



Illinois Power Resources Generating, LLC
1500 Eastport Plaza Drive
Collinsville, IL 62234

December 20, 2023

Illinois Environmental Protection Agency
DWPC – Permits MC#15
Attn: Part 845 Coal Combustion Residual Rule Submittal
1021 North Grand Avenue East
Springfield, IL 62794

Re: Duck Creek Power Plant Bottom Ash Basin; IEPA ID # W0578010001-03

Dear Mr. LeCrone:

In accordance with Title 35 of the Illinois Administrative Code (35 I.A.C.) Section (§) 845.610(b)(3)(D), Illinois Power Resources Generating, LLC (IPRG) is submitting groundwater monitoring data for the Quarter 3, 2023 sampling event at the Duck Creek Power Plant Bottom Ash Basin, identified by Illinois Environmental Protection Agency (IEPA) ID No. W0578010001-03. This data is being submitted and placed in the facility's operating record as required by 35 I.A.C. § 845.800(d)(15) within 60 days of receiving final laboratory analytical data. Results were compared with the groundwater protection standards (GWPSs) described in 35 I.A.C. § 845.600 to determine statistical exceedances of the GWPS.

Sincerely,

A handwritten signature in blue ink that reads "Dianna Tickner".

Dianna Tickner, PE, PMP
Senior Director, Demolition and Decommission

Enclosures

Groundwater Monitoring Data and Detected Exceedances, Quarter 3, 2023, Bottom Ash Basin, Duck Creek Power Plant, Canton, Illinois

35 I.A.C. § 845.610(b)(3)(D)
GROUNDWATER MONITORING DATA AND DETECTED EXCEEDANCES
QUARTER 3, 2023
BOTTOM ASH BASIN, DUCK CREEK POWER PLANT, CANTON, ILLINOIS

December 20, 2023

Samples were collected on July 24 and 25 and September 6, 2023 and analyzed for the parameters listed in Title 35 of the Illinois Administrative Code (35 I.A.C.) Section (§) 845.600(a), calcium, and turbidity. Final laboratory analytical data was received on October 21, 2023.

The monitoring well locations are included in **Figure 1. Attachment A** summarizes the groundwater elevation data for the Quarter 3, 2023 sampling event. **Table 1** is a summary of the field parameters and analytical results. **Attachment B** contains the associated laboratory analytical reports and field data sheets for the Quarter 3, 2023 sampling event. Monitoring well BA02L had insufficient water for purging; therefore, a groundwater sample was not collected for this sampling event.

Statistical procedures used to evaluate groundwater results are provided in Appendix A of the Groundwater Monitoring Plan¹ provided in the operating permit application. In accordance with 35 I.A.C. § 845.610(b)(3)(B), the Quarter 3, 2023 groundwater monitoring data were evaluated for statistical exceedances over background levels for the constituents listed in 35 I.A.C. § 845.600. **Attachment C** shows the statistically derived values compared to background levels.

In accordance with 35 I.A.C. § 845.610(b)(3)(C), the statistically derived values identified as Statistical Results in **Table 2** were compared with the groundwater protection standards (GWPSs) described in 35 I.A.C. § 845.600 to determine statistical exceedances of the GWPS. As shown in **Table 2**, statistical exceedances of the GWPS were not identified.

TABLES

Table 1	Field Parameters and Analytical Results - Quarter 3, 2023
Table 2	Comparison of Statistical Results to GWPS - Quarter 3, 2023

FIGURES

Figure 1	35 I.A.C. § 845 Groundwater Monitoring Well Network
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ATTACHMENTS

Attachment A	Groundwater Elevation Data - Quarter 3, 2023
Attachment B	Laboratory Reports and Field Data Sheets - Quarter 3, 2023
Attachment C	Comparison of Statistical Results to Background - Quarter 3, 2023

¹ Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021. *Groundwater Monitoring Plan. Bottom Ash basin. Duck Creek Power Plant. Canton, Illinois. October 25, 2021.*

TABLES

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
BA05	Background	E002	07/24/2023	Antimony, total	0.00043 U	mg/L
BA05	Background	E002	07/24/2023	Arsenic, total	0.00250	mg/L
BA05	Background	E002	07/24/2023	Barium, total	0.0560	mg/L
BA05	Background	E002	07/24/2023	Beryllium, total	0.00059 U	mg/L
BA05	Background	E002	07/24/2023	Boron, total	0.120 J+	mg/L
BA05	Background	E002	07/24/2023	Cadmium, total	0.00074 U	mg/L
BA05	Background	E002	07/24/2023	Calcium, total	180	mg/L
BA05	Background	E002	07/24/2023	Chloride, total	9.60	mg/L
BA05	Background	E002	07/24/2023	Chromium, total	0.0028 U	mg/L
BA05	Background	E002	07/24/2023	Cobalt, total	0.00077 J	mg/L
BA05	Background	E002	07/24/2023	Dissolved Oxygen	0.450	mg/L
BA05	Background	E002	07/24/2023	Fluoride, total	0.25 UJ	mg/L
BA05	Background	E002	07/24/2023	Lead, total	0.00022 U	mg/L
BA05	Background	E002	07/24/2023	Lithium, total	0.0056 J	mg/L
BA05	Background	E002	07/24/2023	Mercury, total	0.00014 U	mg/L
BA05	Background	E002	07/24/2023	Molybdenum, total	0.00200	mg/L
BA05	Background	E002	07/24/2023	Oxidation Reduction Potential	-51.4	mV
BA05	Background	E002	07/24/2023	pH (field)	6.8	SU
BA05	Background	E002	07/24/2023	Radium 226 + Radium 228, total	0.296 U*	pCi/L
BA05	Background	E002	07/24/2023	Selenium, total	0.00074 U	mg/L
BA05	Background	E002	07/24/2023	Specific Conductance @ 25C (field)	1,592	micromhos/cm
BA05	Background	E002	07/24/2023	Sulfate, total	500	mg/L
BA05	Background	E002	07/24/2023	Temperature	14.6	degrees C
BA05	Background	E002	07/24/2023	Thallium, total	0.00038 U	mg/L
BA05	Background	E002	07/24/2023	Total Dissolved Solids	1,200	mg/L
BA05	Background	E002	07/24/2023	Turbidity, field	5,270	NTU
BA06	Background	E002	07/24/2023	Antimony, total	0.00043 U	mg/L
BA06	Background	E002	07/24/2023	Arsenic, total	0.00420	mg/L
BA06	Background	E002	07/24/2023	Barium, total	0.0930	mg/L
BA06	Background	E002	07/24/2023	Beryllium, total	0.00059 U	mg/L
BA06	Background	E002	07/24/2023	Boron, total	9.00	mg/L
BA06	Background	E002	07/24/2023	Cadmium, total	0.00074 U	mg/L
BA06	Background	E002	07/24/2023	Calcium, total	280	mg/L
BA06	Background	E002	07/24/2023	Chloride, total	560	mg/L
BA06	Background	E002	07/24/2023	Chromium, total	0.0028 U	mg/L
BA06	Background	E002	07/24/2023	Cobalt, total	0.00970	mg/L
BA06	Background	E002	07/24/2023	Dissolved Oxygen	2.50	mg/L
BA06	Background	E002	07/24/2023	Fluoride, total	0.264 J+	mg/L
BA06	Background	E002	07/24/2023	Lead, total	0.00022 U	mg/L
BA06	Background	E002	07/24/2023	Lithium, total	0.005 U	mg/L
BA06	Background	E002	07/24/2023	Mercury, total	0.00014 U	mg/L
BA06	Background	E002	07/24/2023	Molybdenum, total	0.00120	mg/L
BA06	Background	E002	07/24/2023	Oxidation Reduction Potential	-40.0	mV
BA06	Background	E002	07/24/2023	pH (field)	6.5	SU
BA06	Background	E002	07/24/2023	Radium 226 + Radium 228, total	0.223 U*	pCi/L
BA06	Background	E002	07/24/2023	Selenium, total	0.00074 U	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
BA06	Background	E002	07/24/2023	Specific Conductance @ 25C (field)	3,140	micromhos/cm
BA06	Background	E002	07/24/2023	Sulfate, total	360	mg/L
BA06	Background	E002	07/24/2023	Temperature	18.7	degrees C
BA06	Background	E002	07/24/2023	Thallium, total	0.00038 U	mg/L
BA06	Background	E002	07/24/2023	Total Dissolved Solids	2,300	mg/L
BA06	Background	E002	07/24/2023	Turbidity, field	5.30	NTU
BA01	Compliance	E002	07/24/2023	Antimony, total	0.00043 U	mg/L
BA01	Compliance	E002	07/24/2023	Arsenic, total	0.00079 J	mg/L
BA01	Compliance	E002	07/24/2023	Barium, total	0.130	mg/L
BA01	Compliance	E002	07/24/2023	Beryllium, total	0.00059 U	mg/L
BA01	Compliance	E002	07/24/2023	Boron, total	0.0720 J+	mg/L
BA01	Compliance	E002	07/24/2023	Cadmium, total	0.00074 U	mg/L
BA01	Compliance	E002	07/24/2023	Calcium, total	110	mg/L
BA01	Compliance	E002	07/24/2023	Chloride, total	18.0	mg/L
BA01	Compliance	E002	07/24/2023	Chromium, total	0.0028 U	mg/L
BA01	Compliance	E002	07/24/2023	Cobalt, total	0.00097 J	mg/L
BA01	Compliance	E002	07/24/2023	Dissolved Oxygen	3.40	mg/L
BA01	Compliance	E002	07/24/2023	Fluoride, total	0.25 UJ	mg/L
BA01	Compliance	E002	07/24/2023	Lead, total	0.00047 J	mg/L
BA01	Compliance	E002	07/24/2023	Lithium, total	0.005 U	mg/L
BA01	Compliance	E002	07/24/2023	Mercury, total	0.00014 U	mg/L
BA01	Compliance	E002	07/24/2023	Molybdenum, total	0.00110	mg/L
BA01	Compliance	E002	07/24/2023	Oxidation Reduction Potential	26.0	mV
BA01	Compliance	E002	07/24/2023	pH (field)	6.7	SU
BA01	Compliance	E002	07/24/2023	Radium 226 + Radium 228, total	0.478 J	pCi/L
BA01	Compliance	E002	07/24/2023	Selenium, total	0.00074 U	mg/L
BA01	Compliance	E002	07/24/2023	Specific Conductance @ 25C (field)	982	micromhos/cm
BA01	Compliance	E002	07/24/2023	Sulfate, total	150	mg/L
BA01	Compliance	E002	07/24/2023	Temperature	18.8	degrees C
BA01	Compliance	E002	07/24/2023	Thallium, total	0.00038 U	mg/L
BA01	Compliance	E002	07/24/2023	Total Dissolved Solids	640	mg/L
BA01	Compliance	E002	07/24/2023	Turbidity, field	19.1	NTU
BA02	Compliance	E002	07/25/2023	Antimony, total	0.00043 U	mg/L
BA02	Compliance	E002	07/25/2023	Arsenic, total	0.00220	mg/L
BA02	Compliance	E002	07/25/2023	Barium, total	0.240	mg/L
BA02	Compliance	E002	07/25/2023	Beryllium, total	0.00059 U	mg/L
BA02	Compliance	E002	07/25/2023	Boron, total	0.0510 J+	mg/L
BA02	Compliance	E002	07/25/2023	Cadmium, total	0.00074 U	mg/L
BA02	Compliance	E002	07/25/2023	Calcium, total	99.0	mg/L
BA02	Compliance	E002	07/25/2023	Chloride, total	11.0	mg/L
BA02	Compliance	E002	07/25/2023	Chromium, total	0.0028 U	mg/L
BA02	Compliance	E002	07/25/2023	Cobalt, total	0.00055 J	mg/L
BA02	Compliance	E002	07/25/2023	Dissolved Oxygen	1.80	mg/L
BA02	Compliance	E002	07/25/2023	Fluoride, total	0.322 J+	mg/L
BA02	Compliance	E002	07/25/2023	Lead, total	0.00022 U	mg/L
BA02	Compliance	E002	07/25/2023	Lithium, total	0.005 U	mg/L

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DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
BA02	Compliance	E002	07/25/2023	Mercury, total	0.00014 U	mg/L
BA02	Compliance	E002	07/25/2023	Molybdenum, total	0.00460	mg/L
BA02	Compliance	E002	07/25/2023	Oxidation Reduction Potential	-25.9	mV
BA02	Compliance	E002	07/25/2023	pH (field)	6.8	SU
BA02	Compliance	E002	07/25/2023	Radium 226 + Radium 228, total	0.186 UJ*	pCi/L
BA02	Compliance	E002	07/25/2023	Selenium, total	0.00074 U	mg/L
BA02	Compliance	E002	07/25/2023	Specific Conductance @ 25C (field)	741	micromhos/cm
BA02	Compliance	E002	07/25/2023	Sulfate, total	13.0	mg/L
BA02	Compliance	E002	07/25/2023	Temperature	19.6	degrees C
BA02	Compliance	E002	07/25/2023	Thallium, total	0.00038 U	mg/L
BA02	Compliance	E002	07/25/2023	Total Dissolved Solids	620	mg/L
BA02	Compliance	E002	07/25/2023	Turbidity, field	37.3	NTU
BA03	Compliance	E002	07/24/2023	Antimony, total	0.00043 U	mg/L
BA03	Compliance	E002	07/24/2023	Arsenic, total	0.00069 U	mg/L
BA03	Compliance	E002	07/24/2023	Barium, total	0.170	mg/L
BA03	Compliance	E002	07/24/2023	Beryllium, total	0.00059 U	mg/L
BA03	Compliance	E002	07/24/2023	Boron, total	0.0450 J+	mg/L
BA03	Compliance	E002	07/24/2023	Cadmium, total	0.00074 U	mg/L
BA03	Compliance	E002	07/24/2023	Calcium, total	98.0	mg/L
BA03	Compliance	E002	07/24/2023	Chloride, total	5.00	mg/L
BA03	Compliance	E002	07/24/2023	Chromium, total	0.0028 U	mg/L
BA03	Compliance	E002	07/24/2023	Cobalt, total	0.0011 J	mg/L
BA03	Compliance	E002	07/24/2023	Dissolved Oxygen	0.420	mg/L
BA03	Compliance	E002	07/24/2023	Fluoride, total	0.261 J+	mg/L
BA03	Compliance	E002	07/24/2023	Lead, total	0.00140	mg/L
BA03	Compliance	E002	07/24/2023	Lithium, total	0.005 U	mg/L
BA03	Compliance	E002	07/24/2023	Mercury, total	0.00014 U	mg/L
BA03	Compliance	E002	07/24/2023	Molybdenum, total	0.00190	mg/L
BA03	Compliance	E002	07/24/2023	Oxidation Reduction Potential	11.1	mV
BA03	Compliance	E002	07/24/2023	pH (field)	6.9	SU
BA03	Compliance	E002	07/24/2023	Radium 226 + Radium 228, total	1.89	pCi/L
BA03	Compliance	E002	07/24/2023	Selenium, total	0.00120	mg/L
BA03	Compliance	E002	07/24/2023	Specific Conductance @ 25C (field)	799	micromhos/cm
BA03	Compliance	E002	07/24/2023	Sulfate, total	17.0	mg/L
BA03	Compliance	E002	07/24/2023	Temperature	18.6	degrees C
BA03	Compliance	E002	07/24/2023	Thallium, total	0.00038 U	mg/L
BA03	Compliance	E002	07/24/2023	Total Dissolved Solids	460	mg/L
BA03	Compliance	E002	07/24/2023	Turbidity, field	81.9	NTU
BA03L	Compliance	E002	09/06/2023	Antimony, total	0.00043 U	mg/L
BA03L	Compliance	E002	09/06/2023	Arsenic, total	0.00069 U	mg/L
BA03L	Compliance	E002	09/06/2023	Barium, total	0.130	mg/L
BA03L	Compliance	E002	09/06/2023	Beryllium, total	0.00059 U	mg/L
BA03L	Compliance	E002	09/06/2023	Boron, total	0.330	mg/L
BA03L	Compliance	E002	09/06/2023	Cadmium, total	0.00074 U	mg/L
BA03L	Compliance	E002	09/06/2023	Calcium, total	200	mg/L
BA03L	Compliance	E002	09/06/2023	Chloride, total	13.0 J	mg/L

TABLE 1.
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845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
BA03L	Compliance	E002	09/06/2023	Chromium, total	0.0028 U	mg/L
BA03L	Compliance	E002	09/06/2023	Cobalt, total	0.00048 U	mg/L
BA03L	Compliance	E002	09/06/2023	Dissolved Oxygen	4.10	mg/L
BA03L	Compliance	E002	09/06/2023	Fluoride, total	0.165 J	mg/L
BA03L	Compliance	E002	09/06/2023	Lead, total	0.00022 U	mg/L
BA03L	Compliance	E002	09/06/2023	Lithium, total	0.005 U	mg/L
BA03L	Compliance	E002	09/06/2023	Mercury, total	0.000470	mg/L
BA03L	Compliance	E002	09/06/2023	Molybdenum, total	0.00100	mg/L
BA03L	Compliance	E002	09/06/2023	Oxidation Reduction Potential	217	mV
BA03L	Compliance	E002	09/06/2023	pH (field)	6.7	SU
BA03L	Compliance	E002	09/06/2023	Radium 226 + Radium 228, total	1.86 J+	pCi/L
BA03L	Compliance	E002	09/06/2023	Selenium, total	0.00074 U	mg/L
BA03L	Compliance	E002	09/06/2023	Specific Conductance @ 25C (field)	1,490	micromhos/cm
BA03L	Compliance	E002	09/06/2023	Sulfate, total	420	mg/L
BA03L	Compliance	E002	09/06/2023	Temperature	19.4	degrees C
BA03L	Compliance	E002	09/06/2023	Thallium, total	0.00038 U	mg/L
BA03L	Compliance	E002	09/06/2023	Total Dissolved Solids	1,900	mg/L
BA03L	Compliance	E002	09/06/2023	Turbidity, field	44.2	NTU
BA04	Compliance	E002	07/24/2023	Antimony, total	0.00086 J	mg/L
BA04	Compliance	E002	07/24/2023	Arsenic, total	0.00069 U	mg/L
BA04	Compliance	E002	07/24/2023	Barium, total	0.100	mg/L
BA04	Compliance	E002	07/24/2023	Beryllium, total	0.00059 U	mg/L
BA04	Compliance	E002	07/24/2023	Boron, total	1.90	mg/L
BA04	Compliance	E002	07/24/2023	Cadmium, total	0.00074 U	mg/L
BA04	Compliance	E002	07/24/2023	Calcium, total	130	mg/L
BA04	Compliance	E002	07/24/2023	Chloride, total	54.0	mg/L
BA04	Compliance	E002	07/24/2023	Chromium, total	0.0028 U	mg/L
BA04	Compliance	E002	07/24/2023	Cobalt, total	0.00065 J	mg/L
BA04	Compliance	E002	07/24/2023	Dissolved Oxygen	0.420	mg/L
BA04	Compliance	E002	07/24/2023	Fluoride, total	0.25 UJ	mg/L
BA04	Compliance	E002	07/24/2023	Lead, total	0.00022 U	mg/L
BA04	Compliance	E002	07/24/2023	Lithium, total	0.005 U	mg/L
BA04	Compliance	E002	07/24/2023	Mercury, total	0.00014 U	mg/L
BA04	Compliance	E002	07/24/2023	Molybdenum, total	0.00330	mg/L
BA04	Compliance	E002	07/24/2023	Oxidation Reduction Potential	138	mV
BA04	Compliance	E002	07/24/2023	pH (field)	6.7	SU
BA04	Compliance	E002	07/24/2023	Radium 226 + Radium 228, total	0.272 U*	pCi/L
BA04	Compliance	E002	07/24/2023	Selenium, total	0.00074 U	mg/L
BA04	Compliance	E002	07/24/2023	Specific Conductance @ 25C (field)	1,129	micromhos/cm
BA04	Compliance	E002	07/24/2023	Sulfate, total	180	mg/L
BA04	Compliance	E002	07/24/2023	Temperature	18.0	degrees C
BA04	Compliance	E002	07/24/2023	Thallium, total	0.00038 U	mg/L
BA04	Compliance	E002	07/24/2023	Total Dissolved Solids	710	mg/L
BA04	Compliance	E002	07/24/2023	Turbidity, field	39.1	NTU

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Notes:
C = Celsius
cm = centimeter
mg/L = milligrams per liter
mV = millivolts
NTU = Nephelometric Turbidity Units
pCi/L = picocuries per liter
SU = Standard Units
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, but the result may be biased high.
U = The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
BA01	UA	E002	Antimony, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.003	0.006	Standard	No Exceedance
BA01	UA	E002	Arsenic, total	mg/L	02/05/16 - 07/24/23	10	20	CI around mean	0.000199	0.0240	Background	No Exceedance
BA01	UA	E002	Barium, total	mg/L	02/05/16 - 07/24/23	10	0	CI around mean	0.134	2.0	Standard	No Exceedance
BA01	UA	E002	Beryllium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.004	Standard	No Exceedance
BA01	UA	E002	Boron, total	mg/L	02/05/16 - 07/24/23	22	0	CI around median	0.021	7.90	Background	No Exceedance
BA01	UA	E002	Cadmium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.005	Standard	No Exceedance
BA01	UA	E002	Chloride, total	mg/L	02/05/16 - 07/24/23	22	0	CB around T-S line	10.2	700	Background	No Exceedance
BA01	UA	E002	Chromium, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.004	0.1	Standard	No Exceedance
BA01	UA	E002	Cobalt, total	mg/L	02/05/16 - 07/24/23	10	80	CI around median	0.002	0.0300	Background	No Exceedance
BA01	UA	E002	Fluoride, total	mg/L	02/05/16 - 07/24/23	22	54	CI around median	0.25	4.0	Standard	No Exceedance
BA01	UA	E002	Lead, total	mg/L	02/05/16 - 07/24/23	10	30	CI around geomean	0.0016	0.0420	Background	No Exceedance
BA01	UA	E002	Lithium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.02	0.0680	Background	No Exceedance
BA01	UA	E002	Mercury, total	mg/L	02/05/16 - 07/24/23	10	90	Most recent sample	0.0002	0.00400	Background	No Exceedance
BA01	UA	E002	Molybdenum, total	mg/L	02/05/16 - 07/24/23	10	0	CI around median	0.0015	0.1	Standard	No Exceedance
BA01	UA	E002	pH (field)	SU	02/05/16 - 07/24/23	26	0	CI around median	6.8/7.0	6.4/9.0	Background/Standard	No Exceedance
BA01	UA	E002	Radium 226 + Radium 228, total	pCi/L	02/05/16 - 07/24/23	10	0	CI around mean	0.447	7.27	Background	No Exceedance
BA01	UA	E002	Selenium, total	mg/L	02/05/16 - 07/24/23	9	100	All ND - Last	0.001	0.05	Standard	No Exceedance
BA01	UA	E002	Sulfate, total	mg/L	02/05/16 - 07/24/23	22	0	CI around mean	130	890	Background	No Exceedance
BA01	UA	E002	Thallium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.002	Standard	No Exceedance
BA01	UA	E002	Total Dissolved Solids	mg/L	02/05/16 - 07/24/23	22	0	CI around mean	530	2,590	Background	No Exceedance
BA02	UA	E002	Antimony, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.003	0.006	Standard	No Exceedance
BA02	UA	E002	Arsenic, total	mg/L	02/05/16 - 07/25/23	10	10	CI around mean	0.00107	0.0240	Background	No Exceedance
BA02	UA	E002	Barium, total	mg/L	02/05/16 - 07/25/23	10	0	CI around mean	0.19	2.0	Standard	No Exceedance
BA02	UA	E002	Beryllium, total	mg/L	02/05/16 - 07/25/23	10	90	CI around median	0.001	0.004	Standard	No Exceedance
BA02	UA	E002	Boron, total	mg/L	02/05/16 - 07/25/23	22	0	CB around linear reg	0.0478	7.90	Background	No Exceedance
BA02	UA	E002	Cadmium, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.001	0.005	Standard	No Exceedance
BA02	UA	E002	Chloride, total	mg/L	02/05/16 - 07/25/23	22	0	CB around linear reg	9.26	700	Background	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
BA02	UA	E002	Chromium, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.004	0.1	Standard	No Exceedance
BA02	UA	E002	Cobalt, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.002	0.0300	Background	No Exceedance
BA02	UA	E002	Fluoride, total	mg/L	02/05/16 - 07/25/23	22	77	CI around median	0.25	4.0	Standard	No Exceedance
BA02	UA	E002	Lead, total	mg/L	02/05/16 - 07/25/23	10	70	CI around median	0.001	0.0420	Background	No Exceedance
BA02	UA	E002	Lithium, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.02	0.0680	Background	No Exceedance
BA02	UA	E002	Mercury, total	mg/L	02/05/16 - 07/25/23	10	90	CI around median	0.0002	0.00400	Background	No Exceedance
BA02	UA	E002	Molybdenum, total	mg/L	02/05/16 - 07/25/23	10	0	CI around mean	0.00383	0.1	Standard	No Exceedance
BA02	UA	E002	pH (field)	SU	02/05/16 - 07/25/23	23	0	CI around median	6.9/7.3	6.4/9.0	Background/Standard	No Exceedance
BA02	UA	E002	Radium 226 + Radium 228, total	pCi/L	02/05/16 - 07/25/23	10	0	CI around mean	0.397	7.27	Background	No Exceedance
BA02	UA	E002	Selenium, total	mg/L	02/05/16 - 07/25/23	10	80	CI around median	0.001	0.05	Standard	No Exceedance
BA02	UA	E002	Sulfate, total	mg/L	02/05/16 - 07/25/23	22	0	CB around linear reg	11.4	890	Background	No Exceedance
BA02	UA	E002	Thallium, total	mg/L	02/05/16 - 07/25/23	10	90	Most recent sample	0.001	0.002	Standard	No Exceedance
BA02	UA	E002	Total Dissolved Solids	mg/L	02/05/16 - 07/25/23	22	0	CB around linear reg	483	2,590	Background	No Exceedance
BA03	UA	E002	Antimony, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.003	0.006	Standard	No Exceedance
BA03	UA	E002	Arsenic, total	mg/L	02/05/16 - 07/24/23	10	80	CI around median	0.001	0.0240	Background	No Exceedance
BA03	UA	E002	Barium, total	mg/L	02/05/16 - 07/24/23	10	0	CI around mean	0.171	2.0	Standard	No Exceedance
BA03	UA	E002	Beryllium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.004	Standard	No Exceedance
BA03	UA	E002	Boron, total	mg/L	02/05/16 - 07/24/23	22	0	CI around mean	0.0258	7.90	Background	No Exceedance
BA03	UA	E002	Cadmium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.005	Standard	No Exceedance
BA03	UA	E002	Chloride, total	mg/L	02/05/16 - 07/24/23	22	0	CI around median	5.8	700	Background	No Exceedance
BA03	UA	E002	Chromium, total	mg/L	02/05/16 - 07/24/23	10	80	CI around median	0.004	0.1	Standard	No Exceedance
BA03	UA	E002	Cobalt, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.002	0.0300	Background	No Exceedance
BA03	UA	E002	Fluoride, total	mg/L	02/05/16 - 07/24/23	22	50	CI around median	0.25	4.0	Standard	No Exceedance
BA03	UA	E002	Lead, total	mg/L	02/05/16 - 07/24/23	10	60	CI around median	0.001	0.0420	Background	No Exceedance
BA03	UA	E002	Lithium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.02	0.0680	Background	No Exceedance
BA03	UA	E002	Mercury, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.0002	0.00400	Background	No Exceedance
BA03	UA	E002	Molybdenum, total	mg/L	02/05/16 - 07/24/23	10	10	CB around linear reg	-0.0025	0.1	Standard	No Exceedance

