Annual Groundwater Monitoring and Corrective Action Report

Lon D. Wright Power Plant
Fremont, Nebraska

Prepared for:

City of Fremont Utilities Department

401 E. Military Road
Fremont, Nebraska 68025

January 2018

Prepared by:

TETRA TECH, INC.
6307 Center Street, Suite 210
Omaha, Nebraska 68106

INTRODUCTION.....1
1. Location and Maps [257.90(e)(1)].....2
2. Monitoring Well System [257.90(e)(2)].....2
2.1. Well Installations.....2
2.2. Well Decommissioning.....4
3. Summary of Groundwater Samples [257.90(e)(3)].....4
4. Groundwater Monitoring Data [257.90(e)(5)].....6
5. Statistical Analyses of Groundwater Quality Data [257.93(f)-(g)].....6
5.1. Determination of Variance between Groups.....7
5.2. Determination of Distribution.....10
5.3. Comparison Statistical Results.....11
6. Key Activities for Year 2018.....13
7. Professional Engineer Certification.....13

TABLE 2.1: Groundwater Monitoring System Well Specifications.....3
TABLE 3.1: Groundwater Sample Data.....4
TABLE 5.1: Overall Variance between Groups.....8
TABLE 5.2: Variance between Grouped Data Monitoring Well Locations Against Background at MW-4R.....9
TABLE 5.3: Sampling Distributions.....10
TABLE 5.4 Statistical Individual Well Constituent Concentrations Compared to Background Concentrations.....12

APPENDIX 1 Water Well Registrations and Notice of Well Decommissioning (MW-4)
APPENDIX 2 Groundwater Quality Data
APPENDIX 3 Groundwater Elevations and Flow Data
APPENDIX 4 Groundwater Contour Maps
APPENDIX 5 Statistical Data
5A ANOVA Statistical Output Files
5B Distribution Statistical Output Files
5C Statistical Comparison Output Data

INTRODUCTION

40 Code of Federal Regulations ("CFR") Part 257 ("§257") requires owners and operators of existing landfills and surface impoundments containing coal combustion residuals ("CCR;" collectively "CCR units") to monitor groundwater quality and characteristics and provide the results of specified data collection in an annual report due by January 31 of each year. This 2017 Annual Groundwater Monitoring and Corrective Action Report is the first annual groundwater monitoring report prepared on behalf of the City of Fremont Department of Utilities ("FDU"), which owns and operates the 130 megawatt, coal-fired, Lon D. Wright Power Plant and an 11.36-acre CCR monofill.

The data included in this report complies with the requirements for a Detection Monitoring Program prescribed by §257.94 and is also intended to satisfy provisions of the Nebraska Department of Environmental Quality ("NDEQ") Ash Waste Disposal Area Permit NE0203777. Key actions completed under the *detection monitoring program* include:

- Installation of three additional downgradient groundwater monitoring wells;
- Abandonment of background monitoring well MW-4 and replacement with new background monitoring well MW-4R;
- Initiating the *detection monitoring program* by obtaining a minimum of eight independent samples for each background and downgradient monitoring well.

No problems were encountered during the implementation of the *detection monitoring program*, and the key actions executed are further described in corresponding report sections.

In accordance with the reporting requirements prescribed under 40 CFR 257.90(e), this Annual Groundwater Monitoring and Corrective Action Report contains:

- Maps illustrating the CCR unit including background or upgradient and downgradient well locations, and well identification numbers that are part of the groundwater monitoring program [257.90(e)(1)];
- The identification of monitoring wells that were installed or decommissioned during the preceding year and rationale for the actions taken [257.90(e)(2)];
- A summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs [257.90(e)(3)]; and
- Monitoring data required to be included as specified in §§257.90 through 257.98 [257.90(e)(5)], to include:
    - Certification from a qualified professional that the groundwater monitoring system is designed and constructed to meet the requirements of the Performance Standard described by §257.91(a);

- Data collected in accordance with the groundwater monitoring program; and [257.93(a)-(e)]
- Statistical analyses of data sets. [257.93(f)-(g)]

1. LOCATION AND MAPS [257.90(E)(1)]

The Lon D. Wright Power Plant is located at 2701 East First Street, and the associated CCR monofill is located at the intersection of First Street and Johnson Road in Fremont, Nebraska (see Figure 1). The location of background monitoring well MW-4R relative to downgradient wells MW-1 through MW-3 and MW-5 through MW-8 are identified and depicted on the Monitoring Well Location and Elevation Map in Figure 2.

2. MONITORING WELL SYSTEM [257.90(E)(2)]

In 1995, the City of Fremont engaged a detailed study of hydrogeologic conditions beneath and surrounding the monofill area.[1] The data collected was used to characterize and substantiate site conditions in support of state permitting requirements, ultimately resulting in the authorization to construct the monofill under Ash Waste Disposal Area Permit NE0203777. The conclusions of the hydrogeologic study, in conjunction with regulatory concurrence from the NDEQ, resulted in the installation of five groundwater monitoring wells (MW-1 through MW-5) in 1996, designed and constructed to intercept the shallow groundwater table beneath the monofill.

The groundwater monitoring system currently consists of eight monitoring wells to include an additional three monitoring locations constructed in 2016. Monitoring wells MW-6, MW-7, and MW-8 were installed at locations to the east and south of the monofill to increase the interception potential of predominant down- and cross-gradient flow migration pathways. These wells are intended to reduce data gaps between sentinel monitoring locations and demonstrate compliance with the Performance Standard described by §257.91(a). Background monitoring well MW-4 was replaced with background monitoring well MW-4R to ensure reliable background data

2.1. WELL INSTALLATIONS

There were no wells installed during the previous year (2017).

Shallow groundwater is typically encountered beneath the monofill area at depths of approximately 10 to 15 feet below grade surface ("bgs"), with elevations exhibiting seasonal fluctuations and variability. Groundwater wells are designed and constructed with intent to

[1] HDR Engineering, Inc. 1995. "Hydrogeology of Proposed Fossil Fuel Combustion Ash Disposal Site." Prepared for Fremont Department of Utilities. October.

intercept and monitor a minimum of 10 feet of the uppermost aquifer in the immediate vicinity of the monofill.

Upgradient, background monitoring well MW-4 exhibited signs of heaving and dislocation at the surface. Given indications of displacement, the well was replaced and re-designated as new monitoring well MW-4R (replacement). Groundwater monitoring wells MW-6, MW-7, and MW-8 were installed to expand the groundwater monitoring network.

The following Table 2.1 summarizes well specifications for the wells included in the Groundwater Monitoring System, including wells installed during the previous year.

TABLE 2.1: GROUNDWATER MONITORING SYSTEM

WELL SPECIFICATIONS

Well Number	Nebraska Well Registration Number	Location Relative to Monofill (Gradient)	Northing	Easting	Top of Casing Elevation* (feet amsl)	Well Depth** (ft)	Screen Interval** (ft)
MW – 1	G-090148C	Down	5806.42	6640.94	1180.68	29	8 to 28
MW – 1N	NA	Down	5795.28	6639.94	1181.71	NA	NA
MW – 1S	NA	Down	5785.60	6640.09	1181.60	NA	NA
MW – 2	G-090148D	Down	5627.75	6576.24	1177.09	28	7 to 27
MW – 3	G-090148E	Down	5519.40	6130.22	1178.53	28	7 to 27
MW – 4R	G180215D	Up	6028.86	5796.06	1177.77	28	8 to 28
MW – 5	G-090148B	Down/Cross	6032.02	6479.71	1177.61	28	7 to 27
MW-6	G-180215A	Down	5924.03	6865.58	1177.61	28	8 to 28
MW-7	G-180215B	Down	5719.81	6795.99	1177.30	28	8 to 28
MW-8	G-180215C	Down	5548.50	6421.23	1177.37	28	8 to 28

* To datum NGVD 1929

** Feet below grade surface ("bgs")

New wells were installed on or about August 9, 2016 by Olsson and Associates. Wells are constructed using 4-inch polyvinylchloride ("PVC") threaded casing set in 10.25-inch diameter boreholes. Screened intervals intercepting groundwater extend to total well depth using 0.01-inch, PVC slotted screen with threaded joints, capped at depth. The annular space is backfilled across the interval from 5 to 28 feet bgs (i.e., from 3-feet above the top-of-screen to total depth) using 10/20 silica sand. A 5-foot, bentonite surface seal extends from grade surface to approximately 5 feet bgs. Each well head is encased in a steel, raised, locking monument, protected by bollards. Water Well Registration documentation for monitoring wells MW-4R, 6, 7, and 8 on file with the State of Nebraska Department of Natural Resources is included in Appendix 1.

2.2. WELL DECOMMISSIONING

There were no wells decommissioned or abandoned during the previous year (2017).

The integrity of monitoring well MW-4 (Registration No. G-090148A) was deemed questionable due to unexplainable changes in the elevation of the surface casing, which compromised confidence in the groundwater quality data available at this well location. Consequently, this well was decommissioned and abandoned-in-place on August 9, 2016. The well was grouted with bentonite from approximately 3 to 28-feet bgs, and sealed with a 3-foot concrete plug from 3-feet bgs to surface grade. The Notice of Water Well Decommissioning on file with the State of Nebraska Department of Natural Resources is also included in Appendix 1.

3. SUMMARY OF GROUNDWATER SAMPLES [257.90(E)(3)]

Groundwater sampling events conducted from October 2016 through September 2017 were executed in compliance with 40 CFR 257.90(b)(iii), which initiated a *detection monitoring program* to include obtaining a minimum of eight independent samples for each background and downgradient well. Initial groundwater monitoring data collection and statistical evaluation required by the *detection monitoring program* is complete.

The following Table 3.1 summarizes groundwater sample data collected under the *detection monitoring program* and required to be reported under §257.91(e)(3):

TABLE 3.1: GROUNDWATER SAMPLE DATA

Well Number	Location Relative to Monofill (Gradient)	Number of Samples Collected for Analysis	Detection Monitoring Program Sample Dates
MW – 1	Down	8	10.12.2016 11.28.2016 01.18.2017 03.06.2017 04.24.2017 06.12.2017 07.31.2017 09.20.2017
MW – 2	Down	8	10.12.2016 11.28.2016 01.18.2017 03.06.2017 04.24.2017 06.12.2017 08.01.2017 09.20.2017

Well Number	Location Relative to Monofill (Gradient)	Number of Samples Collected for Analysis	Detection Monitoring Program Sample Dates
MW – 3	Down	8	10.12.2016 11.28.2016 01.18.2017 03.06.2017 04.24.2017 06.12.2017 07.31.2017 09.20.2017
MW – 4R	Background	8	10.12.2016 11.28.2016 01.18.2017 03.06.2017 04.24.2017 06.12.2017 07.31.2017 09.20.2017
MW – 5	Down/Cross	8	10.12.2016 11.28.2016 01.18.2017 03.06.2017 04.24.2017 06.12.2017 07.31.2017 09.20.2017
MW-6	Down	8	10.12.2016 11.28.2016 01.18.2017 03.06.2017 04.24.2017 06.12.2017 08.01.2017 09.20.2017
MW-7	Down	8	10.12.2016 11.28.2016 01.18.2017 03.06.2017 04.24.2017 06.12.2017 08.01.2017 09.20.2017
MW-8	Down	8	10.12.2016 11.28.2016 01.18.2017 03.06.2017 04.24.2017 06.12.2017 08.01.2017 09.20.2017

4. GROUNDWATER MONITORING DATA [257.90(E)(5)]

Groundwater monitoring data is collected in accordance with a Sampling and Analysis Plan ("SAP") that complies with the provisions of §257.93(a) and NDEQ permit requirements. The SAP includes procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, chain of custody control, and quality assurance/quality control.

Groundwater quality data collected in accordance with the provisions of the SAP are tabulated and included in Appendix 2. Groundwater elevation and flow data are tabulated and included in Appendix 3 with supporting field log forms pertaining to corresponding groundwater monitoring dates. Groundwater contour maps depicting groundwater flow directions, gradient, and flow rate for the dates monitored are included in Appendix 4.

5. STATISTICAL ANALYSES OF GROUNDWATER QUALITY DATA [257.93(F)-(G)]

In accordance with 40 CFR 257.93 (h), the objective of statistical data evaluation is to determine whether or not there is a statistically-significant increase over background values for each constituent required in a particular groundwater monitoring program. Statistical requirements prescribed by 40 CFR 257.93(g) and (h) specify an analysis of variance ("ANOVA") and distribution, followed by use of either multiple-comparison or individual-well-comparison procedures to test for statistical evidence of impacts to groundwater.

To comply with these requirements, groundwater monitoring data was statistically evaluated using the U.S. EPA Software ProUCL 5.1. All groundwater data was screened to determine variance (spread of data) and probability distributions (normal or non-normal) in order to determine appropriate test methods for individual compliance well comparisons to background, which is established at monitoring well location MW-4R. The Type I error rate ("α;" false positive rate or significance level) was set at 0.01, rendering a confidence interval of 99% (i.e., 1-α) for all individual well comparisons. The Type I experiment wise error rate for multiple comparison procedures was set at 0.05. [40 CFR 257.93(g)(2)]

The following statistical tests were conducted:

Variance between Groups:	Levene's Test – 1-way ANOVA
Probability Distribution:	Goodness-of-Fit Functions
Comparison of Data Sets:	Pooled Variance Student T-Test Welch-Satterthwaite T-Test

Statistical analyses of data sets for *antimony, beryllium, cadmium, cobalt, lead, mercury, and thallium* are dismissed as statistically neutral. All sample concentrations of these analytes at all downgradient well locations were reported as below the method detection limits. Under these

analytical conditions, analyte concentrations are recognized to be at or below background concentrations, in which case, there is no discernible increase over background values.

Only one quantifiable concentration of chromium was detected at monitoring well MW-1 during the April 2017 sampling event, and none of the reported chromium concentrations were flagged to indicate the unquantified presence of this analyte at concentrations below the method detection limit. This data set and the corresponding chromium data collected at background well MW-4R are highly censored, in which case, distribution statistics do not provide meaningful implication or interpretation.

Although these data were challenged using a nonparametric test statistic, one quantified value within a total data population of 64 sample values is fundamentally insufficient to decide with prescribed confidence that the underlying data populations of chromium concentrations (or lack thereof) at MW-1 and MW-4R actually differ. For the statistical comparison of chromium concentrations at monitoring well MW-1 to background at MW-4R, censored data (i.e., data reported below method detection limits) was managed by simple substitution with values assigned at half the reporting limit in order to relieve bias.

5.1. Determination of Variance between Groups

The following Tables 5.1 and 5.2 summarize the variance of data sets: (i) between all well locations (i.e., multiple comparison procedure) and (ii) between each downgradient well location against the background data set compiled at monitoring well location MW-4R (i.e., individual well constituent comparisons to background). The equality or inequality of variances was determined using Levene's Test for the Equality of Variance (or an equivalent variant) and the construction of ANOVA tables for each analytical data population compiled for each monitoring well location.

The following Table 5.1 summarizes results indicating the equality or inequality of overall variance between all groups of data, given 7 degrees of freedom between groups and 56 degrees of freedom within groups. The significance level is set at 0.05 for a multiple-comparison ANOVA test. [40 CFR 257.93(g)(2)]

TABLE 5.1: OVERALL VARIANCE BETWEEN GROUPS

Parameter	Overall Variance Between All Groups of Data
Antimony	NA
Arsenic	Unequal
Barium	Unequal
Beryllium	NA
Boron	Equal
Cadmium	NA
Calcium	Unequal
Chloride	Unequal
Chromium	Insufficient data
Cobalt	NA
Fluoride	Unequal
Lead	NA
Lithium	Unequal
Mercury	NA
Molybdenum	Unequal
Selenium	Unequal
Sulfate	Unequal
Thallium	NA
Total Dissolved Solids	Unequal
Radium 226	Equal
Radium 228	Equal
Total Radium	Equal

The following Table 5.2 summarizes the 1-Way ANOVA determinations of variance between groups of individual compliance well constituent concentrations against background data compiled at monitoring well MW-4R. Data populations render a single degree of freedom between groups and 14 degrees of freedom within groups. Tabulated ANOVA computations are included in Appendix 5A.

TABLE 5.2: VARIANCE BETWEEN GROUPED DATA

MONITORING WELL LOCATIONS AGAINST BACKGROUND AT MW-4R

Parameter	MW-1	MW-2	MW-3	MW-5	MW-6	MW-7	MW-8
Antimony	NA	NA	NA	NA	NA	NA	NA
Arsenic	Equal	Equal	Unequal	Equal	Unequal	Equal	Unequal
Barium	Unequal	Unequal	Unequal	Equal	Unequal	Equal	Unequal
Beryllium	NA	NA	NA	NA	NA	NA	NA
Boron	Equal	Equal	Equal	Equal	Equal	Equal	Equal
Cadmium	NA	NA	NA	NA	NA	NA	NA
Calcium	Unequal	Unequal	Equal	Unequal	Equal	Unequal	Equal
Chloride	Equal	Equal	Equal	Equal	Unequal	Equal	Equal
Chromium*	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data
Cobalt	NA	NA	NA	NA	NA	NA	NA
Fluoride	Unequal	Unequal	Equal	Unequal	Unequal	Equal	Equal
Lead	NA	NA	NA	NA	NA	NA	NA
Lithium	Unequal	Equal	Equal	Unequal	Unequal	Equal	Equal
Mercury	NA	NA	NA	NA	NA	NA	NA
Molybdenum	Unequal	Unequal	Unequal	Equal	Unequal	Unequal	Equal
Selenium	Unequal	Unequal	Equal	Unequal	Unequal	Unequal	Unequal
Sulfate	Unequal	Equal	Equal	Equal	Unequal	Unequal	Equal
Thallium	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	Unequal	Equal	Equal	Unequal	Unequal	Equal	Equal
Radium 226	Equal	Equal	Equal	Equal	Equal	Equal	Equal
Radium 228	Equal	Equal	Equal	Equal	Equal	Equal	Equal
Total Radium	Equal	Equal	Equal	Equal	Equal	Equal	Equal

NA: Not applicable

* Only one quantified chromium concentration at MW-1 renders an insufficient data population to test with confidence.

5.2. Determination of Distribution

Sampling distributions were determined based on goodness-of-fit ("GOF") functions returned by the following tests:

Normal Distributions	Lognormal Distributions	Gamma Distributions	Non-Parametric Distributions
• Shapiro Wilk GOF • Lilliefors GOF	• Lilliefors Lognormal GOF	• Anderson-Darling GOF • Kolmogrov-Smirnoff GOF	• Lillifors Lognormal GOF

All individual data populations were tested against all listed methods to assess distributional behavior quantified by the GOF rendered by the method. The following Table 5.3 summarizes the results of distribution analyses. Statistical output data is included in Appendix 5B.

TABLE 5.3: SAMPLING DISTRIBUTIONS

Parameter	MW-1	MW-2	MW-3	MW-4R	MW-5	MW-6	MW-7	MW-8
Antimony	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Arsenic	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Barium	Normal	Normal	Normal	Normal	**Non parametric**	Normal	Normal	Normal
Beryllium	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Boron	Normal	Normal	**Non parametric**	Normal	Normal	Normal	Normal	**Lognormal**
Cadmium	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Calcium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Chloride	Normal	Normal	Normal	Gamma	Normal	Normal	Normal	Normal
Chromium	NA	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Cobalt	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Fluoride	**Non parametric**	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lead	All ND	All ND	All ND	**Non parametric**	All ND	All ND	All ND	All ND
Lithium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	**Non parametric**
Mercury	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Molybdenum	Normal	Normal	Normal	Normal	Normal	Normal	Normal	**Lognormal**
Selenium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Sulfate	Normal	**Lognormal**	Normal	Normal	Normal	Normal	Normal	Normal
Thallium	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Total Dissolved Solids	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Parameter	MW-1	MW-2	MW-3	MW-4R	MW-5	MW-6	MW-7	MW-8
Radium 226	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Radium 228	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Total Radium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

All ND: All data reported as less than method detection limits; sampling distribution inapplicable.
NA: Not applicable; single data point insufficient to determine sampling distribution.

5.3. Comparison Statistical Results

In accordance with 40 CFR 257.93(g)(1) the statistical methods used to evaluate groundwater are selected in response to the distribution of data pertaining to each constituent at each well location. Data populations from each individual downgradient compliance well location are compared to the respective data population of the upgradient well location, MW-4R, using a suitable test statistic relevant to the assessed sample distribution.

Statistical comparisons between compliance and background well data sets for each constituent monitored predominantly relied on the two-sample t-test for normally distributed data. In nearly all instances where data populations associated with either compliance wells or background well MW-4R exhibited distributions other than normal, the Wilcoxon-Mann-Whiney ("WMW;" rank sum) test statistic, which does not rely on distributional assumptions, was used. The Gehan statistic (generalized Wilcoxon procedure) was used to compare the highly censored data sets (predominantly below method detection limits) for chromium concentrations identified at MW-1 against background concentrations.

For purposes of developing statistical evidence of 'statistically-significant increases" in analyte concentrations at downgradient compliance monitoring well locations against background concentrations, the *Test Form 1* null hypothesis, H_0, is assigned, i.e., the mean/median of the compliance location is less than or equal to the mean/median of background. Test statistics then challenge the H_0 at a confidence level of 99% and a level of significance of 0.01. The test statistics employed are commonly used for evaluation of groundwater characteristics, and are considered relevant and appropriate to make upgradient-to-downgradient comparisons on a limited number of wells and constituents at relatively small sites.

Results of the test statistics comparing downgradient compliance groundwater sample concentrations to upgradient background well concentrations at MW-4R are summarized in the following Table 5.4. Statistically significant increases in concentration above background concentration data collected at MW-4R are indicated as "SSI."

TABLE 5.4

STATISTICAL INDIVIDUAL WELL CONSTITUENT CONCENTRATIONS

COMPARED TO BACKGROUND CONCENTRATIONS

Parameter	MW-1	MW-2	MW-3	MW-5	MW-6	MW-7	MW-8
Antimony							
Arsenic				SSI			
Barium	SSI		SSI	SSI	SSI		SSI
Beryllium							
Boron							
Cadmium							
Calcium		SSI		SSI		SSI	
Chloride					SSI		
Chromium							
Cobalt							
Fluoride	SSI			SSI			
Lead							
Lithium	SSI			SSI	SSI		SSI
Mercury							
Molybdenum	SSI	SSI	SSI		SSI	SSI	
Selenium	SSI	SSI		SSI	SSI	SSI	SSI
Sulfate	SSI	SSI	SSI		SSI	SSI	
Thallium							
Total Dissolved Solids	SSI	SSI		SSI	SSI		
Radium 226							
Radium 228							
Total Radium							

6. KEY ACTIVITIES FOR YEAR 2018

The following key activities are projected to be completed in 2018:

- Prepare and implement a groundwater monitoring program that transitions from *detection monitoring* to *assessment monitoring*;
- Prepare a notification stating that an *assessment monitoring program* has been established; and
- Conduct groundwater monitoring in accordance with *assessment monitoring* protocols and establish groundwater protection standards, as needed.

