW	2	N	N	/	/	/	/	/	
MWFGDW2	10/29/19	0816	G	GW	2	N	N	/	/	/	/	/	
Field Blank	10/29/19	1515	G	W	2	N	N	/	/	/	/	/	
Duplicate	10/29/19	1435	G	GW	2	N	N	/	/	/	/	/	
								4	4	1	1	4	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab Archive for Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Level II Data Package requested. Please see reporting group G for additonal details.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:	Corr'd:	Therm ID No.:
Relinquished by: Kevin Weissgold	Company: Golder Associates Inc.	Date/Time: 10/29/19 1600	Received by:	Company: TAL	Date/Time: 10/31/19 930
Relinquished by	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.26, dated 7/25/2019

12/3/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 121563**

Canton Facility

Client Golder Site Name _____ Cooler unpacked by: DSD

Cooler Received on 10/31/19 Opened on 10/31/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TAC Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt — See Multiple Cooler Form
   IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 each	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC991818
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 121563

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-10 IR-11	4.2	4.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	3.6	4.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	2.5	3.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	4.0	4.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	1.5	2.2	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	2.0	2.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	2.9	3.6	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11	1.0	1.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

FedEx®

Do Not Lift Using This Tag

Part # 159470-434 REV EXP 07/20

eurofins | Environment Testing TestAmerica

ORIGIN ID:PHDA (330) 312-0176
EUROFINS TESTAMERICA CANTON
4101 SHUFFEL STREET NW
NORTH CANTON, OH 447206900
UNITED STATES US

SHIP DATE: 04NOV19
ACTWGT: 37.45 LB
CAD: 0562057/CAFE3311

BILL RECIPIENT

TO ENVIRONMENTAL SAMPLE RECEIPT
TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
DEPT: AL HAIDET

FedEx Express

J191219082001uv

2 of 2
MPS# 0263 1103 6125 4867
Mstr# 1103 6125 4856 0201

TUE - 05 NOV 10:30A
PRIORITY OVERNIGHT

65 AGCA

15238
PA-US PIT

Uncorrected temp 4.7 °C
Thermometer ID 10
CF 0 Initials JB

PT-WI-SR-001 effective 11/8/18

240-121563 Waybill

Part # 159470-434 RIT EXP 07/20

eurofins | Environment Testing TestAmerica

ORIGIN ID:PHDA (330) 312-0176
EUROFINS TESTAMERICA CANTON
4101 SHUFFEL STREET NW

NORTH CANTON, OH 447206900
UNITED STATES US

SHIP DATE: 04NOV19
ACTWGT: 37.45 LB
CAD: 0562057/CAFE3311

BILL RECIPIENT

TO ENVIRONMENTAL SAMPLE RECEIPT
TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238
(412) 963-7058
DEPT: AL HAIDET

585C1/E330/0502

FedEx
Express

E

J191219082001uv

1 of 2

TRK# 1103 6125 4856
0201

TUE - 05 NOV 10:30A
PRIORITY OVERNIGHT

MASTER

65 AGCA

15238
PA-US PIT

Uncorrected temp 2.4 °C
Thermometer ID 16
CF 0 Initials JB
PT-WI-SR-001 effective 11/8/18

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-113170.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-121563-6
Address: 13715 Rider Trail North,	Due Date Requested: 11/29/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Phase A CCR (St Louis)	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

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

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-10 (240-121563-5MS)	10/29/19	13:35 Eastern	MS	Water			X	X	X	1	
MW-10 (240-121563-5MSD)	10/29/19	13:35 Eastern	MSD	Water			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Charles D	11-4-19 1534	240		11/5/19 0915	TASTC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-113169.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-121563-6
Address: 13715 Rider Trail North,	Due Date Requested: 11/29/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Phase A CCR (St Louis)	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

