



2019 NC1 Landfill Annual Groundwater Report

Nebraska City
Generating Station NC1
Ash Disposal Area



Nebraska City, Nebraska
January 31, 2020



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Professional Engineer Certification

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am duly licensed Professional Engineer under the laws of the State of Nebraska.

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Executive Summary

On April 17, 2015, the U.S. Environmental Protection Agency (EPA) published the final rule for the regulation and management of coal combustion residuals (CCR) under Subtitle D of the Resource Conservation and Recovery Act (RCRA). The CCR rule is formally promulgated in the U.S. Code of Federal Regulations (CFR), Title 40, Part 257. The CCR rule defines a set of requirements for the disposal and handling of CCR within CCR units (defined as either landfills or surface impoundments). This regulation applies to the Omaha Public Power District (OPPD), Nebraska City Generating Station NC1 Ash Disposal Area. The NC1 Ash Disposal Area is an unlined CCR landfill of approximately 52 acres that has historically received CCR for disposal.

The groundwater monitoring system currently includes eight monitoring wells consisting of four (4) upgradient/background monitoring wells, three (3) downgradient monitoring wells, and one (1) down/cross-gradient monitoring well. Groundwater sampling events were conducted by OPPD personnel in April 2019 and October 2019 as continuation of the assessment monitoring program. Results of the analysis for both the April 2019 and October 2019 sampling events did not indicate an SSL; therefore assessment monitoring will continue for the NC1 Ash Disposal Area. The next semi-annual assessment monitoring sampling event is anticipated to be conducted in April 2020.



1 Introduction

On April 17, 2015, the U.S. Environmental Protection Agency (EPA) published the final rule for the regulation and management of coal combustion residuals (CCR) under Subtitle D of the Resource Conservation and Recovery Act (RCRA). The CCR rule is formally promulgated in the U.S. Code of Federal Regulations (CFR), Title 40, Part 257. The rule – effective on October 19, 2015 – applies to electric utilities and independent power producers that fall within NAICS code 221112, and facilities that produce or store CCR materials in surface impoundments or landfills (EPA, 2015). The CCR rule defines a set of requirements for the disposal and handling of CCR within CCR units (defined as either landfills or surface impoundments). This regulation applies to the Omaha Public Power District (OPPD), Nebraska City Generating Station. OPPD currently has two (2) active CCR landfills at the Nebraska City Generating Station.

1.1 Purpose

Section 40 CFR 257.90(e) specifies that an owner or operator of an existing CCR landfill must prepare an annual groundwater monitoring and corrective action report to summarize any key actions completed, problems encountered, and upcoming activities related to the ground water monitoring system. The information included in this report complies with the requirements established in §257.90(e) of the CCR Rule. This report provides a summary of CCR groundwater monitoring system activities for calendar year 2019.

1.2 Facility Information

OPPD has a two-unit fossil fuel-fired generating station (NC1 and NC2), located 5.5 miles southeast of Nebraska City, Nebraska, along the west shore of the Missouri River. This Station has two (2) existing CCR landfills that are permitted under the current Nebraska Department of Environment and Energy (NDEE) Title 132 regulations for fossil fuel combustion ash disposal area: the NC1 Ash Disposal Area and NC2 Ash Disposal Area that are active after the CCR rule effective date of October 19, 2015. This annual report covers the NC1 Ash Disposal Area (NDEE Permit No. NE0054712, Facility ID 58343). The NC1 Ash Disposal Area is an unlined CCR landfill of approximately 52 acres that has historically received CCR for disposal. **Figure 1** identifies the relevant CCR unit for this report and the supporting monitoring well network (§257.105(h)(1)).

2 Monitoring Program Summary

The groundwater monitoring system currently includes eight monitoring wells consisting of four (4) upgradient/background monitoring wells, three (3) downgradient monitoring wells, and one (1) down/cross-gradient monitoring well. Monitoring well details for the monitoring network, including the date of installation, is provided in **Table 1** (attached). The location of the monitoring wells in the groundwater monitoring program in respect to the CCR unit, NC1 Ash Disposal Area, are shown in the attached **Figure 1**.



2.1 Transition of Monitoring Programs

On January 31, 2018, OPPD published Statistically Significant Increases (SSIs) above the calculated background threshold values (BTVs) for Appendix III constituents (boron, calcium, chloride, sulfate, and total dissolved solids) in downgradient monitoring wells at the NC1 Ash Disposal Area (OPPD, 2018). An alternative source demonstration (ASD) evaluation was conducted for the published SSIs (dated May 1, 2018). The ASD evaluation confirmed the SSIs for the NC1 CCR unit. As a result, OPPD initiated an assessment monitoring program, as required in the CCR Rule and NDEE Title 132, for the NC1 Ash Disposal Area. As a result of initiation of assessment monitoring, a statistical evaluation for Statistically Significant Levels (SSLs) over the Groundwater Protection Standards (GWPS) was conducted for the October 2018 assessment monitoring data. The October 2018 statistical analysis indicated one SSL for arsenic in monitoring well MW-3.

In anticipation of an ASD or delineation activities, an additional upgradient monitoring well (MW-14) was installed in July 2018. Due to the SSL detected in October 2018, an ASD was conducted in April 2019 and the newly installed monitoring well MW-14 was sampled and statistically analyzed to evaluate if the SSL published in the 2018 Annual Report and 2018 Fall NDEE Title 132 report resulted from natural variation in groundwater quality (refer to **Appendix D** for the ASD memorandum). The statistical re-evaluation of the monitoring data, including the additional upgradient monitoring well MW-14, indicated that natural variation of groundwater quality is present and can influence the determination of whether an SSI and/or SSL has occurred. The ASD evaluation showed that arsenic in upgradient monitoring well MW-14 is present at higher concentrations than both the EPA's maximum contaminant level (MCL) and NDEE Title 118 GWPS. As a result of the variability and detected arsenic concentrations in the background monitoring well, the previously published SSL for arsenic at MW-3 was not considered an SSL, and the NC1 Ash Disposal Area remained in assessment monitoring. The monitoring network was sampled and analyzed semi-annually in 2019 as part of the assessment monitoring program. Results of the first semi-annual assessment monitoring sampling event (April 2019) did not indicate an SSL; therefore assessment monitoring continued in October 2019.

2.2 Groundwater Monitoring Network Condition Assessment

OPPD personnel evaluated the condition of each monitoring well in the groundwater monitoring network during the semi-annual sampling events in April 2019 and October 2019. During this time period, no repairs were required and the wells were noted in good working condition, concrete pads were intact, and no damage was observed to the protective well casings. However, due to nearby flooding conditions of the Missouri River, monitoring well MW-13 was not accessible and could not be sampled during both semi-annual sampling events. There were no monitoring wells added or abandoned from the certified groundwater monitoring system during 2019.

3 Data Evaluation and Summary

3.1 Summary of Sampling Activities

Groundwater sampling events were conducted by OPPD personnel in April 2019 and October 2019 as continuation of the assessment monitoring program. Samples were collected in general compliance with §257.90(c), which requires groundwater monitoring be conducted throughout the active life and post-closure care period of the CCR unit for each current background and downgradient well in the monitoring network. The number of samples collected for each background and downgradient well during each groundwater sample event, whether the sample was collected during detection or assessment monitoring programs, and the date of each event is summarized in **Table 2**.

Groundwater sampling was conducted by OPPD personnel in general accordance with the most recent *Groundwater Sampling and Analysis Plan (SAP) Fossil Fuel Combustion Ash Disposal Area – NC1 Ash Disposal Area* submitted to the NDEE in February 2016. Samples were analyzed for Appendix III and Appendix IV constituents during both the April and October 2019 sampling events. Field sampling forms from the 2019 semi-annual sampling events are provided in **Appendix A**. The collected groundwater samples were analyzed by TestAmerica Laboratories, Inc. The laboratory analytical reports are provided in **Appendix B**.

3.2 Groundwater Elevations & Flow Direction

Static groundwater level measurements were recorded at the monitoring wells specified in **Table 1** prior to purging and sampling activities conducted during the groundwater sampling events. Groundwater measurements of both monitoring network wells and groundwater elevation only wells, as defined in the *CCR Groundwater Monitoring System*, HDR, 2019, were used to determine groundwater contours. Monitoring well static groundwater elevations are provided in **Table 3**. Groundwater flow observed during the October 2019 sampling event indicated a flow direction to the south/southwest and an average flow velocity of 0.0135 ft/day to 0.1333 ft/day (based on a range of hydraulic conductivity at the Site of 3.94 ft/day to 39 ft/day, respectively [*CCR Groundwater Monitoring System*, HDR, 2019]). The groundwater direction October 2019 sampling event shifted slightly from the previous event, where the April 2019 groundwater contours were directed more towards the south/southeast direction towards the Missouri River. The shift in groundwater contour direction is likely due to flooding conditions of the nearby Missouri River. Groundwater elevations will continue to be monitored to determine if the overall groundwater flow direction shifts back towards the south/southeast towards the Missouri River. Based on the groundwater flow directions observed in 2019, the groundwater monitoring network is still applicable to the NC1 Ash Disposal Area and no changes to the monitoring network are recommended at this time.

3.3 Assessment Monitoring Groundwater Sampling

As stated above in **Section 2.1**, The NC1 Ash Disposal Area was monitored and analyzed semi-annually in 2019 as part of the assessment monitoring program. As specified in §257.95(b), monitoring network wells should be resampled at least annually for the full Appendix



IV constituent list. In accordance with §257.95(d), monitoring network wells should be resampled at least semi-annually for the full Appendix III constituents and those Appendix IV constituents detected in response to §257.95(b). However, to be conservative, all Appendix III and Appendix IV constituents were analyzed for both the April and October 2019 sampling events. The results of the assessment monitoring events in April 2019 and October 2019 are presented in **Table 4** (Appendix III constituents) and **Table 5** (Appendix IV constituents).

3.4 Statistical Analysis Results

In the assessment monitoring program, Appendix III and IV constituents are statistically analyzed to evaluate for SSIs above the calculated BTVs, and Appendix IV constituents are statistically analyzed to evaluate for SSLs above the GWPS. Statistical analysis was performed utilizing Sanitas™ Statistical Software in accordance with the methods described in the *Groundwater Monitoring Statistical Methods Certification* (amended July 2018). Results of the statistical analysis of designated in-network downgradient monitoring wells from the April 2019 and October 2019 sampling events are provided in **Appendix C**. Statistically-derived BTVs for Appendix III and IV constituents for detection monitoring are provided in **Table 6**. The established GWPS for all Appendix IV constituents are provided in **Table 7**.

Results of the analysis for both the April 2019 and October 2019 sampling events indicated nine (9) constituent/well pairs at SSIs for Appendix III (detection monitoring) constituents and four (4) constituent/well pairs at SSIs for Appendix IV (assessment monitoring) constituents. Analysis of the Appendix IV (assessment monitoring) constituents indicated there were no SSLs detected above the GWPS during either the April 2019 or October 2019 sampling events.

3.5 Other Information Required under §257.90 through §257.98

No other information is required under Sections §257.90 through §257.98 at this time.

4 Key Activities for Upcoming Year

As a continuation of the assessment monitoring program, as required in the CCR Rule, the next semi-annual assessment monitoring sampling event is anticipated to be conducted in April 2020.

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Tables

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Table 1 - Groundwater Monitoring System
 Omaha Public Power District - NC1 Ash Disposal Area
 January 2020

Monitoring Well ID	Date Installed	Well Depth (feet bgs)	Location w/ respect to Temporary Ash Disposal Area	Top of Well Casing Elevation (ft. AMSL)
Monitoring Network Wells				
NC2-MW-4	9/8/2004	14.0	Background/Upgradient	919.62
MW-11	1/16/2004	20.0	Background/Upgradient	918.44
MW-13	1/26/2016	13.0	Background/Upgradient	918.05
MW-14	7/12/2018	18.0	Background/Upgradient	920.99
NC1-MW-2	3/14/1995	17.8	Downgradient	919.42
NC1-MW-3	3/13/1995	19.5	Downgradient/Cross-gradient	919.85
NC1-MW4	3/13/1995	20.3	Downgradient	919.63
NC1-MW-9	1/21/1999	20.0	Downgradient	920.09

Table 2 - Groundwater Sampling Event Summary
 Omaha Public Power District - NC1 Ash Disposal Area
 January 2020

Monitoring Well ID	# of Background Samples	Background Sample Dates	# of Detection Monitoring Samples	Detection Monitoring Sample Dates	# of Assessment Monitoring Samples	Assessment Monitoring Sample Dates ^{[2] [3]}
Current Background Monitoring Wells						
NC2-MW-4	8	3/9/2016, 6/7/2016, 10/3/2016, 11/18/2016, 2/14/2017, 4/25/2017, 6/20/2017, 7/13/2017	2	11/8/2017, 3/13/2018 ^[1]	4	6/6/2018, 10/4/2018, 4/8/2019, 10/15/2019
MW-11	8	3/9/2016, 6/7/2016, 10/3/2016, 11/18/2016, 2/14/2017, 4/25/2017, 6/20/2017, 7/13/2017	2	11/8/2017, 3/13/2018 ^[1]	4	6/6/2018, 10/4/2018, 4/8/2019, 10/16/2019
MW-13 ^[3]	8	3/9/2016, 6/7/2016, 10/3/2016, 11/18/2016, 2/14/2017, 4/25/2017, 6/20/2017, 7/13/2017	2	11/8/2017, 3/13/2018 ^[1]	2	6/6/2018, 10/4/2018
MW-14 ^[4]	2	1/15/2019, 3/5/2019	0	NA	3	10/4/2018, 4/8/2019, 10/16/2019
Downgradient Monitoring Wells						
NC1-MW-2	8	3/9/2016, 6/7/2016, 10/3/2016, 11/18/2016, 2/14/2017, 4/25/2017, 6/20/2017, 7/13/2017	2	11/8/2017, 3/13/2018 ^[1]	4	6/6/2018, 10/4/2018, 4/8/2019, 10/18/2019
NC1-MW-3	8	3/9/2016, 6/7/2016, 10/3/2016, 11/18/2016, 2/14/2017, 4/25/2017, 6/20/2017, 7/13/2017	2	11/8/2017, 3/13/2018 ^[1]	4	6/6/2018, 10/4/2018, 4/9/2019, 10/18/2019
NC1-MW-4	8	3/9/2016, 6/7/2016, 10/3/2016, 11/18/2016, 2/14/2017, 4/25/2017, 6/20/2017, 7/13/2017	2	11/8/2017, 3/13/2018 ^[1]	4	6/6/2018, 10/4/2018, 4/9/2019, 10/18/2019
NC1-MW-9	8	3/9/2016, 6/7/2016, 10/3/2016, 11/18/2016, 2/14/2017, 4/25/2017, 6/20/2017, 7/13/2017	2	11/8/2017, 3/13/2018 ^[1]	4	6/6/2018, 10/4/2018, 4/10/2019, 10/18/2019

Notes:

[1] The March 13, 2018 Detection Monitoring event was completed as an Alternative Source Evaluation (ASD) due to detected SSIs in November 2017.

[2] The June 6, 2018 sampling event was completed for initiation of the Assessment Monitoring Program.

[3] MW-13 submerged under water during April and October 2019 sampling events.

[4] Monitoring well MW-14 was installed in July 2018; samples will be collected more frequent than semi-annual to obtain the initial 8 background samples. Samples collected during semi-annual events are recorded in corresponding detection or assessment monitoring events.

Table 3 - Groundwater Elevations

Omaha Public Power District - NC1 Ash Disposal Area
January 2020

	NC2-MW-4		MW-11		MW-13		MW-14		NC1-MW-2		NC1-MW-3		NC1-MW-4		NC1-MW-9	
	TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation	
	919.62		918.44		918.05		920.99		919.42		919.85		919.63		920.09	
Date	Measured Depth to Water (ft.)	GW Elevation (AMSL)	Measured Depth to Water (ft.)	GW Elevation (AMSL)	Measured Depth to Water (ft.)	GW Elevation (AMSL)	Measured Depth to Water (ft.)	GW Elevation (AMSL)	Measured Depth to Water (ft.)	GW Elevation (AMSL)	Measured Depth to Water (ft.)	GW Elevation (AMSL)	Measured Depth to Water (ft.)	GW Elevation (AMSL)	Measured Depth to Water (ft.)	GW Elevation (AMSL)
3/9/2016	6.95	912.67	6.90	911.54	4.61	913.44	MW-14 installed 7/12/2018		8.90	910.52	8.95	910.90	9.50	910.13	9.30	910.79
6/7/2016	6.06	913.56	5.85	912.59	3.95	914.10			7.04	912.38	7.75	912.10	7.41	N.M.	7.88	912.21
10/3/2016	6.25	913.37	6.34	912.10	4.03	914.02			8.45	910.97	8.35	911.50	9.10	N.M.	8.76	911.33
11/18/2016	6.79	912.83	7.37	911.07	4.43	913.62			9.30	910.12	9.36	910.49	10.10	909.53	7.75	912.34
2/14/2017	7.52	912.10	7.95	910.49	5.20	912.85			10.10	909.32	9.91	909.94	10.85	908.78	10.41	909.68
4/25/2017	6.20	913.42	6.24	912.20	4.02	914.03			8.10	911.32	8.25	911.60	8.84	910.79	8.65	911.44
6/20/2017	6.75	912.87	7.85	910.59	4.72	913.33			7.60	911.82	7.95	911.90	8.20	911.43	8.15	911.94
7/13/2017	7.10	912.52	6.25	912.19	5.00	913.05			8.40	911.02	8.75	911.10	9.10	910.53	9.10	910.99
11/8/2017	12.20	907.42	10.95	907.49	8.25	909.80			11.55	907.87	11.90	907.95	11.60	908.03	12.10	907.99
3/13/2018	10.18	909.44	9.85	908.59	8.10	909.95			11.50	907.92	11.85	908.00	12.16	907.47	12.22	907.87
6/6/2018	6.80	912.82	6.80	911.64	4.56	913.49			5.30	914.12	7.15	912.70	7.10	912.53	8.90	911.19
10/4/2018	4.14	915.48	4.45	913.99	1.63	916.42	7.35	913.64	5.78	913.64	6.60	913.25	6.66	912.97	6.87	913.22
1/15/2019	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	8.15	912.84	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.
3/5/2019	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	8.75	912.24	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.
4/8/2019	3.53	916.09	3.04	915.40	N.M.	N.M.	5.73	915.26	4.17	915.25	4.69	915.16	4.58	915.05	4.85	915.24
10/14/2019	3.47	916.15	2.90	915.54	N.M.	N.M.	5.75	915.24	3.64	915.78	4.56	915.29	4.33	915.30	4.65	915.44

Notes:

TOC: Top of PVC well casing

N.M. = not measured

AMSL = above mean sea level

Table 4 - Appendix III (Detection Monitoring) Constituents in Groundwater

Omaha Public Power District - NC1 Ash Disposal Area
January 2020

	Constituent Reporting Unit	Appendix III (Detection Monitoring) Constituents						
		Boron	Calcium	Chloride	Fluoride*	pH	Sulfate	TDS
		mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L
NC2-MW-4	3/9/2016	<0.2	131	<5	<0.5	6.94	46.2	546
	6/7/2016	<0.2	129	<5	<0.5	6.95	45.6	660
	10/3/2016	<0.2	127	<5	<0.5	7.33	32	542
	11/18/2016	<0.2	132	<5	1.1	7.30	33.6	574
	2/14/2017	<0.2	148	<5	<0.5	7.72	39.3	544
	4/25/2017	<0.2	122	<5	<0.5	7.28	38.3	594
	6/20/2017	<0.2	119	<5	<0.5	7.13	33.1	558
	7/13/2017	<0.2	112	<5	<0.5	7.98	32.7	664
	11/8/2017	<0.2	133	<5	<0.5	7.15	43.5	556
	3/13/2018	<0.2	138	<5	0.53	6.71 / 7.28 **	42.6	478
	6/6/2018	<0.2	128	<5	<0.5	7.15	43.9	542
	10/4/2018	<0.2	117	<5	<0.5	6.81	42.4	520
	4/8/2019	<0.2	137	<5	<0.5	6.71	40.9	560
	10/15/2019	<0.2	142	5.38	<0.5	6.57	35.0	528
MW-11	3/9/2016	0.811	99.6	<5	<0.5	7.07	128	468
	6/7/2016	0.704	93.4	5.16	<0.5	7.16	27.1	536
	10/3/2016	1.35	107	<5	<0.5	7.36	122	528
	11/18/2016	1.38	115	<5	0.95	7.32	119	512
	2/14/2017	1.25	118	8.57	2.09	7.18	113	532
	4/25/2017	1.02	102	6.17	1.44	7.26	94.7	508
	6/20/2017	0.843	76.1	<5	0.562	7.19	80.4	400
	7/13/2017	1.01	69.9	<5	0.538	7.62	74.2	520
	11/8/2017	1.05	87.2	<5	0.62	6.95	120	492
	3/13/2018	0.63	77.1	<5	<0.5	7.00 / 7.69 **	109	302
	6/6/2018	0.737	86.5	5.09	<0.5	7.16	145	428
	10/4/2018	1.14	96.5	5.60	0.568	6.93	148	486
	4/8/2019	0.698	91.3	14.3	<0.5	7.41	126	470
	10/16/2019	1.53	132	15.3	0.558	6.64	164	608
MW-13	3/9/2016	<0.2	96.3	11.8	<0.5	7.20	44.8	408
	6/7/2016	<0.2	87.1	11.7	<0.5	7.14	39.3	484
	10/3/2016	<0.2	85.4	10.7	<0.5	7.37	29.7	388
	11/18/2016	<0.2	86.2	9.65	0.647	7.14	34.4	410
	2/14/2017	<0.2	106	20.7	3.64	7.29	39.9	472
	4/25/2017	<0.2	93.5	12.1	0.80	7.36	38.9	430
	6/20/2017	<0.2	88.6	12.7	0.51	7.17	35.6	456
	7/13/2017	<0.2	94.1	12.5	<0.5	8.09	39.8	592
	11/8/2017	<0.2	90.2	12.7	0.608	7.00	37.4	498
	3/13/2018	<0.2	93.8	12.7	<0.5	6.89 / 7.51**	38.2	388
	6/6/2018	<0.2	99.4	12.6	<0.5	6.84	70.4	504
	10/4/2018	<0.2	87.3	14.1	0.738	6.88	33.6	410
	4/8/2019 ⁽¹⁾	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	10/15/2019 ⁽¹⁾	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-14	10/4/2018	0.226	129	9.07	0.751	6.85	59.1	700
	1/15/2019	0.257	116	8.61	<0.5	6.53	51.9	730
	3/5/2019	0.231	155	9.76	<0.5	6.70	59.8	752
	4/8/2019	0.296	156	8.46	<0.5	6.81	43.2	840
	10/15/2019	0.272	155	6.99	<0.5	6.52	24.2	600
NC1-MW-2	3/9/2016	0.301	122	<5	0.664	6.84	90.2	456
	6/7/2016	0.205	94.4	<5	<0.5	6.99	60.1	404
	10/3/2016	0.327	103	<5	<0.5	7.29	39.8	370
	11/18/2016	0.333	121	<5	1.82	7.01	59.5	516
	2/14/2017	0.427	122	<5	<0.5	7.48	99.1	580
	4/25/2017	0.226	87	<5	1.4	7.40	59.8	536
	6/20/2017	<0.2	112	<5	<0.5	7.12	54.4	496
	7/13/2017	0.225	110	<5	<0.5	7.48	44.5	524
	11/8/2017	<0.2	135	<5	0.55	7.02	121	592
	3/13/2018	<0.2	94	<5	0.57	6.85 / 7.53 **	61	362
	6/6/2018	0.27	88.8	<5	<0.5	7.06	48.3	344
	10/4/2018	<0.2	115	<5	<0.5	6.78	70.0	400
	4/8/2019	<0.2	111	<5	<0.5	6.68	66.3	418
	10/18/2019	0.305	112	<5	<0.5	6.84	52.0	332
NC1-MW-3	3/9/2016	1.88	227	14.3	0.508	6.73	457	1150
	6/7/2016	2.56	213	18.4	<0.5	6.9	446	1180
	10/3/2016	1.63	147	10.5	<0.5	7.33	326	794
	11/18/2016	1.66	156	9	3.91	7.05	149	732
	2/14/2017	1.66	170	11	2.97	7.56	286	852
	4/25/2017	1.97	166	10.1	0.974	7.27	338	924
	6/20/2017	2.42	155	10.5	0.591	6.99	361	1070
	7/13/2017	2.55	169	7.81	0.603	7.85	334	1080
	11/8/2017	2.04	144	9.53	0.648	7.14	339	852

Table 4 - Appendix III (Detection Monitoring) Constituents in Groundwater

Omaha Public Power District - NC1 Ash Disposal Area

January 2020

	Constituent Reporting Unit	Appendix III (Detection Monitoring) Constituents						
		Boron	Calcium	Chloride	Fluoride*	pH	Sulfate	TDS
		mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L
NC1-MW-3	3/13/2018	1.97	154	10.8	<0.5	6.85 / 7.42 **	362	846
	6/6/2018	2.6	155	12.5	<0.5	6.40	324	948
	10/4/2018	2.32	163	8.88	0.541	7.15	432	944
	4/9/2019	2.33	186	7.96	<0.5	7.32	427	1040
	10/18/2019	2.42	166	9.91	0.527	7.08	361	760
NC1-MW-4	3/9/2016	1.83	227	10.5	<0.5	7.25	373	896
	6/7/2016	1.22	107	<5	<0.5	7.29	344	667
	10/3/2016	1.29	104	<5	<0.5	7.52	262	546
	11/18/2016	1.4	124	<5	0.876	7.25	310	712
	2/14/2017	1.59	139	<5	<0.5	7.48	295	760
	4/25/2017	1.39	102	5.19	<0.5	7.39	244	582
	6/20/2017	1.16	89.9	<5	<0.5	7.22	210	448
	7/13/2017	1.41	88.2	<5	<0.5	7.62	196	696
	11/8/2017	1.13	97.6	6.39	<0.5	7.05	234	480
	3/13/2018	1.21	111	6.04	<0.5	7.16 / 7.31 **	250	560
	6/6/2018	1.45	145	<5	<0.5	7.60	294	822
	10/4/2018	1.15	115	5.39	0.569	7.41	263	580
	4/9/2019	1.28	120	5.78	<0.5	7.65	231	586
	10/18/2019	1.34	151	5.64	0.501	7.33	238	572
NC1-MW-9	3/9/2016	3.7	125	<5	0.547	7.08	284	808
	6/7/2016	2.44	126	<5	<0.5	6.90	133	660
	10/3/2016	3.57	149	<5	0.578	7.58	244	740
	11/18/2016	4.44	181	6.31	3.4	7.08	270	944
	2/14/2017	2.5	139	5.95	1.78	7.52	247	770
	4/25/2017	2.5	164	5.8	0.934	7.12	291	1100
	6/20/2017	1.39	174	5.69	<0.5	7.06	218	870
	7/13/2017	1.68	144	<5	0.68	7.58	159	792
	11/8/2017	2.65	167	5.77	0.735	7.16	344	846
	3/13/2018	2.6	132	5.74	<0.5	6.93 / 7.48 **	276	754
	6/6/2018	2.45	149.0	<5	0.732	5.80	221	708
	10/4/2018	1.28	148	8.56	0.777	7.27	158	678
	4/10/2019	2.59	164	5.34	<0.5	7.03	184	756
	10/18/2019	1.31	157	5.13	0.605	7.06	206	780

Notes:

^[1] MW-13 submerged under water during April and October 2019 sampling events, therefore N/A designates well was not sampled.

* Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

** The first pH value obtained in the field during the ASD sampling event on March 13, 2018 and was found to be an outlier due to equipment errors. The second pH value was a verification sample obtained in the field on March 19, 2018.

Table 5 - Appendix IV Constituents in Groundwater
 Omaha Public Power District - NC1 Ash Disposal Area
 January 2020

		Appendix IV Constituents														
Constituent	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium	
Reporting Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L	
NC2-MW-4	3/9/2016	<0.001	<0.002	0.281	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.00199	<0.05	<0.0002	0.00272	1.54	<0.005	<0.001
	6/7/2016	<0.001	<0.002	0.293	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000951	<0.05	<0.0002	0.00283	1.21	<0.005	<0.001
	10/3/2016	<0.001	<0.002	0.283	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.00421	1.19	<0.005	<0.001
	11/18/2016	<0.001	<0.002	0.283	<0.001	<0.0005	<0.005	<0.0005	1.1	0.00127	<0.05	<0.0002	0.00288	0.984	<0.005	<0.001
	2/14/2017	<0.001	<0.002	0.300	<0.001	<0.0005	<0.005	0.00129	<0.5	0.0032	<0.05	<0.0002	0.0028	0.894	<0.005	<0.001
	4/25/2017	<0.001	<0.002	0.300	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000714	<0.05	<0.0002	0.00323	1.23	<0.005	<0.001
	6/20/2017	<0.001	<0.002	0.258	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000754	<0.05	<0.0002	0.00551	1.16	0.00593	<0.001
	7/13/2017	<0.001	<0.002	0.236	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000787	<0.05	<0.0002	0.00326	0.76	<0.005	<0.001
	3/13/2018	<0.001	<0.002	0.297	<0.001	<0.0005	<0.005	<0.0005	0.53	0.00192	0.0318	<0.0002	<0.002	1.71	0.0112	<0.001
	6/6/2018	<0.001	<0.002	0.329	<0.001	<0.0005	<0.005	0.000502	<0.5	0.00154	0.0292	<0.0002	0.0049	1.9	0.008	<0.001
	10/4/2018	N.S. ^[1]	<0.002	0.321	N.S. ^[1]	N.S. ^[1]	N.S. ^[1]	<0.0005	<0.5	0.000565	0.0332	N.S. ^[1]	0.00707	1.13	<0.005	N.S. ^[1]
	4/8/2019	<0.001	<0.002	0.351	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	0.0351	<0.0002	0.00283	0.980	<0.005	<0.001
10/15/2019	<0.001	<0.002	0.390	<0.001	0.000138	<0.005	<0.0005	<0.5	<0.0005	0.0343	<0.0002	0.00412	1.22	<0.005	<0.001	
MW-11	3/9/2016	<0.001	<0.002	0.215	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.00361	0.714	<0.005	<0.001
	6/7/2016	<0.001	<0.002	0.212	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.00477	0.589	<0.005	<0.001
	10/3/2016	<0.001	<0.002	0.233	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0082	1.1	<0.005	<0.001
	11/18/2016	<0.001	<0.002	0.251	<0.001	<0.0005	<0.005	<0.0005	0.95	<0.0005	<0.05	<0.0002	0.00659	1.13	<0.005	<0.001
	2/14/2017	<0.001	<0.002	0.246	<0.001	<0.0005	<0.005	<0.0005	2.09	<0.0005	<0.05	<0.0002	0.00471	0.225	<0.005	<0.001
	4/25/2017	<0.001	<0.002	0.249	<0.001	<0.0005	<0.005	<0.0005	1.44	<0.0005	<0.05	<0.0002	0.005	0.358	<0.005	<0.001
	6/20/2017	0.00235	<0.002	0.156	<0.001	<0.0005	<0.005	0.000549	0.562	<0.0005	<0.05	<0.0002	0.00788	0.398	<0.005	<0.001
	7/13/2017	<0.001	<0.002	0.146	<0.001	<0.0005	<0.005	0.00085	0.538	<0.0005	<0.05	0.000262	0.00905	0.397	<0.005	<0.001
	3/13/2018	<0.001	0.00272	0.154	<0.001	<0.0005	<0.005	0.00104	<0.5	<0.0005	0.0143	<0.0002	0.00269	0.414	0.00503	<0.001
	6/6/2018	<0.001	<0.002	0.172	<0.001	<0.0005	<0.005	0.000779	<0.5	0.00118	0.0123	<0.0002	0.00996	0.494	0.0071	<0.001
	10/4/2018	N.S. ^[1]	<0.002	0.185	N.S. ^[1]	N.S. ^[1]	N.S. ^[1]	<0.0005	0.568	<0.0005	0.0197	N.S. ^[1]	0.00883	0.958	<0.005	N.S. ^[1]
	4/8/2019	<0.001	<0.002	0.162	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000519	0.0162	<0.0002	0.00609	0.228	<0.005	<0.001
10/16/2019	<0.001	0.00497	0.255	<0.001	<0.0001	<0.005	0.00305	0.558	<0.0005	0.0201	<0.0002	0.0120	0.684	<0.00500	<0.001	
MW-13	3/9/2016	<0.001	0.00492	0.302	<0.001	<0.0005	<0.0005	0.000817	<0.5	<0.0005	<0.05	<0.0002	<0.002	1.14	<0.005	<0.001
	6/7/2016	<0.001	0.00591	0.317	<0.001	<0.0005	<0.0005	0.00118	<0.5	0.000623	<0.05	<0.0002	<0.002	0.69	<0.005	<0.001
	10/3/2016	<0.001	0.00709	0.319	<0.001	<0.0005	<0.0005	0.00103	<0.5	<0.0005	<0.05	<0.0002	0.00264	1.01	<0.005	<0.001
	11/18/2016	<0.001	0.0058	0.333	<0.001	<0.0005	<0.0005	0.000916	0.647	<0.0005	<0.05	<0.0002	0.00235	0.745	<0.005	<0.001
	2/14/2017	<0.001	0.00304	0.349	<0.001	<0.0005	<0.0005	0.000925	3.64	<0.0005	<0.05	<0.0002	0.00228	0.532	<0.005	<0.001
	4/25/2017	<0.001	0.00269	0.358	<0.001	<0.0005	<0.0005	0.00141	0.80	0.000522	<0.05	<0.0002	<0.002	0.429	<0.005	<0.001
	6/20/2017	<0.001	0.00268	0.311	<0.001	<0.0005	<0.0005	0.00119	0.51	0.00171	<0.05	<0.0002	<0.002	0.483	<0.005	<0.001
	7/13/2017	<0.001	0.00325	0.33	<0.001	<0.0005	<0.0005	0.00108	<0.5	<0.0005	<0.05	<0.0002	0.00206	0.502	<0.005	<0.001
	3/13/2018	<0.001	0.00283	0.305	<0.001	<0.0005	<0.0005	0.00222	<0.5	0.00102	0.0265	<0.0002	<0.002	0.412	<0.005	<0.001
	6/6/2018	<0.001	0.00262	0.282	<0.001	<0.0005	<0.0005	0.00236	<0.5	0.00577	0.0423	<0.0002	<0.002	1.89	0.00553	<0.001
	10/4/2018	N.S. ^[1]	0.00965	0.388	N.S. ^[1]	N.S. ^[1]	N.S. ^[1]	0.00191	0.738	0.00216	0.0316	N.S. ^[1]	0.00243	1.62	<0.005	N.S. ^[1]
	4/8/2019 ^[2]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/15/2019 ^[2]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 5 - Appendix IV Constituents in Groundwater
 Omaha Public Power District - NC1 Ash Disposal Area
 January 2020

		Appendix IV Constituents														
Constituent	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium	
Reporting Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L	
MW-14	10/4/2018	<0.001	0.0330	0.306	<0.001	<0.0005	<0.005	0.00290	0.751	<0.0005	0.0480	<0.0002	0.00293	1.48	<0.005	<0.001
	1/15/2019	<0.001	0.0301	0.309	<0.001	<0.0005	<0.005	0.00424	<0.5	<0.0005	0.0507	<0.0002	<0.002	1.20	<0.005	<0.001
	3/5/2019	<0.001	0.0253	0.301	<0.001	<0.0005	<0.005	0.00477	<0.5	<0.0005	0.0569	<0.0002	0.00227	1.75	<0.005	<0.001
	4/8/2019	<0.001	0.0368	0.309	<0.001	<0.0005	<0.005	0.00391	<0.5	<0.0005	0.0557	<0.0002	<0.002	1.03	<0.005	<0.001
	10/16/2019	<0.001	0.0893	0.359	<0.001	<0.0001	<0.005	0.00265	<0.5	<0.0005	0.0528	<0.0002	<0.002	1.81	<0.005	<0.001
NC1-MW-2	3/9/2016	<0.001	<0.002	0.123	<0.001	<0.0005	<0.0005	<0.0005	0.664	<0.0005	<0.05	<0.0002	0.0444	0.495	<0.005	<0.001
	6/7/2016	<0.001	<0.002	0.0956	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0718	0.305	<0.005	<0.001
	10/3/2016	<0.001	<0.002	0.104	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.12	0.586	<0.005	<0.001
	11/18/2016	<0.001	<0.002	0.126	<0.001	<0.0005	<0.0005	<0.0005	1.82	<0.0005	<0.05	<0.0002	0.095	0.415	<0.005	<0.001
	2/14/2017	<0.001	<0.002	0.123	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0654	0.254	<0.005	<0.001
	4/25/2017	<0.001	<0.002	0.0889	<0.001	<0.0005	<0.0005	<0.0005	1.4	<0.0005	<0.05	<0.0002	0.0489	0.396	<0.005	<0.001
	6/20/2017	<0.001	<0.002	0.116	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.038	0.174	<0.005	<0.001
	7/13/2017	<0.001	<0.002	0.122	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0374	0.375	<0.005	<0.001
	3/13/2018	<0.001	<0.002	0.125	<0.001	<0.0005	<0.0005	<0.0005	0.57	<0.0005	<0.01	<0.0002	0.0446	0.656	<0.005	<0.001
	6/6/2018	<0.001	<0.002	0.122	<0.001	<0.0005	<0.0005	0.00143	<0.5	0.000713	<0.01	<0.0002	0.0711	0.615	<0.005	<0.001
	10/4/2018	N.S. ^[1]	<0.002	0.153	N.S. ^[1]	N.S. ^[1]	N.S. ^[1]	<0.0005	<0.5	0.000795	<0.01	N.S. ^[1]	0.0680	1.01	<0.005	N.S. ^[1]
4/8/2019	<0.001	<0.002	0.126	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.01	<0.0002	0.0803	0.494	<0.005	<0.001	
10/18/2019	<0.001	<0.002	0.179	<0.001	0.000230	<0.005	0.000548	<0.5	<0.0005	0.0117	<0.0002	0.0872	0.334	<0.005	<0.001	
NC1-MW-3	3/9/2016	<0.001	0.0135	0.112	<0.001	<0.0005	<0.0005	0.00239	0.508	<0.0005	<0.05	<0.0002	<0.002	0.0759	<0.005	<0.001
	6/7/2016	<0.001	0.00901	0.111	<0.001	<0.0005	<0.0005	0.00364	<0.5	<0.0005	<0.05	<0.0002	<0.002	0.81	<0.005	<0.001
	10/3/2016	<0.001	0.00761	0.0887	<0.001	<0.0005	<0.0005	0.00267	<0.5	<0.0005	<0.05	<0.0002	<0.002	0.15	<0.005	<0.001
	11/18/2016	<0.001	0.031	0.101	<0.001	<0.0005	<0.0005	0.00334	3.91	<0.0005	<0.05	<0.0002	<0.002	0.736	<0.005	<0.001
	2/14/2017	<0.001	0.0248	0.092	<0.001	<0.0005	<0.0005	0.00268	2.97	0.000553	<0.05	<0.0002	<0.002	0.436	<0.005	<0.001
	4/25/2017	<0.001	0.0131	0.106	<0.001	<0.0005	<0.0005	0.00144	0.974	<0.0005	<0.05	<0.0002	<0.002	0.242	<0.005	<0.001
	6/20/2017	<0.001	0.0195	0.115	<0.001	<0.0005	<0.0005	0.00196	0.591	<0.0005	<0.05	<0.0002	<0.002	0.711	<0.005	<0.001
	7/13/2017	<0.001	0.0302	0.116	<0.001	<0.0005	<0.0005	0.00257	0.603	<0.0005	<0.05	<0.0002	<0.002	0.339	<0.005	<0.001
	3/13/2018	<0.001	0.0111	0.0786	<0.001	<0.0005	<0.0005	0.00192	<0.5	<0.0005	0.0262	<0.0002	<0.002	0.728	<0.005	<0.001
	6/6/2018	<0.001	0.0412	0.128	<0.001	<0.0005	<0.0005	0.00219	<0.5	0.00296	0.0325	<0.0002	0.0021	0.922	<0.005	<0.001
	10/4/2018	N.S. ^[1]	0.0352	0.141	N.S. ^[1]	N.S. ^[1]	N.S. ^[1]	0.00120	0.541	0.000833	0.0326	N.S. ^[1]	<0.002	1.12	<0.005	N.S. ^[1]
4/9/2019	<0.001	0.0143	0.0938	<0.001	<0.0005	<0.005	0.00250	<0.5	<0.0005	0.0271	<0.0002	<0.002	0.348	<0.005	<0.001	
10/18/2019	<0.001	0.0333	0.135	<0.001	<0.0001	<0.005	0.00182	0.527	<0.0005	0.0316	<0.0002	<0.002	0.146	<0.005	<0.001	
NC1-MW-4	3/9/2016	<0.001	0.00336	0.195	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0053	0.753	<0.005	<0.001
	6/7/2016	<0.001	0.0029	0.100	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.017	0.37	<0.005	<0.001
	10/3/2016	<0.001	0.0032	0.090	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0297	0.343	<0.005	<0.001
	11/18/2016	<0.001	0.00254	0.115	<0.001	<0.0005	<0.0005	<0.0005	0.876	<0.0005	<0.05	<0.0002	0.0199	0.182	<0.005	<0.001
	2/14/2017	<0.001	0.00433	0.119	<0.001	<0.0005	<0.0005	<0.0005	<0.5	0.00052	<0.05	<0.0002	0.0139	0.301	<0.005	<0.001
	4/25/2017	<0.001	0.00344	0.0968	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0249	0.313	<0.005	<0.001
	6/20/2017	<0.001	0.00334	0.0679	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0356	0.0408	<0.005	<0.001
	7/13/2017	<0.001	0.00381	0.0687	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0317	0.0901	<0.005	<0.001
	3/13/2018	<0.001	0.00265	0.0781	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	0.0114	<0.0002	0.0207	0.286	<0.005	<0.001
	6/6/2018	<0.001	0.00821	0.129	<0.001	<0.0005	<0.0005	0.000636	<0.5	<0.0005	0.01	<0.0002	0.0422	0.577	<0.005	<0.001
	10/4/2018	N.S. ^[1]	0.00641	0.0975	N.S. ^[1]	N.S. ^[1]	N.S. ^[1]	<0.0005	0.569	<0.0005	0.0135	N.S. ^[1]	0.0233	0.802	<0.005	N.S. ^[1]
4/9/2019	<0.001	0.00223	0.0652	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	0.011	<0.0002	0.0269	0.0157	<0.005	<0.001	
10/18/2019	<0.001	0.00347	0.119	<0.001	<0.0001	<0.005	0.000642	0.501	<0.0005	0.0137	<0.0002	0.0183	-0.000469U	<0.005	<0.001	