7. PROFESSIONAL ENGINEER CERTIFICATION

"I hereby certify that the groundwater monitoring system described in this report for the CCR unit located at the Lon D Wright Power Plant, owned and operated by the City of Fremont Utilities District, is designed and constructed to meet the requirements of the Coal Combustion Residual Rule 40 CFR 257.91. Further, the statistical methods selected comply with the requirements of 40 CFR 257.93(f) and are appropriate for evaluating groundwater monitoring data for this CCR management area.

I am a duly licensed Professional Engineer under the laws of the State of Nebraska."

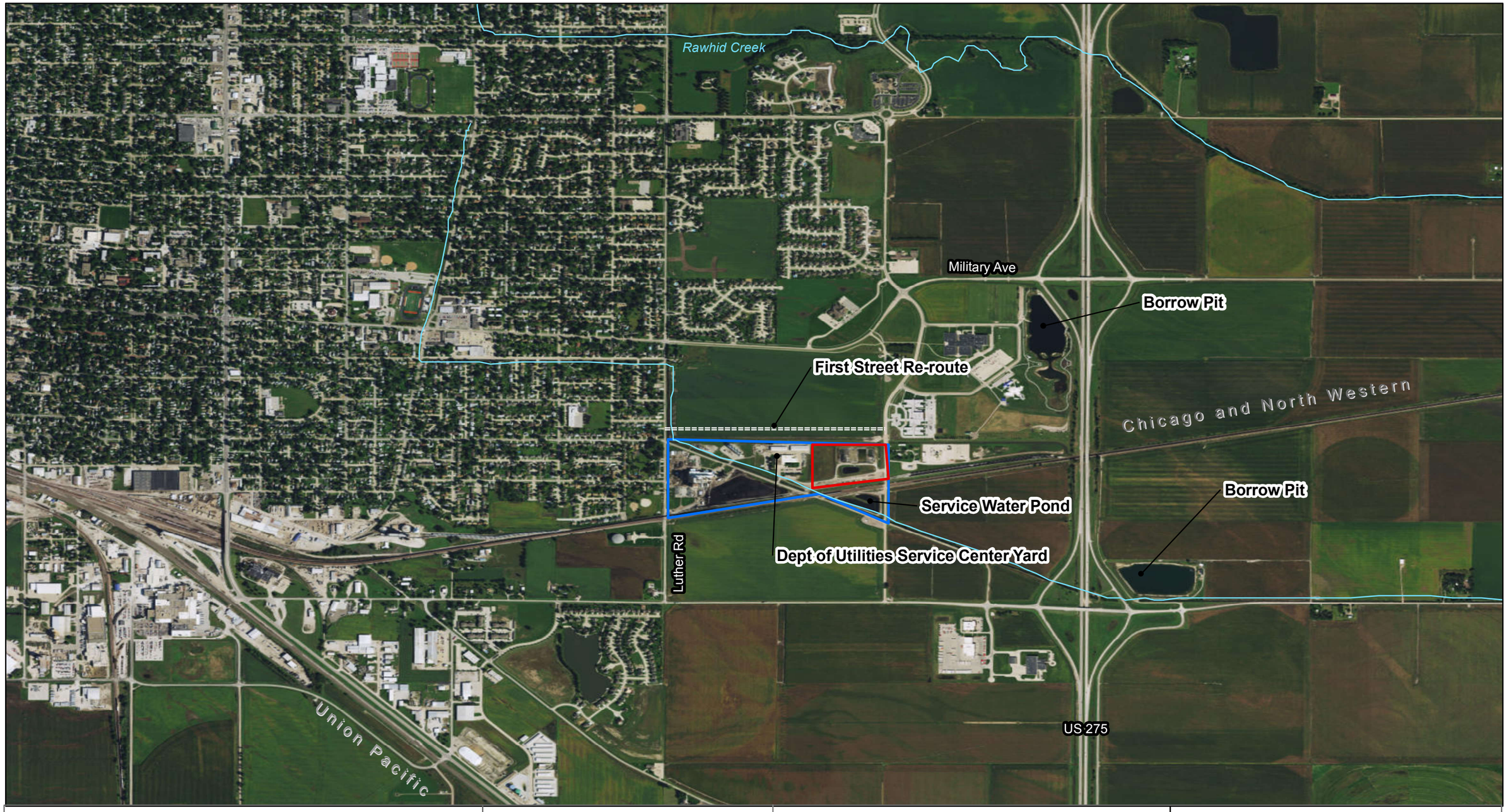
Name: Scott Schmoker

Signature: _____

Date: 1/26/2018

License No.: E-8251

My license renewal date is 12/31/2018.



Monofill Site

Lon D. Wright Power Plant

Streams

N W E S

0 0.25 0.5 1 Miles

Issued by:

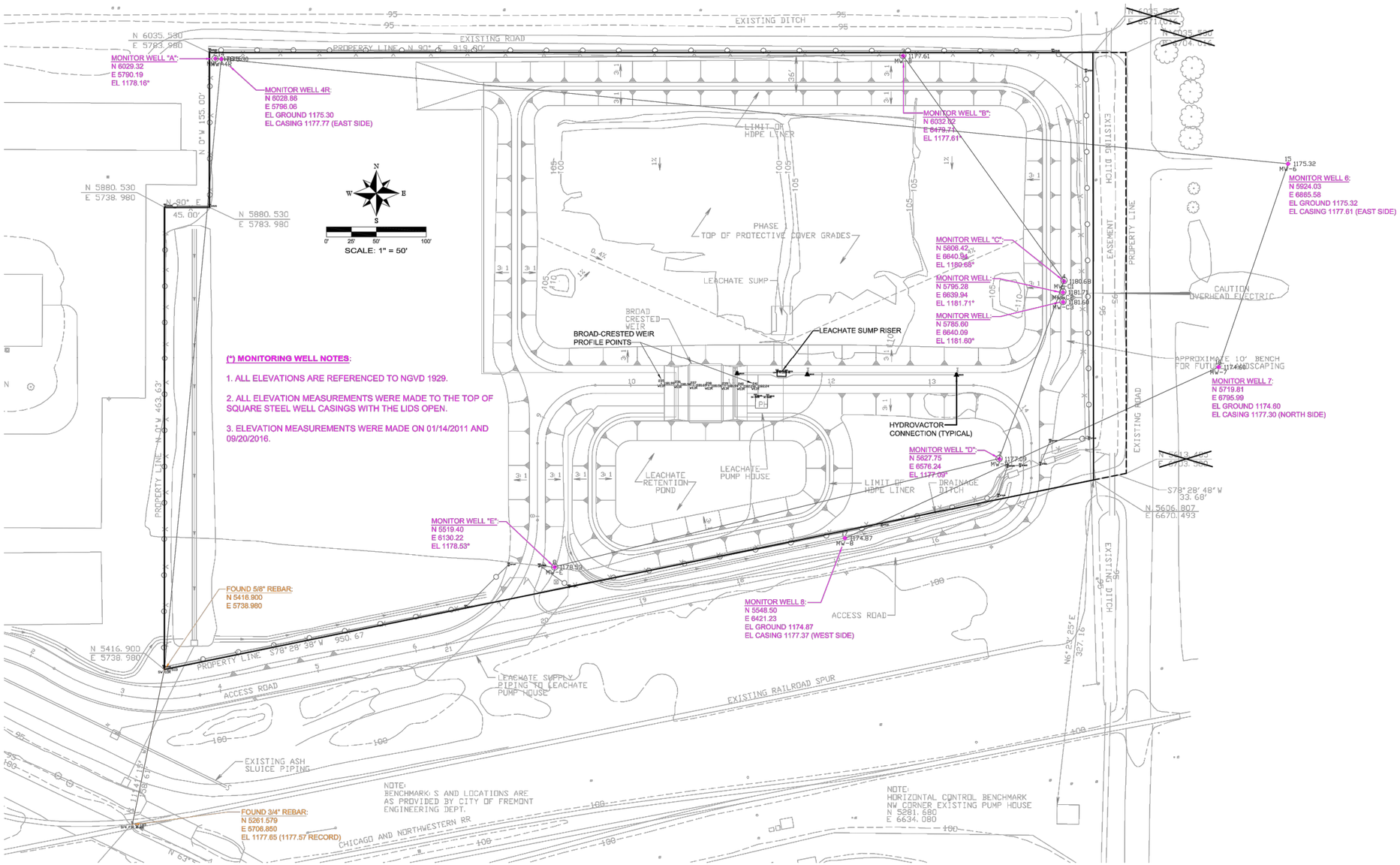
TETRA TECH

Issued for: Fremont Department of Utilities

Project Name: Permit Renewal Application

Date: January 2016

Figure 1
Lon D. Wright Power Plant
Ash Monofill Site Location Map



Notes:

1. Elevation surveyed to the top of casing
2. MW-1 = "C"
3. MW-2 = "D"
4. MW-3 = "E"
5. MW-5 = "B"

TETRA TECH
www.tetratech.com
1634 Eastport Plaza Drive
Collinsville, IL 62234
PHONE: 61□-345-0669 FA□: 61□-345-12□1

Drawing Description

Monitoring Well Location and Elevation Map

Source: APE□ Surveying LLC

Project No.:	T34972
Date:	1/04/2018
Drawn By:	DEF

Figure Number

2

DRAWING: P:\TT Projects\Fremont\Fremont Drawing 1.DWG

APPENDIX 1

WATER WELL REGISTRATIONS AND

NOTICE OF WELL DECOMMISSIONING (MW-4)

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 12-23-96 Sequence No. 105217 Registration No. G-90148 C
Owner Code No. 08112 Receipt No. 58217 19-Lower Platte North NRD

1. Well Owner Fremont Dept of Utilities Telephone Number (402) 727-2600
Address 400 East Military Avenue
City Fremont State NE Zip Code 68025

2. Drilling Firm Layne Western Telephone Number (402) 359-2042
Address 25450 Hwy 275 Contractor's License No. 392.66
City Valley State NE Zip Code 68064

3. Permit Number(s)

4. Purpose of well (indicate use): ___Dewatering (over 90 days) ___Domestic ___Geothermal ___Ground Heat Exchanger
___Ground Water Source Heat Pump ___Industrial ___Injection ___Irrigation ___Livestock X Monitoring
___Observation ___Public Water Supply (with spacing (46-638)) ___Public Water Supply (without spacing) ___Recovery ___Aquaculture
___Other (indicate use)

5. Replacement and abandoned well information.
A. Is this well a replacement well? ___Yes X No
B. Registration number of abandoned well:
C. Replacement well is ___ feet from abandoned well.
D. Abandoned well last operated ___, 19___
E. Original well pump column size: ___ inches.
F. Completion of original well abandonment on ___, 19___
G. Location of water use of abandoned well:

6. A. Well location: NE ¼ of the SW ¼ of Section 19, Township 17 North, Range 9 (East) West, Dodge County.
B. The well is 2200 feet from the (North or (South)) section line and 2600 feet from the (East or (West)) section line.
(Circle one) (Circle one)
C. Street address or block, lot and subdivision, if applicable:
D. Location of water use, if applicable (give legal descriptions):
E. If for irrigation, the land to be irrigated is ___ acres.
F. Well reference letter(s), if applicable:

7. Pump Information.
Is pump installed at this time? ___Yes X No
If yes, complete items A through F.
If no, complete items A and D with estimated information for those wells in which pump will be installed.
A. Actual pumping rate, if applicable: ___ gallons per minute. Measured ☐ or Estimated ☐
B. Pump column diameter: ___ inches. C. Length of pump column: ___ feet.
D. Pumping equipment installed: ___, 19___. E. Brand/Type:
F. Pump installed by: Contractor ☐ Owner ☐ Pump Installer ☐ License No.

8. Well Construction Information.

A. Total well depth: 29 feet. B. Static water level: _____ feet. C. Pumping water level: — feet.
☐ Estimated or ☐ Measured

D. Well Construction began: 9-25 19 96. E. Well Construction completed: 9-30 19 96.

F. Bore hole diameter: 10 inch(es).

G. Plain Casing: Diameter _____ ID 4 OD inches. Type of material: PVC schedule 40

Wall thickness: _____ inches. Joints--Welded/Glued/Threaded/Other: _____

Length(s) and placement(s) depth from 0 ft. to 8 ft. from _____ ft. to _____ ft.

H. Screen: _____ ID 4 OD in.; Type of material PVC schedule 40

Screen openings (slot size): 0.010 Trade name: _____ Guides at — ft.

Length(s) and placement(s) depth from 8 ft. to 28 ft. from _____ ft. to _____ ft.

I. Gravel pack interval(s) from 6 ft. to 29 ft. from _____ ft. to _____ ft. Grade size: _____

J. Grouted/Sealed from 0 ft. to 6 ft., with Enviroplug medium chips (type)

from _____ ft. to _____ ft., with _____ (type)

K. Drilling method: Auger L. Drilling fluid: none

M. Well development technique (total time and method): Bailer, 1 hour

N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? ___ Yes X No
If yes, what will be used: _____

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
0	3	very hard black clay			
3	11	dark brown clay			
11	29	light brown medium sand			

(Additional sheets may be submitted)

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature _____ Date 10-11-96

Water Well Owner's Signature _____ Date 19DEC96

printed on recycled paper

October 1993
DWR Form 188

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 12-23-96 Sequence No. 109218 Registration No. G-901480
Owner Code No. 08117 Receipt No. 89207 19- Lower Platte North NRD

1. Well Owner Fremont Dept. of Utilities Telephone Number (402) 727-2600
Address 400 East Military Avenue
City Fremont State NE Zip Code 68025

2. Drilling Firm Layne Western Telephone Number (402) 359-2042
Address 25450 Hwy 275 Contractor's License No. 58266
City Valley State NE Zip Code 68064

3. Permit Number(s)

4. Purpose of well (indicate one): ___Dewatering (over 90 days) ___Domestic ___Geothermal ___Ground Heat Exchanger
___Ground Water Source Heat Pump ___Industrial ___Injection ___Irrigation ___Livestock X Monitoring
___Observation ___Public Water Supply (with spacing (66-839)) ___Public Water Supply (without spacing) ___Recovery ___Aquaculture
___Other (Indicate use)

5. Replacement and abandoned well information.
A. Is this well a replacement well? ___Yes X No
B. Registration number of abandoned well: ___
C. Replacement well is ___ feet from abandoned well.
D. Abandoned well last operated ___, 19___
E. Original well pump column size: ___ inches.
F. Completion of original well abandonment on ___, 19___
G. Location of water use of abandoned well: ___

6. A. Well location: NE ¼ of the SW ¼ of Section 19, Township 17 North, Range 9 (East) West, Dodge County.
B. The well is 2100 feet from the (North or (South)) (Circle one) section line and 2500 feet from the (East or (West)) (Circle one) section line.
C. Street address or block, lot and subdivision, if applicable: ___
D. Location of water use, if applicable (give legal descriptions): ___
E. If for irrigation, the land to be irrigated is ___ acres.
F. Well reference letter(s), if applicable: D

7. Pump Information.
Is pump installed at this time? ___Yes X No
If yes, complete items A through F.
If no, complete items A and D with estimated information for those wells in which pump will be installed.
A. Actual pumping rate, if applicable: ___ gallons per minute. Measured ☐ or Estimated ☐
B. Pump column diameter: ___ inches. C. Length of pump column: ___ feet.
D. Pumping equipment installed: ___, 19___. E. Brand/Type: ___
F. Pump installed by: Contractor ☐ Owner ☐ Pump Installer ☐ License No. ___

8. Well Construction Information.

A. Total well depth: 28 feet. B. Static water level: _____ feet. C. Pumping water level: — feet.
☐ Estimated or ☐ Measured

D. Well Construction began: 9-26 1996 E. Well Construction completed: 9-30 1996

F. Bore hole diameter: 10 inch(es).

G. Plain Casing: Diameter _____ ID 4 OD inches. Type of material: PVC schedule 40

Wall thickness: _____ inches. Joints–Welded/Glued/Threaded/Other: _____

Length(s) and placement(s) depth from 0 ft. to 7 ft. from _____ ft. to _____ ft.

H. Screen: _____ ID 4 OD in.; Type of material PVC schedule 40

Screen openings (slot size): 0.010 Trade name: _____ Guides at — ft.

Length(s) and placement(s) depth from 7 ft. to 27 ft. from _____ ft. to _____ ft.

I. Gravel pack interval(s) from 5 ft. to 28 ft. from _____ ft. to _____ ft. Grade size: _____

J. Grouted/Sealed from 0 ft. to 5 ft., with Envirplug medium chips (type)

from _____ ft. to _____ ft., with _____ (type)

K. Drilling method: Auger L. Drilling fluid: none

M. Well development technique (total time and method): BAILER, 1 hour

N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? ___ Yes X No

If yes, what will be used: _____

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
0	4	dark brown clay			
4	28	light brown medium sand			

(Additional sheets may be submitted)

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature _____ Date 10-11-96 Water Well Owner's Signature _____ Date 12 Dec 96

printed on recycled paper

DWR Form 143

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 12-23-96 Sequence No. 105219 Registration No. G-90148 E
Owner Code No. 02127 Receipt No. 89207 19-Lower Platte North NRD

1. Well Owner Fremont Dept. of Utilities Telephone Number (402) 727-2600
Address 400 East Military Avenue
City Fremont State NE Zip Code 68025 +

2. Drilling Firm Layne Western Telephone Number (402) 399-2042
Address 25450 Hwy 275 Contractor's License No. 582166
City Valley State NE Zip Code 68064 +

3. Permit Number(s)

4. Purpose of well (indicate one): ___Dewatering (over 90 days) ___Domestic ___Geothermal ___Ground Heat Exchange
___Ground Water Source Heat Pump ___Industrial ___Injection ___Irrigation ___Livestock X Monitoring
___Observation ___Public Water Supply (with sparing (46-630)) ___Public Water Supply (without sparing) ___Recovery ___Aquaculture
___Other (indicate use)

5. Replacement and abandoned well information.
A. Is this well a replacement well? ___Yes X No
B. Registration number of abandoned well:
C. Replacement well is ___ feet from abandoned well.
D. Abandoned well last operated ___, 19___
E. Original well pump column size: ___ inches.
F. Completion of original well abandonment on ___, 19___
G. Location of water use of abandoned well:

6. A. Well location: NE ¼ of the SW ¼ of Section 19, Township 17 North, Range 9 (East) West, Dodge County.
B. The well is 2100 feet from the (North or (South)) (Circle one) section line and 2200 feet from the (East or (West)) (Circle one) section line.
C. Street address or block, lot and subdivision, if applicable:
D. Location of water use, if applicable (give legal descriptions):
E. If for irrigation, the land to be irrigated is ___ acres.
F. Well reference letter(s), if applicable: E

7. Pump Information.
Is pump installed at this time? ___Yes X No
If yes, complete items A through F.
If no, complete items A and D with estimated information for those wells in which pump will be installed.
A. Actual pumping rate, if applicable: ___ gallons per minute. Measured ☐ or Estimated ☐
B. Pump column diameter: ___ inches. C. Length of pump column: ___ feet.
D. Pumping equipment installed: ___, 19___. E. Brand/Type:
F. Pump installed by: Contractor ☐ Owner ☐ Pump Installer ☐ License No.

8. Well Construction Information.

A. Total well depth: 28 feet. B. Static water level: ____ feet. C. Pumping water level: — feet

☐ Estimated or ☐ Measured

D. Well Construction began: 9-26, 1996 E. Well Construction completed: 9-30, 1996.

F. Bore hole diameter: 10 inch(es).

G. Plain Casing: Diameter ____ ID 4 OD inches. Type of material: PVC schedule 40

Wall thickness: ____ inches. Joints--Welded/Glued/(Threaded)/Other: ____

Length(s) and placement(s) depth from 0 ft. to 17 ft. from ____ ft. to ____ ft.

H. Screen: ____ ID 4 OD in.; Type of material PVC schedule 40

Screen openings (slot size): 0.010 Trade name: ____ Guides at ____ ft.

Length(s) and placement(s) depth from 17 ft. to 27 ft. from ____ ft. to ____ ft.

I. Gravel pack interval(s) from: 5 ft. to 28 ft. from ____ ft. to ____ ft. Grade size: ____

J. Grouted/Sealed from 0 ft. to 5 ft.; with Envirplug medium chips (type)

from ____ ft. to ____ ft., with ____ (type)

K. Drilling method: Auger L. Drilling fluid: None

M. Well development techeique (total time and method): Bailer, 1 hour

N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? ___ Yes X No

If yes, what will be used: ____

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
0	1	Stiff black clay			
1	3	dark brown clay			
3	7	light gray silty clay			
7	28	light brown medium sand			

(Additional sheets may be submitted)

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature ____ Date 10-11-96 Water Well Owner's Signature ____ Date

printed on recycled paper

Well Registration or Area Permit

Fee Paid: $70.00 HHSS Fee: $30.00
DNR Cash Fund: $18.50 WWDF: 21.50
Billing ID: 55391

Source:	Nebraska On Line	Import Status:	Accepted	Use:	Monitoring (Ground Water Quality)	Owner ID:	19738
Import ID:	14710218395970	Status:	Active Registered Well	Decommission Date:	___	Registration Number:	G-180215D
Well ID:	244404	NRD:	Lower Platte North			Registration Date:	8/15/2016
Last Change User:	hmcpherson	Call Up Code:	___	Call Up Date:	___	Last Change Date:	8/15/2016

Owner:

Select Contact

		ContactID	Type	SeqNum	Begin Date	End Date	Name	
Edit	Display	19738	Owner	1	8/15/2016		City of Fremont,	Delete

Contractor:

Certificate ID	FirstName	LastName
19256	Michael L	Sorgenfrei

Drilling Firm:

	EmployerID	Employer
Delete	403006	Olsson and Associates

A. Well Location: NE1/4SW1/4 of Section 19
Township 17 North, Range 9 (East E/W), Dodge County
B. Natural Resource District: Lower Platte North

	Latitude	Longitude	
Well GPS Coordinates:	41° 25' 45.75''	-096° 27' 26.06''	GPS Required
Lat/Long DD	41.42938	-96.45724	

C. The well is: 2585 feet from the S Section line and 1772 feet from the W section line.
D. Street address or block, lot and subdivision: Addr/Sub Div ___ Block No ___ Lot ___
E. Location of water use, if applicable (give legal description): NA
G. Well reference letter(s) if applicable: MW-4R

Well In A Series

Well Part of a Series with Site Plan: Yes

Series	# of Wells Reg	Total # Wells	Acres	Acres Cert	NRD Appr	StartDate	EndDate	Comment	Series Reg Num (External Source)	Code	Description	Wells in the Series			
												WellID	RegCD	StartDate	EndDate
248039	4	4		No	No	8/9/2016				Mon	Monitoring Wells Part of a single site	244401	G-180215A	8/8/2016	
												244402	G-180215B	8/9/2016	
												244403	G-180215C	8/9/2016	
												244404	G-180215D	8/9/2016	

Permits

	Aprvd Date(s)				Aprvd Date(s)		
Area Permit	___	___	___	SWater App Code	___	___	___
GeoPermit	___	___	___	Industrial	___	___	___
MWF	___	___	___	Transfer	___	___	___
WSP	___	___	___	Swater Conduct Code	___	___	___
HHSS		___		Other		___	___
HHSS PWS ID		___		ITN		___	___
NDEQ		___					

5. Purpose of Well Monitoring (Ground Water Quality)
Other Use ___
Notes ___

7. Replacement well information. Well Considered a replacement by NRD(WellID, RegCD)
A. Is this well a Replacement well? No Repl No ___ NRD Approval Date ___ Well Replacement Reg CD
B. Registration number of abandoned well: ___ If not registered, date abandoned well was constructed ___
C. Abandoned well last operated ___ D. Replacement well is ___ feet from abandoned well.
E. Original well pump column size: ___ inches.
F. [ ] Original water well decommissioned ___
[ ] I hereby certify that the original water well will be decommissioned within 180 days after such construction of the replacement water well.
[ ] I hereby certify that the original water well will be modified and equipped to pump 50 gallons per minute or less

within 180 days after such construction of the replacement water well.