TABLE 2.
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845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
BA03	UA	E002	pH (field)	SU	02/05/16 - 07/24/23	24	0	CI around mean	7.0/7.2	6.4/9.0	Background/Standard	No Exceedance
BA03	UA	E002	Radium 226 + Radium 228, total	pCi/L	02/05/16 - 07/24/23	10	0	CI around mean	0.491	7.27	Background	No Exceedance
BA03	UA	E002	Selenium, total	mg/L	02/05/16 - 07/24/23	10	50	CI around median	0.001	0.05	Standard	No Exceedance
BA03	UA	E002	Sulfate, total	mg/L	02/05/16 - 07/24/23	22	0	CB around linear reg	14.4	890	Background	No Exceedance
BA03	UA	E002	Thallium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.002	Standard	No Exceedance
BA03	UA	E002	Total Dissolved Solids	mg/L	02/05/16 - 07/24/23	22	0	CB around linear reg	436	2,590	Background	No Exceedance
BA03L	UA/PMP	E002	Antimony, total	mg/L	04/14/21 - 09/06/23	10	100	All ND - Last	0.003	0.006	Standard	No Exceedance
BA03L	UA/PMP	E002	Arsenic, total	mg/L	04/14/21 - 09/06/23	10	70	CI around median	0.001	0.0240	Background	No Exceedance
BA03L	UA/PMP	E002	Barium, total	mg/L	04/14/21 - 09/06/23	10	0	CI around median	0.13	2.0	Standard	No Exceedance
BA03L	UA/PMP	E002	Beryllium, total	mg/L	04/14/21 - 09/06/23	10	90	CI around median	0.001	0.004	Standard	No Exceedance
BA03L	UA/PMP	E002	Boron, total	mg/L	04/14/21 - 09/06/23	11	0	CB around linear reg	0.308	7.90	Background	No Exceedance
BA03L	UA/PMP	E002	Cadmium, total	mg/L	04/14/21 - 09/06/23	10	100	All ND - Last	0.001	0.005	Standard	No Exceedance
BA03L	UA/PMP	E002	Chloride, total	mg/L	04/14/21 - 09/06/23	11	0	CI around mean	19.4	700	Background	No Exceedance
BA03L	UA/PMP	E002	Chromium, total	mg/L	04/14/21 - 09/06/23	10	40	CI around median	0.004	0.1	Standard	No Exceedance
BA03L	UA/PMP	E002	Cobalt, total	mg/L	04/14/21 - 09/06/23	10	80	CI around median	0.002	0.0300	Background	No Exceedance
BA03L	UA/PMP	E002	Fluoride, total	mg/L	04/14/21 - 09/06/23	11	73	CI around median	0.25	4.0	Standard	No Exceedance
BA03L	UA/PMP	E002	Lead, total	mg/L	04/14/21 - 09/06/23	10	50	CI around median	0.001	0.0420	Background	No Exceedance
BA03L	UA/PMP	E002	Lithium, total	mg/L	04/14/21 - 09/06/23	10	90	CI around median	0.02	0.0680	Background	No Exceedance
BA03L	UA/PMP	E002	Mercury, total	mg/L	04/14/21 - 09/06/23	10	90	CI around median	0.0002	0.00400	Background	No Exceedance
BA03L	UA/PMP	E002	Molybdenum, total	mg/L	04/14/21 - 09/06/23	10	40	CI around median	0.001	0.1	Standard	No Exceedance
BA03L	UA/PMP	E002	pH (field)	SU	04/14/21 - 09/06/23	11	0	CI around mean	6.7/6.9	6.4/9.0	Background/Standard	No Exceedance
BA03L	UA/PMP	E002	Radium 226 + Radium 228, total	pCi/L	04/14/21 - 09/06/23	9	0	CI around geomean	0.331	7.27	Background	No Exceedance
BA03L	UA/PMP	E002	Selenium, total	mg/L	04/14/21 - 09/06/23	10	90	CI around median	0.001	0.05	Standard	No Exceedance
BA03L	UA/PMP	E002	Sulfate, total	mg/L	04/14/21 - 09/06/23	11	0	CI around mean	340	890	Background	No Exceedance
BA03L	UA/PMP	E002	Thallium, total	mg/L	04/14/21 - 09/06/23	10	100	All ND - Last	0.001	0.002	Standard	No Exceedance
BA03L	UA/PMP	E002	Total Dissolved Solids	mg/L	04/14/21 - 09/06/23	11	0	CI around median	960	2,590	Background	No Exceedance
BA04	UA	E002	Antimony, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.003	0.006	Standard	No Exceedance

TABLE 2.
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845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
BA04	UA	E002	Arsenic, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.001	0.0240	Background	No Exceedance
BA04	UA	E002	Barium, total	mg/L	02/05/16 - 07/24/23	10	0	CI around mean	0.0996	2.0	Standard	No Exceedance
BA04	UA	E002	Beryllium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.004	Standard	No Exceedance
BA04	UA	E002	Boron, total	mg/L	02/05/16 - 07/24/23	22	0	CB around linear reg	0.595	7.90	Background	No Exceedance
BA04	UA	E002	Cadmium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.005	Standard	No Exceedance
BA04	UA	E002	Chloride, total	mg/L	02/05/16 - 07/24/23	22	0	CB around T-S line	37	700	Background	No Exceedance
BA04	UA	E002	Chromium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.004	0.1	Standard	No Exceedance
BA04	UA	E002	Cobalt, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.002	0.0300	Background	No Exceedance
BA04	UA	E002	Fluoride, total	mg/L	02/05/16 - 07/24/23	22	18	CI around mean	0.278	4.0	Standard	No Exceedance
BA04	UA	E002	Lead, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.001	0.0420	Background	No Exceedance
BA04	UA	E002	Lithium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.02	0.0680	Background	No Exceedance
BA04	UA	E002	Mercury, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.0002	0.00400	Background	No Exceedance
BA04	UA	E002	Molybdenum, total	mg/L	02/05/16 - 07/24/23	10	0	CI around geomean	0.00183	0.1	Standard	No Exceedance
BA04	UA	E002	pH (field)	SU	02/05/16 - 07/24/23	23	0	CB around T-S line	6.6/6.8	6.4/9.0	Background/Standard	No Exceedance
BA04	UA	E002	Radium 226 + Radium 228, total	pCi/L	02/05/16 - 07/24/23	10	0	CI around mean	0.301	7.27	Background	No Exceedance
BA04	UA	E002	Selenium, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.001	0.05	Standard	No Exceedance
BA04	UA	E002	Sulfate, total	mg/L	02/05/16 - 07/24/23	22	0	CB around T-S line	130	890	Background	No Exceedance
BA04	UA	E002	Thallium, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.001	0.002	Standard	No Exceedance
BA04	UA	E002	Total Dissolved Solids	mg/L	02/05/16 - 07/24/23	22	0	CB around linear reg	681	2,590	Background	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Notes:

Compliance Result:

No Exceedance: the statistical result did not exceed the GWPS.

HSU = hydrostratigraphic unit:

UA = Uppermost Aquifer

UA/PMP = Uppermost Aquifer/Potential Migration Pathway

mg/L = milligrams per liter

ND = non-detect

pCi/L = picocuries per liter

SU = standard units

Sample Count = number of samples from Sampled Date Range used to calculate the Statistical Result

Statistical Calculation = method used to calculate the statistical result:

All ND - Last = All results were below the reporting limit, and the last determined reporting limit is shown

CB around T-S line = Confidence band around Thiel-Sen line

CB around linear reg = Confidence band around linear regression

CI around geomean = Confidence interval around the geometric mean

CI around mean = Confidence interval around the mean

CI around median = Confidence interval around the median

Most recent sample = Result for the most recently collected sample used due to insufficient data

Statistical Result = calculated in accordance with the Statistical Analysis Plan using constituent concentrations observed at each monitoring well during all sampling events within the specified date range

For pH, the values presented are the lower / upper limits

GWPS = Groundwater Protection Standard

GWPS Source:

Standard = standard specified in 35 I.A.C. § 845.600(a)(1)

Background = background concentration (see cover page for additional information)

FIGURES



-  BACKGROUND WELL
 COMPLIANCE WELL
 REGULATED UNIT (SUBJECT UNIT)

A horizontal scale bar with three tick marks. The first tick mark is at the left end and is labeled '0'. The second tick mark is in the middle and is labeled '50'. The third tick mark is at the right end and is labeled '100'. To the right of the '100' label, the word 'Feet' is written.

35 I.A.C. § 845 Groundwater Monitoring Well Network

BOTTOM ASH BASIN
DUCK CREEK POWER PLANT
CANTON, ILLINOIS

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.



ATTACHMENTS

**ATTACHMENT A
GROUNDWATER ELEVATION DATA
QUARTER 3, 2023**

ATTACHMENT A.
GROUNDWATER ELEVATION DATA - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	Well Type	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
BA01	Compliance	07/17/2023	14.99	572.09
BA02	Compliance	07/25/2023	[12.02]	[567.90]
BA02L	Compliance	07/17/2023	11.06	568.84
BA03	Compliance	07/24/2023	[10.48]	[567.86]
BA03L	Compliance	07/17/2023	8.87	568.87
BA04	Compliance	07/24/2023	[6.99]	[571.20]
BA05	Background	07/24/2023	[21.36]	[574.36]
BA06	Background	07/24/2023	[25.04]	[570.59]

Notes:
Only wells with groundwater elevations measured are included.
BMP = below measuring point
Bracketing [] indicates that the measurement was obtained outside of the 24-hour period from initiation of depth to groundwater measurements.
NAVD88 = North American Vertical Datum of 1988

**ATTACHMENT B
LABORATORY REPORTS AND FIELD DATA SHEETS
QUARTER 3, 2023**



Pace Analytical Services, LLC
2231 W. Altorfer Drive
Peoria, IL 61615
(800)752-6651

October 21, 2023

Daryl Johnson
Vistra - Duck Creek
17751 North Cilco Road
Canton, IL 61520-8761

Dear Daryl Johnson:

Please find enclosed the analytical results for the sample(s) the laboratory received. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of Pace Analytical Services, LLC.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

Pace Analytical Services appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the General Manager, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lisa.grant@pacelabs.com.

Sincerely,

A handwritten signature in cursive script, appearing to read "Diane Billings".

Diane Billings
Project Manager

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order GG04129

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GG04417

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GI01375

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: GG04129-10
Name: BA06
Matrix: Ground Water - Grab

Sampled: 07/24/23 15:34
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	560	mg/L		07/25/23 13:59	100	100	07/25/23 13:59	TMS	EPA 300.0 REV 2.1
Sulfate	360	mg/L		07/25/23 13:59	100	100	07/25/23 13:59	TMS	EPA 300.0 REV 2.1
Field - PIA									
Depth, From Measuring Point	25.04	Feet		07/24/23 15:34	1		07/24/23 15:34	JD	Field*
Dissolved oxygen, Field	2.5	mg/L		07/24/23 15:34	1		07/24/23 15:34	JD	Field*
Oxidation Reduction Potential	-40.0	mV		07/24/23 15:34	1	-500	07/24/23 15:34	JD	Field*
pH, Field Measured	6.54	pH Units		07/24/23 15:34	1		07/24/23 15:34	JD	Field*
Specific Conductance, Field Measured	3140	umhos/cm		07/24/23 15:34	1		07/24/23 15:34	JD	Field*
Temperature, Field Measured	18.7	°C		07/24/23 15:34	1		07/24/23 15:34	JD	Field*
Turbidity, Field Measured	5.30	NTU		07/24/23 15:34	1	0.00	07/24/23 15:34	JD	Field*
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO ₃	560	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Alkalinity - carbonate as CaCO ₃	< 2.0	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Fluoride	0.264	mg/L		07/27/23 13:03	1	0.250	07/27/23 13:03	ANK	SM 4500F C 1997
Soluble General Chemistry - PIA									
Solids - total dissolved solids (TDS)	2300	mg/L		07/28/23 10:45	1	26	07/28/23 14:16	MKH	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		07/26/23 08:54	5	3.0	08/01/23 12:42	wjm	EPA 6020A
Arsenic	4.2	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:42	wjm	EPA 6020A
Barium	93	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:42	wjm	EPA 6020A
Beryllium	< 1.0	ug/L		07/26/23 08:54	5	1.0	07/28/23 14:42	TJJ	EPA 6020A
Boron	9000	ug/L		07/26/23 08:54	5	10	07/28/23 14:42	TJJ	EPA 6020A
Cadmium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:42	wjm	EPA 6020A
Calcium	280	mg/L		07/26/23 08:54	5	0.20	08/01/23 12:42	wjm	EPA 6020A
Chromium	< 4.0	ug/L		07/26/23 08:54	5	4.0	08/01/23 12:42	wjm	EPA 6020A
Cobalt	9.7	ug/L		07/26/23 08:54	5	2.0	08/01/23 12:42	wjm	EPA 6020A
Lead	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:42	wjm	EPA 6020A
Magnesium	210	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:42	wjm	EPA 6020A
Mercury	< 0.20	ug/L		07/26/23 08:54	5	0.20	08/01/23 12:42	wjm	EPA 6020A
Molybdenum	1.2	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:42	wjm	EPA 6020A
Potassium	0.28	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:42	wjm	EPA 6020A

ANALYTICAL RESULTS

Sample: GG04129-10
Name: BA06
Matrix: Ground Water - Grab

Sampled: 07/24/23 15:34

Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Selenium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:42	wjm	EPA 6020A
Sodium	16	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:42	wjm	EPA 6020A
Thallium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:42	wjm	EPA 6020A
Lithium	< 0.020	mg/L		07/26/23 08:54	1	0.020	08/02/23 09:51	BRS	EPA 6010B

ANALYTICAL RESULTS

Sample: GG04129-11
Name: BA01
Matrix: Ground Water - Grab

Sampled: 07/24/23 13:25
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	18	mg/L	Q4	07/25/23 15:16	5	5.0	07/25/23 15:16	TMS	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		07/25/23 14:18	1	0.250	07/25/23 14:18	TMS	EPA 300.0 REV 2.1
Sulfate	150	mg/L	Q4	07/25/23 15:36	25	25	07/25/23 15:36	TMS	EPA 300.0 REV 2.1
Field - PIA									
Depth, From Measuring Point	15.79	Feet		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Dissolved oxygen, Field	3.4	mg/L		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Oxidation Reduction Potential	26.0	mV		07/24/23 13:25	1	-500	07/24/23 13:25	JD	Field*
pH, Field Measured	6.67	pH Units		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Specific Conductance, Field Measured	982.0	umhos/cm		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Temperature, Field Measured	65.8	°F		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Temperature, Field Measured	18.8	°C		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Turbidity, Field Measured	19.1	NTU		07/24/23 13:25	1	0.00	07/24/23 13:25	JD	Field*
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO ₃	390	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Alkalinity - carbonate as CaCO ₃	< 2.0	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Soluble General Chemistry - PIA									
Solids - total dissolved solids (TDS)	640	mg/L		07/28/23 10:45	1	26	07/28/23 14:16	MKH	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		07/26/23 08:54	5	3.0	08/01/23 12:48	wjm	EPA 6020A
Arsenic	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:48	wjm	EPA 6020A
Barium	130	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:48	wjm	EPA 6020A
Beryllium	< 1.0	ug/L		07/26/23 08:54	5	1.0	07/28/23 14:45	TJJ	EPA 6020A
Boron	72	ug/L		07/26/23 08:54	5	10	07/28/23 14:45	TJJ	EPA 6020A
Cadmium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:48	wjm	EPA 6020A
Calcium	110	mg/L		07/26/23 08:54	5	0.20	08/01/23 12:48	wjm	EPA 6020A
Chromium	< 4.0	ug/L		07/26/23 08:54	5	4.0	08/01/23 12:48	wjm	EPA 6020A
Cobalt	< 2.0	ug/L		07/26/23 08:54	5	2.0	08/01/23 12:48	wjm	EPA 6020A
Lead	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:48	wjm	EPA 6020A
Magnesium	61	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:48	wjm	EPA 6020A
Mercury	< 0.20	ug/L		07/26/23 08:54	5	0.20	08/01/23 12:48	wjm	EPA 6020A
Molybdenum	1.1	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:48	wjm	EPA 6020A

ANALYTICAL RESULTS

Sample: GG04129-11

Name: BA01

Matrix: Ground Water - Grab

Sampled: 07/24/23 13:25

Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Potassium	0.79	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:48	wjm	EPA 6020A
Selenium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:48	wjm	EPA 6020A
Sodium	14	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:48	wjm	EPA 6020A
Thallium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:48	wjm	EPA 6020A
Lithium	< 0.020	mg/L		07/26/23 08:54	1	0.020	08/02/23 09:52	BRS	EPA 6010B

ANALYTICAL RESULTS

Sample: GG04129-12
Name: BA03
Matrix: Ground Water - Grab

Sampled: 07/24/23 12:06
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	5.0	mg/L		07/25/23 15:55	1	1.0	07/25/23 15:55	TMS	EPA 300.0 REV 2.1
Fluoride	0.261	mg/L		07/25/23 15:55	1	0.250	07/25/23 15:55	TMS	EPA 300.0 REV 2.1
Sulfate	17	mg/L		07/25/23 16:14	10	10	07/25/23 16:14	TMS	EPA 300.0 REV 2.1
Field - PIA									
Depth, From Measuring Point	10.48	Feet		07/24/23 12:06	1		07/24/23 12:06	JD	Field*
Dissolved oxygen, Field	0.42	mg/L		07/24/23 12:06	1		07/24/23 12:06	JD	Field*
Oxidation Reduction Potential	11.1	mV		07/24/23 12:06	1	-500	07/24/23 12:06	JD	Field*
pH, Field Measured	6.89	pH Units		07/24/23 12:06	1		07/24/23 12:06	JD	Field*
Specific Conductance, Field Measured	798.9	umhos/cm		07/24/23 12:06	1		07/24/23 12:06	JD	Field*
Temperature, Field Measured	18.6	°C		07/24/23 12:06	1		07/24/23 12:06	JD	Field*
Temperature, Field Measured	65.5	°F		07/24/23 12:06	1		07/24/23 12:06	JD	Field*
Turbidity, Field Measured	81.9	NTU		07/24/23 12:06	1	0.00	07/24/23 12:06	JD	Field*
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO3	450	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Soluble General Chemistry - PIA									
Solids - total dissolved solids (TDS)	460	mg/L		07/28/23 10:45	1	26	07/28/23 14:16	MKH	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		07/26/23 08:54	5	3.0	08/01/23 12:51	wjm	EPA 6020A
Arsenic	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:51	wjm	EPA 6020A
Barium	170	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:51	wjm	EPA 6020A
Beryllium	< 1.0	ug/L		07/26/23 08:54	5	1.0	07/28/23 14:48	TJJ	EPA 6020A
Boron	45	ug/L		07/26/23 08:54	5	10	07/28/23 14:48	TJJ	EPA 6020A
Cadmium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:51	wjm	EPA 6020A
Calcium	98	mg/L		07/26/23 08:54	5	0.20	08/01/23 12:51	wjm	EPA 6020A
Chromium	< 4.0	ug/L		07/26/23 08:54	5	4.0	08/01/23 12:51	wjm	EPA 6020A
Cobalt	< 2.0	ug/L		07/26/23 08:54	5	2.0	08/01/23 12:51	wjm	EPA 6020A
Lead	1.4	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:51	wjm	EPA 6020A
Magnesium	55	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:51	wjm	EPA 6020A
Mercury	< 0.20	ug/L		07/26/23 08:54	5	0.20	08/01/23 12:51	wjm	EPA 6020A
Molybdenum	1.9	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:51	wjm	EPA 6020A

ANALYTICAL RESULTS

Sample: GG04129-12
Name: BA03
Matrix: Ground Water - Grab

Sampled: 07/24/23 12:06
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Potassium	0.81	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:51	wjm	EPA 6020A
Selenium	1.2	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:51	wjm	EPA 6020A
Sodium	6.9	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:51	wjm	EPA 6020A
Thallium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:51	wjm	EPA 6020A
Lithium	< 0.020	mg/L		07/26/23 08:54	1	0.020	08/02/23 09:53	BRS	EPA 6010B

ANALYTICAL RESULTS

Sample: GG04129-13
Name: BA04
Matrix: Ground Water - Grab

Sampled: 07/24/23 14:06
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	54	mg/L		07/25/23 16:53	25	25	07/25/23 16:53	TMS	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		07/25/23 16:34	1	0.250	07/25/23 16:34	TMS	EPA 300.0 REV 2.1
Sulfate	180	mg/L		07/25/23 16:53	25	25	07/25/23 16:53	TMS	EPA 300.0 REV 2.1
Field - PIA									
Depth, From Measuring Point	6.99	Feet		07/24/23 14:06	1		07/24/23 14:06	JD	Field*
Dissolved oxygen, Field	0.42	mg/L		07/24/23 14:06	1		07/24/23 14:06	JD	Field*
Oxidation Reduction Potential	138	mV		07/24/23 14:06	1	-500	07/24/23 14:06	JD	Field*
pH, Field Measured	6.71	pH Units		07/24/23 14:06	1		07/24/23 14:06	JD	Field*
Specific Conductance, Field Measured	1129	umhos/cm		07/24/23 14:06	1		07/24/23 14:06	JD	Field*
Temperature, Field Measured	18.0	°C		07/24/23 14:06	1		07/24/23 14:06	JD	Field*
Turbidity, Field Measured	39.1	NTU		07/24/23 14:06	1	0.00	07/24/23 14:06	JD	Field*
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO ₃	410	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Alkalinity - carbonate as CaCO ₃	< 2.0	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Soluble General Chemistry - PIA									
Solids - total dissolved solids (TDS)	710	mg/L		07/28/23 10:45	1	26	07/28/23 14:16	MKH	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		07/26/23 08:54	5	3.0	08/01/23 12:55	wjm	EPA 6020A
Arsenic	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:55	wjm	EPA 6020A
Barium	100	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:55	wjm	EPA 6020A
Beryllium	< 1.0	ug/L		07/26/23 08:54	5	1.0	07/28/23 14:51	TJJ	EPA 6020A
Boron	1900	ug/L		07/26/23 08:54	5	10	07/28/23 14:51	TJJ	EPA 6020A
Cadmium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:55	wjm	EPA 6020A
Calcium	130	mg/L		07/26/23 08:54	5	0.20	08/01/23 12:55	wjm	EPA 6020A
Chromium	< 4.0	ug/L		07/26/23 08:54	5	4.0	08/01/23 12:55	wjm	EPA 6020A
Cobalt	< 2.0	ug/L		07/26/23 08:54	5	2.0	08/01/23 12:55	wjm	EPA 6020A
Lead	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:55	wjm	EPA 6020A
Magnesium	69	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:55	wjm	EPA 6020A
Mercury	< 0.20	ug/L		07/26/23 08:54	5	0.20	08/01/23 12:55	wjm	EPA 6020A
Molybdenum	3.3	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:55	wjm	EPA 6020A
Potassium	0.89	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:55	wjm	EPA 6020A

ANALYTICAL RESULTS

Sample: GG04129-13
Name: BA04
Matrix: Ground Water - Grab

Sampled: 07/24/23 14:06

Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Selenium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:55	wjm	EPA 6020A
Sodium	22	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:55	wjm	EPA 6020A
Thallium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:55	wjm	EPA 6020A
Lithium	< 0.020	mg/L		07/26/23 08:54	1	0.020	08/02/23 09:57	BRS	EPA 6010B

ANALYTICAL RESULTS

Sample: GG04129-14
Name: BA05
Matrix: Ground Water - Grab

Sampled: 07/24/23 15:52
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	9.6	mg/L		07/26/23 20:30	5	5.0	07/26/23 20:30	TMS	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		07/25/23 17:51	1	0.250	07/25/23 17:51	TMS	EPA 300.0 REV 2.1
Sulfate	500	mg/L		08/01/23 15:06	100	100	08/01/23 15:06	TMS	EPA 300.0 REV 2.1
Field - PIA									
Depth, From Measuring Point	21.36	Feet		07/24/23 15:52	1		07/24/23 15:52	JD	Field*
Dissolved oxygen, Field	0.45	mg/L		07/24/23 15:52	1		07/24/23 15:52	JD	Field*
Oxidation Reduction Potential	-51.4	mV		07/24/23 15:52	1	-500	07/24/23 15:52	JD	Field*
pH, Field Measured	6.79	pH Units		07/24/23 15:52	1		07/24/23 15:52	JD	Field*
Specific Conductance, Field Measured	1592	umhos/cm		07/24/23 15:52	1		07/24/23 15:52	JD	Field*
Temperature, Field Measured	14.6	°C		07/24/23 15:52	1		07/24/23 15:52	JD	Field*
Temperature, Field Measured	58.2	°F		07/24/23 15:52	1		07/24/23 15:52	JD	Field*
Turbidity, Field Measured	5270	NTU		07/24/23 15:52	1	0.00	07/24/23 15:52	JD	Field*
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO ₃	490	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Alkalinity - carbonate as CaCO ₃	< 2.0	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Soluble General Chemistry - PIA									
Solids - total dissolved solids (TDS)	1200	mg/L		07/28/23 10:45	1	26	07/28/23 14:16	MKH	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		07/26/23 08:54	5	3.0	08/01/23 12:59	wjm	EPA 6020A
Arsenic	2.5	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:59	wjm	EPA 6020A
Barium	56	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:59	wjm	EPA 6020A
Beryllium	< 1.0	ug/L		07/26/23 08:54	5	1.0	07/28/23 14:54	TJJ	EPA 6020A
Boron	120	ug/L		07/26/23 08:54	5	10	07/28/23 14:54	TJJ	EPA 6020A
Cadmium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:59	wjm	EPA 6020A
Calcium	180	mg/L		07/26/23 08:54	5	0.20	08/01/23 12:59	wjm	EPA 6020A
Chromium	< 4.0	ug/L		07/26/23 08:54	5	4.0	08/01/23 12:59	wjm	EPA 6020A
Cobalt	< 2.0	ug/L		07/26/23 08:54	5	2.0	08/01/23 12:59	wjm	EPA 6020A
Lead	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:59	wjm	EPA 6020A
Magnesium	100	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:59	wjm	EPA 6020A
Mercury	< 0.20	ug/L		07/26/23 08:54	5	0.20	08/01/23 12:59	wjm	EPA 6020A
Molybdenum	2.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:59	wjm	EPA 6020A

ANALYTICAL RESULTS

Sample: GG04129-14
Name: BA05
Matrix: Ground Water - Grab

Sampled: 07/24/23 15:52

Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Potassium	2.4	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:59	wjm	EPA 6020A
Selenium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:59	wjm	EPA 6020A
Sodium	42	mg/L		07/26/23 08:54	5	0.10	08/01/23 12:59	wjm	EPA 6020A
Thallium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 12:59	wjm	EPA 6020A
Lithium	< 0.020	mg/L		07/26/23 08:54	1	0.020	08/02/23 09:58	BRS	EPA 6010B

ANALYTICAL RESULTS

Sample: GG04129-16
Name: BA01 DUP
Matrix: Ground Water - Field Duplicate

Sampled: 07/24/23 13:25
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	18	mg/L		07/25/23 19:08	5	5.0	07/25/23 19:08	TMS	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		07/25/23 18:49	1	0.250	07/25/23 18:49	TMS	EPA 300.0 REV 2.1
Sulfate	160	mg/L		07/25/23 19:28	25	25	07/25/23 19:28	TMS	EPA 300.0 REV 2.1
Field - PIA									
Depth, From Measuring Point	15.79	Feet		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Dissolved oxygen, Field	3.4	mg/L		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Oxidation Reduction Potential	26.0	mV		07/24/23 13:25	1	-500	07/24/23 13:25	JD	Field*
pH, Field Measured	6.67	pH Units		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Specific Conductance, Field Measured	982.0	umhos/cm		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Temperature, Field Measured	18.8	°C		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Temperature, Field Measured	65.8	°F		07/24/23 13:25	1		07/24/23 13:25	JD	Field*
Turbidity, Field Measured	19.1	NTU		07/24/23 13:25	1	0.00	07/24/23 13:25	JD	Field*
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO ₃	410	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Alkalinity - carbonate as CaCO ₃	< 2.0	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Soluble General Chemistry - PIA									
Solids - total dissolved solids (TDS)	680	mg/L		07/28/23 10:45	1	26	07/28/23 14:16	MKH	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		07/26/23 08:54	5	3.0	08/01/23 13:07	wjm	EPA 6020A
Arsenic	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 13:07	wjm	EPA 6020A
Barium	130	ug/L		07/26/23 08:54	5	1.0	08/01/23 13:07	wjm	EPA 6020A
Beryllium	< 1.0	ug/L		07/26/23 08:54	5	1.0	07/28/23 15:00	TJJ	EPA 6020A
Boron	37	ug/L		07/26/23 08:54	5	10	07/28/23 15:00	TJJ	EPA 6020A
Cadmium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 13:07	wjm	EPA 6020A
Calcium	110	mg/L		07/26/23 08:54	5	0.20	08/01/23 13:07	wjm	EPA 6020A
Chromium	< 4.0	ug/L		07/26/23 08:54	5	4.0	08/01/23 13:07	wjm	EPA 6020A
Cobalt	< 2.0	ug/L		07/26/23 08:54	5	2.0	08/01/23 13:07	wjm	EPA 6020A
Lead	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 13:07	wjm	EPA 6020A
Magnesium	63	mg/L		07/26/23 08:54	5	0.10	08/01/23 13:07	wjm	EPA 6020A
Mercury	< 0.20	ug/L		07/26/23 08:54	5	0.20	08/01/23 13:07	wjm	EPA 6020A
Molybdenum	1.2	ug/L		07/26/23 08:54	5	1.0	08/01/23 13:07	wjm	EPA 6020A

ANALYTICAL RESULTS

Sample: GG04129-16

Name: BA01 DUP

Matrix: Ground Water - Field Duplicate

Sampled: 07/24/23 13:25

Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Potassium	0.82	mg/L		07/26/23 08:54	5	0.10	08/01/23 13:07	wjm	EPA 6020A
Selenium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 13:07	wjm	EPA 6020A
Sodium	15	mg/L		07/26/23 08:54	5	0.10	08/01/23 13:07	wjm	EPA 6020A
Thallium	< 1.0	ug/L		07/26/23 08:54	5	1.0	08/01/23 13:07	wjm	EPA 6020A
Lithium	< 0.020	mg/L		07/26/23 08:54	1	0.020	08/02/23 10:00	BRS	EPA 6010B