Table 5 - Appendix IV Constituents in Groundwater
 Omaha Public Power District - NC1 Ash Disposal Area
 January 2020

		Appendix IV Constituents														
Constituent	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium	
Reporting Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L	
NC1-MW-9	3/9/2016	<0.001	0.00995	0.0865	<0.001	<0.0005	<0.0005	0.00121	0.547	<0.0005	<0.05	<0.0002	0.0111	0.629	0.0634	<0.001
	6/7/2016	<0.001	0.00624	0.0816	<0.001	<0.0005	<0.0005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0204	0.577	0.00958	<0.001
	10/3/2016	<0.001	0.00605	0.0847	<0.001	<0.0005	<0.0005	0.000683	0.578	<0.0005	<0.05	<0.0002	0.0435	0.23	0.0388	<0.001
	11/18/2016	<0.001	0.00828	0.106	<0.001	<0.0005	<0.0005	0.000648	3.4	<0.0005	<0.05	<0.0002	0.0222	1.13	0.0162	<0.001
	2/14/2017	<0.001	0.0122	0.0836	<0.001	<0.0005	<0.0005	0.00147	1.78	<0.0005	<0.05	<0.0002	0.0169	0.425	0.0138	<0.001
	4/25/2017	<0.001	0.0164	0.115	<0.001	<0.0005	<0.0005	0.00124	0.934	<0.0005	<0.05	<0.0002	0.0473	0.592	0.0101	<0.001
	6/20/2017	<0.001	0.01	0.114	<0.001	<0.0005	<0.0005	0.00295	<0.5	<0.0005	<0.05	<0.0002	0.0486	0.473	<0.005	<0.001
	7/13/2017	<0.001	0.00885	0.0952	<0.001	<0.0005	<0.0005	0.000878	0.68	<0.0005	<0.05	<0.0002	0.0302	0.294	<0.005	<0.001
	3/13/2018	<0.001	0.0107	0.0838	<0.001	<0.0005	<0.0005	0.00063	<0.5	<0.0005	0.0198	<0.0002	0.0354	0.412	<0.005	<0.001
	6/6/2018	<0.001	0.0114	0.111	<0.001	<0.0005	<0.0005	0.00109	0.732	<0.0005	0.0189	<0.0002	0.0474	0.827	<0.005	<0.001
	10/4/2018	N.S. ^[1]	0.0101	0.109	N.S. ^[1]	N.S. ^[1]	N.S. ^[1]	0.00492	0.777	<0.0005	0.0201	N.S. ^[1]	0.0399	1.39	<0.005	N.S. ^[1]
	4/10/2019	<0.001	0.00681	0.153	<0.001	<0.0005	<0.0005	0.00559	<0.5	<0.0005	0.0254	<0.0002	0.0196	0.415	0.0120	<0.001
10/18/2019	<0.001	0.00784	0.165	<0.001	0.000100	<0.0005	0.00323	0.605	<0.0005	0.0310	<0.0002	0.0230	0.695	<0.005	<0.001	

Notes:

* Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

< symbol indicates analyte not detected above the reporting limit, which is the value shown following the "<" symbol.

"U" data qualifier (radium) indicates parameter was analyzed for but not detected above limiting criteria (such as, but not limited to: minimum detectable concentration; total uncertainty; reporting limit) as defined in the analytical laboratory data package.

N.S. = Not Sampled

^[1] = Constituent not sampled because only detected Appendix IV constituents were tested, in accordance with 40 CFR 257.95(d)(1)

^[2] MW-13 submerged under water during April and October 2019 sampling events, therefore N/A designates well not sampled.

Table 6 - Background Threshold Values for Assessment Monitoring
 Omaha Public Power District - NC1 Ash Disposal Area
 January 2020

Constituents	Units	Background Threshold Values (UTLs)
Appendix III		
Boron	mg/l	1.38
Calcium	mg/l	145
Chloride	mg/l	20.7
Fluoride ^[1]	mg/l	3.51
pH (LPL) ^[2]	SU	6.57
pH (UPL) ^[3]	SU	7.83
Sulfate	mg/l	148
TDS	mg/l	680
Appendix IV		
Antimony	mg/l	0.00235
Arsenic	mg/l	0.033
Barium	mg/l	0.372
Beryllium	mg/l	0.001
Cadmium	mg/l	0.0005
Chromium	mg/l	0.005
Cobalt	mg/l	0.00477
Lead	mg/l	0.006
Lithium	mg/l	0.0569
Mercury	mg/l	0.000262
Molybdenum	mg/l	0.00996
Radium 226 + 228	pCi/l	2.16
Selenium	mg/l	0.0139
Thallium	mg/l	0.001

Notes:

^[1] Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

^[2] Indicates the lower bound of the range is the lower prediction limit (LPL).

^[3] Indicates the upper bound is the upper prediction limit (UPL).

Table 7 - Established Groundwater Protection Standards

Omaha Public Power District - NC1 Ash Disposal Area

January 2020

Constituents	Units	Established Groundwater Protection Standard (GWPS) ^[1]
Appendix IV		
Antimony	mg/l	0.006
Arsenic	mg/l	0.033 ^[2]
Barium	mg/l	2.0
Beryllium	mg/l	0.004
Cadmium	mg/l	0.005
Chromium	mg/l	0.1
Cobalt	mg/l	0.006
Flouride	mg/l	4.0
Lead	mg/l	0.015
Lithium	mg/l	0.0569 ^[2]
Mercury	mg/l	0.002
Molybdenum	mg/l	0.1
Radium 226 + 228 ^[2]	pCi/l	5.0
Selenium	mg/l	0.05
Thallium	mg/l	0.002

Notes:

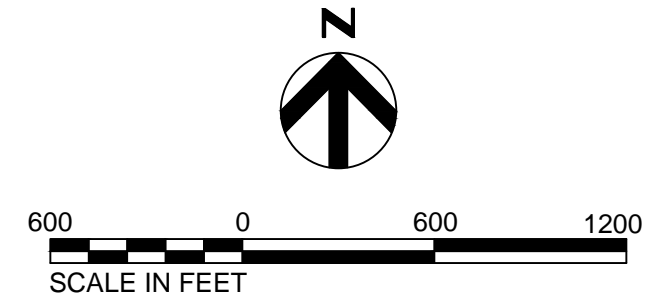
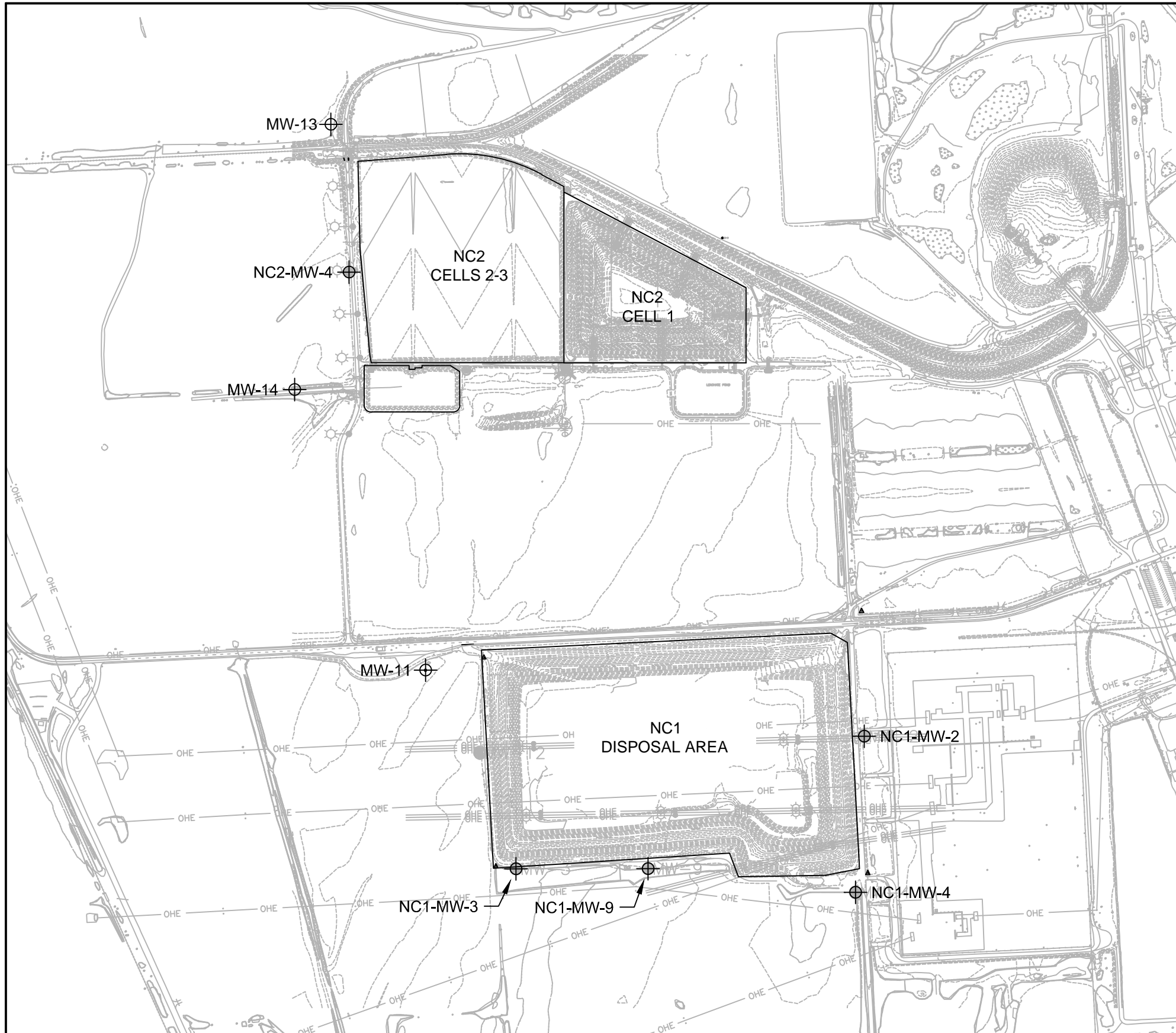
[1] GWPS is established as the U.S. EPA Maximum Contaminant Level (MCL) or the GWPS specified in §257.95(h)(2); unless otherwise specified.

[2] GWPS is established as the upper prediction limit (UPL) when the background level is higher than the U.S. EPA MCL or the GWPS specified in §257.95(h)(2).

A decorative graphic consisting of several overlapping colored rectangles. A large teal rectangle is on the left. A dark grey rectangle is at the top right. A light grey rectangle is at the bottom left. A black rectangle is at the bottom right. The word "Figures" is written in black text on the white background to the right of the teal rectangle.

Figures

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MONITORING WELL NETWORK					
WELL ID	NORTHING	EASTING	ELEVATION	WELL DEPTH	LOCATION WITH RESPECT TO TEMPORARY ASH DISPOSAL AREA
MW-11	315305.1442	2808934.3111	918.4400	20.0000	BACKGROUND / UPGRADIENT
MW-13	318186.6391	2808434.6816	918.0500	13.0000	BACKGROUND / UPGRADIENT
MW-14	316786.4705	2808244.0290	920.9900	18.0000	BACKGROUND / UPGRADIENT
NC1-MW-2	314956.7160	2811249.0294	919.4200	17.8000	DOWNGRADIENT
NC1-MW-3	314256.4530	2809411.6769	919.8500	19.5000	DOWNGRADIENT / CROSS GRADIENT
NC1-MW-4	314132.4875	2811203.5495	919.6300	20.3000	DOWNGRADIENT
NC1-MW-9	314257.3846	208108.9290	920.0900	20.0000	DOWNGRADIENT
NC2-MW-4	317405.8952	2808530.8049	919.6200	14.0000	BACKGROUND / UPGRADIENT

NOTES:

1. TOP OF CASING ELEVATION DETERMINED BY SURVEY DATA OBTAINED JUNE 2019.
2. BGS = BELOW GROUND SURFACE



**OPPD NEBRASKA CITY ASH LANDFILL
NEBRASKA CITY UNIT 1 - NC1
MONITORING WELL LOCATION MAP**

2019 GROUNDWATER MONITORING

DATE
JANUARY 2020

FIGURE
01



Appendix A

Field Sampling Forms

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NEBRASKA CITY STATION

Water Levels Prior to Purging

NC1MW2	Date of Sampling	4/8/2019	Time of Sampling	8:53	Static Water Level	4.17
NC1MW3	Date of Sampling	4/8/2019	Time of Sampling	9:22	Static Water Level	4.69
NC1MW3D	Date of Sampling	4/8/2019	Time of Sampling	9:24	Static Water Level	6.36
NC1MW4	Date of Sampling	4/8/2019	Time of Sampling	9:09	Static Water Level	4.58
NC1MW4D	Date of Sampling	4/8/2019	Time of Sampling	9:11	Static Water Level	3.32
NC1MW5	Date of Sampling		Time of Sampling		Static Water Level	
NC1MW6	Date of Sampling		Time of Sampling		Static Water Level	
NC1MW6D	Date of Sampling		Time of Sampling		Static Water Level	
NC1MW7	Date of Sampling	4/8/2019	Time of Sampling	8:38	Static Water Level	3.68
NC1MW8	Date of Sampling	4/8/2019	Time of Sampling	8:39	Static Water Level	3.98
NC1MW9	Date of Sampling	4/8/2019	Time of Sampling	9:18	Static Water Level	4.85
NC1MW9D	Date of Sampling	4/8/2019	Time of Sampling	9:16	Static Water Level	6.24
NC1MW11	Date of Sampling	4/8/2019	Time of Sampling	9:00	Static Water Level	3.04
NC1MW12	Date of Sampling	4/8/2019	Time of Sampling	9:04	Static Water Level	4.89
NC1MW14	Date of Sampling	4/8/2019	Time of Sampling	7:52	Static Water Level	5.73
NC1MW16	Date of Sampling		Time of Sampling		Static Water Level	
NC1MW17	Date of Sampling		Time of Sampling		Static Water Level	
NC2MW4	Date of Sampling	4/8/2019	Time of Sampling	7:47	Static Water Level	3.53
NC2MW13	Date of Sampling		Time of Sampling		Static Water Level	
NC2MW2	Date of Sampling	4/8/2019	Time of Sampling	8:27	Static Water Level	6.70
NC2MW3	Date of Sampling		Time of Sampling		Static Water Level	
NC2MW4	Date of Sampling	4/8/2019	Time of Sampling	7:47	Static Water Level	3.53
NC2MW5	Date of Sampling	4/8/2019	Time of Sampling	8:09	Static Water Level	4.56
NC2MW6	Date of Sampling	4/8/2019	Time of Sampling	8:12	Static Water Level	4.18
NC2MW7	Date of Sampling	4/8/2019	Time of Sampling	8:34	Static Water Level	2.74
NC2MW8	Date of Sampling		Time of Sampling		Static Water Level	
NC2MW13	Date of Sampling		Time of Sampling		Static Water Level	

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle Uhing (79776), Bryan Lorence
Monitoring Well Identification - Sample Number: MW4 - 5	Date: 4/9/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Cloudy, Partly Sunny, 66°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	9:09	Pump Start Time	12:45
Static Water Level (+/- 0.01 feet)*	4.58	Purge Rate (mL/minute)	350
Bottom of Well Casing (+/- 0.01 feet)*	17.70	Time to Purge Well (hours:minutes)	0:32
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	8.10		
Actual Volume of Water Purged (mL)	11,200		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
12:56	3,850	12.76	1.96	36.0	7.63	0.873	4.68
12:59	4,900	12.68	1.58	18.8	7.61	0.870	4.69
13:02	5,950	12.75	1.33	12.8	7.65	0.867	4.72
13:05	7,000	12.92	1.16	10.8	7.66	0.870	4.75
13:08	8,050	13.05	0.99	10.5	7.65	0.874	4.77
13:11	9,100	13.04	0.89	8.8	7.64	0.871	4.78
13:14	10,150	13.27	0.81	7.9	7.65	0.870	4.79
13:17	11,200	13.17	0.80	6.9	7.65	0.872	4.81

Well Evacuated to Dryness? No Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
13:17	11,200	13.17	0.80	6.9	7.65	0.872	4.81
Duplicate?	Yes, DUP1	Preservation?	Cool on Ice, HNO ₃ for Metals		Pump Rate (mL/minute)		200

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	4/9/2019, 7:54

Notes / Unusual Occurrences: Initial purge water had unusual brown sediments. Purged until clear before recording parameter data.

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Bryan Lorence
Monitoring Well Identification - Sample Number: MW4 - 1	Date: 4/8/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Clear, Sunny, 66°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	7:47	Pump Start Time	10:03
Static Water Level (+/- 0.01 feet)*	3.53	Purge Rate (mL/minute)	200
Bottom of Well Casing (+/- 0.01 feet)*	14.50	Time to Purge Well (hours:minutes)	0:42
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	6.77		
Actual Volume of Water Purged (mL)	8,400		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:08	1,000	11.51	12.01	152	6.55	0.932	4.92
10:11	1,600	11.33	11.08	88.4	6.52	0.932	5.47
10:15	2,400	11.26	10.20	57.8	6.52	0.933	6.02
10:18	3,000	11.12	10.05	58.5	6.52	0.933	6.14
10:21	3,600	11.03	1.95	62.1	6.53	0.931	6.19
10:24	4,200	11.15	1.89	56.8	6.57	0.932	6.26
10:27	4,800	11.09	6.89	53.6	6.58	0.931	6.32
10:30	5,400	11.16	7.00	45.6	6.59	0.930	6.38
10:33	6,000	11.19	6.84	39.1	6.63	0.932	6.44
10:36	6,600	11.13	8.52	34.3	6.65	0.929	6.57
10:39	7,200	11.09	8.51	30.4	6.66	0.929	6.64
10:42	7,800	11.07	8.24	27.0	6.68	0.930	6.69
10:45	8,400	11.03	8.04	24.1	6.71	0.930	6.72

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:45	8,400	11.03	8.04	24.1	6.71	0.930	6.72
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals		Pump Rate (mL/minute)		200

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	4/8/2019, 5:46

Notes / Unusual Occurrences: None

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle Uhing (79776)
Monitoring Well Identification - Sample Number: MW9 - 9	Date: 4/10/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Partly Cloudy, Sunny, 58°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	9:18	Pump Start Time	9:54
Static Water Level (+/- 0.01 feet)*	4.85	Purge Rate (mL/minute)	250
Bottom of Well Casing (+/- 0.01 feet)*	22.40	Time to Purge Well (hours:minutes)	0:20
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	10.84		
Actual Volume of Water Purged (mL)	5,000		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
9:59	1,250	12.05	1.95	<1,000	7.06	1.14	4.92
10:02	2,000	11.84	1.46	490	7.03	1.14	4.95
10:05	2,750	11.89	1.31	110	7.03	1.14	4.98
10:08	3,500	11.78	1.07	59.4	7.03	1.14	5.00
10:11	4,250	11.80	1.13	31.7	7.03	1.14	5.03
10:14	5,000	11.75	1.16	21.6	7.03	1.16	5.03

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:14	5,000	11.75	1.16	21.6	7.03	1.16	5.03
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals		Pump Rate (mL/minute)		250

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	4/10/2019, 8:05

Notes / Unusual Occurrences: None

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle Uhing (79776), Bryan Lorence
Monitoring Well Identification - Sample Number: MW11 - 3	Date: 4/8/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Clear, Sunny, 74°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	9:00	Pump Start Time	17:44
Static Water Level (+/- 0.01 feet)*	3.04	Purge Rate (mL/minute)	250
Bottom of Well Casing (+/- 0.01 feet)*	21.85	Time to Purge Well (hours:minutes)	0:26
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	11.61		
Actual Volume of Water Purged (mL)	6,500		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
17:49	1,250	13.83	1.74	14.7	7.27	0.724	3.20
17:52	2,000	13.42	1.15	11.9	7.28	0.722	3.22
17:55	2,750	13.33	0.94	13.4	7.33	0.725	3.27
17:58	3,500	13.49	0.79	14.9	7.33	0.721	3.27
18:01	4,250	13.74	0.68	15.4	7.36	0.719	3.27
18:04	5,000	13.89	0.63	15.7	7.38	0.720	3.27
18:07	5,750	13.92	0.56	15.2	7.40	0.723	3.28
18:10	6,500	14.00	0.55	16.7	7.41	0.723	3.27

Well Evacuated to Dryness? No Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
18:10	6,500	14.00	0.55	16.7	7.41	0.723	3.27
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals		Pump Rate (mL/minute)		250

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	4/8/2019, 5:46

Notes / Unusual Occurrences: None

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle Uhing (79776), Bryan Lorence
Monitoring Well Identification - Sample Number: MW14 - 2	Date: 4/8/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Clear, Sunny, 68°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	7:52	Pump Start Time	11:26
Static Water Level (+/- 0.01 feet)*	5.73	Purge Rate (mL/minute)	250
Bottom of Well Casing (+/- 0.01 feet)*	Not Measured	Time to Purge Well (hours:minutes)	0:32
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	Not Measured		
Actual Volume of Water Purged (mL)	8,000		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
11:31	1,250	13.20	6.70	125	6.73	1.28	8.44
11:34	2,000	12.80	7.98	71.5	6.78	1.27	9.88
11:37	2,750	12.82	8.06	66.9	6.79	1.28	10.74
11:40	3,500	12.64	4.06	53.6	6.78	1.28	11.06
11:43	4,250	12.58	8.23	51.6	6.81	1.27	11.14
11:46	5,000	12.77	7.99	43.9	6.79	1.27	11.20
11:49	5,750	12.71	7.84	39.4	6.80	1.27	11.23
11:52	6,500	12.68	7.24	32.8	6.83	1.27	11.28
11:55	7,250	12.70	7.16	29.6	6.81	1.26	11.30
11:58	8,000	12.67	7.04	25.0	6.81	1.26	11.31

Well Evacuated to Dryness? No Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
11:58	8,000	12.67	7.04	25.0	6.81	1.26	11.31
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals	Pump Rate (mL/minute)			250

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	4/8/2019, 5:46

Notes / Unusual Occurrences: None

Equipment Calibration Sheet

Date: 4/8/2019

Time: 5:46

Person Calibrating Instrument: Kyle K. Uhing

Instrument Type	Instrument Brand	Instrument Model	Instrument Serial Number
Multiparameter Water Meter	Horiba	U-5000/U-52	KE3AGWPR/NTKDC76Y

Parameter:	Reading	Units
pH 4	4.00	SU
Conductivity	4.49	$\mu\text{S}/\text{cm}$
Turbidity	0.0	NTU
DO	10.44	mg/L

Comments:

The Horiba was calibrated using pH 4.0 AutoCal buffer solution.

SU = Standard Units

Equipment Calibration Sheet

Date: 4/9/2019

Time: 7:54

Person Calibrating Instrument: Kyle K. Uhing

Instrument Type	Instrument Brand	Instrument Model	Instrument Serial Number
Multiparameter Water Meter	Horiba	U-5000/U-52	KE3AGWPR/NTKDC76Y

Parameter:	Reading	Units
pH 4	3.99	SU
Conductivity	4.48	$\mu\text{S/cm}$
Turbidity	0.1	NTU
DO	10.11	mg/L

Comments:

The Horiba was calibrated using pH 4.0 AutoCal buffer solution.

SU = Standard Units

Equipment Calibration Sheet

Date: 4/10/2019

Time: 8:05

Person Calibrating Instrument: Kyle K. Uhing

Instrument Type	Instrument Brand	Instrument Model	Instrument Serial Number
Multiparameter Water Meter	Horiba	U-5000/U-52	KE3AGWPR/NTKDC76Y

Parameter:	Reading	Units
pH 4	4.00	SU
Conductivity	4.52	$\mu\text{S}/\text{cm}$
Turbidity	0.0	NTU
DO	10.02	mg/L

Comments:

The Horiba was calibrated using pH 4.0 AutoCal buffer solution.

SU = Standard Units

NEBRASKA CITY STATION

Water Levels Prior to Purging (Feet Below TOC)

NC1MW2	Date of Sampling	10/14/2019	Time of Sampling	14:52	Static Water Level	3.64
NC1MW3	Date of Sampling	10/14/2019	Time of Sampling	16:19	Static Water Level	4.56
NC1MW4	Date of Sampling	10/14/2019	Time of Sampling	16:10	Static Water Level	4.33
NC1MW5	Date of Sampling	10/14/2019	Time of Sampling	NM	Static Water Level	NM
NC1MW6	Date of Sampling	10/14/2019	Time of Sampling	NM	Static Water Level	NM
NC1MW7	Date of Sampling	10/14/2019	Time of Sampling	14:58	Static Water Level	3.01
NC1MW8	Date of Sampling	10/14/2019	Time of Sampling	14:59	Static Water Level	3.33
NC1MW9	Date of Sampling	10/14/2019	Time of Sampling	16:24	Static Water Level	4.65
NC2MW2	Date of Sampling	10/14/2019	Time of Sampling	15:21	Static Water Level	6.34
NC2MW3	Date of Sampling	10/14/2019	Time of Sampling	15:18	Static Water Level	0.21*
NC2MW4	Date of Sampling	10/14/2019	Time of Sampling	14:28	Static Water Level	3.47
NC2MW5	Date of Sampling	10/14/2019	Time of Sampling	15:04	Static Water Level	4.48
NC2MW6	Date of Sampling	10/14/2019	Time of Sampling	15:10	Static Water Level	3.75
NC2MW7	Date of Sampling	10/14/2019	Time of Sampling	15:27	Static Water Level	2.27
NC2MW8	Date of Sampling	10/14/2019	Time of Sampling	15:48	Static Water Level	2.38
MW11	Date of Sampling	10/14/2019	Time of Sampling	14:41	Static Water Level	2.90
MW12	Date of Sampling	10/14/2019	Time of Sampling	14:45	Static Water Level	4.77
MW13	Date of Sampling	10/14/2019	Time of Sampling	NM	Static Water Level	NM
MW14	Date of Sampling	10/14/2019	Time of Sampling	14:33	Static Water Level	5.75

NOTES:

TOC = Top of Casing

NM = Not Measured, Inaccessible

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle K. Uhing (79776)
Monitoring Well Identification - Sample Number: MW2 - 4	Date: 10/18/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Partly Cloudy, Sunny, Windy, 57°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	9:46	Pump Start Time	9:49
Static Water Level (+/- 0.01 feet)*	3.77	Purge Rate (mL/minute)	300
Bottom of Well Casing (+/- 0.01 feet)*	16.40	Time to Purge Well (hours:minutes)	0:23
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	7.80		
Actual Volume of Water Purged (mL)	6,900		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
9:54	1,500	16.99	1.77	14.2	6.26	0.609	3.80
9:57	2,400	17.58	1.48	13.2	6.52	0.598	3.81
10:00	3,300	17.55	1.52	10.7	6.59	0.591	3.81
10:03	4,200	17.59	1.48	10.9	6.69	0.599	3.81
10:06	5,100	17.68	1.45	9.8	6.83	0.600	3.81
10:09	6,000	17.67	1.44	8.7	6.83	0.599	3.81
10:12	6,900	17.65	1.42	8.3	6.84	0.599	3.81

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:12	6,900	17.65	1.42	8.3	6.84	0.599	3.81
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals	Pump Rate (mL/minute)	300		

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/18/2019, 8:01

Notes / Unusual Occurrences: None

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle K. Uhing (79776)
Monitoring Well Identification - Sample Number: MW3 - 6	Date: 10/18/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Clear, Sunny, Breezy, 66°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	11:29	Pump Start Time	11:32
Static Water Level (+/- 0.01 feet)*	4.61	Purge Rate (mL/minute)	300
Bottom of Well Casing (+/- 0.01 feet)*	22.20	Time to Purge Well (hours:minutes)	0:20
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	10.86		
Actual Volume of Water Purged (mL)	6,000		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
11:37	1,500	15.80	1.83	51.6	7.22	1.32	4.61
11:40	2,400	15.42	9.12	51.0	7.22	1.31	4.61
11:43	3,300	15.38	8.37	29.2	7.18	1.31	4.61
11:46	4,200	15.34	8.22	22.3	7.09	1.31	4.61
11:49	5,100	15.34	8.27	14.1	7.11	1.31	4.61
11:52	6,000	15.32	8.11	10.9	7.08	1.30	4.61

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
11:52	6,000	15.32	8.11	10.9	7.08	1.30	4.61
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals	Pump Rate (mL/minute)		300	

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/18/2019, 8:01

Notes / Unusual Occurrences: None

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle K. Uhing (79776)
Monitoring Well Identification - Sample Number: MW4 - 5	Date: 10/18/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Partly Cloudy, Sunny, Breezy, 60°F

Groundwater Measurements and Purge Data			
Time of Water Level Measurement	10:42	Pump Start Time	10:45
Static Water Level (+/- 0.01 feet)*	4.41	Purge Rate (mL/minute)	300
Bottom of Well Casing (+/- 0.01 feet)*	17.70	Time to Purge Well (hours:minutes)	0:20
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	8.21		
Actual Volume of Water Purged (mL)	6,000		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data							
Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:50	1,500	16.44	1.27	23.8	7.34	0.942	4.38
10:53	2,400	16.44	0.81	13.3	7.31	0.952	4.38
10:56	3,300	16.52	0.70	10.0	7.32	0.956	4.38
10:59	4,200	16.56	0.70	8.2	7.33	0.957	4.38
11:02	5,100	16.59	0.66	8.2	7.34	0.958	4.38
11:05	6,000	16.56	0.61	6.9	7.33	0.957	4.38

Well Evacuated to Dryness? No Recharge time? Not Measured

Groundwater Sample Information							
Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
11:05	6,000	16.56	0.61	6.9	7.33	0.957	4.38
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals		Pump Rate (mL/minute)		300

Sample Physical Characteristics	Equipment Information
Sample Clarity	Clear QED Pump Control Information CPM-2, 27/3, ~20 psi
Sample Color	Clear Decontamination Procedure Alconox and DI Water Rinse
Sample Odor	Odorless Instrument Calibration By Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No Date and Time of Calibration 10/4/2018, 6:01
Notes / Unusual Occurrences: None	

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle K. Uhing (79776)
Monitoring Well Identification - Sample Number: MW4 - 1	Date: 10/15/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Clear, Windy, 54°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	10:42	Pump Start Time	10:44
Static Water Level (+/- 0.01 feet)*	3.53	Purge Rate (mL/minute)	300-350
Bottom of Well Casing (+/- 0.01 feet)*	14.50	Time to Purge Well (hours:minutes)	0:32
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	6.77		
Actual Volume of Water Purged (mL)	10,450		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:49	1,750	15.52	1.58	12.3	6.07	0.882	4.17
10:52	2,800	15.61	1.32	5.8	6.17	0.879	5.56
10:55	3,850	15.78	1.60	5.6	6.22	0.876	6.32
10:58	4,900	15.91	1.95	6.9	6.26	0.874	6.82
11:01	5,950	15.92	1.97	8.9	6.34	0.873	7.05
11:04	6,850	15.89	1.94	10.5	6.41	0.873	7.05
11:07	7,750	15.87	1.87	10.5	6.48	0.873	7.04
11:10	8,650	15.85	1.62	10.1	6.51	0.873	7.04
11:13	9,550	15.85	1.63	10.4	6.55	0.873	7.02
11:16	10,450	15.84	1.60	10.2	6.57	0.873	7.00

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
11:16	10,450	15.84	1.60	10.2	6.57	0.873	7.00
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals	Pump Rate (mL/minute)			300

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/15/2019, 9:29
Notes / Unusual Occurrences: None			

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle K. Uhing (79776)
Monitoring Well Identification - Sample Number: MW9 - 7	Date: 10/18/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Clear, Sunny, Breezy, 68°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	12:17	Pump Start Time	12:19
Static Water Level (+/- 0.01 feet)*	4.74	Purge Rate (mL/minute)	350
Bottom of Well Casing (+/- 0.01 feet)*	22.40	Time to Purge Well (hours:minutes)	0:20
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	10.90		
Actual Volume of Water Purged (mL)	7,000		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
12:24	1,750	15.62	1.35	222	7.17	1.22	4.74
12:27	2,800	15.43	1.22	66.9	7.13	1.22	4.74
12:30	3,850	15.33	1.17	24.3	7.11	1.20	4.74
12:33	4,900	15.28	1.18	11.3	7.10	1.18	4.74
12:36	5,950	15.19	1.13	10.0	7.08	1.18	4.74
12:39	7,000	15.18	1.15	6.0	7.06	1.18	4.74

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
12:39	7,000	15.18	1.15	6.0	7.06	1.18	4.74
Duplicate?	Yes, DUP1	Preservation?	Cool on Ice, HNO ₃ for Metals		Pump Rate (mL/minute)		350

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/18/2019, 8:01

Notes / Unusual Occurrences: None

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle K. Uhing (79776)
Monitoring Well Identification - Sample Number: MW13	Date:
Wellhead Inspection (Condition): Compliant (See Notes)	Weather Conditions:

Groundwater Measurements and Purge Data

Time of Water Level Measurement	NM	Pump Start Time
Static Water Level (+/- 0.01 feet)*	NM	Purge Rate (mL/minute)
Bottom of Well Casing (+/- 0.01 feet)*	15.19	Time to Purge Well (hours:minutes)
Pump Intake Elevation (+/- 0.01 feet)*		Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator
2" Well Casing Volume (L)		
Actual Volume of Water Purged (mL)		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)

Well Evacuated to Dryness? _____ Recharge time? _____

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
Duplicate?		Preservation?	Cool on Ice, HNO ₃ for Metals	Pump Rate (mL/minute)			

Sample Physical Characteristics

Equipment Information

Sample Clarity	QED Pump Control Information
Sample Color	Decontamination Procedure
Sample Odor	Instrument Calibration By
Immiscible Layer Observed? If so, thickness?	Date and Time of Calibration

Notes / Unusual Occurrences: Monitoring Well Not Accessible Due To Flood Conditions

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 1	Sampler Name(s): Kyle K. Uhing (79776)
Monitoring Well Identification - Sample Number: MW14 - 2	Date: 10/16/2019
Wellhead Inspection (Condition): Compliant	Weather Conditions: Overcast, Breezy, 44°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	10:37	Pump Start Time	10:39
Static Water Level (+/- 0.01 feet)*	5.80	Purge Rate (mL/minute)	250-300
Bottom of Well Casing (+/- 0.01 feet)*	Not Measured	Time to Purge Well (hours:minutes)	0:20
Pump Intake Elevation (+/- 0.01 feet)*	Not Measured	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas, Graduated Measuring Bucket and Cup, Multi-Parameter Water Meter, and Electronic Water Level Indicator	
2" Well Casing Volume (L)	Not Measured		
Actual Volume of Water Purged (mL)	5,600		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:44	1,250	14.62	2.45	8.0	6.22	1.20	7.22
10:47	2,000	14.51	1.84	10.2	6.38	1.19	7.89
10:50	2,900	14.51	1.68	9.0	6.44	1.19	8.47
10:53	3,800	14.53	1.40	9.3	6.48	1.18	8.93
10:56	4,700	14.44	1.36	9.3	6.51	1.18	9.15
10:59	5,600	14.40	1.32	9.0	6.52	1.18	9.22

Well Evacuated to Dryness? No Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:59	5,600	14.40	1.32	9.0	6.52	1.18	9.22
Duplicate?	No	Preservation?	Cool on Ice, HNO ₃ for Metals	Pump Rate (mL/minute)		300	

Sample Physical Characteristics

Equipment Information

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Light Yellow	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Sulfur	Instrument Calibration By	Kyle K. Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/16/2019, 9:08

Notes / Unusual Occurrences: None

Equipment Calibration Sheet

Date: 10/15/2019

Time: 9:29

Person Calibrating Instrument: Kyle K. Uhing

Instrument Type	Instrument Brand	Instrument Model	Instrument Serial Number
Multi-Parameter Water Meter	Horiba	U-5000/U-52	KE3AGWPR/NTKDC76Y

Parameter:	Reading	Units
pH 4	4.00	NA
Conductivity	4.31	$\mu\text{S}/\text{cm}$
Turbidity	0.0	NTU
DO	10.10	mg/L

Comments:

The Horiba was calibrated using pH 4.0 AutoCal buffer solution.