[ ] Livestock
[ ] Monitoring
[ ] Observation
[ ] Nonconsumptive or de minimus use approved by the applicable natural resources district. __

[ ] Decommission/Modification certification form is submitted by landowner (Must be submitted before registering well)

G. Location of water use of original well: __

Decommission Information

Decommission Date: __ By

8. Pump Information.

A. Is Pump installed at this time? No
Pump present but Well Inactive: No
Free Flowing Well: No
Well active, no pump installed: Yes
B. License No.
C. Pumping Rate __ gallons per minute.
D. Pumping water level __ feet.
E. Drop pipe diameter __ inches.
F. Length of pipe __ in feet.
G. Pump equipment installed: __
H. Pump Brand/Type __
I. Will this well be used to pump 50 gpm or less? Yes

9. Well Construction Information

A. Total well depth: 28 feet.
B. Static water level 10 feet.
C. Well Construction began: 8/9/2016
D. Well Construction Completed: 8/9/2016
E. Bore hole diameter in inches. Top 10.25 Bottom 10.25
F. Casing and Screen Joints are: Threaded
Other Joints description: __
H. Total Estimate Capacity of Well 20 gallons per minute.
I. Pumping water level at capacity: 20 feet.

10. Well Construction (Casing & Screen) - c, d, e & f measurements should be in inches to three decimal places
Record Count = 2

WellID	FromDepth*	ToDepth*	Case/Screen	InsideDiam	OutsideDiam	CaseThickness	ScrnSlotSize	Material	ScreenTname
244404	0	8	casing	3.998	4.5	0.237		PVC	Enviro Manf
244404	8	28	screen	3.998	4.5	0.237	0.01	PVC	Enviro Manf

* are in Feet, all else is in inches

11. Grout and Gravel Pack
Record Count = 2

WellID	FromDepth	ToDepth	Grout/Gravel	Material Description[1]	Quantity Gravel[2]	Volume &Type Grout[3]
244404	0	5	grout	Bentonite Chips		2 Bags
244404	5	28	gravel	10/20 Silica Sand	18 Bags	

* are in Feet, all else is in inches

[1]Description of gravel pack, i.e. engineered gravel pack, or gravel pit description (1/4 down) or brand name (best sand) natural formation, drilling cuttings, soil backfill

[2]Quantity #cubic yards, #Tons, #Sacks - (for drilling cuttings and soil backfill estimate quantity) Calculation assistance available on web

[3]Volume & Type: #gallons of a slurry, #Barrels of a slurry, #sacks used in the slurry, #Bags of non-slurry bentonite (chip-pellet-granular)

12. Well Geologic Materials Logged

WellID	FromDepth*	ToDepth*	Type	Hardness	Color	Other/Drilling Action
244404	0	8	Clay	Dense/Stiff	Gray	
244404	8	28	Sand with gravel	Dense/Stiff	Tan	

* are in Feet.

October 1995
DWR Form 143

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 12-23-96 Sequence No. 105216 Registration No. G-901486
Owner Code No. 09717 Receipt No. 89207 19- Lower Platte North NRD

1. Well Owner Fremont Dept of Utilities Telephone Number (402) 727-2600
Address 400 East Military Ave.
City Fremont State NE Zip Code 68025

2. Drilling Firm Layne-Western Telephone Number (402) 359-2042
Address 25450 Hwy 275 Contractor's License No. 39266
City Valley State NE Zip Code 68064

3. Permit Number(s)

4. Purpose of well (indicate one): ___Dewatering (over 90 days) ___Domestic ___Geothermal ___Ground Heat Exchanger ___Ground Water Source Heat Pump ___Industrial ___Injection ___Irrigation ___Livestock X Monitoring ___Observation ___Public Water Supply (with spacing (46-638)) ___Public Water Supply (without spacing) ___Recovery ___Aquaculture ___Other
(indicate use)

5. Replacement and abandoned well information.
A. Is this well a replacement well? ___Yes X No
B. Registration number of abandoned well:
C. Replacement well is ___ feet from abandoned well.
D. Abandoned well last operated ___, 19___
E. Original well pump column size: ___ inches.
F. Completion of original well abandonment on ___, 19___
G. Location of water use of abandoned well:

6. A. Well location: NE¼ of the SW¼ of Section 19, Township 17 North, Range 9 (East) West, Dodge County.
B. The well is 2300 feet from the (North or (South)) section line and 2500 feet from the (East or (West)) section line.
(Circle one) (Circle one)
C. Street address or block, lot and subdivision, if applicable:
D. Location of water use, if applicable (give legal descriptions):
E. If for irrigation, the land to be irrigated is ___ acres.
F. Well reference letter(s), if applicable: B

7. Pump Information.
Is pump installed at this time? ___Yes X No
If yes, complete items A through F.
If no, complete items A and D with estimated information for those wells in which pump will be installed.
A. Actual pumping rate, if applicable: / gallons per minute. Measured ☐ or Estimated ☐
B. Pump column diameter: 2 inches. C. Length of pump column: ___ feet.
D. Pumping equipment installed ___, 19___. E. Brand/Type:
F. Pump Installed by: Contractor ☐ Owner ☐ Pump Installer ☐ License No.

8. Well Construction Information.

A. Total well depth: 28 feet. B. Static water level: [illegible] feet. C. Pumping water level: — feet

☐ Estimated or ☐ Measured

D. Well Construction began: 9-24 1996. E. Well Construction completed: 9-30 1996.

F. Bore hole diameter: 10 inch(es).

G. Plain Casing: Diameter: [illegible] ID 4 OD inches. Type of material: PVC schedule 40

Wall thickness: [illegible] inches. Joints--Welded/Glued/Threaded/Other: [illegible]

Length(s) and placement(s) depth from 0 ft. to 17 ft. from [illegible] ft. to [illegible] ft.

H. Screen: [illegible] ID 4 OD in.; Type of material PVC schedule 40

Screen openings (slot size): 0.010 Trade name: [illegible] Guides at [illegible] ft.

Length(s) and placement(s) depth from 17 ft. to 27 ft. from [illegible] ft. to [illegible] ft.

I. Gravel pack interval(s) from 5 ft. to 28 ft. from [illegible] ft. to [illegible] ft. Grade size: [illegible]

J. Grouted/Sealed from 0 ft. to 5 ft., with Envirosplug medium Chips (type)

from [illegible] ft. to [illegible] ft., with [illegible] (type)

K. Drilling method: Auger L. Drilling fluid: none

M. Well development technique (total time and method): Bailed, 1 hour

N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? ___Yes _X_No

If yes, what will be used: [illegible]

9. Geologic Materials Logged

DEPTH IN FEET FROM	TO	DESCRIPTION	DEPTH IN FEET FROM	TO	DESCRIPTION
0	7	dark brown clay			
7	28	light brown medium sand			

(Additional sheets may be submitted)

10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature [illegible] Date 10/11/96

Water Well Owner's Signature [illegible] Date 10 DEC 96

printed on recycled paper

Well Registration or Area Permit

Fee Paid: $70.00 HHSS Fee: $30.00
DNR Cash Fund: $18.50 WWDF: 21.50
Billing ID: 55388

Source:	Nebraska On Line	Import Status:	Accepted	Use:	Monitoring (Ground Water Quality)	Owner ID:	19738
Import ID:	147101943731407	Status:	Active Registered Well	Decommission Date:	___	Registration Number:	G-180215A
Well ID:	244401	NRD:	Lower Platte North			Registration Date:	8/15/2016
Last Change User:	hmcpherson	Call Up Code:	___	Call Up Date:	___	Last Change Date:	8/15/2016

Owner:

Select Contact

		ContactID	Type	SeqNum	Begin Date	End Date	Name	
Edit	Display	19738	Owner	1	8/15/2016		City of Fremont,	Delete

Contractor:

Certificate ID	FirstName	LastName
19256	Michael L	Sorgenfrei

Drilling Firm:

	EmployerID	Employer
Delete	403006	Olsson and Associates

A. Well Location: NW1/4SE1/4 of Section 19
Township 17 North, Range 9 (East E/W), Dodge County
B. Natural Resource District: Lower Platte North

	Latitude	Longitude	
Well GPS Coordinates:	41° 25' 44.74''	-096° 27' 11.96''	GPS Required
Lat/Long DD	41.42909	-96.45332	

C. The well is: 2484 feet from the S Section line and 2474 feet from the E section line.
D. Street address or block, lot and subdivision: Addr/Sub Div ___ Block No ___ Lot ___
E. Location of water use, if applicable (give legal description): NA
G. Well reference letter(s) if applicable: MW-6

Well In A Series

Well Part of a Series with Site Plan: Yes

Series	# of Wells Reg	Total # Wells	Acres	Acres Cert	NRD Appr	StartDate	EndDate	Comment	Series Reg Num (External Source)	Code	Description	Wells in the Series			
												WellID	RegCD	StartDate	EndDate
248039	4	4		No	No	8/8/2016				Mon	Monitoring Wells Part of a single site	244401	G-180215A	8/8/2016	
												244402		8/9/2016	
												244403		8/9/2016	
												244404		8/9/2016	

Permits

	Aprvd Date(s)				Aprvd Date(s)		
Area Permit	___	___	___	SWater App Code	___	___	___
GeoPermit	___	___	___	Industrial	___	___	___
MWF	___	___	___	Transfer	___	___	___
WSP	___	___	___	Swater Conduct Code	___	___	___
HHSS		___		Other		___	___
HHSS PWS ID		___		ITN		___	___
NDEQ		___					

5. Purpose of Well Monitoring (Ground Water Quality)
Other Use ___
Notes ___

7. Replacement well information.
Well Considered a replacement by NRD(WellID, RegCD)
A. Is this well a Replacement well? No Repl No ___ NRD Approval Date ___ Well Replacement Reg CD
B. Registration number of abandoned well: ___ If not registered, date abandoned well was constructed ___
C. Abandoned well last operated ___ D. Replacement well is ___ feet from abandoned well.
E. Original well pump column size: ___ inches.
F. [ ] Original water well decommissioned ___
[ ] I hereby certify that the original water well will be decommissioned within 180 days after such construction of the replacement water well.
[ ] I hereby certify that the original water well will be modified and equipped to pump 50 gallons per minute or less within 180 days after such construction of the replacement water well.
[ ] Livestock

[ ] Monitoring
[ ] Observation
[ ] Nonconsumptive or de minimus use approved by the applicable natural resources district. __
[ ] Decommission/Modification certification form is submitted by landowner (Must be submitted before registering well)

G. Location of water use of original well: __

Decommission Information
Decommission Date: __ By

8. Pump Information.

A. Is Pump installed at this time? No
Pump present but Well Inactive: No
Free Flowing Well: No
Well active, no pump installed: Yes
B. License No.
C. Pumping Rate __ gallons per minute.
D. Pumping water level __ feet.
E. Drop pipe diameter __ inches.
F. Length of pipe __ in feet.
G. Pump equipment installed: __
H. Pump Brand/Type __
I. Will this well be used to pump 50 gpm or less? Yes

9. Well Construction Information

A. Total well depth: 28 feet.
B. Static water level 10 feet.
C. Well Construction began: 8/8/2016
D. Well Construction Completed: 8/8/2016
E. Bore hole diameter in inches. Top 10.25 Bottom 10.25
F. Casing and Screen Joints are: Threaded
Other Joints description: __
H. Total Estimate Capacity of Well 20 gallons per minute.
I. Pumping water level at capacity: 20 feet.

10. Well Construction (Casing & Screen) - c, d, e & f measurements should be in inches to three decimal places
Record Count = 2

WellID	FromDepth*	ToDepth*	Case/Screen	InsideDiam	OutsideDiam	CaseThickness	ScrnSlotSize	Material	ScreenTname
244401	0	8	casing	3.998	4.5	0.237		PVC	Enviro Manf
244401	8	28	screen	3.998	4.5	0.237	0.01	PVC	Enviro Manf

* are in Feet, all else is in inches

11. Grout and Gravel Pack
Record Count = 2

WellID	FromDepth	ToDepth	Grout/Gravel	Material Description[1]	Quantity Gravel[2]	Volume &Type Grout[3]
244401	0	5	grout	Bentonite Chips		2 Bags
244401	5	28	gravel	10/20 Silica Sand	18 Bags	

* are in Feet, all else is in inches
[1]Description of gravel pack, i.e. engineered gravel pack, or gravel pit description (1/4 down) or brand name (best sand) natural formation, drilling cuttings, soil backfill
[2]Quantity #cubic yards, #Tons, #Sacks - (for drilling cuttings and soil backfill estimate quantity) Calculation assistance available on web
[3]Volume & Type: #gallons of a slurry, #Barrels of a slurry, #sacks used in the slurry, #Bags of non-slurry bentonite (chip-pellet-granular)

12. Well Geologic Materials Logged

WellID	FromDepth*	ToDepth*	Type	Hardness	Color	Other/Drilling Action
244401	0	8	Clay	Dense/Stiff	Gray	
244401	8	28	Sand with gravel	Dense/Stiff	Tan	

* are in Feet.

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
Gordon W. "Jeff" Fassett, P.E., Director

Monday, August 15, 2016

CONTRACTOR: Michael L Sorgenfrei

CONTRACTORS FIRM:
Olsson and Associates
601 P St Suite 200
Lincoln, NE 68508

LOCATION OF WELL:
NW1/4SE1/4 of Section 19
Township 17 North, Range 9 E
Dodge County

OWNER: City of Fremont

NOL ID: 14710215827704
Well ID: 244402

The above well has been registered with the Nebraska Department of Natural Resources. Its registration number is G-180215B. The registered well information can be reviewed at the Department website: http://www.dnr.nebraska.gov/.

We thank you for your cooperation. If you have any questions or comments, please let us know.

Please allow up to 24 hours for the information to be displayed on the web.

Sincerely,

Heather McPherson
Staff Assistant, Ground Water

Nebraska Department of Natural Resources
Lincoln, NE 68509
(402) 471-2363

Well Registration or Area Permit

Fee Paid: $70.00 HHSS Fee: $30.00
DNR Cash Fund: $18.50 WWDF: 21.50
Billing ID: 55389

Source:	Nebraska On Line	Import Status:	Accepted	Use:	Monitoring (Ground Water Quality)	Owner ID:	19738
Import ID:	14710215827704	Status:	Active Registered Well	Decommission Date:	__	Registration Number:	G-180215B
Well ID:	244402	NRD:	Lower Platte North			Registration Date:	8/15/2016
Last Change User:	hmcpherson	Call Up Code:	__	Call Up Date:	__	Last Change Date:	8/15/2016

Owner:

Select Contact

		ContactID	Type	SeqNum	Begin Date	End Date	Name	
Edit	Display	19738	Owner	1	8/15/2016		City of Fremont,	Delete

Contractor:

Certificate ID	FirstName	LastName
19256	Michael L	Sorgenfrei

Drilling Firm:

	EmployerID	Employer
Delete	403006	Olsson and Associates

A. Well Location: NW1/4SE1/4 of Section 19
Township 17 North, Range 9 (East E/W), Dodge County
B. Natural Resource District: Lower Platte North

	Latitude	Longitude	
Well GPS Coordinates:	41° 25' 42.64''	-096° 27' 12.73''	GPS Required
Lat/Long DD	41.42851	-96.45354	

C. The well is: 2270 feet from the S Section line and 2533 feet from the E section line.
D. Street address or block, lot and subdivision: Addr/Sub Div __ Block No __ Lot __
E. Location of water use, if applicable (give legal description): NA
G. Well reference letter(s) if applicable: MW-7

Well In A Series

Well Part of a Series with Site Plan: Yes

Series	# of Wells Reg	Total # Wells	Acres	Acres Cert	NRD Appr	StartDate	EndDate	Comment	Series Reg Num (External Source)	Code	Description	Wells in the Series			
												WellID	RegCD	StartDate	EndDate
248039	4	4		No	No	8/9/2016				Mon	Monitoring Wells Part of a single site	244401	G-180215A	8/8/2016	
												244402	G-180215B	8/9/2016	
												244403		8/9/2016	
												244404		8/9/2016	

Permits

	Aprvd Date(s)				Aprvd Date(s)		
Area Permit	__	__	__	SWater App Code	__	__	__
GeoPermit	__	__	__	Industrial	__	__	__
MWF	__	__	__	Transfer	__	__	__
WSP	__	__	__	Swater Conduct Code	__	__	__
HHSS	__			Other	__	__	
HHSS PWS ID	__			ITN	__	__	
NDEQ	__						

5. Purpose of Well Monitoring (Ground Water Quality)
Other Use __
Notes __

7. Replacement well information. Well Considered a replacement by NRD(WellID, RegCD)
A. Is this well a Replacement well? No Repl No __ NRD Approval Date __ Well Replacement Reg CD
B. Registration number of abandoned well: __ If not registered, date abandoned well was constructed __
C. Abandoned well last operated __ D. Replacement well is __ feet from abandoned well.
E. Original well pump column size: __ inches.
F. [ ] Original water well decommissioned __
[ ] I hereby certify that the original water well will be decommissioned within 180 days after such construction of the replacement water well.
[ ] I hereby certify that the original water well will be modified and equipped to pump 50 gallons per minute or less within 180 days after such construction of the replacement water well.

[ ] Livestock
[ ] Monitoring
[ ] Observation
[ ] Nonconsumptive or de minimus use approved by the applicable natural resources district. __
[ ] Decommission/Modification certification form is submitted by landowner (Must be submitted before registering well)

G. Location of water use of original well: __

Decommission Information
Decommission Date: __ By

8. Pump Information.

A. Is Pump installed at this time? No
Pump present but Well Inactive: No
Free Flowing Well: No
Well active, no pump installed: Yes
B. License No.
C. Pumping Rate __ gallons per minute.
D. Pumping water level __ feet.
E. Drop pipe diameter __ inches.
F. Length of pipe __ in feet.
G. Pump equipment installed: __
H. Pump Brand/Type __
I. Will this well be used to pump 50 gpm or less? Yes

9. Well Construction Information

A. Total well depth: 28 feet.
B. Static water level 10 feet.
C. Well Construction began: 8/8/2016
D. Well Construction Completed: 8/9/2016
E. Bore hole diameter in inches. Top 10.25 Bottom 10.25
F. Casing and Screen Joints are: Threaded
Other Joints description: __
H. Total Estimate Capacity of Well 20 gallons per minute.
I. Pumping water level at capacity: 20 feet.

10. Well Construction (Casing & Screen) - c, d, e & f measurements should be in inches to three decimal places
Record Count = 2

WellID	FromDepth*	ToDepth*	Case/Screen	InsideDiam	OutsideDiam	CaseThickness	ScrnSlotSize	Material	ScreenTname
244402	0	8	casing	3.998	4.5	0.237		PVC	Enviro Manf
244402	8	28	screen	3.998	4.5	0.237	0.01	PVC	Enviro Manf

* are in Feet, all else is in inches

11. Grout and Gravel Pack
Record Count = 2

WellID	FromDepth	ToDepth	Grout/Gravel	Material Description[1]	Quantity Gravel[2]	Volume &Type Grout[3]
244402	0	5	grout	Bentonite Chips		2 Bags
244402	5	28	gravel	10/20 Silica Sand	18 Bags	

* are in Feet, all else is in inches

[1]Description of gravel pack, i.e. engineered gravel pack, or gravel pit description (1/4 down) or brand name (best sand) natural formation, drilling cuttings, soil backfill

[2]Quantity #cubic yards, #Tons, #Sacks - (for drilling cuttings and soil backfill estimate quantity) Calculation assistance available on web

[3]Volume & Type: #gallons of a slurry, #Barrels of a slurry, #sacks used in the slurry, #Bags of non-slurry bentonite (chip-pellet-granular)

12. Well Geologic Materials Logged

WellID	FromDepth*	ToDepth*	Type	Hardness	Color	Other/Drilling Action
244402	0	8	Clay	Dense/Stiff	Gray	
244402	8	28	Sand with gravel	Dense/Stiff	Tan	

* are in Feet.

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
Gordon W. "Jeff" Fassett, P.E., Director

Monday, August 15, 2016

CONTRACTOR: Michael L Sorgenfrei

CONTRACTORS FIRM:
Olsson and Associates
601 P St Suite 200
Lincoln, NE 68508

LOCATION OF WELL:
NW1/4SE1/4 of Section 19
Township 17 North, Range 9 E
Dodge County

OWNER: City of Fremont

NOL ID: 14710215827704
Well ID: 244402

The above well has been registered with the Nebraska Department of Natural Resources. Its registration number is G-180215B. The registered well information can be reviewed at the Department website: http://www.dnr.nebraska.gov/.

We thank you for your cooperation. If you have any questions or comments, please let us know.

Please allow up to 24 hours for the information to be displayed on the web.