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

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-5 (240-121563-1)	10/29/19	15:55 Eastern		Water			X	X	X	3	
MW-8 (240-121563-4)	10/29/19	13:44 Eastern		Water			X	X	X	3	
MW-10 (240-121563-5)	10/29/19	13:35 Eastern		Water			X	X	X	6	
MW-22 (240-121563-9)	10/29/19	08:31 Eastern		Water			X	X	X	3	
MWFGDW2 (240-121563-10)	10/29/19	08:16 Eastern		Water			X	X	X	3	
MWFGDW6 (240-121563-14)	10/29/19	12:47 Eastern		Water			X	X	X	3	
FIELD BLANK (240-121563-15)	10/29/19	15:15 Eastern		Water			X	X	X	3	
DUPLICATE (240-121563-16)	10/29/19	14:35 Eastern		Water			X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:
Empty Kit Relinquished by: Date:	Time: Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 11/5/19 09:15	Company FAST
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-113169.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-121563-8
Address: 13715 Rider Trail North,	Due Date Requested: 11/29/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Phase B CCR (St Louis)	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-6R (240-121563-2)	10/29/19	09:18 Eastern		Water			X	X	X	3	
MW-7 (240-121563-3)	10/29/19	12:15 Eastern		Water			X	X	X	3	
MW-10 (240-121563-5)	10/29/19	13:35 Eastern		Water			X	X	X	3	
MW-12R (240-121563-6)	10/29/19	10:02 Eastern		Water			X	X	X	6	
MW-13 (240-121563-7)	10/29/19	09:43 Eastern		Water			X	X	X	3	
MW-14 (240-121563-8)	10/29/19	11:03 Eastern		Water			X	X	X	3	
MW-22 (240-121563-9)	10/29/19	08:31 Eastern		Water			X	X	X	3	
MWFGDW2 (240-121563-10)	10/29/19	08:16 Eastern		Water			X	X	X	3	
FIELD BLANK (240-121563-15)	10/29/19	15:15 Eastern		Water			X	X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:
Empty Kit Relinquished by:	Date: Time: Method of Shipment:

	Relinquished by: Charles H	Date/Time: 11-4-19 1534	Company: 240	Received by:	Date/Time: 11/5/19 09:15	Company: TAL STL
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lang, Eric A.	Carrier Tracking No(s):	COC No: 240-113169.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: eric.lang@testamericainc.com	State of Origin: West Virginia	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - West Virginia DEP		Job #: 240-121563-8
Address: 13715 Rider Trail North,	Due Date Requested: 11/29/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Phase B CCR (St Louis)	Project #: 24021758			
Site:	SSOW#:			

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Ra226Ra228_GFPC/ (MOD) Local Method	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
DUPLICATE (240-121563-16)	10/29/19	14:35 Eastern		Water			X	X	X	3	

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

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification
Unconfirmed

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

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Charles B	11-4-19 1534	290	[signature]	11/5/19 09:15	TASTL

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

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Golder Associates Inc.

Job Number: 240-121563-8

Login Number: 121563
List Number: 2
Creator: Harris, Lorin C

List Source: Eurofins TestAmerica, St. Louis
List Creation: 11/05/19 11:38 AM

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

GOLDER

Project Name: Mount Storm Power Station - Phase B - CCR Appendix III & IV Detects

Project Reference Number: 19117239

Sampling Event Date: October 29, 2019

Review Date: 12/12/2019 *Initials:* RIP

Review Date: 12/26/2019 *Initials:* ALR

Person(s) performing the review are to initial each item on this form as acknowledgement of data acceptance, or as acknowledgement of a review issue. In the case of the latter, a brief explanation should follow the applicable item.

Golder Associates Inc. has reviewed the laboratory certificates of analysis, chain-of-custody form, and laboratory provided sample group quality assurance and quality control data for the above referenced sample group to identify potential bias or inaccuracy, in general accordance with the following United States Environmental Protection Agency (EPA) and Department of Energy (DOE) documents:

- National Functional Guidelines for Organic Superfund Methods Data Review, January 2017;
- National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017;
- Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, July 1988;
- US Department of Energy Evaluation of Radiochemical Data Usability, April 1997; and
- Sampling and Analysis Plan for US Department of Energy Office of Legacy Management Sites.

COMMON ACRONYMS:

- MS = matrix spike
- MSD = matrix spike duplicate
- LCS = laboratory control spike
- RPD = relative percent difference
- MB = method blank
- DUP = duplicate
- FB = field blank
- VSWMR = Virginia Solid Waste Management Regulations
- J = estimated
- ND and/or U= not detected
- COC = chain of custody
- QC = quality control
- µg/L = micrograms per liter
- mg/L = milligrams per liter
- EPA = United States Environmental Protection Agency
- pCi/L = picocuries per liter

COMPLIANCE ANALYTE LIST

☐ Historical VPDES Parameters

☒ CCR Appendix III to Part 257

☒ CCR Appendix IV to Part 257: Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium, Radium

☐ VSWMR Phase II Parameters: _____

☐ Other: _____

Note: TestAmerica Job No.: 240-121563-3, 240-121563-7, 240-121563-8

Golder
2108 West Laburnum Ave, Suite 200
Richmond, Virginia, USA 23227
T: +1 804 358-7900 | F: +1 804 358-2900

1.0 CHAIN OF CUSTODY (COC) REVIEW

Yes COC was properly signed by all parties.