Equipment Calibration Sheet

Date: 10/16/2019

Time: 9:08

Person Calibrating Instrument: Kyle K. Uhing

Instrument Type	Instrument Brand	Instrument Model	Instrument Serial Number
Multi-Parameter Water Meter	Horiba	U-5000/U-52	KE3AGWPR/NTKDC76Y

Parameter:	Reading	Units
pH 4	4.00	NA
Conductivity	4.49	$\mu\text{S}/\text{cm}$
Turbidity	0.0	NTU
DO	10.10	mg/L

Comments:

The Horiba was calibrated using pH 4.0 AutoCal buffer solution.

Equipment Calibration Sheet

Date: 10/18/2019

Time: 8:01

Person Calibrating Instrument: Kyle K. Uhing

Instrument Type	Instrument Brand	Instrument Model	Instrument Serial Number
Multiparameter Water Meter	Horiba	U-5000/U-52	KE3AGWPR/NTKDC76Y

Parameter:	Reading	Units
pH 4	4.00	NA
Conductivity	4.50	$\mu\text{S}/\text{cm}$
Turbidity	0.0	NTU
DO	10.42	mg/L

Comments:

The Horiba was calibrated using pH 4.0 AutoCal buffer solution.



Appendix B

Laboratory Analytical Reports

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ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-153107-1
Client Project/Site: Nebraska City Unit 1
Revision: 1

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
5/6/2019 10:08:23 AM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

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results through
TotalAccess

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www.testamericainc.com

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Job ID: 310-153107-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-153107-1

Comments

No additional comments.

Receipt

The samples were received on 4/11/2019 11:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were -0.7° C, -0.3° C, 1.0° C and 1.2° C.

HPLC/IC

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

Metals

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

General Chemistry

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-153107-1	MW2	Ground Water	04/09/19 11:11	04/11/19 11:30
310-153107-2	MW3	Ground Water	04/09/19 15:47	04/11/19 11:30
310-153107-3	MW4	Ground Water	04/09/19 13:17	04/11/19 11:30
310-153107-4	MW9	Ground Water	04/10/19 10:14	04/11/19 11:30
310-153107-5	DUP1	Ground Water	04/09/19 00:00	04/11/19 11:30
310-153107-6	DUP2	Ground Water	04/09/19 00:00	04/11/19 11:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: MW2

Lab Sample ID: 310-153107-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	66.3		5.00		mg/L	5		9056A	Total/NA
Barium	0.126	F1	0.00200		mg/L	1		6020A	Total/NA
Calcium	111		0.500		mg/L	1		6020A	Total/NA
Molybdenum	0.0803		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	418		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW3

Lab Sample ID: 310-153107-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.96		5.00		mg/L	5		9056A	Total/NA
Sulfate	427		20.0		mg/L	20		9056A	Total/NA
Arsenic	0.0143		0.00200		mg/L	1		6020A	Total/NA
Barium	0.0938		0.00200		mg/L	1		6020A	Total/NA
Boron	2.33		0.200		mg/L	1		6020A	Total/NA
Calcium	186		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00250		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0271		0.0100		mg/L	1		6020A	Total/NA
Total Dissolved Solids	1040		60.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW4

Lab Sample ID: 310-153107-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.78		5.00		mg/L	5		9056A	Total/NA
Sulfate	231		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00223		0.00200		mg/L	1		6020A	Total/NA
Barium	0.0652		0.00200		mg/L	1		6020A	Total/NA
Boron	1.28		0.200		mg/L	1		6020A	Total/NA
Calcium	120		0.500		mg/L	1		6020A	Total/NA
Lithium	0.0110		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0269		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	586		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW9

Lab Sample ID: 310-153107-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.34		5.00		mg/L	5		9056A	Total/NA
Sulfate	184		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00681		0.00200		mg/L	1		6020A	Total/NA
Barium	0.153		0.00200		mg/L	1		6020A	Total/NA
Boron	2.59		0.200		mg/L	1		6020A	Total/NA
Calcium	164		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00559		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0254		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0196		0.00200		mg/L	1		6020A	Total/NA
Selenium	0.0120		0.00500		mg/L	1		6020A	Total/NA
Total Dissolved Solids	756		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP1

Lab Sample ID: 310-153107-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.95		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.581		0.500		mg/L	5		9056A	Total/NA
Sulfate	228		5.00		mg/L	5		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Detection Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: DUP1 (Continued)

Lab Sample ID: 310-153107-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00207		0.00200		mg/L	1		6020A	Total/NA
Barium	0.0661		0.00200		mg/L	1		6020A	Total/NA
Boron	1.28		0.200		mg/L	1		6020A	Total/NA
Calcium	119		0.500		mg/L	1		6020A	Total/NA
Lithium	0.0108		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0267		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	644		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP2

Lab Sample ID: 310-153107-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.76		5.00		mg/L	5		9056A	Total/NA
Sulfate	431		20.0		mg/L	20		9056A	Total/NA
Arsenic	0.0180		0.00200		mg/L	1		6020A	Total/NA
Barium	0.0974		0.00200		mg/L	1		6020A	Total/NA
Boron	2.29		0.200		mg/L	1		6020A	Total/NA
Calcium	186		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00312		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0259		0.0100		mg/L	1		6020A	Total/NA
Total Dissolved Solids	972		30.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: MW2

Lab Sample ID: 310-153107-1

Date Collected: 04/09/19 11:11

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			04/16/19 11:16	5
Fluoride	<0.500		0.500		mg/L			04/16/19 11:16	5
Sulfate	66.3		5.00		mg/L			04/16/19 11:16	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:29	1
Arsenic	<0.00200		0.00200		mg/L		04/12/19 08:40	04/25/19 15:17	1
Barium	0.126	F1	0.00200		mg/L		04/12/19 08:40	04/24/19 23:29	1
Beryllium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 15:17	1
Boron	<0.200		0.200		mg/L		04/12/19 08:40	04/24/19 23:29	1
Cadmium	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:29	1
Calcium	111		0.500		mg/L		04/12/19 08:40	04/24/19 23:29	1
Chromium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/25/19 15:17	1
Cobalt	<0.000500		0.000500		mg/L		04/12/19 08:40	04/25/19 15:17	1
Lead	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:29	1
Lithium	<0.0100		0.0100		mg/L		04/12/19 08:40	04/24/19 23:29	1
Molybdenum	0.0803		0.00200		mg/L		04/12/19 08:40	04/24/19 23:29	1
Selenium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/24/19 23:29	1
Thallium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:29	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 15:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	418		30.0		mg/L			04/12/19 11:57	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: MW3

Lab Sample ID: 310-153107-2

Date Collected: 04/09/19 15:47

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.96		5.00		mg/L			04/16/19 11:31	5
Fluoride	<0.500		0.500		mg/L			04/16/19 11:31	5
Sulfate	427		20.0		mg/L			04/16/19 11:47	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:46	1
Arsenic	0.0143		0.00200		mg/L		04/12/19 08:40	04/25/19 15:27	1
Barium	0.0938		0.00200		mg/L		04/12/19 08:40	04/24/19 23:46	1
Beryllium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 15:27	1
Boron	2.33		0.200		mg/L		04/12/19 08:40	04/24/19 23:46	1
Cadmium	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:46	1
Calcium	186		0.500		mg/L		04/12/19 08:40	04/24/19 23:46	1
Chromium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/25/19 15:27	1
Cobalt	0.00250		0.000500		mg/L		04/12/19 08:40	04/25/19 15:27	1
Lead	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:46	1
Lithium	0.0271		0.0100		mg/L		04/12/19 08:40	04/24/19 23:46	1
Molybdenum	<0.00200		0.00200		mg/L		04/12/19 08:40	04/24/19 23:46	1
Selenium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/24/19 23:46	1
Thallium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:46	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 15:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1040		60.0		mg/L			04/12/19 11:57	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: MW4

Lab Sample ID: 310-153107-3

Date Collected: 04/09/19 13:17

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.78		5.00		mg/L			04/16/19 12:03	5
Fluoride	<0.500		0.500		mg/L			04/16/19 12:03	5
Sulfate	231		5.00		mg/L			04/16/19 12:03	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:49	1
Arsenic	0.00223		0.00200		mg/L		04/12/19 08:40	04/25/19 15:31	1
Barium	0.0652		0.00200		mg/L		04/12/19 08:40	04/24/19 23:49	1
Beryllium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 15:31	1
Boron	1.28		0.200		mg/L		04/12/19 08:40	04/24/19 23:49	1
Cadmium	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:49	1
Calcium	120		0.500		mg/L		04/12/19 08:40	04/24/19 23:49	1
Chromium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/25/19 15:31	1
Cobalt	<0.000500		0.000500		mg/L		04/12/19 08:40	04/25/19 15:31	1
Lead	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:49	1
Lithium	0.0110		0.0100		mg/L		04/12/19 08:40	04/24/19 23:49	1
Molybdenum	0.0269		0.00200		mg/L		04/12/19 08:40	04/24/19 23:49	1
Selenium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/24/19 23:49	1
Thallium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:49	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 15:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	586		30.0		mg/L			04/12/19 11:57	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: MW9

Lab Sample ID: 310-153107-4

Date Collected: 04/10/19 10:14

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.34		5.00		mg/L			04/16/19 13:05	5
Fluoride	<0.500		0.500		mg/L			04/16/19 13:05	5
Sulfate	184		5.00		mg/L			04/16/19 13:05	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 15:34	1
Arsenic	0.00681		0.00200		mg/L		04/12/19 08:40	04/25/19 15:34	1
Barium	0.153		0.00200		mg/L		04/12/19 08:40	04/24/19 23:53	1
Beryllium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 15:34	1
Boron	2.59		0.200		mg/L		04/12/19 08:40	04/24/19 23:53	1
Cadmium	<0.000500		0.000500		mg/L		04/12/19 08:40	04/25/19 15:34	1
Calcium	164		0.500		mg/L		04/12/19 08:40	04/24/19 23:53	1
Chromium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/25/19 15:34	1
Cobalt	0.00559		0.000500		mg/L		04/12/19 08:40	04/25/19 15:34	1
Lead	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:53	1
Lithium	0.0254		0.0100		mg/L		04/12/19 08:40	04/24/19 23:53	1
Molybdenum	0.0196		0.00200		mg/L		04/12/19 08:40	04/24/19 23:53	1
Selenium	0.0120		0.00500		mg/L		04/12/19 08:40	04/25/19 15:34	1
Thallium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:53	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 15:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	756		30.0		mg/L			04/12/19 13:49	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: DUP1

Lab Sample ID: 310-153107-5

Date Collected: 04/09/19 00:00

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.95		5.00		mg/L			04/16/19 13:21	5
Fluoride	0.581		0.500		mg/L			04/16/19 13:21	5
Sulfate	228		5.00		mg/L			04/16/19 13:21	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:56	1
Arsenic	0.00207		0.00200		mg/L		04/12/19 08:40	04/25/19 15:37	1
Barium	0.0661		0.00200		mg/L		04/12/19 08:40	04/24/19 23:56	1
Beryllium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 15:37	1
Boron	1.28		0.200		mg/L		04/12/19 08:40	04/24/19 23:56	1
Cadmium	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:56	1
Calcium	119		0.500		mg/L		04/12/19 08:40	04/24/19 23:56	1
Chromium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/25/19 15:37	1
Cobalt	<0.000500		0.000500		mg/L		04/12/19 08:40	04/25/19 15:37	1
Lead	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:56	1
Lithium	0.0108		0.0100		mg/L		04/12/19 08:40	04/24/19 23:56	1
Molybdenum	0.0267		0.00200		mg/L		04/12/19 08:40	04/24/19 23:56	1
Selenium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/24/19 23:56	1
Thallium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:56	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 15:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	644		30.0		mg/L			04/12/19 11:57	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: DUP2

Lab Sample ID: 310-153107-6

Date Collected: 04/09/19 00:00

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.76		5.00		mg/L			04/16/19 13:52	5
Fluoride	<0.500		0.500		mg/L			04/16/19 13:52	5
Sulfate	431		20.0		mg/L			04/16/19 18:37	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 00:10	1
Arsenic	0.0180		0.00200		mg/L		04/12/19 08:40	04/25/19 15:44	1
Barium	0.0974		0.00200		mg/L		04/12/19 08:40	04/25/19 00:10	1
Beryllium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 15:44	1
Boron	2.29		0.200		mg/L		04/12/19 08:40	04/25/19 00:10	1
Cadmium	<0.000500		0.000500		mg/L		04/12/19 08:40	04/25/19 00:10	1
Calcium	186		0.500		mg/L		04/12/19 08:40	04/25/19 00:10	1
Chromium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/25/19 15:44	1
Cobalt	0.00312		0.000500		mg/L		04/12/19 08:40	04/25/19 15:44	1
Lead	<0.000500		0.000500		mg/L		04/12/19 08:40	04/25/19 00:10	1
Lithium	0.0259		0.0100		mg/L		04/12/19 08:40	04/25/19 00:10	1
Molybdenum	<0.00200		0.00200		mg/L		04/12/19 08:40	04/25/19 00:10	1
Selenium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/25/19 00:10	1
Thallium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/25/19 00:10	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 15:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	972		30.0		mg/L			04/12/19 11:57	1

- 1
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- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

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

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-236282/3
Matrix: Water
Analysis Batch: 236282

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/16/19 09:42	1
Fluoride	<0.100		0.100		mg/L			04/16/19 09:42	1
Sulfate	<1.00		1.00		mg/L			04/16/19 09:42	1

Lab Sample ID: LCS 310-236282/4
Matrix: Water
Analysis Batch: 236282

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.987		mg/L		100	90 - 110
Fluoride	2.00	2.000		mg/L		100	90 - 110
Sulfate	10.0	10.19		mg/L		102	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-235588/1-A
Matrix: Water
Analysis Batch: 237143

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235588

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:12	1
Barium	<0.00200		0.00200		mg/L		04/12/19 08:40	04/24/19 23:12	1
Beryllium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:12	1
Boron	<0.200		0.200		mg/L		04/12/19 08:40	04/24/19 23:12	1
Cadmium	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:12	1
Calcium	<0.500		0.500		mg/L		04/12/19 08:40	04/24/19 23:12	1
Chromium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/24/19 23:12	1
Cobalt	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:12	1
Lead	<0.000500		0.000500		mg/L		04/12/19 08:40	04/24/19 23:12	1
Lithium	<0.0100		0.0100		mg/L		04/12/19 08:40	04/24/19 23:12	1
Molybdenum	<0.00200		0.00200		mg/L		04/12/19 08:40	04/24/19 23:12	1
Selenium	<0.00500		0.00500		mg/L		04/12/19 08:40	04/24/19 23:12	1
Thallium	<0.00100		0.00100		mg/L		04/12/19 08:40	04/24/19 23:12	1

Lab Sample ID: MB 310-235588/1-A
Matrix: Water
Analysis Batch: 237264

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235588

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200		mg/L		04/12/19 08:40	04/25/19 15:00	1

Lab Sample ID: LCS 310-235588/2-A
Matrix: Water
Analysis Batch: 237143

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235588

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0200	0.01866		mg/L		93	80 - 120
Barium	0.0400	0.03799		mg/L		95	80 - 120
Boron	0.880	0.8710		mg/L		99	80 - 120
Cadmium	0.0200	0.01907		mg/L		95	80 - 120

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

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

Lab Sample ID: LCS 310-235588/2-A
Matrix: Water
Analysis Batch: 237143

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235588
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Calcium	2.00	1.967		mg/L		98	80 - 120
Lead	0.0200	0.01910		mg/L		95	80 - 120
Lithium	0.100	0.09130		mg/L		91	80 - 120
Molybdenum	0.0400	0.03644		mg/L		91	80 - 120
Selenium	0.0400	0.03776		mg/L		94	80 - 120
Thallium	0.0160	0.01546		mg/L		97	80 - 120

Lab Sample ID: LCS 310-235588/2-A
Matrix: Water
Analysis Batch: 237264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235588
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	0.0400	0.04453		mg/L		111	80 - 120
Beryllium	0.0200	0.02033		mg/L		102	80 - 120
Chromium	0.0400	0.04004		mg/L		100	80 - 120
Cobalt	0.0200	0.01976		mg/L		99	80 - 120

Lab Sample ID: 310-153107-1 MS
Matrix: Ground Water
Analysis Batch: 237143

Client Sample ID: MW2
Prep Type: Total/NA
Prep Batch: 235588
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	<0.00100		0.0200	0.02075		mg/L		104	75 - 125
Barium	0.126	F1	0.0400	0.1627		mg/L		91	75 - 125
Boron	<0.200		0.880	1.041		mg/L		102	75 - 125
Cadmium	<0.000500		0.0200	0.02056		mg/L		103	75 - 125
Calcium	111		2.00	111.9	4	mg/L		48	75 - 125
Lead	<0.000500		0.0200	0.01969		mg/L		98	75 - 125
Lithium	<0.0100		0.100	0.09942		mg/L		92	75 - 125
Molybdenum	0.0803		0.0400	0.1180		mg/L		94	75 - 125
Selenium	<0.00500		0.0400	0.03994		mg/L		100	75 - 125
Thallium	<0.00100		0.0160	0.01585		mg/L		99	75 - 125

Lab Sample ID: 310-153107-1 MS
Matrix: Ground Water
Analysis Batch: 237264

Client Sample ID: MW2
Prep Type: Total/NA
Prep Batch: 235588
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	<0.00200		0.0400	0.04478		mg/L		112	75 - 125
Beryllium	<0.00100		0.0200	0.02025		mg/L		101	75 - 125
Chromium	<0.00500		0.0400	0.03906		mg/L		98	75 - 125
Cobalt	<0.000500		0.0200	0.01926		mg/L		95	75 - 125

Lab Sample ID: 310-153107-1 MSD
Matrix: Ground Water
Analysis Batch: 237143

Client Sample ID: MW2
Prep Type: Total/NA
Prep Batch: 235588
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	<0.00100		0.0200	0.01960		mg/L		98	75 - 125	6	20
Barium	0.126	F1	0.0400	0.1537	F1	mg/L		69	75 - 125	6	20

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QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

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

Lab Sample ID: 310-153107-1 MSD
Matrix: Ground Water
Analysis Batch: 237143

Client Sample ID: MW2
Prep Type: Total/NA
Prep Batch: 235588

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	<0.200		0.880	1.046		mg/L		102	75 - 125	0	20
Cadmium	<0.000500		0.0200	0.01957		mg/L		98	75 - 125	5	20
Calcium	111		2.00	109.6	4	mg/L		-68	75 - 125	2	20
Lead	<0.000500		0.0200	0.01861		mg/L		93	75 - 125	6	20
Lithium	<0.0100		0.100	0.09911		mg/L		92	75 - 125	0	20
Molybdenum	0.0803		0.0400	0.1122		mg/L		80	75 - 125	5	20
Selenium	<0.00500		0.0400	0.03866		mg/L		97	75 - 125	3	20
Thallium	<0.00100		0.0160	0.01499		mg/L		94	75 - 125	6	20

Lab Sample ID: 310-153107-1 MSD
Matrix: Ground Water
Analysis Batch: 237264

Client Sample ID: MW2
Prep Type: Total/NA
Prep Batch: 235588

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	<0.00200		0.0400	0.04404		mg/L		110	75 - 125	2	20
Beryllium	<0.00100		0.0200	0.01959		mg/L		98	75 - 125	3	20
Chromium	<0.00500		0.0400	0.03865		mg/L		97	75 - 125	1	20
Cobalt	<0.000500		0.0200	0.01896		mg/L		94	75 - 125	2	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-235611/1-A
Matrix: Water
Analysis Batch: 235884

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235611

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 14:46	1

Lab Sample ID: LCS 310-235611/2-A
Matrix: Water
Analysis Batch: 235884

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235611

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00167	0.001667		mg/L		100	80 - 120

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

Lab Sample ID: MB 310-235636/1
Matrix: Water
Analysis Batch: 235636

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			04/12/19 11:57	1

Lab Sample ID: LCS 310-235636/2
Matrix: Water
Analysis Batch: 235636

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	996.0		mg/L		100	90 - 110

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QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

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

Lab Sample ID: 310-153107-B-7 DU
Matrix: Ground Water
Analysis Batch: 235636

Client Sample ID: 310-153107-B-7 DU
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	1100		960.0		mg/L		14	24

Lab Sample ID: MB 310-235657/1
Matrix: Water
Analysis Batch: 235657

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			04/12/19 13:49	1

Lab Sample ID: LCS 310-235657/2
Matrix: Water
Analysis Batch: 235657

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	990.0		mg/L		99	90 - 110

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- 13
- 14

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

HPLC/IC

Analysis Batch: 236282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	9056A	
310-153107-2	MW3	Total/NA	Ground Water	9056A	
310-153107-2	MW3	Total/NA	Ground Water	9056A	
310-153107-3	MW4	Total/NA	Ground Water	9056A	
310-153107-4	MW9	Total/NA	Ground Water	9056A	
310-153107-5	DUP1	Total/NA	Ground Water	9056A	
310-153107-6	DUP2	Total/NA	Ground Water	9056A	
310-153107-6	DUP2	Total/NA	Ground Water	9056A	
MB 310-236282/3	Method Blank	Total/NA	Water	9056A	
LCS 310-236282/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 235588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	3010A	
310-153107-2	MW3	Total/NA	Ground Water	3010A	
310-153107-3	MW4	Total/NA	Ground Water	3010A	
310-153107-4	MW9	Total/NA	Ground Water	3010A	
310-153107-5	DUP1	Total/NA	Ground Water	3010A	
310-153107-6	DUP2	Total/NA	Ground Water	3010A	
MB 310-235588/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-235588/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-153107-1 MS	MW2	Total/NA	Ground Water	3010A	
310-153107-1 MSD	MW2	Total/NA	Ground Water	3010A	

Prep Batch: 235611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	7470A	
310-153107-2	MW3	Total/NA	Ground Water	7470A	
310-153107-3	MW4	Total/NA	Ground Water	7470A	
310-153107-4	MW9	Total/NA	Ground Water	7470A	
310-153107-5	DUP1	Total/NA	Ground Water	7470A	
310-153107-6	DUP2	Total/NA	Ground Water	7470A	
MB 310-235611/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-235611/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 235884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	7470A	235611
310-153107-2	MW3	Total/NA	Ground Water	7470A	235611
310-153107-3	MW4	Total/NA	Ground Water	7470A	235611
310-153107-4	MW9	Total/NA	Ground Water	7470A	235611
310-153107-5	DUP1	Total/NA	Ground Water	7470A	235611
310-153107-6	DUP2	Total/NA	Ground Water	7470A	235611
MB 310-235611/1-A	Method Blank	Total/NA	Water	7470A	235611
LCS 310-235611/2-A	Lab Control Sample	Total/NA	Water	7470A	235611

Analysis Batch: 237143

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	6020A	235588

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QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Metals (Continued)

Analysis Batch: 237143 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-2	MW3	Total/NA	Ground Water	6020A	235588
310-153107-3	MW4	Total/NA	Ground Water	6020A	235588
310-153107-4	MW9	Total/NA	Ground Water	6020A	235588
310-153107-5	DUP1	Total/NA	Ground Water	6020A	235588
310-153107-6	DUP2	Total/NA	Ground Water	6020A	235588
MB 310-235588/1-A	Method Blank	Total/NA	Water	6020A	235588
LCS 310-235588/2-A	Lab Control Sample	Total/NA	Water	6020A	235588
310-153107-1 MS	MW2	Total/NA	Ground Water	6020A	235588
310-153107-1 MSD	MW2	Total/NA	Ground Water	6020A	235588

Analysis Batch: 237264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	6020A	235588
310-153107-2	MW3	Total/NA	Ground Water	6020A	235588
310-153107-3	MW4	Total/NA	Ground Water	6020A	235588
310-153107-4	MW9	Total/NA	Ground Water	6020A	235588
310-153107-5	DUP1	Total/NA	Ground Water	6020A	235588
310-153107-6	DUP2	Total/NA	Ground Water	6020A	235588
MB 310-235588/1-A	Method Blank	Total/NA	Water	6020A	235588
LCS 310-235588/2-A	Lab Control Sample	Total/NA	Water	6020A	235588
310-153107-1 MS	MW2	Total/NA	Ground Water	6020A	235588
310-153107-1 MSD	MW2	Total/NA	Ground Water	6020A	235588

General Chemistry

Analysis Batch: 235636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	SM 2540C	
310-153107-2	MW3	Total/NA	Ground Water	SM 2540C	
310-153107-3	MW4	Total/NA	Ground Water	SM 2540C	
310-153107-5	DUP1	Total/NA	Ground Water	SM 2540C	
310-153107-6	DUP2	Total/NA	Ground Water	SM 2540C	
MB 310-235636/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-235636/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-153107-B-7 DU	310-153107-B-7 DU	Total/NA	Ground Water	SM 2540C	

Analysis Batch: 235657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-4	MW9	Total/NA	Ground Water	SM 2540C	
MB 310-235657/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-235657/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: MW2

Lab Sample ID: 310-153107-1

Date Collected: 04/09/19 11:11

Matrix: Ground Water

Date Received: 04/11/19 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	236282	04/16/19 11:16	MLU	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237143	04/24/19 23:29	SAD	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237264	04/25/19 15:17	SAD	TAL CF
Total/NA	Prep	7470A			235611	04/12/19 09:48	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 15:18	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235636	04/12/19 11:57	MDK	TAL CF

Client Sample ID: MW3

Lab Sample ID: 310-153107-2

Date Collected: 04/09/19 15:47

Matrix: Ground Water

Date Received: 04/11/19 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	236282	04/16/19 11:31	MLU	TAL CF
Total/NA	Analysis	9056A		20	236282	04/16/19 11:47	MLU	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237143	04/24/19 23:46	SAD	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237264	04/25/19 15:27	SAD	TAL CF
Total/NA	Prep	7470A			235611	04/12/19 09:48	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 15:21	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235636	04/12/19 11:57	MDK	TAL CF

Client Sample ID: MW4

Lab Sample ID: 310-153107-3

Date Collected: 04/09/19 13:17

Matrix: Ground Water

Date Received: 04/11/19 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	236282	04/16/19 12:03	MLU	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237143	04/24/19 23:49	SAD	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237264	04/25/19 15:31	SAD	TAL CF
Total/NA	Prep	7470A			235611	04/12/19 09:48	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 15:23	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235636	04/12/19 11:57	MDK	TAL CF

Client Sample ID: MW9

Lab Sample ID: 310-153107-4

Date Collected: 04/10/19 10:14

Matrix: Ground Water

Date Received: 04/11/19 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	236282	04/16/19 13:05	MLU	TAL CF

Eurofins TestAmerica, Cedar Falls

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Client Sample ID: MW9

Date Collected: 04/10/19 10:14

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237143	04/24/19 23:53	SAD	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237264	04/25/19 15:34	SAD	TAL CF
Total/NA	Prep	7470A			235611	04/12/19 09:48	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 15:25	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235657	04/12/19 13:49	MDK	TAL CF

Client Sample ID: DUP1

Date Collected: 04/09/19 00:00

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-5

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	236282	04/16/19 13:21	MLU	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237143	04/24/19 23:56	SAD	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237264	04/25/19 15:37	SAD	TAL CF
Total/NA	Prep	7470A			235611	04/12/19 09:48	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 15:27	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235636	04/12/19 11:57	MDK	TAL CF

Client Sample ID: DUP2

Date Collected: 04/09/19 00:00

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	236282	04/16/19 13:52	MLU	TAL CF
Total/NA	Analysis	9056A		20	236282	04/16/19 18:37	MLU	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237143	04/25/19 00:10	SAD	TAL CF
Total/NA	Prep	3010A			235588	04/12/19 08:40	HED	TAL CF
Total/NA	Analysis	6020A		1	237264	04/25/19 15:44	SAD	TAL CF
Total/NA	Prep	7470A			235611	04/12/19 09:48	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 15:29	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235636	04/12/19 11:57	MDK	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-19
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-20
Minnesota	NELAP	5	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-19
Oregon	NELAP	10	IA100001	09-29-19
USDA	Federal		P330-19-00003	01-02-22

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-153107-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401



Cooler/Sample Receipt and Temperature Log Form

Client Information				
Client: <u>Omaha Public Power District</u>				
City/State:	<u>Omaha</u>	STATE: <u>NE</u>	Project: <u>Nebraska City Unit 1</u>	
Receipt Information				
Date/Time Received:	DATE: <u>4-11-19</u>	TIME: <u>1130</u>	Received By: <u>KP</u>	
Delivery Type:	<input type="checkbox"/> UPS	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> FedEx Ground	<input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee
	<input type="checkbox"/> Lab Courier	<input type="checkbox"/> TA Field Services	<input type="checkbox"/> Client Drop-off	<input type="checkbox"/> Other: _____
Condition of Cooler/Containers				
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler # <u>1</u> of <u>4</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record				
Coolant:	<input checked="" type="checkbox"/> Wet ice	<input type="checkbox"/> Blue ice	<input type="checkbox"/> Dry ice	<input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE
Thermometer ID:	<u>J</u>		Correction Factor (°C): <u>+0.1</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature				
Uncorrected Temp (°C):	<u>1.1</u>		Corrected Temp (°C): <u>1.2</u>	
• Sample Container Temperature				
Container type(s) used:	CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):	TEMP 1	TEMP 2	Corrected Temp (°C):	TEMP 1 TEMP 2
Exceptions Noted				
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No				
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No				
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No				
NOTE: If yes, contact PM before proceeding. If no, proceed with login				
Additional Comments				

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client: <u>DPPD</u>					
City/State: <u>Omaha</u> <small>CITY</small>		STATE: <u>NE</u>		Project: <u>Nebraska City Unit 1</u>	
Receipt Information					
Date/Time Received: <u>04/19</u> <small>DATE</small>		<u>1130</u> <small>TIME</small>		Received By: <u>APB</u>	
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee					
<input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____					
Condition of Cooler/Containers					
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler ID: _____	
Multiple Coolers?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler # <u>2</u> of <u>4</u>	
Cooler Custody Seals Present?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Which VOA samples are in cooler? ↓	
Temperature Record					
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE					
Thermometer ID: <u>M</u>			Correction Factor (°C): <u>0.0</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature					
Uncorrected Temp (°C): <u>-0.6</u>			Corrected Temp (°C): <u>0.7</u>		
• Sample Container Temperature					
Container type(s) used:		CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):		TEMP 1	TEMP 2	Corrected Temp (°C):	
				TEMP 1	TEMP 2
Exceptions Noted					
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No					
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No					
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No					
NOTE: If yes, contact PM before proceeding. If no, proceed with login					
Additional Comments					

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>OPPD</u>			
City/State: <u>Omaha</u> <small>CITY</small>	<u>NE</u> <small>STATE</small>	Project: <u>Nebraska City Unit 1</u>	
Receipt Information			
Date/Time Received: <u>6/4/19</u> <small>DATE</small>	<u>1130</u> <small>TIME</small>	Received By: <u>APR</u>	
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>3</u> of <u>4</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>W</u>		Correction Factor (°C): <u>-0.1</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.1</u>		Corrected Temp (°C): <u>1.0</u>	
• Sample Container Temperature			
Container type(s) used:		CONTAINER 1	CONTAINER 2
Uncorrected Temp (°C):	TEMP 1	TEMP 2	Corrected Temp (°C): TEMP 1 TEMP 2
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
a) If yes: Is there evidence that the chilling process began?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?)		<input type="checkbox"/> Yes	<input type="checkbox"/> No
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client: <u>BPPD</u>					
City/State: <u>Omaha</u>		STATE: <u>NE</u>	Project: <u>Nebraska City Unit 1</u>		
Receipt Information					
Date/Time Received: DATE <u>04/11/19</u>		TIME <u>1130</u>	Received By: <u>JEP</u>		
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee					
<input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____					
Condition of Cooler/Containers					
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____		
Multiple Coolers?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>4</u> of <u>4</u>		
Cooler Custody Seals Present?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Trip Blank Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓		
Temperature Record					
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE					
Thermometer ID: <u>M</u>			Correction Factor (°C): <u>-0.1</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature					
Uncorrected Temp (°C): <u>-0.2</u>			Corrected Temp (°C): <u>-0.3</u>		
• Sample Container Temperature					
Container type(s) used:		CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):		TEMP 1	TEMP 2	Corrected Temp (°C):	
				TEMP 1	
				TEMP 2	
Exceptions Noted					
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No					
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No					
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No					
NOTE: If yes, contact PM before proceeding. If no, proceed with login					
Additional Comments					

Chain of Custody Record

Client Information Client Contact: Kyle Uhing Phone: Kyle H. Wang Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com		Carrier Tracking No(s): Job #:		COC No: Page:	
Company: Omaha Public Power District Address: 444 South 16th Street Mall City: Omaha State, Zip: NE, 68102-2247 Phone: Email: kkuhing@oppd.com Project Name: Nebraska City Unit 1 Site:		Analysis Requested 2540C TDS and 9056A Chloride, Fluoride, Sulfate Dissolved 9315_Ra226, 9320_Ra228 Dissolved CCR Metals List Metals and 7470A Mercury 2540C TDS and 9056A Chloride, Fluoride, Sulfate Total CCR Metals List Metals and 7470A Mercury Total 9315_Ra226, 9320_Ra228 Perform MS/MSD (Yes or No) Field Filtered Sample (Yes or No)		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecalhydrate U - Acetone V - MCAA W - pH 4-5 L - EDTA Z - other (specify) Other:	
Sample Identification Due Date Requested: TAT Requested (days): PO #: WO #: TestAmerica Project #: 31007558 SSOW#:		Sample Date Sample Time Sample Type (C=Comp, G=grab) Matrix (W=water, S=solid, O=soil, BT=Tissue, A=Air)		Total Number of containers Special Instructions/Note:	
MW2	4/9/2019	11:11	GW	X	X
MW3	4/9/2019	15:47	GW	X	X
MW4	4/9/2019	13:17	GW	X	X
MW9	4/10/2019	10:14	GW	X	X
DUP1	4/9/2019	---	GW	X	X
DUP2	4/9/2019	---	GW	X	X
MW3D	4/9/2019	17:03	GW	X	X
MW4D	4/9/2019	14:16	GW	X	X
MW9D	4/10/2019	11:13	GW	X	X
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Empty Kit Relinquished by: Kyle H. Wang Date/Time: 4/10/2019 15:35 Company: OPPD		Method of Shipment: Received by: [Signature] Date/Time: 4/10/19 1535 Company: TESTA		Received by: [Signature] Date/Time: 04/11/19 1130 Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
MW2	310-153107-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW2	310-153107-B-1	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW2	310-153107-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW2	310-153107-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW2	310-153107-E-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW2	310-153107-F-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW3	310-153107-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW3	310-153107-B-2	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW3	310-153107-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3	310-153107-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3	310-153107-E-2	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW3	310-153107-F-2	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW4	310-153107-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW4	310-153107-B-3	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW4	310-153107-E-3	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW4	310-153107-F-3	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW4	310-153107-G-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW4	310-153107-H-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW9	310-153107-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW9	310-153107-B-4	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW9	310-153107-E-4	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW9	310-153107-F-4	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW9	310-153107-G-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW9	310-153107-H-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP1	310-153107-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
DUP1	310-153107-B-5	Plastic 250ml - w/nitric - dis	<2	_____	_____
DUP1	310-153107-E-5	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
DUP1	310-153107-F-5	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
DUP1	310-153107-G-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP1	310-153107-H-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP2	310-153107-A-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
DUP2	310-153107-B-6	Plastic 250ml - w/nitric - dis	<2	_____	_____
DUP2	310-153107-E-6	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
DUP2	310-153107-F-6	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
DUP2	310-153107-G-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP2	310-153107-H-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3D	310-153107-A-7	Plastic 250ml - with Nitric Acid	<2	_____	_____

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<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> <u>pH</u>	<u>Preservative</u> <u>Added (mls)</u>	<u>Lot #</u>
MW3D	310-153107-C-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3D	310-153107-D-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW4D	310-153107-A-8	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW4D	310-153107-C-8	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW4D	310-153107-D-8	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW9D	310-153107-A-9	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW9D	310-153107-C-9	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW9D	310-153107-D-9	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-153107-1

Login Number: 153107

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Spoerre, Autumn R

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

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-152964-1
Client Project/Site: Nebraska City Unit 1
Revision: 2

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
5/6/2019 9:55:23 AM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Job ID: 310-152964-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-152964-1

Comments

No additional comments.

Receipt

The samples were received on 4/10/2019 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8° C.