Sincerely,

Heather McPherson
Staff Assistant, Ground Water

Nebraska Department of Natural Resources
Lincoln, NE 68509
(402) 471-2363

Well Registration or Area Permit

Fee Paid: $70.00 HHSS Fee: $30.00
DNR Cash Fund: $18.50 WWDF: 21.50
Billing ID: 55390

Source:	Nebraska On Line	Import Status:	Accepted	Use:	Monitoring (Ground Water Quality)	Owner ID:	19738
Import ID:	14710217173629	Status:	Active Registered Well	Decommission Date:	__	Registration Number:	G-180215C
Well ID:	244403	NRD:	Lower Platte North			Registration Date:	8/15/2016
Last Change User:	hmcpherson	Call Up Code:	__	Call Up Date:	__	Last Change Date:	8/15/2016

Owner:

Select Contact

		ContactID	Type	SeqNum	Begin Date	End Date	Name	
Edit	Display	19738	Owner	1	8/15/2016		City of Fremont,	Delete

Contractor:

Certificate ID	FirstName	LastName
19256	Michael L	Sorgenfrei

Drilling Firm:

	EmployerID	Employer
Delete	403006	Olsson and Associates

A. Well Location: NE1/4SW1/4 of Section 19
Township 17 North, Range 9 (East E/W), Dodge County

B. Natural Resource District: Lower Platte North

	Latitude	Longitude	
Well GPS Coordinates:	41° 25' 40.98''	-096° 27' 17.67''	GPS Required
Lat/Long DD	41.42805	-96.45491	

C. The well is: 2103 feet from the S Section line and 2411 feet from the W section line.

D. Street address or block, lot and subdivision: Addr/Sub Div __ Block No __ Lot __

E. Location of water use, if applicable (give legal description): NA

G. Well reference letter(s) if applicable: MW-8

Well In A Series

Well Part of a Series with Site Plan: Yes

Series	# of Wells Reg	Total # Wells	Acres	Acres Cert	NRD Appr	StartDate	EndDate	Comment	Series Reg Num (External Source)	Code	Description	Wells in the Series			
												WellID	RegCD	StartDate	EndDate
248039	4	4		No	No	8/9/2016				Mon	Monitoring Wells Part of a single site	244401	G-180215A	8/8/2016	
												244402	G-180215B	8/9/2016	
												244403	G-180215C	8/9/2016	
												244404		8/9/2016	

Permits

	Aprvd Date(s)				Aprvd Date(s)		
Area Permit	__	__	__	SWater App Code	__	__	__
GeoPermit	__	__	__	Industrial	__	__	__
MWF	__	__	__	Transfer	__	__	__
WSP	__	__	__	Swater Conduct Code	__	__	__
HHSS		__		Other		__	__
HHSS PWS ID		__		ITN		__	__
NDEQ		__					

5. Purpose of Well Monitoring (Ground Water Quality)
Other Use __
Notes __

7. Replacement well information. Well Considered a replacement by NRD(WellID, RegCD)

A. Is this well a Replacement well? No Repl No __ NRD Approval Date __ Well Replacement Reg CD

B. Registration number of abandoned well: __ If not registered, date abandoned well was constructed __

C. Abandoned well last operated __ D. Replacement well is __ feet from abandoned well.

E. Original well pump column size: __ inches.

F. [ ] Original water well decommissioned __
[ ] I hereby certify that the original water well will be decommissioned within 180 days after such construction of the replacement water well.
[ ] I hereby certify that the original water well will be modified and equipped to pump 50 gallons per minute or less within 180 days after such construction of the replacement water well.

[ ] Livestock
[ ] Monitoring
[ ] Observation
[ ] Nonconsumptive or de minimus use approved by the applicable natural resources district. __
[ ] Decommission/Modification certification form is submitted by landowner (Must be submitted before registering well)

G. Location of water use of original well: __

Decommission Information
Decommission Date: __ By

8. Pump Information.

A. Is Pump installed at this time? No
Pump present but Well Inactive: No
Free Flowing Well: No
Well active, no pump installed: Yes
B. License No.
C. Pumping Rate __ gallons per minute.
D. Pumping water level __ feet.
E. Drop pipe diameter __ inches.
F. Length of pipe __ in feet.
G. Pump equipment installed: __
H. Pump Brand/Type __
I. Will this well be used to pump 50 gpm or less? Yes

9. Well Construction Information

A. Total well depth: 28 feet.
B. Static water level 10 feet.
C. Well Construction began: 8/9/2016
D. Well Construction Completed: 8/9/2016
E. Bore hole diameter in inches. Top 10.25 Bottom 10.25
F. Casing and Screen Joints are: Threaded
Other Joints description: __
H. Total Estimate Capacity of Well 20 gallons per minute.
I. Pumping water level at capacity: 20 feet.

10. Well Construction (Casing & Screen) - c, d, e & f measurements should be in inches to three decimal places
Record Count = 2

WellID	FromDepth*	ToDepth*	Case/Screen	InsideDiam	OutsideDiam	CaseThickness	ScrnSlotSize	Material	ScreenTname
244403	0	8	casing	3.998	4.5	0.237		PVC	Enviro Manf
244403	8	28	screen	3.998	4.5	0.237	0.01	PVC	Enviro Manf

* are in Feet, all else is in inches

11. Grout and Gravel Pack
Record Count = 2

WellID	FromDepth	ToDepth	Grout/Gravel	Material Description[1]	Quantity Gravel[2]	Volume &Type Grout[3]
244403	0	5	grout	Bentonite Chips		2 Bags
244403	5	28	gravel	10/20 Silica Sand	18 Bags	

* are in Feet, all else is in inches

[1]Description of gravel pack, i.e. engineered gravel pack, or gravel pit description (1/4 down) or brand name (best sand) natural formation, drilling cuttings, soil backfill

[2]Quantity #cubic yards, #Tons, #Sacks - (for drilling cuttings and soil backfill estimate quantity) Calculation assistance available on web

[3]Volume & Type: #gallons of a slurry, #Barrels of a slurry, #sacks used in the slurry, #Bags of non-slurry bentonite (chip-pellet-granular)

12. Well Geologic Materials Logged

WellID	FromDepth*	ToDepth*	Type	Hardness	Color	Other/Drilling Action
244403	0	8	Clay	Dense/Stiff	Gray	
244403	8	28	Sand with gravel	Dense/Stiff	Tan	

* are in Feet.

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
Gordon W. "Jeff" Fassett, P.E., Director

Monday, August 15, 2016

CONTRACTOR: Michael L Sorgenfrei

CONTRACTORS FIRM:
Olsson and Associates
601 P St Suite 200
Lincoln, NE 68508

LOCATION OF WELL:
NE1/4SW1/4 of Section 19
Township 17 North, Range 9 E
Dodge County

OWNER: City of Fremont

NOL ID: 14710217173629
Well ID: 244403

The above well has been registered with the Nebraska Department of Natural Resources. Its registration number is G-180215C. The registered well information can be reviewed at the Department website: http://www.dnr.nebraska.gov/.

We thank you for your cooperation. If you have any questions or comments, please let us know.

Please allow up to 24 hours for the information to be displayed on the web.

Sincerely,

Heather McPherson
Staff Assistant, Ground Water

Nebraska Department of Natural Resources
Lincoln, NE 68509
(402) 471-2363

Submit to:
Department of Natural Resources
301 Centennial Mall South
P.O. Box 94676
Lincoln, Nebraska 68509-4676
Phone (402) 471 2363

Oct 2007
DNR DECO

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES

This form is required to be filed within **60 days** of decommissioning of the water well.

NOTICE OF WATER WELL DECOMMISSIONING

FOR DEPARTMENT USE ONLY

Date Filed 8/12/2016 Owner Code No. 19738 Registration No. G-090148A

0812/2016 - 105215 - decf Lower Platte North NRD
Well ID

1. Well Owner's First Name _____ Last Name _____

OR Company Name Fremont Department of Utlities

Attention Name _____

Address 400 East Military Ave

City Fremont State NE Zip 68025 Telephone () -

2. Contractor (if applicable). Olsson and Associates Telephone Number (402) 474-6311

Address 601 P St Suite 200 Contractor License No. 19256

City Lincoln State NE Zip Code 68508 +

Email: jmcpeak@olssonassociates.com

3**a**. Well Registration No. G-090148

3**b**. Purpose of Well: Monitoring

3**c**. Date Well Last Operated. 08/08/2016 3**d**. Date of Decommissioning. 08/09/2016

3**e**. List complete well location: Legal, Footage and/or GPS Coordinates

Well location: NE 1/4 of the SW 1/4 of Section 19, Township 17 North, Range 9 E X W, Dodge County.

The well is 2300 feet from the (N or S X) section line and 2000 feet from the (E W X) section line.

OR Latitude Degree: 41 Minute: 25 Second: 42 . 93

Longitude Degree: -96 Minute: 27 Second: 23 . 07

3**f**. Location of Water Use: N/A

4. Actual Method for Decommissioning of Well

Placement Depth in Feet		Detailed Description of Material
From	To	
0	3.0	Concrete
3.0	28.0	Bentonite Grout

5**a**. Well Casing Size: 4.00 5**b**. Bore Hole Diameter: 10.25

I hereby certify that the information provided on this form is true and accurate to the best of my knowledge.
This form has been electronically submitted by the contractor listed in Section 2.

11414 NOL ID: olsson — Contractor (**owner)

08/12/2016 — Date

* *Owner may sign on wells prior to 7/1/2001 or sandpoint or if well no longer exists and it is unknown when decommissioning occurred

The Department reserves the right to request verification of information provided.

APPENDIX 2

GROUNDWATER QUALITY DATA

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

November 17, 2016
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #1 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the October 12, 2016 background groundwater sampling event at the Lon D Wright Power Plant in Fremont, Nebraska. Depths to groundwater were measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived to the laboratory intact, within appropriate holding time and temperature. Field data sheets detailing well information and purge stabilization parameters, complete analytical results, and a groundwater flow direction map have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Data Sheets
Analytical Results
Groundwater Flow Direction Map

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

October 24, 2016

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60229965

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on October 14, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60229965

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60229965

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60229965001	**MW-1**	Water	10/12/16 12:42	10/14/16 06:22
60229965002	**MW-2**	Water	10/12/16 13:42	10/14/16 06:22
60229965003	**MW-3**	Water	10/12/16 10:49	10/14/16 06:22
60229965004	**MW-4R**	Water	10/12/16 09:48	10/14/16 06:22
60229965005	**MW-5**	Water	10/12/16 11:38	10/14/16 06:22
60229965006	**MW-6**	Water	10/12/16 16:16	10/14/16 06:22
60229965007	**MW-7**	Water	10/12/16 15:28	10/14/16 06:22
60229965008	**MW-8**	Water	10/12/16 14:42	10/14/16 06:22
60229965009	**DUPLICATE**	Water	10/12/16 23:59	10/14/16 06:22

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60229965

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60229965001	**MW-1**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60229965002	**MW-2**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60229965003	**MW-3**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60229965004	**MW-4R**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60229965005	**MW-5**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60229965006	**MW-6**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60229965007	**MW-7**	EPA 6010	JGP	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60229965

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60229965008	**MW-8**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60229965009	**DUPLICATE**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: MW-1 **Lab ID: 60229965001** Collected: 10/12/16 12:42 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**126**	ug/L	100	1	10/14/16 09:30	10/17/16 14:47	7440-42-8	
Calcium	**97.7**	mg/L	0.10	1	10/14/16 09:30	10/17/16 14:47	7440-70-2	
Lithium	**37.3**	ug/L	10.0	1	10/14/16 09:30	10/17/16 14:47	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7440-38-2	
Barium	**142**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 12:37	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 12:37	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7439-92-1	
Molybdenum	**7.2**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7439-98-7	
Selenium	**15.8**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 10:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**444**	mg/L	5.0	1		10/14/16 14:58		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**10.9**	mg/L	1.0	1		10/20/16 00:23	16887-00-6	
Fluoride	**1.3**	mg/L	0.20	1		10/20/16 00:23	16984-48-8	
Sulfate	**54.1**	mg/L	5.0	5		10/21/16 20:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: MW-2 **Lab ID: 60229965002** Collected: 10/12/16 13:42 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**119**	ug/L	100	1	10/14/16 09:30	10/17/16 15:05	7440-42-8	
Calcium	**91.8**	mg/L	0.10	1	10/14/16 09:30	10/17/16 15:05	7440-70-2	
Lithium	**26.7**	ug/L	10.0	1	10/14/16 09:30	10/17/16 15:05	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7440-36-0	
Arsenic	**3.9**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7440-38-2	
Barium	**98.5**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 12:41	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 12:41	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7439-92-1	
Molybdenum	**9.4**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7439-98-7	
Selenium	**11.6**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:41	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 10:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**428**	mg/L	5.0	1		10/14/16 14:58		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**18.9**	mg/L	1.0	1		10/20/16 00:38	16887-00-6	
Fluoride	**0.97**	mg/L	0.20	1		10/20/16 00:38	16984-48-8	
Sulfate	**47.2**	mg/L	5.0	5		10/21/16 21:41	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: MW-3 **Lab ID: 60229965003** Collected: 10/12/16 10:49 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	10/14/16 09:30	10/17/16 15:08	7440-42-8	
Calcium	**76.7**	mg/L	0.10	1	10/14/16 09:30	10/17/16 15:08	7440-70-2	
Lithium	**25.0**	ug/L	10.0	1	10/14/16 09:30	10/17/16 15:08	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7440-36-0	
Arsenic	**3.0**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7440-38-2	
Barium	**149**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 12:55	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 12:55	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7439-92-1	
Molybdenum	**8.5**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7439-98-7	
Selenium	**6.5**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:55	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 10:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**392**	mg/L	5.0	1		10/14/16 14:59		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**27.5**	mg/L	5.0	5		10/21/16 22:09	16887-00-6	
Fluoride	**0.77**	mg/L	0.20	1		10/20/16 00:52	16984-48-8	
Sulfate	**34.2**	mg/L	5.0	5		10/21/16 22:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: MW-4R **Lab ID: 60229965004** Collected: 10/12/16 09:48 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**180**	ug/L	100	1	10/14/16 09:30	10/17/16 15:12	7440-42-8	
Calcium	**88.5**	mg/L	0.10	1	10/14/16 09:30	10/17/16 15:12	7440-70-2	
Lithium	**26.8**	ug/L	10.0	1	10/14/16 09:30	10/17/16 15:12	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7440-36-0	
Arsenic	**4.3**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7440-38-2	
Barium	**122**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 12:59	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 12:59	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7439-92-1	
Molybdenum	**6.0**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7439-98-7	
Selenium	**9.3**	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 12:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 10:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**440**	mg/L	5.0	1		10/14/16 14:59		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**22.4**	mg/L	5.0	5		10/21/16 22:24	16887-00-6	
Fluoride	**0.74**	mg/L	0.20	1		10/20/16 01:06	16984-48-8	
Sulfate	**42.3**	mg/L	5.0	5		10/21/16 22:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: MW-5 **Lab ID: 60229965005** Collected: 10/12/16 11:38 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**122**	ug/L	100	1	10/14/16 09:30	10/17/16 15:16	7440-42-8	
Calcium	**101**	mg/L	0.10	1	10/14/16 09:30	10/17/16 15:16	7440-70-2	
Lithium	**29.3**	ug/L	10.0	1	10/14/16 09:30	10/17/16 15:16	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7440-36-0	
Arsenic	**4.5**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7440-38-2	
Barium	**138**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:04	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:04	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7439-92-1	
Molybdenum	**6.4**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7439-98-7	
Selenium	**8.8**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:04	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 10:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**486**	mg/L	5.0	1		10/14/16 15:00		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.8**	mg/L	1.0	1		10/20/16 01:20	16887-00-6	
Fluoride	**1.0**	mg/L	0.20	1		10/20/16 01:20	16984-48-8	
Sulfate	**40.6**	mg/L	5.0	5		10/21/16 23:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: MW-6 **Lab ID: 60229965006** Collected: 10/12/16 16:16 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**116**	ug/L	100	1	10/14/16 09:30	10/17/16 15:19	7440-42-8	
Calcium	**70.4**	mg/L	0.10	1	10/14/16 09:30	10/17/16 15:19	7440-70-2	
Lithium	**26.2**	ug/L	10.0	1	10/14/16 09:30	10/17/16 15:19	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7440-36-0	
Arsenic	**2.1**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7440-38-2	
Barium	**128**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:08	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:08	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7439-92-1	
Molybdenum	**9.8**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7439-98-7	
Selenium	**10.2**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 10:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**407**	mg/L	5.0	1		10/14/16 15:01		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**41.6**	mg/L	5.0	5		10/21/16 23:20	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	1		10/20/16 01:34	16984-48-8	
Sulfate	**33.9**	mg/L	5.0	5		10/21/16 23:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: MW-7 **Lab ID: 60229965007** Collected: 10/12/16 15:28 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**172**	ug/L	100	1	10/14/16 09:30	10/17/16 15:23	7440-42-8	
Calcium	**92.6**	mg/L	0.10	1	10/14/16 09:30	10/17/16 15:23	7440-70-2	
Lithium	**25.9**	ug/L	10.0	1	10/14/16 09:30	10/17/16 15:23	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7440-36-0	
Arsenic	**3.4**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7440-38-2	
Barium	**114**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:21	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:21	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7439-92-1	
Molybdenum	**9.5**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7439-98-7	
Selenium	**10.6**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:21	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 10:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**454**	mg/L	5.0	1		10/14/16 15:01		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**25.5**	mg/L	2.0	2		10/21/16 23:34	16887-00-6	
Fluoride	**0.80**	mg/L	0.20	1		10/20/16 02:17	16984-48-8	
Sulfate	**43.7**	mg/L	5.0	5		10/21/16 23:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: MW-8 **Lab ID: 60229965008** Collected: 10/12/16 14:42 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**102**	ug/L	100	1	10/14/16 09:30	10/17/16 15:27	7440-42-8	
Calcium	**92.8**	mg/L	0.10	1	10/14/16 09:30	10/17/16 15:27	7440-70-2	
Lithium	**26.2**	ug/L	10.0	1	10/14/16 09:30	10/17/16 15:27	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7440-36-0	
Arsenic	**2.5**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7440-38-2	
Barium	**166**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:26	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:26	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7439-92-1	
Molybdenum	**8.2**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7439-98-7	
Selenium	**11.4**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:26	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 11:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**418**	mg/L	5.0	1		10/14/16 15:02		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.0**	mg/L	1.0	1		10/20/16 02:31	16887-00-6	
Fluoride	**0.72**	mg/L	0.20	1		10/20/16 02:31	16984-48-8	
Sulfate	**35.1**	mg/L	5.0	5		10/22/16 00:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60229965

Sample: DUPLICATE **Lab ID: 60229965009** Collected: 10/12/16 23:59 Received: 10/14/16 06:22 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**116**	ug/L	100	1	10/14/16 09:30	10/17/16 15:31	7440-42-8	
Calcium	**71.6**	mg/L	0.10	1	10/14/16 09:30	10/17/16 15:31	7440-70-2	
Lithium	**27.5**	ug/L	10.0	1	10/14/16 09:30	10/17/16 15:31	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7440-36-0	
Arsenic	**2.1**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7440-38-2	
Barium	**132**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7440-39-3	
Beryllium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:30	7440-41-7	
Cadmium	ND	ug/L	0.50	1	10/14/16 09:30	10/19/16 13:30	7440-43-9	
Chromium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7440-47-3	
Cobalt	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7440-48-4	
Lead	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7439-92-1	
Molybdenum	**9.9**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7439-98-7	
Selenium	**9.6**	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7782-49-2	
Thallium	ND	ug/L	1.0	1	10/14/16 09:30	10/19/16 13:30	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	10/17/16 03:25	10/18/16 11:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**411**	mg/L	5.0	1		10/14/16 15:03		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		10/19/16 10:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**41.9**	mg/L	5.0	5		10/22/16 00:17	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	1		10/20/16 02:45	16984-48-8	
Sulfate	**33.9**	mg/L	5.0	5		10/22/16 00:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60229965

QC Batch: 450887 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

METHOD BLANK: 1845197 Matrix: Water
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	10/18/16 09:36	

LABORATORY CONTROL SAMPLE: 1845198

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1845199 1845200

Parameter	Units	60230078001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	0.42	5	5	5.9	5.7	109	106	75-125	3	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60229965

QC Batch: 450540 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

METHOD BLANK: 1843572 Matrix: Water
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	10/17/16 14:32	
Calcium	mg/L	ND	0.10	10/17/16 14:32	
Lithium	ug/L	ND	10.0	10/17/16 14:32	

LABORATORY CONTROL SAMPLE: 1843573

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	990	99	80-120	
Calcium	mg/L	10	9.6	96	80-120	
Lithium	ug/L	1000	1040	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1843574 1843575

Parameter	Units	60229965001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	126	1000	1000	1140	1120	101	99	75-125	2	20	
Calcium	mg/L	97.7	10	10	106	108	87	103	75-125	1	20	
Lithium	ug/L	37.3	1000	1000	1060	1060	102	102	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60229965

QC Batch: 450542 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

METHOD BLANK: 1843589 Matrix: Water
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	10/19/16 12:28	
Arsenic	ug/L	ND	1.0	10/19/16 12:28	
Barium	ug/L	ND	1.0	10/19/16 12:28	
Beryllium	ug/L	ND	0.50	10/19/16 12:28	
Cadmium	ug/L	ND	0.50	10/19/16 12:28	
Chromium	ug/L	ND	1.0	10/19/16 12:28	
Cobalt	ug/L	ND	1.0	10/19/16 12:28	
Lead	ug/L	ND	1.0	10/19/16 12:28	
Molybdenum	ug/L	ND	1.0	10/19/16 12:28	
Selenium	ug/L	ND	1.0	10/19/16 12:28	
Thallium	ug/L	ND	1.0	10/19/16 12:28	

LABORATORY CONTROL SAMPLE: 1843590

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.4	98	80-120	
Arsenic	ug/L	40	39.9	100	80-120	
Barium	ug/L	40	39.3	98	80-120	
Beryllium	ug/L	40	37.4	93	80-120	
Cadmium	ug/L	40	39.2	98	80-120	
Chromium	ug/L	40	39.4	98	80-120	
Cobalt	ug/L	40	39.4	98	80-120	
Lead	ug/L	40	38.8	97	80-120	
Molybdenum	ug/L	40	40.9	102	80-120	
Selenium	ug/L	40	40.5	101	80-120	
Thallium	ug/L	40	37.2	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1843591 1843592

Parameter	Units	60229965002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	39.8	39.6	98	98	75-125	1	20	
Arsenic	ug/L	3.9	40	40	45.0	45.0	103	103	75-125	0	20	
Barium	ug/L	98.5	40	40	141	140	106	105	75-125	0	20	
Beryllium	ug/L	ND	40	40	33.3	34.0	83	85	75-125	2	20	
Cadmium	ug/L	ND	40	40	37.8	37.8	94	94	75-125	0	20	
Chromium	ug/L	ND	40	40	39.4	39.0	97	97	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60229965

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1843591 1843592

Parameter	Units	60229965002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	37.8	37.9	94	95	75-125	0	20	
Lead	ug/L	ND	40	40	36.1	36.4	90	91	75-125	1	20	
Molybdenum	ug/L	9.4	40	40	52.8	53.1	108	109	75-125	1	20	
Selenium	ug/L	11.6	40	40	52.8	51.0	103	99	75-125	3	20	
Thallium	ug/L	ND	40	40	35.6	35.9	89	90	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60229965

QC Batch: 450625 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

METHOD BLANK: 1844005 Matrix: Water
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	10/14/16 14:47	

LABORATORY CONTROL SAMPLE: 1844006

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	964	96	80-120	

SAMPLE DUPLICATE: 1844007

Parameter	Units	60229877001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	267	257	4	10	

SAMPLE DUPLICATE: 1844008

Parameter	Units	60229879004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2160	2110	2	10	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60229965

QC Batch: 451146 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

SAMPLE DUPLICATE: 1846140

Parameter	Units	60229965004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.2	7.2	0	10	H6

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60229965

QC Batch: 451190 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

METHOD BLANK: 1846384 Matrix: Water
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/19/16 20:37	
Fluoride	mg/L	ND	0.20	10/19/16 20:37	

LABORATORY CONTROL SAMPLE: 1846385

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	101	80-120	
Fluoride	mg/L	2.5	2.7	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1846386 1846387