ANALYTICAL RESULTS

Sample: GG04417-14
Name: BA02
Matrix: Ground Water - Grab

Sampled: 07/25/23 12:47
Received: 07/25/23 17:45

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	11	mg/L		07/26/23 16:48	5	5.0	07/26/23 16:48	TMS	EPA 300.0 REV 2.1
Fluoride	0.322	mg/L		07/26/23 16:28	1	0.250	07/26/23 16:28	TMS	EPA 300.0 REV 2.1
Sulfate	13	mg/L		07/26/23 16:48	5	5.0	07/26/23 16:48	TMS	EPA 300.0 REV 2.1
Field - PIA									
Depth, From Measuring Point	12.02	Feet		07/25/23 12:47	1		07/25/23 12:47	FIELD	Field*
Dissolved oxygen, Field	1.8	mg/L		07/25/23 12:47	1		07/25/23 12:47	FIELD	Field*
Oxidation Reduction Potential	-25.9	mV		07/25/23 12:47	1	-500	07/25/23 12:47	FIELD	Field*
pH, Field Measured	6.79	pH Units		07/25/23 12:47	1		07/25/23 12:47	FIELD	Field*
Specific Conductance, Field Measured	740.6	umhos/cm		07/25/23 12:47	1		07/25/23 12:47	FIELD	Field*
Temperature, Field Measured	19.6	°C		07/25/23 12:47	1		07/25/23 12:47	FIELD	Field*
Turbidity, Field Measured	37.3	NTU		07/25/23 12:47	1	0.00	07/25/23 12:47	FIELD	Field*
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO ₃	490	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Alkalinity - carbonate as CaCO ₃	< 2.0	mg/L		08/04/23 09:45	1	2.0	08/04/23 09:45	CPS	SM 2320B 1997*
Soluble General Chemistry - PIA									
Solids - total dissolved solids (TDS)	620	mg/L		08/01/23 09:40	1	26	08/01/23 11:00	MKH	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		07/27/23 09:21	5	3.0	08/07/23 17:07	TJJ	EPA 6020A
Arsenic	2.2	ug/L		07/27/23 09:21	5	1.0	08/08/23 17:44	TJJ	EPA 6020A
Barium	240	ug/L		07/27/23 09:21	5	1.0	08/07/23 17:07	TJJ	EPA 6020A
Beryllium	< 1.0	ug/L		07/27/23 09:21	5	1.0	08/08/23 17:44	TJJ	EPA 6020A
Boron	51	ug/L		07/27/23 09:21	5	10	08/09/23 16:54	TJJ	EPA 6020A
Cadmium	< 1.0	ug/L		07/27/23 09:21	5	1.0	08/07/23 17:07	TJJ	EPA 6020A
Calcium	99	mg/L		07/27/23 09:21	5	0.20	08/07/23 17:07	TJJ	EPA 6020A
Chromium	< 4.0	ug/L		07/27/23 09:21	5	4.0	08/07/23 17:07	TJJ	EPA 6020A
Cobalt	< 2.0	ug/L		07/27/23 09:21	5	2.0	08/07/23 17:07	TJJ	EPA 6020A
Lead	< 1.0	ug/L		07/27/23 09:21	5	1.0	08/07/23 17:07	TJJ	EPA 6020A
Magnesium	47	mg/L		07/27/23 09:21	5	0.10	08/07/23 17:07	TJJ	EPA 6020A
Mercury	< 0.20	ug/L		07/27/23 09:21	5	0.20	08/07/23 17:07	TJJ	EPA 6020A
Molybdenum	4.6	ug/L		07/27/23 09:21	5	1.0	08/08/23 17:44	TJJ	EPA 6020A
Potassium	1.4	mg/L		07/27/23 09:21	5	0.10	08/07/23 17:07	TJJ	EPA 6020A

ANALYTICAL RESULTS

Sample: GG04417-14
Name: BA02
Matrix: Ground Water - Grab

Sampled: 07/25/23 12:47

Received: 07/25/23 17:45

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Selenium	< 1.0	ug/L		07/27/23 09:21	5	1.0	08/07/23 17:07	TJJ	EPA 6020A
Sodium	48	mg/L		07/27/23 09:21	5	0.10	08/08/23 17:44	TJJ	EPA 6020A
Thallium	< 1.0	ug/L		07/27/23 09:21	5	1.0	08/07/23 17:07	TJJ	EPA 6020A
Lithium	< 0.020	mg/L		07/27/23 09:21	1	0.020	08/02/23 10:57	BRS	EPA 6010B

ANALYTICAL RESULTS

Sample: GI01375-01
Name: BA03L
Matrix: Ground Water - Grab

Sampled: 09/06/23 10:54
Received: 09/06/23 14:06

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	13	mg/L	Q4	09/07/23 12:05	10	10	09/07/23 12:05	TMS	EPA 300.0 REV 2.1
Fluoride	< 0.250	mg/L		09/07/23 11:47	1	0.250	09/07/23 11:47	TMS	EPA 300.0 REV 2.1
Sulfate	420	mg/L	Q4	09/07/23 12:23	50	50	09/07/23 12:23	TMS	EPA 300.0 REV 2.1
Field - PIA									
Depth, From Measuring Point	9.46	Feet		09/07/23 00:00	1		09/07/23 00:00	FIELD	Field*
Dissolved oxygen, Field	4.1	mg/L		09/07/23 00:00	1		09/07/23 00:00	FIELD	Field*
Oxidation Reduction Potential	217	mV		09/07/23 00:00	1	-500	09/07/23 00:00	FIELD	Field*
pH, Field Measured	6.72	pH Units		09/07/23 00:00	1		09/07/23 00:00	FIELD	Field*
Specific Conductance, Field Measured	1490	umhos/cm		09/07/23 00:00	1		09/07/23 00:00	FIELD	Field*
Temperature, Field Measured	66.9	°F		09/07/23 00:00	1		09/07/23 00:00	FIELD	Field*
Temperature, Field Measured	19.4	°C		09/07/23 00:00	1		09/07/23 00:00	FIELD	Field*
Turbidity, Field Measured	44.2	NTU		09/07/23 00:00	1	0.00	09/07/23 00:00	FIELD	Field*
General Chemistry - PIA									
Alkalinity - bicarbonate as CaCO ₃	500	mg/L		09/13/23 15:18	1	10	09/13/23 15:18	CPS	SM 2320B 1997*
Alkalinity - carbonate as CaCO ₃	< 10	mg/L		09/13/23 15:18	1	10	09/13/23 15:18	CPS	SM 2320B 1997*
Soluble General Chemistry - PIA									
Solids - total dissolved solids (TDS)	1900	mg/L		09/13/23 10:50	1	17	09/13/23 12:20	CPS	SM 2540C
Total Metals - PIA									
Antimony	< 3.0	ug/L		09/14/23 08:52	5	3.0	09/18/23 15:57	TJJ	EPA 6020A
Arsenic	< 1.0	ug/L		09/14/23 08:52	5	1.0	09/18/23 15:57	TJJ	EPA 6020A
Barium	130	ug/L		09/14/23 08:52	5	1.0	09/18/23 15:57	TJJ	EPA 6020A
Beryllium	< 1.0	ug/L		09/14/23 08:52	5	1.0	09/19/23 11:05	TJJ	EPA 6020A
Boron	330	ug/L		09/14/23 08:52	5	10	09/19/23 11:05	TJJ	EPA 6020A
Cadmium	< 1.0	ug/L		09/14/23 08:52	5	1.0	09/18/23 15:57	TJJ	EPA 6020A
Calcium	200	mg/L		09/14/23 08:52	5	0.20	09/25/23 12:56	TJJ	EPA 6020A
Chromium	< 4.0	ug/L		09/14/23 08:52	5	4.0	09/18/23 15:57	TJJ	EPA 6020A
Cobalt	< 2.0	ug/L		09/14/23 08:52	5	2.0	09/18/23 15:57	TJJ	EPA 6020A
Lead	< 1.0	ug/L		09/14/23 08:52	5	1.0	09/22/23 11:01	TJJ	EPA 6020A
Magnesium	110	mg/L		09/14/23 08:52	5	0.10	09/18/23 15:57	TJJ	EPA 6020A
Mercury	0.47	ug/L		09/14/23 08:52	5	0.20	09/22/23 11:01	TJJ	EPA 6020A
Molybdenum	1.0	ug/L		09/14/23 08:52	5	1.0	09/18/23 15:57	TJJ	EPA 6020A

ANALYTICAL RESULTS

Sample: GI01375-01

Name: BA03L

Matrix: Ground Water - Grab

Sampled: 09/06/23 10:54

Received: 09/06/23 14:06

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Potassium	0.30	mg/L		09/14/23 08:52	5	0.10	09/18/23 15:57	TJJ	EPA 6020A
Selenium	< 1.0	ug/L		09/14/23 08:52	5	1.0	09/18/23 15:57	TJJ	EPA 6020A
Sodium	15	mg/L		09/14/23 08:52	5	0.10	09/18/23 15:57	TJJ	EPA 6020A
Thallium	< 1.0	ug/L		09/14/23 08:52	5	1.0	09/22/23 11:01	TJJ	EPA 6020A
Lithium	< 0.020	mg/L		09/14/23 08:52	1	0.020	09/20/23 14:14	BRS	EPA 6010B

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B339564 - SW 3015 - EPA 6010B</u>									
Blank (B339564-BLK1)				Prepared: 07/26/23 Analyzed: 08/02/23					
Lithium	< 0.020	mg/L							
LCS (B339564-BS1)				Prepared: 07/26/23 Analyzed: 08/02/23					
Lithium	0.561	mg/L		0.5556		101	80-120		
Matrix Spike (B339564-MS1)				Prepared: 07/26/23 Analyzed: 08/02/23					
Lithium	0.570	mg/L		0.5556	0.0349	96	75-125		
Matrix Spike Dup (B339564-MSD1)				Prepared: 07/26/23 Analyzed: 08/02/23					
Lithium	0.551	mg/L		0.5556	0.0349	93	75-125	3	20
<u>Batch B339564 - SW 3015 - EPA 6020A</u>									
Blank (B339564-BLK1)				Prepared: 07/26/23 Analyzed: 08/01/23					
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 0.20	mg/L							
Chromium	< 4.0	ug/L							
Cobalt	< 2.0	ug/L							
Lead	< 1.0	ug/L							
Magnesium	< 0.10	mg/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Potassium	< 0.10	mg/L							
Selenium	< 1.0	ug/L							
Sodium	< 0.10	mg/L							
Thallium	< 1.0	ug/L							
LCS (B339564-BS1)				Prepared: 07/26/23 Analyzed: 08/01/23					
Antimony	544	ug/L		555.6		98	80-120		
Arsenic	566	ug/L		555.6		102	80-120		
Barium	535	ug/L		555.6		96	80-120		
Beryllium	651	ug/L		555.6		117	80-120		
Boron	663	ug/L		555.6		119	80-120		
Cadmium	566	ug/L		555.6		102	80-120		
Calcium	5.11	mg/L		5.556		92	80-120		
Chromium	579	ug/L		555.6		104	80-120		
Cobalt	567	ug/L		555.6		102	80-120		
Lead	552	ug/L		555.6		99	80-120		
Magnesium	5.77	mg/L		5.556		104	80-120		
Mercury	55.2	ug/L		55.56		99	80-120		
Molybdenum	553	ug/L		555.6		100	80-120		
Potassium	5.43	mg/L		5.556		98	80-120		
Selenium	582	ug/L		555.6		105	80-120		
Sodium	5.34	mg/L		5.556		96	80-120		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
LCS (B339564-BS1)				Prepared: 07/26/23 Analyzed: 08/01/23					
Thallium	545	ug/L		555.6		98	80-120		
Matrix Spike (B339564-MS1)				Sample: GG04129-01		Prepared: 07/26/23 Analyzed: 08/01/23			
Antimony	540	ug/L		555.6	ND	97	75-125		
Arsenic	575	ug/L		555.6	7.95	102	75-125		
Barium	564	ug/L		555.6	30.9	96	75-125		
Beryllium	597	ug/L		555.6	ND	107	75-125		
Boron	23800	ug/L	Q4	555.6	23500	68	75-125		
Cadmium	559	ug/L		555.6	ND	101	75-125		
Calcium	212	mg/L	Q4	5.556	211	22	75-125		
Chromium	579	ug/L		555.6	2.97	104	75-125		
Cobalt	551	ug/L		555.6	1.76	99	75-125		
Lead	537	ug/L		555.6	2.41	96	75-125		
Magnesium	102	mg/L	Q4	5.556	98.9	53	75-125		
Mercury	57.3	ug/L		55.56	ND	103	75-125		
Molybdenum	594	ug/L		555.6	32.6	101	75-125		
Potassium	12.9	mg/L		5.556	7.69	94	75-125		
Selenium	579	ug/L		555.6	ND	104	75-125		
Sodium	173	mg/L	Q4	5.556	173	6	75-125		
Thallium	527	ug/L		555.6	ND	95	75-125		
Matrix Spike Dup (B339564-MSD1)				Sample: GG04129-01		Prepared: 07/26/23 Analyzed: 08/01/23			
Antimony	533	ug/L		555.6	ND	96	75-125	1	20
Arsenic	572	ug/L		555.6	7.95	102	75-125	0.4	20
Barium	561	ug/L		555.6	30.9	95	75-125	0.6	20
Beryllium	591	ug/L		555.6	ND	106	75-125	1	20
Boron	24200	ug/L	Q4	555.6	23500	129	75-125	1	20
Cadmium	558	ug/L		555.6	ND	101	75-125	0.07	20
Calcium	211	mg/L	Q4	5.556	211	NR	75-125	0.6	20
Chromium	577	ug/L		555.6	2.97	103	75-125	0.4	20
Cobalt	554	ug/L		555.6	1.76	99	75-125	0.5	20
Lead	532	ug/L		555.6	2.41	95	75-125	1	20
Magnesium	101	mg/L	Q4	5.556	98.9	42	75-125	0.6	20
Mercury	57.3	ug/L		55.56	ND	103	75-125	0.07	20
Molybdenum	593	ug/L		555.6	32.6	101	75-125	0.1	20
Potassium	12.8	mg/L		5.556	7.69	93	75-125	0.6	20
Selenium	574	ug/L		555.6	ND	103	75-125	0.9	20
Sodium	173	mg/L	Q4	5.556	173	NR	75-125	0.3	20
Thallium	522	ug/L		555.6	ND	94	75-125	0.8	20
<u>Batch B339593 - IC No Prep - EPA 300.0 REV 2.1</u>									
Matrix Spike (B339593-MS1)				Sample: GG04129-01		Prepared & Analyzed: 07/25/23			
Sulfate	1.00E9	mg/L	Q4	1.500	391	NR	80-120		
Chloride	1.0E9	mg/L	Q4	1.500	330	NR	80-120		
Matrix Spike (B339593-MS2)				Sample: GG04129-11		Prepared & Analyzed: 07/25/23			
Sulfate	1.00E9	mg/L	Q4	1.500	150	NR	80-120		
Fluoride	1.85	mg/L		1.500	0.230	108	80-120		
Chloride	1.0E9	mg/L	Q4	1.500	18	NR	80-120		
Matrix Spike Dup (B339593-MSD1)				Sample: GG04129-01		Prepared & Analyzed: 07/25/23			

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Matrix Spike Dup (B339593-MSD1)				Sample: GG04129-01		Prepared & Analyzed: 07/25/23			
Chloride	1.0E9	mg/L	Q4	1.500	330	NR	80-120	0	20
Sulfate	1.00E9	mg/L	Q4	1.500	391	NR	80-120	0	20
Matrix Spike Dup (B339593-MSD2)				Sample: GG04129-11		Prepared & Analyzed: 07/25/23			
Chloride	1.0E9	mg/L	Q4	1.500	18	NR	80-120	0	20
Fluoride	1.85	mg/L		1.500	0.230	108	80-120	0.04	20
Sulfate	1.00E9	mg/L	Q4	1.500	150	NR	80-120	0	20
<u>Batch B339705 - SW 3015 - EPA 6010B</u>									
Blank (B339705-BLK1)				Prepared: 07/27/23 Analyzed: 08/02/23					
Lithium	< 0.020	mg/L							
LCS (B339705-BS1)				Prepared: 07/27/23 Analyzed: 08/02/23					
Lithium	0.567	mg/L		0.5556		102	80-120		
Matrix Spike (B339705-MS1)				Sample: GG04417-01 Prepared: 07/27/23 Analyzed: 08/02/23					
Lithium	1.00	mg/L	F	0.5556	0.396	109	75-125		
Matrix Spike Dup (B339705-MSD1)				Sample: GG04417-01 Prepared: 07/27/23 Analyzed: 08/02/23					
Lithium	0.992	mg/L	F	0.5556	0.396	107	75-125	0.9	20
<u>Batch B339705 - SW 3015 - EPA 6020A</u>									
Blank (B339705-BLK1)				Prepared: 07/27/23 Analyzed: 08/07/23					
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 0.20	mg/L							
Chromium	< 4.0	ug/L							
Cobalt	< 2.0	ug/L							
Lead	< 1.0	ug/L							
Magnesium	< 0.10	mg/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Potassium	< 0.10	mg/L							
Selenium	< 1.0	ug/L							
Sodium	< 0.10	mg/L							
Thallium	< 1.0	ug/L							
LCS (B339705-BS1)				Prepared: 07/27/23 Analyzed: 08/07/23					
Antimony	565	ug/L		555.6		102	80-120		
Arsenic	541	ug/L		555.6		97	80-120		
Barium	555	ug/L		555.6		100	80-120		
Beryllium	581	ug/L		555.6		105	80-120		
Boron	526	ug/L		555.6		95	80-120		
Cadmium	509	ug/L		555.6		92	80-120		
Calcium	5.59	mg/L		5.556		101	80-120		
Chromium	565	ug/L		555.6		102	80-120		
Cobalt	594	ug/L		555.6		107	80-120		
Lead	600	ug/L		555.6		108	80-120		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
LCS (B339705-BS1)				Prepared: 07/27/23 Analyzed: 08/08/23					
Magnesium	5.81	mg/L		5.556		105	80-120		
Mercury	53.2	ug/L		55.56		96	80-120		
Molybdenum	493	ug/L		555.6		89	80-120		
Potassium	6.05	mg/L		5.556		109	80-120		
Selenium	615	ug/L		555.6		111	80-120		
Sodium	5.69	mg/L		5.556		102	80-120		
Thallium	614	ug/L		555.6		111	80-120		
Matrix Spike (B339705-MS1)				Sample: GG04417-01		Prepared: 07/27/23 Analyzed: 08/07/23			
Antimony	69.1	ug/L	Q1	555.6	0.817	12	75-125		
Barium	1980	ug/L		555.6	1320	118	75-125		
Beryllium	445	ug/L		555.6	16.0	77	75-125		
Boron	826	ug/L	Q1	555.6	472	64	75-125		
Cadmium	526	ug/L		555.6	9.18	93	75-125		
Calcium	290	mg/L	Q4	5.556	289	18	75-125		
Chromium	993	ug/L		555.6	440	99	75-125		
Cobalt	828	ug/L		555.6	236	107	75-125		
Lead	914	ug/L		555.6	316	108	75-125		
Magnesium	189	mg/L	Q4	5.556	179	173	75-125		
Mercury	53.0	ug/L		55.56	0.828	94	75-125		
Molybdenum	369	ug/L	Q1	555.6	6.34	65	75-125		
Potassium	30.8	mg/L		5.556	24.5	113	75-125		
Selenium	304	ug/L	Q1	555.6	14.2	52	75-125		
Sodium	10.7	mg/L		5.556	5.57	93	75-125		
Thallium	543	ug/L		555.6	3.41	97	75-125		
Matrix Spike Dup (B339705-MSD1)				Sample: GG04417-01		Prepared: 07/27/23 Analyzed: 08/07/23			
Antimony	64.8	ug/L	Q2	555.6	0.817	12	75-125	6	20
Barium	1980	ug/L		555.6	1320	119	75-125	0.3	20
Beryllium	443	ug/L		555.6	16.0	77	75-125	0.4	20
Boron	770	ug/L	Q2	555.6	472	54	75-125	7	20
Cadmium	524	ug/L		555.6	9.18	93	75-125	0.3	20
Calcium	285	mg/L	Q4	5.556	289	NR	75-125	2	20
Chromium	1000	ug/L		555.6	440	101	75-125	0.7	20
Cobalt	843	ug/L		555.6	236	109	75-125	2	20
Lead	915	ug/L		555.6	316	108	75-125	0.1	20
Magnesium	191	mg/L	Q4	5.556	179	205	75-125	0.9	20
Mercury	52.9	ug/L		55.56	0.828	94	75-125	0.04	20
Molybdenum	361	ug/L	Q2	555.6	6.34	64	75-125	2	20
Potassium	31.3	mg/L		5.556	24.5	123	75-125	2	20
Selenium	336	ug/L	Q2	555.6	14.2	58	75-125	10	20
Sodium	10.6	mg/L		5.556	5.57	90	75-125	1	20
Thallium	537	ug/L		555.6	3.41	96	75-125	1	20
<u>Batch B339730 - IC No Prep - EPA 300.0 REV 2.1</u>									
Matrix Spike (B339730-MS1)				Sample: GG04417-01		Prepared & Analyzed: 07/26/23			
Chloride	4.5	mg/L		1.500	2.8	115	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	347	NR	80-120		
Matrix Spike Dup (B339730-MSD1)				Sample: GG04417-01		Prepared & Analyzed: 07/26/23			

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Matrix Spike Dup (B339730-MSD1)				Sample: GG04417-01		Prepared & Analyzed: 07/26/23			
Sulfate	1.00E9	mg/L	Q4	1.500	347	NR	80-120	0	20
Chloride	4.4	mg/L		1.500	2.8	113	80-120	0.9	20
<u>Batch B339834 - No Prep - SM 2540C</u>									
Blank (B339834-BLK1)				Prepared & Analyzed: 07/28/23					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B339834-BS1)				Prepared & Analyzed: 07/28/23					
Solids - total dissolved solids (TDS)	963	mg/L		1000		96	84.9-109		
Duplicate (B339834-DUP1)				Sample: GG04129-01		Prepared & Analyzed: 07/28/23			
Solids - total dissolved solids (TDS)	1760	mg/L			1840			4	5
Duplicate (B339834-DUP2)				Sample: GG04129-11		Prepared & Analyzed: 07/28/23			
Solids - total dissolved solids (TDS)	630	mg/L			635			0.8	5
<u>Batch B339934 - No Prep - SM 2540C</u>									
Blank (B339934-BLK1)				Prepared & Analyzed: 08/01/23					
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B339934-BS1)				Prepared & Analyzed: 08/01/23					
Solids - total dissolved solids (TDS)	993	mg/L		1000		99	84.9-109		
Duplicate (B339934-DUP1)				Sample: GG04417-01		Prepared & Analyzed: 08/01/23			
Solids - total dissolved solids (TDS)	980	mg/L			960			2	5
Duplicate (B339934-DUP2)				Sample: GG04417-11		Prepared & Analyzed: 08/01/23			
Solids - total dissolved solids (TDS)	785	mg/L	M		810			3	5
<u>Batch B340448 - No Prep - SM 2320B 1997</u>									
Duplicate (B340448-DUP1)				Sample: GG04129-01		Prepared & Analyzed: 08/04/23			
Alkalinity - bicarbonate as CaCO3	525	mg/L			525			0	10
Alkalinity - carbonate as CaCO3	< 10	mg/L			ND				10
Duplicate (B340448-DUP2)				Sample: GG04129-11		Prepared & Analyzed: 08/04/23			
Alkalinity - bicarbonate as CaCO3	400	mg/L			388			3	10
Alkalinity - carbonate as CaCO3	< 10	mg/L			ND				10
Duplicate (B340448-DUP3)				Sample: GG04129-14		Prepared & Analyzed: 08/04/23			
Alkalinity - carbonate as CaCO3	< 10	mg/L			ND				10
Alkalinity - bicarbonate as CaCO3	500	mg/L			488			3	10
Duplicate (B340448-DUP4)				Sample: GG04417-01		Prepared & Analyzed: 08/04/23			
Alkalinity - bicarbonate as CaCO3	400	mg/L			362			10	10
Alkalinity - carbonate as CaCO3	< 10	mg/L			ND				10
<u>Batch B343272 - IC No Prep - EPA 300.0 REV 2.1</u>									
Matrix Spike (B343272-MS1)				Sample: GI01375-01		Prepared & Analyzed: 09/07/23			
Chloride	1.0E9	mg/L	Q4	1.500	13	NR	80-120		
Sulfate	1.00E9	mg/L	Q4	1.500	417	NR	80-120		
Fluoride	1.76	mg/L		1.500	0.165	106	80-120		
Matrix Spike Dup (B343272-MSD1)				Sample: GI01375-01		Prepared & Analyzed: 09/07/23			
Chloride	1.0E9	mg/L	Q4	1.500	13	NR	80-120	0	20
Fluoride	1.70	mg/L		1.500	0.165	102	80-120	3	20
Sulfate	1.00E9	mg/L	Q4	1.500	417	NR	80-120	0	20

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B343644 - No Prep - SM 2540C</u>									
Blank (B343644-BLK1)	Prepared & Analyzed: 09/13/23								
Solids - total dissolved solids (TDS)	< 17	mg/L							
LCS (B343644-BS1)	Prepared & Analyzed: 09/13/23								
Solids - total dissolved solids (TDS)	953	mg/L		1000		95	84.9-109		
<u>Batch B343702 - No Prep - SM 2320B 1997</u>									
Duplicate (B343702-DUP1)	Sample: GI01375-01			Prepared & Analyzed: 09/13/23					
Alkalinity - carbonate as CaCO ₃	< 10	mg/L			ND				10
Alkalinity - bicarbonate as CaCO ₃	512	mg/L			500			2	10
<u>Batch B343765 - SW 3015 - EPA 6010B</u>									
Blank (B343765-BLK1)	Prepared: 09/14/23 Analyzed: 09/20/23								
Lithium	< 0.020	mg/L							
LCS (B343765-BS1)	Prepared: 09/14/23 Analyzed: 09/20/23								
Lithium	0.539	mg/L		0.5556		97	80-120		
Matrix Spike (B343765-MS1)	Sample: GI01375-01			Prepared: 09/14/23 Analyzed: 09/20/23					
Lithium	0.532	mg/L		0.5556	ND	96	75-125		
Matrix Spike Dup (B343765-MSD1)	Sample: GI01375-01			Prepared: 09/14/23 Analyzed: 09/20/23					
Lithium	0.534	mg/L		0.5556	ND	96	75-125	0.5	20
<u>Batch B343765 - SW 3015 - EPA 6020A</u>									
Blank (B343765-BLK1)	Prepared: 09/14/23 Analyzed: 09/18/23								
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Beryllium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Chromium	< 4.0	ug/L							
Cobalt	< 2.0	ug/L							
Lead	< 1.0	ug/L							
Magnesium	< 0.10	mg/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Potassium	< 0.10	mg/L							
Selenium	< 1.0	ug/L							
Sodium	< 0.10	mg/L							
Thallium	< 1.0	ug/L							
LCS (B343765-BS1)	Prepared: 09/14/23 Analyzed: 09/18/23								
Antimony	544	ug/L		555.6		98	80-120		
Arsenic	525	ug/L		555.6		95	80-120		
Barium	507	ug/L		555.6		91	80-120		
Beryllium	553	ug/L		555.6		100	80-120		
Boron	547	ug/L		555.6		98	80-120		
Cadmium	528	ug/L		555.6		95	80-120		
Chromium	563	ug/L		555.6		101	80-120		

QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
LCS (B343765-BS1)				Prepared: 09/14/23 Analyzed: 09/18/23					
Cobalt	566	ug/L		555.6		102	80-120		
Lead	520	ug/L		555.6		94	80-120		
Magnesium	5.81	mg/L		5.556		105	80-120		
Mercury	49.5	ug/L		55.56		89	80-120		
Molybdenum	523	ug/L		555.6		94	80-120		
Potassium	5.58	mg/L		5.556		100	80-120		
Selenium	562	ug/L		555.6		101	80-120		
Sodium	5.73	mg/L		5.556		103	80-120		
Thallium	535	ug/L		555.6		96	80-120		
Matrix Spike (B343765-MS1)				Sample: GI01375-01	Prepared: 09/14/23 Analyzed: 09/19/23				
Beryllium	548	ug/L		555.6	ND	99	75-125		
Boron	867	ug/L		555.6	328	97	75-125		
Lead	502	ug/L		555.6	ND	90	75-125		
Mercury	50.4	ug/L		55.56	0.472	90	75-125		
Thallium	521	ug/L		555.6	ND	94	75-125		
Matrix Spike Dup (B343765-MSD1)				Sample: GI01375-01	Prepared: 09/14/23 Analyzed: 09/19/23				
Beryllium	541	ug/L		555.6	ND	97	75-125	1	20
Boron	858	ug/L		555.6	328	95	75-125	1	20
Lead	501	ug/L		555.6	ND	90	75-125	0.2	20
Mercury	50.9	ug/L		55.56	0.472	91	75-125	0.8	20
Thallium	521	ug/L		555.6	ND	94	75-125	0.07	20
<u>Batch B344570 - SW 3015 - EPA 6020A</u>									
Blank (B344570-BLK1)				Prepared & Analyzed: 09/25/23					
Calcium	< 0.20	mg/L							
LCS (B344570-BS1)				Prepared & Analyzed: 09/25/23					
Calcium	5.56	mg/L		5.556		100	80-120		

NOTES

Specifications regarding method revisions, method modifications, and calculations used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553

Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050

Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

- F Internal standard area failed to meet the required acceptance criteria in repeat instrumental analyses. Results should be interpreted as estimated concentrations.
- M Analyte failed to meet the required acceptance criteria for duplicate analysis.
- Q1 Matrix Spike failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
- Q2 Matrix Spike Duplicate failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
- Q4 The matrix spike recovery result is unusable since the analyte concentration in the sample is greater than four times the spike level. The associated blank spike was acceptable.



Certified by: Diane Billings, Project Manager



SAR-3: Episodic Depth to Groundwater Measurements

All DTWs on SAR-3 must be collected within 24 hours.