HPLC/IC

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

Metals

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

General Chemistry

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-152964-1	MW14	Ground Water	04/08/19 11:58	04/10/19 09:10
310-152964-2	MW11	Ground Water	04/08/19 18:10	04/10/19 09:10

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- 14

Detection Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Client Sample ID: MW14

Lab Sample ID: 310-152964-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8.46		5.00		mg/L	5		9056A	Total/NA
Sulfate	43.2		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.0368		0.00200		mg/L	1		6020A	Total/NA
Barium	0.309		0.00200		mg/L	1		6020A	Total/NA
Boron	0.296		0.200		mg/L	1		6020A	Total/NA
Calcium	156		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00391		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0557		0.0100		mg/L	1		6020A	Total/NA
Total Dissolved Solids	840		150		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW11

Lab Sample ID: 310-152964-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14.3		5.00		mg/L	5		9056A	Total/NA
Sulfate	126		5.00		mg/L	5		9056A	Total/NA
Barium	0.162		0.00200		mg/L	1		6020A	Total/NA
Boron	0.698		0.200		mg/L	1		6020A	Total/NA
Calcium	91.3		0.500		mg/L	1		6020A	Total/NA
Lead	0.000519		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0162		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.00609		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	470		30.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Client Sample ID: MW14
Date Collected: 04/08/19 11:58
Date Received: 04/10/19 09:10

Lab Sample ID: 310-152964-1
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.46		5.00		mg/L			04/10/19 22:35	5
Fluoride	<0.500		0.500		mg/L			04/10/19 22:35	5
Sulfate	43.2		5.00		mg/L			04/10/19 22:35	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/11/19 08:00	04/18/19 21:20	1
Arsenic	0.0368		0.00200		mg/L		04/11/19 08:00	04/18/19 21:20	1
Barium	0.309		0.00200		mg/L		04/11/19 08:00	04/18/19 21:20	1
Beryllium	<0.00100		0.00100		mg/L		04/11/19 08:00	04/18/19 21:20	1
Boron	0.296		0.200		mg/L		04/11/19 08:00	04/22/19 12:13	1
Cadmium	<0.000500		0.000500		mg/L		04/11/19 08:00	04/18/19 21:20	1
Calcium	156		0.500		mg/L		04/11/19 08:00	04/18/19 21:20	1
Chromium	<0.00500		0.00500		mg/L		04/11/19 08:00	04/18/19 21:20	1
Cobalt	0.00391		0.000500		mg/L		04/11/19 08:00	04/18/19 21:20	1
Lead	<0.000500		0.000500		mg/L		04/11/19 08:00	04/18/19 21:20	1
Lithium	0.0557		0.0100		mg/L		04/11/19 08:00	04/18/19 21:20	1
Molybdenum	<0.00200		0.00200		mg/L		04/11/19 08:00	04/19/19 23:36	1
Selenium	<0.00500		0.00500		mg/L		04/11/19 08:00	04/18/19 21:20	1
Thallium	<0.00100		0.00100		mg/L		04/11/19 08:00	04/18/19 21:20	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:34	04/15/19 14:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	840		150		mg/L			04/10/19 14:38	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Client Sample ID: MW11
Date Collected: 04/08/19 18:10
Date Received: 04/10/19 09:10

Lab Sample ID: 310-152964-2
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14.3		5.00		mg/L			04/10/19 22:51	5
Fluoride	<0.500		0.500		mg/L			04/10/19 22:51	5
Sulfate	126		5.00		mg/L			04/10/19 22:51	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/11/19 08:00	04/18/19 21:23	1
Arsenic	<0.00200		0.00200		mg/L		04/11/19 08:00	04/18/19 21:23	1
Barium	0.162		0.00200		mg/L		04/11/19 08:00	04/18/19 21:23	1
Beryllium	<0.00100		0.00100		mg/L		04/11/19 08:00	04/18/19 21:23	1
Boron	0.698		0.200		mg/L		04/11/19 08:00	04/22/19 12:26	1
Cadmium	<0.000500		0.000500		mg/L		04/11/19 08:00	04/18/19 21:23	1
Calcium	91.3		0.500		mg/L		04/11/19 08:00	04/18/19 21:23	1
Chromium	<0.00500		0.00500		mg/L		04/11/19 08:00	04/18/19 21:23	1
Cobalt	<0.000500		0.000500		mg/L		04/11/19 08:00	04/18/19 21:23	1
Lead	0.000519		0.000500		mg/L		04/11/19 08:00	04/18/19 21:23	1
Lithium	0.0162		0.0100		mg/L		04/11/19 08:00	04/18/19 21:23	1
Molybdenum	0.00609		0.00200		mg/L		04/11/19 08:00	04/19/19 23:39	1
Selenium	<0.00500		0.00500		mg/L		04/11/19 08:00	04/18/19 21:23	1
Thallium	<0.00100		0.00100		mg/L		04/11/19 08:00	04/18/19 21:23	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:34	04/15/19 14:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	470		30.0		mg/L			04/10/19 14:38	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Glossary

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

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-235649/3
Matrix: Water
Analysis Batch: 235649

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/10/19 15:44	1
Fluoride	<0.100		0.100		mg/L			04/10/19 15:44	1
Sulfate	<1.00		1.00		mg/L			04/10/19 15:44	1

Lab Sample ID: LCS 310-235649/4
Matrix: Water
Analysis Batch: 235649

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	7.50	7.261		mg/L		97	90 - 110
Fluoride	1.50	1.472		mg/L		98	90 - 110
Sulfate	7.50	7.490		mg/L		100	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-235364/1-A
Matrix: Water
Analysis Batch: 236162

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/11/19 08:00	04/17/19 13:18	1
Arsenic	<0.00200		0.00200		mg/L		04/11/19 08:00	04/17/19 13:18	1
Barium	<0.00200		0.00200		mg/L		04/11/19 08:00	04/17/19 13:18	1
Beryllium	<0.00100		0.00100		mg/L		04/11/19 08:00	04/17/19 13:18	1
Cadmium	<0.000500		0.000500		mg/L		04/11/19 08:00	04/17/19 13:18	1
Calcium	<0.500		0.500		mg/L		04/11/19 08:00	04/17/19 13:18	1
Chromium	<0.00500		0.00500		mg/L		04/11/19 08:00	04/17/19 13:18	1
Cobalt	<0.000500		0.000500		mg/L		04/11/19 08:00	04/17/19 13:18	1
Lead	<0.000500		0.000500		mg/L		04/11/19 08:00	04/17/19 13:18	1
Lithium	<0.0100		0.0100		mg/L		04/11/19 08:00	04/17/19 13:18	1
Molybdenum	<0.00200		0.00200		mg/L		04/11/19 08:00	04/17/19 13:18	1
Selenium	<0.00500		0.00500		mg/L		04/11/19 08:00	04/17/19 13:18	1
Thallium	<0.00100		0.00100		mg/L		04/11/19 08:00	04/17/19 13:18	1

Lab Sample ID: MB 310-235364/1-A
Matrix: Water
Analysis Batch: 236351

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.200		0.200		mg/L		04/11/19 08:00	04/18/19 12:03	1

Lab Sample ID: LCS 310-235364/2-A
Matrix: Water
Analysis Batch: 236162

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0200	0.01900		mg/L		95	80 - 120
Arsenic	0.0400	0.04362		mg/L		109	80 - 120
Barium	0.0400	0.03867		mg/L		97	80 - 120
Beryllium	0.0200	0.01913		mg/L		96	80 - 120

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

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

Lab Sample ID: LCS 310-235364/2-A
Matrix: Water
Analysis Batch: 236162

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	0.0200	0.01848		mg/L		92	80 - 120
Calcium	2.00	1.956		mg/L		98	80 - 120
Chromium	0.0400	0.03703		mg/L		93	80 - 120
Cobalt	0.0200	0.01821		mg/L		91	80 - 120
Lead	0.0200	0.01891		mg/L		95	80 - 120
Lithium	0.100	0.09724		mg/L		97	80 - 120
Molybdenum	0.0400	0.03562		mg/L		89	80 - 120
Selenium	0.0400	0.03884		mg/L		97	80 - 120
Thallium	0.0160	0.01474		mg/L		92	80 - 120

Lab Sample ID: LCS 310-235364/2-A
Matrix: Water
Analysis Batch: 237088

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.880	0.8462		mg/L		96	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-235608/1-A
Matrix: Water
Analysis Batch: 235884

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:34	04/15/19 13:42	1

Lab Sample ID: LCS 310-235608/2-A
Matrix: Water
Analysis Batch: 235884

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235608

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00167	0.001628		mg/L		98	80 - 120

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

Lab Sample ID: MB 310-235365/1
Matrix: Water
Analysis Batch: 235365

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			04/10/19 14:38	1

Lab Sample ID: LCS 310-235365/2
Matrix: Water
Analysis Batch: 235365

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	998.0		mg/L		100	90 - 110

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

HPLC/IC

Analysis Batch: 235649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	9056A	
310-152964-2	MW11	Total/NA	Ground Water	9056A	
MB 310-235649/3	Method Blank	Total/NA	Water	9056A	
LCS 310-235649/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 235364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	3010A	
310-152964-2	MW11	Total/NA	Ground Water	3010A	
MB 310-235364/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-235364/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 235608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	7470A	
310-152964-2	MW11	Total/NA	Ground Water	7470A	
MB 310-235608/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-235608/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 235884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	7470A	235608
310-152964-2	MW11	Total/NA	Ground Water	7470A	235608
MB 310-235608/1-A	Method Blank	Total/NA	Water	7470A	235608
LCS 310-235608/2-A	Lab Control Sample	Total/NA	Water	7470A	235608

Analysis Batch: 236162

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-235364/1-A	Method Blank	Total/NA	Water	6020A	235364
LCS 310-235364/2-A	Lab Control Sample	Total/NA	Water	6020A	235364

Analysis Batch: 236351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-235364/1-A	Method Blank	Total/NA	Water	6020A	235364

Analysis Batch: 236393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	6020A	235364
310-152964-2	MW11	Total/NA	Ground Water	6020A	235364

Analysis Batch: 236650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	6020A	235364
310-152964-2	MW11	Total/NA	Ground Water	6020A	235364

Analysis Batch: 236725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	6020A	235364
310-152964-2	MW11	Total/NA	Ground Water	6020A	235364

Eurofins TestAmerica, Cedar Falls

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Metals

Analysis Batch: 237088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-235364/2-A	Lab Control Sample	Total/NA	Water	6020A	235364

General Chemistry

Analysis Batch: 235365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	SM 2540C	
310-152964-2	MW11	Total/NA	Ground Water	SM 2540C	
MB 310-235365/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-235365/2	Lab Control Sample	Total/NA	Water	SM 2540C	

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Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Client Sample ID: MW14

Date Collected: 04/08/19 11:58

Date Received: 04/10/19 09:10

Lab Sample ID: 310-152964-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	235649	04/10/19 22:35	MLU	TAL CF
Total/NA	Prep	3010A			235364	04/11/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	236393	04/18/19 21:20	SAD	TAL CF
Total/NA	Prep	3010A			235364	04/11/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	236650	04/19/19 23:36	SAD	TAL CF
Total/NA	Prep	3010A			235364	04/11/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	236725	04/22/19 12:13	SAD	TAL CF
Total/NA	Prep	7470A			235608	04/12/19 09:34	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 14:21	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235365	04/10/19 14:38	MDK	TAL CF

Client Sample ID: MW11

Date Collected: 04/08/19 18:10

Date Received: 04/10/19 09:10

Lab Sample ID: 310-152964-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	235649	04/10/19 22:51	MLU	TAL CF
Total/NA	Prep	3010A			235364	04/11/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	236393	04/18/19 21:23	SAD	TAL CF
Total/NA	Prep	3010A			235364	04/11/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	236650	04/19/19 23:39	SAD	TAL CF
Total/NA	Prep	3010A			235364	04/11/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	236725	04/22/19 12:26	SAD	TAL CF
Total/NA	Prep	7470A			235608	04/12/19 09:34	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 14:23	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235365	04/10/19 14:38	MDK	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-19
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-20
Minnesota	NELAP	5	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-19
Oregon	NELAP	10	IA100001	09-29-19
USDA	Federal		P330-19-00003	01-02-22

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401



Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client: <u>Omaha Public Power District</u>					
City/State: <u>Omaha</u> <small>CITY</small>		<u>NE</u> <small>STATE</small>		Project: <u>Nebraska City Unit 1</u>	
Receipt Information					
Date/Time Received: <u>4-10-19</u> <small>DATE</small>		<u>910</u> <small>TIME</small>		Received By: <u>KP</u>	
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____					
Condition of Cooler/Containers					
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler ID: _____	
Multiple Coolers?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Cooler # _____ of _____	
Cooler Custody Seals Present?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Which VOA samples are in cooler? ↓	
Temperature Record					
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE					
Thermometer ID: <u>5</u>			Correction Factor (°C): <u>+0.1</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature					
Uncorrected Temp (°C): <u>0.7</u>			Corrected Temp (°C): <u>0.8</u>		
• Sample Container Temperature					
Container type(s) used:		CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):		TEMP 1	TEMP 2	Corrected Temp (°C):	
				TEMP 1	
				TEMP 2	
Exceptions Noted					
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No					
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No					
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No					
NOTE: If yes, contact PM before proceeding. If no, proceed with login					
Additional Comments					

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704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Client Information Client Contact: Kyle Uhing Company: Omaha Public Power District Address: 444 South 16th Street Mall City: Omaha State, Zip: NE, 68102-2247 Phone: _____ PO #: _____ WO #: _____ Email: kkuhing@oppd.com Project Name: Nebraska City Unit 1 Site: _____ TestAmerica Project #: 31007558 SSON#: _____		Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com Sampler: _____ Phone: _____		Carrier Tracking No(s): _____ Page: _____ Job #: _____		COC No: _____											
Due Date Requested: _____ TAT Requested (days): _____ PO #: _____ WO #: _____ TestAmerica Project #: 31007558 SSON#: _____		Analysis Requested															
Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total CCR Metals List Metals and 7470A Mercury		2540C TDS, TSS, and 9056A Chloride, Fluoride, Sulfate		Dissolved CCR Metals List Metals and 7470A Mercury		Dissolved 9315_Ra226, 9320_Ra228		Aluminum		Total Number of Containers			
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=soil, BT=Tissue, A=Air)		Preservation Code:		Special Instructions/Note:		Preservation Codes:			
NC2MW4		4/9/2019		10:45		GW		GW		X		X		See attached list.			
MW14		4/9/2019		11:58		GW		GW		X		X		See attached list.			
MW11		4/9/2019		18:10		GW		GW		X		X		See attached list.			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Deliverable Requested: I, II, III, IV, Other (specify)		Empty Kit Relinquished by: _____		Date: _____		Time: _____		Method of Shipment:		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Relinquished by: _____		Date/Time: 4/9/2019 0900		Company: OPPD		Date/Time: 4-9-19 0900		Company: TESTA		Date/Time: _____		Company: _____		Date/Time: _____		Company: _____	
Relinquished by: _____		Date/Time: 4-9-19 1600		Company: TESTA		Date/Time: _____		Company: _____		Date/Time: _____		Company: _____		Date/Time: _____		Company: _____	
Relinquished by: _____		Date/Time: _____		Company: _____		Date/Time: _____		Company: _____		Date/Time: _____		Company: _____		Date/Time: _____		Company: _____	
Custody Seals Intact: _____ Δ Yes Δ No		Custody Seal No.: _____		Cooler Temperature(s): _____		and Other Remarks: _____		Received by: _____		Date/Time: _____		Company: _____		Date/Time: _____		Company: _____	



Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> pH	<u>Preservative</u> Added (mls)	<u>Lot #</u>
MW14	310-152964-A-1	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW14	310-152964-B-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW14	310-152964-D-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW14	310-152964-E-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW14	310-152964-F-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW14	310-152964-G-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW11	310-152964-A-2	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW11	310-152964-B-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW11	310-152964-D-2	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW11	310-152964-E-2	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW11	310-152964-F-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW11	310-152964-G-2	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-152964-1

Login Number: 152964

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Homolar, Dana J

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



ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-152964-2
Client Project/Site: Nebraska City Unit 1

For:

Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
5/30/2019 12:27:25 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

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results through
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www.testamericainc.com

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Job ID: 310-152964-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-152964-2

Comments

No additional comments.

Receipt

The samples were received on 4/10/2019 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8° C.

RAD

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

Field Service / Mobile Lab

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

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Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-152964-1	MW14	Ground Water	04/08/19 11:58	04/10/19 09:10	
310-152964-2	MW11	Ground Water	04/08/19 18:10	04/10/19 09:10	

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Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Client Sample ID: MW14

Lab Sample ID: 310-152964-1

Date Collected: 04/08/19 11:58

Matrix: Ground Water

Date Received: 04/10/19 09:10

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.342		0.111	0.116	1.00	0.0950	pCi/L	04/29/19 11:42	05/21/19 21:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.7		40 - 110					04/29/19 11:42	05/21/19 21:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.401		0.103	0.109	1.00	0.0655	pCi/L	04/30/19 14:23	05/28/19 07:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					04/30/19 14:23	05/28/19 07:22	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.774		0.299	0.308	1.00	0.421	pCi/L	04/29/19 13:58	05/14/19 08:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.7		40 - 110					04/29/19 13:58	05/14/19 08:55	1
Y Carrier	88.6		40 - 110					04/29/19 13:58	05/14/19 08:55	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.632		0.242	0.249	1.00	0.337	pCi/L	04/30/19 15:01	05/16/19 08:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					04/30/19 15:01	05/16/19 08:39	1
Y Carrier	90.5		40 - 110					04/30/19 15:01	05/16/19 08:39	1

Method: Ra226_Ra228 (D) - Combined Radium-226 and Radium-228 - Dissolved

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	1.03		0.263	0.272	5.00	0.337	pCi/L		05/30/19 09:05	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.12		0.319	0.329	5.00	0.421	pCi/L		05/22/19 09:03	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Client Sample ID: MW11

Lab Sample ID: 310-152964-2

Date Collected: 04/08/19 18:10

Matrix: Ground Water

Date Received: 04/10/19 09:10

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.117		0.0687	0.0695	1.00	0.0772	pCi/L	04/29/19 11:42	05/21/19 21:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.0		40 - 110					04/29/19 11:42	05/21/19 21:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0711	U	0.0588	0.0592	1.00	0.0816	pCi/L	04/30/19 14:23	05/28/19 07:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.2		40 - 110					04/30/19 14:23	05/28/19 07:22	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.576		0.293	0.298	1.00	0.441	pCi/L	04/29/19 13:58	05/14/19 08:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.0		40 - 110					04/29/19 13:58	05/14/19 08:55	1
Y Carrier	92.7		40 - 110					04/29/19 13:58	05/14/19 08:55	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.157	U	0.201	0.201	1.00	0.333	pCi/L	04/30/19 15:01	05/16/19 08:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.2		40 - 110					04/30/19 15:01	05/16/19 08:39	1
Y Carrier	90.8		40 - 110					04/30/19 15:01	05/16/19 08:39	1

Method: Ra226_Ra228 (D) - Combined Radium-226 and Radium-228 - Dissolved

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.228	U	0.209	0.210	5.00	0.333	pCi/L		05/30/19 09:05	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.693		0.301	0.306	5.00	0.441	pCi/L		05/22/19 09:03	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Qualifiers

Rad

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

Glossary

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

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-426052/23-A
Matrix: Water
Analysis Batch: 429273

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426052

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.03084	U	0.0466	0.0467	1.00	0.0806	pCi/L	04/29/19 11:42	05/21/19 21:41	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	102		40 - 110		04/29/19 11:42	05/21/19 21:41	1			

Lab Sample ID: LCS 160-426052/1-A
Matrix: Water
Analysis Batch: 429225

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426052

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	9.982		1.07	1.00	0.0952	pCi/L	88	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	97.7		40 - 110						

Lab Sample ID: LCSD 160-426052/2-A
Matrix: Water
Analysis Batch: 429225

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426052

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
				Uncert. (2σ+/-)							
Radium-226	11.4	9.802		1.05	1.00	0.106	pCi/L	86	75 - 125	0.09	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits								
Ba Carrier	92.7		40 - 110								

Lab Sample ID: MB 160-426264/23-A
Matrix: Water
Analysis Batch: 429838

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426264

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.04470	U	0.0508	0.0509	1.00	0.0815	pCi/L	04/30/19 14:23	05/28/19 16:12	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	98.0		40 - 110		04/30/19 14:23	05/28/19 16:12	1			

Lab Sample ID: LCS 160-426264/1-A
Matrix: Water
Analysis Batch: 429838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426264

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	9.772		1.02	1.00	0.0841	pCi/L	86	75 - 125

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

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

Lab Sample ID: LCS 160-426264/1-A
Matrix: Water
Analysis Batch: 429838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426264

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	94.9		40 - 110

Lab Sample ID: LCSD 160-426264/2-A
Matrix: Water
Analysis Batch: 429838

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426264

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	9.515		0.998	1.00	0.0865	pCi/L	84	75 - 125	0.13	1

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

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-426058/23-A
Matrix: Water
Analysis Batch: 428152

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426058

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.08499	U	0.196	0.196	1.00	0.337	pCi/L	04/29/19 13:58	05/14/19 08:55	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	04/29/19 13:58	05/14/19 08:55	1
Y Carrier	91.6		40 - 110	04/29/19 13:58	05/14/19 08:55	1

Lab Sample ID: LCS 160-426058/1-A
Matrix: Water
Analysis Batch: 428139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426058

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.21	8.942		1.04	1.00	0.369	pCi/L	97	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	97.7		40 - 110
Y Carrier	89.0		40 - 110

Lab Sample ID: LCSD 160-426058/2-A
Matrix: Water
Analysis Batch: 428139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426058

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	9.21	9.100		1.06	1.00	0.379	pCi/L	99	75 - 125	0.08	1

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

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

Lab Sample ID: LCSD 160-426058/2-A
Matrix: Water
Analysis Batch: 428139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426058

Carrier	LCSD		Limits
	%Yield	Qualifier	
Ba Carrier	92.7		40 - 110
Y Carrier	90.1		40 - 110

Lab Sample ID: MB 160-426271/23-A
Matrix: Water
Analysis Batch: 428668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426271

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1409	U	0.248	0.249	1.00	0.420	pCi/L	04/30/19 15:01	05/16/19 08:43	1

Carrier	MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	98.0		40 - 110	04/30/19 15:01	05/16/19 08:43	1
Y Carrier	87.5		40 - 110	04/30/19 15:01	05/16/19 08:43	1

Lab Sample ID: LCS 160-426271/1-A
Matrix: Water
Analysis Batch: 428666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426271

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-228	9.20	8.580		0.998	1.00	0.343	pCi/L	93	75 - 125

Carrier	LCS		Limits
	%Yield	Qualifier	
Ba Carrier	94.9		40 - 110
Y Carrier	90.5		40 - 110

Lab Sample ID: LCSD 160-426271/2-A
Matrix: Water
Analysis Batch: 428666

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426271

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
				Uncert. (2σ+/-)							
Radium-228	9.20	8.930		1.03	1.00	0.330	pCi/L	97	75 - 125	0.17	1

Carrier	LCSD		Limits
	%Yield	Qualifier	
Ba Carrier	92.1		40 - 110
Y Carrier	90.8		40 - 110

QC Association Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Rad

Prep Batch: 426052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	PrecSep-21	
310-152964-2	MW11	Total/NA	Ground Water	PrecSep-21	
MB 160-426052/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-426052/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-426052/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 426058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Total/NA	Ground Water	PrecSep_0	
310-152964-2	MW11	Total/NA	Ground Water	PrecSep_0	
MB 160-426058/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-426058/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-426058/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 426264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Dissolved	Ground Water	PrecSep-21	
310-152964-2	MW11	Dissolved	Ground Water	PrecSep-21	
MB 160-426264/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-426264/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-426264/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 426271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152964-1	MW14	Dissolved	Ground Water	PrecSep_0	
310-152964-2	MW11	Dissolved	Ground Water	PrecSep_0	
MB 160-426271/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-426271/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-426271/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Client Sample ID: MW14

Lab Sample ID: 310-152964-1

Date Collected: 04/08/19 11:58

Matrix: Ground Water

Date Received: 04/10/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	PrecSep-21			426264	04/30/19 14:23		TAL SL
Dissolved	Analysis	9315		1	429838	05/28/19 07:22	KLS	TAL SL
Total/NA	Prep	PrecSep-21			426052	04/29/19 11:42		TAL SL
Total/NA	Analysis	9315		1	429273	05/21/19 21:40	CDR	TAL SL
Dissolved	Prep	PrecSep_0			426271	04/30/19 15:01		TAL SL
Dissolved	Analysis	9320		1	428666	05/16/19 08:39	KLS	TAL SL
Total/NA	Prep	PrecSep_0			426058	04/29/19 13:58		TAL SL
Total/NA	Analysis	9320		1	428152	05/14/19 08:55	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	429294	05/22/19 09:03	SMP	TAL SL
Dissolved	Analysis	Ra226_Ra228 (D)		1	430223	05/30/19 09:05	SMP	TAL SL

Client Sample ID: MW11

Lab Sample ID: 310-152964-2

Date Collected: 04/08/19 18:10

Matrix: Ground Water

Date Received: 04/10/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	PrecSep-21			426264	04/30/19 14:23		TAL SL
Dissolved	Analysis	9315		1	429838	05/28/19 07:22	KLS	TAL SL
Total/NA	Prep	PrecSep-21			426052	04/29/19 11:42		TAL SL
Total/NA	Analysis	9315		1	429273	05/21/19 21:40	CDR	TAL SL
Dissolved	Prep	PrecSep_0			426271	04/30/19 15:01		TAL SL
Dissolved	Analysis	9320		1	428666	05/16/19 08:39	KLS	TAL SL
Total/NA	Prep	PrecSep_0			426058	04/29/19 13:58		TAL SL
Total/NA	Analysis	9320		1	428152	05/14/19 08:55	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	429294	05/22/19 09:03	SMP	TAL SL
Dissolved	Analysis	Ra226_Ra228 (D)		1	430223	05/30/19 09:05	SMP	TAL SL

Laboratory References:

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

Accreditation/Certification Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-19
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-20
Minnesota	NELAP	5	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-19
Oregon	NELAP	10	IA100001	09-29-19
USDA	Federal		P330-19-00003	01-02-22

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19 *
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-19 *
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19 *
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19 *
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
Ra226_Ra228 (D)	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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



Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client: <u>Omaha Public Power District</u>					
City/State: <u>Omaha</u> <small>CITY</small>		STATE: <u>NE</u>		Project: <u>Nebraska City Unit 1</u>	
Receipt Information					
Date/Time Received: <u>4-10-19</u> <small>DATE</small>		<u>910</u> <small>TIME</small>		Received By: <u>KP</u>	
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____					
Condition of Cooler/Containers					
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler ID: _____	
Multiple Coolers?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Cooler # _____ of _____	
Cooler Custody Seals Present?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Which VOA samples are in cooler? ↓	
Temperature Record					
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE					
Thermometer ID: <u>5</u>			Correction Factor (°C): <u>+0.1</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature					
Uncorrected Temp (°C): <u>0.7</u>			Corrected Temp (°C): <u>0.8</u>		
• Sample Container Temperature					
Container type(s) used:		CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):		TEMP 1	TEMP 2	Corrected Temp (°C):	
				TEMP 1	
				TEMP 2	
Exceptions Noted					
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No					
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No					
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No					
NOTE: If yes, contact PM before proceeding. If no, proceed with login					
Additional Comments					

Client Information Client Contact: Kyle Uhing Company: Omaha Public Power District Address: 444 South 16th Street Mall City: Omaha State, Zip: NE, 68102-2247 Phone: _____ PO #: _____ WO #: _____ Email: kkuhing@oppd.com Project Name: Nebraska City Unit 1 Site: _____ TestAmerica Project #: 31007558 SSOW#: _____		Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com		Carrier Tracking No(s): _____ COC No: _____ Page: _____ Job #: _____	
Due Date Requested: _____ TAT Requested (days): _____ PO #: _____ WO #: _____ TestAmerica Project #: 31007558 SSOW#: _____		Analysis Requested			
Total 9315_Ra226, 9320_Ra228 Total CCR Metals List Metals and 7470A Mercury 2540C TDS, TSS, and 9056A Chloride, Fluoride, Sulfate Dissolved CCR Metals List Metals and 7470A Mercury Dissolved 9315_Ra226, 9320_Ra228 Aluminum		Total Number of Containers: _____			
Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> X Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> X Total CCR Metals List Metals and 7470A Mercury <input checked="" type="checkbox"/> X 2540C TDS, TSS, and 9056A Chloride, Fluoride, Sulfate <input checked="" type="checkbox"/> X Dissolved CCR Metals List Metals and 7470A Mercury <input checked="" type="checkbox"/> X Dissolved 9315_Ra226, 9320_Ra228 <input checked="" type="checkbox"/> X Aluminum <input checked="" type="checkbox"/> X		Special Instructions/Note: See attached list. See attached list. See attached list.			
Sample Identification Sample Date: 4/19/2019 Sample Time: 10:45 Matrix: GW Sample Type (C=Comp, G=grab): G Preservation Code: _____		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Sample Date: 4/19/2019 Sample Time: 11:58 Matrix: GW Sample Type (C=Comp, G=grab): G Preservation Code: _____		Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify) _____			
Sample Date: 4/19/2019 Sample Time: 18:10 Matrix: GW Sample Type (C=Comp, G=grab): G Preservation Code: _____		Empty Kit Relinquished by: _____ Relinquished by: _____ Relinquished by: _____ Relinquished by: _____ Custody Seal No.: _____ Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			
Date/Time: 4/19/2019 0900 Date/Time: 4/19/2019 1000 Date/Time: _____ Date/Time: _____ Date/Time: _____		Method of Shipment: _____ Received by: _____ Received by: _____ Received by: _____ Received by: _____ Cooler Temperature(s): _____ and Other Remarks: _____			



Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> pH	<u>Preservative</u> Added (mls)	<u>Lot #</u>
MW14	310-152964-A-1	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW14	310-152964-B-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW14	310-152964-D-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW14	310-152964-E-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW14	310-152964-F-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW14	310-152964-G-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW11	310-152964-A-2	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW11	310-152964-B-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW11	310-152964-D-2	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW11	310-152964-E-2	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW11	310-152964-F-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW11	310-152964-G-2	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-152964-2

Login Number: 152964

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Homolar, Dana J

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

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-152964-2

Login Number: 152964

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 04/11/19 06:01 PM

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

Tracer/Carrier Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
310-152964-1	MW14	90.7	
310-152964-2	MW11	91.0	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water

Prep Type: Dissolved

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
310-152964-1	MW14	102	
310-152964-2	MW11	95.2	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
LCS 160-426052/1-A	Lab Control Sample	97.7	
LCS 160-426264/1-A	Lab Control Sample	94.9	
LCSD 160-426052/2-A	Lab Control Sample Dup	92.7	
LCSD 160-426264/2-A	Lab Control Sample Dup	92.1	
MB 160-426052/23-A	Method Blank	102	
MB 160-426264/23-A	Method Blank	98.0	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-152964-1	MW14	90.7	88.6
310-152964-2	MW11	91.0	92.7
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

Tracer/Carrier Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152964-2

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water

Prep Type: Dissolved

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba Carrier (40-110)	Y Carrier (40-110)
310-152964-1	MW14	102	90.5
310-152964-2	MW11	95.2	90.8

Tracer/Carrier Legend
 Ba Carrier = Ba Carrier
 Y Carrier = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba Carrier (40-110)	Y Carrier (40-110)
LCS 160-426058/1-A	Lab Control Sample	97.7	89.0
LCS 160-426271/1-A	Lab Control Sample	94.9	90.5
LCSD 160-426058/2-A	Lab Control Sample Dup	92.7	90.1
LCSD 160-426271/2-A	Lab Control Sample Dup	92.1	90.8
MB 160-426058/23-A	Method Blank	102	91.6
MB 160-426271/23-A	Method Blank	98.0	87.5

Tracer/Carrier Legend
 Ba Carrier = Ba Carrier
 Y Carrier = Y Carrier

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-152983-1
Client Project/Site: Nebraska City Unit 1/Unit 2
Revision: 1

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
5/6/2019 10:01:01 AM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Job ID: 310-152983-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-152983-1

Comments

No additional comments.

Receipt

The sample was received on 4/10/2019 9:10 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.5° C.

HPLC/IC

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

Metals

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

General Chemistry

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

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Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-152983-1	NC2MW4	Ground Water	04/08/19 10:45	04/10/19 09:10

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Client Sample ID: NC2MW4

Lab Sample ID: 310-152983-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	40.9		5.00		mg/L	5		9056A	Total/NA
Barium	0.351		0.00200		mg/L	1		6020A	Total/NA
Calcium	137		0.500		mg/L	1		6020A	Total/NA
Lithium	0.0351		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.00283		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	560		30.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Client Sample ID: NC2MW4

Lab Sample ID: 310-152983-1

Date Collected: 04/08/19 10:45

Matrix: Ground Water

Date Received: 04/10/19 09:10

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			04/16/19 10:24	5
Fluoride	<0.500		0.500		mg/L			04/16/19 10:24	5
Sulfate	40.9		5.00		mg/L			04/16/19 10:24	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/11/19 08:03	04/23/19 17:25	1
Arsenic	<0.00200		0.00200		mg/L		04/11/19 08:03	04/23/19 17:25	1
Barium	0.351		0.00200		mg/L		04/11/19 08:03	04/23/19 17:25	1
Beryllium	<0.00100		0.00100		mg/L		04/11/19 08:03	04/23/19 17:25	1
Boron	<0.200		0.200		mg/L		04/11/19 08:03	04/24/19 13:31	1
Cadmium	<0.000500		0.000500		mg/L		04/11/19 08:03	04/23/19 17:25	1
Calcium	137		0.500		mg/L		04/11/19 08:03	04/23/19 17:25	1
Chromium	<0.00500		0.00500		mg/L		04/11/19 08:03	04/23/19 17:25	1
Cobalt	<0.000500		0.000500		mg/L		04/11/19 08:03	04/23/19 17:25	1
Lead	<0.000500		0.000500		mg/L		04/11/19 08:03	04/23/19 17:25	1
Lithium	0.0351		0.0100		mg/L		04/11/19 08:03	04/23/19 17:25	1
Molybdenum	0.00283		0.00200		mg/L		04/11/19 08:03	04/23/19 17:25	1
Selenium	<0.00500		0.00500		mg/L		04/11/19 08:03	04/23/19 17:25	1
Thallium	<0.00100		0.00100		mg/L		04/11/19 08:03	04/23/19 17:25	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 15:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	560		30.0		mg/L			04/10/19 14:38	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Glossary

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

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-236282/3
Matrix: Water
Analysis Batch: 236282

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/16/19 09:42	1
Fluoride	<0.100		0.100		mg/L			04/16/19 09:42	1
Sulfate	<1.00		1.00		mg/L			04/16/19 09:42	1

Lab Sample ID: LCS 310-236282/4
Matrix: Water
Analysis Batch: 236282

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.987		mg/L		100	90 - 110
Fluoride	2.00	2.000		mg/L		100	90 - 110
Sulfate	10.0	10.19		mg/L		102	90 - 110

Lab Sample ID: 310-152983-1 MS
Matrix: Ground Water
Analysis Batch: 236282

Client Sample ID: NC2MW4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	<5.00		25.0	26.35		mg/L		94	80 - 120
Fluoride	<0.500		5.00	5.121		mg/L		102	80 - 120
Sulfate	40.9		25.0	66.68		mg/L		103	80 - 120

Lab Sample ID: 310-152983-1 MSD
Matrix: Ground Water
Analysis Batch: 236282

Client Sample ID: NC2MW4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	<5.00		25.0	26.26		mg/L		93	80 - 120	0	15
Fluoride	<0.500		5.00	5.129		mg/L		103	80 - 120	0	15
Sulfate	40.9		25.0	66.63		mg/L		103	80 - 120	0	15

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-235436/1-A
Matrix: Water
Analysis Batch: 236992

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235436

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		04/11/19 08:03	04/23/19 17:18	1
Arsenic	<0.00200		0.00200		mg/L		04/11/19 08:03	04/23/19 17:18	1
Barium	<0.00200		0.00200		mg/L		04/11/19 08:03	04/23/19 17:18	1
Beryllium	<0.00100		0.00100		mg/L		04/11/19 08:03	04/23/19 17:18	1
Cadmium	<0.000500		0.000500		mg/L		04/11/19 08:03	04/23/19 17:18	1
Calcium	<0.500		0.500		mg/L		04/11/19 08:03	04/23/19 17:18	1
Chromium	<0.00500		0.00500		mg/L		04/11/19 08:03	04/23/19 17:18	1
Cobalt	<0.000500		0.000500		mg/L		04/11/19 08:03	04/23/19 17:18	1
Lead	<0.000500		0.000500		mg/L		04/11/19 08:03	04/23/19 17:18	1
Lithium	<0.0100		0.0100		mg/L		04/11/19 08:03	04/23/19 17:18	1
Molybdenum	<0.00200		0.00200		mg/L		04/11/19 08:03	04/23/19 17:18	1
Selenium	<0.00500		0.00500		mg/L		04/11/19 08:03	04/23/19 17:18	1

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

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

Lab Sample ID: MB 310-235436/1-A
Matrix: Water
Analysis Batch: 236992

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235436

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	<0.00100		0.00100		mg/L		04/11/19 08:03	04/23/19 17:18	1

Lab Sample ID: MB 310-235436/1-A
Matrix: Water
Analysis Batch: 237088

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 235436

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.200		0.200		mg/L		04/11/19 08:03	04/24/19 13:25	1

Lab Sample ID: LCS 310-235436/2-A
Matrix: Water
Analysis Batch: 236992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235436

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	0.0200	0.02005		mg/L		100	80 - 120
Arsenic	0.0400	0.04188		mg/L		105	80 - 120
Barium	0.0400	0.04149		mg/L		104	80 - 120
Beryllium	0.0200	0.01964		mg/L		98	80 - 120
Cadmium	0.0200	0.02115		mg/L		106	80 - 120
Calcium	2.00	2.142		mg/L		107	80 - 120
Chromium	0.0400	0.04108		mg/L		103	80 - 120
Cobalt	0.0200	0.02001		mg/L		100	80 - 120
Lead	0.0200	0.02074		mg/L		104	80 - 120
Lithium	0.100	0.1042		mg/L		104	80 - 120
Molybdenum	0.0400	0.03924		mg/L		98	80 - 120
Selenium	0.0400	0.04057		mg/L		101	80 - 120
Thallium	0.0160	0.01615		mg/L		101	80 - 120

Lab Sample ID: LCS 310-235436/2-A
Matrix: Water
Analysis Batch: 237088

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 235436

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	0.880	0.8324		mg/L		95	80 - 120

Lab Sample ID: 310-152983-1 DU
Matrix: Ground Water
Analysis Batch: 236992

Client Sample ID: NC2MW4
Prep Type: Total/NA
Prep Batch: 235436

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Antimony	<0.00100		<0.00100		mg/L		NC	20
Arsenic	<0.00200		<0.00200		mg/L		NC	20
Barium	0.351		0.3533		mg/L		0.5	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Cadmium	<0.000500		<0.000500		mg/L		NC	20
Calcium	137		136.8		mg/L		0.09	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	<0.000500		<0.000500		mg/L		NC	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Lithium	0.0351		0.03513		mg/L		0.05	20

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

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

Lab Sample ID: 310-152983-1 DU
 Matrix: Ground Water
 Analysis Batch: 236992

Client Sample ID: NC2MW4
 Prep Type: Total/NA
 Prep Batch: 235436

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Molybdenum	0.00283		0.002672		mg/L		6	20
Selenium	<0.00500		<0.00500		mg/L		NC	20
Thallium	<0.00100		<0.00100		mg/L		NC	20

Lab Sample ID: 310-152983-1 DU
 Matrix: Ground Water
 Analysis Batch: 237088

Client Sample ID: NC2MW4
 Prep Type: Total/NA
 Prep Batch: 235436

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Boron	<0.200		<0.200		mg/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-235611/1-A
 Matrix: Water
 Analysis Batch: 235884

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 235611

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		04/12/19 09:48	04/15/19 14:46	1

Lab Sample ID: LCS 310-235611/2-A
 Matrix: Water
 Analysis Batch: 235884

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 235611
 %Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00167	0.001667		mg/L		100	80 - 120

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

Lab Sample ID: MB 310-235365/1
 Matrix: Water
 Analysis Batch: 235365

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			04/10/19 14:38	1

Lab Sample ID: LCS 310-235365/2
 Matrix: Water
 Analysis Batch: 235365

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	1000	998.0		mg/L		100	90 - 110

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

HPLC/IC

Analysis Batch: 236282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	9056A	
MB 310-236282/3	Method Blank	Total/NA	Water	9056A	
LCS 310-236282/4	Lab Control Sample	Total/NA	Water	9056A	
310-152983-1 MS	NC2MW4	Total/NA	Ground Water	9056A	
310-152983-1 MSD	NC2MW4	Total/NA	Ground Water	9056A	

Metals

Prep Batch: 235436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	3010A	
MB 310-235436/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-235436/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-152983-1 DU	NC2MW4	Total/NA	Ground Water	3010A	

Prep Batch: 235611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	7470A	
MB 310-235611/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-235611/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 235884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	7470A	235611
MB 310-235611/1-A	Method Blank	Total/NA	Water	7470A	235611
LCS 310-235611/2-A	Lab Control Sample	Total/NA	Water	7470A	235611

Analysis Batch: 236992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	6020A	235436
MB 310-235436/1-A	Method Blank	Total/NA	Water	6020A	235436
LCS 310-235436/2-A	Lab Control Sample	Total/NA	Water	6020A	235436
310-152983-1 DU	NC2MW4	Total/NA	Ground Water	6020A	235436

Analysis Batch: 237088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	6020A	235436
MB 310-235436/1-A	Method Blank	Total/NA	Water	6020A	235436
LCS 310-235436/2-A	Lab Control Sample	Total/NA	Water	6020A	235436
310-152983-1 DU	NC2MW4	Total/NA	Ground Water	6020A	235436

General Chemistry

Analysis Batch: 235365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	SM 2540C	
MB 310-235365/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-235365/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Eurofins TestAmerica, Cedar Falls

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Client Sample ID: NC2MW4

Lab Sample ID: 310-152983-1

Date Collected: 04/08/19 10:45

Matrix: Ground Water

Date Received: 04/10/19 09:10

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Analysis	9056A		5	236282	04/16/19 10:24	MLU	TAL CF
Total/NA	Prep	3010A			235436	04/11/19 08:03	HED	TAL CF
Total/NA	Analysis	6020A		1	236992	04/23/19 17:25	SAD	TAL CF
Total/NA	Prep	3010A			235436	04/11/19 08:03	HED	TAL CF
Total/NA	Analysis	6020A		1	237088	04/24/19 13:31	SAD	TAL CF
Total/NA	Prep	7470A			235611	04/12/19 09:48	JNR	TAL CF
Total/NA	Analysis	7470A		1	235884	04/15/19 15:06	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	235365	04/10/19 14:38	MDK	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-19
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-20
Minnesota	NELAP	5	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-19
Oregon	NELAP	10	IA100001	09-29-19
USDA	Federal		P330-19-00003	01-02-22

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1/Unit 2

Job ID: 310-152983-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401





Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Omaha Public Power District</u>			
City/State: <u>Omaha</u> <small>CITY</small>	<u>NE</u> <small>STATE</small>	Project: <u>Nebraska City unit 2, unit 2 CCR, unit 1</u>	
Receipt Information			
Date/Time Received: <u>4-10-19</u> <small>DATE</small>	<u>910</u> <small>TIME</small>	Received By: <u>KP</u>	
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # _____ of _____	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>5</u>	Correction Factor (°C): <u>+0.1</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>2.4</u>	Corrected Temp (°C): <u>2.5</u>		
• Sample Container Temperature			
Container type(s) used:		CONTAINER 1	CONTAINER 2
Uncorrected Temp (°C):	TEMP 1	TEMP 2	Corrected Temp (°C): TEMP 1 TEMP 2
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

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Client Information Client Contact: Kyle Uhing Company: Omaha Public Power District Address: 444 South 16th Street Mall 9E/EP1 City: Omaha State, Zip: NE, 68102-2247 Phone: 402-636-2515 (Tel) Email: kkuhing@oppd.com Project Name: Nebraska City Unit 2 CCR Site:		Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com Carrier Tracking No(s): Lab No: Page: Job #:	
Due Date Requested: TAT Requested (days): PO #: WO #: TestAmerica Project #: SLOW#:		Analysis Requested 6020 CCR Appendix III and IV List 6020 Appendix III Boron and Calcium 2540C TDS, 9056A Chloride, Fluoride, Sulfate 9315, Ra226, 9320, Ra228, Combined Ra226 and Ra228 Perform MS/MSD (Yes or No) Field Filtered Sample (Yes or No)	
Sample Identification NC2MWA Sample Date: 4/9/2019 Sample Time: 10:45 Sample Type (C=Comp, G=grab) Matrix (W=water, S=solid, O=organic, I=Inorganic, A=air) Preservation Code: G GW		Total Number of containers: X Special Instructions/Note: Appendix III	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)			
Empty Kit Relinquished by: Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by: [Signature]			
Date/Time: 4/9/2019 0900 Date/Time: 4/9/2019 1000 Date/Time:		Date/Time: 4/9/19 0900 Date/Time: 4-10-19 910 Date/Time:	
Company: OPPD Company: TestA Company:		Company: TestA Company: TestA Company:	
Custody Seals Intact: Δ Yes Δ No		Cooler Temperature(s) °C and Other Remarks:	



Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
NC2MW4	310-152983-A-1	Plastic 250ml - w/nitric - dis	<2	_____	_____
NC2MW4	310-152983-B-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC2MW4	310-152983-D-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
NC2MW4	310-152983-E-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
NC2MW4	310-152983-F-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC2MW4	310-152983-G-1	Plastic 1 liter - Nitric Acid	<2	_____	_____



Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-152983-1

Login Number: 152983

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bindert, Lindsay A

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

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-152983-2
Client Project/Site: Nebraska City Unit 1

For:

Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
5/30/2019 12:38:49 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Job ID: 310-152983-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-152983-2

Comments

No additional comments.