Parameter	Units	60229896001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.70	2.5	2.5	3.4	3.4	108	110	80-120	1	15	

SAMPLE DUPLICATE: 1846388

Parameter	Units	60229896002 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.96	0.95	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60229965

QC Batch: 451554 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

METHOD BLANK: 1848074 Matrix: Water
Associated Lab Samples: 60229965001, 60229965002, 60229965003, 60229965004, 60229965005, 60229965006, 60229965007, 60229965008, 60229965009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/21/16 20:30	
Sulfate	mg/L	ND	1.0	10/21/16 20:30	

LABORATORY CONTROL SAMPLE: 1848075

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	80-120	
Sulfate	mg/L	5	5.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1848076 1848077

Parameter	Units	60229965001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	54.1	25	25	81.0	78.1	108	96	80-120	4	15	

SAMPLE DUPLICATE: 1848089

Parameter	Units	60229965002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	47.2	46.9	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60229965

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60229965

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60229965001	**MW-1**	EPA 3010	450540	EPA 6010	450577
60229965002	**MW-2**	EPA 3010	450540	EPA 6010	450577
60229965003	**MW-3**	EPA 3010	450540	EPA 6010	450577
60229965004	**MW-4R**	EPA 3010	450540	EPA 6010	450577
60229965005	**MW-5**	EPA 3010	450540	EPA 6010	450577
60229965006	**MW-6**	EPA 3010	450540	EPA 6010	450577
60229965007	**MW-7**	EPA 3010	450540	EPA 6010	450577
60229965008	**MW-8**	EPA 3010	450540	EPA 6010	450577
60229965009	**DUPLICATE**	EPA 3010	450540	EPA 6010	450577
60229965001	**MW-1**	EPA 3010	450542	EPA 6020	450578
60229965002	**MW-2**	EPA 3010	450542	EPA 6020	450578
60229965003	**MW-3**	EPA 3010	450542	EPA 6020	450578
60229965004	**MW-4R**	EPA 3010	450542	EPA 6020	450578
60229965005	**MW-5**	EPA 3010	450542	EPA 6020	450578
60229965006	**MW-6**	EPA 3010	450542	EPA 6020	450578
60229965007	**MW-7**	EPA 3010	450542	EPA 6020	450578
60229965008	**MW-8**	EPA 3010	450542	EPA 6020	450578
60229965009	**DUPLICATE**	EPA 3010	450542	EPA 6020	450578
60229965001	**MW-1**	EPA 7470	450887	EPA 7470	450900
60229965002	**MW-2**	EPA 7470	450887	EPA 7470	450900
60229965003	**MW-3**	EPA 7470	450887	EPA 7470	450900
60229965004	**MW-4R**	EPA 7470	450887	EPA 7470	450900
60229965005	**MW-5**	EPA 7470	450887	EPA 7470	450900
60229965006	**MW-6**	EPA 7470	450887	EPA 7470	450900
60229965007	**MW-7**	EPA 7470	450887	EPA 7470	450900
60229965008	**MW-8**	EPA 7470	450887	EPA 7470	450900
60229965009	**DUPLICATE**	EPA 7470	450887	EPA 7470	450900
60229965001	**MW-1**	SM 2540C	450625		
60229965002	**MW-2**	SM 2540C	450625		
60229965003	**MW-3**	SM 2540C	450625		
60229965004	**MW-4R**	SM 2540C	450625		
60229965005	**MW-5**	SM 2540C	450625		
60229965006	**MW-6**	SM 2540C	450625		
60229965007	**MW-7**	SM 2540C	450625		
60229965008	**MW-8**	SM 2540C	450625		
60229965009	**DUPLICATE**	SM 2540C	450625		
60229965001	**MW-1**	EPA 9040	451146		
60229965002	**MW-2**	EPA 9040	451146		
60229965003	**MW-3**	EPA 9040	451146		
60229965004	**MW-4R**	EPA 9040	451146		
60229965005	**MW-5**	EPA 9040	451146		
60229965006	**MW-6**	EPA 9040	451146		
60229965007	**MW-7**	EPA 9040	451146		
60229965008	**MW-8**	EPA 9040	451146		
60229965009	**DUPLICATE**	EPA 9040	451146		
60229965001	**MW-1**	EPA 9056	451190		

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60229965

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60229965001	**MW-1**	EPA 9056	451554		
60229965002	**MW-2**	EPA 9056	451190		
60229965002	**MW-2**	EPA 9056	451554		
60229965003	**MW-3**	EPA 9056	451190		
60229965003	**MW-3**	EPA 9056	451554		
60229965004	**MW-4R**	EPA 9056	451190		
60229965004	**MW-4R**	EPA 9056	451554		
60229965005	**MW-5**	EPA 9056	451190		
60229965005	**MW-5**	EPA 9056	451554		
60229965006	**MW-6**	EPA 9056	451190		
60229965006	**MW-6**	EPA 9056	451554		
60229965007	**MW-7**	EPA 9056	451190		
60229965007	**MW-7**	EPA 9056	451554		
60229965008	**MW-8**	EPA 9056	451190		
60229965008	**MW-8**	EPA 9056	451554		
60229965009	**DUPLICATE**	EPA 9056	451190		
60229965009	**DUPLICATE**	EPA 9056	451554		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60229965

60229965

TPG

Client Name: SCS

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

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

Thermometer Used: CF +1.1 / CF -0.1 T-266 / T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.7 1.0 **Corr. Factor** CF +1.1 CF -0.1 **Corrected** 1.8 2.1

Date and initials of person examining contents: JB 10/14

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	
Cyanide water sample checks: ☒ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JPL Date: 10.14.16

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A — Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	mmiller@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B — Required Project Information:

Report To:	Korey Brunken
Copy To:	
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C — Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D — Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60229965
																		N	N	N						
1	MW-1	WT	G	xxx	xxx	10.12.16	12:42		2	1		1							X	X	X	X	X	X		BP2N BP2S 001
2	MW-2	WT	G			10.12.16	13:42		2	1		1							X	X	X	X	X	X		002
3	MW-3	WT	G			10.12.16	10:49		2	1		1							X	X	X	X	X	X		003
4	MW-4R	WT	G			10.12.16	09:48		2	1		1							X	X	X	X	X	X		004
5	MW-5	WT	G			10.12.16	11:38		2	1		1							X	X	X	X	X	X		005
6	MW-6	WT	G			10.12.16	16:16		2	1		1							X	X	X	X	X	X		006
7	MW-7	WT	G			10.12.16	15:28		2	1		1							X	X	X	X	X	X		007
8	MW-8	WT	G			10.12.16	14:42		2	1		1							X	X	X	X	X	X		008
9	Duplicate	WT	G			10.12.16	23:59		2	1		1							X	X	X	X	X	X		009
10																										
11									BS																	
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	10.13.16	08:00		10/14	0822	1.8	y	y	y
* Sb-As-Ba-Be-Cd-Co-Cr-Pb-Mo-Se-Tl							2.1	y	y	y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: Bret Stephens

DATE Signed (MM/DD/YY): 10/12/16

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

November 11, 2016

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60229979

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on October 14, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60229979

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60229979

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60229979001	**MW-1**	Water	10/12/16 12:42	10/14/16 06:22
60229979002	**MW-2**	Water	10/12/16 13:42	10/14/16 06:22
60229979003	**MW-3**	Water	10/12/16 10:49	10/14/16 06:22
60229979004	**MW-4R**	Water	10/12/16 09:48	10/14/16 06:22
60229979005	**MW-5**	Water	10/12/16 11:38	10/14/16 06:22
60229979006	**MW-6**	Water	10/12/16 16:16	10/14/16 06:22
60229979007	**MW-7**	Water	10/12/16 15:28	10/14/16 06:22
60229979008	**MW-8**	Water	10/12/16 14:42	10/14/16 06:22
60229979009	**DUPLICATE**	Water	10/12/16 23:59	10/14/16 06:22

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60229979

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60229979001	**MW-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60229979002	**MW-2**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60229979003	**MW-3**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60229979004	**MW-4R**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60229979005	**MW-5**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60229979006	**MW-6**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60229979007	**MW-7**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60229979008	**MW-8**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60229979009	**DUPLICATE**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: MW-1 **Lab ID: 60229979001** Collected: 10/12/16 12:42 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.613 ± 0.480 (0.564) C:NA T:96%**	pCi/L	11/10/16 19:51	13982-63-3	
Radium-228	EPA 904.0	**2.70 ± 0.689 (0.705) C:81% T:92%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**3.31 ± 1.17 (1.27)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: MW-2 **Lab ID: 60229979002** Collected: 10/12/16 13:42 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.214 ± 0.465 (0.857) C:NA T:102%**	pCi/L	11/10/16 19:52	13982-63-3	
Radium-228	EPA 904.0	**1.60 ± 0.508 (0.679) C:81% T:91%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**1.81 ± 0.973 (1.54)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: MW-3 **Lab ID: 60229979003** Collected: 10/12/16 10:49 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.892 ± 0.537 (0.220) C:NA T:96%**	pCi/L	11/10/16 19:52	13982-63-3	
Radium-228	EPA 904.0	**2.34 ± 0.623 (0.620) C:74% T:89%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**3.23 ± 1.16 (0.840)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: MW-4R **Lab ID: 60229979004** Collected: 10/12/16 09:48 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.657 ± 0.515 (0.605) C:NA T:92%**	pCi/L	11/10/16 19:53	13982-63-3	
Radium-228	EPA 904.0	**2.04 ± 0.620 (0.805) C:77% T:82%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**2.70 ± 1.14 (1.41)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: MW-5 **Lab ID: 60229979005** Collected: 10/12/16 11:38 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.594 ± 0.509 (0.690) C:NA T:99%**	pCi/L	11/10/16 20:04	13982-63-3	
Radium-228	EPA 904.0	**2.13 ± 0.603 (0.697) C:76% T:90%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**2.72 ± 1.11 (1.39)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: MW-6 **Lab ID: 60229979006** Collected: 10/12/16 16:16 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.662 ± 0.439 (0.199) C:NA T:101%**	pCi/L	11/10/16 20:12	13982-63-3	
Radium-228	EPA 904.0	**1.65 ± 0.506 (0.644) C:79% T:95%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**2.31 ± 0.945 (0.843)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: MW-7 **Lab ID: 60229979007** Collected: 10/12/16 15:28 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.497 ± 0.422 (0.523) C:NA T:101%**	pCi/L	11/10/16 20:13	13982-63-3	
Radium-228	EPA 904.0	**1.65 ± 0.542 (0.741) C:75% T:88%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**2.15 ± 0.964 (1.26)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: MW-8 **Lab ID: 60229979008** Collected: 10/12/16 14:42 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.384 ± 0.501 (0.826) C:NA T:93%**	pCi/L	11/10/16 20:12	13982-63-3	
Radium-228	EPA 904.0	**1.53 ± 0.541 (0.795) C:74% T:86%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**1.91 ± 1.04 (1.62)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

Sample: DUPLICATE **Lab ID: 60229979009** Collected: 10/12/16 23:59 Received: 10/14/16 06:22 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.156 ± 0.374 (0.723) C:NA T:96%**	pCi/L	11/10/16 20:15	13982-63-3	
Radium-228	EPA 904.0	**1.88 ± 0.542 (0.631) C:77% T:93%**	pCi/L	11/10/16 15:13	15262-20-1	
Total Radium	Total Radium Calculation	**2.04 ± 0.916 (1.35)**	pCi/L	11/11/16 17:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

QC Batch: 239107 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60229979001, 60229979002, 60229979003, 60229979004, 60229979005, 60229979006, 60229979007, 60229979008, 60229979009

METHOD BLANK: 1174953 Matrix: Water
Associated Lab Samples: 60229979001, 60229979002, 60229979003, 60229979004, 60229979005, 60229979006, 60229979007, 60229979008, 60229979009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0760 ± 0.347 (0.705) C:NA T:94%	pCi/L	11/10/16 19:51	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60229979

QC Batch: 239018 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60229979001, 60229979002, 60229979003, 60229979004, 60229979005, 60229979006, 60229979007, 60229979008, 60229979009

METHOD BLANK: 1174606 Matrix: Water
Associated Lab Samples: 60229979001, 60229979002, 60229979003, 60229979004, 60229979005, 60229979006, 60229979007, 60229979008, 60229979009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.573 ± 0.387 (0.739) C:82% T:76%	pCi/L	11/10/16 15:27	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60229979

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60229979

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60229979001	**MW-1**	EPA 903.1	239107		
60229979002	**MW-2**	EPA 903.1	239107		
60229979003	**MW-3**	EPA 903.1	239107		
60229979004	**MW-4R**	EPA 903.1	239107		
60229979005	**MW-5**	EPA 903.1	239107		
60229979006	**MW-6**	EPA 903.1	239107		
60229979007	**MW-7**	EPA 903.1	239107		
60229979008	**MW-8**	EPA 903.1	239107		
60229979009	**DUPLICATE**	EPA 903.1	239107		
60229979001	**MW-1**	EPA 904.0	239018		
60229979002	**MW-2**	EPA 904.0	239018		
60229979003	**MW-3**	EPA 904.0	239018		
60229979004	**MW-4R**	EPA 904.0	239018		
60229979005	**MW-5**	EPA 904.0	239018		
60229979006	**MW-6**	EPA 904.0	239018		
60229979007	**MW-7**	EPA 904.0	239018		
60229979008	**MW-8**	EPA 904.0	239018		
60229979009	**DUPLICATE**	EPA 904.0	239018		
60229979001	**MW-1**	Total Radium Calculation	240093		
60229979002	**MW-2**	Total Radium Calculation	240093		
60229979003	**MW-3**	Total Radium Calculation	240093		
60229979004	**MW-4R**	Total Radium Calculation	240093		
60229979005	**MW-5**	Total Radium Calculation	240093		
60229979006	**MW-6**	Total Radium Calculation	240093		
60229979007	**MW-7**	Total Radium Calculation	240093		
60229979008	**MW-8**	Total Radium Calculation	240093		
60229979009	**DUPLICATE**	Total Radium Calculation	240093		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60229979

60229979

TDG

Client Name: SCS

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

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

Thermometer Used: CF +1.1 T-266 / CF -0.1 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.7 2.2 **Corr. Factor** CF +1.1 CF -0.1 **Corrected** 2.9 3.3

Date and initials of person examining contents: JB 10/14

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	
Cyanide water sample checks: ☐☒N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 10-14-16

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com

Page: 1 of 1

Section A — Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	mmiller@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B — Required Project Information:

Report To:	Korey Brunken
Copy To:	
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C — Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NE

Section D — Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G	10.12.16	12:42	→			2			2						X	X	X		(2) BPIN	001
2	MW-2	WT	G	10.12.16	13:42	→			2			2						X	X	X			002
3	MW-3	WT	G	10.12.16	10:49	→			2			2						X	X	X			003
4	MW-4R	WT	G	10.12.16	09:48	→			2			2						X	X	X			004
5	MW-5	WT	G	10.12.16	11:38	→			2			2						X	X	X			005
6	MW-6	WT	G	10.12.16	16:16	→			2			2						X	X	X			006
7	MW-7	WT	G	10.12.16	15:28	→			2			2						X	X	X			007
8	MW-8	WT	G	10.12.16	14:42	→			2			2						X	X	X			008
9	Duplicate	WT	G	10.12.16	23:59	→			2			2						X	X	X			009
10																							
11																							
12																							

60229979

Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	10.13.16	08:00		10/14	0622

SAMPLE CONDITIONS			
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
2.8	Y	Y	Y
3.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: Bret Stephens

DATE Signed (MM/DD/YY): 10/12/16

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60229979 **Workorder Name:** FDU/27216302 **Owner Received Date:** 10/14/2016 **Results Requested By:** 11/7/2016

Report To	Subcontract To
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#:30199505

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3						Requested Analysis 903.1 Radium-226	904.0 Radium-228	Total Radium										LAB USE ONLY
1	MW-1	PS	10/12/2016 12:42	60229979001	Water	2						X	X	X										
2	MW-2	PS	10/12/2016 13:42	60229979002	Water	2						X	X	X										
3	MW-3	PS	10/12/2016 10:49	60229979003	Water	2						X	X	X										
4	MW-4R	PS	10/12/2016 09:48	60229979004	Water	2						X	X	X										
5	MW-5	PS	10/12/2016 11:38	60229979005	Water	2						X	X	X										
6	MW-6	PS	10/12/2016 16:16	60229979006	Water	2						X	X	X										
7	MW-7	PS	10/12/2016 15:28	60229979007	Water	2						X	X	X										
8	MW-8	PS	10/12/2016 14:42	60229979008	Water	2						X	X	X										
9	DUPLICATE	PS	10/12/2016 23:59	60229979009	Water	2						X	X	X										

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	10/17/16 1707	Ashley Rowe/Pace	10-18-16/0955
2				
3				

Comments

Cooler Temperature on Receipt N/A °C Custody Seal (Y) or ~~(N)~~ ACTR 10-18-16 Received on Ice Y or (N) Samples Intact (Y) or N

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

Sample Condition Upon Receipt Pittsburgh

30199505

Pace Analytical

Client Name: Pace, KS Project #

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

Tracking #: 7044 6655 0350

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: aqnR 10-18-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used: -Pace Containers Used:	X X			10.
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked. All containers needing preservation are found to be in compliance with EPA recommendation.	X X			13. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: aqnR Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:		X		15.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: aqnR Date: 10-18-16

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

December 30, 2016
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #2 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the November 28, 2016 background groundwater sampling event at the Lon D Wright Power Plant in Fremont, Nebraska. Depths to groundwater were measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. Field data sheets detailing well information and purge stabilization parameters, complete analytical results, and a groundwater flow direction map have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

December 12, 2016

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60233168

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on November 30, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60233168

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60233168

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60233168001	**MW-1**	Water	11/28/16 12:24	11/30/16 07:00
60233168002	**MW-2**	Water	11/28/16 13:14	11/30/16 07:00
60233168003	**MW-3**	Water	11/28/16 10:23	11/30/16 07:00
60233168004	**MW-4R**	Water	11/28/16 09:32	11/30/16 07:00
60233168005	**MW-5**	Water	11/28/16 11:21	11/30/16 07:00
60233168006	**MW-6**	Water	11/28/16 16:02	11/30/16 07:00
60233168007	**MW-7**	Water	11/28/16 15:13	11/30/16 07:00
60233168008	**MW-8**	Water	11/28/16 14:27	11/30/16 07:00
60233168009	**DUPLICATE**	Water	11/28/16 23:59	11/30/16 07:00

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60233168

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60233168001	**MW-1**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60233168002	**MW-2**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60233168003	**MW-3**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60233168004	**MW-4R**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60233168005	**MW-5**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60233168006	**MW-6**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60233168007	**MW-7**	EPA 6010	JGP	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60233168

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60233168008	**MW-8**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60233168009	**DUPLICATE**	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: MW-1 **Lab ID: 60233168001** Collected: 11/28/16 12:24 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**135**	ug/L	100	1	12/01/16 14:30	12/08/16 18:25	7440-42-8	
Calcium	**108**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:25	7440-70-2	
Lithium	**31.7**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:25	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7440-36-0	
Arsenic	**3.9**	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7440-38-2	
Barium	**131**	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 10:50	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 10:50	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7440-48-4	
Lead	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7439-92-1	
Molybdenum	**9.0**	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7439-98-7	
Selenium	**12.8**	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 10:50	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:28	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**464**	mg/L	5.0	1		12/01/16 10:36		
9040 pH	Analytical Method: EPA 9040							
pH	**7.7**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**11.8**	mg/L	1.0	1		12/09/16 17:52	16887-00-6	M1
Fluoride	**1.3**	mg/L	0.20	1		12/09/16 17:52	16984-48-8	M1
Sulfate	**46.6**	mg/L	5.0	5		12/10/16 12:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: MW-2 **Lab ID: 60233168002** Collected: 11/28/16 13:14 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**115**	ug/L	100	1	12/01/16 14:30	12/08/16 18:29	7440-42-8	
Calcium	**101**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:29	7440-70-2	
Lithium	**30.3**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:29	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7440-36-0	
Arsenic	**4.1**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7440-38-2	
Barium	**95.4**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:03	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:03	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7440-48-4	
Lead	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7439-92-1	
Molybdenum	**8.7**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7439-98-7	
Selenium	**15.0**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:03	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:39	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**416**	mg/L	5.0	1		12/01/16 10:38		
9040 pH	Analytical Method: EPA 9040							
pH	**7.4**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**16.7**	mg/L	1.0	1		12/09/16 18:34	16887-00-6	
Fluoride	**0.95**	mg/L	0.20	1		12/09/16 18:34	16984-48-8	
Sulfate	**49.6**	mg/L	5.0	5		12/10/16 12:47	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: MW-3 **Lab ID: 60233168003** Collected: 11/28/16 10:23 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**101**	ug/L	100	1	12/01/16 14:30	12/08/16 18:33	7440-42-8	
Calcium	**87.6**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:33	7440-70-2	
Lithium	**27.6**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:33	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7440-36-0	
Arsenic	**3.0**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7440-38-2	
Barium	**164**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:07	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:07	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7440-48-4	
Lead	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7439-92-1	
Molybdenum	**9.7**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7439-98-7	
Selenium	**8.5**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**373**	mg/L	5.0	1		12/01/16 10:39		
9040 pH	Analytical Method: EPA 9040							
pH	**7.5**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**28.3**	mg/L	5.0	5		12/10/16 14:07	16887-00-6	
Fluoride	**0.80**	mg/L	0.20	1		12/10/16 13:51	16984-48-8	
Sulfate	**40.8**	mg/L	5.0	5		12/10/16 14:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: MW-4R **Lab ID: 60233168004** Collected: 11/28/16 09:32 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	12/01/16 14:30	12/08/16 18:36	7440-42-8	
Calcium	**84.3**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:36	7440-70-2	
Lithium	**25.8**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:36	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7440-36-0	
Arsenic	**4.1**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7440-38-2	
Barium	**113**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:12	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:12	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7440-48-4	
Lead	**2.8**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7439-92-1	
Molybdenum	**6.8**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7439-98-7	
Selenium	**7.5**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:12	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**355**	mg/L	5.0	1		12/01/16 10:40		
9040 pH	Analytical Method: EPA 9040							
pH	**7.6**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**12.5**	mg/L	1.0	1		12/10/16 14:23	16887-00-6	
Fluoride	**0.85**	mg/L	0.20	1		12/10/16 14:23	16984-48-8	
Sulfate	**26.7**	mg/L	2.0	2		12/10/16 14:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: MW-5 **Lab ID: 60233168005** Collected: 11/28/16 11:21 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**132**	ug/L	100	1	12/01/16 14:30	12/08/16 18:40	7440-42-8	
Calcium	**107**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:40	7440-70-2	
Lithium	**28.3**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:40	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7440-36-0	
Arsenic	**4.7**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7440-38-2	
Barium	**132**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:16	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:16	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7440-48-4	
Lead	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7439-92-1	
Molybdenum	**5.8**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7439-98-7	
Selenium	**8.8**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:16	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**455**	mg/L	5.0	1		12/01/16 10:41		
9040 pH	Analytical Method: EPA 9040							
pH	**7.6**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.2**	mg/L	5.0	5		12/10/16 15:10	16887-00-6	
Fluoride	**1.0**	mg/L	0.20	1		12/10/16 14:55	16984-48-8	
Sulfate	**39.7**	mg/L	5.0	5		12/10/16 15:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: MW-6 **Lab ID: 60233168006** Collected: 11/28/16 16:02 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**115**	ug/L	100	1	12/01/16 14:30	12/08/16 18:44	7440-42-8	
Calcium	**78.7**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:44	7440-70-2	
Lithium	**25.8**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:44	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7440-36-0	
Arsenic	**2.9**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7440-38-2	
Barium	**138**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:20	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:20	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7440-48-4	
Lead	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7439-92-1	
Molybdenum	**9.7**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7439-98-7	
Selenium	**8.1**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:48	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**412**	mg/L	5.0	1		12/01/16 10:42		
9040 pH	Analytical Method: EPA 9040							
pH	**7.4**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**61.7**	mg/L	5.0	5		12/10/16 15:42	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		12/10/16 15:26	16984-48-8	
Sulfate	**38.8**	mg/L	5.0	5		12/10/16 15:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: MW-7 **Lab ID: 60233168007** Collected: 11/28/16 15:13 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**150**	ug/L	100	1	12/01/16 14:30	12/08/16 18:47	7440-42-8	
Calcium	**93.1**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:47	7440-70-2	
Lithium	**26.6**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:47	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7440-36-0	
Arsenic	**3.3**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7440-38-2	
Barium	**106**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:38	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:38	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7440-48-4	
Lead	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7439-92-1	
Molybdenum	**9.1**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7439-98-7	
Selenium	**10.1**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**417**	mg/L	5.0	1		12/01/16 10:42		
9040 pH	Analytical Method: EPA 9040							
pH	**7.5**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**23.0**	mg/L	5.0	5		12/10/16 16:14	16887-00-6	
Fluoride	**0.87**	mg/L	0.20	1		12/10/16 15:58	16984-48-8	
Sulfate	**42.0**	mg/L	5.0	5		12/10/16 16:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: MW-8 **Lab ID: 60233168008** Collected: 11/28/16 14:27 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**120**	ug/L	100	1	12/01/16 14:30	12/08/16 18:51	7440-42-8	
Calcium	**92.1**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:51	7440-70-2	
Lithium	**28.0**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:51	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7440-36-0	
Arsenic	**2.7**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7440-38-2	
Barium	**142**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:42	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:42	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7440-48-4	
Lead	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7439-92-1	
Molybdenum	**8.6**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7439-98-7	
Selenium	**13.4**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:42	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**403**	mg/L	5.0	1		12/01/16 10:43		
9040 pH	Analytical Method: EPA 9040							
pH	**7.6**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**22.3**	mg/L	5.0	5		12/10/16 17:18	16887-00-6	
Fluoride	**0.79**	mg/L	0.20	1		12/10/16 17:02	16984-48-8	
Sulfate	**44.4**	mg/L	5.0	5		12/10/16 17:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60233168