Yes Correct project name and number are on the form.

Yes Sample receipt condition at laboratory was acceptable.

Yes Each sample and blank submitted for analysis appears in the data report.

Note: _____

2.0 SAMPLE HOLDING TIMES

Yes Holding times for extraction *and/or* analysis were met for each analytical method.

Review Criteria		
Method	**Analytes**	**Holding Time**
EPA 9056	Chloride, Fluoride, Sulfate	28 days
EPA 9315 EPA 9320	Radium 226 Radium 228	6 months
EPA 6000 series	Metals	6 months
SM2540	Total Dissolved Solids	7 days

Notes:_____

3.0 LABORATORY QUALITY CONTROL REVIEW

Yes Laboratory analyzed at least one internal blank for each method, where applicable.

Yes Laboratory blanks were interference free.

Notes: _____

_Parameter	Method Blank Detection (µg/L)	Batch	Associated Qualified Sample(s)	Validator Qualifier
--	--	--	'--	'--

NA Surrogate recoveries are provided for each analytical method, where applicable.

NA Surrogate recoveries for each method are within the acceptable limits.

Notes: _____

Yes Tracer and carrier yields are provided for each analytical method, where applicable (Radiochemical Data Only).

Yes Tracer and carrier yields for each method are within the acceptable limits (Radiochemical Data Only).

Notes: _____

Yes MS/MSD/LCS/RPD data results are provided for each analytical method.

Yes MS/MSD/LCS/RPD recoveries for each method are within the acceptable limits.

Notes: _____

Parameter	Recovery Outside QC Limits	Batch	Associated Qualified Sample(s)
--	--	--	--

Yes Minimum Detectable Concentrations (MDCs) are provided for radiological samples.

Yes Radiological samples reported below their respective MDC have been qualified with a "U."

Notes: _____

Parameter	Associated Samples Below MDC
Radium-226	MW-7, MW-12R, MW-14, MW-22, MWFGDW2, FIELD BLANK, DUPLICATE
Radium-228	MW-6R, MW-7, MW-10, MW-12R, MW-13, MW-14, MW-22, MWFGDW2, FIELD BLANK
Total Radium	MW-6R, MW-7, MW-12R, MW-13, MW-14, MW-22, MWFGDW2, FIELD BLANK

4.0 ANALYTE LISTS/METHODS

Yes The proper number of constituents are present for each analyte list as identified above (including detects where applicable).

Yes Proper EPA SW-846 analytical methods were used for analysis.

Notes: _____

5.0 OUTLIER EVALUATION

Yes Analytical results have been evaluated for variances +/- 25% compared to the average of the most recent 8 data points.

Yes Analytical results with variances >25% have been evaluated for trends.

NA If no trends were identified for analytical results with variances >25%, a data quality review (DQR) was conducted for suspect analytical results identified as possible outliers. DQR results summarized below.

Analyte	Location	DQR identified issues?	Re-analysis requested?	Outlier Identification
--	--	--	--	--

6.0 DATA REPORTING

Yes Trip; field and/or equipment; and laboratory blank results have all been reported and the detected constituents in these blanks, if any, have been qualified using professional judgement where detected in other samples.

Notes: _____

Sample ID	Parameter	Blank Detection (µg/L)	Associated Qualified Sample(s)	Validator Qualifier
--	--	--	--	--

Yes It is clear from the laboratory report that samples have or have not been diluted during analysis, and if the samples have been diluted, the result is reported as a multiple of the dilution (*e.g.*, a sample diluted 10x resulting in an analytical detection of 1.0 should be reported as 10).

Yes The report provides the reporting limit for each constituent.

Yes The proper reporting limits have been used (*e.g.* NC Solid Waste Section approved PQLs, or VA DEQ Permit approved detection limits, as appropriate).

Notes: _____

7.0 FIELD DUPLICATE PRECISION

Yes Field duplicate sample results were within control limits of 20% relative percent difference for sample results greater than 5 times the quantitation limit. When one or both results were less than 5 times the quantitation limit, the difference between the two results was less than twice the reporting limit.

Notes: The following table presents field duplicates and their associaed parent samples that were not within control limits. In accordance with EPA guidance, sample results with field duplicate imprecison may be qualified estimated (J) or non-detect estimated (UJ). As presented below, data qualification is not recommended.

Parameter	Associated Samples	Parent Sample Result (ug/L)	Duplicate Sample Result (ug/L)	Renalysis requested?	Outlier Indentification
--	--	--	--	--	--

golder.com