Receipt

The sample was received on 4/10/2019 9:10 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.5° C.

RAD

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

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Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-152983-1	NC2MW4	Ground Water	04/08/19 10:45	04/10/19 09:10	

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Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Client Sample ID: NC2MW4

Lab Sample ID: 310-152983-1

Date Collected: 04/08/19 10:45

Matrix: Ground Water

Date Received: 04/10/19 09:10

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.211		0.0879	0.0900	1.00	0.0859	pCi/L	04/29/19 11:42	05/21/19 21:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.6		40 - 110					04/29/19 11:42	05/21/19 21:41	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.224		0.0904	0.0927	1.00	0.0856	pCi/L	04/30/19 14:23	05/28/19 07:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					04/30/19 14:23	05/28/19 07:22	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.532		0.294	0.298	1.00	0.450	pCi/L	04/29/19 13:58	05/14/19 08:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.6		40 - 110					04/29/19 13:58	05/14/19 08:55	1
Y Carrier	92.7		40 - 110					04/29/19 13:58	05/14/19 08:55	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.756		0.233	0.243	1.00	0.294	pCi/L	04/30/19 15:01	05/16/19 08:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					04/30/19 15:01	05/16/19 08:39	1
Y Carrier	89.0		40 - 110					04/30/19 15:01	05/16/19 08:39	1

Method: Ra226_Ra228 (D) - Combined Radium-226 and Radium-228 - Dissolved

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.980		0.250	0.260	5.00	0.294	pCi/L		05/30/19 09:05	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.743		0.307	0.311	5.00	0.450	pCi/L		05/22/19 09:03	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Qualifiers

Rad

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

Glossary

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

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-426052/23-A
Matrix: Water
Analysis Batch: 429273

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426052

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.03084	U	0.0466	0.0467	1.00	0.0806	pCi/L	04/29/19 11:42	05/21/19 21:41	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	102		40 - 110		04/29/19 11:42	05/21/19 21:41	1			

Lab Sample ID: LCS 160-426052/1-A
Matrix: Water
Analysis Batch: 429225

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426052

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	9.982		1.07	1.00	0.0952	pCi/L	88	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	97.7		40 - 110						

Lab Sample ID: LCSD 160-426052/2-A
Matrix: Water
Analysis Batch: 429225

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426052

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
				Uncert. (2σ+/-)							
Radium-226	11.4	9.802		1.05	1.00	0.106	pCi/L	86	75 - 125	0.09	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits								
Ba Carrier	92.7		40 - 110								

Lab Sample ID: MB 160-426264/23-A
Matrix: Water
Analysis Batch: 429838

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426264

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.04470	U	0.0508	0.0509	1.00	0.0815	pCi/L	04/30/19 14:23	05/28/19 16:12	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	98.0		40 - 110		04/30/19 14:23	05/28/19 16:12	1			

Lab Sample ID: LCS 160-426264/1-A
Matrix: Water
Analysis Batch: 429838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426264

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	9.772		1.02	1.00	0.0841	pCi/L	86	75 - 125

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

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

Lab Sample ID: LCS 160-426264/1-A
Matrix: Water
Analysis Batch: 429838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426264

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	94.9		40 - 110

Lab Sample ID: LCSD 160-426264/2-A
Matrix: Water
Analysis Batch: 429838

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426264

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	9.515		0.998	1.00	0.0865	pCi/L	84	75 - 125	0.13	1

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

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-426058/23-A
Matrix: Water
Analysis Batch: 428152

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426058

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.08499	U	0.196	0.196	1.00	0.337	pCi/L	04/29/19 13:58	05/14/19 08:55	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110	04/29/19 13:58	05/14/19 08:55	1
Y Carrier	91.6		40 - 110	04/29/19 13:58	05/14/19 08:55	1

Lab Sample ID: LCS 160-426058/1-A
Matrix: Water
Analysis Batch: 428139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426058

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.21	8.942		1.04	1.00	0.369	pCi/L	97	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	97.7		40 - 110
Y Carrier	89.0		40 - 110

Lab Sample ID: LCSD 160-426058/2-A
Matrix: Water
Analysis Batch: 428139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426058

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	9.21	9.100		1.06	1.00	0.379	pCi/L	99	75 - 125	0.08	1

QC Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

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

Lab Sample ID: LCSD 160-426058/2-A
Matrix: Water
Analysis Batch: 428139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426058

Carrier	LCSD		Limits
	%Yield	Qualifier	
Ba Carrier	92.7		40 - 110
Y Carrier	90.1		40 - 110

Lab Sample ID: MB 160-426271/23-A
Matrix: Water
Analysis Batch: 428668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426271

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1409	U	0.248	0.249	1.00	0.420	pCi/L	04/30/19 15:01	05/16/19 08:43	1

Carrier	MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	98.0		40 - 110	04/30/19 15:01	05/16/19 08:43	1
Y Carrier	87.5		40 - 110	04/30/19 15:01	05/16/19 08:43	1

Lab Sample ID: LCS 160-426271/1-A
Matrix: Water
Analysis Batch: 428666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426271

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-228	9.20	8.580		0.998	1.00	0.343	pCi/L	93	75 - 125

Carrier	LCS		Limits
	%Yield	Qualifier	
Ba Carrier	94.9		40 - 110
Y Carrier	90.5		40 - 110

Lab Sample ID: LCSD 160-426271/2-A
Matrix: Water
Analysis Batch: 428666

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426271

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
				Uncert. (2σ+/-)							
Radium-228	9.20	8.930		1.03	1.00	0.330	pCi/L	97	75 - 125	0.17	1

Carrier	LCSD		Limits
	%Yield	Qualifier	
Ba Carrier	92.1		40 - 110
Y Carrier	90.8		40 - 110

QC Association Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Rad

Prep Batch: 426052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	PrecSep-21	
MB 160-426052/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-426052/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-426052/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 426058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Total/NA	Ground Water	PrecSep_0	
MB 160-426058/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-426058/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-426058/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 426264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Dissolved	Ground Water	PrecSep-21	
MB 160-426264/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-426264/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-426264/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 426271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152983-1	NC2MW4	Dissolved	Ground Water	PrecSep_0	
MB 160-426271/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-426271/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-426271/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Client Sample ID: NC2MW4

Lab Sample ID: 310-152983-1

Date Collected: 04/08/19 10:45

Matrix: Ground Water

Date Received: 04/10/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	PrecSep-21			426264	04/30/19 14:23		TAL SL
Dissolved	Analysis	9315		1	429838	05/28/19 07:22	KLS	TAL SL
Total/NA	Prep	PrecSep-21			426052	04/29/19 11:42		TAL SL
Total/NA	Analysis	9315		1	429273	05/21/19 21:41	CDR	TAL SL
Dissolved	Prep	PrecSep_0			426271	04/30/19 15:01		TAL SL
Dissolved	Analysis	9320		1	428666	05/16/19 08:39	KLS	TAL SL
Total/NA	Prep	PrecSep_0			426058	04/29/19 13:58		TAL SL
Total/NA	Analysis	9320		1	428152	05/14/19 08:55	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	429294	05/22/19 09:03	SMP	TAL SL
Dissolved	Analysis	Ra226_Ra228 (D)		1	430223	05/30/19 09:05	SMP	TAL SL

Laboratory References:

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



Accreditation/Certification Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-19
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-20
Minnesota	NELAP	5	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-19
Oregon	NELAP	10	IA100001	09-29-19
USDA	Federal		P330-19-00003	01-02-22

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19 *
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-19 *
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19 *
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19 *
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
Ra226_Ra228 (D)	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Omaha Public Power District</u>			
City/State: <u>Omaha</u> <small>CITY</small> <u>NE</u> <small>STATE</small>		Project: <u>Nebraska City Unit 2, Unit 2 CCR, Unit 1</u>	
Receipt Information			
Date/Time Received: <u>4-10-19</u> <small>DATE</small> <u>910</u> <small>TIME</small>		Received By: <u>KP</u>	
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler ID: _____	
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Cooler # _____ of _____	
Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>5</u>		Correction Factor (°C): <u>+0.1</u>	
• Temp Blank Temperature – if no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>24</u>		Corrected Temp (°C): <u>25</u>	
• Sample Container Temperature			
Container type(s) used: CONTAINER 1 _____ CONTAINER 2 _____			
Uncorrected Temp (°C): TEMP 1 _____ TEMP 2 _____		Corrected Temp (°C): TEMP 1 _____ TEMP 2 _____	
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Client Information Company: Omaha Public Power District Address: 444 South 16th Street Mail City: Omaha State, Zip: NE, 68102-2247 Phone: Email: kkuhling@oppd.com Project Name: Nebraska City Unit 1 Site:		Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com Carrier Tracking Note:		COC No: Page: Job #:	
Due Date Requested: TAT Requested (days): PO #: WO #: TestAmerica Project #: S50WE:		Analysis Requested			
Perform ICM/MSD (Yes or No)		Total 9315_Ra226, 9320_Ra228		Total CCR Metals List Metals and 7470A Mercury	
Field Filtered Sample (Yes or No)		Total CCR Metals List Metals and 7470A Mercury		2540C TDS, TSS, and 9056A Chloride, Fluoride, Sulfate	
Disolved 9315_Ra226, 9320_Ra228		Disolved CCR Metals List Metals and 7470A Mercury		Disolved 9315_Ra226, 9320_Ra228	
Aluminum					
Total Number of Containers					
Special Instructions/Note: See attached list. See attached list. See attached list.					
Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AcNaO2 P - Na2CO3 Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)					
Sample Identification NC2MW4 MW14 MW11		Sample Date 4/18/2019 4/18/2019 4/18/2019	Sample Time 10:45 11:58 18:10	Sample Type (C=Comp, G=grab) GW GW GW	Matrix (Inorganic, Organic, Inorganic, Analyt) GW GW GW
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Empty Kit Relinquished by:		Date: 4/9/2019 0900 Company: ORPD		Method of Shipment:	
Relinquished by:		Date/Time: 4-9-19 1600 Company: TestA		Recieved by: #6 Date/Time: 4-9-19 0900 Company: TestA	
Relinquished by:		Date/Time: 4-9-19 1600 Company: TestA		Recieved by: Andrew Binder Date/Time: 4-10-19 910 Company:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	



Login Container Summary Report

Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
NC2MW4	310-152983-A-1	Plastic 250ml - w nitric - dis	<2	_____	_____
NC2MW4	310-152983-B-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC2MW4	310-152983-D-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
NC2MW4	310-152983-E-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
NC2MW4	310-152983-F-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC2MW4	310-152983-G-1	Plastic 1 liter - Nitric Acid	<2	_____	_____



Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-152983-2

Login Number: 152983

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bindert, Lindsay A

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

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-152983-2

Login Number: 152983

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 04/11/19 06:01 PM

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

Tracer/Carrier Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1

Job ID: 310-152983-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
310-152983-1	NC2MW4	96.6	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water

Prep Type: Dissolved

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
310-152983-1	NC2MW4	100	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
LCS 160-426052/1-A	Lab Control Sample	97.7	
LCS 160-426264/1-A	Lab Control Sample	94.9	
LCS 160-426052/2-A	Lab Control Sample Dup	92.7	
LCS 160-426264/2-A	Lab Control Sample Dup	92.1	
MB 160-426052/23-A	Method Blank	102	
MB 160-426264/23-A	Method Blank	98.0	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-152983-1	NC2MW4	96.6	92.7
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			
Y Carrier = Y Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water

Prep Type: Dissolved

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-152983-1	NC2MW4	100	89.0
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1
Y Carrier = Y Carrier

Job ID: 310-152983-2

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
LCS 160-426058/1-A	Lab Control Sample	97.7	89.0
LCS 160-426271/1-A	Lab Control Sample	94.9	90.5
LCSD 160-426058/2-A	Lab Control Sample Dup	92.7	90.1
LCSD 160-426271/2-A	Lab Control Sample Dup	92.1	90.8
MB 160-426058/23-A	Method Blank	102	91.6
MB 160-426271/23-A	Method Blank	98.0	87.5

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-153107-2
Client Project/Site: Nebraska City Unit 1 CCR
Revision: 1

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
7/22/2019 3:58:00 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Job ID: 310-153107-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-153107-2

Comments

No additional comments.

Receipt

The samples were received on 4/11/2019 11:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were -0.7° C, -0.3° C, 1.0° C and 1.2° C.

RAD

Method(s) 9315: Radium-226 Prep Batch 160-427459

The LCS spike recovery (70%) was below the lower limit (75%) indicating a potential low bias to sample results. This appears to be due to a somewhat higher than normal barium carrier recovery (109%). If this carrier value were truncated to 100% for the calculation, the spike recovery would be within QC limits (76%). Further, the LCSD run on this batch was within limits demonstrating acceptable method performance. The laboratory does not believe this excursion significantly affects the sample results.

Method(s) 9315: Radium-226 Prep Batch: 160-430942

Ra-226 is reported without a 21-day waiting period to ensure short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL. The results are reported with this narrative.

MW2 (310-153107-1), MW3 (310-153107-2), MW4 (310-153107-3), DUP1 (310-153107-5), DUP2 (310-153107-6), (LCS 160-430942/1-A), (LCSD 160-430942/2-A) and (MB 160-430942/8-A)

Method(s) 9320: Ra-228 Prep Batch 160-432420

The detector used to count the LCSD (Orange 1) failed its beta background for 6/26. This excursion does not directly affect client samples. The LCS and LCSD both were within QC limits demonstrating acceptable method performance. The data is reported. MW2 (310-153107-1), MW3 (310-153107-2), MW4 (310-153107-3), DUP1 (310-153107-5), DUP2 (310-153107-6), (LCS 160-432420/1-A), (LCSD 160-432420/2-A) and (MB 160-432420/8-A)

Method(s) 9320: Ra-228 Prep Batch 160-430972

The detector used to count the LCSD (Orange 1) failed its beta background for 6/26. This excursion does not directly affect client samples. The LCS and LCSD both were within QC limits demonstrating acceptable method performance. The data is reported. MW2 (310-153107-1), MW3 (310-153107-2), MW4 (310-153107-3), MW9 (310-153107-4), DUP1 (310-153107-5), DUP2 (310-153107-6), MW3D (310-153107-7), MW4D (310-153107-8), MW9D (310-153107-9), (LCS 160-430972/1-A), (LCSD 160-430972/2-A) and (MB 160-430972/18-A)

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-153107-1	MW2	Ground Water	04/09/19 11:11	04/11/19 11:30	
310-153107-2	MW3	Ground Water	04/09/19 15:47	04/11/19 11:30	
310-153107-3	MW4	Ground Water	04/09/19 13:17	04/11/19 11:30	
310-153107-4	MW9	Ground Water	04/10/19 10:14	04/11/19 11:30	
310-153107-5	DUP1	Ground Water	04/09/19 00:00	04/11/19 11:30	
310-153107-6	DUP2	Ground Water	04/09/19 00:00	04/11/19 11:30	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Client Sample ID: MW2

Lab Sample ID: 310-153107-1

Date Collected: 04/09/19 11:11

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.123		0.0808	0.0816	1.00	0.107	pCi/L	06/05/19 12:57	07/02/19 10:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.5		40 - 110					06/05/19 12:57	07/02/19 10:12	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.372	U	0.308	0.310	1.00	0.494	pCi/L	06/05/19 13:24	06/26/19 11:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.5		40 - 110					06/05/19 13:24	06/26/19 11:52	1
Y Carrier	79.6		40 - 110					06/05/19 13:24	06/26/19 11:52	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.494		0.318	0.321	5.00	0.494	pCi/L		07/17/19 09:19	1

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Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Client Sample ID: MW3

Lab Sample ID: 310-153107-2

Date Collected: 04/09/19 15:47

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.102	U	0.0896	0.0901	1.00	0.134	pCi/L	06/05/19 12:57	07/02/19 10:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					06/05/19 12:57	07/02/19 10:12	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.246	U	0.254	0.255	1.00	0.414	pCi/L	06/05/19 13:24	06/26/19 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					06/05/19 13:24	06/26/19 11:53	1
Y Carrier	81.5		40 - 110					06/05/19 13:24	06/26/19 11:53	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.348	U	0.269	0.270	5.00	0.414	pCi/L		07/17/19 09:19	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Client Sample ID: MW4

Lab Sample ID: 310-153107-3

Date Collected: 04/09/19 13:17

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00878	U	0.0453	0.0453	1.00	0.0893	pCi/L	06/05/19 12:57	07/15/19 15:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		40 - 110					06/05/19 12:57	07/15/19 15:01	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00690	U	0.243	0.243	1.00	0.433	pCi/L	06/05/19 13:24	06/26/19 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		40 - 110					06/05/19 13:24	06/26/19 11:53	1
Y Carrier	79.6		40 - 110					06/05/19 13:24	06/26/19 11:53	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0157	U	0.247	0.247	5.00	0.433	pCi/L		07/17/19 09:19	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Client Sample ID: MW9

Date Collected: 04/10/19 10:14

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-4

Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.136		0.0761	0.0771	1.00	0.0998	pCi/L	06/05/19 12:57	07/16/19 11:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		40 - 110					06/05/19 12:57	07/16/19 11:45	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.279	U	0.254	0.255	1.00	0.409	pCi/L	06/05/19 13:24	06/26/19 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		40 - 110					06/05/19 13:24	06/26/19 11:53	1
Y Carrier	79.6		40 - 110					06/05/19 13:24	06/26/19 11:53	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.415		0.265	0.266	5.00	0.409	pCi/L		07/17/19 09:19	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Client Sample ID: DUP1

Lab Sample ID: 310-153107-5

Date Collected: 04/09/19 00:00

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0313	U	0.0786	0.0786	1.00	0.145	pCi/L	06/05/19 12:57	07/02/19 10:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.1		40 - 110					06/05/19 12:57	07/02/19 10:24	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.196	U	0.271	0.272	1.00	0.453	pCi/L	06/05/19 13:24	06/26/19 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.1		40 - 110					06/05/19 13:24	06/26/19 11:53	1
Y Carrier	80.0		40 - 110					06/05/19 13:24	06/26/19 11:53	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.227	U	0.282	0.283	5.00	0.453	pCi/L		07/17/19 09:19	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Client Sample ID: DUP2

Lab Sample ID: 310-153107-6

Date Collected: 04/09/19 00:00

Matrix: Ground Water

Date Received: 04/11/19 11:30

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0979	U	0.0808	0.0812	1.00	0.116	pCi/L	06/05/19 12:57	07/02/19 10:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					06/05/19 12:57	07/02/19 10:24	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.161	U	0.245	0.245	1.00	0.411	pCi/L	06/05/19 13:24	06/26/19 11:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					06/05/19 13:24	06/26/19 11:53	1
Y Carrier	82.2		40 - 110					06/05/19 13:24	06/26/19 11:53	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.259	U	0.258	0.258	5.00	0.411	pCi/L		07/17/19 09:19	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Qualifiers

Rad

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

Glossary

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

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-430963/18-A
Matrix: Water
Analysis Batch: 433407

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430963

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.03779	U	0.0600	0.0601	1.00	0.105	pCi/L	06/05/19 12:57	07/02/19 13:32	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	105		40 - 110			06/05/19 12:57	07/02/19 13:32	1		

Lab Sample ID: LCS 160-430963/1-A
Matrix: Water
Analysis Batch: 433408

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430963

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	8.968		0.968	1.00	0.110	pCi/L	79	75 - 125
Carrier	LCS	LCS	Limits			Prepared	Analyzed	Dil Fac	
	%Yield	Qualifier							
Ba Carrier	100		40 - 110						

Lab Sample ID: LCSD 160-430963/2-A
Matrix: Water
Analysis Batch: 433410

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 430963

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
				Uncert. (2σ+/-)							
Radium-226	11.4	9.097		0.976	1.00	0.127	pCi/L	80	75 - 125	0.07	1
Carrier	LCSD	LCSD	Limits			Prepared	Analyzed	Dil Fac			
	%Yield	Qualifier									
Ba Carrier	101		40 - 110								

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-430972/18-A
Matrix: Water
Analysis Batch: 432948

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430972

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.07694	U	0.213	0.213	1.00	0.367	pCi/L	06/05/19 13:24	06/26/19 11:54	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	105		40 - 110			06/05/19 13:24	06/26/19 11:54	1		
Y Carrier	82.2		40 - 110			06/05/19 13:24	06/26/19 11:54	1		

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

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

Lab Sample ID: LCS 160-430972/1-A
Matrix: Water
Analysis Batch: 432948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430972

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.08	9.745		1.13	1.00	0.405	pCi/L	107	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	100		40 - 110
Y Carrier	77.8		40 - 110

Lab Sample ID: LCSD 160-430972/2-A
Matrix: Water
Analysis Batch: 432948

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 430972

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	9.08	9.520		1.10	1.00	0.355	pCi/L	105	75 - 125	0.10	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	101		40 - 110
Y Carrier	80.4		40 - 110

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QC Association Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Rad

Prep Batch: 430963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	PrecSep-21	
310-153107-2	MW3	Total/NA	Ground Water	PrecSep-21	
310-153107-3	MW4	Total/NA	Ground Water	PrecSep-21	
310-153107-4	MW9	Total/NA	Ground Water	PrecSep-21	
310-153107-5	DUP1	Total/NA	Ground Water	PrecSep-21	
310-153107-6	DUP2	Total/NA	Ground Water	PrecSep-21	
MB 160-430963/18-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-430963/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-430963/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 430972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153107-1	MW2	Total/NA	Ground Water	PrecSep_0	
310-153107-2	MW3	Total/NA	Ground Water	PrecSep_0	
310-153107-3	MW4	Total/NA	Ground Water	PrecSep_0	
310-153107-4	MW9	Total/NA	Ground Water	PrecSep_0	
310-153107-5	DUP1	Total/NA	Ground Water	PrecSep_0	
310-153107-6	DUP2	Total/NA	Ground Water	PrecSep_0	
MB 160-430972/18-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-430972/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-430972/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Client Sample ID: MW2

Date Collected: 04/09/19 11:11

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			430963	06/05/19 12:57	ORM	TAL SL
Total/NA	Analysis	9315		1	433407	07/02/19 10:12	KLS	TAL SL
Total/NA	Prep	PrecSep_0			430972	06/05/19 13:24	ORM	TAL SL
Total/NA	Analysis	9320		1	432948	06/26/19 11:52	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	435084	07/17/19 09:19	SMP	TAL SL

Client Sample ID: MW3

Date Collected: 04/09/19 15:47

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			430963	06/05/19 12:57	ORM	TAL SL
Total/NA	Analysis	9315		1	433407	07/02/19 10:12	KLS	TAL SL
Total/NA	Prep	PrecSep_0			430972	06/05/19 13:24	ORM	TAL SL
Total/NA	Analysis	9320		1	432948	06/26/19 11:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	435084	07/17/19 09:19	SMP	TAL SL

Client Sample ID: MW4

Date Collected: 04/09/19 13:17

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			430963	06/05/19 12:57	ORM	TAL SL
Total/NA	Analysis	9315		1	434854	07/15/19 15:01	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430972	06/05/19 13:24	ORM	TAL SL
Total/NA	Analysis	9320		1	432948	06/26/19 11:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	435084	07/17/19 09:19	SMP	TAL SL

Client Sample ID: MW9

Date Collected: 04/10/19 10:14

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			430963	06/05/19 12:57	ORM	TAL SL
Total/NA	Analysis	9315		1	435022	07/16/19 11:45	CDR	TAL SL
Total/NA	Prep	PrecSep_0			430972	06/05/19 13:24	ORM	TAL SL
Total/NA	Analysis	9320		1	432948	06/26/19 11:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	435084	07/17/19 09:19	SMP	TAL SL

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Client Sample ID: DUP1

Date Collected: 04/09/19 00:00

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-5

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			430963	06/05/19 12:57	ORM	TAL SL
Total/NA	Analysis	9315		1	433407	07/02/19 10:24	KLS	TAL SL
Total/NA	Prep	PrecSep_0			430972	06/05/19 13:24	ORM	TAL SL
Total/NA	Analysis	9320		1	432948	06/26/19 11:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	435084	07/17/19 09:19	SMP	TAL SL

Client Sample ID: DUP2

Date Collected: 04/09/19 00:00

Date Received: 04/11/19 11:30

Lab Sample ID: 310-153107-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			430963	06/05/19 12:57	ORM	TAL SL
Total/NA	Analysis	9315		1	433407	07/02/19 10:24	KLS	TAL SL
Total/NA	Prep	PrecSep_0			430972	06/05/19 13:24	ORM	TAL SL
Total/NA	Analysis	9320		1	432948	06/26/19 11:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	435084	07/17/19 09:19	SMP	TAL SL

Laboratory References:

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

Accreditation/Certification Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State		IA100001 (OR)	09-29-19
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-19
Illinois	NELAP		200024	11-29-19
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-20
Minnesota	NELAP	5	019-999-319	12-31-19
Minnesota	NELAP		019-999-319	12-31-19
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-19
Oregon	NELAP	10	IA100001	09-29-19
Oregon	NELAP		IA100001	09-29-19
USDA	Federal		P330-19-00003	01-02-22

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP		L2305	04-06-22
ANAB	DoD		L2305	04-06-22
ANAB	DOE		L2305.01	04-06-22
Arizona	State		AZ0813	12-08-19
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-20
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-20
Florida	NELAP		E87689	06-30-20
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-20
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19 *
Missouri	State Program	7	780	06-30-19 *
Nevada	State Program	9	MO000542018-1	07-31-19 *
New Jersey	NELAP	2	MO002	06-30-20
New York	NELAP	2	11616	03-31-20
New York	NELAP		11616	04-01-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State		9997	08-31-19
Oklahoma	State Program	6	9997	08-31-19 *
Pennsylvania	NELAP	3	68-00540	02-28-20
Pennsylvania	NELAP		68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19 *
Texas	NELAP	6	T104704193-18-13	07-31-19 *
Texas	NELAP		T104704193-19-13	07-31-20
US Fish & Wildlife	Federal		058448	07-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Cedar Falls

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Laboratory: Eurofins TestAmerica, St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19 *
Virginia	NELAP	3	460230	06-14-20
Virginia	NELAP		10310	06-14-20
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Cedar Falls

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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



310-153107 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information				
Client: <u>Omaha Public Power District</u>				
City/State:	<small>CITY</small> <u>Omaha</u>	<small>STATE</small> <u>NE</u>	Project: <u>Nebraska City Unit 1</u>	
Receipt Information				
Date/Time Received:	<small>DATE</small> <u>4-11-19</u>	<small>TIME</small> <u>1130</u>	Received By: <u>KP</u>	
Delivery Type:	<input type="checkbox"/> UPS	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> FedEx Ground	<input type="checkbox"/> US Mail
	<input type="checkbox"/> Lab Courier	<input type="checkbox"/> TA Field Services	<input type="checkbox"/> Client Drop-off	<input type="checkbox"/> Other: _____
Condition of Cooler/Containers				
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler # <u>1</u> of <u>4</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? <u>↓</u>	
Temperature Record				
Coolant:	<input checked="" type="checkbox"/> Wet ice	<input type="checkbox"/> Blue ice	<input type="checkbox"/> Dry ice	<input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE
Thermometer ID:	<u>J</u>		Correction Factor (°C): <u>+0.1</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature				
Uncorrected Temp (°C):	<u>1.1</u>		Corrected Temp (°C): <u>1.2</u>	
• Sample Container Temperature				
Container type(s) used:	<small>CONTAINER 1</small>		<small>CONTAINER 2</small>	
Uncorrected Temp (°C):	<small>TEMP 1</small>	<small>TEMP 2</small>	Corrected Temp (°C):	<small>TEMP 1</small>
				<small>TEMP 2</small>
Exceptions Noted				
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No				
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No				
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No				
NOTE: If yes, contact PM before proceeding. If no, proceed with login				
Additional Comments				

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information						
Client: <u>DPPD</u>						
City/State: <u>Omaha</u> <small>CITY</small>		STATE: <u>NE</u>	Project: <u>Nebraska City Unit 1</u>			
Receipt Information						
Date/Time Received: <u>04/19</u> <small>DATE</small>		<u>1130</u> <small>TIME</small>	Received By: <u>APB</u>			
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____						
Condition of Cooler/Containers						
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____			
Multiple Coolers?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>2</u> of <u>4</u>			
Cooler Custody Seals Present?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Trip Blank Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓			
Temperature Record						
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE						
Thermometer ID: <u>M</u>			Correction Factor (°C): <u>0.0</u>			
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature						
Uncorrected Temp (°C): <u>-0.6</u>			Corrected Temp (°C): <u>0.7</u>			
• Sample Container Temperature						
Container type(s) used:		CONTAINER 1	CONTAINER 2			
Uncorrected Temp (°C):		TEMP 1	TEMP 2	Corrected Temp (°C):	TEMP 1	TEMP 2
Exceptions Noted						
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No						
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No						
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No						
NOTE: If yes, contact PM before proceeding. If no, proceed with login						
Additional Comments						

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Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information				
Client: <u>OPPD</u>				
City/State:	<u>Omaha</u>	STATE: <u>NE</u>	Project: <u>Nebraska City Unit 1</u>	
Receipt Information				
Date/Time Received:	DATE: <u>6/11/19</u>	TIME: <u>1130</u>	Received By: <u>APR</u>	
Delivery Type:	<input type="checkbox"/> UPS	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> FedEx Ground	<input type="checkbox"/> US Mail
	<input type="checkbox"/> Lab Courier	<input type="checkbox"/> TA Field Services	<input type="checkbox"/> Client Drop-off	<input type="checkbox"/> Other: _____
Condition of Cooler/Containers				
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler # <u>3</u> of <u>4</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record				
Coolant:	<input checked="" type="checkbox"/> Wet ice	<input type="checkbox"/> Blue ice	<input type="checkbox"/> Dry ice	<input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE
Thermometer ID: <u>W</u>	Correction Factor (°C): <u>-0.1</u>			
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature				
Uncorrected Temp (°C): <u>1.1</u>	Corrected Temp (°C): <u>1.0</u>			
• Sample Container Temperature				
Container type(s) used:	CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):	TEMP 1	TEMP 2	Corrected Temp (°C):	TEMP 1
				TEMP 2
Exceptions Noted				
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No				
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No				
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No				
NOTE: If yes, contact PM before proceeding. If no, proceed with login				
Additional Comments				

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client: <u>BPPD</u>					
City/State: <u>Omaha</u>		STATE: <u>NE</u>	Project: <u>Nebraska City Unit 1</u>		
Receipt Information					
Date/Time Received: DATE <u>04/11/19</u>		TIME <u>1130</u>	Received By: <u>JEP</u>		
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee					
<input type="checkbox"/> Lab Courier <input type="checkbox"/> TA Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____					
Condition of Cooler/Containers					
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____		
Multiple Coolers?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>4</u> of <u>4</u>		
Cooler Custody Seals Present?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Trip Blank Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓		
Temperature Record					
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE					
Thermometer ID: <u>M</u>			Correction Factor (°C): <u>-0.1</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature					
Uncorrected Temp (°C): <u>-0.2</u>			Corrected Temp (°C): <u>-0.3</u>		
• Sample Container Temperature					
Container type(s) used:		CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):		TEMP 1	TEMP 2	Corrected Temp (°C):	
				TEMP 1	
				TEMP 2	
Exceptions Noted					
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No					
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No					
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No					
NOTE: If yes, contact PM before proceeding. If no, proceed with login					
Additional Comments					

Chain of Custody Record

Client Information Client Contact: Kyle Uhing Phone: Kyle H. Wang Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com		Carrier Tracking No(s): Job #:	
Company: Omaha Public Power District Address: 444 South 16th Street Mall City: Omaha State, Zip: NE, 68102-2247 Phone:		Analysis Requested 2540C TDS and 9056A Chloride, Fluoride, Sulfate Dissolved 9315_Ra226, 9320_Ra228 Dissolved CCR Metals List Metals and 7470A Mercury 2540C TDS and 9056A Chloride, Fluoride, Sulfate	
Due Date Requested: TAT Requested (days): PO #: WO #: TestAmerica Project #: 31007558 SSOW#:		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Sample Identification MW2 MW3 MW4 MW9 DUP1 DUP2 MW3D MW4D MW9D		Total Number of Containers Special Instructions/Note:	
Sample Date Sample Time Matrix (W=water, S=solid, O=swallow, BT=titus, A=Al) Preservation Code:		Total CCR Metals List Metals and 7470A Mercury Total 9315_Ra226, 9320_Ra228 Dissolved CCR Metals List Metals and 7470A Mercury Dissolved 9315_Ra226, 9320_Ra228 2540C TDS, TSS and 9056A Chloride, Fluoride, Sulfate	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Empty Kit Relinquished by: Kyle H. Wang Relinquished by: Kyle H. Wang Relinquished by: Kyle H. Wang		Method of Shipment: Date/Time: 4/10/2019 15:35 Date/Time: 04/19 1130 Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	

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Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
MW2	310-153107-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW2	310-153107-B-1	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW2	310-153107-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW2	310-153107-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW2	310-153107-E-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW2	310-153107-F-1	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW3	310-153107-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW3	310-153107-B-2	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW3	310-153107-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3	310-153107-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3	310-153107-E-2	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW3	310-153107-F-2	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW4	310-153107-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW4	310-153107-B-3	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW4	310-153107-E-3	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW4	310-153107-F-3	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW4	310-153107-G-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW4	310-153107-H-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW9	310-153107-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW9	310-153107-B-4	Plastic 250ml - w/nitric - dis	<2	_____	_____
MW9	310-153107-E-4	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW9	310-153107-F-4	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
MW9	310-153107-G-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW9	310-153107-H-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP1	310-153107-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
DUP1	310-153107-B-5	Plastic 250ml - w/nitric - dis	<2	_____	_____
DUP1	310-153107-E-5	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
DUP1	310-153107-F-5	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
DUP1	310-153107-G-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP1	310-153107-H-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP2	310-153107-A-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
DUP2	310-153107-B-6	Plastic 250ml - w/nitric - dis	<2	_____	_____
DUP2	310-153107-E-6	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
DUP2	310-153107-F-6	Plastic 1 liter - Nitric Acid (diss)	<2	_____	_____
DUP2	310-153107-G-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP2	310-153107-H-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3D	310-153107-A-7	Plastic 250ml - with Nitric Acid	<2	_____	_____

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<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> <u>pH</u>	<u>Preservative</u> <u>Added (mls)</u>	<u>Lot #</u>
MW3D	310-153107-C-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3D	310-153107-D-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW4D	310-153107-A-8	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW4D	310-153107-C-8	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW4D	310-153107-D-8	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW9D	310-153107-A-9	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW9D	310-153107-C-9	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW9D	310-153107-D-9	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-153107-2

Login Number: 153107

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Spoerre, Autumn R

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

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-153107-2

Login Number: 153107

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 04/16/19 03:37 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-153107-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba Carrier (40-110)	
310-153107-1	MW2	93.5	
310-153107-2	MW3	94.4	
310-153107-3	MW4	94.6	
310-153107-4	MW9	94.6	
310-153107-5	DUP1	92.1	
310-153107-6	DUP2	93.2	

Tracer/Carrier Legend
 Ba Carrier = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba Carrier (40-110)	
LCS 160-430963/1-A	Lab Control Sample	100	
LCSD 160-430963/2-A	Lab Control Sample Dup	101	
MB 160-430963/18-A	Method Blank	105	

Tracer/Carrier Legend
 Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba Carrier (40-110)	Y Carrier (40-110)
310-153107-1	MW2	93.5	79.6
310-153107-2	MW3	94.4	81.5
310-153107-3	MW4	94.6	79.6
310-153107-4	MW9	94.6	79.6
310-153107-5	DUP1	92.1	80.0
310-153107-6	DUP2	93.2	82.2

Tracer/Carrier Legend
 Ba Carrier = Ba Carrier
 Y Carrier = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba Carrier (40-110)	Y Carrier (40-110)
LCS 160-430972/1-A	Lab Control Sample	100	77.8
LCSD 160-430972/2-A	Lab Control Sample Dup	101	80.4
MB 160-430972/18-A	Method Blank	105	82.2

Tracer/Carrier Legend
 Ba Carrier = Ba Carrier
 Y Carrier = Y Carrier

Eurofins TestAmerica, Cedar Falls

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-167718-1

Client Project/Site: Nebraska City Unit 1 CCR/Landfill

For:

Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
10/30/2019 1:51:26 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Job ID: 310-167718-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-167718-1

Comments

No additional comments.