Sample: DUPLICATE **Lab ID: 60233168009** Collected: 11/28/16 23:59 Received: 11/30/16 07:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**119**	ug/L	100	1	12/01/16 14:30	12/08/16 18:55	7440-42-8	
Calcium	**78.7**	mg/L	0.10	1	12/01/16 14:30	12/08/16 18:55	7440-70-2	
Lithium	**26.3**	ug/L	10.0	1	12/01/16 14:30	12/08/16 18:55	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7440-36-0	
Arsenic	**2.8**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7440-38-2	
Barium	**134**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7440-39-3	
Beryllium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:47	7440-41-7	
Cadmium	ND	ug/L	0.50	1	12/05/16 10:15	12/08/16 11:47	7440-43-9	
Chromium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7440-47-3	
Cobalt	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7440-48-4	
Lead	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7439-92-1	
Molybdenum	**9.0**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7439-98-7	
Selenium	**8.0**	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7782-49-2	
Thallium	ND	ug/L	1.0	1	12/05/16 10:15	12/08/16 11:47	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	11/30/16 13:45	12/01/16 13:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**419**	mg/L	5.0	1		12/01/16 10:43		
9040 pH	Analytical Method: EPA 9040							
pH	**7.6**	Std. Units	0.10	1		12/12/16 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**60.9**	mg/L	10.0	10		12/10/16 17:49	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	1		12/10/16 17:34	16984-48-8	
Sulfate	**39.0**	mg/L	10.0	10		12/10/16 17:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60233168

QC Batch: 456954 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

METHOD BLANK: 1870926 Matrix: Water
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	12/01/16 13:24	

LABORATORY CONTROL SAMPLE: 1870927

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.4	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1870928 1870929

Parameter	Units	60233168001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	6.0	5.6	120	112	75-125	7	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60233168

QC Batch: 457212 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

METHOD BLANK: 1871693 Matrix: Water
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	12/08/16 16:53	
Calcium	mg/L	ND	0.10	12/08/16 16:53	
Lithium	ug/L	ND	10.0	12/08/16 16:53	

LABORATORY CONTROL SAMPLE: 1871694

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	995	100	80-120	
Calcium	mg/L	10	10.2	102	80-120	
Lithium	ug/L	1000	1000	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1871695 1871696

Parameter	Units	60233193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	252	1000	1000	1280	1280	103	102	75-125	0	20	
Calcium	mg/L	203000	10	10	211	215	77	119	75-125	2	20	
Lithium	ug/L	ND ug/L	1000	1000	1040	1040	103	103	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60233168

QC Batch: 457542 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

METHOD BLANK: 1873432 Matrix: Water
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	12/08/16 11:33	
Arsenic	ug/L	ND	1.0	12/08/16 11:33	
Barium	ug/L	ND	1.0	12/08/16 11:33	
Beryllium	ug/L	ND	0.50	12/08/16 11:33	
Cadmium	ug/L	ND	0.50	12/08/16 11:33	
Chromium	ug/L	ND	1.0	12/08/16 11:33	
Cobalt	ug/L	ND	1.0	12/08/16 11:33	
Lead	ug/L	ND	1.0	12/08/16 11:33	
Molybdenum	ug/L	ND	1.0	12/08/16 11:33	
Selenium	ug/L	ND	1.0	12/08/16 11:33	
Thallium	ug/L	ND	1.0	12/08/16 11:33	

LABORATORY CONTROL SAMPLE: 1873433

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.8	102	80-120	
Arsenic	ug/L	40	41.2	103	80-120	
Barium	ug/L	40	40.6	102	80-120	
Beryllium	ug/L	40	43.1	108	80-120	
Cadmium	ug/L	40	41.0	102	80-120	
Chromium	ug/L	40	41.2	103	80-120	
Cobalt	ug/L	40	42.2	105	80-120	
Lead	ug/L	40	41.2	103	80-120	
Molybdenum	ug/L	40	41.8	104	80-120	
Selenium	ug/L	40	39.0	98	80-120	
Thallium	ug/L	40	39.4	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1873434 1873435

Parameter	Units	60233168001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	42.1	41.4	104	102	75-125	2	20	
Arsenic	ug/L	3.9	40	40	44.8	45.8	102	105	75-125	2	20	
Barium	ug/L	131	40	40	173	168	105	93	75-125	3	20	
Beryllium	ug/L	ND	40	40	43.1	43.4	108	108	75-125	1	20	
Cadmium	ug/L	ND	40	40	40.6	40.3	101	101	75-125	1	20	
Chromium	ug/L	ND	40	40	42.2	42.3	105	105	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60233168

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1873434 1873435

Parameter	Units	60233168001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	40.6	41.1	101	103	75-125	1	20	
Lead	ug/L	ND	40	40	41.5	41.6	103	104	75-125	0	20	
Molybdenum	ug/L	9.0	40	40	51.4	52.1	106	108	75-125	2	20	
Selenium	ug/L	12.8	40	40	51.9	52.3	98	99	75-125	1	20	
Thallium	ug/L	ND	40	40	39.5	39.7	99	99	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60233168

QC Batch: 457145 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

METHOD BLANK: 1871394 Matrix: Water
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	12/01/16 10:34	

LABORATORY CONTROL SAMPLE: 1871395

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	980	98	80-120	

SAMPLE DUPLICATE: 1871396

Parameter	Units	60233168001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	464	456	2	10	

SAMPLE DUPLICATE: 1871397

Parameter	Units	60233205001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	446	458	3	10	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60233168

QC Batch: 458522 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

SAMPLE DUPLICATE: 1877267

Parameter	Units	60233168009 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.6	7.6	0	10	H6

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60233168

QC Batch: 458217 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60233168001, 60233168002

METHOD BLANK: 1876015 Matrix: Water
Associated Lab Samples: 60233168001, 60233168002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	12/09/16 17:23	
Fluoride	mg/L	ND	0.20	12/09/16 17:23	

LABORATORY CONTROL SAMPLE: 1876016

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	80-120	
Fluoride	mg/L	2.5	2.6	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1876017 1876018

Parameter	Units	60233168001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	11.8	5	5	18.2	18.0	128	125	80-120	1	15	M1
Fluoride	mg/L	1.3	2.5	2.5	4.4	4.4	125	124	80-120	0	15	M1

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60233168

QC Batch: 458446 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

METHOD BLANK: 1876878 Matrix: Water
Associated Lab Samples: 60233168001, 60233168002, 60233168003, 60233168004, 60233168005, 60233168006, 60233168007, 60233168008, 60233168009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	12/10/16 09:14	
Fluoride	mg/L	ND	0.20	12/10/16 09:14	
Sulfate	mg/L	ND	1.0	12/10/16 09:14	

LABORATORY CONTROL SAMPLE: 1876879

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Fluoride	mg/L	2.5	2.5	100	80-120	
Sulfate	mg/L	5	4.7	95	80-120	

SAMPLE DUPLICATE: 1876882

Parameter	Units	60233168002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	15.6	14.4	8	15	
Fluoride	mg/L	1.2	1.0	18	15	D6
Sulfate	mg/L	49.6	45.4	9	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60233168

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60233168

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60233168001	**MW-1**	EPA 3010	457212	EPA 6010	457273
60233168002	**MW-2**	EPA 3010	457212	EPA 6010	457273
60233168003	**MW-3**	EPA 3010	457212	EPA 6010	457273
60233168004	**MW-4R**	EPA 3010	457212	EPA 6010	457273
60233168005	**MW-5**	EPA 3010	457212	EPA 6010	457273
60233168006	**MW-6**	EPA 3010	457212	EPA 6010	457273
60233168007	**MW-7**	EPA 3010	457212	EPA 6010	457273
60233168008	**MW-8**	EPA 3010	457212	EPA 6010	457273
60233168009	**DUPLICATE**	EPA 3010	457212	EPA 6010	457273
60233168001	**MW-1**	EPA 3010	457542	EPA 6020	457614
60233168002	**MW-2**	EPA 3010	457542	EPA 6020	457614
60233168003	**MW-3**	EPA 3010	457542	EPA 6020	457614
60233168004	**MW-4R**	EPA 3010	457542	EPA 6020	457614
60233168005	**MW-5**	EPA 3010	457542	EPA 6020	457614
60233168006	**MW-6**	EPA 3010	457542	EPA 6020	457614
60233168007	**MW-7**	EPA 3010	457542	EPA 6020	457614
60233168008	**MW-8**	EPA 3010	457542	EPA 6020	457614
60233168009	**DUPLICATE**	EPA 3010	457542	EPA 6020	457614
60233168001	**MW-1**	EPA 7470	456954	EPA 7470	456961
60233168002	**MW-2**	EPA 7470	456954	EPA 7470	456961
60233168003	**MW-3**	EPA 7470	456954	EPA 7470	456961
60233168004	**MW-4R**	EPA 7470	456954	EPA 7470	456961
60233168005	**MW-5**	EPA 7470	456954	EPA 7470	456961
60233168006	**MW-6**	EPA 7470	456954	EPA 7470	456961
60233168007	**MW-7**	EPA 7470	456954	EPA 7470	456961
60233168008	**MW-8**	EPA 7470	456954	EPA 7470	456961
60233168009	**DUPLICATE**	EPA 7470	456954	EPA 7470	456961
60233168001	**MW-1**	SM 2540C	457145		
60233168002	**MW-2**	SM 2540C	457145		
60233168003	**MW-3**	SM 2540C	457145		
60233168004	**MW-4R**	SM 2540C	457145		
60233168005	**MW-5**	SM 2540C	457145		
60233168006	**MW-6**	SM 2540C	457145		
60233168007	**MW-7**	SM 2540C	457145		
60233168008	**MW-8**	SM 2540C	457145		
60233168009	**DUPLICATE**	SM 2540C	457145		
60233168001	**MW-1**	EPA 9040	458522		
60233168002	**MW-2**	EPA 9040	458522		
60233168003	**MW-3**	EPA 9040	458522		
60233168004	**MW-4R**	EPA 9040	458522		
60233168005	**MW-5**	EPA 9040	458522		
60233168006	**MW-6**	EPA 9040	458522		
60233168007	**MW-7**	EPA 9040	458522		
60233168008	**MW-8**	EPA 9040	458522		
60233168009	**DUPLICATE**	EPA 9040	458522		
60233168001	**MW-1**	EPA 9056	458217		

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60233168

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60233168001	**MW-1**	EPA 9056	458446		
60233168002	**MW-2**	EPA 9056	458217		
60233168002	**MW-2**	EPA 9056	458446		
60233168003	**MW-3**	EPA 9056	458446		
60233168004	**MW-4R**	EPA 9056	458446		
60233168005	**MW-5**	EPA 9056	458446		
60233168006	**MW-6**	EPA 9056	458446		
60233168007	**MW-7**	EPA 9056	458446		
60233168008	**MW-8**	EPA 9056	458446		
60233168009	**DUPLICATE**	EPA 9056	458446		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60233168

60233168

Client Name: SCS Eng. - NE

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: CF +0.7 / CF -0.5 T-266 / T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.6 / -0.3 **Corr. Factor** CF +0.7 / CF -0.5 **Corrected** 1.3 0.4

Date and initials of person examining contents: JN 11/30/16

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☑No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 11-30-16

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Korey Brunken	Attention:	Korey Brunken
Address:	14755 Grover Street	Copy To:		Company Name:	SCS Engineers
	Omaha NE 68144			Address:	
Email To:	mmiller@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	30857 (JR)
Phone:	402-884-6202 Fax:	Project Name:	FDU	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:	Standard	Project Number:	27216302	Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N					60233168
1	MW-1	WT	G	11.28.16	12:24				2	1		1						X	X	X	X	X	X		BR2N1-5 BR2U 01
2	MW-2	WT	G	11.28.16	13:14																				02
3	MW-3	WT	G	11.28.16	10:23																				03
4	MW-4R	WT	G	11.28.16	09:32																				04
5	MW-5	WT	G	11.28.16	11:21																				05
6	MW-6	WT	G	11.28.16	16:02																				06
7	MW-7	WT	G	11.28.16	15:13																				07
8	MW-8	WT	G	11.28.16	14:27																				08
9	Duplicate	WT	G	11.28.16	23:59																				09
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	11.29.16	09:00		11/30/16	0700	1.3	Y	Y	Y
* Sb-As-Ba-Be-Cd-Co-Cr-Pb-Mo-Se-Tl							6.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Bret Stephens					
SIGNATURE of SAMPLER:	Bret Stephens	DATE Signed (MM/DD/YY): 11.29.16				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

December 29, 2016

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60233183

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on November 30, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60233183

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60233183

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60233183001	**MW-1**	Water	11/28/16 12:24	11/30/16 07:00
60233183002	**MW-2**	Water	11/28/16 13:14	11/30/16 07:00
60233183003	**MW-3**	Water	11/28/16 10:23	11/30/16 07:00
60233183004	**MW-4R**	Water	11/28/16 09:32	11/30/16 07:00
60233183005	**MW-5**	Water	11/28/16 11:21	11/30/16 07:00
60233183006	**MW-6**	Water	11/28/16 16:02	11/30/16 07:00
60233183007	**MW-7**	Water	11/28/16 15:13	11/30/16 07:00
60233183008	**MW-8**	Water	11/28/16 14:27	11/30/16 07:00
60233183009	**DUPLICATE**	Water	11/28/16 23:59	11/30/16 07:00

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60233183

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60233183001	**MW-1**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60233183002	**MW-2**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60233183003	**MW-3**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60233183004	**MW-4R**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60233183005	**MW-5**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60233183006	**MW-6**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60233183007	**MW-7**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60233183008	**MW-8**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60233183009	**DUPLICATE**	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: MW-1 **Lab ID: 60233183001** Collected: 11/28/16 12:24 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.456 ± 0.474 (0.705) C:NA T:98%**	pCi/L	12/22/16 21:57	13982-63-3	
Radium-228	EPA 904.0	**2.80 ± 0.810 (1.01) C:66% T:87%**	pCi/L	12/28/16 11:34	15262-20-1	
Total Radium	Total Radium Calculation	**3.26 ± 1.28 (1.72)**	pCi/L	12/29/16 16:36	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: MW-2 **Lab ID: 60233183002** Collected: 11/28/16 13:14 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.402 ± 0.420 (0.592) C:NA T:88%**	pCi/L	12/22/16 21:57	13982-63-3	
Radium-228	EPA 904.0	**1.11 ± 0.627 (1.19) C:66% T:86%**	pCi/L	12/28/16 11:34	15262-20-1	
Total Radium	Total Radium Calculation	**1.51 ± 1.05 (1.78)**	pCi/L	12/29/16 16:36	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: MW-3 **Lab ID: 60233183003** Collected: 11/28/16 10:23 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.750 ± 0.594 (0.807) C:NA T:93%**	pCi/L	12/22/16 21:57	13982-63-3	
Radium-228	EPA 904.0	**1.77 ± 0.714 (1.16) C:60% T:77%**	pCi/L	12/28/16 11:34	15262-20-1	
Total Radium	Total Radium Calculation	**2.52 ± 1.31 (1.97)**	pCi/L	12/29/16 16:36	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: MW-4R **Lab ID: 60233183004** Collected: 11/28/16 09:32 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.368 ± 0.435 (0.683) C:NA T:96%**	pCi/L	12/22/16 21:57	13982-63-3	
Radium-228	EPA 904.0	**1.43 ± 0.648 (1.12) C:64% T:83%**	pCi/L	12/28/16 11:34	15262-20-1	
Total Radium	Total Radium Calculation	**1.80 ± 1.08 (1.80)**	pCi/L	12/29/16 16:36	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: MW-5 **Lab ID: 60233183005** Collected: 11/28/16 11:21 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.535 ± 0.454 (0.562) C:NA T:92%**	pCi/L	12/22/16 22:19	13982-63-3	
Radium-228	EPA 904.0	**1.79 ± 0.653 (0.974) C:58% T:86%**	pCi/L	12/28/16 15:20	15262-20-1	
Total Radium	Total Radium Calculation	**2.33 ± 1.11 (1.54)**	pCi/L	12/29/16 16:36	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: MW-6 **Lab ID: 60233183006** Collected: 11/28/16 16:02 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.247 ± 0.485 (0.887) C:NA T:88%**	pCi/L	12/22/16 22:19	13982-63-3	
Radium-228	EPA 904.0	**2.01 ± 0.667 (0.924) C:66% T:82%**	pCi/L	12/28/16 15:20	15262-20-1	
Total Radium	Total Radium Calculation	**2.26 ± 1.15 (1.81)**	pCi/L	12/29/16 16:36	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: MW-7 **Lab ID: 60233183007** Collected: 11/28/16 15:13 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.541 ± 0.590 (0.929) C:NA T:89%**	pCi/L	12/22/16 22:19	13982-63-3	
Radium-228	EPA 904.0	**1.10 ± 0.526 (0.908) C:64% T:85%**	pCi/L	12/28/16 15:21	15262-20-1	
Total Radium	Total Radium Calculation	**1.64 ± 1.12 (1.84)**	pCi/L	12/29/16 16:36	7440-14-4	

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: MW-8 **Lab ID: 60233183008** Collected: 11/28/16 14:27 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.078 ± 0.458 (1.02) C:NA T:89%**	pCi/L	12/22/16 22:19	13982-63-3	
Radium-228	EPA 904.0	**1.82 ± 0.638 (0.925) C:65% T:81%**	pCi/L	12/28/16 15:20	15262-20-1	
Total Radium	Total Radium Calculation	**1.82 ± 1.10 (1.95)**	pCi/L	12/29/16 16:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

Sample: DUPLICATE **Lab ID: 60233183009** Collected: 11/28/16 23:59 Received: 11/30/16 07:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.14 ± 0.641 (0.664) C:NA T:96%**	pCi/L	12/22/16 22:19	13982-63-3	
Radium-228	EPA 904.0	**1.77 ± 0.647 (0.960) C:61% T:82%**	pCi/L	12/28/16 15:21	15262-20-1	
Total Radium	Total Radium Calculation	**2.91 ± 1.29 (1.62)**	pCi/L	12/29/16 16:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

QC Batch: 243345 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60233183001, 60233183002, 60233183003, 60233183004, 60233183005, 60233183006, 60233183007, 60233183008, 60233183009

METHOD BLANK: 1196938 Matrix: Water
Associated Lab Samples: 60233183001, 60233183002, 60233183003, 60233183004, 60233183005, 60233183006, 60233183007, 60233183008, 60233183009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.331 ± 0.514 (0.889) C:NA T:91%	pCi/L	12/22/16 21:04	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60233183

QC Batch: 243346 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60233183001, 60233183002, 60233183003, 60233183004, 60233183005, 60233183006, 60233183007, 60233183008, 60233183009

METHOD BLANK: 1196939 Matrix: Water
Associated Lab Samples: 60233183001, 60233183002, 60233183003, 60233183004, 60233183005, 60233183006, 60233183007, 60233183008, 60233183009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.534 ± 0.478 (0.972) C:67% T:72%	pCi/L	12/28/16 11:49	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60233183

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60233183

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60233183001	**MW-1**	EPA 903.1	243345		
60233183002	**MW-2**	EPA 903.1	243345		
60233183003	**MW-3**	EPA 903.1	243345		
60233183004	**MW-4R**	EPA 903.1	243345		
60233183005	**MW-5**	EPA 903.1	243345		
60233183006	**MW-6**	EPA 903.1	243345		
60233183007	**MW-7**	EPA 903.1	243345		
60233183008	**MW-8**	EPA 903.1	243345		
60233183009	**DUPLICATE**	EPA 903.1	243345		
60233183001	**MW-1**	EPA 904.0	243346		
60233183002	**MW-2**	EPA 904.0	243346		
60233183003	**MW-3**	EPA 904.0	243346		
60233183004	**MW-4R**	EPA 904.0	243346		
60233183005	**MW-5**	EPA 904.0	243346		
60233183006	**MW-6**	EPA 904.0	243346		
60233183007	**MW-7**	EPA 904.0	243346		
60233183008	**MW-8**	EPA 904.0	243346		
60233183009	**DUPLICATE**	EPA 904.0	243346		
60233183001	**MW-1**	Total Radium Calculation	245060		
60233183002	**MW-2**	Total Radium Calculation	245060		
60233183003	**MW-3**	Total Radium Calculation	245060		
60233183004	**MW-4R**	Total Radium Calculation	245060		
60233183005	**MW-5**	Total Radium Calculation	245060		
60233183006	**MW-6**	Total Radium Calculation	245060		
60233183007	**MW-7**	Total Radium Calculation	245060		
60233183008	**MW-8**	Total Radium Calculation	245061		
60233183009	**DUPLICATE**	Total Radium Calculation	245061		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60233183