Plant: DC
Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Num	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	Comments	Initials
BA01C	DC-BA01!C	205	BAB	7/17/23	1428	14.90		KL
BA01L	DC-BA01!L	205	BAB		1425	15.29		KL
G02L	DC-G02!L	204	LF		0941	12.22		JD
G02D	DC-G02&D	204	LF		0944	22.04	TD = 68.48'	JD
G03L	DC-G03!L	204	LF		0934	8.68	TD = 26.80'	JD
G03S	DC-G03#S	204	LF		0929	8.33		JD
G04L	DC-G04!L	204	LF		1327	15.42	dry	NW
G04S	DC-G04#S	204	LF		1329	18.27		NW
G06L	DC-G06!L	204	LF		1232	21.80		JD
G06S	DC-G06#S	204	LF		1230	22.02		JD
G07L	DC-G07!L	204	LF		1222	21.12		JD
G08L	DC-G08!L	204	LF		1216	20.68		JD
G09L	DC-G09!L	204	LF		1207	20.75		JD
G09S	DC-G09#S	204	LF		1210	20.63		JD
G12L	DC-G12!L	204	LF		1139	21.67		JD
G12S	DC-G12#S	204	LF		1141	22.72		JD
G14L	DC-G14!L	204	LF		1106	24.02	TD = 26.8	JD
G15L	DC-G15!L	204	LF		1050	30.85		JD
G15S	DC-G15#S	204	LF		1047	31.19		JD
G16L	DC-G16!L	204	LF		1042	29.41		JD
G50L	DC-G50!L	203	GMF		1036	12.52		KL
G51L	DC-G51!L	203	GMF		1522	15.75		JD
G52L	DC-G52!L	203	GMF		1515	26.38		JD

SAR-3: Episodic Depth to Groundwater Measurements

All DTWs on SAR-3 must be collected within 24 hours.

Plant: DC

Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Numl	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	Comments	Initials
G52S	DC-G52#S	203	GMF	7/17/23	15:16	31.00		JD
G53L	DC-G53!L	203	GMF		11:56	11.98		KL
G53S	DC-G53#S	203	GMF		11:59	13.70		KL
G55L	DC-G55!L	203	GMF		1532	19.38		JD
G55S	DC-G55#S	203	GMF		1531	19.18		JD
G56L	DC-G56!L	203	GMF		9:36	18.15	TD = 25.43	KL
G56S	DC-G56#S	203	GMF		9:33	18.55		KL
G57L	DC-G57!L	203	GMF		9:47	22.35	TD = 29.28	KL
G58L	DC-G58!L	203	GMF		9:51	26.56	TD = 33.81	KL
G58S	DC-G58#S	203	GMF		9:54	26.59		KL
G59L	DC-G59!L	203	GMF		9:57	25.54	TD = 35.32	KL
G59S	DC-G59#S	203	GMF		9:59	33.85		KL
G61S	DC-G61#S	203	GMF		10:14	19.28		KL
G62L	DC-G62!L	203	GMF		10:19	20.79	TD = 33.52	KL
G63L	DC-G63!L	203	GMF		10:22	23.60	TD = 31.02	KL
G63S	DC-G63#S	203	GMF		10:26	24.34		KL
G65L	DC-G65!L	203	GMF		12:35	18.21	TD = 25.16	NW
G65S	DC-G65#S	203	GMF		10:31	18.52		NW
G66L	DC-G66!L	203	GMF		10:45	12.35		NW
G66S	DC-G66#S	203	GMF		10:46	13.01		NW
G67L	DC-G67!L	203	GMF		10:55	11.45		NW
G67S	DC-G67#S	203	GMF		10:58	12.33		NW
G68L	DC-G68!L	203	GMF		11:41	11.97		NW

SAR-3: Episodic Depth to Groundwater Measurements
All DTWs on SAR-3 must be collected within 24 hours.

Plant: DC
Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Numt	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	Comments	Initials
G68S	DC-G68#S	203	GMF	7/17/23	1148	12.85		NW
G69L	DC-G69!L	203	GMF		0941	13.80	TD = 27.86	NW
G69S	DC-G69#S	203	GMF		0933	16.96		NW
G70L	DC-G70!L	203	GMF		0949	16.54		NW
G71L	DC-G71!L	203	GMF		1000	23.71	TD = 32.96	NW
G71S	DC-G71#S	203	GMF		0955	24.48		NW
G72L	DC-G72!L	203	GMF		1005	22.40	TD = 28.02	NW
G73L	DC-G73!L	203	GMF		1025	25.53		NW
L103	DC-L103	204	LF		1515	1.10		AP
OM05S	DC-OM05#S	201-202	AP1/2		1403	18.00	TD = 25.70	AP
OM08	DC-OM08	201-202	AP1/2		1348	14.85	TD = 26.94	AP
OM09	DC-OM09	201-202	AP1/2		1259	4.18		AP
OM10	DC-OM10	201-202	AP1/2		1100	-	not safe to access	AP
OM15	DC-OM15	201-202	AP1/2		1437	21.60	TD = 51.17	AP
OM22S	DC-OM22#S	201-202	AP1/2		1057	41.79 19.31		BG
OM23S	DC-OM23#S	201-202	AP1/2		1235	57.95 41.79	TD = 46.10	AP
OM25D	DC-OM25&D	201-202	AP1/2		1317	48.62 57.95	TD = 77.39	AP
OR03S	DC-OR03#S	201-202	AP1/2		1045	21.65 45.62		BG
OR05D	DC-OR05&D	201-202	AP1/2		1400	16. 21.65	TD = 49.74	AP
OR14S	DC-OR14#S	201-202	AP1/2		1337	35 7.17 6.82	TD = 24.33	AP
OR18	DC-OR18	201-202	AP1/2		0943	17.32	TD = 53.10	AP
P01L	DC-P01!L	204	LF		0951	10.38	TD = 23.35'	JS
P01S	DC-P01#S	204	LF		0954	10.13	TD = 29.71'	JS

SAR-3: Episodic Depth to Groundwater Measurements

All DTWs on SAR-3 must be collected within 24 hours.

Plant: DC
Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Numt	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	Comments	Initials
P01I	DC-P01\$I	204	LF	7/17/23	1005	10.05	TD = 46.95	JD
P02S	DC-P02#S	204	LF		1523	14.89	TD = 91.94	JD
P04S	DC-P04#S	204	LF		1329	18.27		JD
P05L	DC-P05!L	204	LF		1335	3.11	TD = 14.92'	JD
P05S	DC-P05#S	204	LF		1337	3.28		JD
P05D	DC-P05&D	204	LF		1339	6.30	TD = 46.10'	JD
P36L	DC-P36!L	204	LF		1306 1024	6.96 11.17	TD = 15.09' to 7/17/23	JD
P36S	DC-P36#S	204	LF		1302	11.33	TD = 31.43'	JD
P36D	DC-P36&D	204	LF		1310	11.57	TD = 51.38	JD
P37L	DC-P37!L	204	LF		1203	13.64		JD
P37D	DC-P37&D	204	LF		1306	15.59		KL
P38L	DC-P38!L	204	LF		1059	17.95	TD = 19.75	JD
P38S	DC-P38#S	204	LF		1057	17.30	TD = 31.42'	JD
P39L	DC-P39!L	204	LF		1024	6.96	TD = 15.09'	JD
P39S	DC-P39#S	204	LF		1031	7.14	TD = 26.25'	JD
P39D	DC-P39&D	204	LF		1028	13.75	TD = 43.58'	JD
P40L	DC-P40!L	204	LF		1359	10.28	TD = 20.44'	JD
P40S	DC-P40#S	204	LF		1401	9.54	TD = 35.42'	JD
P41L	DC-P41!L	204	LF		1117	6.90	TD = 12.00'	JD
P41S	DC-P41#S	204	LF		1119	9.51		KL
P41D	DC-P41&D	204	LF		1123	35.40		KL
P42L	DC-P42!L	204	LF		1216	5.88	TD = 24.30 well is knocked over	NW
P42S	DC-P42#S	204	LF		1218	5.73	TD = 31.47	NW

SAR-3: Episodic Depth to Groundwater Measurements

All DTWs on SAR-3 must be collected within 24 hours.

Plant: DC
Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Numt	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	Comments	Initials
P42I1	DC-P42\$I1	204	LF	7/17/23	1536	6.02	TD = 42.22	KL
P42I2	DC-P42%I2	204	LF		1534	32.42	TD = 57.30	KL
P42D	DC-P42&D	204	LF		1221	37.62	TD = 77.07	NW
P52	DC-P52	203	GMF		1514	14.82	TD = 28.26	KL
P57L	DC-P57!L	203	GMF		1517	22.32	TD = 29.27	KL
P57S	DC-P57#S	203	GMF		1520	22.08		KL
P60	DC-P60	203	GMF		1010	24.54	TD = 37.30	KL
P61	DC-P61	203	GMF		1053	10.00	TD = 21.53	KL
P62	DC-P62	203	GMF		1050	10.55	TD = 19.11	KL
P63	DC-P63	203	GMF		1048	14.17	TD = 20.46	KL
P64	DC-P64	203	GMF		1103	14.71	TD = 18.92	KL
R10L	DC-R10!L	204	LF		1154	21.93	27.45' = TD	JD
R11L	DC-R11!L	204	LF		1145	21.37	26.89' = TD ^{5'-ft} bottom	JD
R13L	DC-R13!L	204	LF		1131	21.10	29.88' = TD	JD
R61L	DC-R61!L	203	GMF		1528	19.00	31.45' = TD	KL
R72S	DC-R72#S	203	GMF		1010	22.26	TD = 37.77	NW
T43L	DC-T43!L	204	LF		1238	6.69		JD
T44L	DC-T44!L	204	LF		1243	11.00		JD
T45L	DC-T45!L	204	LF		1246	8.96		JD
T46L	DC-T46!L	204	LF		1258	7.00		JD
X301	DC-X301-leachate	203	GMF		NA	NA	NA	
XTPW02	DC-XTPW02-pore	203	GMF		1530	6.99	Dry	AP

U:6/19/23 GKJ

SAR-3: Episodic Depth to Groundwater Measurements

All DTWs on SAR-3 must be collected within 24 hours.

Plant: DC

Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Numt	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	Comments	Initials
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SAR-4: Depth to Groundwater Measurements - On-site Transducer Downloads
All DTWs on SAR-4 form may be collected at anytime during the sampling event.

Plant: DC

Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Number	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	On-site Transducer Data					Comments	Initials
							Data Logger Serial No.	Does Data Match?	WL Reading on Transducer (ft)	Data downloaded?	Batt (H/M/L)		
BA01	DC-BA01	205	BAB	7/24/23	1105	15.79	21615533	yes	174.21	Y	M		KL
BA02	DC-BA02	205	BAB	7/25/23	1111	12.02	21615636	yes	506.	Y	H	batteries replaced	JR
BA02L	DC-BA02IL	205	BAB	7/24	1056	Dry	21615682	yes	173.38	Y	H		KL
BA03	DC-BA03	205	BAB	7/31/23	1340	10.48	21615637	yes	578.34	Y	H		JR
BA03L	DC-BA03IL	205	BAB	7/24	1009	Dry	21615687	yes	173.24	Y	M		KL
BA04	DC-BA04	205	BAB	7/24/23	1249	6.99	21615631	yes	573.67	Y	H		JR
BA05	DC-BA05#	205	BAB	7/31/23	1332	21.36	21615540	yes	572.81	Y	H		JR
BA06	DC-BA06	205	BAB	7/24/23	1534	25.04	21615525	yes	173.93	Y	H		KL
G02S	DC-G02#S	204	LF	7/25/23	1316	10.47	21615554	yes	611.07	Y	M		JR
G50S	DC-G50#S	203	GMF	7/27	1314	15.44	21615535	yes	185.41	Y	H		KL
G51S	DC-G51#S	203	GMF	7/31	1332	15.33	21615691	yes	183.68	Y	H		KL
G54L	DC-G54IL	203	GMF	7/31	1341	22.37	21615690	yes	183.09	Y	H		KL
G54S	DC-G54#S	203	GMF	7/31	1337	23.56	21615684	yes	182.72	Y	H		KL
G57S	DC-G57#S	203	GMF	7/31	1347	22.26	21615683	yes	182.88	Y	H		KL
G60L	DC-G60IL	203	GMF	7/31	1354	12.20	21615678	yes	183.39	Y	H		KL
G60S	DC-G60#S	203	GMF	7/31	1351	24.63	21615677	yes	179.73	Y	H		KL
G64L	DC-G64IL	203	GMF	7/31	1358	22.83	21615688	yes	190.29	Y	H		KL
G64S	DC-G64#S	203	GMF	7/25/23	1504	24.18	21615632	yes	600.32	Y	H		JR

SAR-4: Depth to Groundwater Measurements - On-site Transducer Downloads
All DTWs on SAR-4 form may be collected at anytime during the sampling event.
Plant: DC
Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Number	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	On-site Transducer Data					Comments	Initials
							Data Logger Serial No.	Does Data Match?	WL Reading on Transducer (ft)	Data downloaded?	Batt (H/M/L)		
OM01	DC-OM01	201-AP1/ 202 2	AP1/2	7/20/23	10:19	12.06	21615685	yes	583.4573	yes	H	TD-27.83	App
OM04S	DC-OM04#S	201-AP1/ 202 2	AP1/2	7/25/23	10:50	20.00	21615542	yes	587.37	yes	H	TD-35.88	JD
OM07	DC-OM07	201-AP1/ 202 2	AP1/2	7/26/23	10:45	12.41	21615541	yes	584.12	yes	H	TD-29.97	JD
OM12	DC-OM12	201-AP1/ 202 2	AP1/2	7/27/23	15:11	17.34	21615527	yes	176.17	yes	H		KU
OM16	DC-OM16	201-AP1/ 202 2	AP1/2	7/24/23	11:30	24.50	21615539	yes	-580.61	yes	H	TD-43.60	SD
OM17	DC-OM17	201-AP1/ 202 2	AP1/2	7/24/23	13:30	13.66	21615693	yes	—	yes	H	replaced batteries	JD
OM21	DC-OM21	201-AP1/ 202 2	AP1/2	7/19/23	15:27	10.80	21615593	yes	11.3153	yes	H	TD-60.57	App
OM22D	DC-OM22&D	201-AP1/ 202 2	AP1/2	7/19/23	11:05	18.85	21615592	yes	580.0543	yes	H	TD-65.07	App
OM23D	DC-OM23&D	201-AP1/ 202 2	AP1/2	7/21/23	12:22	38.54	21615591	yes	39.76	yes	M		JR
OM24D	DC-OM24&D	201-AP1/ 202 2	AP1/2	7/27/23	12:30	41.90	21615522	yes	broken	NO	—	broken/called informed Graham	JK
OM25S	DC-OM25#S	201-AP1/ 202 2	AP1/2	7/26/23	12:51	57.96	21615681	yes	370.79	yes	H		JD
OR02	DC-OR02	201-AP1/ 202 2	AP1/2	7/20/23	12:42	6.19	21615679	yes	595.0210	yes	H	TD-22.28	App
OR03D	DC-OR03&D	201-AP1/ 202 2	AP1/2	7/20/23	14:10	14.44	21615577	yes	583.1447	yes	H	TD	App
OR04D	DC-OR04&D	201-AP1/ 202 2	AP1/2	7/25/23	10:47	21.21	21615570	yes	586.37	yes	H	TD-68.01	JD
OR06A	DC-OR06A	201-AP1/ 202 2	AP1/2	7/26/23	12:02	14.07	21615692	yes	581.23	yes	H	TD-25.65	JD
OR11	DC-OR11	201-AP1/ 202 2	AP1/2	7/25/23	10:00	31.84	21615686	yes	564.59	yes	H	TD-41.63	JD
OR13S	DC-OR13#S	201-AP1/ 202 2	AP1/2	7/31/23	13:55		21615676	yes	588.75	yes	M		JK
OR13D	DC-OR13&D	201-AP1/ 202 2	AP1/2	7/26/23	17:42		21564135	yes	589.15	yes	H		JK

SAR-4: Depth to Groundwater Measurements - On-site Transducer Downloads
All DTWs on SAR-4 form may be collected at anytime during the sampling event.

Plant: DC
Event: DC-23Q3 Rev 0

Well	Unique ID	Unit Number	Unit Name	Date	Time	Measured Depth to Water (ft bmp)	On-site Transducer Data					Comments	Initials
							Data Logger Serial No.	Does Data Match?	WL Reading on Transducer (ft)	Data down-loaded?	Batt (H/M/L)		
OR14D	DC-OR14&D	201-202	AP1/2	7/24/23	1431	10.52	21615611	yes	588.34	x	H		
OR19	DC-OR19	201-202	AP1/2	7/31/23	1210	25.99	21615634	yes	571.76	y	H		JR
OR20	DC-OR20	201-202	AP1/2	07/24/23	0936	21.95	21615610	yes	-565.1	y	H	TD=57.55	JO

U: 6/21/23 GKJ

WELL/SAMPLE POINT **BA01**

Purge Method: LOW-FLOW

Date: 7-24-23 Start Time: 11:16 Finish/Sample Time: 13:25

Well Depth (Bottom) From MP: PUMP ft Min. Purge Volume: 1.0 Gal / L / mL

Depth to Water From MP: 15.79 ft Total Purge Volume: 1.3 Gal / L / mL

Water Column Length: ft

Well Water Volume: Gal / L

Total Drawdown: 0.12 ft

Reading (Units)	Time	Depth ft.	Flow Rate mL/min	pH s.u.	Spec Cond umhos/cm	Temp deg C	ORP mV	DO mg/L	Turb NTU
1	11:38	15.84	100	6.73	977	18.97	33	3.64	23.1
2	11:39	15.83	100	6.67	993	18.86	30	3.48	21.2
3	11:40	15.84	100	6.67	982	18.80	26	3.35	19.1
4									
5									
Stabilization	NA	NA	NA	± 0.2	± 3%	± 0.2	± 20	± 10% or 0.2	NA

Field Meter: HORIBA

Sample Appearance:

Odor: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Color: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Turb: ☒ None ☐ Slight ☐ Mod ☐ Strong

Well Integrity	Yes	No
Well has ID sign	☒	☐
Casing locked/secure	☒	☐
Well cap fits securely.	☒	☐
Good seal/drainage	☒	☐
Well has weep holes	☒	☐

BOTTLE INFORMATION:

Unfiltered	
Qty	Bottles
	VOAs (C,V, 40mL, HCL)
	VOAs (C,V, 40mL)
	Organics (A,G,U 1000mL)
	Organics (A,G,U 500mL)
3430	TOC (A,V 40mL, H2SO4)
	TOX (A,G 500mL, H2SO4)
1+1	Metals (P,250mL, HNO3)
	Cyanide (P, 250mL, NaOH)
	Phenols (A,G,250mL, H2SO4)
1+1	General (P, 500 mL)
	Ammonia (P, 250mL, H2SO4)
1+1	Rad (P, 2.5L, HNO3)

Filtered	
Qty	Bottles
1+1	Metals (P,250mL, HNO3)
	Ammonia (P,250mL, H2SO4)
1+1	General (P,500mL)
3+3	TOC (A,V, 40mL, H2SO4)

Ferrous Iron - 1.411 mg/L

Final DTW: 15.91 ft

Comments FD were gaged

Sampler's Signature: [Signature]

WELL/SAMPLE POINT BA02

Purge Method: dedicated pump

Date: 7/25/23 Start Time: 11:15 Finish/Sample Time: 12:47

Well Depth (Bottom) From MP: 20.44 ft Min. Purge Volume: 1.0 Gal 0 mL

Depth to Water From MP: 12.02 ft Total Purge Volume: 1.5 Gal 0 mL

Water Column Length: 8.42 ft

Well Water Volume: 5.10 Gal 0 Total Drawdown: 2.73 ft

Reading (Units)	Time	Depth ft.	Flow Rate mL/min	pH s.u.	Spec Cond umhos/cm	Temp deg C	ORP mV	DO mg/L	Turb NTU
1	11:38	13.43	100	6.79	750.41	19.79	-34.0	1.05	38.60
2	11:40	13:50	100	6.79	720.58	19.75	-30.5	1.08	32.60
3	11:42	13:51	100	6.79	740.64	19.65	-25.9	1.84	37.34
4									
5									
Stabilization	NA	NA	NA	± 0.2	± 3%	± 0.2	± 20	± 10% or 0.2	NA

Field Meter: Aquatroll 600

Sample Appearance:

Odor: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Color: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Turb: ☒ None ☐ Slight ☐ Mod ☐ Strong

Well Integrity	Yes	No
Well has ID sign	☒	☐
Casing locked/secure	☒	☐
Well cap fits securely.	☒	☐
Good seal/drainage	☒	☐
Well has weep holes	☒	☐

BOTTLE INFORMATION:

Unfiltered	
Qty	Bottles
	VOAs (C,V, 40mL, HCL)
	VOAs (C,V, 40mL)
	Organics (A,G,U 1000mL)
	Organics (A,G,U 500mL)
3	TOC (A,V 40mL, H2SO4)
	TOX (A,G 500mL, H2SO4)
1	Metals (P,250mL, HNO3)
	Cyanide (P, 250mL, NaOH)
	Phenols (A,G,250mL, H2SO4)
1	General (P, 500 mL) IL
	Ammonia (P, 250mL, H2SO4)
1	Rad (P, 2.5L, HNO3)

Filtered	
Qty	Bottles
1	Metals (P,250mL, HNO3)
	Ammonia (P,250mL, H2SO4)
1	General (P, 500 mL) IL
3	TOC (A,V, 40mL, H2SO4)

Ferrous Iron - 3.509 mg/L

Final DTW: 14.75 ft

Comments

Sampler's Signature: Nicole Wilson

WELL/SAMPLE POINT **BA02L**

Purge Method: **low-flow**

Date: **7-24-23** Start Time: **13:40** Finish/Sample Time: **1345**

Well Depth (Bottom) From MP: **PUMP** ft Min. Purge Volume: **—** Gal / L / mL

Depth to Water From MP: **JR 12.03 ft water below pump** Total Purge Volume: **—** Gal / L / mL

Water Column Length: **—** ft **pump**

Well Water Volume: **—** Gal / L Total Drawdown: **—** ft

Reading (Units)	Time	Depth ft.	Flow Rate mL/min	pH s.u.	Spec Cond umhos/cm	Temp deg C	ORP mV	DO mg/L	Turb NTU
1			1.00						
2			1.00						
3			1.00						
4									
5									
Stabilization	NA	NA	NA	± 0.2	± 3%	± 0.2	± 20	± 10% or 0.2	NA

Field Meter: **—**

Sample Appearance:

Odor: ☐ None ☐ Slight ☐ Mod. ☐ Strong

Color ☐ None ☐ Slight ☐ Mod. ☐ Strong

Turb: ☐ None ☐ Slight ☐ Mod ☐ Strong

Well Integrity	Yes	No
Well has ID sign	☒	
Casing locked/secure	☒	
Well cap fits securely.	☒	
Good seal/drainage	☒	
Well has weep holes	☒	

BOTTLE INFORMATION:

Unfiltered	
Qty	Bottles
	VOAs (C,V, 40mL, HCL)
	VOAs (C,V, 40mL)
	Organics (A,G,U 1000mL)
	Organics (A,G,U 500mL)
	TOC (A,V 40mL, H2SO4)
	TOX (A,G 500mL, H2SO4)
	Metals (P,250mL, HNO3)
	Cyanide (P, 250mL, NaOH)
	Phenols (A,G,250mL, H2SO4)
	General (P, 500 mL)
	Ammonia (P, 250mL, H2SO4)
	Rad (P, 2.5L, HNO3)

Filtered	
Qty	Bottles
	Metals (P,250mL, HNO3)
	Ammonia (P,250mL, H2SO4)
	General (P,500mL)
	TOC (A,V, 40mL, H2SO4)

Ferrous Iron - **NA** mg/L

Final DTW: **—** ft

Comments **Insufficient water for sample**

Sampler's Signature: **Joseph A. Reed**

WELL/SAMPLE POINT **BA03**

Purge Method: Bladder Pump

Date: 7/24/23 Start Time: 1105 Finish/Sample Time: 1206

Well Depth (Bottom) From MP: ft Min. Purge Volume: 1.0 Gal ☒ L mL

Depth to Water From MP: 10.48 ft Total Purge Volume: 1.3 Gal ☒ L mL

Water Column Length: ft

Well Water Volume: Gal / L Total Drawdown: 0.49 ft

Reading (Units)	Time	Depth ft.	Flow Rate mL/min	pH s.u.	Spec Cond umhos/cm	Temp deg C	ORP mV	DO mg/L	Turb NTU
1	1100	10.51	100	6.86	806.49	18.76	8.0	0.61	69.83
2	1101	10.51	100	6.89	800.31	18.65	9.2	0.50	72.02
3	1102	10.52	100	6.89	798.91	18.63	11.1	0.42	81.91
4									
5									
Stabilization	NA	NA	NA	± 0.2	± 3%	± 0.2	± 20	± 10% or 0.2	NA

Field Meter: AT 600

Sample Appearance:

Odor: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Color: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Turb: ☐ None ☒ Slight ☐ Mod ☐ Strong

Well Integrity	Yes	No
Well has ID sign	☒	
Casing locked/secure	☒	
Well cap fits securely.	☒	
Good seal/drainage	☒	
Well has weep holes	☒	

BOTTLE INFORMATION:

Unfiltered	
Qty	Bottles
	VOAs (C,V, 40mL, HCL)
	VOAs (C,V, 40mL)
	Organics (A,G,U 1000mL)
	Organics (A,G,U 500mL)
3	TOC (A,V 40mL, H2SO4)
	TOX (A,G 500mL, H2SO4)
1	Metals (P,250mL, HNO3)
	Cyanide (P, 250mL, NaOH)
	Phenols (A,G,250mL, H2SO4)
1	General (P, 250 mL) <u>1000mL</u>
	Ammonia (P, 250mL, H2SO4)
1	Rad (P, 2.5L, HNO3)

Filtered	
Qty	Bottles
1	Metals (P,250mL, HNO3)
PK +	Ammonia (P,250mL, H2SO4)
1	General (P,500mL)
3	TOC (A,V, 40mL, H2SO4)

Ferrous Iron - 0.287 mg/L

Final DTW: 10.97 ft

Comments Changed Batteries in transducer

Sampler's Signature: Joseph R Paul

BCG

WELL/SAMPLE POINT **BA03L**

Purge Method: bladder pump

Date: 7/24/23 Start Time: 1009 Finish/Sample Time: 1010

Well Depth (Bottom) From MP: pump ft Min. Purge Volume: — Gal / L / mL

Depth to Water From MP: water below pump Total Purge Volume: — Gal / L / mL

Water Column Length: — ft

Well Water Volume: — Gal / L Total Drawdown: — ft

Reading (Units)	Time	Depth ft.	Flow Rate mL/min	pH s.u.	Spec Cond umhos/cm	Temp deg C	ORP mV	DO mg/L	Turb NTU
1									
2									
3									
4									
5									
Stabilization	NA	NA	NA	± 0.2	± 3%	± 0.2	± 20	± 10% or 0.2	NA

Field Meter: —

Sample Appearance:

Odor: ☐ None ☐ Slight ☐ Mod. ☐ Strong

Color: ☐ None ☐ Slight ☐ Mod. ☐ Strong

Turb: ☐ None ☐ Slight ☐ Mod ☐ Strong

Well Integrity	Yes	No
Well has ID sign	☒	
Casing locked/secure	☒	
Well cap fits securely.	☒	
Good seal/drainage	☒	
Well has weep holes	☒	

BOTTLE INFORMATION:

Unfiltered	
Qty	Bottles
	VOAs (C,V, 40mL, HCL)
	VOAs (C,V, 40mL)
	Organics (A,G,U 1000mL)
	Organics (A,G,U 500mL)
	TOC (A,V 40mL, H2SO4)
	TOX (A,G 500mL, H2SO4)
	Metals (P,250mL, HNO3)
	Cyanide (P, 250mL, NaOH)
	Phenols (A,G,250mL, H2SO4)
	General (P, 500 mL)
	Ammonia (P, 250mL, H2SO4)
	Rad (P, 2.5L, HNO3)

Filtered	
Qty	Bottles
	Metals (P,250mL, HNO3)
	Ammonia (P,250mL, H2SO4)
	General (P,500mL)
	TOC (A,V, 40mL, H2SO4)

Ferrous Iron - NA mg/L

Final DTW: — ft

Comments No water to pump

Sampler's Signature: Joseph Reed

WELL/SAMPLE POINT **BA04**

Purge Method: Bladder

Date: 7/24/23 Start Time: 12 49 Finish/Sample Time: 1406

Well Depth (Bottom) From MP: ft Min. Purge Volume: 1.0 Gal / L / mL

Depth to Water From MP: 6.99 ft Total Purge Volume: 1.3 Gal / L / mL

Water Column Length: ft

Well Water Volume: Gal / L Total Drawdown: 0.09 ft

Reading (Units)	Time	Depth ft.	Flow Rate mL/min	pH s.u.	Spec Cond umhos/cm	Temp deg C	ORP mV	DO mg/L	Turb NTU
1	1304	7.03	100	6.71	1131.4	18.05	142.9	0.48	29.18
2	1305	7.03	100	6.72	1125.7	18.06	139.1	0.40	30.79
3	1306	7.03	100	6.71	1128.8	17.98	138.1	0.42	39.11
4									
5									
Stabilization	NA	NA	NA	± 0.2	± 3%	± 0.2	± 20	± 10% or 0.2	NA