Receipt

The samples were received on 10/17/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.7° C.

HPLC/IC

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

Metals

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

General Chemistry

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

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Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-167718-1	MW11	Water	10/16/19 11:43	10/17/19 09:15	
310-167718-2	MW14	Water	10/16/19 10:59	10/17/19 09:15	

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Detection Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Client Sample ID: MW11

Lab Sample ID: 310-167718-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15.3		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.558		0.500		mg/L	5		9056A	Total/NA
Sulfate	164		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00497		0.00200		mg/L	1		6020A	Total/NA
Barium	0.255		0.00200		mg/L	1		6020A	Total/NA
Boron	1.53		0.200		mg/L	1		6020A	Total/NA
Calcium	132		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00305		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0201		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0120		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	608		60.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW14

Lab Sample ID: 310-167718-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	6.99		5.00		mg/L	5		9056A	Total/NA
Sulfate	24.2		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.0893		0.00200		mg/L	1		6020A	Total/NA
Barium	0.359		0.00200		mg/L	1		6020A	Total/NA
Boron	0.272		0.200		mg/L	1		6020A	Total/NA
Calcium	155		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00265		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0528		0.0100		mg/L	1		6020A	Total/NA
Total Dissolved Solids	600		60.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Client Sample ID: MW11

Lab Sample ID: 310-167718-1

Date Collected: 10/16/19 11:43

Matrix: Water

Date Received: 10/17/19 09:15

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15.3		5.00		mg/L			10/22/19 09:09	5
Fluoride	0.558		0.500		mg/L			10/22/19 09:09	5
Sulfate	164		5.00		mg/L			10/22/19 09:09	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 20:06	1
Arsenic	0.00497		0.00200		mg/L		10/18/19 08:00	10/21/19 20:06	1
Barium	0.255		0.00200		mg/L		10/18/19 08:00	10/21/19 20:06	1
Beryllium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 20:06	1
Boron	1.53		0.200		mg/L		10/18/19 08:00	10/21/19 20:06	1
Cadmium	<0.000100		0.000100		mg/L		10/18/19 08:00	10/21/19 20:06	1
Calcium	132		0.500		mg/L		10/18/19 08:00	10/21/19 20:06	1
Chromium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 20:06	1
Cobalt	0.00305		0.000500		mg/L		10/18/19 08:00	10/21/19 20:06	1
Lithium	0.0201		0.0100		mg/L		10/18/19 08:00	10/21/19 20:06	1
Lead	<0.000500		0.000500		mg/L		10/18/19 08:00	10/21/19 20:06	1
Molybdenum	0.0120		0.00200		mg/L		10/18/19 08:00	10/21/19 20:06	1
Selenium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 20:06	1
Thallium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 20:06	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/23/19 13:26	10/24/19 12:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	608		60.0		mg/L			10/23/19 12:25	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Client Sample ID: MW14

Lab Sample ID: 310-167718-2

Date Collected: 10/16/19 10:59

Matrix: Water

Date Received: 10/17/19 09:15

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.99		5.00		mg/L			10/22/19 09:26	5
Fluoride	<0.500		0.500		mg/L			10/22/19 09:26	5
Sulfate	24.2		5.00		mg/L			10/22/19 09:26	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 20:11	1
Arsenic	0.0893		0.00200		mg/L		10/18/19 08:00	10/21/19 20:11	1
Barium	0.359		0.00200		mg/L		10/18/19 08:00	10/21/19 20:11	1
Beryllium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 20:11	1
Boron	0.272		0.200		mg/L		10/18/19 08:00	10/21/19 20:11	1
Cadmium	<0.000100		0.000100		mg/L		10/18/19 08:00	10/21/19 20:11	1
Calcium	155		0.500		mg/L		10/18/19 08:00	10/21/19 20:11	1
Chromium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 20:11	1
Cobalt	0.00265		0.000500		mg/L		10/18/19 08:00	10/21/19 20:11	1
Lithium	0.0528		0.0100		mg/L		10/18/19 08:00	10/21/19 20:11	1
Lead	<0.000500		0.000500		mg/L		10/18/19 08:00	10/21/19 20:11	1
Molybdenum	<0.00200		0.00200		mg/L		10/18/19 08:00	10/21/19 20:11	1
Selenium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 20:11	1
Thallium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 20:11	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/23/19 13:26	10/24/19 12:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	600		60.0		mg/L			10/23/19 12:25	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Glossary

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

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-258135/3
Matrix: Water
Analysis Batch: 258135

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/22/19 04:39	1
Fluoride	<0.100		0.100		mg/L			10/22/19 04:39	1
Sulfate	<1.00		1.00		mg/L			10/22/19 04:39	1

Lab Sample ID: LCS 310-258135/4
Matrix: Water
Analysis Batch: 258135

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	10.05		mg/L		100	90 - 110
Fluoride	2.00	2.051		mg/L		103	90 - 110
Sulfate	10.0	10.12		mg/L		101	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-257296/1-A
Matrix: Water
Analysis Batch: 257738

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 257296

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 19:08	1
Arsenic	<0.00200		0.00200		mg/L		10/18/19 08:00	10/21/19 19:08	1
Barium	<0.00200		0.00200		mg/L		10/18/19 08:00	10/21/19 19:08	1
Beryllium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 19:08	1
Boron	<0.200		0.200		mg/L		10/18/19 08:00	10/21/19 19:08	1
Cadmium	<0.000100		0.000100		mg/L		10/18/19 08:00	10/21/19 19:08	1
Calcium	<0.500		0.500		mg/L		10/18/19 08:00	10/21/19 19:08	1
Chromium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 19:08	1
Cobalt	<0.000500		0.000500		mg/L		10/18/19 08:00	10/21/19 19:08	1
Lithium	<0.0100		0.0100		mg/L		10/18/19 08:00	10/21/19 19:08	1
Lead	<0.000500		0.000500		mg/L		10/18/19 08:00	10/21/19 19:08	1
Molybdenum	<0.00200		0.00200		mg/L		10/18/19 08:00	10/21/19 19:08	1
Selenium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 19:08	1
Thallium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 19:08	1

Lab Sample ID: LCS 310-257296/2-A
Matrix: Water
Analysis Batch: 257738

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 257296

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.0400	0.03297		mg/L		82	80 - 120
Arsenic	0.0800	0.07551		mg/L		94	80 - 120
Barium	0.0800	0.08431		mg/L		105	80 - 120
Beryllium	0.0400	0.04271		mg/L		107	80 - 120
Boron	1.76	1.758		mg/L		100	80 - 120
Cadmium	0.0400	0.04368		mg/L		109	80 - 120
Calcium	4.00	4.522		mg/L		113	80 - 120
Chromium	0.0800	0.08580		mg/L		107	80 - 120
Cobalt	0.0400	0.04271		mg/L		107	80 - 120

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

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

Lab Sample ID: LCS 310-257296/2-A

Matrix: Water

Analysis Batch: 257738

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 257296

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	0.200	0.1996		mg/L		100	80 - 120
Lead	0.0400	0.04276		mg/L		107	80 - 120
Molybdenum	0.0800	0.07243		mg/L		91	80 - 120
Selenium	0.0800	0.08048		mg/L		101	80 - 120
Thallium	0.0320	0.03341		mg/L		104	80 - 120

Lab Sample ID: 310-167718-1 DU

Matrix: Water

Analysis Batch: 257738

Client Sample ID: MW11

Prep Type: Total/NA

Prep Batch: 257296

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Antimony	<0.00100		<0.00100		mg/L		NC	20
Arsenic	0.00497		0.004711		mg/L		5	20
Barium	0.255		0.2374		mg/L		7	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Boron	1.53		1.456		mg/L		5	20
Cadmium	<0.000100		<0.000100		mg/L		NC	20
Calcium	132		121.9		mg/L		8	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	0.00305		0.002775		mg/L		10	20
Lithium	0.0201		0.01784		mg/L		12	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Molybdenum	0.0120		0.01097		mg/L		9	20
Selenium	<0.00500		<0.00500		mg/L		NC	20
Thallium	<0.00100		<0.00100		mg/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-257977/1-A

Matrix: Water

Analysis Batch: 258195

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 257977

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/23/19 13:26	10/24/19 12:38	1

Lab Sample ID: LCS 310-257977/2-A

Matrix: Water

Analysis Batch: 258195

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 257977

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00167	0.001528		mg/L		92	80 - 120

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

Lab Sample ID: MB 310-257962/1

Matrix: Water

Analysis Batch: 257962

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			10/23/19 12:25	1

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

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

Lab Sample ID: LCS 310-257962/2
Matrix: Water
Analysis Batch: 257962

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	988.0		mg/L		99	90 - 110

Lab Sample ID: 310-167718-1 DU
Matrix: Water
Analysis Batch: 257962

Client Sample ID: MW11
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	608		532.0		mg/L		13	24

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QC Association Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

HPLC/IC

Analysis Batch: 258135

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167718-1	MW11	Total/NA	Water	9056A	
310-167718-2	MW14	Total/NA	Water	9056A	
MB 310-258135/3	Method Blank	Total/NA	Water	9056A	
LCS 310-258135/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 257296

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167718-1	MW11	Total/NA	Water	3010A	
310-167718-2	MW14	Total/NA	Water	3010A	
MB 310-257296/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-257296/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-167718-1 DU	MW11	Total/NA	Water	3010A	

Analysis Batch: 257738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167718-1	MW11	Total/NA	Water	6020A	257296
310-167718-2	MW14	Total/NA	Water	6020A	257296
MB 310-257296/1-A	Method Blank	Total/NA	Water	6020A	257296
LCS 310-257296/2-A	Lab Control Sample	Total/NA	Water	6020A	257296
310-167718-1 DU	MW11	Total/NA	Water	6020A	257296

Prep Batch: 257977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167718-1	MW11	Total/NA	Water	7470A	
310-167718-2	MW14	Total/NA	Water	7470A	
MB 310-257977/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-257977/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 258195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167718-1	MW11	Total/NA	Water	7470A	257977
310-167718-2	MW14	Total/NA	Water	7470A	257977
MB 310-257977/1-A	Method Blank	Total/NA	Water	7470A	257977
LCS 310-257977/2-A	Lab Control Sample	Total/NA	Water	7470A	257977

General Chemistry

Analysis Batch: 257962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167718-1	MW11	Total/NA	Water	SM 2540C	
310-167718-2	MW14	Total/NA	Water	SM 2540C	
MB 310-257962/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-257962/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-167718-1 DU	MW11	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Client Sample ID: MW11

Lab Sample ID: 310-167718-1

Date Collected: 10/16/19 11:43

Matrix: Water

Date Received: 10/17/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258135	10/22/19 09:09	CJT	TAL CF
Total/NA	Prep	3010A			257296	10/18/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	257738	10/21/19 20:06	SAD	TAL CF
Total/NA	Prep	7470A			257977	10/23/19 13:26	HIS	TAL CF
Total/NA	Analysis	7470A		1	258195	10/24/19 12:53	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	257962	10/23/19 12:25	MDK	TAL CF

Client Sample ID: MW14

Lab Sample ID: 310-167718-2

Date Collected: 10/16/19 10:59

Matrix: Water

Date Received: 10/17/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258135	10/22/19 09:26	CJT	TAL CF
Total/NA	Prep	3010A			257296	10/18/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	257738	10/21/19 20:11	SAD	TAL CF
Total/NA	Prep	7470A			257977	10/23/19 13:26	HIS	TAL CF
Total/NA	Analysis	7470A		1	258195	10/24/19 12:55	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	257962	10/23/19 12:25	MDK	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401



Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
AIHA-LAP, LLC	Industrial Hygiene Laboratory Accreditation Program (IHLAP)	101044	11-01-20
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-20
Georgia	State	IA100001 (OR)	09-29-20
Illinois	NELAP	200024	11-29-19
Iowa	State	007	12-01-19
Kansas	NELAP	E-10341	01-31-20
Minnesota	NELAP	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	3349	08-22-21
Oregon	NELAP	IA100001	09-29-20
USDA	US Federal Programs	P330-19-00003	01-02-22

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401





310-167718 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information	
Client: <u>Omaha Public Power District</u>	
City/State: <small>CITY</small> <u>Omaha</u> <small>STATE</small> <u>NE</u>	Project:
Receipt Information	
Date/Time Received: <small>DATE</small> <u>10/17/19</u> <small>TIME</small> <u>0915</u>	Received By: <u>[Signature]</u>
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____	
Condition of Cooler/Containers	
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
Temperature Record	
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE	
Thermometer ID: <u>0</u>	Correction Factor (°C): <u>0.0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature	
Uncorrected Temp (°C): <u>0.7</u>	Corrected Temp (°C): <u>0.7</u>
• Sample Container Temperature	
Container(s) used:	<u>CONTAINER 1</u> <u>CONTAINER 2</u>
Uncorrected Temp (°C):	
Corrected Temp (°C):	
Exceptions Noted	
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No	
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No	
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No	
NOTE: If yes, contact PM before proceeding. If no, proceed with login	
Additional Comments	

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Chain of Custody Record

Client Information Client Contact: Kyle Uhing Phone: (531) 226-2515 E-Mail: shawn.hayes@testamericainc.com		Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com		Carrier Tracking No(s):		COC No: Page: Job #:	
Company: Omaha Public Power District Address: 444 South 16th Street Mall 9E/EP1 City: Omaha State, Zip: NE, 68102-2247 Phone: (531) 226-2515 Email: kkuhing@oppd.com		Due Date Requested: TAT Requested (days): PO #: WO #: TestAmerica Project #: 31007559 SSOW#:		Analysis Requested		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - ph 4-5 Z - other (specify)	
Project Name: Nebraska City Station Unit 1 CCR/Landfill Site: Nebraska City Station Unit 1		Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Attached CCR/Title 132 List <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 2540C TDS, 9056A Chloride, Fluoride, Sulfate 9315 and 9320 Radium 226+228 Combined		Total Number of containers:		Special Instructions/Note: See attached list for specific analysis.	
Sample Identification NEA000A NEA000B NEA000C NEA000D MW11 MW14 NEA000E		Sample Date Sample Time Sample Type (C=Comp, G=grab) Matrix (W=water, S=solid, O=wastewater, BT=tissue, A=air)		Preservation Code: 9315 and 9320 Radium 226+228 Combined		Special Instructions/Note: See attached list for specific analysis.	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:		Date:		Method of Shipment:		Cooler Temperature(s) °C and Other Remarks:	
Relinquished by: Kyle Uhing Date/Time: 10/16/2019 15:05 Company: OPPD		Relinquished by: Kyle Uhing Date/Time: 10-16-2019 15:05 Company: OPPD		Relinquished by: [Signature] Date/Time: 10-10-19 1800 Company: EAURO		Relinquished by: [Signature] Date/Time: 10-10-19 1505 Company: EAURO	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Relinquished by: [Signature] Date/Time: 10-17-19 09:55 Company: EAURO		Relinquished by: [Signature] Date/Time: 10-17-19 09:55 Company: EAURO	



NC1 CCR/Title132 Sample Analysis (Some Parameters Need Reported Separate From Others [See COCs])

- Total metals: antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium via USEPA Method 6020A
- Radium 226+228 Combined via USEPA Method 9315 and 9320
- Mercury via USEPA Method 7470A
- TDS via SM 2540C
- Chloride, fluoride, and sulfate via USEPA Method 9056A

Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> <u>pH</u>	<u>Preservative</u> <u>Added (mls)</u>	<u>Lot #</u>
MW11	310-167718-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW11	310-167718-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW11	310-167718-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW14	310-167718-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW14	310-167718-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW14	310-167718-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____

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Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167718-1

Login Number: 167718

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bovy, Lorraine L

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



ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-167718-2

Client Project/Site: Nebraska City Unit 1 CCR/Landfill

For:

Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
11/22/2019 9:05:38 AM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Job ID: 310-167718-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-167718-2

Comments

No additional comments.

Receipt

The samples were received on 10/17/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.7° C.

RAD

Method PrecSep_0: Radium 228 Prep Batch 160-447622:

The following samples had light yellow discoloration:MW14 (310-167718-2).

Method PrecSep-21: Radium 226 Prep Batch 160-447621:

The following samples had light yellow discoloration:MW14 (310-167718-2).

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



Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-167718-1	MW11	Water	10/16/19 11:43	10/17/19 09:15	
310-167718-2	MW14	Water	10/16/19 10:59	10/17/19 09:15	

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Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Client Sample ID: MW11

Lab Sample ID: 310-167718-1

Date Collected: 10/16/19 11:43

Matrix: Water

Date Received: 10/17/19 09:15

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0608	U	0.0821	0.0823	1.00	0.138	pCi/L	10/24/19 17:52	11/15/19 14:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.4		40 - 110					10/24/19 17:52	11/15/19 14:32	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.624		0.266	0.272	1.00	0.377	pCi/L	10/24/19 18:25	11/06/19 08:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.4		40 - 110					10/24/19 18:25	11/06/19 08:57	1
Y Carrier	84.9		40 - 110					10/24/19 18:25	11/06/19 08:57	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.684		0.278	0.284	5.00	0.377	pCi/L		11/22/19 08:16	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Client Sample ID: MW14

Lab Sample ID: 310-167718-2

Date Collected: 10/16/19 10:59

Matrix: Water

Date Received: 10/17/19 09:15

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.515		0.154	0.161	1.00	0.160	pCi/L	10/24/19 17:52	11/15/19 14:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.5		40 - 110					10/24/19 17:52	11/15/19 14:32	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.30		0.354	0.373	1.00	0.444	pCi/L	10/24/19 18:25	11/06/19 08:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.5		40 - 110					10/24/19 18:25	11/06/19 08:57	1
Y Carrier	86.4		40 - 110					10/24/19 18:25	11/06/19 08:57	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.81		0.386	0.406	5.00	0.444	pCi/L		11/22/19 08:16	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Qualifiers

Rad

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

Glossary

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

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-447621/20-A
 Matrix: Water
 Analysis Batch: 450674

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 447621

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.03233	U	0.0605	0.0606	1.00	0.136	pCi/L	10/24/19 17:52	11/15/19 16:36	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	89.8		40 - 110		10/24/19 17:52	11/15/19 16:36	1			

Lab Sample ID: LCS 160-447621/1-A
 Matrix: Water
 Analysis Batch: 450674

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 447621

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
		Result	Qual	Uncert. (2σ+/-)					
Radium-226	11.4	10.32		1.09	1.00	0.142	pCi/L	91	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	92.5		40 - 110						

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-447622/20-A
 Matrix: Water
 Analysis Batch: 449305

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 447622

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1328	U	0.248	0.249	1.00	0.422	pCi/L	10/24/19 18:25	11/06/19 09:02	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	89.8		40 - 110		10/24/19 18:25	11/06/19 09:02	1			
Y Carrier	87.5		40 - 110		10/24/19 18:25	11/06/19 09:02	1			

Lab Sample ID: LCS 160-447622/1-A
 Matrix: Water
 Analysis Batch: 449235

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 447622

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
		Result	Qual	Uncert. (2σ+/-)					
Radium-228	9.42	10.53		1.19	1.00	0.384	pCi/L	112	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	92.5		40 - 110						
Y Carrier	89.3		40 - 110						

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Rad

Prep Batch: 447621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167718-1	MW11	Total/NA	Water	PrecSep-21	
310-167718-2	MW14	Total/NA	Water	PrecSep-21	
MB 160-447621/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-447621/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 447622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167718-1	MW11	Total/NA	Water	PrecSep_0	
310-167718-2	MW14	Total/NA	Water	PrecSep_0	
MB 160-447622/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-447622/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Client Sample ID: MW11

Lab Sample ID: 310-167718-1

Date Collected: 10/16/19 11:43

Matrix: Water

Date Received: 10/17/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			447621	10/24/19 17:52	ORM	TAL SL
Total/NA	Analysis	9315		1	450674	11/15/19 14:32	SCB	TAL SL
Total/NA	Prep	PrecSep_0			447622	10/24/19 18:25	ORM	TAL SL
Total/NA	Analysis	9320		1	449235	11/06/19 08:57	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	451578	11/22/19 08:16	SMP	TAL SL

Client Sample ID: MW14

Lab Sample ID: 310-167718-2

Date Collected: 10/16/19 10:59

Matrix: Water

Date Received: 10/17/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			447621	10/24/19 17:52	ORM	TAL SL
Total/NA	Analysis	9315		1	450674	11/15/19 14:32	SCB	TAL SL
Total/NA	Prep	PrecSep_0			447622	10/24/19 18:25	ORM	TAL SL
Total/NA	Analysis	9320		1	449235	11/06/19 08:57	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	451578	11/22/19 08:16	SMP	TAL SL

Laboratory References:

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

Accreditation/Certification Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
AIHA-LAP, LLC	Industrial Hygiene Laboratory Accreditation Program (IHLAP)	101044	11-01-20
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-20
Georgia	State	IA100001 (OR)	09-29-20
Illinois	NELAP	200024	11-29-19
Iowa	State	007	12-01-19
Kansas	NELAP	E-10341	01-31-20
Minnesota	NELAP	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	3349	08-22-21
Oregon	NELAP	IA100001	09-29-20
USDA	US Federal Programs	P330-19-00003	01-02-22

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	12-01-19

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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



310-167718 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information	
Client: <u>Omaha Public Power District</u>	
City/State: <small>CITY</small> <u>Omaha</u> <small>STATE</small> <u>NE</u>	Project:
Receipt Information	
Date/Time Received: <small>DATE</small> <u>10/17/19</u> <small>TIME</small> <u>0915</u>	Received By: <u>[Signature]</u>
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____	
Condition of Cooler/Containers	
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID:
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
Temperature Record	
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE	
Thermometer ID: <u>0</u>	Correction Factor (°C): <u>0.0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature	
Uncorrected Temp (°C): <u>0.7</u>	Corrected Temp (°C): <u>0.7</u>
• Sample Container Temperature	
Container(s) used:	<u>CONTAINER 1</u> <u>CONTAINER 2</u>
Uncorrected Temp (°C):	
Corrected Temp (°C):	
Exceptions Noted	
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No	
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No	
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No	
NOTE: If yes, contact PM before proceeding. If no, proceed with login	
Additional Comments	

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Client Information		Sampler: Kyle K. Uhing		Lab PM: Hayes, Shawn M		Carrier Tracking No(s):	
Client Contact: Kyle Uhing		Phone: (531) 226-2515		E-Mail: shawn.hayes@testamericainc.com		COC No:	
Company: Omaha Public Power District		Due Date Requested:		Analysis Requested		Job #:	
Address: 444 South 16th Street Mall 9E/EP1		TAT Requested (days):		6020A Total Metals CCR/Title 132 List		Preservation Codes:	
City: Omaha		PO #:		2540C TDS, 9056A Chloride, Fluoride, Sulfate		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
State, Zip: NE, 68102-2247		WO #:		9315 and 9320 Radium 226+228 Combined		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4.5 Z - other (specify)	
Phone: (531) 226-2515		TestAmerica Project #: 31007559		Field Filtered Sample (Yes or No)		Total Number of containers	
Email: kkuhing@oppd.com		SSOW #:		Perform MS/MSD (Yes or No)		Special Instructions/Note:	
Project Name: Nebraska City Station Unit 1 CCR/Landfill		Sample Date		D N D		See attached list for specific analysis.	
Site: Nebraska City Station Unit 1		Sample Time		X X X		See attached list for specific analysis.	
Sample Identification		Sample Type (C=Comp, G=grab)		X X X		See attached list for specific analysis.	
Nebraska		G		X X X		See attached list for specific analysis.	
Nebraska		G		X X X		See attached list for specific analysis.	
Nebraska		G		X X X		See attached list for specific analysis.	
Nebraska		G		X X X		See attached list for specific analysis.	
MW11		G		X X X		See attached list for specific analysis.	
MW14		G		X X X		See attached list for specific analysis.	
Nebraska		G		X X X		See attached list for specific analysis.	
Possible Hazard Identification		Matrix (W=water, S=solid, O=wastewater, BT=tissue, A=air)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological <input type="checkbox"/>		Preservation Code:		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:	
Deliverable Requested: I, II, III, IV, Other (specify)		Date		Method of Shipment:		Empty Kit Relinquished by:	
Empty Kit Relinquished by:		Date/Time: 10/16/2019 15:05		Date/Time: 10-10-19 1505		Date/Time: 10-17-19 0915	
Relinquished by: Kyle K. Uhing		Company: OPPD		Received by: J. H. Uhing		Company: ECURO	
Relinquished by:		Date/Time: 10-10-19 1800		Received by: J. H. Uhing		Company: ECURO	
Relinquished by:		Date/Time:		Received by:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			



NC1 CCR/Title132 Sample Analysis (Some Parameters Need Reported Separate From Others [See COCs])

- Total metals: antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium via USEPA Method 6020A
- Radium 226+228 Combined via USEPA Method 9315 and 9320
- Mercury via USEPA Method 7470A
- TDS via SM 2540C
- Chloride, fluoride, and sulfate via USEPA Method 9056A

Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> <u>pH</u>	<u>Preservative</u> <u>Added (mls)</u>	<u>Lot #</u>
MW11	310-167718-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW11	310-167718-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW11	310-167718-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW14	310-167718-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW14	310-167718-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW14	310-167718-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____



Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167718-2

Login Number: 167718

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bovy, Lorraine L

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

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167718-2

Login Number: 167718

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 10/18/19 01:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	22.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR/Landfill

Job ID: 310-167718-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
310-167718-1	MW11	90.4	
310-167718-2	MW14	80.5	
LCS 160-447621/1-A	Lab Control Sample	92.5	
MB 160-447621/20-A	Method Blank	89.8	

Tracer/Carrier Legend
Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-167718-1	MW11	90.4	84.9
310-167718-2	MW14	80.5	86.4
LCS 160-447622/1-A	Lab Control Sample	92.5	89.3
MB 160-447622/20-A	Method Blank	89.8	87.5

Tracer/Carrier Legend
Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-167720-1

Client Project/Site: Nebraska City Unit1/2 CCR and Landfill

For:

Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
10/30/2019 3:28:35 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

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results through
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www.testamericainc.com

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Job ID: 310-167720-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-167720-1

Comments

No additional comments.

Receipt

The sample was received on 10/17/2019 9:45 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.0° C.

HPLC/IC

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

Metals

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

General Chemistry

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



Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-167720-1	NC2MW4	Water	10/15/19 11:16	10/17/19 09:45	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Client Sample ID: NC2MW4

Lab Sample ID: 310-167720-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.38		5.00		mg/L	5		9056A	Total/NA
Sulfate	35.0		5.00		mg/L	5		9056A	Total/NA
Barium	0.390		0.00200		mg/L	1		6020A	Total/NA
Cadmium	0.000138		0.000100		mg/L	1		6020A	Total/NA
Calcium	142		0.500		mg/L	1		6020A	Total/NA
Lithium	0.0343		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.00412		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	528		60.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Client Sample ID: NC2MW4

Lab Sample ID: 310-167720-1

Date Collected: 10/15/19 11:16

Matrix: Water

Date Received: 10/17/19 09:45

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.38		5.00		mg/L			10/22/19 10:17	5
Fluoride	<0.500		0.500		mg/L			10/22/19 10:17	5
Sulfate	35.0		5.00		mg/L			10/22/19 10:17	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 18:58	1
Arsenic	<0.00200		0.00200		mg/L		10/18/19 08:00	10/21/19 18:58	1
Barium	0.390		0.00200		mg/L		10/18/19 08:00	10/21/19 18:58	1
Beryllium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 18:58	1
Boron	<0.200		0.200		mg/L		10/18/19 08:00	10/21/19 18:58	1
Cadmium	0.000138		0.000100		mg/L		10/18/19 08:00	10/21/19 18:58	1
Calcium	142		0.500		mg/L		10/18/19 08:00	10/21/19 18:58	1
Chromium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 18:58	1
Cobalt	<0.000500		0.000500		mg/L		10/18/19 08:00	10/21/19 18:58	1
Lead	<0.000500		0.000500		mg/L		10/18/19 08:00	10/21/19 18:58	1
Lithium	0.0343		0.0100		mg/L		10/18/19 08:00	10/21/19 18:58	1
Molybdenum	0.00412		0.00200		mg/L		10/18/19 08:00	10/21/19 18:58	1
Selenium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 18:58	1
Thallium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 18:58	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/23/19 13:26	10/24/19 12:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	528		60.0		mg/L			10/18/19 14:14	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Glossary

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

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-258135/3
Matrix: Water
Analysis Batch: 258135

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/22/19 04:39	1
Fluoride	<0.100		0.100		mg/L			10/22/19 04:39	1
Sulfate	<1.00		1.00		mg/L			10/22/19 04:39	1

Lab Sample ID: LCS 310-258135/4
Matrix: Water
Analysis Batch: 258135

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.05		mg/L		100	90 - 110
Fluoride	2.00	2.051		mg/L		103	90 - 110
Sulfate	10.0	10.12		mg/L		101	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-257291/1-A
Matrix: Water
Analysis Batch: 257738

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 257291

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 17:46	1
Arsenic	<0.00200		0.00200		mg/L		10/18/19 08:00	10/21/19 17:46	1
Barium	<0.00200		0.00200		mg/L		10/18/19 08:00	10/21/19 17:46	1
Beryllium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 17:46	1
Boron	<0.200		0.200		mg/L		10/18/19 08:00	10/21/19 17:46	1
Cadmium	<0.000100		0.000100		mg/L		10/18/19 08:00	10/21/19 17:46	1
Calcium	<0.500		0.500		mg/L		10/18/19 08:00	10/21/19 17:46	1
Chromium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 17:46	1
Cobalt	<0.000500		0.000500		mg/L		10/18/19 08:00	10/21/19 17:46	1
Lead	<0.000500		0.000500		mg/L		10/18/19 08:00	10/21/19 17:46	1
Lithium	<0.0100		0.0100		mg/L		10/18/19 08:00	10/21/19 17:46	1
Molybdenum	<0.00200		0.00200		mg/L		10/18/19 08:00	10/21/19 17:46	1
Selenium	<0.00500		0.00500		mg/L		10/18/19 08:00	10/21/19 17:46	1
Thallium	<0.00100		0.00100		mg/L		10/18/19 08:00	10/21/19 17:46	1

Lab Sample ID: LCS 310-257291/2-A
Matrix: Water
Analysis Batch: 257738

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 257291

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0400	0.03317		mg/L		83	80 - 120
Arsenic	0.0800	0.07489		mg/L		94	80 - 120
Barium	0.0800	0.08444		mg/L		106	80 - 120
Beryllium	0.0400	0.04176		mg/L		104	80 - 120
Boron	1.76	1.733		mg/L		98	80 - 120
Cadmium	0.0400	0.04273		mg/L		107	80 - 120
Calcium	4.00	4.432		mg/L		111	80 - 120
Chromium	0.0800	0.08526		mg/L		107	80 - 120
Cobalt	0.0400	0.04207		mg/L		105	80 - 120

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

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

Lab Sample ID: LCS 310-257291/2-A
 Matrix: Water
 Analysis Batch: 257738

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 257291

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Lead	0.0400	0.04257		mg/L		106	80 - 120
Lithium	0.200	0.1966		mg/L		98	80 - 120
Molybdenum	0.0800	0.07061		mg/L		88	80 - 120
Selenium	0.0800	0.07899		mg/L		99	80 - 120
Thallium	0.0320	0.03374		mg/L		105	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-257977/1-A
 Matrix: Water
 Analysis Batch: 258195

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 257977

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/23/19 13:26	10/24/19 12:38	1

Lab Sample ID: LCS 310-257977/2-A
 Matrix: Water
 Analysis Batch: 258195

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 257977

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00167	0.001528		mg/L		92	80 - 120

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

Lab Sample ID: MB 310-257430/1
 Matrix: Water
 Analysis Batch: 257430

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			10/18/19 14:14	1

Lab Sample ID: LCS 310-257430/2
 Matrix: Water
 Analysis Batch: 257430

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	1000	1004		mg/L		100	90 - 110

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

HPLC/IC

Analysis Batch: 258135

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167720-1	NC2MW4	Total/NA	Water	9056A	
MB 310-258135/3	Method Blank	Total/NA	Water	9056A	
LCS 310-258135/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 257291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167720-1	NC2MW4	Total/NA	Water	3010A	
MB 310-257291/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-257291/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 257738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167720-1	NC2MW4	Total/NA	Water	6020A	257291
MB 310-257291/1-A	Method Blank	Total/NA	Water	6020A	257291
LCS 310-257291/2-A	Lab Control Sample	Total/NA	Water	6020A	257291

Prep Batch: 257977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167720-1	NC2MW4	Total/NA	Water	7470A	
MB 310-257977/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-257977/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 258195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167720-1	NC2MW4	Total/NA	Water	7470A	257977
MB 310-257977/1-A	Method Blank	Total/NA	Water	7470A	257977
LCS 310-257977/2-A	Lab Control Sample	Total/NA	Water	7470A	257977

General Chemistry

Analysis Batch: 257430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167720-1	NC2MW4	Total/NA	Water	SM 2540C	
MB 310-257430/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-257430/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Client Sample ID: NC2MW4

Lab Sample ID: 310-167720-1

Date Collected: 10/15/19 11:16

Matrix: Water

Date Received: 10/17/19 09:45

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Analysis	9056A		5	258135	10/22/19 10:17	CJT	TAL CF
Total/NA	Prep	3010A			257291	10/18/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	257738	10/21/19 18:58	SAD	TAL CF
Total/NA	Prep	7470A			257977	10/23/19 13:26	HIS	TAL CF
Total/NA	Analysis	7470A		1	258195	10/24/19 12:57	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	257430	10/18/19 14:14	MDK	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
AIHA-LAP, LLC	Industrial Hygiene Laboratory Accreditation Program (IHLAP)	101044	11-01-20
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-20
Georgia	State	IA100001 (OR)	09-29-20
Illinois	NELAP	200024	11-29-19
Iowa	State	007	12-01-19
Kansas	NELAP	E-10341	01-31-20
Minnesota	NELAP	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	3349	08-22-21
Oregon	NELAP	IA100001	09-29-20
USDA	US Federal Programs	P330-19-00003	01-02-22

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401



Environment Testing
TestAmerica



310-167720 Chain of Custody

Cooler/Sample Receipt and Temperature L

Client Information	
Client: <u>Omaha Public Power</u>	
City/State: <u>Omaha</u>	Project:
Receipt Information	
Date/Time Received: <u>10/17/19</u> <u>caus</u>	Received By: <u>C</u>
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____	
Condition of Cooler/Containers	
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? <u>1</u>
Temperature Record	
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE	
Thermometer ID: <u>0</u>	Correction Factor (°C): <u>0.0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature	
Uncorrected Temp (°C):	Corrected Temp (°C):
• Sample Container Temperature	
Container(s) used:	CONTAINER 1
Uncorrected Temp (°C):	CONTAINER 2
Corrected Temp (°C):	
Exceptions Noted	
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No	
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No	
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No	
NOTE: If yes, contact PM before proceeding. If no, proceed with login	
Additional Comments	

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Client Information		Lab PM: Hayes, Shawn M		Carrier Tracking Note:	
Sampler: Kyle K. Uhing		E-Mail: shawn.hayes@testamericainc.com		COC No:	
Client Contact: Kyle Uhing		Phone: (531) 226-2515		Page:	
Company: Omaha Public Power District		Address: 444 South 16th Street Mall 9E/EP1		Job #:	
City: Omaha		State, Zip: NE, 68102-2247		Preservation Codes:	
Phone: (531) 226-2515		PO #:		A - HCL	
Email: kkuhing@oppd.com		WO #:		M - Hexane	
Project Name: Nebraska City Station Unit 1 CCR/Landfill		TestAmerica Project #: 31007559		N - None	
Site: Nebraska City Station Unit 1		SSCW#:		O - AsNaO2	
Sample Identification		Sample Date		P - Na2OAS	
NC2M1W4		10/15/19		Q - Na2SO3	
Sample Type (C=Comp, G=grab)		Sample Time		R - Na2S2O3	
G		11:16		S - H2SO4	
Matrix (Water, Swab, On-surface, Air/Tissue, Any)		Preservation Code:		T - TSP Dodecahydrate	
		G W		U - Acetone	
Field Filtered Sample (Yes or No)		Attached CCR/Tite 132 List		V - MCAA	
X		D X X		W - ph 4-5	
Perform MS/MSD (Yes or No)		6020A Total Metals CCR/Tite 132 List, 7470A Mercury, See		Z - other (specify)	
X		D X X		Other:	
2540C TDS, 9056A Chloride, Fluoride, Sulfate		9315 and 9320 Radium 226+228 Combined		Total Number of Containers	
N		D X X		4	
Special Instructions/Notes:		Special Instructions/IOC Requirements:		Special Instructions/Notes:	
See attached list for specific analysis.		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		See attached list for specific analysis.	
Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Special Instructions/IOC Requirements:	
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/IOC Requirements:	
Deliverable Requested: I, II, III, IV, Other (specify)		Empty Kit Relinquished by:		Special Instructions/IOC Requirements:	
Relinquished by: [Signature]		Date: 10/16/2019 15:05		Special Instructions/IOC Requirements:	
Relinquished by: [Signature]		Date/Time: 10-16-19 15:05		Special Instructions/IOC Requirements:	
Relinquished by: [Signature]		Date/Time: 10-17-19 09:15		Special Instructions/IOC Requirements:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Special Instructions/IOC Requirements:	
Cooler Temperature(s) °C and Other Remarks:		Relinquished by: [Signature]		Special Instructions/IOC Requirements:	
		Date/Time: 10-16-19 15:05		Special Instructions/IOC Requirements:	
		Date/Time: 10-17-19 09:15		Special Instructions/IOC Requirements:	
		Date/Time: 10-17-19 09:15		Special Instructions/IOC Requirements:	



NC1 CCR/Title132 Sample Analysis (Some Parameters Need Reported Separate From Others [See COCs])

- Total metals: antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium via USEPA Method 6020A
- Radium 226+228 Combined via USEPA Method 9315 and 9320
- Mercury via USEPA Method 7470A
- TDS via SM 2540C
- Chloride, fluoride, and sulfate via USEPA Method 9056A

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Login Container Summary Report

Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
NC2MW4	310-167720-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC2MW4	310-167720-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC2MW4	310-167720-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____

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Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167720-1

Login Number: 167720

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bovy, Lorrainna L

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



ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-167720-2

Client Project/Site: Nebraska City Unit1/2 CCR and Landfill

For:

Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
11/22/2019 9:09:06 AM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Job ID: 310-167720-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-167720-2

Comments

No additional comments.