60233183

Client Name: SCS Engineers - NE

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

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

Thermometer Used: CF +0.7 T-266 / CF -0.5 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.3 0.0 **Corr. Factor** CF +0.7 CF -0.5 **Corrected** 1.0 0.7

Date and initials of person examining contents: JB 11/30

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	
Cyanide water sample checks: ☒ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 11-30-16

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com

Page: 1 of 1

Section A — Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	mmiller@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B — Required Project Information:

Report To:	Korey Brunken
Copy To:	
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C — Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NE

Section D — Required Client information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: 903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G	11.28.16	12:24				2			2						X	X	X			60233283 (1) BPN 2.0
2	MW-2	WT	G	11.28.16	13:14																		
3	MW-3	WT	G	11.28.16	10:23																		
4	MW-4R	WT	G	11.28.16	09:32																		
5	MW-5	WT	G	11.28.16	11:21																		
6	MW-6	WT	G	11.28.16	16:02																		
7	MW-7	WT	G	11.28.16	15:13																		
8	MW-8	WT	G	11.28.16	14:27																		
9	Duplicate	WT	G	11.28.16	23:59																		
10																							
11																							
12																							

135

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	11.29.16	09:00		11/30	0705	1.0	Y	Y	Y
						0700	0.7	Y	Y	Y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Bret Stephens					
SIGNATURE of SAMPLER:	Bret Stephens	DATE Signed (MM/DD/YY): 11.29.16				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

WO#: 30203995

30203995

Pace Analytical®
www.pacelabs.com

Workorder: 60233183 **Workorder Name:** FDU/27216302 **Owner Received Date:** 11/30/2016 **Results Requested By:** 12/22/2016

Report To	Subcontract To
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: 903.1 Radium-226	904.0 Radium-228	Total Radium									LAB USE ONLY
1	MW-1	PS	11/28/2016 12:24	60233183001	Water	2						X	X	X									001
2	MW-2	PS	11/28/2016 13:14	60233183002	Water	2						X	X	X									002
3	MW-3	PS	11/28/2016 10:23	60233183003	Water	2						X	X	X									003
4	MW-4R	PS	11/28/2016 09:32	60233183004	Water	2						X	X	X									004
5	MW-5	PS	11/28/2016 11:21	60233183005	Water	2						X	X	X									005
6	MW-6	PS	11/28/2016 16:02	60233183006	Water	2						X	X	X									006
7	MW-7	PS	11/28/2016 15:13	60233183007	Water	2						X	X	X									007
8	MW-8	PS	11/28/2016 14:27	60233183008	Water	2						X	X	X									008
9	DUPLICATE	PS	11/28/2016 23:59	60233183009	Water	2						X	X	X									009

Transfers	Released By	Date/Time	Received	Date/Time
1		11/30/16 1700	Alyna R. Mulvey PACE	12/1/16 1020
2				
3				

Comments

Cooler Temperature on Receipt N/A °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

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

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace KS Project # 30203995

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

Tracking #: 7044 0021 7491

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ARM 12/1/16

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Filtered volume received for Dissolved tests			✓	12.
All containers needing preservation have been checked.	✓			13.
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			PH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: ARM Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	14.
Trip Blank Present:			✓	15.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ARM Date:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

February 15, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #3 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the January 18, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/CGJ

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

February 01, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60236399

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on January 20, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60236399

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60236399

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60236399001	**MW-1**	Water	01/18/17 12:11	01/20/17 07:35
60236399002	**MW-2**	Water	01/18/17 13:11	01/20/17 07:35
60236399003	**MW-3**	Water	01/18/17 10:15	01/20/17 07:35
60236399004	**MW-4R**	Water	01/18/17 09:26	01/20/17 07:35
60236399005	**MW-5**	Water	01/18/17 11:12	01/20/17 07:35
60236399006	**MW-6**	Water	01/18/17 15:58	01/20/17 07:35
60236399007	**MW-7**	Water	01/18/17 15:03	01/20/17 07:35
60236399008	**MW-8**	Water	01/18/17 14:19	01/20/17 07:35
60236399009	**DUPLICATE**	Water	01/18/17 23:59	01/20/17 07:35

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60236399

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60236399001	**MW-1**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236399002	**MW-2**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236399003	**MW-3**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236399004	**MW-4R**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236399005	**MW-5**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236399006	**MW-6**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236399007	**MW-7**	EPA 6010	SMW	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60236399

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236399008	**MW-8**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236399009	**DUPLICATE**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: MW-1 **Lab ID: 60236399001** Collected: 01/18/17 12:11 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**144**	ug/L	100	1	01/23/17 14:00	01/26/17 11:35	7440-42-8	
Calcium	**101**	mg/L	0.10	1	01/23/17 14:00	01/26/17 11:35	7440-70-2	
Lithium	**37.1**	ug/L	10.0	1	01/23/17 14:00	01/26/17 11:35	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7440-38-2	
Barium	**160**	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 13:54	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 13:54	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7439-92-1	
Molybdenum	**7.2**	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7439-98-7	
Selenium	**16.3**	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:30	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**465**	mg/L	5.0	1		01/25/17 14:54		
9040 pH	Analytical Method: EPA 9040							
pH	**7.3**	Std. Units	0.10	1		02/01/17 09:41		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**9.9**	mg/L	1.0	1		01/24/17 23:47	16887-00-6	
Fluoride	**1.3**	mg/L	0.20	1		01/24/17 23:47	16984-48-8	
Sulfate	**56.7**	mg/L	5.0	5		01/25/17 18:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: MW-2 **Lab ID: 60236399002** Collected: 01/18/17 13:11 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**121**	ug/L	100	1	01/23/17 14:00	01/26/17 11:46	7440-42-8	
Calcium	**95.5**	mg/L	0.10	1	01/23/17 14:00	01/26/17 11:46	7440-70-2	
Lithium	**27.6**	ug/L	10.0	1	01/23/17 14:00	01/26/17 11:46	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7440-36-0	
Arsenic	**4.3**	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7440-38-2	
Barium	**100**	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 13:59	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 13:59	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7439-92-1	
Molybdenum	**8.6**	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7439-98-7	
Selenium	**14.6**	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 13:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:32	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**428**	mg/L	5.0	1		01/25/17 14:55		
9040 pH	Analytical Method: EPA 9040							
pH	**7.4**	Std. Units	0.10	1		02/01/17 09:42		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**15.5**	mg/L	1.0	1		01/25/17 01:04	16887-00-6	
Fluoride	**0.88**	mg/L	0.20	1		01/25/17 01:04	16984-48-8	
Sulfate	**48.4**	mg/L	5.0	5		01/25/17 19:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: MW-3 **Lab ID: 60236399003** Collected: 01/18/17 10:15 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**115**	ug/L	100	1	01/23/17 14:00	01/26/17 11:49	7440-42-8	
Calcium	**89.4**	mg/L	0.10	1	01/23/17 14:00	01/26/17 11:49	7440-70-2	
Lithium	**27.2**	ug/L	10.0	1	01/23/17 14:00	01/26/17 11:49	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7440-38-2	
Barium	**174**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:11	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:11	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7439-92-1	
Molybdenum	**11.2**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7439-98-7	
Selenium	**9.8**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:11	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:35	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**422**	mg/L	5.0	1		01/25/17 14:55		
9040 pH	Analytical Method: EPA 9040							
pH	**7.5**	Std. Units	0.10	1		02/01/17 09:37		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**31.3**	mg/L	2.0	2		01/25/17 20:13	16887-00-6	
Fluoride	**0.77**	mg/L	0.20	1		01/25/17 01:35	16984-48-8	
Sulfate	**46.9**	mg/L	5.0	5		01/25/17 20:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: MW-4R **Lab ID: 60236399004** Collected: 01/18/17 09:26 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**214**	ug/L	100	1	01/23/17 14:00	01/26/17 11:53	7440-42-8	
Calcium	**78.5**	mg/L	0.10	1	01/23/17 14:00	01/26/17 11:53	7440-70-2	
Lithium	**26.0**	ug/L	10.0	1	01/23/17 14:00	01/26/17 11:53	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7440-36-0	
Arsenic	**4.6**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7440-38-2	
Barium	**111**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:16	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:16	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7439-92-1	
Molybdenum	**6.6**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7439-98-7	
Selenium	**7.5**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:16	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:37	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**372**	mg/L	5.0	1		01/25/17 14:56		
9040 pH	Analytical Method: EPA 9040							
pH	**7.4**	Std. Units	0.10	1		02/01/17 09:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**16.7**	mg/L	1.0	1		01/25/17 01:50	16887-00-6	
Fluoride	**0.87**	mg/L	0.20	1		01/25/17 01:50	16984-48-8	
Sulfate	**37.1**	mg/L	2.0	2		01/25/17 20:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: MW-5 **Lab ID: 60236399005** Collected: 01/18/17 11:12 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**130**	ug/L	100	1	01/23/17 14:00	01/26/17 11:57	7440-42-8	
Calcium	**109**	mg/L	0.10	1	01/23/17 14:00	01/26/17 11:57	7440-70-2	
Lithium	**29.1**	ug/L	10.0	1	01/23/17 14:00	01/26/17 11:57	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7440-36-0	
Arsenic	**4.7**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7440-38-2	
Barium	**144**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:20	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:20	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7439-92-1	
Molybdenum	**6.6**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7439-98-7	
Selenium	**9.1**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:39	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**473**	mg/L	5.0	1		01/25/17 14:58		
9040 pH	Analytical Method: EPA 9040							
pH	**7.6**	Std. Units	0.10	1		02/01/17 09:38		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**16.1**	mg/L	1.0	1		01/25/17 02:06	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	1		01/25/17 02:06	16984-48-8	
Sulfate	**38.4**	mg/L	5.0	5		01/25/17 20:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: MW-6 **Lab ID: 60236399006** Collected: 01/18/17 15:58 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**167**	ug/L	100	1	01/23/17 14:00	01/26/17 12:00	7440-42-8	
Calcium	**86.6**	mg/L	0.10	1	01/23/17 14:00	01/26/17 12:00	7440-70-2	
Lithium	**31.2**	ug/L	10.0	1	01/23/17 14:00	01/26/17 12:00	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7440-36-0	
Arsenic	**2.8**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7440-38-2	
Barium	**157**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:24	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:24	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7439-92-1	
Molybdenum	**8.4**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7439-98-7	
Selenium	**11.2**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:24	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**470**	mg/L	5.0	1		01/25/17 14:59		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		02/01/17 09:47		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**43.5**	mg/L	5.0	5		01/25/17 21:08	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		01/25/17 02:21	16984-48-8	
Sulfate	**53.6**	mg/L	5.0	5		01/25/17 21:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: MW-7 **Lab ID: 60236399007** Collected: 01/18/17 15:03 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**186**	ug/L	100	1	01/23/17 14:00	01/26/17 12:11	7440-42-8	
Calcium	**90.9**	mg/L	0.10	1	01/23/17 14:00	01/26/17 12:11	7440-70-2	
Lithium	**26.3**	ug/L	10.0	1	01/23/17 14:00	01/26/17 12:11	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7440-36-0	
Arsenic	**3.9**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7440-38-2	
Barium	**119**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:42	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:42	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7439-92-1	
Molybdenum	**8.2**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7439-98-7	
Selenium	**10.5**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:42	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**435**	mg/L	5.0	1		01/25/17 15:00		
9040 pH	Analytical Method: EPA 9040							
pH	**7.3**	Std. Units	0.10	1		02/01/17 09:46		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**20.3**	mg/L	2.0	2		01/25/17 21:22	16887-00-6	
Fluoride	**0.81**	mg/L	0.20	1		01/25/17 02:36	16984-48-8	
Sulfate	**49.2**	mg/L	5.0	5		01/25/17 21:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: MW-8 **Lab ID: 60236399008** Collected: 01/18/17 14:19 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**121**	ug/L	100	1	01/23/17 14:00	01/26/17 12:15	7440-42-8	
Calcium	**86.1**	mg/L	0.10	1	01/23/17 14:00	01/26/17 12:15	7440-70-2	
Lithium	**26.7**	ug/L	10.0	1	01/23/17 14:00	01/26/17 12:15	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7440-36-0	
Arsenic	**2.8**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7440-38-2	
Barium	**163**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:46	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:46	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7439-92-1	
Molybdenum	**8.3**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7439-98-7	
Selenium	**13.1**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:46	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**389**	mg/L	5.0	1		01/25/17 15:01		
9040 pH	Analytical Method: EPA 9040							
pH	**7.5**	Std. Units	0.10	1		02/01/17 09:43		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**23.6**	mg/L	2.0	2		01/25/17 22:18	16887-00-6	
Fluoride	**0.80**	mg/L	0.20	1		01/25/17 02:52	16984-48-8	
Sulfate	**39.7**	mg/L	2.0	2		01/25/17 22:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60236399

Sample: DUPLICATE **Lab ID: 60236399009** Collected: 01/18/17 23:59 Received: 01/20/17 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**176**	ug/L	100	1	01/23/17 14:00	01/26/17 12:19	7440-42-8	
Calcium	**88.3**	mg/L	0.10	1	01/23/17 14:00	01/26/17 12:19	7440-70-2	
Lithium	**32.9**	ug/L	10.0	1	01/23/17 14:00	01/26/17 12:19	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7440-36-0	
Arsenic	**3.0**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7440-38-2	
Barium	**165**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:51	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/23/17 14:00	01/26/17 14:51	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7440-48-4	
Lead	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7439-92-1	
Molybdenum	**9.1**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7439-98-7	
Selenium	**12.2**	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/23/17 14:00	01/26/17 14:51	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/27/17 15:30	01/30/17 13:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**473**	mg/L	5.0	1		01/25/17 15:01		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		02/01/17 09:48		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**44.5**	mg/L	5.0	5		01/25/17 22:46	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		01/25/17 03:38	16984-48-8	
Sulfate	**54.0**	mg/L	5.0	5		01/25/17 22:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60236399

QC Batch: 463565 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

METHOD BLANK: 1897695 Matrix: Water
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	01/30/17 12:50	

LABORATORY CONTROL SAMPLE: 1897696

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1897697 1897698

Parameter	Units	60236266001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	0.70	0.71	14	14	75-125	1	20	M1

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60236399

QC Batch: 462882 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

METHOD BLANK: 1895235 Matrix: Water
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	01/26/17 11:28	
Calcium	mg/L	ND	0.10	01/26/17 11:28	
Lithium	ug/L	ND	10.0	01/26/17 11:28	

LABORATORY CONTROL SAMPLE: 1895236

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	976	98	80-120	
Calcium	mg/L	10	9.6	96	80-120	
Lithium	ug/L	1000	1010	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895237 1895238

Parameter	Units	60236399001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	144	1000	1000	1140	1150	100	100	75-125	0	20	
Calcium	mg/L	101	10	10	112	109	108	82	75-125	2	20	
Lithium	ug/L	37.1	1000	1000	1060	1070	102	103	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60236399

QC Batch: 462883 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

METHOD BLANK: 1895239 Matrix: Water
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	01/26/17 13:46	
Arsenic	ug/L	ND	1.0	01/26/17 13:46	
Barium	ug/L	ND	1.0	01/26/17 13:46	
Beryllium	ug/L	ND	0.50	01/26/17 13:46	
Cadmium	ug/L	ND	0.50	01/26/17 13:46	
Chromium	ug/L	ND	1.0	01/26/17 13:46	
Cobalt	ug/L	ND	1.0	01/26/17 13:46	
Lead	ug/L	ND	1.0	01/26/17 13:46	
Molybdenum	ug/L	ND	1.0	01/26/17 13:46	
Selenium	ug/L	ND	1.0	01/26/17 13:46	
Thallium	ug/L	ND	1.0	01/26/17 13:46	

LABORATORY CONTROL SAMPLE: 1895240

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.3	101	80-120	
Arsenic	ug/L	40	41.1	103	80-120	
Barium	ug/L	40	39.6	99	80-120	
Beryllium	ug/L	40	42.2	106	80-120	
Cadmium	ug/L	40	40.7	102	80-120	
Chromium	ug/L	40	40.4	101	80-120	
Cobalt	ug/L	40	39.7	99	80-120	
Lead	ug/L	40	38.4	96	80-120	
Molybdenum	ug/L	40	41.2	103	80-120	
Selenium	ug/L	40	42.8	107	80-120	
Thallium	ug/L	40	40.4	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895241 1895242

Parameter	Units	60236399002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	40.5	40.7	100	101	75-125	1	20	
Arsenic	ug/L	4.3	40	40	44.2	45.1	100	102	75-125	2	20	
Barium	ug/L	100	40	40	141	144	102	110	75-125	2	20	
Beryllium	ug/L	ND	40	40	38.6	38.6	96	96	75-125	0	20	
Cadmium	ug/L	ND	40	40	39.6	39.4	99	98	75-125	0	20	
Chromium	ug/L	ND	40	40	40.0	40.2	98	99	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60236399

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895241 1895242

Parameter	Units	60236399002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	37.6	37.9	94	95	75-125	1	20	
Lead	ug/L	ND	40	40	38.5	38.6	96	96	75-125	0	20	
Molybdenum	ug/L	8.6	40	40	50.8	50.9	105	106	75-125	0	20	
Selenium	ug/L	14.6	40	40	54.5	55.6	100	102	75-125	2	20	
Thallium	ug/L	ND	40	40	40.4	41.1	101	103	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60236399

QC Batch: 463212 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

METHOD BLANK: 1896342 Matrix: Water
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	01/25/17 14:50	

LABORATORY CONTROL SAMPLE: 1896343

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	967	97	80-120	

SAMPLE DUPLICATE: 1896344

Parameter	Units	60236312005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	157	184	16	10	D6

SAMPLE DUPLICATE: 1896345

Parameter	Units	60236399005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	473	470	1	10	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60236399

QC Batch: 463706 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

SAMPLE DUPLICATE: 1898316

Parameter	Units	60236399005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.6	7.6	0	10	H6

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60236399

QC Batch: 462971 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

METHOD BLANK: 1895551 Matrix: Water
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	01/24/17 23:16	
Fluoride	mg/L	ND	0.20	01/24/17 23:16	

LABORATORY CONTROL SAMPLE: 1895552

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	80-120	
Fluoride	mg/L	2.5	2.5	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895553 1895554

Parameter	Units	60236399001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	9.9	5	5	15.4	15.6	110	113	80-120	1	15	
Fluoride	mg/L	1.3	2.5	2.5	3.9	4.0	104	107	80-120	2	15	

SAMPLE DUPLICATE: 1895555

Parameter	Units	60236399002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	15.5	15.5	0	15	
Fluoride	mg/L	0.88	0.88	0	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60236399

QC Batch: 463223 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

METHOD BLANK: 1896359 Matrix: Water
Associated Lab Samples: 60236399001, 60236399002, 60236399003, 60236399004, 60236399005, 60236399006, 60236399007, 60236399008, 60236399009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	01/25/17 13:57	
Sulfate	mg/L	ND	1.0	01/25/17 13:57	

LABORATORY CONTROL SAMPLE: 1896360

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	80-120	
Sulfate	mg/L	5	5.1	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1896361 1896362

Parameter	Units	60236399001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	56.7	25	25	83.6	83.8	108	108	80-120	0	15	

SAMPLE DUPLICATE: 1896363

Parameter	Units	60236399002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	48.4	45.4	6	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60236399

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60236399

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236399001	**MW-1**	EPA 3010	462882	EPA 6010	462904
60236399002	**MW-2**	EPA 3010	462882	EPA 6010	462904
60236399003	**MW-3**	EPA 3010	462882	EPA 6010	462904
60236399004	**MW-4R**	EPA 3010	462882	EPA 6010	462904
60236399005	**MW-5**	EPA 3010	462882	EPA 6010	462904
60236399006	**MW-6**	EPA 3010	462882	EPA 6010	462904
60236399007	**MW-7**	EPA 3010	462882	EPA 6010	462904
60236399008	**MW-8**	EPA 3010	462882	EPA 6010	462904
60236399009	**DUPLICATE**	EPA 3010	462882	EPA 6010	462904
60236399001	**MW-1**	EPA 3010	462883	EPA 6020	462905
60236399002	**MW-2**	EPA 3010	462883	EPA 6020	462905
60236399003	**MW-3**	EPA 3010	462883	EPA 6020	462905
60236399004	**MW-4R**	EPA 3010	462883	EPA 6020	462905
60236399005	**MW-5**	EPA 3010	462883	EPA 6020	462905
60236399006	**MW-6**	EPA 3010	462883	EPA 6020	462905
60236399007	**MW-7**	EPA 3010	462883	EPA 6020	462905
60236399008	**MW-8**	EPA 3010	462883	EPA 6020	462905
60236399009	**DUPLICATE**	EPA 3010	462883	EPA 6020	462905
60236399001	**MW-1**	EPA 7470	463565	EPA 7470	463574
60236399002	**MW-2**	EPA 7470	463565	EPA 7470	463574
60236399003	**MW-3**	EPA 7470	463565	EPA 7470	463574
60236399004	**MW-4R**	EPA 7470	463565	EPA 7470	463574
60236399005	**MW-5**	EPA 7470	463565	EPA 7470	463574
60236399006	**MW-6**	EPA 7470	463565	EPA 7470	463574
60236399007	**MW-7**	EPA 7470	463565	EPA 7470	463574
60236399008	**MW-8**	EPA 7470	463565	EPA 7470	463574
60236399009	**DUPLICATE**	EPA 7470	463565	EPA 7470	463574
60236399001	**MW-1**	SM 2540C	463212		
60236399002	**MW-2**	SM 2540C	463212		
60236399003	**MW-3**	SM 2540C	463212		
60236399004	**MW-4R**	SM 2540C	463212		
60236399005	**MW-5**	SM 2540C	463212		
60236399006	**MW-6**	SM 2540C	463212		
60236399007	**MW-7**	SM 2540C	463212		
60236399008	**MW-8**	SM 2540C	463212		
60236399009	**DUPLICATE**	SM 2540C	463212		
60236399001	**MW-1**	EPA 9040	463706		
60236399002	**MW-2**	EPA 9040	463706		
60236399003	**MW-3**	EPA 9040	463706		
60236399004	**MW-4R**	EPA 9040	463706		
60236399005	**MW-5**	EPA 9040	463706		
60236399006	**MW-6**	EPA 9040	463706		
60236399007	**MW-7**	EPA 9040	463706		
60236399008	**MW-8**	EPA 9040	463706		
60236399009	**DUPLICATE**	EPA 9040	463706		
60236399001	**MW-1**	EPA 9056	462971		