Field Meter: ATI 600

Well Integrity	Yes	No
Well has ID sign	☒	
Casing locked/secure	☒	
Well cap fits securely.	☒	
Good seal/drainage	☒	
Well has weep holes	☒	

Sample Appearance:

Odor: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Color: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Turb: ☒ None ☐ Slight ☐ Mod ☐ Strong

BOTTLE INFORMATION:

Unfiltered	
Qty	Bottles
	VOAs (C,V, 40mL, HCL)
	VOAs (C,V, 40mL)
	Organics (A,G,U 1000mL)
	Organics (A,G,U 500mL)
3	TOC (A,V 40mL, H2SO4)
	TOX (A,G 500mL, H2SO4)
1	Metals (P,250mL, HNO3)
	Cyanide (P, 250mL, NaOH)
	Phenols (A,G,250mL, H2SO4)
1	General (P, 500 mL) <u>1000mL</u>
	Ammonia (P, 250mL, H2SO4)
1	Rad (P, 2.5L, HNO3)

Filtered	
Qty	Bottles
1	Metals (P,250mL, HNO3)
1	Ammonia (P,250mL, H2SO4)
1	General (P,500mL)
3	TOC (A,V, 40mL, H2SO4)

Ferrous Iron - 0.412 mg/L

Final DTW: 7.08 ft

Comments Replaced dead batteries - no data to download

Sampler's Signature: Joseph R Reed

WELL/SAMPLE POINT **BA05**

Purge Method: Bladder

Date: 7/24/23 Start Time: 1420 Finish/Sample Time: 1552

Well Depth (Bottom) From MP: ft Min. Purge Volume: 1.0 Gal (L) / mL

Depth to Water From MP: 21.36 ft Total Purge Volume: 1.3 Gal (L) / mL

Water Column Length: ft

Well Water Volume: Gal / L Total Drawdown: 4.74 ft

Reading (Units)	Time	Depth ft.	Flow Rate mL/min	pH s.u.	Spec Cond umhos/cm	Temp deg C	ORP mV	DO mg/L	Turb NTU
1	1439	23.05	100	6.79	1576.2	14.57	-48.7	0.54	75.33
2	1440	23.05	100	6.79	1589.1	14.56	-50.9	0.47	54.57
3	1441	23.05	100	6.79	1591.5	14.57	-51.4	0.45	52.72
4									
5									
Stabilization	NA	NA	NA	± 0.2	± 3%	± 0.2	± 20	± 10% or 0.2	NA

Field Meter: AT 600

Sample Appearance:

Odor: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Color: ☐ None ☒ Slight ☐ Mod. ☐ Strong

Turb: ☐ None ☒ Slight ☐ Mod ☐ Strong

Well Integrity	Yes	No
Well has ID sign	☒	☐
Casing locked/secure	☒	☐
Well cap fits securely.	☒	☐
Good seal/drainage	☒	☐
Well has weep holes	☒	☐

BOTTLE INFORMATION:

Unfiltered	
Qty	Bottles
	VOAs (C,V, 40mL, HCL)
	VOAS (C,V, 40mL)
	Organics (A,G,U 1000mL)
	Organics (A,G,U 500mL)
3	TOC (A,V 40mL, H2SO4)
	TOX (A,G 500mL, H2SO4)
1	Metals (P,250mL, HNO3)
	Cyanide (P, 250mL, NaOH)
	Phenols (A,G,250mL, H2SO4)
1	General (P, 500 mL)
	Ammonia (P, 250mL, H2SO4)
1	Rad (P, 2.5L, HNO3)

Filtered	
Qty	Bottles
1	Metals (P,250mL, HNO3)
	Ammonia (P,250mL, H2SO4)
1	General (P,500mL)
3	TOC (A,V, 40mL, H2SO4)

Ferrous Iron - 5.463 mg/L

Final DTW: 26.10 ft

Comments

Sampler's Signature: Joseph R Reed

WELL/SAMPLE POINT **BA06**

Purge Method: low flow

Date: 7/24/23 Start Time: 14:21 Finish/Sample Time: 15:34

Well Depth (Bottom) From MP: PUMP ft Min. Purge Volume: 1.0 Gal / L / mL

Depth to Water From MP: 25.04 ft Total Purge Volume: 1.3 Gal / L / mL

Water Column Length: — ft

Well Water Volume: — Gal / L

Total Drawdown: 5.94 ft

Reading (Units)	Time	Depth ft.	Flow Rate mL/min	pH s.u.	Spec Cond umhos/cm	Temp deg C	ORP mV	DO mg/L	Turb NTU
1	14:34	26.8	100	6.56	3,140	18.78	-28	2.73	5.5
2	14:35	26.8	100	6.53	3,110	18.81	-34	2.61	4.8
3	14:36	27.1	100	6.54	3,140	18.70	-40	2.50	5.3
4									
5									
Stabilization	NA	NA	NA	± 0.2	± 3%	± 0.2	± 20	± 10% or 0.2	NA

Field Meter: HORIBA

Sample Appearance:

Odor: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Color: ☒ None ☐ Slight ☐ Mod. ☐ Strong

Turb: ☒ None ☐ Slight ☐ Mod ☐ Strong

Well Integrity	Yes	No
Well has ID sign	☒	☐
Casing locked/secure	☒	☐
Well cap fits securely.	☒	☐
Good seal/drainage	☒	☐
Well has weep holes	☒	☐

BOTTLE INFORMATION:

Unfiltered	
Qty	Bottles
	VOAs (C,V, 40mL, HCL)
	VOAS (C,V, 40mL)
	Organics (A,G,U 1000mL)
	Organics (A,G,U 500mL)
3	TOC (A,V 40mL, H2SO4)
	TOX (A,G 500mL, H2SO4)
1	Metals (P,250mL, HNO3)
	Cyanide (P, 250mL, NaOH)
	Phenols (A,G,250mL, H2SO4)
1	General (P, 500 mL)
	Ammonia (P, 250mL, H2SO4)
1	Rad (P, 2.5L, HNO3)

Filtered	
Qty	Bottles
1	Metals (P,250mL, HNO3)
1	Ammonia (P,250mL, H2SO4)
1	General (P,500mL)
3	TOC (A,V, 40mL, H2SO4)

Ferrous Iron - Over Range mg/L

Final DTW: 30.98 ft

Comments NA

Sampler's Signature: [Signature]

6604124-78
GES

DC-845-205

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp	Report To:	Brian Voelker	Attention:	Jason Stuckey
Address:	13498 E. 900th St	Copy To:	Jason Stuckey	Company Name:	Vistra Corp
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Address:	see Section A
Phone:	(217) 753-8911	Project Name:		Quote Reference:	
	Fax:			Project Manager:	
Requested Due Date/TAT:		Project Number:		Profile #	
10 day		2285			

Page: 6 of 7

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location

STATE: IL

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information	Valid Matrix Codes	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		# OF CONTAINERS	Preservatives	Y/N	Requested Analysis Filtered (Y/N)										Project No./ Lab I.D.
					DATE	TIME		Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other												
1	OR20	DRINKING WATER	WTG	G	7/24/23	1110	11	X	X											
2	OR16	WASTE WATER				1245	11	X	X											
3	OR140	WASTE WATER				1531	11	X	X											
4	P36L	PRODUCT				1424	2	X	X											
5	G12S	SOIL-SOLID				1335	3	X	X											
6	T46L	WASTE WATER				1200	2	X	X											
7	P37L	WASTE WATER				1235	2	X	X											
8	G09S	WASTE WATER				1121	3	X	X											
9	T43L	WASTE WATER				1019	2	X	X											
10	B406	WASTE WATER				1534	11	X	X											
11	B401	WASTE WATER				1325	22	X	X											
12	B403	WASTE WATER				1206	4	X	X											
13	B404	WASTE WATER				1406	4	X	X											
14	B405	WASTE WATER				1552	11	X	X											
15	EB7	WASTE WATER				1700	11	X	X											
16																				

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	
DC-23Q3 Rev 0		Am Dnj	7/24/23	1742	graceful	7/24/23	1742	Received on	Temp in °C
								Ice (Y/N)	4
								Custody	N
								Sealed	
								Cooler (Y/N)	
								Samples	Intact (Y/N)
									4

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: James David
SIGNATURE of SAMPLER: Am Dnj

DATE Signed (MM/DD/YY): 7/24/23

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Page: 7 of 7	
Company: <u>Vistra Corp</u>		Report To: <u>Brian Voelker</u>		Attention: <u>Jason Stuckey</u>		REGULATORY AGENCY NPDES GROUND WATER DRINKING WATER UST RCRA OTHER Site Location: <u>IL</u> <u>6604417</u> STATE:	
Address: <u>13498 E. 900th St</u>		Copy To: <u>Jason Stuckey</u>		Company Name: <u>Vistra Corp</u>			
Email To: <u>Brian.Voelker@VistraCorp.com</u>		Purchase Order No.:		Address: <u>see Section A</u>			
Phone: (217) 753-8911 Fax:		Project Name:		Quote Reference:			
Requested Due Date/TAT: <u>10 day</u>		Project Number: <u>2285</u>		Project Manager:			
				Profile #:			

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WT WASTE WATER WW PRODUCT P SOIL/SOLID SL OIL OL WIPE WP AIR AR OTHER OT TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Analysis Test Y/N	Requested Analysis Filtered (Y/N)												Residual Chlorine (Y/N)	Project No./ Lab I.D.
					DATE	TIME			Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other		DC-257-205	DC-SUP-000	DC-845-205	DC-845-201-202	DC-257-203	DC-845-203	DC-257-204	DC-811-204	DC-WPCP-203-206	DC-CLOSURE-201-202				
1	0M17		WT	G	7/25/23	1515		8	X	X	X																				
2	0M045					1724		11	X	X	X																				
3	GR040					1201		21	X	X	X																				
4	G58L					1351		2	X		X																				
5	R61L					1310		10	X	X	X																				
6	G62L					1219		16	X	X	X																				
7	G63L					1121	30	2	X	X	X																				
8	G15S					1031		3	X		X																				
9	EB8					1601		11	X	X	X																				
10	EB9					1615		10	X	X	X																				
11	G63L Dup					1121		2	X		X																				
12	G64S					1623		11	X	X	X																				
13	G02S					1735		11	X	X	X																				
14	BA02					1247		11	X	X	X																				
15																															
16																															
ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION				DATE	TIME	ACCEPTED BY / AFFILIATION				DATE	TIME	SAMPLE CONDITIONS																	
DC-23Q3 Rev 0		Joseph R. Reed				7/25/23	1746	Van Wagoner				7-25-23	1746	5.3 Y N Y																	

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION		DATE	TIME	ACCEPTED BY / AFFILIATION		DATE	TIME	SAMPLE CONDITIONS			
DC-23Q3 Rev 0		<u>Joe Reed</u>		7/25/23	1746	<u>Van Wagon</u>		7-25-23	1746	5.3	Y	N	Y
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: <u>Joe Reed</u> SIGNATURE of SAMPLER: <u>Joe Reed</u>										DATE Signed (MM/DD/YY): <u>7/25/23</u>			

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

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CHAIN-OF-CUSTODY / Analytical Request Document

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

ATTACHMENT B.
845 QUARTERLY REPORT - QUARTER 3, 2023

DUCK CREEK POWER PLANT, BOTTOM ASH BASIN				
DC-845-205				

Section A Required Client Information:						Section B Required Project Information:						Section C Invoice Information:					
Company: Vistra Corp-Duck Creek						Report To: Brian Voelker						Attention: John Romang					
Address: 17751 North Cilco Rd						Copy To: John Romang						Company Name: Vistra Corp-Duck Creek					
Canton, IL 61520						Purchase Order No.:						Address: see Section A					
Email To: Brian.Voelker@VistraCorp.com												Quote Reference:					
Phone: (217) 753-8911 Fax:						Project Name:						Project Manager:					
Requested Due Date/TAT: 10 day						Project Number: 2285						Profile #:					

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCTS SOLID SL OIL WP WIPE AIR AR OTHER OT TISSUE TS	Matrix Code	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		# OF CONTAINERS	Preservatives										Analysis Test ↑ Y/N ↓	WPCP-203-206	Residual Chlorine (Y/N)	Project No./ Lab I.D.
				DATE	TIME		H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other							
1	G66L	WT G	G	9/6/23	1017	2	X	X												
2	G71L	WT G	G	9/6/23	1257	1	X													
3	G72L	WT G	G	9/6/23	1148	2	X	X												
4	G73L	WT G	G	9/6/23	1056	2	X	X												
5	R72S	WT G	G	9/6/23	1225	2	X	X												
6	BA02L	WT G	G	9/6/23	1130	0														
7	BA03L	WT G	G	9/6/23	1054	11	X	X												
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		SAMPLE CONDITIONS	
	DATE	SIGNATURE	DATE	SIGNATURE	TEMP IN °C	RECEIVED ON
DC-23Q3R-Conf-Rev 0	9/6/23	[Signature]	9/6/23	1406	1406	Y N Y

SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Aaron Rembert SIGNATURE of SAMPLER: [Signature]		DATE Signed (MM/DD/YYYY) 09/06/23
---	--	--------------------------------------

walkin



Pace Analytical Services, LLC

2231 W. Altorfer Drive

Peoria, IL 61615

(800)752-6651

September 11, 2023

Daryl Johnson
Vistra - Duck Creek
17751 North Cilco Road
Canton, IL 61520-8761

Dear Daryl Johnson:

Please find enclosed the **revised** analytical results for the sample(s) the laboratory received. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of Pace Analytical Services, LLC.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

Pace Analytical Services appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the General Manager, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lisa.grant@pacelabs.com.

A handwritten signature in black ink that reads "Diane Billings". The signature is written in a cursive, flowing style.

Diane Billings
Project Manager

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order GG03026

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
YES	Zero headspace, <6 mm present in VOA vials
YES	Trip blank(s) received
YES	All non-field analyses received within holding times
YES	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GG03365

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GG03715

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GG04161

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GG04427

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GG04652

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GG04996

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

Work Order GG05278

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers received undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: GG03026-01
Name: G51S
Matrix: Ground Water - Grab

Sampled: 07/18/23 12:02
Received: 07/18/23 17:16

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	1.59	pCi/L			1	0.488	08/08/23 21:17		904.0 903.0
-----------------------------	------	-------	--	--	---	-------	----------------	--	-------------

Sample: GG03365-01
Name: OM21
Matrix: Ground Water - Grab

Sampled: 07/19/23 15:05
Received: 07/19/23 17:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	2.96	pCi/L			1	0.72	08/10/23 17:49		904.0 903.0
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Sample: GG03365-02
Name: OM22D
Matrix: Ground Water - Grab

Sampled: 07/19/23 12:42
Received: 07/19/23 17:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	5.51	pCi/L			1	0.798	08/10/23 17:49		904.0 903.0
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Sample: GG03365-03
Name: EB 3
Matrix: Ground Water - Equipment Blank

Sampled: 07/19/23 17:10
Received: 07/19/23 17:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.143	pCi/L			1	0.586	08/10/23 17:49		904.0 903.0
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Pace Analytical Services, LLC
2231 W. Altorfer Drive
Peoria, IL 61615
(800)752-6651

ANALYTICAL RESULTS

Sample: GG03715-01
Name: G54L
Matrix: Ground Water - Grab

Sampled: 07/20/23 12:18
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.847	pCi/L			1	0.459	08/10/23 17:49		904.0 903.0
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Sample: GG03715-02
Name: G54S
Matrix: Ground Water - Grab

Sampled: 07/20/23 11:04
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
-----------	--------	------	-----------	----------	----------	-----	----------	---------	--------

Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	4.03	pCi/L			1	0.492	08/08/23 21:17		904.0 903.0
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Sample: GG03715-03
Name: G57S
Matrix: Ground Water - Grab

Sampled: 07/20/23 13:20
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
-----------	--------	------	-----------	----------	----------	-----	----------	---------	--------

Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	1.03	pCi/L			1	0.449	08/08/23 21:17		904.0 903.0
-----------------------------	------	-------	--	--	---	-------	----------------	--	-------------

Sample: GG03715-04
Name: OM01
Matrix: Ground Water - Grab

Sampled: 07/20/23 12:35
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.714	pCi/L			1	0.684	08/08/23 21:17		904.0 903.0
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ANALYTICAL RESULTS

Sample: GG03715-05
Name: OM01 DUP
Matrix: Ground Water - Field Duplicate

Sampled: 07/20/23 12:35
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	2.26	pCi/L			1	0.62	08/08/23 21:17		904.0 903.0

Sample: GG03715-06
Name: OR02
Matrix: Ground Water - Grab

Sampled: 07/20/23 14:00
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	2.09	pCi/L			1	1.04	08/10/23 17:49		904.0 903.0

Sample: GG03715-07
Name: G60S
Matrix: Ground Water - Grab

Sampled: 07/20/23 14:53
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.85	pCi/L			1	0.585	08/10/23 17:49		904.0 903.0

Sample: GG03715-08
Name: G60L
Matrix: Ground Water - Grab

Sampled: 07/20/23 14:41
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.968	pCi/L			1	1.13	08/08/23 21:17		904.0 903.0

ANALYTICAL RESULTS

Sample: GG03715-09
Name: X301 PUMP HOUSE
Matrix: Ground Water - Grab

Sampled: 07/20/23 15:12
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	2.13	pCi/L			1	1.03	08/08/23 21:17		904.0 903.0

Sample: GG03715-10
Name: EB 4
Matrix: Ground Water - Equipment Blank

Sampled: 07/20/23 16:00
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.696	pCi/L			1	0.503	08/08/23 21:17		904.0 903.0

Sample: GG03715-11
Name: EB 5
Matrix: Ground Water - Equipment Blank

Sampled: 07/20/23 16:00
Received: 07/20/23 17:22

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.717	pCi/L			1	0.466	08/10/23 17:49		904.0 903.0

Sample: GG04161-01
Name: OR20
Matrix: Ground Water - Grab

Sampled: 07/24/23 11:10
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	4.18	pCi/L			1	0.997	08/09/23 17:01		904.0 903.0

ANALYTICAL RESULTS

Sample: GG04161-02
Name: OM16
Matrix: Ground Water - Grab

Sampled: 07/24/23 12:45
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.642	pCi/L			1	0.574	08/09/23 17:01		904.0 903.0

Sample: GG04161-03
Name: OR14D
Matrix: Ground Water - Grab

Sampled: 07/24/23 15:31
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.58	pCi/L			1	0.624	08/09/23 17:01		904.0 903.0

Sample: GG04161-04
Name: BA06
Matrix: Ground Water - Grab

Sampled: 07/24/23 15:34
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.223	pCi/L			1	0.514	08/09/23 17:01		904.0 903.0

Sample: GG04161-05
Name: BA01
Matrix: Ground Water - Grab

Sampled: 07/24/23 13:25
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.478	pCi/L			1	0.468	08/09/23 17:01		904.0 903.0

ANALYTICAL RESULTS

Sample: GG04161-06
Name: BA01 DUP
Matrix: Ground Water - Field Duplicate

Sampled: 07/24/23 13:25
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.16	pCi/L			1	0.499	08/09/23 17:01		904.0 903.0

Sample: GG04161-07
Name: BA03
Matrix: Ground Water - Grab

Sampled: 07/24/23 12:06
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.89	pCi/L			1	0.555	08/09/23 17:01		904.0 903.0

Sample: GG04161-08
Name: BA04
Matrix: Ground Water - Grab

Sampled: 07/24/23 14:06
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.272	pCi/L			1	0.567	08/09/23 17:01		904.0 903.0

Sample: GG04161-09
Name: BA05
Matrix: Ground Water - Grab

Sampled: 07/24/23 15:52
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.296	pCi/L			1	0.551	08/09/23 17:01		904.0 903.0

ANALYTICAL RESULTS

Sample: GG04161-10
Name: EB 7
Matrix: Ground Water - Equipment Blank

Sampled: 07/24/23 17:00
Received: 07/24/23 17:42

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.198	pCi/L			1	0.594	08/09/23 17:01		904.0 903.0
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Sample: GG04427-01
Name: OM17
Matrix: Ground Water - Grab

Sampled: 07/25/23 15:15
Received: 07/25/23 17:46

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	17.5	pCi/L			1	0.983	08/10/23 17:49		904.0 903.0
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Sample: GG04427-02
Name: OM04S
Matrix: Ground Water - Grab

Sampled: 07/25/23 14:24
Received: 07/25/23 17:46

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.599	pCi/L			1	0.574	08/10/23 17:49		904.0 903.0
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Sample: GG04427-03
Name: OR04D
Matrix: Ground Water - Grab

Sampled: 07/25/23 12:01
Received: 07/25/23 17:46

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	1.24	pCi/L			1	0.549	08/10/23 17:49		904.0 903.0
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ANALYTICAL RESULTS

Sample: GG04427-04
Name: EB 8
Matrix: Ground Water - Equipment Blank

Sampled: 07/25/23 16:01
Received: 07/25/23 17:46

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.697	pCi/L			1	0.603	08/10/23 17:49		904.0 903.0

Sample: GG04427-05
Name: G64S
Matrix: Ground Water - Grab

Sampled: 07/25/23 16:23
Received: 07/25/23 17:46

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.846	pCi/L			1	0.657	08/10/23 17:49		904.0 903.0

Sample: GG04427-06
Name: G02S
Matrix: Ground Water - Grab

Sampled: 07/25/23 14:35
Received: 07/25/23 17:46

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	3.97	pCi/L			1	0.464	08/10/23 17:49		904.0 903.0

Sample: GG04427-07
Name: BA02
Matrix: Ground Water - Grab

Sampled: 07/25/23 12:47
Received: 07/25/23 17:46

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.186 U	pCi/L			1	0.541	08/10/23 17:49		904.0 903.0

ANALYTICAL RESULTS

Sample: GG04652-01
Name: OR13D
Matrix: Ground Water - Grab

Sampled: 07/26/23 13:15
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	5.58	pCi/L			1	1.13	08/09/23 21:09		904.0 903.0

Sample: GG04652-02
Name: OR13D DUP
Matrix: Ground Water - Grab

Sampled: 07/26/23 13:15
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.96	pCi/L			1	0.85	08/09/23 21:09		904.0 903.0

Sample: GG04652-03
Name: OR13S
Matrix: Ground Water - Grab

Sampled: 07/26/23 11:42
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.883	pCi/L			1	0.645	08/09/23 21:09		904.0 903.0

Sample: GG04652-04
Name: OR11
Matrix: Ground Water - Grab

Sampled: 07/26/23 10:10
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	1.8	pCi/L			1	1.35	08/09/23 21:09		904.0 903.0

ANALYTICAL RESULTS

Sample: GG04652-05
Name: OM07
Matrix: Ground Water - Grab

Sampled: 07/26/23 11:52
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.945	pCi/L			1	0.626	08/09/23 21:09		904.0 903.0

Sample: GG04652-06
Name: OR06A
Matrix: Ground Water - Grab

Sampled: 07/26/23 12:33
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.837	pCi/L			1	0.684	08/14/23 16:37		904.0 903.0

Sample: GG04652-07
Name: OM25S
Matrix: Ground Water - Grab

Sampled: 07/26/23 13:30
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	17.7	pCi/L			1	1.29	08/14/23 16:37		904.0 903.0

Sample: GG04652-08
Name: EB10
Matrix: Ground Water - Grab

Sampled: 07/26/23 15:00
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.524	pCi/L			1	0.769	08/14/23 16:37		904.0 903.0

ANALYTICAL RESULTS

Sample: GG04652-09
Name: EB11
Matrix: Ground Water - Grab

Sampled: 07/26/23 15:05
Received: 07/26/23 15:29

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.0651	pCi/L			1	0.835	08/14/23 16:37		904.0 903.0
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Sample: GG04996-01
Name: OM12
Matrix: Ground Water - Grab

Sampled: 07/27/23 16:02
Received: 07/27/23 18:38

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.943	pCi/L			1	0.462	08/09/23 21:09		904.0 903.0
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Sample: GG04996-02
Name: OM23D
Matrix: Ground Water - Grab

Sampled: 07/27/23 14:12
Received: 07/27/23 18:38

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.389	pCi/L			1	0.48	08/09/23 21:09		904.0 903.0
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Sample: GG04996-03
Name: OM24D
Matrix: Ground Water - Grab

Sampled: 07/27/23 15:40
Received: 07/27/23 18:38

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	1.55	pCi/L			1	0.564	08/09/23 21:09		904.0 903.0
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ANALYTICAL RESULTS

Sample: GG04996-04
Name: G50S
Matrix: Ground Water - Grab

Sampled: 07/27/23 14:28
Received: 07/27/23 18:38

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.318	pCi/L			1	0.582	08/09/23 21:09		904.0 903.0

Sample: GG04996-05
Name: G64L
Matrix: Ground Water - Grab

Sampled: 07/27/23 12:06
Received: 07/27/23 18:38

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.544	pCi/L			1	0.494	08/09/23 21:09		904.0 903.0

Sample: GG04996-06
Name: EB 12
Matrix: Ground Water - Equipment Blank

Sampled: 07/27/23 00:00
Received: 07/27/23 18:38

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	0.174	pCi/L			1	0.611	08/09/23 21:09		904.0 903.0

Sample: GG05278-01
Name: OR03D
Matrix: Ground Water - Grab

Sampled: 07/31/23 11:30
Received: 07/31/23 16:05

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Rad 226 and 228-Subcontract	16.2	pCi/L			1	0.933	08/11/23 16:39		904.0 903.0

ANALYTICAL RESULTS

Sample: GG05278-02
Name: OR19
Matrix: Ground Water - Grab

Sampled: 07/31/23 13:27
Received: 07/31/23 16:05

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	2.94	pCi/L			1	1.17	08/11/23 16:39		904.0 903.0
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Sample: GG05278-03
Name: EB 13
Matrix: Ground Water - Grab

Sampled: 07/31/23 15:50
Received: 07/31/23 16:05

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
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Miscellaneous - Pace Analytical - Mt Juliet, Tn

Rad 226 and 228-Subcontract	0.367	pCi/L			1	0.532	08/11/23 16:39		904.0 903.0
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QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit

NOTES

Specifications regarding method revisions, method modifications, and calculations used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050

TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W. Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553

Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)

Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389

TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080

Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050

Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050



Certified by: Diane Billings, Project Manager



ANALYTICAL REPORT

August 16, 2023

Pace IR - Peoria, IL

Sample Delivery Group: L1640282
Samples Received: 07/28/2023
Project Number: GG03026
Description: Vistra-Duck Creek
Site: 001
Report To: Gail Schindler
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:

Haley Torrence

Haley Torrence
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

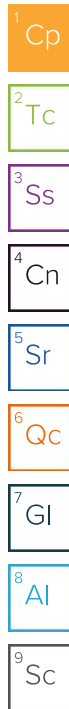


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		⁹ Sc

SAMPLE SUMMARY

Collected by

Collected date/time

Received date/time

07/18/23 12:02

07/28/23 10:00

G51S L1640282-01 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104670	1	07/31/23 09:50	08/08/23 21:17	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/08/23 21:17	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Haley Torrence
Project Manager



DUCK CREEK POWER PLANT, BOTTOM ASH BASIN
DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.752		0.268	0.459	08/08/2023 21:17	WG2104670
(T) Barium	104			30.0-143	08/08/2023 21:17	WG2104670
(T) Yttrium	108			30.0-136	08/08/2023 21:17	WG2104670

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.59		0.419	0.488	08/08/2023 21:17	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.835		0.322	0.166	08/04/2023 17:01	WG2105812
(T) Barium-133	109			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3959520-1 08/08/23 21:17

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-228	-0.0771	U	0.211	0.381
(T) Barium	101		101	
(T) Yttrium	82.1		82.1	

L1640280-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1640280-05 08/08/23 21:17 • (DUP) R3959520-5 08/08/23 21:17

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.909	0.311	0.530	0.000	0.370	0.530	1	200	1.88	U	20	3
(T) Barium	94.2			94.4	94.4							
(T) Yttrium	98.8			105	105							

Laboratory Control Sample (LCS)

(LCS) R3959520-2 08/08/23 21:17

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.07	101	80.0-120	
(T) Barium			99.0		
(T) Yttrium			92.6		

L1639961-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1639961-02 08/08/23 21:17 • (MS) R3959520-3 08/08/23 21:17 • (MSD) R3959520-4 08/08/23 21:17

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.461	17.5	18.7	102	109	1	70.0-130			6.53		20
(T) Barium		124			112	98.6							
(T) Yttrium		98.0			107	97.6							

Method Blank (MB)

(MB) R3960529-1 08/04/23 17:01

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-226	0.0550	J	0.0681	0.0955
(T) Barium-133	78.7		78.7	

L1640281-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1640281-07 08/04/23 17:01 • (DUP) R3960529-4 08/04/23 17:01

Analyte	Original Result pCi/l	Original Uncertainty +/-	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.186	0.180	0.223	0.494	0.223	1	90.5	0.774		20	3
(T) Barium-133	109		81.1	81.1							

Laboratory Control Sample (LCS)

(LCS) R3960529-5 08/04/23 20:57

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.58	91.4	80.0-120	
(T) Barium-133		60.1			

L1640284-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640284-04 08/04/23 17:01 • (MS) R3960529-2 08/04/23 17:01 • (MSD) R3960529-3 08/04/23 17:01

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.223	21.4	18.7	106	1	75.0-125			13.7		20
(T) Barium-133		86.4		77.7	77.7							

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

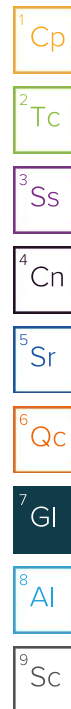
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.