Receipt

The sample was received on 10/17/2019 9:45 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.0° C.

RAD

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

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Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-167720-1	NC2MW4	Water	10/15/19 11:16	10/17/19 09:45	

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Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Client Sample ID: NC2MW4

Lab Sample ID: 310-167720-1

Date Collected: 10/15/19 11:16

Matrix: Water

Date Received: 10/17/19 09:45

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.248		0.113	0.115	1.00	0.138	pCi/L	10/24/19 17:52	11/15/19 14:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.3		40 - 110					10/24/19 17:52	11/15/19 14:32	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.969		0.313	0.325	1.00	0.416	pCi/L	10/24/19 18:25	11/06/19 08:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.3		40 - 110					10/24/19 18:25	11/06/19 08:57	1
Y Carrier	84.9		40 - 110					10/24/19 18:25	11/06/19 08:57	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.22		0.333	0.345	5.00	0.416	pCi/L		11/22/19 08:16	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Qualifiers

Rad

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

Glossary

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

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-447621/20-A
Matrix: Water
Analysis Batch: 450674

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447621

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.03233	U	0.0605	0.0606	1.00	0.136	pCi/L	10/24/19 17:52	11/15/19 16:36	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	89.8		40 - 110		10/24/19 17:52	11/15/19 16:36	1			

Lab Sample ID: LCS 160-447621/1-A
Matrix: Water
Analysis Batch: 450674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 447621

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	10.32		1.09	1.00	0.142	pCi/L	91	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	92.5		40 - 110						

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-447622/20-A
Matrix: Water
Analysis Batch: 449305

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447622

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1328	U	0.248	0.249	1.00	0.422	pCi/L	10/24/19 18:25	11/06/19 09:02	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	89.8		40 - 110		10/24/19 18:25	11/06/19 09:02	1			
Y Carrier	87.5		40 - 110		10/24/19 18:25	11/06/19 09:02	1			

Lab Sample ID: LCS 160-447622/1-A
Matrix: Water
Analysis Batch: 449235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 447622

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-228	9.42	10.53		1.19	1.00	0.384	pCi/L	112	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	92.5		40 - 110						
Y Carrier	89.3		40 - 110						

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Rad

Prep Batch: 447621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167720-1	NC2MW4	Total/NA	Water	PrecSep-21	
MB 160-447621/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-447621/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 447622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167720-1	NC2MW4	Total/NA	Water	PrecSep_0	
MB 160-447622/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-447622/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Client Sample ID: NC2MW4

Lab Sample ID: 310-167720-1

Date Collected: 10/15/19 11:16

Matrix: Water

Date Received: 10/17/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			447621	10/24/19 17:52	ORM	TAL SL
Total/NA	Analysis	9315		1	450674	11/15/19 14:32	SCB	TAL SL
Total/NA	Prep	PrecSep_0			447622	10/24/19 18:25	ORM	TAL SL
Total/NA	Analysis	9320		1	449235	11/06/19 08:57	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	451578	11/22/19 08:16	SMP	TAL SL

Laboratory References:

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



Accreditation/Certification Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
AIHA-LAP, LLC	Industrial Hygiene Laboratory Accreditation Program (IHLAP)	101044	11-01-20
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-20
Georgia	State	IA100001 (OR)	09-29-20
Illinois	NELAP	200024	11-29-19
Iowa	State	007	12-01-19
Kansas	NELAP	E-10341	01-31-20
Minnesota	NELAP	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	3349	08-22-21
Oregon	NELAP	IA100001	09-29-20
USDA	US Federal Programs	P330-19-00003	01-02-22

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	12-01-19

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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





Environment Testing
TestAmerica



310-167720 Chain of Custody

Cooler/Sample Receipt and Temperature L

Client Information	
Client: <u>Omaha Public Power</u>	
City/State: <u>Omaha</u>	Project:
Receipt Information	
Date/Time Received: <u>10/17/19</u> <u>9:45</u>	Received By: <u>[Signature]</u>
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____	
Condition of Cooler/Containers	
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes: Cooler ID: _____
Multiple Coolers?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Cooler # _____ of _____
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Which VOA samples are in cooler? ↓
Temperature Record	
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE	
Thermometer ID: <u>0</u>	Correction Factor (°C): <u>0.0</u>
• Temp Blank Temperature - If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature	
Uncorrected Temp (°C):	Corrected Temp (°C):
• Sample Container Temperature	
Container(s) used:	<u>CONTAINER 1</u> <u>CONTAINER 2</u>
Uncorrected Temp (°C):	<u>0.0</u> <u>1.1 HNO₃ PI</u>
Corrected Temp (°C):	<u>0.0</u>
Exceptions Noted	
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No	
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No	
NOTE: If yes, contact PM before proceeding. If no, proceed with login	
Additional Comments	

TestAmerica Cedar Falls
 704 Enterprise Drive
 Cedar Falls, IA 50613
 Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Omaha
 268



Client Information Client Contact: Kyle K. Uehring Phone: (531) 226-2515 E-Mail: shawn.hayes@testamericainc.com Lab Pk: Hayes, Shawn M		Carrier Tracking Mo(s): Job #:	
Company: Omaha Public Power District Address: 444 South 16th Street Mail 9E/EP1 City: Omaha State, Zip: NE, 68102-2247 Phone: (531) 226-2515 Email: kkuehring@oppd.com		Analysis Requested Due Date Requested: TAT Requested (days): PO #: WO #: TestAmerica Project #: Nebraska City Station Unit 2 CCR Site: Nebraska City Station Unit 2	
Sample Identification Sample ID: INC2MW4 Sample Date: 10/15/19 Sample Time: 11:16 Sample Type (C=comp, G=grab): G Matrix (W=water, S=solid, O=oil, C=creosote, A=air): W	Field Filtered Sample (Yes or No): X Perform MS/MSD (Yes or No): X 6020 Total Metals CCR List, 7470A Mercury, See Attached 2540C TDS, 9056A Chloride, Fluoride, Sulfate 9315 and 9320 Radium 226+228 Combined	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Ascorbic Acid H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	Special Instructions/Note: See attached list for specific analysis.
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)		Total Number of Containers: 4 Special Instructions/Note: See attached list for specific analysis.	
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:	
Empty Kit Relinquished by: Relinquished by: [Signature] Date/Time: 10/16/2019 15:05 Company: ORB		Method of Shipment:	
Relinquished by: Relinquished by: [Signature] Date/Time: 10-16-19 1800 Company: EATO		Received by: [Signature] Date/Time: 10-16-19 1505 Company: EATO	
Relinquished by: Relinquished by: [Signature] Date/Time: 10-17-19 0915 Company: EATO		Received by: [Signature] Date/Time: 10-17-19 0915 Company: EATO	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	



NC2 CCR Sample Analysis (Some Parameters Need Reported Separate From Others [See COCs])

- Total metals: aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lithium, lead, molybdenum, selenium, and thallium via USEPA Method 6020A
- Radium 226+228 Combined via USEPA Method 9315 and 9320
- Mercury via USEPA Method 7470A
- TDS via SM 2540C
- Chloride, fluoride, and sulfate via USEPA Method 9056A



Temperature readings:

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
NC2MW4	310-167720-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC2MW4	310-167720-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC2MW4	310-167720-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____

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Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167720-2

Login Number: 167720

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bovy, Lorraine L

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



Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167720-2

Login Number: 167720

List Number: 2

Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis

List Creation: 10/18/19 01:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	22.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit1/2 CCR and Landfill

Job ID: 310-167720-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
310-167720-1	NC2MW4	88.3	
LCS 160-447621/1-A	Lab Control Sample	92.5	
MB 160-447621/20-A	Method Blank	89.8	

Tracer/Carrier Legend
Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-167720-1	NC2MW4	88.3	84.9
LCS 160-447622/1-A	Lab Control Sample	92.5	89.3
MB 160-447622/20-A	Method Blank	89.8	87.5

Tracer/Carrier Legend
Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-167942-1
Client Project/Site: Nebraska City Unit 1 CCR

For:

Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
10/31/2019 3:42:39 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

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www.testamericainc.com

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Job ID: 310-167942-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

**Job Narrative
310-167942-1**

Comments

No additional comments.

Receipt

The samples were received on 10/19/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.2° C and 2.2° C.

HPLC/IC

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

Metals

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

General Chemistry

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

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Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-167942-1	NC1MW2	Water	10/18/19 10:12	10/19/19 09:05	
310-167942-2	NC1MW3	Water	10/18/19 11:52	10/19/19 09:05	
310-167942-3	NC1MW4	Water	10/18/19 11:05	10/19/19 09:05	
310-167942-4	NC1MW9	Water	10/18/19 12:39	10/19/19 09:05	
310-167942-5	DUP-1	Water	10/18/19 00:00	10/19/19 09:05	

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Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: NC1MW2

Lab Sample ID: 310-167942-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	52.0		5.00		mg/L	5		9056A	Total/NA
Barium	0.179		0.00200		mg/L	1		6020A	Total/NA
Boron	0.305		0.200		mg/L	1		6020A	Total/NA
Cadmium	0.000230		0.000100		mg/L	1		6020A	Total/NA
Calcium	112		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.000548		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0117		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0872		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	332		60.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: NC1MW3

Lab Sample ID: 310-167942-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.91		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.527		0.500		mg/L	5		9056A	Total/NA
Sulfate	361		20.0		mg/L	20		9056A	Total/NA
Arsenic	0.0333		0.00200		mg/L	1		6020A	Total/NA
Barium	0.135		0.00200		mg/L	1		6020A	Total/NA
Boron	2.42		0.200		mg/L	1		6020A	Total/NA
Calcium	166		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00182		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0316		0.0100		mg/L	1		6020A	Total/NA
Total Dissolved Solids	760		60.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: NC1MW4

Lab Sample ID: 310-167942-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.64		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.501		0.500		mg/L	5		9056A	Total/NA
Sulfate	238		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00347		0.00200		mg/L	1		6020A	Total/NA
Barium	0.119		0.00200		mg/L	1		6020A	Total/NA
Boron	1.34		0.200		mg/L	1		6020A	Total/NA
Calcium	151		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.000642		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0137		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0183		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	572		60.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: NC1MW9

Lab Sample ID: 310-167942-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.13		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.605		0.500		mg/L	5		9056A	Total/NA
Sulfate	206		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00784		0.00200		mg/L	1		6020A	Total/NA
Barium	0.165		0.00200		mg/L	1		6020A	Total/NA
Boron	1.31		0.200		mg/L	1		6020A	Total/NA
Cadmium	0.000100		0.000100		mg/L	1		6020A	Total/NA
Calcium	157		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00323		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0310		0.0100		mg/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Detection Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: NC1MW9 (Continued)

Lab Sample ID: 310-167942-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.0230		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	780		60.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP-1

Lab Sample ID: 310-167942-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.24		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.583		0.500		mg/L	5		9056A	Total/NA
Sulfate	205		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00823		0.00200		mg/L	1		6020A	Total/NA
Barium	0.169		0.00200		mg/L	1		6020A	Total/NA
Boron	1.35		0.200		mg/L	1		6020A	Total/NA
Calcium	163		0.500		mg/L	1		6020A	Total/NA
Cobalt	0.00333		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0319		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0240		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	764		30.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: NC1MW2

Lab Sample ID: 310-167942-1

Date Collected: 10/18/19 10:12

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			10/25/19 14:17	5
Fluoride	<0.500		0.500		mg/L			10/25/19 14:17	5
Sulfate	52.0		5.00		mg/L			10/25/19 14:17	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:07	1
Arsenic	<0.00200		0.00200		mg/L		10/23/19 07:59	10/26/19 01:07	1
Barium	0.179		0.00200		mg/L		10/23/19 07:59	10/26/19 01:07	1
Beryllium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:07	1
Boron	0.305		0.200		mg/L		10/23/19 07:59	10/26/19 01:07	1
Cadmium	0.000230		0.000100		mg/L		10/23/19 07:59	10/26/19 01:07	1
Calcium	112		0.500		mg/L		10/23/19 07:59	10/26/19 01:07	1
Chromium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/26/19 01:07	1
Cobalt	0.000548		0.000500		mg/L		10/23/19 07:59	10/26/19 01:07	1
Lithium	0.0117		0.0100		mg/L		10/23/19 07:59	10/26/19 01:07	1
Lead	<0.000500		0.000500		mg/L		10/23/19 07:59	10/26/19 01:07	1
Molybdenum	0.0872		0.00200		mg/L		10/23/19 07:59	10/26/19 01:07	1
Selenium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/26/19 01:07	1
Thallium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:07	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/28/19 10:32	10/29/19 08:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	332		60.0		mg/L			10/23/19 12:05	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: NC1MW3

Lab Sample ID: 310-167942-2

Date Collected: 10/18/19 11:52

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.91		5.00		mg/L			10/25/19 14:33	5
Fluoride	0.527		0.500		mg/L			10/25/19 14:33	5
Sulfate	361		20.0		mg/L			10/25/19 15:22	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/23/19 07:59	10/29/19 16:51	1
Arsenic	0.0333		0.00200		mg/L		10/23/19 07:59	10/29/19 16:51	1
Barium	0.135		0.00200		mg/L		10/23/19 07:59	10/26/19 01:31	1
Beryllium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/29/19 16:51	1
Boron	2.42		0.200		mg/L		10/23/19 07:59	10/29/19 16:51	1
Cadmium	<0.000100		0.000100		mg/L		10/23/19 07:59	10/26/19 01:31	1
Calcium	166		0.500		mg/L		10/23/19 07:59	10/29/19 16:51	1
Chromium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/29/19 16:51	1
Cobalt	0.00182		0.000500		mg/L		10/23/19 07:59	10/29/19 16:51	1
Lithium	0.0316		0.0100		mg/L		10/23/19 07:59	10/29/19 16:51	1
Lead	<0.000500		0.000500		mg/L		10/23/19 07:59	10/26/19 01:31	1
Molybdenum	<0.00200		0.00200		mg/L		10/23/19 07:59	10/29/19 16:51	1
Selenium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/29/19 16:51	1
Thallium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:31	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/28/19 10:32	10/29/19 08:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	760		60.0		mg/L			10/23/19 12:05	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: NC1MW4

Lab Sample ID: 310-167942-3

Date Collected: 10/18/19 11:05

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.64		5.00		mg/L			10/25/19 15:38	5
Fluoride	0.501		0.500		mg/L			10/25/19 15:38	5
Sulfate	238		5.00		mg/L			10/25/19 15:38	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:34	1
Arsenic	0.00347		0.00200		mg/L		10/23/19 07:59	10/26/19 01:34	1
Barium	0.119		0.00200		mg/L		10/23/19 07:59	10/26/19 01:34	1
Beryllium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/31/19 12:44	1
Boron	1.34		0.200		mg/L		10/23/19 07:59	10/31/19 12:44	1
Cadmium	<0.000100		0.000100		mg/L		10/23/19 07:59	10/26/19 01:34	1
Calcium	151		0.500		mg/L		10/23/19 07:59	10/31/19 12:44	1
Chromium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/26/19 01:34	1
Cobalt	0.000642		0.000500		mg/L		10/23/19 07:59	10/26/19 01:34	1
Lithium	0.0137		0.0100		mg/L		10/23/19 07:59	10/31/19 12:44	1
Lead	<0.000500		0.000500		mg/L		10/23/19 07:59	10/26/19 01:34	1
Molybdenum	0.0183		0.00200		mg/L		10/23/19 07:59	10/26/19 01:34	1
Selenium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/26/19 01:34	1
Thallium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:34	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/28/19 10:32	10/29/19 09:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	572		60.0		mg/L			10/23/19 12:05	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: NC1MW9

Lab Sample ID: 310-167942-4

Date Collected: 10/18/19 12:39

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.13		5.00		mg/L			10/25/19 16:10	5
Fluoride	0.605		0.500		mg/L			10/25/19 16:10	5
Sulfate	206		5.00		mg/L			10/25/19 16:10	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/23/19 07:59	10/29/19 16:53	1
Arsenic	0.00784		0.00200		mg/L		10/23/19 07:59	10/29/19 16:53	1
Barium	0.165		0.00200		mg/L		10/23/19 07:59	10/26/19 01:37	1
Beryllium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/29/19 16:53	1
Boron	1.31		0.200		mg/L		10/23/19 07:59	10/29/19 16:53	1
Cadmium	0.000100		0.000100		mg/L		10/23/19 07:59	10/26/19 01:37	1
Calcium	157		0.500		mg/L		10/23/19 07:59	10/29/19 16:53	1
Chromium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/26/19 01:37	1
Cobalt	0.00323		0.000500		mg/L		10/23/19 07:59	10/26/19 01:37	1
Lithium	0.0310		0.0100		mg/L		10/23/19 07:59	10/29/19 16:53	1
Lead	<0.000500		0.000500		mg/L		10/23/19 07:59	10/26/19 01:37	1
Molybdenum	0.0230		0.00200		mg/L		10/23/19 07:59	10/29/19 16:53	1
Selenium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/26/19 01:37	1
Thallium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:37	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/28/19 10:32	10/29/19 09:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	780		60.0		mg/L			10/23/19 12:05	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: DUP-1

Lab Sample ID: 310-167942-5

Date Collected: 10/18/19 00:00

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.24		5.00		mg/L			10/25/19 16:26	5
Fluoride	0.583		0.500		mg/L			10/25/19 16:26	5
Sulfate	205		5.00		mg/L			10/25/19 16:26	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/23/19 07:59	10/29/19 16:56	1
Arsenic	0.00823		0.00200		mg/L		10/23/19 07:59	10/29/19 16:56	1
Barium	0.169		0.00200		mg/L		10/23/19 07:59	10/26/19 01:41	1
Beryllium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/29/19 16:56	1
Boron	1.35		0.200		mg/L		10/23/19 07:59	10/29/19 16:56	1
Cadmium	<0.000100		0.000100		mg/L		10/23/19 07:59	10/26/19 01:41	1
Calcium	163		0.500		mg/L		10/23/19 07:59	10/29/19 16:56	1
Chromium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/29/19 16:56	1
Cobalt	0.00333		0.000500		mg/L		10/23/19 07:59	10/29/19 16:56	1
Lithium	0.0319		0.0100		mg/L		10/23/19 07:59	10/29/19 16:56	1
Lead	<0.000500		0.000500		mg/L		10/23/19 07:59	10/26/19 01:41	1
Molybdenum	0.0240		0.00200		mg/L		10/23/19 07:59	10/29/19 16:56	1
Selenium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/29/19 16:56	1
Thallium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:41	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/28/19 10:32	10/29/19 09:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	764		30.0		mg/L			10/24/19 08:58	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Glossary

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

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-258664/3
Matrix: Water
Analysis Batch: 258664

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/25/19 04:42	1
Fluoride	<0.100		0.100		mg/L			10/25/19 04:42	1
Sulfate	<1.00		1.00		mg/L			10/25/19 04:42	1

Lab Sample ID: LCS 310-258664/4
Matrix: Water
Analysis Batch: 258664

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.10		mg/L		101	90 - 110
Fluoride	2.00	2.093		mg/L		105	90 - 110
Sulfate	10.0	10.04		mg/L		100	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-257893/1-A
Matrix: Water
Analysis Batch: 258465

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 257893

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:00	1
Arsenic	<0.00200		0.00200		mg/L		10/23/19 07:59	10/26/19 01:00	1
Barium	<0.00200		0.00200		mg/L		10/23/19 07:59	10/26/19 01:00	1
Beryllium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:00	1
Boron	<0.200		0.200		mg/L		10/23/19 07:59	10/26/19 01:00	1
Cadmium	<0.000100		0.000100		mg/L		10/23/19 07:59	10/26/19 01:00	1
Calcium	<0.500		0.500		mg/L		10/23/19 07:59	10/26/19 01:00	1
Chromium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/26/19 01:00	1
Cobalt	<0.000500		0.000500		mg/L		10/23/19 07:59	10/26/19 01:00	1
Lithium	<0.0100		0.0100		mg/L		10/23/19 07:59	10/26/19 01:00	1
Lead	<0.000500		0.000500		mg/L		10/23/19 07:59	10/26/19 01:00	1
Molybdenum	<0.00200		0.00200		mg/L		10/23/19 07:59	10/26/19 01:00	1
Selenium	<0.00500		0.00500		mg/L		10/23/19 07:59	10/26/19 01:00	1
Thallium	<0.00100		0.00100		mg/L		10/23/19 07:59	10/26/19 01:00	1

Lab Sample ID: LCS 310-257893/2-A
Matrix: Water
Analysis Batch: 258465

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 257893

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.0800	0.06746		mg/L		84	80 - 120
Beryllium	0.0400	0.03635		mg/L		91	80 - 120
Boron	1.76	1.490		mg/L		85	80 - 120
Cadmium	0.0400	0.03497		mg/L		87	80 - 120
Calcium	4.00	3.537		mg/L		88	80 - 120
Chromium	0.0800	0.06523		mg/L		82	80 - 120
Cobalt	0.0400	0.03320		mg/L		83	80 - 120
Lithium	0.200	0.1676		mg/L		84	80 - 120
Lead	0.0400	0.03445		mg/L		86	80 - 120

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QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

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

Lab Sample ID: LCS 310-257893/2-A
 Matrix: Water
 Analysis Batch: 258465

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 257893

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	0.0800	0.06664		mg/L		83	80 - 120
Thallium	0.0320	0.02792		mg/L		87	80 - 120

Lab Sample ID: LCS 310-257893/2-A
 Matrix: Water
 Analysis Batch: 258764

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 257893

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0400	0.03581		mg/L		90	80 - 120
Arsenic	0.0800	0.07469		mg/L		93	80 - 120
Molybdenum	0.0800	0.07696		mg/L		96	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-258509/1-A
 Matrix: Water
 Analysis Batch: 258722

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 258509

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/28/19 10:32	10/29/19 08:19	1

Lab Sample ID: LCS 310-258509/2-A
 Matrix: Water
 Analysis Batch: 258722

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 258509

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00167	0.001591		mg/L		95	80 - 120

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

Lab Sample ID: MB 310-257956/1
 Matrix: Water
 Analysis Batch: 257956

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			10/23/19 12:05	1

Lab Sample ID: LCS 310-257956/2
 Matrix: Water
 Analysis Batch: 257956

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1004		mg/L		100	90 - 110

Lab Sample ID: MB 310-258097/1
 Matrix: Water
 Analysis Batch: 258097

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			10/24/19 08:58	1

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

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

Lab Sample ID: LCS 310-258097/2
Matrix: Water
Analysis Batch: 258097

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	982.0		mg/L	-	98	90 - 110

Lab Sample ID: 310-167942-5 DU
Matrix: Water
Analysis Batch: 258097

Client Sample ID: DUP-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	764		774.0		mg/L	-	1	24

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QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

HPLC/IC

Analysis Batch: 258664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-1	NC1MW2	Total/NA	Water	9056A	
310-167942-2	NC1MW3	Total/NA	Water	9056A	
310-167942-2	NC1MW3	Total/NA	Water	9056A	
310-167942-3	NC1MW4	Total/NA	Water	9056A	
310-167942-4	NC1MW9	Total/NA	Water	9056A	
310-167942-5	DUP-1	Total/NA	Water	9056A	
MB 310-258664/3	Method Blank	Total/NA	Water	9056A	
LCS 310-258664/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 257893

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-1	NC1MW2	Total/NA	Water	3010A	
310-167942-2	NC1MW3	Total/NA	Water	3010A	
310-167942-3	NC1MW4	Total/NA	Water	3010A	
310-167942-4	NC1MW9	Total/NA	Water	3010A	
310-167942-5	DUP-1	Total/NA	Water	3010A	
MB 310-257893/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-257893/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 258465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-1	NC1MW2	Total/NA	Water	6020A	257893
310-167942-2	NC1MW3	Total/NA	Water	6020A	257893
310-167942-3	NC1MW4	Total/NA	Water	6020A	257893
310-167942-4	NC1MW9	Total/NA	Water	6020A	257893
310-167942-5	DUP-1	Total/NA	Water	6020A	257893
MB 310-257893/1-A	Method Blank	Total/NA	Water	6020A	257893
LCS 310-257893/2-A	Lab Control Sample	Total/NA	Water	6020A	257893

Prep Batch: 258509

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-1	NC1MW2	Total/NA	Water	7470A	
310-167942-2	NC1MW3	Total/NA	Water	7470A	
310-167942-3	NC1MW4	Total/NA	Water	7470A	
310-167942-4	NC1MW9	Total/NA	Water	7470A	
310-167942-5	DUP-1	Total/NA	Water	7470A	
MB 310-258509/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-258509/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 258722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-1	NC1MW2	Total/NA	Water	7470A	258509
310-167942-2	NC1MW3	Total/NA	Water	7470A	258509
310-167942-3	NC1MW4	Total/NA	Water	7470A	258509
310-167942-4	NC1MW9	Total/NA	Water	7470A	258509
310-167942-5	DUP-1	Total/NA	Water	7470A	258509
MB 310-258509/1-A	Method Blank	Total/NA	Water	7470A	258509
LCS 310-258509/2-A	Lab Control Sample	Total/NA	Water	7470A	258509

Eurofins TestAmerica, Cedar Falls

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Metals

Analysis Batch: 258764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-2	NC1MW3	Total/NA	Water	6020A	257893
310-167942-4	NC1MW9	Total/NA	Water	6020A	257893
310-167942-5	DUP-1	Total/NA	Water	6020A	257893
LCS 310-257893/2-A	Lab Control Sample	Total/NA	Water	6020A	257893

Analysis Batch: 259018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-3	NC1MW4	Total/NA	Water	6020A	257893

General Chemistry

Analysis Batch: 257956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-1	NC1MW2	Total/NA	Water	SM 2540C	
310-167942-2	NC1MW3	Total/NA	Water	SM 2540C	
310-167942-3	NC1MW4	Total/NA	Water	SM 2540C	
310-167942-4	NC1MW9	Total/NA	Water	SM 2540C	
MB 310-257956/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-257956/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 258097

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-5	DUP-1	Total/NA	Water	SM 2540C	
MB 310-258097/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-258097/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-167942-5 DU	DUP-1	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: NC1MW2

Lab Sample ID: 310-167942-1

Date Collected: 10/18/19 10:12

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258664	10/25/19 14:17	CJT	TAL CF
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/26/19 01:07	SAD	TAL CF
Total/NA	Prep	7470A			258509	10/28/19 10:32	ACJ	TAL CF
Total/NA	Analysis	7470A		1	258722	10/29/19 08:57	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	257956	10/23/19 12:05	MDK	TAL CF

Client Sample ID: NC1MW3

Lab Sample ID: 310-167942-2

Date Collected: 10/18/19 11:52

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258664	10/25/19 14:33	CJT	TAL CF
Total/NA	Analysis	9056A		20	258664	10/25/19 15:22	CJT	TAL CF
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/26/19 01:31	SAD	TAL CF
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	258764	10/29/19 16:51	SAD	TAL CF
Total/NA	Prep	7470A			258509	10/28/19 10:32	ACJ	TAL CF
Total/NA	Analysis	7470A		1	258722	10/29/19 08:59	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	257956	10/23/19 12:05	MDK	TAL CF

Client Sample ID: NC1MW4

Lab Sample ID: 310-167942-3

Date Collected: 10/18/19 11:05

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258664	10/25/19 15:38	CJT	TAL CF
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/26/19 01:34	SAD	TAL CF
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	259018	10/31/19 12:44	SAD	TAL CF
Total/NA	Prep	7470A			258509	10/28/19 10:32	ACJ	TAL CF
Total/NA	Analysis	7470A		1	258722	10/29/19 09:05	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	257956	10/23/19 12:05	MDK	TAL CF

Client Sample ID: NC1MW9

Lab Sample ID: 310-167942-4

Date Collected: 10/18/19 12:39

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258664	10/25/19 16:10	CJT	TAL CF
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/26/19 01:37	SAD	TAL CF

Lab Chronicle

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Client Sample ID: NC1MW9

Lab Sample ID: 310-167942-4

Date Collected: 10/18/19 12:39

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	258764	10/29/19 16:53	SAD	TAL CF
Total/NA	Prep	7470A			258509	10/28/19 10:32	ACJ	TAL CF
Total/NA	Analysis	7470A		1	258722	10/29/19 09:08	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	257956	10/23/19 12:05	MDK	TAL CF

Client Sample ID: DUP-1

Lab Sample ID: 310-167942-5

Date Collected: 10/18/19 00:00

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258664	10/25/19 16:26	CJT	TAL CF
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/26/19 01:41	SAD	TAL CF
Total/NA	Prep	3010A			257893	10/23/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	258764	10/29/19 16:56	SAD	TAL CF
Total/NA	Prep	7470A			258509	10/28/19 10:32	ACJ	TAL CF
Total/NA	Analysis	7470A		1	258722	10/29/19 09:10	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	258097	10/24/19 08:58	SAS	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
AIHA-LAP, LLC	Industrial Hygiene Laboratory Accreditation Program (IHLAP)	101044	11-01-20
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-20
Georgia	State	IA100001 (OR)	09-29-20
Illinois	NELAP	200024	11-29-19
Iowa	State	007	12-01-19
Kansas	NELAP	E-10341	01-31-20
Minnesota	NELAP	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	3349	08-22-21
Oregon	NELAP	IA100001	09-29-20
USDA	US Federal Programs	P330-19-00003	01-02-22

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

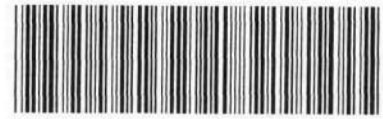
Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>OPPD</u>			
City/State:	CITY <u>Omaha</u>	STATE <u>NE</u>	Project: <u>NE City Station Unit 1</u>
Receipt Information			
Date/Time Received:	DATE <u>10/19/19</u>	TIME <u>0905</u>	Received By: <u>MRH</u>
Delivery Type:	<input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <u>Sea</u> <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____		
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: <u>SD</u>	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <u>MRH 10/19/19</u>	If yes: Cooler # <u>1</u> of <u>2</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID: <u>M</u>	Correction Factor (°C): <u>-0.1</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.3</u>	Corrected Temp (°C): <u>1.2</u>		
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

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Cooler/Sample Receipt and Temperature Log Form

Client Information		
Client: <u>OPPD</u>		
City/State: <small>CITY</small> <u>Omaha</u> <small>STATE</small> <u>NE</u>	Project: <u>NE City Station Unit 1</u>	
Receipt Information		
Date/Time Received: <small>DATE</small> <u>10/19/19</u> <small>TIME</small> <u>0905</u>	Received By: <u>MRH</u>	
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <u>Sat</u> <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____		
Condition of Cooler/Containers		
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: <u>#9</u>
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <u>MH 10/19/19</u>	If yes: Cooler # <u>2</u> of <u>2</u>
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
Temperature Record		
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID: <u>M</u>	Correction Factor (°C): <u>-0.1</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature.		
Uncorrected Temp (°C): <u>2.3</u>	Corrected Temp (°C): <u>2.2</u>	
Sample Container Temperature		
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>
Uncorrected Temp (°C):		
Corrected Temp (°C):		
Exceptions Noted		
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No		
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No		
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No		
NOTE: If yes, contact PM before proceeding. If no, proceed with login		
Additional Comments		

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Client Information Client Contact: Kyle Uhing Company: Omaha Public Power District Address: 444 South 16th Street Mall 9E/EP1 City: Omaha State, Zip: NE, 68102-2247 Phone: (531) 226-2515 Email: kkuhing@oppd.com		Lab PM: Hayes, Shawn M E-Mail: shawn.hayes@testamericainc.com		Carrier Tracking No(s): Job #:							
Due Date Requested: TAT Requested (days): PO #: WO #: TestAmerica Project #: 31007559 SSOW#:		Analysis Requested									
Project Name: Nebraska City Station Unit 1 CCR/Landfill Site: Nebraska City Station Unit 1		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)									
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, BT=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A Total Metals CCR/Title 132 List, 7470A Mercury, See Attached CCR/Title 132 List	2540C TDS, 9056A Chloride, Fluoride, Sulfate	9315 and 9320 Radium 226+228 Combined	Total Number of Containers	Special Instructions/Note:
NC1MW2	10/18/19	10:12	G	W	N	X	X	X	X	4	See attached list for specific analysis.
NC1MW3	10/18/19	11:52	G	W	N	X	X	X	X	4	See attached list for specific analysis.
NC1MW4	10/18/19	11:05	G	W	N	X	X	X	X	4	See attached list for specific analysis.
NC1MW9	10/18/19	12:39	G	W	N	X	X	X	X	4	See attached list for specific analysis.
DUP1	10/18/19	—	G	W	N	X	X	X	X	4	See attached list for specific analysis.
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)											
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months											
Special Instructions/QC Requirements:											
Empty Kit Relinquished by:											
Relinquished by: <i>[Signature]</i> Date/Time: 10/18/2019 14:35 Company: OPPD											
Relinquished by: <i>[Signature]</i> Date/Time: 10/18/19 0905 Company: EPA-CF											
Relinquished by: <i>[Signature]</i> Date/Time: _____ Company: _____											
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks:											



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Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
NC1MW2	310-167942-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC1MW2	310-167942-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW2	310-167942-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW3	310-167942-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC1MW3	310-167942-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW3	310-167942-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW4	310-167942-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC1MW4	310-167942-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW4	310-167942-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW9	310-167942-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC1MW9	310-167942-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW9	310-167942-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP	310-167942-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
DUP	310-167942-C-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP	310-167942-D-5	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167942-1

Login Number: 167942

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Spoerre, Autumn R

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

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-167942-2
Client Project/Site: Nebraska City Unit 1 CCR

For:

Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing



Authorized for release by:
12/13/2019 10:55:15 AM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

LINKS

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results through
TotalAccess

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

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



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Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Job ID: 310-167942-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

**Job Narrative
310-167942-2**

Comments

No additional comments.

Receipt

The samples were received on 10/19/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.2° C and 2.2° C.

RAD

Radium-226 prep batch 160-44751

The following samples need to be re-digested/re-extracted due to sample switch with the LCS and LCSD. NC1MW2 (310-167942-1), NC1MW3 (310-167942-2), NC1MW4 (310-167942-3), NC1MW9 (310-167942-4) and DUP-1 (310-167942-5).

Method PrecSep-21: Radium 226 Prep Batch 160-451213:

The following samples were prepared at a reduced aliquot due to insufficient volume for re-prep: NC1MW2 (310-167942-1), NC1MW3 (310-167942-2), NC1MW4 (310-167942-3), NC1MW9 (310-167942-4) and DUP-1 (310-167942-5).