ACCREDITATIONS & LOCATIONS

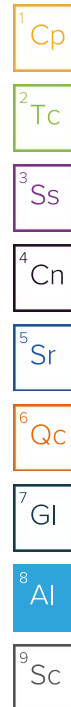
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



ANALYTICAL REPORT

August 16, 2023

Pace IR - Peoria, IL

Sample Delivery Group: L1640283
Samples Received: 07/28/2023
Project Number: GG03365
Description: Vistra-Duck Creek
Site: 001
Report To: Gail Schindler
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:

Haley Torrence

Haley Torrence
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

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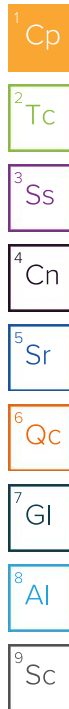


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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

OM21 L1640283-01 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/19/23 15:05

07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

OM22D L1640283-02 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/19/23 12:42

07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

EB 3 L1640283-03 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/19/23 17:10

07/28/23 10:00

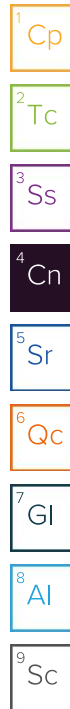
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Haley Torrence
Project Manager



DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.38		0.396	0.677	08/10/2023 17:49	WG2105353
(T) Barium	93.0			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	114			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.96		0.619	0.720	08/10/2023 17:49	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.58		0.476	0.246	08/04/2023 17:01	WG2105812
(T) Barium-133	102			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.37		0.457	0.764	08/10/2023 17:49	WG2105353
(T) Barium	91.6			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	111			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	5.51		0.787	0.798	08/10/2023 17:49	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	3.14		0.641	0.230	08/04/2023 17:01	WG2105812
(T) Barium-133	97.3			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.0661	U	0.303	0.544	08/10/2023 17:49	WG2105353
(T) Barium	111			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	110			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.143	U	0.331	0.586	08/10/2023 17:49	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0766	U	0.133	0.217	08/04/2023 17:01	WG2105812
(T) Barium-133	96.0			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3959496-1 08/10/23 17:49

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/l
Radium-228	-0.175	U	0.177	0.328
(T) Barium	134		134	
(T) Yttrium	114		114	

L1640281-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1640281-02 08/10/23 17:49 • (DUP) R3959496-5 08/10/23 17:49

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.380	0.291	0.521	-0.0470	0.316	0.521	1	200	0.995	U	20	3
(T) Barium	119			114	114							
(T) Yttrium	113			104	104							

Laboratory Control Sample (LCS)

(LCS) R3959496-2 08/10/23 17:49

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.71	114	80.0-120	
(T) Barium			119		
(T) Yttrium			95.2		

L1640281-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640281-05 08/10/23 17:49 • (MS) R3959496-3 08/10/23 17:49 • (MSD) R3959496-4 08/10/23 17:49

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.442	16.6	16.0	96.8	93.1	1	70.0-130			3.80		20
(T) Barium		107			113	116							
(T) Yttrium		109			112	111							

Method Blank (MB)

(MB) R3960529-1 08/04/23 17:01

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-226	0.0550	J	0.0681	0.0955
(T) Barium-133	78.7		78.7	

L1640281-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1640281-07 08/04/23 17:01 • (DUP) R3960529-4 08/04/23 17:01

Analyte	Original Result pCi/l	Original Uncertainty +/-	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.186	0.180	0.223	0.494	0.223	1	90.5	0.774		20	3
(T) Barium-133	109		81.1	81.1							

Laboratory Control Sample (LCS)

(LCS) R3960529-5 08/04/23 20:57

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.58	91.4	80.0-120	
(T) Barium-133		60.1			

L1640284-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640284-04 08/04/23 17:01 • (MS) R3960529-2 08/04/23 17:01 • (MSD) R3960529-3 08/04/23 17:01

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.223	21.4	18.7	106	92.2	1	75.0-125		13.7		20
(T) Barium-133		86.4		77.7	77.7	76.2						

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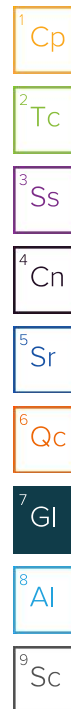
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Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.



ACCREDITATIONS & LOCATIONS

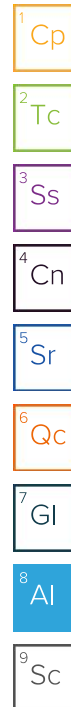
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



A129

PH-10BDH4321 TRC-2-1441d1
CR6-20221V

Internal Transfer Chain of Custody



State of Origin: IL
Cert. Needed: ☒ YES ☐ NO

Owner Received
Date: 7/19/2023 By: 8/8/2023

Workorder: GG03365

Workorder Name: VISTRA - DUCK CREEK

Report To: Subcontract To:

Gail Schindler
Pace Analytical - IL/MO
2231 W. Altorfer Drive
Peoria, IL 61615
800-752-6651

Pace Analytical - Mt Juliet
12065 Lebanon Rd
Mt Juliet TN 37122

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Date/Time	Received By	Comments
1	OM21	GRAB	7/19/2023 15:05	GG03365-01	GW				
2	OM22D	GRAB	7/19/2023 12:42	GG03365-02	GW				
3	EB 3	GRAB	7/19/2023 17:10	GG03365-03	DI				
Transfers 3/14/2023 14:31									
1							07/18/23	D. Remy	Needs reported as 226, 228 and also combined 226/228, include QC
2									
3									

LAB USE ONLY
-01
-02
-03

Cooler Temperature on Receipt _____ °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ N If Applicable

COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N

Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N

Correct bottles used: ☒ Y ☐ N

Sufficient volume sent: ☒ Y ☐ N

RAT Screen <0.5 mR/hr: ☒ Y ☐ N

ANALYTICAL REPORT

September 07, 2023

Revised Report

Pace IR - Peoria, IL

Sample Delivery Group: L1640280
Samples Received: 07/28/2023
Project Number: GG03715
Description: Vistra-Duck Creek
Site: 001
Report To: Gail Schindler
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:



Haley Torrence
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

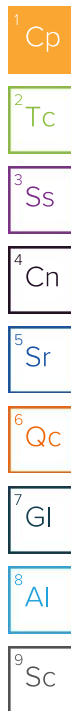
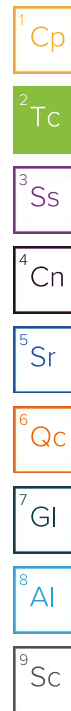


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SAMPLE SUMMARY

G54L L1640280-01 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104631	1	07/31/23 16:00	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104631	1	07/31/23 16:00	08/04/23 12:26	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/20/23 12:18

07/28/23 10:00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

G54S L1640280-02 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104670	1	07/31/23 09:50	08/08/23 21:17	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104631	1	07/31/23 16:00	08/08/23 21:17	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104631	1	07/31/23 16:00	08/04/23 12:26	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/20/23 11:04

07/28/23 10:00

G57S L1640280-03 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104670	1	07/31/23 09:50	08/08/23 21:17	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/08/23 21:17	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/20/23 13:20

07/28/23 10:00

OM01 L1640280-04 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104670	1	07/31/23 09:50	08/08/23 21:17	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/08/23 21:17	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/20/23 12:35

07/28/23 10:00

OM01 DUP L1640280-05 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104670	1	07/31/23 09:50	08/08/23 21:17	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/08/23 21:17	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/20/23 12:35

07/28/23 10:00

ORO2 L1640280-06 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/20/23 14:00

07/28/23 10:00

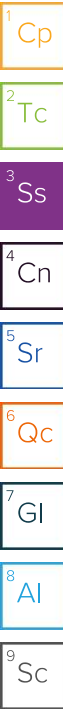
SAMPLE SUMMARY

G60S L1640280-07 Non-Potable Water

Collected by
Collected date/time
Received date/time

07/20/23 14:53 07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN



G60L L1640280-08 Non-Potable Water

Collected by
Collected date/time
Received date/time

07/20/23 14:41 07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104670	1	07/31/23 09:50	08/08/23 21:17	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/08/23 21:17	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

X301 PUMP HOUSE L1640280-09 Non-Potable Water

Collected by
Collected date/time
Received date/time

07/20/23 15:12 07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104670	1	07/31/23 09:50	08/08/23 21:17	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/08/23 21:17	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

EB 4 L1640280-10 Non-Potable Water

Collected by
Collected date/time
Received date/time

07/20/23 16:00 07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104670	1	07/31/23 09:50	08/08/23 21:17	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/08/23 21:17	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

EB 5 L1640280-11 Non-Potable Water

Collected by
Collected date/time
Received date/time

07/20/23 16:00 07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

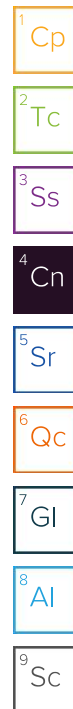


Haley Torrence
Project Manager

Report Revision History

Level II Report - Version 1: 08/16/23 10:34
Level II Report - Version 2: 08/17/23 14:28

Project Narrative



Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.644		0.225	0.389	08/10/2023 17:49	WG2105353
(T) Barium	104			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	106			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.847		0.298	0.459	08/10/2023 17:49	WG2104631

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.203	J	0.196	0.243	08/04/2023 12:26	WG2104631
(T) Barium-133	82.4			30.0-143	08/04/2023 12:26	WG2104631

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DUCK CREEK POWER PLANT, BOTTOM ASH BASIN
DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.292	J	0.236	0.417	08/08/2023 21:17	WG2104670
(T) Barium	85.1			30.0-143	08/08/2023 21:17	WG2104670
(T) Yttrium	99.3			30.0-136	08/08/2023 21:17	WG2104670

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	4.03		0.731	0.492	08/08/2023 21:17	WG2104631

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	3.74		0.692	0.261	08/04/2023 12:26	WG2104631
(T) Barium-133	99.2			30.0-143	08/04/2023 12:26	WG2104631

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.680		0.206	0.347	08/08/2023 21:17	WG2104670
(T) Barium	108			30.0-143	08/08/2023 21:17	WG2104670
(T) Yttrium	107			30.0-136	08/08/2023 21:17	WG2104670

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.03		0.334	0.449	08/08/2023 21:17	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.355		0.263	0.285	08/03/2023 18:42	WG2104809
(T) Barium-133	106			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.390	J	0.274	0.481	08/08/2023 21:17	WG2104670
(T) Barium	79.2			30.0-143	08/08/2023 21:17	WG2104670
(T) Yttrium	106			30.0-136	08/08/2023 21:17	WG2104670

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.714		0.453	0.684	08/08/2023 21:17	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.323	J	0.361	0.487	08/03/2023 18:42	WG2104809
(T) Barium-133	60.5			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.909		0.311	0.530	08/08/2023 21:17	WG2104670
(T) Barium	94.2			30.0-143	08/08/2023 21:17	WG2104670
(T) Yttrium	98.8			30.0-136	08/08/2023 21:17	WG2104670

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.26		0.618	0.620	08/08/2023 21:17	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.35		0.534	0.321	08/03/2023 18:42	WG2104809
(T) Barium-133	73.1			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-1.06	U	0.504	0.963	08/10/2023 17:49	WG2105353
(T) Barium	93.7			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	114			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.09		0.819	1.04	08/10/2023 17:49	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	2.09		0.646	0.403	08/03/2023 18:42	WG2104809
(T) Barium-133	73.5			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.729		0.287	0.500	08/10/2023 17:49	WG2105353
(T) Barium	105			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	93.5			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.85		0.566	0.585	08/10/2023 17:49	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.12		0.488	0.303	08/03/2023 18:42	WG2104809
(T) Barium-133	71.7			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.648	J	0.588	1.04	08/08/2023 21:17	WG2104670
(T) Barium	41.3			30.0-143	08/08/2023 21:17	WG2104670
(T) Yttrium	89.7			30.0-136	08/08/2023 21:17	WG2104670

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.968	J	0.674	1.13	08/08/2023 21:17	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.320	J	0.330	0.432	08/03/2023 18:42	WG2104809
(T) Barium-133	61.2			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.76		0.582	0.992	08/08/2023 21:17	WG2104670
(T) Barium	45.4			30.0-143	08/08/2023 21:17	WG2104670
(T) Yttrium	112			30.0-136	08/08/2023 21:17	WG2104670

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.13		0.645	1.03	08/08/2023 21:17	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.374		0.279	0.295	08/03/2023 18:42	WG2104809
(T) Barium-133	67.8			30.0-143	08/03/2023 18:42	WG2104809



Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.396	J	0.231	0.402	08/08/2023 21:17	WG2104670
(T) Barium	100			30.0-143	08/08/2023 21:17	WG2104670
(T) Yttrium	106			30.0-136	08/08/2023 21:17	WG2104670

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.696		0.343	0.503	08/08/2023 21:17	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.300	J	0.254	0.303	08/03/2023 18:42	WG2104809
(T) Barium-133	85.3			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

	Result	<u>Qualifier</u>	Uncertainty	MDA	Analysis Date	<u>Batch</u>
Analyte	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.399		0.196	0.346	08/10/2023 17:49	WG2105353
(T) Barium	113			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	111			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

	Result	<u>Qualifier</u>	Uncertainty	MDA	Analysis Date	<u>Batch</u>
Analyte	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.717		0.326	0.466	08/10/2023 17:49	WG2104809

Radiochemistry by Method SM7500Ra B M

	Result	<u>Qualifier</u>	Uncertainty	MDA	Analysis Date	<u>Batch</u>
Analyte	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.318		0.261	0.312	08/03/2023 18:42	WG2104809
(T) Barium-133	108			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3959520-1 08/08/23 21:17

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-228 (T) Barium	-0.0771 101	U	0.211 101	0.381
(T) Yttrium	82.1		82.1	

L1640280-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1640280-05 08/08/23 21:17 • (DUP) R3959520-5 08/08/23 21:17

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228 (T) Barium	0.909 94.2	0.311	0.530	0.000 94.4	0.370 94.4	0.530	1	200	1.88	U	20	3
(T) Yttrium	98.8			105	105							

Laboratory Control Sample (LCS)

(LCS) R3959520-2 08/08/23 21:17

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228 (T) Barium	5.00	5.07	101	80.0-120	
(T) Yttrium			99.0 92.6		

L1639961-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1639961-02 08/08/23 21:17 • (MS) R3959520-3 08/08/23 21:17 • (MSD) R3959520-4 08/08/23 21:17

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228 (T) Barium	16.7	0.461 124	17.5	18.7	102 112	109 98.6	1	70.0-130			6.53		20
(T) Yttrium		98.0			107	97.6							

Method Blank (MB)

(MB) R3959496-1 08/10/23 17:49

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-228	-0.175	U	0.177	0.328
(T) Barium	134		134	
(T) Yttrium	114		114	

L1640281-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1640281-02 08/10/23 17:49 • (DUP) R3959496-5 08/10/23 17:49

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.380	0.291	0.521	-0.0470	0.316	0.521	1	200	0.995	U	20	3
(T) Barium	119			114	114							
(T) Yttrium	113			104	104							

Laboratory Control Sample (LCS)

(LCS) R3959496-2 08/10/23 17:49

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.71	114	80.0-120	
(T) Barium			119		
(T) Yttrium			95.2		

L1640281-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640281-05 08/10/23 17:49 • (MS) R3959496-3 08/10/23 17:49 • (MSD) R3959496-4 08/10/23 17:49

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.442	16.6	16.0	96.8	93.1	1	70.0-130			3.80		20
(T) Barium		107			113	116							
(T) Yttrium		109			112	111							

Method Blank (MB)

(MB) R3960559-1 08/04/23 09:33

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-226	0.0383	U	0.0696	0.108
(T) Barium-133	72.2		72.2	

L1638449-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1638449-06 08/04/23 09:34 • (DUP) R3960559-5 08/04/23 09:33

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.857	0.490	0.431	0.619	0.391	0.431	1	32.2	0.379		20	3
(T) Barium-133	51.7			70.0	70.0							

Laboratory Control Sample (LCS)

(LCS) R3960559-2 08/04/23 09:33

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	5.00	99.8	80.0-120	
(T) Barium-133		47.1			

L1640280-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640280-01 08/04/23 12:26 • (MS) R3960559-3 08/04/23 09:33 • (MSD) R3960559-4 08/04/23 09:33

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.203	16.0	17.9	79.2	88.4	1	75.0-125			10.9		20
(T) Barium-133		82.4		94.1	94.1	89.3							

Method Blank (MB)

(MB) R3960500-1 08/03/23 18:42

Analyte	MB Result pCi/l	MB Qualifier +/-	MB Uncertainty pCi/l	MB MDA pCi/l
Radium-226	-0.00925	U	0.0497	0.104
(T) Barium-133	71.9	71.9		

L1636055-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1636055-06 08/03/23 18:42 • (DUP) R3960500-5 08/03/23 18:42

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	16.0	2.06	0.474	15.0	2.08	0.474	1	6.41	0.338		20	3
(T) Barium-133	47.0			47.9	47.9							

Laboratory Control Sample (LCS)

(LCS) R3960500-2 08/03/23 18:42

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.43	88.3	80.0-120	
(T) Barium-133			92.5		

L1638449-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638449-14 08/03/23 18:42 • (MS) R3960500-3 08/03/23 18:42 • (MSD) R3960500-4 08/03/23 18:42

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	65.5	81.1	83.0	78.1	87.5	1	75.0-125			2.29		20
(T) Barium-133		112			94.6	82.4							

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

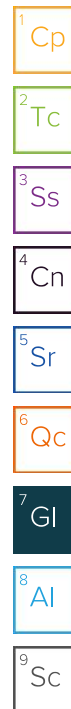
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.



ACCREDITATIONS & LOCATIONS

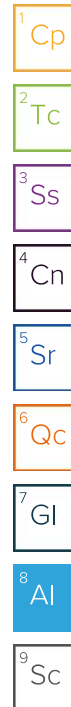
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
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Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

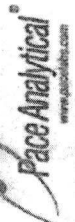
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



A131

PH-10BDH4321 TRC-2144141
CR6-20221V

Internal Transfer Chain of Custody



State of Origin: IL
Cert. Needed: ☒ YES ☐ NO

Owner Received
Date: 7/20/2023 By: 8/8/2023

Workorder: GG03715

Workorder Name: VISTRA - DUCK CREEK

Subcontract To:

Report To:
Gail Schindler

Pace Analytical - IL/MO
2231 W. Altorfer Drive
Peoria, IL 61615
800-752-6651

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Radium 226	Radium 228	LAB USE ONLY
1	G54L	GRAB	7/20/2023 12:18	GG03715-01	GW		X	X	-01
2	G54S	GRAB	7/20/2023 11:04	GG03715-02	GW		X	X	-02
3	G57S	GRAB	7/20/2023 13:20	GG03715-03	GW		X	X	-03
4	OM01	GRAB	7/20/2023 12:35	GG03715-04	GW		X	X	-04
5	OM01 DUP	GRAB	7/20/2023 12:35	GG03715-05	GW		X	X	-05
6	OR02	GRAB	7/20/2023 14:00	GG03715-06	GW		X	X	-06
7	G60S	GRAB	7/20/2023 14:53	GG03715-07	GW		X	X	-07
8	G60L	GRAB	7/20/2023 14:41	GG03715-08	GW		X	X	-08
9	X301 PUMP HOUSE	GRAB	7/20/2023 15:12	GG03715-09	GW		X	X	-09
10	EB 4	GRAB	7/20/2023 16:00	GG03715-10	DI		X	X	-10
Transfers 3/11/2023 14:31									
1	7/27/23 0600 D. Kennedy						07/26/23 1000		
2							Needs reported as 226, 228 and also combined 226/228, include QC		
3							10 day TAT		

U1640280

Cooler Temperature on Receipt

Custody Seal Y or N

Received on Ice Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

IL ☒ YES ☐ NO

Results Required By: 8/8/2023

FaceAnalytical®
www.faceanalytics.com

Owner Received
Date:

Results Required: 8/8/2023

Workorder: GG03715

Workorder Name: VISTRA - DUCK CREEK

Report To:	Subcontract To:
------------	-----------------

Gail Schindler

Pace Analytical - Mt Juliet
12065 Lebanon Rd
Mt Juliet TN 37122

Pace Analytical - IL/MO
2231 W. Altorfer Drive
Peoria, IL 61615
800-752-6651

[illegible]

Cooler Temperature on Receipt

Custody Seal Y or N

Received on Ice Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Receipt Checklist

	Sample Receipt	Checklist
COC Seal Present/Intact:	Y N	If Applicable
COC Signed/Accurate:	Y N	VOA Zarc Headspace:
Bottles active intact:	Y N	Press/Correct/Check:
Correct bottles used:	Y N	
Sufficient volume sent:	Y N	
RAD Screen <0.5 mA/hr:	Y N	

ANALYTICAL REPORT

August 16, 2023

Pace IR - Peoria, IL

Sample Delivery Group: L1640284
Samples Received: 07/28/2023
Project Number: GG04161
Description: Vistra-Duck Creek
Site: 001
Report To: Gail Schindler
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:



Haley Torrence
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

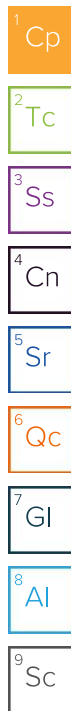
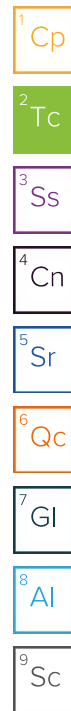


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SAMPLE SUMMARY

OR20 L1640284-01 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/24/23 11:10

07/28/23 10:00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

OM16 L1640284-02 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/24/23 12:45

07/28/23 10:00

OR14D L1640284-03 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/24/23 15:31

07/28/23 10:00

BA06 L1640284-04 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/24/23 15:34

07/28/23 10:00

BA01 L1640284-05 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/24/23 13:25

07/28/23 10:00

BA01 DUP L1640284-06 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/24/23 13:25

07/28/23 10:00

SAMPLE SUMMARY

BA03 L1640284-07 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/24/23 12:06

07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

BA04 L1640284-08 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/24/23 14:06

07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

BA05 L1640284-09 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/24/23 15:52

07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

EB 7 L1640284-10 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/24/23 17:00

07/28/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2104999	1	07/31/23 17:24	08/09/23 17:01	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/09/23 17:01	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Haley Torrence
Project Manager



DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.39		0.567	0.955	08/09/2023 17:01	WG2104999
(T) Barium	90.3			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	101			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	4.18		0.773	0.997	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.79		0.526	0.285	08/04/2023 17:01	WG2105812
(T) Barium-133	102			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.479	J	0.274	0.486	08/09/2023 17:01	WG2104999
(T) Barium	94.3			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	105			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.642		0.347	0.574	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.163	J	0.213	0.305	08/04/2023 17:01	WG2105812
(T) Barium-133	96.6			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.773		0.320	0.560	08/09/2023 17:01	WG2104999
(T) Barium	85.1			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	98.7			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.58		0.502	0.624	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.808		0.387	0.276	08/04/2023 17:01	WG2105812
(T) Barium-133	85.1			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0567	U	0.207	0.384	08/09/2023 17:01	WG2104999
(T) Barium	110			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	110			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.223	J	0.326	0.514	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.223	J	0.252	0.342	08/04/2023 17:01	WG2105812
(T) Barium-133	86.4			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.0338	U	0.207	0.379	08/09/2023 17:01	WG2104999
(T) Barium	119			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	108			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.478		0.366	0.468	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.445		0.302	0.274	08/04/2023 17:01	WG2105812
(T) Barium-133	79.4			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.390	J	0.230	0.409	08/09/2023 17:01	WG2104999
(T) Barium	92.7			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	114			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.16		0.420	0.499	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.775		0.352	0.285	08/04/2023 17:01	WG2105812
(T) Barium-133	92.6			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.01		0.302	0.518	08/09/2023 17:01	WG2104999
(T) Barium	107			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	112			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.89		0.444	0.555	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.887		0.325	0.200	08/04/2023 17:01	WG2105812
(T) Barium-133	106			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.146	U	0.270	0.495	08/09/2023 17:01	WG2104999
(T) Barium	98.4			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	113			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.272	J	0.355	0.567	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.272	J	0.231	0.276	08/04/2023 17:01	WG2105812
(T) Barium-133	93.8			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.151	U	0.251	0.454	08/09/2023 17:01	WG2104999
(T) Barium	92.9			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	103			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.296	J	0.329	0.551	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.145	J	0.212	0.312	08/04/2023 17:01	WG2105812
(T) Barium-133	102			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Collected date/time: 08/09/2023 17:01

DUCK CREEK POWER PLANT, BOTTOM ASH BASIN

L1640284

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.151	<u>U</u>	0.286	0.515	08/09/2023 17:01	WG2104999
(T) Barium	104			30.0-143	08/09/2023 17:01	WG2104999
(T) Yttrium	91.1			30.0-136	08/09/2023 17:01	WG2104999

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.198	<u>U</u>	0.332	0.594	08/09/2023 17:01	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0470	<u>U</u>	0.169	0.296	08/04/2023 17:01	WG2105812
(T) Barium-133	131			30.0-143	08/04/2023 17:01	WG2105812

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3959504-1 08/09/23 17:01

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-228	-0.438	U	0.193	0.365
(T) Barium	111			
(T) Yttrium	89.3		89.3	

L1640421-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1640421-09 08/09/23 17:01 • (DUP) R3959504-5 08/09/23 17:01

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.145	0.455	0.825	0.701	0.342	0.825	1	200	1.48		20	3
(T) Barium	95.7			98.0	98.0							
(T) Yttrium	114			97.6	97.6							

Laboratory Control Sample (LCS)

(LCS) R3959504-2 08/09/23 17:01

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.18	83.7	80.0-120	
(T) Barium			127		
(T) Yttrium			98.3		

L1640284-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640284-05 08/09/23 17:01 • (MS) R3959504-3 08/09/23 17:01 • (MSD) R3959504-4 08/09/23 17:01

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	0.0338	8.98	8.23	89.5	82.0	1	70.0-130			8.68		20
(T) Barium		119			109	102							
(T) Yttrium		108			105	106							

Method Blank (MB)

(MB) R3960529-1 08/04/23 17:01

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-226	0.0550	J	0.0681	0.0955
(T) Barium-133	78.7		78.7	

L1640281-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1640281-07 08/04/23 17:01 • (DUP) R3960529-4 08/04/23 17:01

Analyte	Original Result pCi/l	Original Uncertainty +/-	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.186	0.180	0.223	0.494	0.223	1	90.5	0.774		20	3
(T) Barium-133	109		81.1	81.1							

Laboratory Control Sample (LCS)

(LCS) R3960529-5 08/04/23 20:57

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.58	91.4	80.0-120	
(T) Barium-133		60.1			

L1640284-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640284-04 08/04/23 17:01 • (MS) R3960529-2 08/04/23 17:01 • (MSD) R3960529-3 08/04/23 17:01

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.223	21.4	18.7	106	92.2	1	75.0-125		13.7		20
(T) Barium-133		86.4		77.7	77.7	76.2						

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

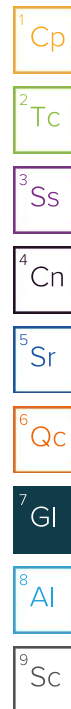
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.



ACCREDITATIONS & LOCATIONS

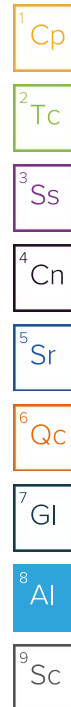
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



A128

PH-10BDH4321 TRC-2144141
CRG-20221V

Internal Transfer Chain of Custody



State of Origin: IL
Cert. Needed: ☒ YES ☐ NO

Owner Received
Date: 7/24/2023 By: 8/8/2023

Workorder: GG04161

Workorder Name: VISTRA - DUCK CREEK

Subcontract To:

Pace Analytical - Mt Juliet
12065 Lebanon Rd
Mt Juliet TN 37122

Report To:
Gail Schindler
Pace Analytical - IL/MO
2231 W. Alton Drive
Peoria, IL 61615
800-752-6651

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Date/Time	Received By	Date/Time	Comments
1	OR20	GRAB	7/24/2023 11:10	GG04161-01	GW	7/27/23 0600	D. L. Amey	07/18/23	Needs reported as 226, 228 and also combined 226/228, include QC 10 day TAT
2	OM16	GRAB	7/24/2023 12:45	GG04161-02	GW				
3	OR14D	GRAB	7/24/2023 15:31	GG04161-03	GW				
4	BA06	GRAB	7/24/2023 15:34	GG04161-04	GW				
5	BA01	GRAB	7/24/2023 13:25	GG04161-05	GW				
6	BA01 DUP	GRAB	7/24/2023 13:25	GG04161-06	GW				
7	BA03	GRAB	7/24/2023 12:06	GG04161-07	GW				
8	BA04	GRAB	7/24/2023 14:06	GG04161-08	GW				
9	BA05	GRAB	7/24/2023 15:52	GG04161-09	GW				
10	EB7	GRAB	7/24/2023 17:00	GG04161-10	DI				
Transfers 3/14/2023 14:31									
1									
2									
3									

LAB USE ONLY
-01
-02
-03
-04
-05
-06
-07
-08
-09
-10

Cooler Temperature on Receipt _____ °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N
COC Signed/Accurate: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
RAD Screen <0.5 mR/hr: ☒ Y ☐ N

ANALYTICAL REPORT

August 16, 2023

Pace IR - Peoria, IL

Sample Delivery Group: L1640281
Samples Received: 07/28/2023
Project Number: GG04427
Description: Vistra-Duck Creek
Site: 001
Report To: Gail Schindler
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:



Haley Torrence
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

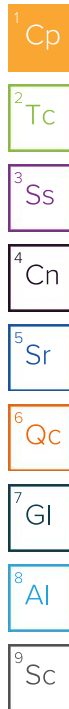
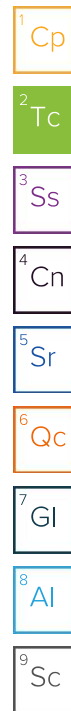


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SAMPLE SUMMARY

OM17 L1640281-01 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/25/23 15:15

07/28/23 10:00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

OM04S L1640281-02 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/25/23 14:24

07/28/23 10:00

OR04D L1640281-03 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/25/23 12:01

07/28/23 10:00

EB 8 L1640281-04 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 18:42	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/25/23 16:01

07/28/23 10:00

G64S L1640281-05 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2104809	1	08/01/23 14:50	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2104809	1	08/01/23 14:50	08/03/23 16:06	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/25/23 16:23

07/28/23 10:00

G02S L1640281-06 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/25/23 14:35

07/28/23 10:00

SAMPLE SUMMARY

Collected by

Collected date/time

Received date/time

07/25/23 12:47

07/28/23 10:00

BA02 L1640281-07 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2105353	1	08/01/23 10:27	08/10/23 17:49	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2105812	1	08/01/23 17:49	08/10/23 17:49	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2105812	1	08/01/23 17:49	08/04/23 17:01	RGT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

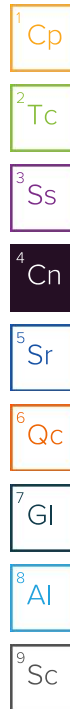
⁹Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Haley Torrence
Project Manager



DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	7.39		0.617	0.880	08/10/2023 17:49	WG2105353
(T) Barium	151	C1		30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	111			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	17.5		1.34	0.983	08/10/2023 17:49	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	10.1		1.19	0.439	08/03/2023 18:42	WG2104809
(T) Barium-133	97.0			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.380	J	0.291	0.521	08/10/2023 17:49	WG2105353
(T) Barium	119			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	113			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.599		0.353	0.574	08/10/2023 17:49	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.218	J	0.199	0.240	08/03/2023 18:42	WG2104809
(T) Barium-133	103			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.840		0.233	0.396	08/10/2023 17:49	WG2105353
(T) Barium	104			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	96.6			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.24		0.393	0.549	08/10/2023 17:49	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.401		0.317	0.380	08/03/2023 18:42	WG2104809
(T) Barium-133	96.6			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.166	U	0.268	0.481	08/10/2023 17:49	WG2105353
(T) Barium	131			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	106			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.697		0.430	0.603	08/10/2023 17:49	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.531		0.336	0.363	08/03/2023 18:42	WG2104809
(T) Barium-133	81.5			30.0-143	08/03/2023 18:42	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DUCK CREEK POWER PLANT, BOTTOM ASH BASIN
DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.442	J	0.308	0.548	08/10/2023 17:49	WG2105353
(T) Barium	107			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	109			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.846		0.442	0.657	08/10/2023 17:49	WG2104809

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.404		0.317	0.363	08/03/2023 16:06	WG2104809
(T) Barium-133	85.5			30.0-143	08/03/2023 16:06	WG2104809

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DUCK CREEK POWER PLANT, BOTTOM ASH BASIN
DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.688		0.246	0.425	08/10/2023 17:49	WG2105353
(T) Barium	116			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	109			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	3.97		0.712	0.464	08/10/2023 17:49	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	3.28		0.668	0.185	08/04/2023 17:01	WG2105812
(T) Barium-133	100			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.295	U	0.268	0.493	08/10/2023 17:49	WG2105353
(T) Barium	119			30.0-143	08/10/2023 17:49	WG2105353
(T) Yttrium	118			30.0-136	08/10/2023 17:49	WG2105353

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.186	U	0.323	0.541	08/10/2023 17:49	WG2105812

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.186	J	0.180	0.223	08/04/2023 17:01	WG2105812
(T) Barium-133	109			30.0-143	08/04/2023 17:01	WG2105812

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3959496-1 08/10/23 17:49

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-228	-0.175	U	0.177	0.328
(T) Barium	134		134	
(T) Yttrium	114		114	

L1640281-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1640281-02 08/10/23 17:49 • (DUP) R3959496-5 08/10/23 17:49

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.380	0.291	0.521	-0.0470	0.316	0.521	1	200	0.995	U	20	3
(T) Barium	119			114	114							
(T) Yttrium	113			104	104							

Laboratory Control Sample (LCS)

(LCS) R3959496-2 08/10/23 17:49

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.71	114	80.0-120	
(T) Barium			119		
(T) Yttrium			95.2		

L1640281-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640281-05 08/10/23 17:49 • (MS) R3959496-3 08/10/23 17:49 • (MSD) R3959496-4 08/10/23 17:49

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.442	16.6	16.0	96.8	93.1	1	70.0-130			3.80		20
(T) Barium		107			113	116							
(T) Yttrium		109			112	111							

Method Blank (MB)

(MB) R3960500-1 08/03/23 18:42

Analyte	MB Result pCi/l	MB Qualifier +/-	MB Uncertainty pCi/l	MB MDA pCi/l
Radium-226	-0.00925	U	0.0497	0.104
(T) Barium-133	71.9	71.9		

L1636055-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1636055-06 08/03/23 18:42 • (DUP) R3960500-5 08/03/23 18:42

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	16.0	2.06	0.474	15.0	2.08	0.474	1	6.41	0.338		20	3
(T) Barium-133	47.0			47.9	47.9							

Laboratory Control Sample (LCS)

(LCS) R3960500-2 08/03/23 18:42

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.43	88.3	80.0-120	
(T) Barium-133			92.5		

L1638449-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638449-14 08/03/23 18:42 • (MS) R3960500-3 08/03/23 18:42 • (MSD) R3960500-4 08/03/23 18:42

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	65.5	81.1	83.0	78.1	87.5	1	75.0-125		2.29		20
(T) Barium-133		112			94.6	82.4						

Method Blank (MB)

(MB) R3960529-1 08/04/23 17:01

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-226	0.0550	J	0.0681	0.0955
(T) Barium-133	78.7		78.7	

L1640281-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1640281-07 08/04/23 17:01 • (DUP) R3960529-4 08/04/23 17:01

Analyte	Original Result pCi/l	Original Uncertainty +/-	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.186	0.180	0.223	0.494	0.223	1	90.5	0.774		20	3
(T) Barium-133	109		81.1	81.1							

Laboratory Control Sample (LCS)

(LCS) R3960529-5 08/04/23 20:57

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.58	91.4	80.0-120	
(T) Barium-133		60.1			

L1640284-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1640284-04 08/04/23 17:01 • (MS) R3960529-2 08/04/23 17:01 • (MSD) R3960529-3 08/04/23 17:01

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.223	21.4	18.7	106	92.2	1	75.0-125		13.7		20
(T) Barium-133		86.4		77.7	77.7	76.2						

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

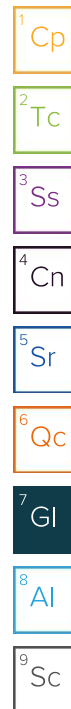
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

C1	Tracer recovery limits have been exceeded; values are outside upper control limits.
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.



ACCREDITATIONS & LOCATIONS

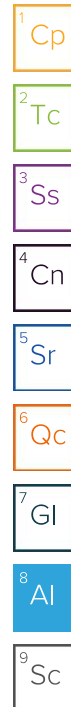
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



PH-10BDH4321 TRC-2144141
CR6-20221V

A130

Internal Transfer Chain of Custody



State of Origin: IL
Cert. Needed: ☒ YES ☐ NO

Owner Received
Date: 7/25/2023 By: 8/8/2023

Workorder Name: VISTRA - DUCK CREEK
Subcontract To:

Workorder: GG04427

Report To: Gail Schindler
Pace Analytical - IL/MO
2231 W. Altorfer Drive
Peoria, IL 61615
800-752-6651

Pace Analytical - Mt Juliet
12065 Lebanon Rd
Mt Juliet TN 37122

Item		Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Date/Time		Received By		Date/Time		Comments	
1	OM17	GRAB	7/25/2023 15:15	GG04427-01	GW										
2	OM04S	GRAB	7/25/2023 14:24	GG04427-02	GW										
3	OR04D	GRAB	7/25/2023 12:01	GG04427-03	GW										
4	EB 8	GRAB	7/25/2023 16:01	GG04427-04	DI										
5	G64S	GRAB	7/25/2023 16:23	GG04427-05	GW										
6	G02S	GRAB	7/25/2023 14:35	GG04427-06	GW										
7	BA02	GRAB	7/25/2023 12:47	GG04427-07	GW										
Transfers 3/14/2023 14:31															
1												7/28/23 1000		Needs reported as 226, 228 and also combined 226/228, include QC	
2															
3															

4640281
LAB USE ONLY

-01
-02
-03
-04
-05
-06
-07

Cooler Temperature on Receipt _____ °C Custody Seal ☒ Y ☐ N Received on Ice ☒ Y ☐ N Sample Intact ☒ Y ☐ N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N If Applicable
COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N Pres.Correct/Check: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
RAD Screen <0.5 mR/hr: ☒ Y ☐ N

ANALYTICAL REPORT

August 24, 2023

Revised Report

Pace IR - Peoria, IL

Sample Delivery Group: L1641654
Samples Received: 08/02/2023
Project Number: GG04652
Description: Vistra-Duck Creek

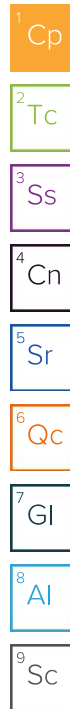
Report To: Diane Billings
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:



Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



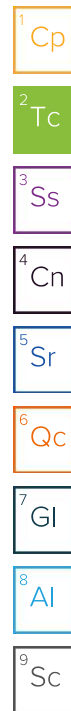
Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

OR13D L1641654-01 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/26/23 13:15

08/02/23 08:45

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

OR13D DUP L1641654-02 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/26/23 13:15

08/02/23 08:45

OR13S L1641654-03 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/26/23 11:42

08/02/23 08:45

OR11 L1641654-04 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/26/23 10:10

08/02/23 08:45

OM07 L1641654-05 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/26/23 11:52

08/02/23 08:45

OR06A L1641654-06 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107055	1	08/03/23 13:35	08/14/23 16:37	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/14/23 16:37	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by

Collected date/time

Received date/time

07/26/23 12:33

08/02/23 08:45

SAMPLE SUMMARY

OM25S L1641654-07 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/26/23 13:30

08/02/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107055	1	08/03/23 13:35	08/14/23 16:37	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/14/23 16:37	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 21:10	RGT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

EB10 L1641654-08 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/26/23 15:00

08/02/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107055	1	08/03/23 13:35	08/14/23 16:37	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/14/23 16:37	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 18:00	RGT	Mt. Juliet, TN

EB11 L1641654-09 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/26/23 15:05

08/02/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107055	1	08/03/23 13:35	08/14/23 16:37	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/14/23 16:37	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 18:00	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



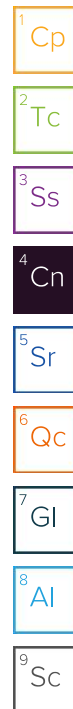
Donna Eidson
Project Manager

Report Revision History

Level II Report - Version 1: 08/22/23 08:28

Project Narrative

Corrected -06 ID



DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.03		0.643	1.10	08/09/2023 21:09	WG2107434
(T) Barium	99.5			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	99.3			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	5.58		1.01	1.13	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	3.55		0.785	0.276	08/09/2023 17:59	WG2108939
(T) Barium-133	75.5			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DUCK CREEK POWER PLANT, BOTTOM ASH BASIN

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.22		0.448	0.770	08/09/2023 21:09	WG2107434
(T) Barium	80.9			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	105			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.96		0.603	0.850	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.736		0.404	0.361	08/09/2023 17:59	WG2108939
(T) Barium-133	79.0			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.564		0.290	0.504	08/09/2023 21:09	WG2107434
(T) Barium	110			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	103			30.0-136	08/09/2023 21:09	WG2107434

1
Cp

2
Tc

3
Ss

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.883		0.429	0.645	08/09/2023 21:09	WG2108939

4
Cn

5
Sr

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.319	J	0.316	0.403	08/09/2023 17:59	WG2108939
(T) Barium-133	73.0			30.0-143	08/09/2023 17:59	WG2108939

6
Qc

7
Gl

8
Al

9
Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.10	J	0.756	1.32	08/09/2023 21:09	WG2107434
(T) Barium	116			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	98.3			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.80		0.837	1.35	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.705		0.360	0.271	08/09/2023 17:59	WG2108939
(T) Barium-133	86.7			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.110	U	0.285	0.508	08/09/2023 21:09	WG2107434
(T) Barium	103			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	104			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.945		0.501	0.626	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.835		0.412	0.366	08/09/2023 17:59	WG2108939
(T) Barium-133	80.9			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.412	J	0.356	0.632	08/14/2023 16:37	WG2107055
(T) Barium	112			30.0-143	08/14/2023 16:37	WG2107055
(T) Yttrium	106			30.0-136	08/14/2023 16:37	WG2107055

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.837		0.458	0.684	08/14/2023 16:37	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.425		0.288	0.262	08/09/2023 17:59	WG2108939
(T) Barium-133	83.1			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	8.06		0.719	1.08	08/14/2023 16:37	WG2107055
(T) Barium	185	C1		30.0-143	08/14/2023 16:37	WG2107055
(T) Yttrium	109			30.0-136	08/14/2023 16:37	WG2107055

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	17.7		1.55	1.29	08/14/2023 16:37	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	9.68		1.37	0.702	08/09/2023 21:10	WG2108939
(T) Barium-133	80.5			30.0-143	08/09/2023 21:10	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.334	J	0.397	0.705	08/14/2023 16:37	WG2107055
(T) Barium	109			30.0-143	08/14/2023 16:37	WG2107055
(T) Yttrium	107			30.0-136	08/14/2023 16:37	WG2107055

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.524	J	0.455	0.769	08/14/2023 16:37	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.190	J	0.223	0.308	08/09/2023 18:00	WG2108939
(T) Barium-133	85.9			30.0-143	08/09/2023 18:00	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.457	U	0.437	0.796	08/14/2023 16:37	WG2107055
(T) Barium	125			30.0-143	08/14/2023 16:37	WG2107055
(T) Yttrium	97.4			30.0-136	08/14/2023 16:37	WG2107055

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.0651	U	0.460	0.835	08/14/2023 16:37	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0651	U	0.145	0.251	08/09/2023 18:00	WG2108939
(T) Barium-133	79.6			30.0-143	08/09/2023 18:00	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3961392-1 08/14/23 16:37

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/l
Radium-228	0.163		0.171	0.148
(T) Barium	105		105	
(T) Yttrium	96.4		96.4	

L1641654-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1641654-09 08/14/23 16:37 • (DUP) R3961392-5 08/14/23 16:37

Analyte	Original Result pCi/l	Original Uncertainty + / -	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.457	0.437	0.796	0.388	0.249	1	200	1.21	U	20	3
(T) Barium	125		94.7	94.7							
(T) Yttrium	97.4		95.3	95.3							

Laboratory Control Sample (LCS)

(LCS) R3961392-2 08/14/23 16:37

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.14	82.9	80.0-120	
(T) Barium			104		
(T) Yttrium			106		

L1641654-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1641654-08 08/14/23 16:37 • (MS) R3961392-3 08/14/23 16:37 • (MSD) R3961392-4 08/14/23 16:37

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.334	14.9	14.1	87.2	82.3	1	70.0-130		5.66		20
(T) Barium		109			105	121						
(T) Yttrium		107			97.0	106						

Method Blank (MB)

(MB) R3963380-1 08/09/23 21:09

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-228	-0.262	U	0.178	0.328
(T) Barium	112		112	
(T) Yttrium	101		101	

L1636055-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1636055-01 08/18/23 20:32 • (DUP) R3963380-5 08/18/23 20:32

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	7.19	0.416	0.00531	6.76	0.428	0.00531	1	6.11	0.714		20	3
(T) Barium	115			103	103							
(T) Yttrium	98.2			107	107							

Laboratory Control Sample (LCS)

(LCS) R3963380-2 08/09/23 21:09

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.88	97.7	80.0-120	
(T) Barium			100		
(T) Yttrium			103		

L1638819-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638819-01 08/09/23 21:09 • (MS) R3963380-3 08/18/23 20:32 • (MSD) R3963380-4 08/18/23 20:32

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	0.171	10.1	10.7	98.9	105	1	70.0-130		5.79		20
(T) Barium		103			100	116						
(T) Yttrium		93.5			104	102						

Method Blank (MB)

(MB) R3961715-5 08/09/23 21:10

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-226	0.0292	J	0.0337	0.0498
(T) Barium-133	72.8		72.8	

L1641635-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1641635-06 08/09/23 17:59 • (DUP) R3961715-4 08/09/23 17:59

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.174	0.223	0.318	0.432	0.453	0.318	1	85.2	0.511	J	20	3
(T) Barium-133	70.5			56.8	56.8							

Laboratory Control Sample (LCS)

(LCS) R3961715-1 08/09/23 17:59

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.57	91.3	80.0-120	
(T) Barium-133			81.7		

L1641635-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1641635-04 08/09/23 17:59 • (MS) R3961715-2 08/09/23 17:59 • (MSD) R3961715-3 08/09/23 17:59

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.318	19.2	19.3	94.5	94.8	1	75.0-125			0.364		20
(T) Barium-133		75.6			80.8	77.2							

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

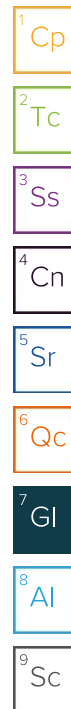
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

C1	Tracer recovery limits have been exceeded; values are outside upper control limits.
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.



ACCREDITATIONS & LOCATIONS

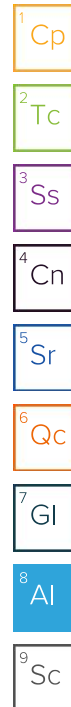
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



F210

Internal Transfer Chain of Custody

State of Origin: IL
Cert. Needed: ☒ YES ☐ NO



Owner Received
Date: 7/26/2023 By: 8/14/2023

Workorder: GG04652
Report To: Diane Billings
Pace Analytical - IL/MO
2231 W. Altorfer Drive
Peoria, IL 61615
800-752-6651

Workorder Name: Vistra - Duck Creek
Subcontract To:

Pace Analytical - Mt Juliet
12065 Lebanon Rd
Mt Juliet TN 37122

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers										LAB USE ONLY
1	OR13D	GRAB	7/26/2023 13:15	GG04652-01	GW											-01
2	OR13D DUP	GRAB	7/26/2023 13:15	GG04652-02	GW											-02
3	OR13S	GRAB	7/26/2023 11:42	GG04652-03	GW											-03
4	OR11	GRAB	7/26/2023 10:10	GG04652-04	GW											-04
5	OM07	GRAB	7/26/2023 11:52	GG04652-05	GW											-05
6	OR06A	GRAB	7/26/2023 12:33	GG04652-06	GW											-06
7	OM25S	GRAB	7/26/2023 13:30	GG04652-07	GW											-07
8	EB10	GRAB	7/26/2023 15:00	GG04652-08	GW											-08
9	EB11	GRAB	7/26/2023 15:05	GG04652-09	GW											-09
10																-10
Transfers Released By						Date/Time										Comments
1																
2																
3																Needs reported as 226, 228 and also combined 226/228 Include QC summary and add

Cooler Temperature on Receipt _____ °C Custody Seal Y or N Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

GRAB 21.7+0 631960039017

COC Seal Present/Intact: ☒ Y ☐ N If Applicable ☒ Y ☐ N
COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N
Bottles active intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
RAD Screen <0.5 mR/hr: ☒ Y ☐ N

PH-10BDH4321 TRC-214141
CR6-20221V

ANALYTICAL REPORT

August 22, 2023

Pace IR - Peoria, IL

Sample Delivery Group: L1641635
Samples Received: 08/02/2023
Project Number: GG04996
Description: VISTRA-DUCK CREEK

Report To: Diane Billings
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:



Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

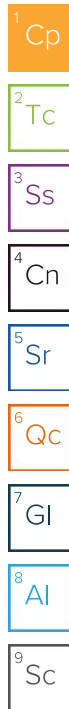
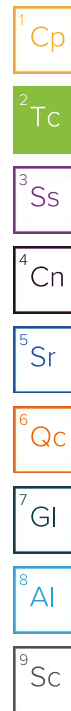


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SAMPLE SUMMARY

OM12 L1641635-01 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

07/27/23 16:02 08/02/23 08:45

OM23D L1641635-02 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

07/27/23 14:12 08/02/23 08:45

OM24D L1641635-03 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

07/27/23 15:40 08/02/23 08:45

G50S L1641635-04 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

07/27/23 14:28 08/02/23 08:45

G64L L1641635-05 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

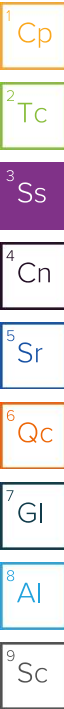
07/27/23 12:06 08/02/23 08:45

EB 12 L1641635-06 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2107434	1	08/03/23 18:24	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/09/23 21:09	SNR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 17:59	RGT	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

07/27/23 00:00 08/02/23 08:45



CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager



DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.567		0.219	0.378	08/09/2023 21:09	WG2107434
(T) Barium	106			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	102			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.943		0.341	0.462	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.376		0.262	0.266	08/09/2023 17:59	WG2108939
(T) Barium-133	83.7			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.154	U	0.237	0.426	08/09/2023 21:09	WG2107434
(T) Barium	105			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	87.7			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.389	J	0.315	0.480	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.235		0.208	0.222	08/09/2023 17:59	WG2108939
(T) Barium-133	83.6			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.926		0.309	0.527	08/09/2023 21:09	WG2107434
(T) Barium	98.9			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	98.3			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.55		0.438	0.564	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.629		0.310	0.200	08/09/2023 17:59	WG2108939
(T) Barium-133	82.9			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.410	U	0.262	0.483	08/09/2023 21:09	WG2107434
(T) Barium	105			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	102			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.318	J	0.382	0.582	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.318	J	0.278	0.325	08/09/2023 17:59	WG2108939
(T) Barium-133	75.6			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

DUCK CREEK POWER PLANT, BOTTOM ASH BASIN
DC-845-205

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.273	J	0.238	0.422	08/09/2023 21:09	WG2107434
(T) Barium	109			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	103			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.544		0.330	0.494	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.272		0.228	0.256	08/09/2023 17:59	WG2108939
(T) Barium-133	74.1			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0714	U	0.290	0.522	08/09/2023 21:09	WG2107434
(T) Barium	103			30.0-143	08/09/2023 21:09	WG2107434
(T) Yttrium	89.7			30.0-136	08/09/2023 21:09	WG2107434

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.174	U	0.366	0.611	08/09/2023 21:09	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.174	J	0.223	0.318	08/09/2023 17:59	WG2108939
(T) Barium-133	70.5			30.0-143	08/09/2023 17:59	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3963380-1 08/09/23 21:09

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-228	-0.262	U	0.178	0.328
(T) Barium	112		112	
(T) Yttrium	101		101	

L1636055-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1636055-01 08/18/23 20:32 • (DUP) R3963380-5 08/18/23 20:32

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	7.19	0.416	0.00531	6.76	0.428	0.00531	1	6.11	0.714		20	3
(T) Barium	115			103	103							
(T) Yttrium	98.2			107	107							

Laboratory Control Sample (LCS)

(LCS) R3963380-2 08/09/23 21:09

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.88	97.7	80.0-120	
(T) Barium			100		
(T) Yttrium			103		

L1638819-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1638819-01 08/09/23 21:09 • (MS) R3963380-3 08/18/23 20:32 • (MSD) R3963380-4 08/18/23 20:32

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	0.171	10.1	10.7	98.9	105	1	70.0-130		5.79		20
(T) Barium		103			100	116						
(T) Yttrium		93.5			104	102						

Method Blank (MB)

(MB) R3961715-5 08/09/23 21:10

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-226	0.0292	J	0.0337	0.0498
(T) Barium-133	72.8		72.8	

L1641635-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1641635-06 08/09/23 17:59 • (DUP) R3961715-4 08/09/23 17:59

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.174	0.223	0.318	0.432	0.453	0.318	1	85.2	0.511	J	20	3
(T) Barium-133	70.5			56.8	56.8							

Laboratory Control Sample (LCS)

(LCS) R3961715-1 08/09/23 17:59

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.57	91.3	80.0-120	
(T) Barium-133			81.7		

L1641635-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1641635-04 08/09/23 17:59 • (MS) R3961715-2 08/09/23 17:59 • (MSD) R3961715-3 08/09/23 17:59

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.318	19.2	19.3	94.5	94.8	1	75.0-125			0.364		20
(T) Barium-133		75.6			80.8	77.2							

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

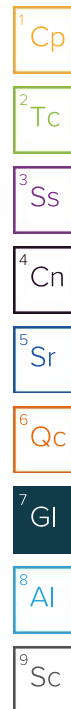
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.



ACCREDITATIONS & LOCATIONS

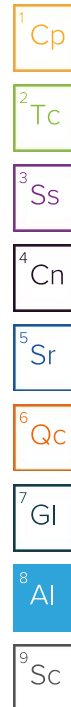
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Internal Transfer Chain of Custody

ATTACHMENT B.
845 QUARTERLY REPORT - QUARTER 3, 2023
DUCK CREEK POWER PLANT, BOTTOM ASH BASIN
DC-845-205

State of Origin: IL
Cert. Needed: ☒ YES ☐ NO



Results Required

By: 8/9/2023

Owner Received

Date: 7/26/2023

Workorder Name: VISTRA - DUCK CREEK

Subcontract To:

Workorder: GG04996

Report To:

Diane Billings
Pace Analytical - IL/MO
2231 W. Altorfer Drive
Peoria, IL 61615
800-752-6651

Pace Analytical - Mt Juliet
12065 Lebanon Rd
Mt Juliet TN 37122

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers										Date/Time	Received By	Comments
1	OM12	GRAB	7/27/2023 16:02	GG04996-01	GW													
2	OM23D	GRAB	7/27/2023 14:12	GG04996-02	GW													
3	OM24D	GRAB	7/27/2023 15:40	GG04996-03	GW													
4	G50S	GRAB	7/27/2023 14:28	GG04996-04	GW													
5	G64L	GRAB	7/27/2023 12:06	GG04996-05	GW													
6	EB 12	GRAB	7/27/2023 0:00	GG04996-06	GW													
7																		
8																		
9																		
10																		
Transfers 3/14/2023 14:31																		
1																		
2																		
3																		

Preserved Containers

Radium 226

Radium 228

LAB USE ONLY

-01

-02

-03

-04

-05

-06

-07

-08

-09

-10

Needs reported as 226, 228 and also combined 226/228, include QC 10 day TAT

Cooler Temperature on Receipt

°C

Custody Seal Y or N

Received on Ice Y or N

Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

PH-10BCH4321 TRC-2144141
CR6-20221V

FMT-ALL-C-002rev.00 24March2009

Page 1 of 2

GRAB 22-6+D

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N If Applicable
COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
RAD Screen <0.5 mR/hr: ☒ Y ☐ N

GRAB 22-6+D
GRAB 22-6+D

ANALYTICAL REPORT

August 17, 2023

Pace IR - Peoria, IL

Sample Delivery Group: L1642036
Samples Received: 08/03/2023
Project Number: GG05278
Description: Vistra-Duck Creek
Site: 001
Report To: Diane Billings
2231 W. Altorfer Drive
Peoria, IL 61615

Entire Report Reviewed By:



Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

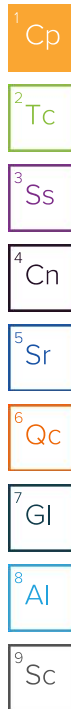


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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc

SAMPLE SUMMARY

OR03D L1642036-01 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/31/23 11:30

08/03/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2109108	1	08/07/23 13:43	08/11/23 16:39	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/11/23 16:39	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 21:10	RGT	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

OR19 L1642036-02 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/31/23 13:27

08/03/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2109108	1	08/07/23 13:43	08/11/23 16:39	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/11/23 16:39	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 18:00	RGT	Mt. Juliet, TN

EB 13 L1642036-03 Non-Potable Water

Collected by

Collected date/time

Received date/time

07/31/23 15:50

08/03/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2109108	1	08/07/23 13:43	08/11/23 16:39	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2108939	1	08/07/23 12:53	08/11/23 16:39	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2108939	1	08/07/23 12:53	08/09/23 18:00	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Donna Eidson
Project Manager



Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	5.58		0.562	0.822	08/11/2023 16:39	WG2109108
(T) Barium	132			30.0-143	08/11/2023 16:39	WG2109108
(T) Yttrium	101			30.0-136	08/11/2023 16:39	WG2109108

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	16.2		1.56	0.933	08/11/2023 16:39	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	10.6		1.45	0.442	08/09/2023 21:10	WG2108939
(T) Barium-133	76.0			30.0-143	08/09/2023 21:10	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.24		0.641	1.12	08/11/2023 16:39	WG2109108
(T) Barium	76.8			30.0-143	08/11/2023 16:39	WG2109108
(T) Yttrium	111			30.0-136	08/11/2023 16:39	WG2109108

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.94		0.846	1.17	08/11/2023 16:39	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.70		0.552	0.344	08/09/2023 18:00	WG2108939
(T) Barium-133	75.3			30.0-143	08/09/2023 18:00	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.878	U	0.221	0.432	08/11/2023 16:39	WG2109108
(T) Barium	97.8			30.0-143	08/11/2023 16:39	WG2109108
(T) Yttrium	124			30.0-136	08/11/2023 16:39	WG2109108

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.367	J	0.351	0.532	08/11/2023 16:39	WG2108939

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.367		0.273	0.311	08/09/2023 18:00	WG2108939
(T) Barium-133	95.2			30.0-143	08/09/2023 18:00	WG2108939

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3961414-1 08/11/23 16:39

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-228	0.277	J	0.198	0.348
(T) Barium	96.7		96.7	
(T) Yttrium	91.2		91.2	

L1642013-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1642013-04 08/11/23 16:39 • (DUP) R3961414-5 08/11/23 16:39

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.110	0.271	0.499	-0.0165	0.343	0.499	1	0.000	0.213	U	20	3
(T) Barium	105			95.5	95.5							
(T) Yttrium	110			102	102							

Laboratory Control Sample (LCS)

(LCS) R3961414-2 08/11/23 16:39

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.47	109	80.0-120	
(T) Barium			85.5		
(T) Yttrium			104		

L1642013-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1642013-01 08/11/23 16:39 • (MS) R3961414-3 08/11/23 16:39 • (MSD) R3961414-4 08/11/23 16:39

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.263	16.8	18.4	98.8	108	1	70.0-130			9.00		20
(T) Barium		81.2			112	99.2							
(T) Yttrium		107			107	105							

Method Blank (MB)

(MB) R3961715-5 08/09/23 21:10

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty +/-	MB MDA pCi/l
Radium-226	0.0292	J	0.0337	0.0498
(T) Barium-133	72.8		72.8	

L1641635-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1641635-06 08/09/23 17:59 • (DUP) R3961715-4 08/09/23 17:59

Analyte	Original Result pCi/l	Original Uncertainty +/-	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty +/-	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.174	0.223	0.318	0.432	0.453	0.318	1	85.2	0.511	J	20	3
(T) Barium-133	70.5			56.8	56.8							

Laboratory Control Sample (LCS)

(LCS) R3961715-1 08/09/23 17:59

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.57	91.3	80.0-120	
(T) Barium-133		81.7			

L1641635-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1641635-04 08/09/23 17:59 • (MS) R3961715-2 08/09/23 17:59 • (MSD) R3961715-3 08/09/23 17:59

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.318	19.2	19.3	94.5	94.8	1	75.0-125		0.364		20
(T) Barium-133		75.6			80.8	77.2						

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

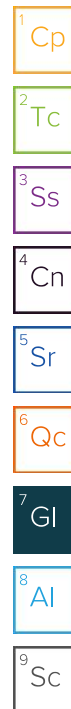
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.