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-167942-1	NC1MW2	Water	10/18/19 10:12	10/19/19 09:05	
310-167942-2	NC1MW3	Water	10/18/19 11:52	10/19/19 09:05	
310-167942-3	NC1MW4	Water	10/18/19 11:05	10/19/19 09:05	
310-167942-4	NC1MW9	Water	10/18/19 12:39	10/19/19 09:05	
310-167942-5	DUP-1	Water	10/18/19 00:00	10/19/19 09:05	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Client Sample ID: NC1MW2

Lab Sample ID: 310-167942-1

Date Collected: 10/18/19 10:12

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.157	U	0.185	0.186	1.00	0.304	pCi/L	11/19/19 18:01	12/11/19 07:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	78.8		40 - 110					11/19/19 18:01	12/11/19 07:06	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.177	U	0.362	0.362	1.00	0.616	pCi/L	10/24/19 07:55	11/06/19 18:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.9		40 - 110					10/24/19 07:55	11/06/19 18:50	1
Y Carrier	72.9		40 - 110					10/24/19 07:55	11/06/19 18:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.334	U	0.407	0.407	5.00	0.616	pCi/L		12/13/19 09:38	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Client Sample ID: NC1MW3

Lab Sample ID: 310-167942-2

Date Collected: 10/18/19 11:52

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.102	U	0.134	0.135	1.00	0.225	pCi/L	11/19/19 18:01	12/11/19 08:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.9		40 - 110					11/19/19 18:01	12/11/19 08:53	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0432	U	0.343	0.343	1.00	0.602	pCi/L	10/24/19 07:55	11/06/19 18:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.3		40 - 110					10/24/19 07:55	11/06/19 18:50	1
Y Carrier	71.4		40 - 110					10/24/19 07:55	11/06/19 18:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.146	U	0.368	0.369	5.00	0.602	pCi/L		12/13/19 09:38	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Client Sample ID: NC1MW4

Lab Sample ID: 310-167942-3

Date Collected: 10/18/19 11:05

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0559	U	0.118	0.118	1.00	0.258	pCi/L	11/19/19 18:01	12/11/19 08:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	81.8		40 - 110					11/19/19 18:01	12/11/19 08:53	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0555	U	0.316	0.316	1.00	0.549	pCi/L	10/24/19 07:55	11/06/19 18:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.3		40 - 110					10/24/19 07:55	11/06/19 18:50	1
Y Carrier	89.3		40 - 110					10/24/19 07:55	11/06/19 18:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.000469	U	0.337	0.337	5.00	0.549	pCi/L		12/13/19 09:38	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Client Sample ID: NC1MW9

Lab Sample ID: 310-167942-4

Date Collected: 10/18/19 12:39

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.100	U	0.150	0.150	1.00	0.256	pCi/L	11/19/19 18:01	12/11/19 08:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.3		40 - 110					11/19/19 18:01	12/11/19 08:53	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.595		0.286	0.291	1.00	0.422	pCi/L	10/24/19 07:55	11/06/19 18:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					10/24/19 07:55	11/06/19 18:50	1
Y Carrier	85.2		40 - 110					10/24/19 07:55	11/06/19 18:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.695		0.323	0.327	5.00	0.422	pCi/L		12/13/19 09:38	1

Client Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Client Sample ID: DUP-1

Lab Sample ID: 310-167942-5

Date Collected: 10/18/19 00:00

Matrix: Water

Date Received: 10/19/19 09:05

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.124	U	0.142	0.143	1.00	0.232	pCi/L	11/19/19 18:01	12/11/19 08:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.6		40 - 110					11/19/19 18:01	12/11/19 08:53	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.246	U	0.301	0.302	1.00	0.497	pCi/L	10/24/19 07:55	11/06/19 18:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.2		40 - 110					10/24/19 07:55	11/06/19 18:50	1
Y Carrier	82.2		40 - 110					10/24/19 07:55	11/06/19 18:50	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.370	U	0.333	0.334	5.00	0.497	pCi/L		12/13/19 09:38	1

Definitions/Glossary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Qualifiers

Rad

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

Glossary

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

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-451213/23-A
Matrix: Water
Analysis Batch: 453945

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 451213

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.007399	U	0.124	0.124	1.00	0.245	pCi/L	11/19/19 18:01	12/11/19 08:53	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	79.7		40 - 110					11/19/19 18:01	12/11/19 08:53	1

Lab Sample ID: LCS 160-451213/1-A
Matrix: Water
Analysis Batch: 453945

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 451213

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	22.7	24.79		2.59	1.00	0.293	pCi/L	109	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	71.6		40 - 110					11/19/19 18:01	12/11/19 08:53

Lab Sample ID: LCSD 160-451213/2-A
Matrix: Water
Analysis Batch: 453945

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 451213

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
				Uncert. (2σ+/-)							
Radium-226	22.7	24.10		2.47	1.00	0.280	pCi/L	106	75 - 125	0.13	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits		Prepared	Analyzed	Dil Fac				
Ba Carrier	82.4		40 - 110					11/19/19 18:01	12/11/19 08:53	1	

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-447520/23-A
Matrix: Water
Analysis Batch: 449305

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 447520

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.09098	U	0.245	0.245	1.00	0.421	pCi/L	10/24/19 07:55	11/06/19 18:50	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	104		40 - 110					10/24/19 07:55	11/06/19 18:50	1
Y Carrier	89.0		40 - 110		10/24/19 07:55	11/06/19 18:50	1			

QC Sample Results

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

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

Lab Sample ID: LCS 160-447520/1-A
Matrix: Water
Analysis Batch: 449235

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 447520

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.42	9.798		1.20	1.00	0.537	pCi/L	104	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	88.4		40 - 110
Y Carrier	74.8		40 - 110

Lab Sample ID: LCSD 160-447520/2-A
Matrix: Water
Analysis Batch: 449235

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 447520

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	9.42	8.280		1.04	1.00	0.488	pCi/L	88	75 - 125	0.68	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	85.3		40 - 110
Y Carrier	83.7		40 - 110

QC Association Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Rad

Prep Batch: 447520

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-1	NC1MW2	Total/NA	Water	PrecSep_0	
310-167942-2	NC1MW3	Total/NA	Water	PrecSep_0	
310-167942-3	NC1MW4	Total/NA	Water	PrecSep_0	
310-167942-4	NC1MW9	Total/NA	Water	PrecSep_0	
310-167942-5	DUP-1	Total/NA	Water	PrecSep_0	
MB 160-447520/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-447520/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-447520/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 451213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167942-1	NC1MW2	Total/NA	Water	PrecSep-21	
310-167942-2	NC1MW3	Total/NA	Water	PrecSep-21	
310-167942-3	NC1MW4	Total/NA	Water	PrecSep-21	
310-167942-4	NC1MW9	Total/NA	Water	PrecSep-21	
310-167942-5	DUP-1	Total/NA	Water	PrecSep-21	
MB 160-451213/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-451213/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-451213/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	



Lab Chronicle

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Client Sample ID: NC1MW2

Lab Sample ID: 310-167942-1

Date Collected: 10/18/19 10:12

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			451213	11/19/19 18:01	ORM	TAL SL
Total/NA	Analysis	9315		1	453945	12/11/19 07:06	AJD	TAL SL
Total/NA	Prep	PrecSep_0			447520	10/24/19 07:55	EJQ	TAL SL
Total/NA	Analysis	9320		1	449305	11/06/19 18:50	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	454196	12/13/19 09:38	SMP	TAL SL

Client Sample ID: NC1MW3

Lab Sample ID: 310-167942-2

Date Collected: 10/18/19 11:52

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			451213	11/19/19 18:01	ORM	TAL SL
Total/NA	Analysis	9315		1	453945	12/11/19 08:53	AJD	TAL SL
Total/NA	Prep	PrecSep_0			447520	10/24/19 07:55	EJQ	TAL SL
Total/NA	Analysis	9320		1	449305	11/06/19 18:50	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	454196	12/13/19 09:38	SMP	TAL SL

Client Sample ID: NC1MW4

Lab Sample ID: 310-167942-3

Date Collected: 10/18/19 11:05

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			451213	11/19/19 18:01	ORM	TAL SL
Total/NA	Analysis	9315		1	453945	12/11/19 08:53	AJD	TAL SL
Total/NA	Prep	PrecSep_0			447520	10/24/19 07:55	EJQ	TAL SL
Total/NA	Analysis	9320		1	449305	11/06/19 18:50	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	454196	12/13/19 09:38	SMP	TAL SL

Client Sample ID: NC1MW9

Lab Sample ID: 310-167942-4

Date Collected: 10/18/19 12:39

Matrix: Water

Date Received: 10/19/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			451213	11/19/19 18:01	ORM	TAL SL
Total/NA	Analysis	9315		1	453945	12/11/19 08:53	AJD	TAL SL
Total/NA	Prep	PrecSep_0			447520	10/24/19 07:55	EJQ	TAL SL
Total/NA	Analysis	9320		1	449305	11/06/19 18:50	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	454196	12/13/19 09:38	SMP	TAL SL

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Client Sample ID: DUP-1

Lab Sample ID: 310-167942-5

Date Collected: 10/18/19 00:00

Matrix: Water

Date Received: 10/19/19 09:05

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	PrecSep-21			451213	11/19/19 18:01	ORM	TAL SL
Total/NA	Analysis	9315		1	453945	12/11/19 08:53	AJD	TAL SL
Total/NA	Prep	PrecSep_0			447520	10/24/19 07:55	EJQ	TAL SL
Total/NA	Analysis	9320		1	449305	11/06/19 18:50	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	454196	12/13/19 09:38	SMP	TAL SL

Laboratory References:

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



Accreditation/Certification Summary

Client: Omaha Public Power District
 Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Laboratory: Eurofins TestAmerica, Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
AIHA-LAP, LLC	Industrial Hygiene Laboratory Accreditation Program (IHLAP)	101044	11-01-20
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-20
Georgia	State	IA100001 (OR)	09-29-20
Illinois	NELAP	200024	11-29-19 *
Iowa	State Program	007	12-01-19 *
Kansas	NELAP	E-10341	01-31-20
Minnesota	NELAP	019-999-319	12-31-19
Minnesota (Petrofund)	State Program	3349	08-22-21
North Dakota	State	R-186	09-30-20
Oregon	NELAP	IA100001	09-29-20
USDA	US Federal Programs	P330-19-00003	01-02-22

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Cedar Falls

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

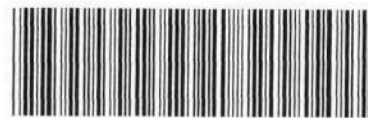
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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





Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>OPPD</u>			
City/State:	CITY <u>Omaha</u>	STATE <u>NE</u>	Project: <u>NE City Station Unit 1</u>
Receipt Information			
Date/Time Received:	DATE <u>10/19/19</u>	TIME <u>0905</u>	Received By: <u>MRH</u>
Delivery Type:	<input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <u>Sea</u> <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____		
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: <u>SD</u>	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <u>MRH 10/19/19</u>	If yes: Cooler # <u>1</u> of <u>2</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID:	<u>M</u>	Correction Factor (°C): <u>-0.1</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):	<u>1.3</u>	Corrected Temp (°C): <u>1.2</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

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Cooler/Sample Receipt and Temperature Log Form

Client Information		
Client: <u>OPPD</u>		
City/State: <small>CITY</small> <u>Omaha</u> <small>STATE</small> <u>NE</u>	Project: <u>NE City Station Unit 1</u>	
Receipt Information		
Date/Time Received: <small>DATE</small> <u>10/19/19</u> <small>TIME</small> <u>0905</u>	Received By: <u>MRH</u>	
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <u>Sat</u> <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____		
Condition of Cooler/Containers		
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: <u>#9</u>
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <u>MH 10/19/19</u>	If yes: Cooler # <u>2</u> of <u>2</u>
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
Temperature Record		
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID: <u>M</u>	Correction Factor (°C): <u>-0.1</u>	
• Temp Blank Temperature - If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature.		
Uncorrected Temp (°C): <u>2.3</u>	Corrected Temp (°C): <u>2.2</u>	
Sample Container Temperature		
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>
Uncorrected Temp (°C):		
Corrected Temp (°C):		
Exceptions Noted		
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No		
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No		
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No		
NOTE: If yes, contact PM before proceeding. If no, proceed with login		
Additional Comments		

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Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> pH	<u>Preservative</u> Added (mls)	<u>Lot #</u>
NC1MW2	310-167942-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC1MW2	310-167942-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW2	310-167942-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW3	310-167942-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC1MW3	310-167942-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW3	310-167942-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW4	310-167942-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC1MW4	310-167942-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW4	310-167942-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW9	310-167942-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
NC1MW9	310-167942-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
NC1MW9	310-167942-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP	310-167942-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
DUP	310-167942-C-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP	310-167942-D-5	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167942-2

Login Number: 167942

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Spoerre, Autumn R

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



Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-167942-2

Login Number: 167942

List Number: 2

Creator: Harris, Lorin C

List Source: Eurofins TestAmerica, St. Louis

List Creation: 10/22/19 11:01 AM

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



Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 1 CCR

Job ID: 310-167942-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	
310-167942-1	NC1MW2	78.8	
310-167942-2	NC1MW3	80.9	
310-167942-3	NC1MW4	81.8	
310-167942-4	NC1MW9	80.3	
310-167942-5	DUP-1	80.6	
LCS 160-451213/1-A	Lab Control Sample	71.6	
LCSD 160-451213/2-A	Lab Control Sample Dup	82.4	
MB 160-451213/23-A	Method Blank	79.7	

Tracer/Carrier Legend
Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-167942-1	NC1MW2	85.9	72.9
310-167942-2	NC1MW3	89.3	71.4
310-167942-3	NC1MW4	85.3	89.3
310-167942-4	NC1MW9	101	85.2
310-167942-5	DUP-1	91.2	82.2
LCS 160-447520/1-A	Lab Control Sample	88.4	74.8
LCSD 160-447520/2-A	Lab Control Sample Dup	85.3	83.7
MB 160-447520/23-A	Method Blank	104	89.0

Tracer/Carrier Legend
Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

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Appendix C

Spring and Fall 2019
Statistical Memos

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Technical Memorandum

Date: Tuesday, July 30, 2019

To: Omaha Public Power District (OPPD)

From: HDR Engineering, Inc.

Subject: Summary of Statistical Analysis and Evaluation for SSLs
Nebraska City Station NC1 Ash Disposal Area
Spring 2019 CCR Groundwater Monitoring Network

Omaha Public Power District (OPPD) operates a two-unit (Unit 1 and Unit 2) fossil fuel-fired generating plant at the Nebraska City Station (Station) southeast of Nebraska City, Nebraska. The Station has two existing Coal Combustion Residuals (CCR) landfills for fossil fuel combustion ash disposal; the NC1 Ash Disposal Area and the NC2 Ash Disposal Area. Both NC1 and NC2 Ash Disposal Areas are subject to the U.S. Environmental Protection Agency’s (USEPA’s) final CCR Rule. This memorandum provides a discussion and evaluation of the NC1 Ash Disposal Area. The NC1 Ash Disposal Area is an unlined CCR landfill which encompasses a total area of approximately 52 acres.

Groundwater sampling was completed as part of an assessment monitoring program for the NC1 CCR unit in April 2019 (as specified in §257.95(d) and Title 132 Chapter 7 Section 005.06). The statistical analysis of groundwater data was performed in accordance with the methods described in the *Groundwater Monitoring Statistical Certification* for the Nebraska City Station – NC1 Combustion Ash Landfill, amended July 31, 2018 and the facility’s most recent SAP as permitted under Title 132. Sampling results used to update background threshold values (BTVs) were obtained during monitoring events performed between March 2016 and October 2018. Downgradient sampling results from the April 2019 assessment monitoring were used to evaluate for statistically significant increases (SSIs) over background and statistically significant levels (SSLs) over the groundwater protection standard (GWPS). The calculated BTVs and the evaluation for SSIs over background for the Appendix III (Detection Monitoring) constituents and Appendix IV (Assessment Monitoring) constituents are provided in **Table 1**. The calculated lower confidence levels (LCLs) and the evaluation for SSLs over the GWPS for the Appendix IV constituents are provided in **Table 2**.

Table 1. Summary of Evaluation for SSIs over Background (April 2019)

Well ID:		NC1-MW2	NC1-MW3	NC1-MW4	NC1-MW9	
Constituent	BTV (UPL):	Unit	Assessment Monitoring Results in accordance with §257.95(d)(1) – April 2019			
Appendix III Constituents						
Boron	1.38	mg/L	<0.2	2.33	1.28	2.59
Calcium	145	mg/L	111	186	120	164
Chloride	20.7	mg/L	<5	7.96	5.78	5.34
Fluoride	3.51	mg/L	<0.5	<0.5	<0.5	<0.5



Table 1. Summary of Evaluation for SSIs over Background (April 2019)

Well ID:		NC1-MW2	NC1-MW3	NC1-MW4	NC1-MW9	
Constituent	BTV (UPL):	Unit	Assessment Monitoring Results in accordance with §257.95(d)(1) – April 2019			
pH	6.57 – 7.83*	SU	6.68	7.32	7.65	7.03
Sulfate	148	mg/L	66.3	<u>427</u>	<u>231</u>	<u>184</u>
TDS	680	mg/L	418	<u>1040</u>	586	<u>756</u>
Appendix IV Constituents						
Antimony	0.00235	mg/L	<0.001	<0.001	<0.001	<0.001
Arsenic	0.033	mg/L	<0.002	0.0143	0.00223	0.00681
Barium	0.372	mg/L	0.126	0.0938	0.0652	0.153
Beryllium	0.001	mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0005	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Chromium	0.005	mg/L	<0.005	<0.005	<0.005	<0.005
Cobalt	0.00477	mg/L	<0.0005	0.00250	<0.0005	<u>0.00559</u>
Fluoride	3.51	mg/L	<0.5	<0.5	<0.5	<0.5
Lead	0.006	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Lithium	0.0569	mg/L	<0.01	0.0271	0.011	0.0254
Mercury	0.000262	mg/L	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.00996	mg/L	<u>0.0803</u>	<0.002	<u>0.0269</u>	<u>0.0196</u>
Radium 226+228	2.16	pCi/L	0.494	0.348	0.0157	0.415
Selenium	0.0139	mg/L	<0.005	<0.005	<0.005	0.012
Thallium	0.001	mg/L	<0.001	<0.001	<0.001	<0.001

Bold and underlined concentration indicates an SSI over background.

* indicates the lower bound of the range is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).

Table 2. Summary of Evaluation for SSLs over GWPS (April 2019)

Well ID:		NC1-MW2	NC1-MW3	NC1-MW4	NC1-MW9	
Constituent	GWPS	Unit	Confidence Intervals in accordance with §257.95(d)(1)			
Antimony	0.006 ^[1]	mg/L	0.001	0.001	0.001	0.001
Arsenic	0.01 ^[1]	mg/L	0.002	0.01504	0.002965	0.008252
Barium	2.00 ^[1]	mg/L	0.1101	0.09786	0.08292	0.019104
Beryllium	0.004 ^[1]	mg/L	0.001	0.001	0.001	0.001
Cadmium	0.005 ^[1]	mg/L	0.0005	0.0005	0.0005	0.0005
Chromium	0.1 ^[1]	mg/L	0.005	0.005	0.005	0.005
Cobalt	0.006 ^[1]	mg/L	0.0005	0.002011	0.0005	0.0008585
Fluoride	4.00 ^[1]	mg/L	0.5	0.5	0.5	0.5
Lead	0.015 ^[1]	mg/L	0.0005	0.0005	0.0005	0.0005
Lithium	0.0423 ^[2]	mg/L	0.01	0.0325	0.0114	0.0201
Mercury	0.002 ^[1]	mg/L	0.0002	0.0002	0.0002	0.0002
Molybdenum	0.1 ^[1]	mg/L	0.05248	0.002	0.01909	0.02488
Radium 226+228	5.0 ^[1]	pCi/L	0.3532	0.3842	0.2335	0.4407
Selenium	0.05 ^[1]	mg/L	0.005	0.005	0.005	0.005
Thallium	0.002 ^[1]	mg/L	0.001	0.001	0.001	0.001

Bold and underlined concentration indicates an SSL over the GWPS.

[1] GWPS is established as the U.S. EPA Maximum Contaminant Level (MCL) or the GWPS specified in §257.95(h)(2).

[2] GWPS is established as the UPL when the background level is higher than the U.S. EPA MCL.



Technical Memorandum

Date: Friday, January 31, 2020

To: Omaha Public Power District (OPPD)

From: HDR Engineering, Inc.

Subject: Summary of Statistical Analysis and Evaluation for SSLs
Nebraska City Station NC1 Ash Disposal Area
Fall 2019 CCR Annual Groundwater Monitoring Report

Omaha Public Power District (OPPD) operates a two-unit (Unit 1 and Unit 2) fossil fuel-fired generating plant at the Nebraska City Station (Station) southeast of Nebraska City, Nebraska. The Station has two existing Coal Combustion Residuals (CCR) landfills for fossil fuel combustion ash disposal; the NC1 Ash Disposal Area and the NC2 Ash Disposal Area. Both NC1 and NC2 Ash Disposal Areas are subject to the U.S. Environmental Protection Agency’s (USEPA’s) final CCR Rule and Nebraska Department of Environment and Energy’s (NDEE) Title 132 regulations for fossil fuel combustion ash disposal areas. This memorandum provides a discussion and evaluation of the NC1 Ash Disposal Area. The NC1 Ash Disposal Area is an unlined CCR landfill which encompasses a total area of approximately 52 acres.

Groundwater sampling was completed as part of an assessment monitoring program for the NC1 CCR unit in October 2019 (as specified in §257.95(d) and Title 132 Chapter 7 Section 005.06). The statistical analysis of groundwater data was performed in accordance with the methods described in the *Groundwater Monitoring Statistical Certification* for the Nebraska City Station – NC1 Combustion Ash Landfill, amended July 31, 2018 and the facility’s most recent SAP as permitted under Title 132. Sampling results used to update background threshold values (BTVs) were obtained during monitoring events performed between March 2016 and October 2018. Downgradient sampling results from the October 2019 assessment monitoring were used to evaluate for statistically significant increases (SSIs) over background and statistically significant levels (SSLs) over the groundwater protection standard (GWPS). The calculated BTVs and the evaluation for SSIs over background for the Appendix III (Detection Monitoring) constituents and Appendix IV (Assessment Monitoring) constituents are provided in **Table 1**. The calculated lower confidence levels (LCLs) and the evaluation for SSLs over the GWPS for the Appendix IV constituents are provided in **Table 2**.

Table 1. Summary of Evaluation for SSIs over Background (October 2019)

Constituent	BTV (UPL):	Well ID: Unit	NC1-MW2	NC1-MW3	NC1-MW4	NC1-MW9
			Assessment Monitoring Results – October 2019			
Detection Monitoring (Appendix III) Constituents						
Boron	1.38	mg/L	0.305	2.42	1.34	1.31
Calcium	145	mg/L	112	166	151	157
Chloride	20.7	mg/L	<5	9.91	5.64	5.13
Fluoride	3.51	mg/L	<0.5	0.527	0.501	0.605
pH	6.57 – 7.83*	SU	6.84	7.08	7.33	7.06



Table 1. Summary of Evaluation for SSIs over Background (October 2019)

Well ID:		NC1-MW2	NC1-MW3	NC1-MW4	NC1-MW9	
Constituent	BTV (UPL):	Unit	Assessment Monitoring Results – October 2019			
Sulfate	148	mg/L	52.0	<u>361</u>	<u>238</u>	<u>206</u>
TDS	680	mg/L	332	<u>760</u>	572	<u>780</u>
Assessment Monitoring (Appendix IV) Constituents						
Antimony	0.00235	mg/L	<0.001	<0.001	<0.001	<0.001
Arsenic	0.033	mg/L	<0.002	<u>0.0333</u>	0.00347	0.00784
Barium	0.372	mg/L	0.179	0.135	0.119	0.165
Beryllium	0.001	mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0005	mg/L	0.000230	<0.0001	<0.0001	0.000100
Chromium	0.005	mg/L	<0.005	<0.005	<0.005	<0.005
Cobalt	0.00477	mg/L	0.000548	0.00182	0.000642	0.00323
Fluoride	3.51	mg/L	<0.5	0.527	0.501	0.605
Lead	0.006	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Lithium	0.0569	mg/L	0.0117	0.0316	0.0137	0.0310
Mercury	0.000262	mg/L	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.00996	mg/L	<u>0.0872</u>	<0.002	<u>0.0183</u>	<u>0.0230</u>
Radium 226+228	2.16	pCi/L	0.334	0.146	-0.000469U	0.695
Selenium	0.0139	mg/L	<0.005	<0.005	<0.005	<0.005
Thallium	0.001	mg/L	<0.001	<0.001	<0.001	<0.001

Bold and underlined concentration indicates an SSI over background.

* indicates the lower bound of the range is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).

Table 2. Summary of Evaluation for SSLs over GWPS (October 2019)

Well ID:		NC1-MW2	NC1-MW3	NC1-MW4	NC1-MW9	
Constituent	GWPS	Unit	Lower Confidence Levels – Assessment Monitoring (Appendix IV) Constituents – October 2019			
Antimony	0.006 ^[1]	mg/L	0.001	0.001	0.001	0.001
Arsenic	0.033 ^[2]	mg/L	0.002	0.0162	0.003	0.0082
Barium	2.00 ^[1]	mg/L	0.1119	0.010	0.085	0.0930
Beryllium	0.004 ^[1]	mg/L	0.001	0.001	0.001	0.001
Cadmium	0.005 ^[1]	mg/L	0.00023	0.0001	0.0001	0.0001
Chromium	0.1 ^[1]	mg/L	0.005	0.005	0.005	0.005
Cobalt	0.006 ^[1]	mg/L	0.0005	0.002	0.0005	0.0009
Fluoride	4.00 ^[1]	mg/L	0.5	0.5	0.5	0.547
Lead	0.015 ^[1]	mg/L	0.0005	0.0005	0.0005	0.0005
Lithium	0.0569 ^[2]	mg/L	0.01	0.0325	0.0135	0.0254
Mercury	0.002 ^[1]	mg/L	0.0002	0.0002	0.0002	0.0002
Molybdenum	0.1 ^[1]	mg/L	0.0549	0.002	0.0190	0.0247
Radium 226+228	5.0 ^[1]	pCi/L	0.3511	0.355	0.2037	0.464
Selenium	0.05 ^[1]	mg/L	0.005	0.005	0.005	0.005
Thallium	0.002 ^[1]	mg/L	0.001	0.001	0.001	0.001

Bold and underlined concentration indicates an SSL over the GWPS.

[1] GWPS is established as the U.S. EPA Maximum Contaminant Level (MCL) or the GWPS specified in §257.95(h)(2).

[2] GWPS is established as the UPL when the background level is higher than the U.S. EPA MCL.



Appendix D

April 2019 ASD Memo

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Memo

Date: Sunday, April 07, 2019

To: Omaha Public Power District (OPPD)

From: HDR Engineering, Inc.

Subject: Alternative Source Demonstration Evaluation for SSLs
Nebraska City Station NC1 Ash Disposal Area
CCR Groundwater Monitoring

Omaha Public Power District (OPPD) operates a two-unit (Unit 1 and Unit 2) fossil fuel-fired generating plant at the Nebraska City Station (Station) southeast of Nebraska City, Nebraska. The Station has two existing Coal Combustion Residuals (CCR) landfills for fossil fuel combustion ash disposal; the NC1 Ash Disposal Area and the NC2 Ash Disposal Area. Both NC1 and NC2 Ash Disposal Areas are subject to the U.S. Environmental Protection Agency's (USEPA's) final CCR Rule. This memorandum provides a discussion and evaluation of the NC1 Ash Disposal Area. The NC1 Ash Disposal Area is an unlined CCR landfill which encompasses a total area of approximately 52 acres.

On January 31, 2019, OPPD published, in the 2018 Annual Groundwater Monitoring and Corrective Action Report (2018 Annual Report), an Appendix IV constituent at a statistically significant level (SSL) in one of the downgradient monitoring wells at the NC1 Ash Disposal Area^[1]. The statistical evaluation for SSLs over the Groundwater Protection Standards (GWPS) conducted for the October 2018 assessment monitoring data indicated one SSL for arsenic in monitoring well MW-3.

As required by the CCR Rule, the owner must either initiate an assessment of corrective measures as required by §257.96; or demonstrate that a source other than the CCR unit caused the SSL, that the SSL resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Due to the complexities of hydrogeological conditions and the nature of statistical testing, there are numerous reasons why a statistically significant result may not be an indication of an actual release from the regulated unit. It is reasonable to allow for a separate demonstration, including statistical factors, once an SSL occurs to determine whether the detected level is actually due to a contaminant release.

The objective of this memorandum is to document an alternative source demonstration (ASD) for the SSL (i.e. arsenic at MW-3) published in the 2018 Annual Report at the NC1 Ash Disposal Area. In anticipation of an ASD or delineation activities, an additional upgradient monitoring well (MW-14) was installed. As part of this ASD, MW-14 was sampled and statistically analyzed in this memorandum to evaluate if the SSL published in the 2018 Annual Report resulted from natural variation in groundwater quality.



Groundwater Monitoring Well Installation & Sample Analysis

To evaluate the potential of natural variation, upgradient monitoring well MW-14 was installed on July 12, 2018 and is located northwest of the NC1 Ash Disposal Area. Table 1 provides a summary of the updated monitoring well network, including MW-14, for the NC1 Ash Disposal Area. The “CCR Groundwater Monitoring System” certification will be updated to include the addition of MW-14 to the groundwater monitoring network.

Table 1. NC1 Ash Disposal Area monitoring network

Monitoring Well ID	Date Installed	Well Depth	Location w/ respect to NC1 Ash Disposal Area	Top of Well Casing Elevation
		(feet bgs)		(feet AMSL)
NC2-MW-4	09/08/2004	14.0	Background/Upgradient	919.40
MW-11	01/16/2004	20.0	Background/Upgradient	918.35
MW-13	01/26/2016	13.0	Background/Upgradient	917.69
MW-14	07/12/2018	18.0	Background/Upgradient	921.00
NC1-MW-2	03/14/1995	17.8	Downgradient	919.39
NC1-MW-3	03/13/1995	19.5	Downgradient/Cross-gradient	919.80
NC1-MW-4	03/13/1995	20.3	Downgradient	919.81
MW-9	01/21/1999	20.0	Downgradient	920.14

Groundwater samples were collected at MW-14 by OPPD personnel on October 4, 2018; January 15, 2019; and March 5, 2019. Groundwater samples were analyzed by Test America Laboratories, Inc. in Cedar Falls, Iowa for the full Appendix III and Appendix IV constituent lists. Additionally, dissolved samples were collected during the January and March 2019 sampling events by field filtering the groundwater sample using a 0.45 µm inline disposable filter to evaluate the total metals and dissolved metals detected. Analytical results for total arsenic and dissolved arsenic at MW-14 are provided in Table 2. Results in Table 2 indicate total arsenic detections and dissolved arsenic detections were within 0.01 mg/L of each other; indicating the detected arsenic is present as dissolved arsenic in the groundwater. The full laboratory analytical reports will be included in the 2019 Annual Groundwater Monitoring & Corrective Action Report. The results of the ASD sampling events are further discussed in the Statistical Re-evaluation section of this memorandum.

Table 2. Arsenic Detections in MW-14

Date Sampled	Total Arsenic (mg/L)	Dissolved Arsenic (mg/L)
10/04/2018	0.0330	N/A
01/15/2019	0.0301	0.0295
03/05/2019	0.0253	0.0185



Statistical Re-evaluation

To evaluate a potential in natural variability of arsenic near the NC1 Ash Disposal Area, a statistical analyses was completed using the new upgradient monitoring well MW-14 as part of the pooled upgradient data from background wells (refer to Table 1). Groundwater samples from the NC1 Ash Disposal Area monitoring network were statistically re-evaluated for background threshold values (BTVs) by using interwell upper prediction limits (UPLs). The UPLs calculated for each constituent as part of this ASD used the pooled data from the four upgradient monitoring wells collected from March 2016 to March 2019. The previous UPLs reported prior to this ASD evaluation did not include data from MW-14 and instead consisted of pooled March 2016 to March 2018 data from MW-11, MW-13, and NC2-MW-4. The BTVs for Appendix III constituents and Appendix IV constituents for both events are presented in Table 3 and Table 4, respectively.

A comparison of the resulting UPLs in Table 3 shows comparable but slightly different values for calcium, fluoride, pH, and TDS; as expected from the relatively small background sample sizes. The UPLs for boron, chloride, and sulfate did not change with the additional samples. The UPLs for these constituents follow a nonparametric distribution; therefore, the UPL is set as the maximum observed background value (i.e. 148 mg/L for sulfate observed on 10-4-2018). Overall, the eight statistically significant increase (SSIs) for Appendix III constituents detected in the 2018 Annual Report remain unchanged with the additional data from MW-14; with the exception of total dissolved solids (TDS) at MW-9. By updating the UPL, an SSI is not detected for TDS at MW-9. The change in the UPL values with the additional upgradient data from MW-14 indicates that background variation influences the determination of whether an SSI has occurred.

Table 3. Background Threshold Values (UPL^{1,2}) for Appendix III Constituents

Monitoring Event	Reporting Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
Assessment Monitoring	Jan. 2019	1.38	141	20.7	3.64	7.80 - 6.67 ¹	148	640
ASD Evaluation	Apr. 2019	1.38	145	20.7	3.51	7.83 - 6.57 ¹	148	680

Notes:

¹ BTVs have been reported to three significant figures to maintain the same level of precision as the results reported by the laboratory.

²Indicates the lower bound of the range is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).

A comparison of the resulting UPLs in Table 4 shows comparable but slightly different values for barium, lead, lithium, molybdenum, combined radium and selenium; as expected from the relatively small background sample sizes. The UPLs for antimony, beryllium, cadmium, chromium, mercury, and thallium did not change with the additional samples. The UPLs for antimony and mercury follow a nonparametric distribution; therefore, the UPL is set as the maximum observed background value (i.e. 0.000262 mg/L for mercury observed on 7-13-2017 & 0.00235 mg/L for antimony observed on 6-20-2017). The remaining constituents (beryllium, cadmium, chromium, and thallium) were not detected in the four background wells; therefore, the UPLs are set as the laboratory reporting limit. The largest changes in the UPLs were observed for arsenic and cobalt due to higher detections of these constituents in the background well MW-14. The increase in the UPLs for arsenic and cobalt indicate the influence of background variation.



Overall, the eight statistically significant increase (SSIs) for Appendix IV constituents at the four downgradient monitoring wells detected in the 2018 Annual Report remain unchanged with the additional data from MW-14; the exception being arsenic at NC1-MW-4 and MW-9. With the updated UPL for arsenic, NC1-MW-4 and MW-9 are not detected as SSIs. The change in the UPLs with the additional upgradient data from MW-14 indicates that background variation influences the determination of whether an SSI has occurred for Appendix IV constituents.

The GWPS established as part of the Assessment Monitoring event published in January 2019 is provided in Table 4 and were re-evaluated as part of this ASD evaluation. As shown in Table 4, the BTV for arsenic and lithium were above the U.S. EPA Maximum Contaminant Level (MCL) or the GWPS specified in §257.95(h)(2). In accordance with the NC1 Groundwater Monitoring Statistical Certification^[2] and 40 CFR 257.95(h), the upper tolerance limits (UTLs) were used to establish GWPS for Appendix IV constituents where background concentration for which the background level is higher than the MCL or the GWPS specified in §257.95(h)(2).

Analytical sampling results for downgradient monitoring well MW-3 published in the 2018 Annual Report are provided in Table 4. As part of this ASD evaluation, a statistical re-evaluation was completed at MW-3. As shown in Table 4, arsenic at MW-3 remains above the updated BTV indicating an SSI over background.

Table 4. SSI Determination for MW-3: BTVs (UPL) & GWPS for Appendix IV Constituents

Constituent	Units	MW-3 Detections – Published Jan. 2019	BTVs		GWPS ^[1]	
			Assessment Monitoring – Jan. 2019	ASD Evaluation – Apr. 2019	Assessment Monitoring – Jan. 2019	ASD Evaluation – Apr. 2019
Antimony	mg/L	N.S.*	0.00235	0.00235	0.006	0.006
Arsenic	mg/L	0.0352	0.00965	0.033	0.01	0.033 ^[2]
Barium	mg/L	0.141	0.400	0.372	2.0	2.0
Beryllium	mg/L	N.S.*	0.001 ^[4]	0.001 ^[4]	0.004	0.004
Cadmium	mg/L	N.S.*	0.0005 ^[4]	0.0005 ^[4]	0.005	0.005
Chromium	mg/L	N.S.*	0.005 ^[4]	0.005 ^[4]	0.1	0.1
Cobalt	mg/L	0.00120	0.00236	0.00477	0.006	0.006
Fluoride ^[3]	mg/L	0.541	3.64	3.51	4.0	4.0
Lead	mg/L	0.000833	0.00577	0.006	0.015	0.015
Lithium	mg/L	0.0326	0.0423	0.0569	0.0423 ^[2]	0.0569 ^[2]
Mercury	mg/L	N.S.*	0.000262	0.000262	0.002	0.002
Molybdenum	mg/L	<0.002	0.0100	0.00996	0.10	0.10
Radium 226 + 228	pCi/L	1.12	1.84	2.16	5.0	5.0
Selenium	mg/L	<0.005	0.011	0.0139	0.05	0.05
Thallium	mg/L	N.S.*	0.001 ^[4]	0.001 ^[4]	0.002	0.002

Notes:

Bold indicates an SSI over background

N.S.* = Not sampled; Constituent not sampled because only detected Appendix IV constituents were tested, in accordance with 40 CFR 257.95(d)(1).

¹GWPS is established as the U.S. EPA Maximum Contaminant Level (MCL) or the GWPS specified in §257.95(h)(2); unless otherwise specified.

²GWPS is established as the upper tolerance limit (UTL) when the background level is higher than the U.S. EPA MCL or the GWPS specified in §257.95(h)(2).

³ Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

⁴ Constituent was not detected above the laboratory reporting limit (RL) for the background wells; therefore, the BTV is set at the laboratory RL.



In accordance with the statistical procedures specified in the NC1 Groundwater Monitoring Statistical Certification ^[2], the lower confidence limit (LCL) is calculated to determine if an SSL above the GWPS is detected. OPPD published an SSL in the 2018 Annual Report for arsenic in MW-3. A re-evaluation of the SSL was completed as part of this ASD utilizing the updated GWPS for arsenic. Results of the statistical re-evaluation for an SSL at MW-3 is provided in Table 5. The LCL was re-calculated to determine if there is an exceedance above the GWPS. As shown in Table 5, the LCL for both the Assessment Monitoring and the ASD evaluation are below the GWPS; therefore, the SSL previously published at MW-3 is not considered an SSL and is not associated with a release from the NC1 Ash Disposal Area.

Table 5. SSL Determination for Arsenic in MW-3

Monitoring Well ID	Constituent	Detection - Published Jan. 2019	GWPS	Lower Confidence Limit		SSL (Yes/No)
				Assessment Monitoring – Jan. 2019	ASD Evaluation – Apr. 2019	
MW-3	Arsenic (mg/L)	0.0352	0.033	0.0151	0.0151	No ^[1]

Notes:

¹The lower confidence limit (LCL) is below the GWPS; therefore so SSL has been detected.

Summary

The statistical re-evaluation of the monitoring data, including the additional upgradient monitoring well MW-14, indicated that natural variation of groundwater quality is present and can influence the determination of whether an SSI and/or SSL has occurred. The ASD evaluation shows that arsenic in upgradient monitoring well MW-14 is present at higher concentrations than the EPA’s MCL. As a result of the variability and detected arsenic concentrations in the background monitoring well, the previously published SSL for arsenic at MW-3 is not considered an SSL, and the NC1 Ash Disposal Area will remain in assessment monitoring.

Key Upcoming Activities

As a result of this ASD, OPPD intends to conduct the following activities:

- Update the NC1 Groundwater Monitoring Network certification to include monitoring well MW-14 as an upgradient/background monitoring well for the NC1 Ash Disposal Area.
- Continue monitoring groundwater in the Assessment Monitoring program, in accordance with the CCR Rule §257.95 for the NC1 Ash Disposal Area.
- Continue more frequent groundwater monitoring at MW-14 to collect five additional rounds of samples to complete the eight initial background monitoring samples.

References

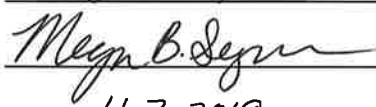
- ^[1]OPPD, 2019. (Omaha Public Power District). *2018 NC1 CCR Landfill Annual Groundwater Monitoring and Corrective Action Report*. Nebraska City, Nebraska, January 31, 2019.
- ^[2]OPPD, 2018. (Omaha Public Power District). *NC1 CCR Landfill Groundwater Monitoring Statistical Certification*. Nebraska City, Nebraska, July 2018.

Certification

Professional Engineer Certification

I hereby certify to the best of my knowledge that the information contained in this document is appropriate for evaluating the groundwater monitoring data and verify its use for an alternative source demonstration at the Nebraska City Station's NC1 Ash Disposal Area.

I am duly licensed Professional Engineer under the laws of the State of Nebraska.

Print Name: Megan B. Seymour
Signature: 
Date: 4-7-2019
License #: E-1593



My license renewal date is December 31, 2020.