ACCREDITATIONS & LOCATIONS

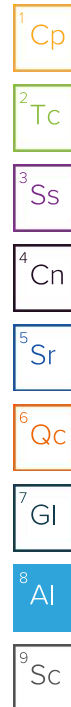
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Internal Transfer Chain of Custody

State of Origin: IL ☒ YES ☐ NO
Cert. Needed: ☒ YES ☐ NO

Results Required

By: 8/12/2023

Owner Received

Date: 7/31/2023

Workorder Name: VISTRA - DUCK CREEK

Subcontract To:

Pace Analytical - Mt Juliet
12065 Lebanon Rd
Mt Juliet TN 37122

Workorder: GG05278

Report To:

Diane Billings
Pace Analytical - IL/MO
2231 W. Altorfer Drive
Peoria, IL 61615
800-752-6651

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Date/Time	Received By	Date/Time	Comments
1	OR03D	GRAB	7/31/2023 11:30	GG05278-01	GW				
2	OR19	GRAB	7/31/2023 13:27	GG05278-02	GW				
3	EB 13	GRAB	7/31/2023 15:50	GG05278-03	GW				
4									
5									
6									
7									
8									
9									
10									
Transfers 3/14/2023 14:31									
1						8/2/23 0615			
2									
3									

LAB USE ONLY
11/6/2036
-01
-02
-03

Needs reported as 226, 228 and also
combined 226/228, include QC
10 day TAT

Cooler Temperature on Receipt

°C Custody Seal Y or N

Received on Ice Y or N Sample Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this form. PH-108DH4321 TRC-2144141 CR6-20221V

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N If Applicable
COC Signed/Accurate: ☒ Y ☐ N VOA Zero Headspace: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N Pres. Correct/Check: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
RAD Screen <0.5 mR/hr: ☒ Y ☐ N

FMT-ALL-C-002rev.00 24March2009

Page 1 of 2

63196003 9808 QB
22.5 ± 0.2 = 22.5 AB

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp	Report To:	Brian Voelker	Attention:	Jason Stuckey
Address:	13498 E. 900th St	Copy To:	Jason Stuckey	Company Name:	Vistra Corp
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Address:	see Section A
Phone:	(217) 753-8911	Project Name:		Quote Reference:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Project Manager:	
				Profile #:	

Section D Required Client Information		Valid Matrix Codes		Requested Analysis Filtered (Y/N)		Project No./ Lab I.D.	
SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE		MATRIX CODE (see valid codes to left)		SAMPLE TEMP AT COLLECTION		Residual Chlorine (Y/N)	
ITEM #		DATE		TIME			
1		7/18/23		1338			
2		7/18/23		1338			
3		7/18/23		1054			
4		7/18/23		1440			
5		7/18/23		1521			
6		7/18/23		1150			
7		7/18/23		1202			
8		7/18/23		1014			
9		7/18/23		1059			
10		7/18/23		1149			
11		7/18/23		1235			
12		7/18/23		1342			
13		7/18/23		1420			
14		7/18/23		1457			
15		7/18/23		1532			
16		7/18/23		1547			

Section E Additional Comments		Section F Relinquished By / Affiliation		Section G Accepted By / Affiliation		Section H Sample Conditions	
DC-23Q3 Rev 0		DATE		DATE		DATE	
7/18/23		7/18/23		7/18/23		7/18/23	
Signature		Signature		Signature		Signature	
James David		James David		James David		James David	
DATE SIGNED (MM/DD/YY):		DATE SIGNED (MM/DD/YY):		DATE SIGNED (MM/DD/YY):		DATE SIGNED (MM/DD/YY):	
7/18/23		7/18/23		7/18/23		7/18/23	

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Vistra Corp	Report To:	Brian Voelker	Attention:	Jason Stuckey
Address:	13498 E. 900th St	Copy To:	Jason Stuckey	Company Name:	Vistra Corp
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Address:	see Section A
Phone:	(217) 753-8911	Project Name:		Quote Reference:	
Requested Due Date/TAT:	10 day	Project Number:	2285	Project Manager:	
				Profile #:	

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER WASTE WATER PRODUCT SOLID WIFE AIR OTHER TISSE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (S=GRAB C=COMP)	COLLECTED		# OF CONTAINERS	Preservatives	Analysis Test	Requested Analysis Filtered (Y/N)										Project No./ Lab I.D.
					DATE	TIME		Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other												
1	6071		WT	G	7/11/23	1431	3	X	X											
2	6082		WT	G	7/19/23	1205	3	X	X											
3	6091		WT	G	7/11/23	1428	3	X	X											
4	6092		WT	G	7/11/23	1505	11	X	X											
5	6093		WT	G	7/19/23	1242	11	X	X											
6	6094		WT	G	7/11/23	1710	11	X	X											
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on	Custody Sealed	Cooler (Y/N)	Samples Intact (Y/N)
DC-23Q3 Rev 0			7/19/23	1712		7-19-23	1712	11.6	Y	W	Y	Y

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Aaron Remick
SIGNATURE of SAMPLER: *[Signature]*
DATE Signed (MM/DD/YYYY): 07/19/23

Confer

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information: Company: Visira Corp Address: 13498 E. 900th St Email To: Brian.Voelker@VisiraCorp.com Phone: (217) 753-8911 Fax: Requested Due Date/TAT: 10 day		Section B Required Project Information: Report To: Brian Voelker Copy To: Jason Stuckey Purchase Order No.: Project Name: Project Number: 2285		Section C Invoice Information: Attention: Jason Stuckey Company Name: Visira Corp Address: see Section A Quote Reference: Project Manager: Profile #		Page: 4 of 7	
REGULATORY AGENCY NPDES GROUND WATER DRINKING WATER UST RCRA OTHER Site Location: IL STATE: 6603715		Requested Analysis Filtered (Y/N)					
SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE		Valid Matrix Codes MATRIX CODE DW DRINKING WATER WT WASTE WATER WW WASTE WATER P PRODUCT S SOLID SL SOIL WP WASTE WP WASTE AR AIR OT OTHER TS TISSUE		MATRIX CODE (see valid codes to left) SAMPLE TYPE (G=GRAB C=COMP)		COLLECTED DATE TIME	
ITEM #		SAMPLE TEMP AT COLLECTION		# OF CONTAINERS		PRESERVATIVES H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	
Analysis Test		Y/N		DC-257-205 DC-SUP-000 DC-845-205 DC-845-201-202 DC-257-203 DC-845-203 DC-257-204 DC-811-204 DC-WPCP-203-206 DC-CLOSURE-201-202		Residual Chlorine (Y/N)	
Project No./ Lab I.D.		Project No./ Lab I.D.					
ADDITIONAL COMMENTS DC-23Q3 Rev 0		RELINQUISHED BY / AFFILIATION 7/20/23		DATE 7/20/23		TIME 1721	
ACCEPTED BY / AFFILIATION 7/20/23		DATE 7/20/23		TIME 1722		Temp in °C 8.5	
SAMPLE CONDITIONS Received on Custody Sealed Cooler (Y/N)		Y N Y N		Y N Y N		Samples Inlet (Y/N)	
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Kyle Lark SIGNATURE of SAMPLER: Kyle Lark		DATE Signed 07/20/23 (MM/DD/YYYY)		DATE Signed 07/20/23 (MM/DD/YYYY)			

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Page: 6 of 7	
Company:	Vistra Corp	Report To:	Brian Voelker	Attention:	Jason Stuckey		
Address:	13498 E. 900th St	Copy To:	Jason Stuckey	Company Name:	Vistra Corp		
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Address:	see Section A		
iPhone:	(217) 753-8911	Project Name:		Quote Reference:			
Fax:		Project Manager:		Profile #			
Requested Due Date/TAT:		Project Number: 2285					
10 day							
				REGULATORY AGENCY			
				NPDES		GROUND WATER	
				UST		RCRA	
						OTHER	
				Site Location		IL	
				STATE:			

[illegible]

161

GG04652
Vmw 7-26-23
Page: 1 of 7

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

Section A Required Client Information:			Section B Required Project Information:			Section C Invoice Information:																					
Company:	Vistra Corp	Report To:	Brian Voelker	Attention:	Jason Stuckey	Company Name:	Vistra Corp																				
Address:	13498 E. 900th St	Copy To:	Jason Stuckey	Address:	see Section A	Address:	see Section A																				
Email To:	Brian.Voelker@VistraCorp.com	Purchase Order No.:		Quote Reference:		Quote Reference:																					
Phone:	(217) 753-8911	Project Name:		Project Manager:		Project Manager:																					
Requested Due Date/TAT:	10 day	Project Number:	2285	Profile #:		Profile #:																					
Valid Matrix Codes		COLLECTED		SAMPLE TEMP AT COLLECTION		Preservatives		Requested Analysis Filtered (Y/N)		Project No./ Lab I.D.																	
MATRIX	CODE	DATE	TIME	DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other	Analysis Test ↑	Y/N	DC-257-205	DC-SUP-000	DC-845-205	DC-845-201-202	DC-257-203	DC-845-203	DC-257-204	DC-811-204	DC-WPCP-203-206	DC-CLOSURE-201-202	Residual Chlorine (Y/N)	Project No./ Lab I.D.
1	OR13D	7/26/23	1315				X	X	X																		
2	OR13D Dup		1315				X	X	X																		
3	OR13S		1442				X	X	X																		
4	OR11		1010				X	X	X																		
5	OM07		1452				X	X	X																		
6	OR06A		1233				X	X	X																		
7	OM25S		1330				X	X	X																		
8	EB10		1500				X	X	X																		
9	EB11		1505				X	X	X																		
10																											
11																											
12																											
13																											
14																											
15																											
16																											
ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME		SAMPLE CONDITIONS													
DC-23Q3 Rev 0		Brian Dini		7/26/23		1529		Jason Stuckey		7-26-23		1529		Y N Y													
SAMPLER NAME AND SIGNATURE		DATE SIGNED (MM/DD/YY)																									
PRINT Name of SAMPLER:	Samuel Dard	7/26/23																									
SIGNATURE of SAMPLER:	Brian Dini	7/26/23																									
SAMPLER NAME AND SIGNATURE		DATE SIGNED (MM/DD/YY)																									
PRINT Name of SAMPLER:	Samuel Dard	7/26/23																									
SIGNATURE of SAMPLER:	Brian Dini	7/26/23																									

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 7

Section A
Required Client Information:

Company: **Vistra Corp**
Address: **13498 E. 900th St**
Email To: **Brian.Voelker@VistraCorp.com**
Phone: **(217) 753-8911** Fax:
Requested Due Date/TAT: **10 day**

Section B
Required Project Information:

Report To: **Brian Voelker**
Copy To: **Jason Stuckey**
Purchase Order No.:
Project Name:
Project Number: **2285**

Section C
Invoice Information:

Attention: **Jason Stuckey**
Company Name: **Vistra Corp**
Address: **see Section A**
Quote Reference:
Project Manager:
Profile #:

REGULATORY AGENCY
NPDES **GROUND WATER** **DRINKING WATER**
UST **RCRA** **OTHER**
Site Location **IL**
STATE: **6304996**

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCT P SOIL/SOLID SL OIL WP WIFE AR OTHER OT TISSUE TS	SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	Analysis Test ↑ V/N ↓	Requested Analysis Filtered (Y/N)										Project No./ Lab I.D.
1	OM 12				7/27/23	1602	11													
2	OM 237D				7/27/23	1412	11													
3	OM 240				7/27/23	1540	11													
4	G503				7/27/23	1428	11													
5	G59L				7/27/23	1400	11													
6	G64L				7/27/23	1400	11													
7	G64L				7/27/23	1206	11													
8	G65L				7/27/23	1258	2													
9	QR13D				7/27/23	1634	2													
10	QR13S				7/27/23	1101	2													
11	QR07				7/27/23	1135	2													
12	QR06A				7/27/23	1159	2													
13	QR06A				7/27/23	1219	2													
14	QR06S				7/27/23	1241	2													
15	EB12				7/27/23	0000	1													
16																				

ADDITIONAL COMMENTS
DC-23Q3 Rev 0

RELINQUISHED BY / AFFILIATION **DATE** **TIME** **ACCEPTED BY / AFFILIATION** **DATE** **TIME** **SAMPLE CONDITIONS**

DC-23Q3 Rev 0 **7/27/23** **1839** **7/27/23** **1838** **44**

SAMPLER NAME AND SIGNATURE **PRINT Name of SAMPLER:** **SIGNATURE of SAMPLER:**

DATE Signed (MM/DD/YYYY): **7/27/23**

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section C

Section B

Section A

Company: Vistra Corp		Report To: Brian Voelker		Attention: Jason Stuckey	
Address: 13498 E. 900th St		Copy To: Jason Stuckey		Company Name: Vistra Corp	
Email To: Brian.Voelker@VistraCorp.com		Purchase Order No.:		Address: see Section A	
Phone: (217) 753-8911		Project Name:		Quote Reference:	
Requested Due Date/TAT: 10 day		Project Number: 2285		Project Manager:	
				Profile #:	

REGULATORY AGENCY	
NPDES	GROUND WATER
UST	RCRA
Site Location	OTHER
STATE:	IL

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WT WASTE WATER WW PRODUCT P SOIL/SOLID SL OIL OL WIPE WP AIR AR OTHER OT TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ O ₃ Methanol Other	Y/N	Requested Analysis Filtered (Y/N)												Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on	Custody Sealed	Cooler (Y/N)	Samples Intact (Y/N)
DC-23Q3 Rev 0		Joseph A. Rand	7/31/23	1605		7/31/23	1605	26	X	N	N	Y

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	DATE Signed (MM/DD/YY):
SIGNATURE of SAMPLER:	

**ATTACHMENT C
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND
QUARTER 3, 2023**

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
BA01	UA	E002	Antimony, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.003	0.003
BA01	UA	E002	Arsenic, total	mg/L	02/05/16 - 07/24/23	10	20	CI around mean	0.000199	0.0240
BA01	UA	E002	Barium, total	mg/L	02/05/16 - 07/24/23	10	0	CI around mean	0.134	0.480
BA01	UA	E002	Beryllium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.00210
BA01	UA	E002	Boron, total	mg/L	02/05/16 - 07/24/23	22	0	CI around median	0.021	7.90
BA01	UA	E002	Cadmium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.001
BA01	UA	E002	Chloride, total	mg/L	02/05/16 - 07/24/23	22	0	CB around T-S line	10.2	700
BA01	UA	E002	Chromium, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.004	0.0730
BA01	UA	E002	Cobalt, total	mg/L	02/05/16 - 07/24/23	10	80	CI around median	0.002	0.0300
BA01	UA	E002	Fluoride, total	mg/L	02/05/16 - 07/24/23	22	54	CI around median	0.25	0.461
BA01	UA	E002	Lead, total	mg/L	02/05/16 - 07/24/23	10	30	CI around geomean	0.0016	0.0420
BA01	UA	E002	Lithium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.02	0.0680
BA01	UA	E002	Mercury, total	mg/L	02/05/16 - 07/24/23	10	90	Most recent sample	0.0002	0.004
BA01	UA	E002	Molybdenum, total	mg/L	02/05/16 - 07/24/23	10	0	CI around median	0.0015	0.00550
BA01	UA	E002	pH (field)	SU	02/05/16 - 07/24/23	26	0	CI around median	6.8/7.0	6.4/7.5
BA01	UA	E002	Radium 226 + Radium 228, total	pCi/L	02/05/16 - 07/24/23	10	0	CI around mean	0.447	7.27
BA01	UA	E002	Selenium, total	mg/L	02/05/16 - 07/24/23	9	100	All ND - Last	0.001	0.00230
BA01	UA	E002	Sulfate, total	mg/L	02/05/16 - 07/24/23	22	0	CI around mean	130	890
BA01	UA	E002	Thallium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.001
BA01	UA	E002	Total Dissolved Solids	mg/L	02/05/16 - 07/24/23	22	0	CI around mean	530	2,590
BA02	UA	E002	Antimony, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.003	0.003
BA02	UA	E002	Arsenic, total	mg/L	02/05/16 - 07/25/23	10	10	CI around mean	0.00107	0.0240
BA02	UA	E002	Barium, total	mg/L	02/05/16 - 07/25/23	10	0	CI around mean	0.19	0.480
BA02	UA	E002	Beryllium, total	mg/L	02/05/16 - 07/25/23	10	90	CI around median	0.001	0.00210
BA02	UA	E002	Boron, total	mg/L	02/05/16 - 07/25/23	22	0	CB around linear reg	0.0478	7.90
BA02	UA	E002	Cadmium, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.001	0.001
BA02	UA	E002	Chloride, total	mg/L	02/05/16 - 07/25/23	22	0	CB around linear reg	9.26	700

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
BA02	UA	E002	Chromium, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.004	0.0730
BA02	UA	E002	Cobalt, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.002	0.0300
BA02	UA	E002	Fluoride, total	mg/L	02/05/16 - 07/25/23	22	77	CI around median	0.25	0.461
BA02	UA	E002	Lead, total	mg/L	02/05/16 - 07/25/23	10	70	CI around median	0.001	0.0420
BA02	UA	E002	Lithium, total	mg/L	02/05/16 - 07/25/23	10	100	All ND - Last	0.02	0.0680
BA02	UA	E002	Mercury, total	mg/L	02/05/16 - 07/25/23	10	90	CI around median	0.0002	0.004
BA02	UA	E002	Molybdenum, total	mg/L	02/05/16 - 07/25/23	10	0	CI around mean	0.00383	0.00550
BA02	UA	E002	pH (field)	SU	02/05/16 - 07/25/23	23	0	CI around median	6.9/7.3	6.4/7.5
BA02	UA	E002	Radium 226 + Radium 228, total	pCi/L	02/05/16 - 07/25/23	10	0	CI around mean	0.397	7.27
BA02	UA	E002	Selenium, total	mg/L	02/05/16 - 07/25/23	10	80	CI around median	0.001	0.00230
BA02	UA	E002	Sulfate, total	mg/L	02/05/16 - 07/25/23	22	0	CB around linear reg	11.4	890
BA02	UA	E002	Thallium, total	mg/L	02/05/16 - 07/25/23	10	90	Most recent sample	0.001	0.001
BA02	UA	E002	Total Dissolved Solids	mg/L	02/05/16 - 07/25/23	22	0	CB around linear reg	483	2,590
BA03	UA	E002	Antimony, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.003	0.003
BA03	UA	E002	Arsenic, total	mg/L	02/05/16 - 07/24/23	10	80	CI around median	0.001	0.0240
BA03	UA	E002	Barium, total	mg/L	02/05/16 - 07/24/23	10	0	CI around mean	0.171	0.480
BA03	UA	E002	Beryllium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.00210
BA03	UA	E002	Boron, total	mg/L	02/05/16 - 07/24/23	22	0	CI around mean	0.0258	7.90
BA03	UA	E002	Cadmium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.001
BA03	UA	E002	Chloride, total	mg/L	02/05/16 - 07/24/23	22	0	CI around median	5.8	700
BA03	UA	E002	Chromium, total	mg/L	02/05/16 - 07/24/23	10	80	CI around median	0.004	0.0730
BA03	UA	E002	Cobalt, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.002	0.0300
BA03	UA	E002	Fluoride, total	mg/L	02/05/16 - 07/24/23	22	50	CI around median	0.25	0.461
BA03	UA	E002	Lead, total	mg/L	02/05/16 - 07/24/23	10	60	CI around median	0.001	0.0420
BA03	UA	E002	Lithium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.02	0.0680
BA03	UA	E002	Mercury, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.0002	0.004
BA03	UA	E002	Molybdenum, total	mg/L	02/05/16 - 07/24/23	10	10	CB around linear reg	-0.0025	0.00550

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
BA03	UA	E002	pH (field)	SU	02/05/16 - 07/24/23	24	0	CI around mean	7.0/7.2	6.4/7.5
BA03	UA	E002	Radium 226 + Radium 228, total	pCi/L	02/05/16 - 07/24/23	10	0	CI around mean	0.491	7.27
BA03	UA	E002	Selenium, total	mg/L	02/05/16 - 07/24/23	10	50	CI around median	0.001	0.00230
BA03	UA	E002	Sulfate, total	mg/L	02/05/16 - 07/24/23	22	0	CB around linear reg	14.4	890
BA03	UA	E002	Thallium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.001
BA03	UA	E002	Total Dissolved Solids	mg/L	02/05/16 - 07/24/23	22	0	CB around linear reg	436	2,590
BA03L	UA/PMP	E002	Antimony, total	mg/L	04/14/21 - 09/06/23	10	100	All ND - Last	0.003	0.003
BA03L	UA/PMP	E002	Arsenic, total	mg/L	04/14/21 - 09/06/23	10	70	CI around median	0.001	0.0240
BA03L	UA/PMP	E002	Barium, total	mg/L	04/14/21 - 09/06/23	10	0	CI around median	0.13	0.480
BA03L	UA/PMP	E002	Beryllium, total	mg/L	04/14/21 - 09/06/23	10	90	CI around median	0.001	0.00210
BA03L	UA/PMP	E002	Boron, total	mg/L	04/14/21 - 09/06/23	11	0	CB around linear reg	0.308	7.90
BA03L	UA/PMP	E002	Cadmium, total	mg/L	04/14/21 - 09/06/23	10	100	All ND - Last	0.001	0.001
BA03L	UA/PMP	E002	Chloride, total	mg/L	04/14/21 - 09/06/23	11	0	CI around mean	19.4	700
BA03L	UA/PMP	E002	Chromium, total	mg/L	04/14/21 - 09/06/23	10	40	CI around median	0.004	0.0730
BA03L	UA/PMP	E002	Cobalt, total	mg/L	04/14/21 - 09/06/23	10	80	CI around median	0.002	0.0300
BA03L	UA/PMP	E002	Fluoride, total	mg/L	04/14/21 - 09/06/23	11	73	CI around median	0.25	0.461
BA03L	UA/PMP	E002	Lead, total	mg/L	04/14/21 - 09/06/23	10	50	CI around median	0.001	0.0420
BA03L	UA/PMP	E002	Lithium, total	mg/L	04/14/21 - 09/06/23	10	90	CI around median	0.02	0.0680
BA03L	UA/PMP	E002	Mercury, total	mg/L	04/14/21 - 09/06/23	10	90	CI around median	0.0002	0.004
BA03L	UA/PMP	E002	Molybdenum, total	mg/L	04/14/21 - 09/06/23	10	40	CI around median	0.001	0.00550
BA03L	UA/PMP	E002	pH (field)	SU	04/14/21 - 09/06/23	11	0	CI around mean	6.7/6.9	6.4/7.5
BA03L	UA/PMP	E002	Radium 226 + Radium 228, total	pCi/L	04/14/21 - 09/06/23	9	0	CI around geomean	0.331	7.27
BA03L	UA/PMP	E002	Selenium, total	mg/L	04/14/21 - 09/06/23	10	90	CI around median	0.001	0.00230
BA03L	UA/PMP	E002	Sulfate, total	mg/L	04/14/21 - 09/06/23	11	0	CI around mean	340	890
BA03L	UA/PMP	E002	Thallium, total	mg/L	04/14/21 - 09/06/23	10	100	All ND - Last	0.001	0.001
BA03L	UA/PMP	E002	Total Dissolved Solids	mg/L	04/14/21 - 09/06/23	11	0	CI around median	960	2,590
BA04	UA	E002	Antimony, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.003	0.003

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
BA04	UA	E002	Arsenic, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.001	0.0240
BA04	UA	E002	Barium, total	mg/L	02/05/16 - 07/24/23	10	0	CI around mean	0.0996	0.480
BA04	UA	E002	Beryllium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.00210
BA04	UA	E002	Boron, total	mg/L	02/05/16 - 07/24/23	22	0	CB around linear reg	0.595	7.90
BA04	UA	E002	Cadmium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.001	0.001
BA04	UA	E002	Chloride, total	mg/L	02/05/16 - 07/24/23	22	0	CB around T-S line	37	700
BA04	UA	E002	Chromium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.004	0.0730
BA04	UA	E002	Cobalt, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.002	0.0300
BA04	UA	E002	Fluoride, total	mg/L	02/05/16 - 07/24/23	22	18	CI around mean	0.278	0.461
BA04	UA	E002	Lead, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.001	0.0420
BA04	UA	E002	Lithium, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.02	0.0680
BA04	UA	E002	Mercury, total	mg/L	02/05/16 - 07/24/23	10	100	All ND - Last	0.0002	0.004
BA04	UA	E002	Molybdenum, total	mg/L	02/05/16 - 07/24/23	10	0	CI around geomean	0.00183	0.00550
BA04	UA	E002	pH (field)	SU	02/05/16 - 07/24/23	23	0	CB around T-S line	6.6/6.8	6.4/7.5
BA04	UA	E002	Radium 226 + Radium 228, total	pCi/L	02/05/16 - 07/24/23	10	0	CI around mean	0.301	7.27
BA04	UA	E002	Selenium, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.001	0.00230
BA04	UA	E002	Sulfate, total	mg/L	02/05/16 - 07/24/23	22	0	CB around T-S line	130	890
BA04	UA	E002	Thallium, total	mg/L	02/05/16 - 07/24/23	10	90	CI around median	0.001	0.001
BA04	UA	E002	Total Dissolved Solids	mg/L	02/05/16 - 07/24/23	22	0	CB around linear reg	681	2,590

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
845 QUARTERLY REPORT
DUCK CREEK POWER PLANT
BOTTOM ASH BASIN
CANTON, IL

Notes:
HSU = hydrostratigraphic unit:
 UA = Uppermost Aquifer
 UA/PMP = Uppermost Aquifer/Potential Migration Pathway
mg/L = milligrams per liter
ND = non-detect
pCi/L = picocuries per liter
SU = standard units
Sample Count = number of samples from Sampled Date Range used to calculate the Statistical Result
Statistical Calculation = method used to calculate the statistical result:
 All ND - Last = All results were below the reporting limit, and the last determined reporting limit is shown
 CB around T-S line = Confidence band around Thiel-Sen line
 CB around linear reg = Confidence band around linear regression
 CI around geomean = Confidence interval around the geometric mean
 CI around mean = Confidence interval around the mean
 CI around median = Confidence interval around the median
 Most recent sample = Result for the most recently collected sample used due to insufficient data
Statistical Result = calculated in accordance with the Statistical Analysis Plan using constituent concentrations observed at each monitoring well during all sampling events within the specified date range
For pH, the values presented are the lower / upper limits of the background determination