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60236399

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236399001	**MW-1**	EPA 9056	463223		
60236399002	**MW-2**	EPA 9056	462971		
60236399002	**MW-2**	EPA 9056	463223		
60236399003	**MW-3**	EPA 9056	462971		
60236399003	**MW-3**	EPA 9056	463223		
60236399004	**MW-4R**	EPA 9056	462971		
60236399004	**MW-4R**	EPA 9056	463223		
60236399005	**MW-5**	EPA 9056	462971		
60236399005	**MW-5**	EPA 9056	463223		
60236399006	**MW-6**	EPA 9056	462971		
60236399006	**MW-6**	EPA 9056	463223		
60236399007	**MW-7**	EPA 9056	462971		
60236399007	**MW-7**	EPA 9056	463223		
60236399008	**MW-8**	EPA 9056	462971		
60236399008	**MW-8**	EPA 9056	463223		
60236399009	**DUPLICATE**	EPA 9056	462971		
60236399009	**DUPLICATE**	EPA 9056	463223		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60236399

60236399

TDG

Client Name: SCS Eng

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: CF +1.5 T-266 / CF +0.9 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.1/1.4 **Corr. Factor** CF +1.5 CF +0.9 **Corrected** 1.6/2.9

Date and initials of person examining contents: PVL 1/20/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 1-20-17

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com

Page: 1 of 1

Section A — Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	mmiller@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B — Required Project Information:

Report To:	Korey Brunken
Copy To:	KbrunKen@SCSengineers.com
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C — Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NE

Section D — Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60236799
1	MW-1	WT	G	xxx	xxx	1.18.17	12:11		2	1		1						N	X	X	X	X	X	X		IBP2M IBP2N 20 001
2	MW-2	WT	G			1.18.17	13:11		2	1		1							X	X	X	X	X	X		002
3	MW-3	WT	G			1.18.17	10:15		2	1		1							X	X	X	X	X	X		003
4	MW-4R	WT	G			1.18.17	09:26		2	1		1							X	X	X	X	X	X		004
5	MW-5	WT	G			1.18.17	11:12		2	1		1							X	X	X	X	X	X		005
6	MW-6	WT	G			1.18.17	15:58		2	1		1							X	X	X	X	X	X		006
7	MW-7	WT	G			1.18.17	15:03		2	1		1							X	X	X	X	X	X		007
8	MW-8	WT	G			1.18.17	14:19		2	1		1							X	X	X	X	X	X		008
9	Duplicate	WT	G			1.18.17	23:59		2	1		1							X	X	X	X	X	X		009
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	B Stephens / SCS	1.19.17	10:00	[signature]	1/20/17	0735	1.6	Y	Y	Y
* Sb-As-Ba-Be-Cd-Co-Cr-Pb-Mo-Se-Tl							2.9	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: B Stephens

DATE Signed (MM/DD/YY): 1.19.17

Temp In °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

February 14, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60236400

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on January 20, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60236400

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60236400

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60236400001	**MW-1**	Water	01/18/17 12:11	01/20/17 07:35
60236400002	**MW-2**	Water	01/18/17 13:11	01/20/17 07:35
60236400003	**MW-3**	Water	01/18/17 10:15	01/20/17 07:35
60236400004	**MW-4R**	Water	01/18/17 09:26	01/20/17 07:35
60236400005	**MW-5**	Water	01/18/17 11:12	01/20/17 07:35
60236400006	**MW-6**	Water	01/18/17 15:58	01/20/17 07:35
60236400007	**MW-7**	Water	01/18/17 15:03	01/20/17 07:35
60236400008	**MW-8**	Water	01/18/17 14:19	01/20/17 07:35
60236400009	**DUPLICATE**	Water	01/18/17 23:59	01/20/17 07:35

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60236400

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60236400001	**MW-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236400002	**MW-2**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236400003	**MW-3**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236400004	**MW-4R**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236400005	**MW-5**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236400006	**MW-6**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236400007	**MW-7**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236400008	**MW-8**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236400009	**DUPLICATE**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: MW-1 **Lab ID: 60236400001** Collected: 01/18/17 12:11 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.343 ± 0.406 (0.638) C:NA T:88%**	pCi/L	02/13/17 20:12	13982-63-3	
Radium-228	EPA 904.0	**2.40 ± 0.879 (1.38) C:57% T:83%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**2.74 ± 1.29 (2.02)**	pCi/L	02/14/17 16:25	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: MW-2 **Lab ID: 60236400002** Collected: 01/18/17 13:11 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.517 ± 0.438 (0.543) C:NA T:89%**	pCi/L	02/13/17 20:37	13982-63-3	
Radium-228	EPA 904.0	**0.297 ± 0.494 (1.08) C:57% T:83%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**0.814 ± 0.932 (1.62)**	pCi/L	02/14/17 16:25	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: MW-3 **Lab ID: 60236400003** Collected: 01/18/17 10:15 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.618 ± 0.591 (0.900) C:NA T:86%**	pCi/L	02/13/17 20:37	13982-63-3	
Radium-228	EPA 904.0	**0.652 ± 0.579 (1.18) C:56% T:81%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**1.27 ± 1.17 (2.08)**	pCi/L	02/14/17 16:25	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: MW-4R **Lab ID: 60236400004** Collected: 01/18/17 09:26 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.206 ± 0.356 (0.637) C:NA T:92%**	pCi/L	02/13/17 20:37	13982-63-3	
Radium-228	EPA 904.0	**1.27 ± 0.673 (1.20) C:49% T:83%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**1.48 ± 1.03 (1.84)**	pCi/L	02/14/17 16:25	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: MW-5 **Lab ID: 60236400005** Collected: 01/18/17 11:12 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.459 ± 0.429 (0.609) C:NA T:96%**	pCi/L	02/13/17 20:37	13982-63-3	
Radium-228	EPA 904.0	**1.04 ± 0.487 (0.816) C:63% T:89%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**1.50 ± 0.916 (1.43)**	pCi/L	02/14/17 16:25	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: MW-6 **Lab ID: 60236400006** Collected: 01/18/17 15:58 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.273 ± 0.379 (0.633) C:NA T:88%**	pCi/L	02/13/17 20:37	13982-63-3	
Radium-228	EPA 904.0	**1.07 ± 0.646 (1.22) C:54% T:86%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 1.03 (1.85)**	pCi/L	02/14/17 16:25	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: MW-7 **Lab ID: 60236400007** Collected: 01/18/17 15:03 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.532 ± 0.456 (0.618) C:NA T:91%**	pCi/L	02/13/17 20:37	13982-63-3	
Radium-228	EPA 904.0	**0.516 ± 0.469 (0.950) C:56% T:87%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**1.05 ± 0.925 (1.57)**	pCi/L	02/14/17 16:25	7440-14-4	

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: MW-8 **Lab ID: 60236400008** Collected: 01/18/17 14:19 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.557 ± 0.514 (0.749) C:NA T:91%**	pCi/L	02/13/17 21:02	13982-63-3	
Radium-228	EPA 904.0	**1.06 ± 0.669 (1.27) C:50% T:81%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**1.62 ± 1.18 (2.02)**	pCi/L	02/14/17 16:25	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

Sample: DUPLICATE **Lab ID: 60236400009** Collected: 01/18/17 23:59 Received: 01/20/17 07:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.138 ± 0.384 (0.744) C:NA T:91%**	pCi/L	02/13/17 21:02	13982-63-3	
Radium-228	EPA 904.0	**0.260 ± 0.484 (1.06) C:55% T:81%**	pCi/L	02/13/17 12:19	15262-20-1	
Total Radium	Total Radium Calculation	**0.398 ± 0.868 (1.80)**	pCi/L	02/14/17 16:25	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

QC Batch: 248431 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60236400001, 60236400002, 60236400003, 60236400004, 60236400005, 60236400006, 60236400007, 60236400008, 60236400009

METHOD BLANK: 1222137 Matrix: Water
Associated Lab Samples: 60236400001, 60236400002, 60236400003, 60236400004, 60236400005, 60236400006, 60236400007, 60236400008, 60236400009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.188 ± 0.345 (0.848) C:60% T:93%	pCi/L	02/13/17 12:18	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60236400

QC Batch: 248430 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60236400001, 60236400002, 60236400003, 60236400004, 60236400005, 60236400006, 60236400007, 60236400008, 60236400009

METHOD BLANK: 1222136 Matrix: Water
Associated Lab Samples: 60236400001, 60236400002, 60236400003, 60236400004, 60236400005, 60236400006, 60236400007, 60236400008, 60236400009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.069 ± 0.316 (0.744) C:NA T:95%	pCi/L	02/13/17 20:23	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60236400

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60236400

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236400001	**MW-1**	EPA 903.1	248430		
60236400002	**MW-2**	EPA 903.1	248430		
60236400003	**MW-3**	EPA 903.1	248430		
60236400004	**MW-4R**	EPA 903.1	248430		
60236400005	**MW-5**	EPA 903.1	248430		
60236400006	**MW-6**	EPA 903.1	248430		
60236400007	**MW-7**	EPA 903.1	248430		
60236400008	**MW-8**	EPA 903.1	248430		
60236400009	**DUPLICATE**	EPA 903.1	248430		
60236400001	**MW-1**	EPA 904.0	248431		
60236400002	**MW-2**	EPA 904.0	248431		
60236400003	**MW-3**	EPA 904.0	248431		
60236400004	**MW-4R**	EPA 904.0	248431		
60236400005	**MW-5**	EPA 904.0	248431		
60236400006	**MW-6**	EPA 904.0	248431		
60236400007	**MW-7**	EPA 904.0	248431		
60236400008	**MW-8**	EPA 904.0	248431		
60236400009	**DUPLICATE**	EPA 904.0	248431		
60236400001	**MW-1**	Total Radium Calculation	249310		
60236400002	**MW-2**	Total Radium Calculation	249310		
60236400003	**MW-3**	Total Radium Calculation	249310		
60236400004	**MW-4R**	Total Radium Calculation	249310		
60236400005	**MW-5**	Total Radium Calculation	249310		
60236400006	**MW-6**	Total Radium Calculation	249310		
60236400007	**MW-7**	Total Radium Calculation	249310		
60236400008	**MW-8**	Total Radium Calculation	249310		
60236400009	**DUPLICATE**	Total Radium Calculation	249310		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60236400

60236400

Client Name: SCS Eng

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: T-266 (CF +1.5) / T-239 (CF +0.9) **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.4 / 1.6 **Corr. Factor** (CF +1.5) CF +0.9 **Corrected** 2.9 / 3.1

Date and initials of person examining contents: pvl/20/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 1-20-17

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com

Page: 1 of 1

Section A Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	mmiller@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Korey Brunken
Copy To:	Kbrunken@scsengineers.com
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
				DATE	TIME	DATE	TIME											Y/N	2	2	2		60236400
1	MW-1	WT	G	xxx	xxx	1.18.17	12:11		2			2							X	X	X		23PIN2-01
2	MW-2	WT	G			1.18.17	13:11		2			2							X	X	X		02
3	MW-3	WT	G			1.18.17	10:15		2			2							X	X	X		03
4	MW-4R	WT	G			1.18.17	09:26		2			2							X	X	X		04
5	MW-5	WT	G			1.18.17	11:12		2			2							X	X	X		05
6	MW-6	WT	G			1.18.17	15:58		2			2							X	X	X		06
7	MW-7	WT	G			1.18.17	15:03		2			2							X	X	X		07
8	MW-8	WT	G			1.18.17	14:19		2			2							X	X	X		08
9	Duplicate	WT	G			1.18.17	23:59		2			2							X	X	X		09
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	1.19.17	10:00		1/20/17	0735	2.9	Y	Y	Y
							3.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Bret Stephens				
SIGNATURE of SAMPLER:	Bret Stephens				
DATE Signed (MM/DD/YY):	1.19.17				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

30208801

Pace Analytical®
www.pacelabs.com

Workorder: 60236400 **Workorder Name:** FDU/27216302 **Owner Received Date:** 1/20/2017 **Results Requested By:** 2/17/2017

Report To	Subcontract To
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#:30208801

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Requested Analysis 903.1 Radium-226	904.0 Radium-228	Total Radium	LAB USE ONLY
1	MW-1	PS	1/18/2017 12:11	60236400001	Water	2	X	X	X	001
2	MW-2	PS	1/18/2017 13:11	60236400002	Water	2	X	X	X	002
3	MW-3	PS	1/18/2017 10:15	60236400003	Water	2	X	X	X	003
4	MW-4R	PS	1/18/2017 09:26	60236400004	Water	2	X	X	X	004
5	MW-5	PS	1/18/2017 11:12	60236400005	Water	2	X	X	X	005
6	MW-6	PS	1/18/2017 15:58	60236400006	Water	2	X	X	X	006
7	MW-7	PS	1/18/2017 15:03	60236400007	Water	2	X	X	X	007
8	MW-8	PS	1/18/2017 14:19	60236400008	Water	2	X	X	X	008
9	DUPLICATE	PS	1/18/2017 23:59	60236400009	Water	2	X	X	X	009

Transfers	Released By	Date/Time	Received	Date/Time
1		1/23/17	Ashleigh Rae	1-24-17/1025
2				
3			Aggh 1-24-17	

Comments

Cooler Temperature on Receipt N/A °C Custody Seal (Y) or (N) Received on Ice Y or (N) Samples Intact (Y) or N

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

Sample Condition Upon Receipt Pittsburgh

30208801

Pace Analytical

Client Name: Pace, KS Project #

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

Tracking #: 7046 6654 7954 ANM 1-24-17

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ANM 1-24-17

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used: -Pace Containers Used:	X X			10.
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Organic Samples checked for dechlorination:			X	13.
Filtered volume received for Dissolved tests			X	14.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	X X			15. pH<2 Initial when completed: ANM Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			X	16.
Trip Blank Present:		X		17.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: ANM Date: 1-24-17

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

March 31, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #4 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the March 6, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

March 15, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60239191

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on March 08, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60239191

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60239191

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60239191001	**MW-1**	Water	03/06/17 12:22	03/08/17 07:30
60239191002	**MW-2**	Water	03/06/17 13:16	03/08/17 07:30
60239191003	**MW-3**	Water	03/06/17 10:21	03/08/17 07:30
60239191004	**MW-4R**	Water	03/06/17 09:31	03/08/17 07:30
60239191005	**MW-5**	Water	03/06/17 11:16	03/08/17 07:30
60239191006	**MW-6**	Water	03/06/17 16:05	03/08/17 07:30
60239191007	**MW-7**	Water	03/06/17 15:18	03/08/17 07:30
60239191008	**MW-8**	Water	03/06/17 14:10	03/08/17 07:30
60239191009	**DUPLICATE**	Water	03/06/17 23:59	03/08/17 07:30

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60239191

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60239191001	**MW-1**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60239191002	**MW-2**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60239191003	**MW-3**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60239191004	**MW-4R**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60239191005	**MW-5**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60239191006	**MW-6**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60239191007	**MW-7**	EPA 6010	TDS	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60239191

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60239191008	**MW-8**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60239191009	**DUPLICATE**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: MW-1 **Lab ID: 60239191001** Collected: 03/06/17 12:22 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**144**	ug/L	100	1	03/09/17 15:55	03/10/17 12:29	7440-42-8	
Calcium	**106**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:29	7440-70-2	
Lithium	**35.0**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:29	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7440-36-0	
Arsenic	**3.4**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7440-38-2	
Barium	**146**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 17:44	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 17:44	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7439-92-1	
Molybdenum	**8.4**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7439-98-7	
Selenium	**14.8**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:44	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 11:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**455**	mg/L	5.0	1		03/09/17 09:45		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		03/10/17 09:39		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**11.8**	mg/L	1.0	1		03/12/17 23:26	16887-00-6	
Fluoride	**1.4**	mg/L	0.20	1		03/12/17 23:26	16984-48-8	
Sulfate	**50.1**	mg/L	5.0	5		03/15/17 01:19	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: MW-2 **Lab ID: 60239191002** Collected: 03/06/17 13:16 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**113**	ug/L	100	1	03/09/17 15:55	03/10/17 12:31	7440-42-8	
Calcium	**98.0**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:31	7440-70-2	
Lithium	**27.4**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:31	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7440-36-0	
Arsenic	**3.9**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7440-38-2	
Barium	**99.5**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 17:48	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 17:48	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7439-92-1	
Molybdenum	**8.7**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7439-98-7	
Selenium	**14.7**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:48	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 12:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**423**	mg/L	5.0	1		03/09/17 09:45		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		03/10/17 09:46		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**14.4**	mg/L	1.0	1		03/12/17 23:41	16887-00-6	
Fluoride	**0.85**	mg/L	0.20	1		03/12/17 23:41	16984-48-8	
Sulfate	**46.8**	mg/L	5.0	5		03/15/17 02:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: MW-3 **Lab ID: 60239191003** Collected: 03/06/17 10:21 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	03/09/17 15:55	03/10/17 12:38	7440-42-8	
Calcium	**88.3**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:38	7440-70-2	
Lithium	**26.5**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:38	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7440-36-0	
Arsenic	**2.9**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7440-38-2	
Barium	**165**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 17:52	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 17:52	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7439-92-1	
Molybdenum	**10.6**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7439-98-7	
Selenium	**7.7**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:52	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 12:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**389**	mg/L	5.0	1		03/09/17 09:45		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		03/10/17 09:32		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**25.0**	mg/L	2.0	2		03/15/17 02:53	16887-00-6	
Fluoride	**0.85**	mg/L	0.20	1		03/12/17 23:55	16984-48-8	
Sulfate	**43.9**	mg/L	5.0	5		03/15/17 03:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: MW-4R **Lab ID: 60239191004** Collected: 03/06/17 09:31 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**341**	ug/L	100	1	03/09/17 15:55	03/10/17 12:41	7440-42-8	
Calcium	**81.8**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:41	7440-70-2	
Lithium	**23.2**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:41	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7440-36-0	
Arsenic	**3.7**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7440-38-2	
Barium	**118**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 17:56	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 17:56	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7439-92-1	
Molybdenum	**6.8**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7439-98-7	
Selenium	**6.4**	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 17:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 12:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**391**	mg/L	5.0	1		03/09/17 09:46		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		03/10/17 09:30		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.4**	mg/L	1.0	1		03/13/17 00:09	16887-00-6	
Fluoride	**0.79**	mg/L	0.20	1		03/13/17 00:09	16984-48-8	
Sulfate	**45.5**	mg/L	5.0	5		03/15/17 03:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: MW-5 **Lab ID: 60239191005** Collected: 03/06/17 11:16 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**132**	ug/L	100	1	03/09/17 15:55	03/10/17 12:43	7440-42-8	
Calcium	**118**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:43	7440-70-2	
Lithium	**31.2**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:43	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7440-36-0	
Arsenic	**4.5**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7440-38-2	
Barium	**155**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:01	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:01	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7439-92-1	
Molybdenum	**7.1**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7439-98-7	
Selenium	**9.2**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:01	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 12:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**482**	mg/L	5.0	1		03/09/17 09:46		
9040 pH	Analytical Method: EPA 9040							
pH	**7.3**	Std. Units	0.10	1		03/10/17 09:36		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**13.7**	mg/L	1.0	1		03/13/17 00:24	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	1		03/13/17 00:24	16984-48-8	
Sulfate	**36.5**	mg/L	5.0	5		03/15/17 03:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: MW-6 **Lab ID: 60239191006** Collected: 03/06/17 16:05 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**138**	ug/L	100	1	03/09/17 15:55	03/10/17 12:45	7440-42-8	
Calcium	**101**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:45	7440-70-2	
Lithium	**30.9**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:45	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7440-36-0	
Arsenic	**2.5**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7440-38-2	
Barium	**191**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:14	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:14	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7439-92-1	
Molybdenum	**7.9**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7439-98-7	
Selenium	**7.7**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:14	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 12:11	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**542**	mg/L	5.0	1		03/09/17 09:46		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		03/10/17 09:56		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**45.4**	mg/L	5.0	5		03/15/17 03:47	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	1		03/13/17 00:38	16984-48-8	
Sulfate	**62.5**	mg/L	5.0	5		03/15/17 03:47	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: MW-7 **Lab ID: 60239191007** Collected: 03/06/17 15:18 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**172**	ug/L	100	1	03/09/17 15:55	03/10/17 12:47	7440-42-8	
Calcium	**85.0**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:47	7440-70-2	
Lithium	**23.5**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:47	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7440-38-2	
Barium	**104**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:18	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:18	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7439-92-1	
Molybdenum	**7.5**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7439-98-7	
Selenium	**8.7**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:18	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 12:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**376**	mg/L	5.0	1		03/09/17 09:46		
9040 pH	Analytical Method: EPA 9040							
pH	**7.4**	Std. Units	0.10	1		03/10/17 09:55		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**18.5**	mg/L	1.0	1		03/13/17 00:53	16887-00-6	
Fluoride	**0.76**	mg/L	0.20	1		03/13/17 00:53	16984-48-8	
Sulfate	**42.2**	mg/L	5.0	5		03/15/17 04:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: MW-8 **Lab ID: 60239191008** Collected: 03/06/17 14:10 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**130**	ug/L	100	1	03/09/17 15:55	03/10/17 12:50	7440-42-8	
Calcium	**88.2**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:50	7440-70-2	
Lithium	**28.0**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:50	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7440-36-0	
Arsenic	**2.7**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7440-38-2	
Barium	**155**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:32	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:32	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7439-92-1	
Molybdenum	**8.4**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7439-98-7	
Selenium	**11.4**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:32	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 12:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**396**	mg/L	5.0	1		03/09/17 09:47		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		03/10/17 09:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**22.8**	mg/L	2.0	2		03/15/17 04:14	16887-00-6	
Fluoride	**0.79**	mg/L	0.20	1		03/13/17 01:07	16984-48-8	
Sulfate	**38.5**	mg/L	2.0	2		03/15/17 04:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60239191

Sample: DUPLICATE **Lab ID: 60239191009** Collected: 03/06/17 23:59 Received: 03/08/17 07:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**142**	ug/L	100	1	03/09/17 15:55	03/10/17 12:52	7440-42-8	
Calcium	**103**	mg/L	0.10	1	03/09/17 15:55	03/10/17 12:52	7440-70-2	
Lithium	**32.7**	ug/L	10.0	1	03/09/17 15:55	03/10/17 12:52	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7440-36-0	
Arsenic	**2.7**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7440-38-2	
Barium	**189**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:36	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/09/17 15:55	03/10/17 18:36	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7440-48-4	
Lead	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7439-92-1	
Molybdenum	**8.1**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7439-98-7	
Selenium	**8.1**	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/09/17 15:55	03/10/17 18:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/10/17 09:00	03/10/17 12:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**535**	mg/L	5.0	1		03/09/17 09:48		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		03/10/17 09:58		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**45.8**	mg/L	5.0	5		03/15/17 04:40	16887-00-6	
Fluoride	**0.47**	mg/L	0.20	1		03/13/17 01:50	16984-48-8	
Sulfate	**62.6**	mg/L	5.0	5		03/15/17 04:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60239191

QC Batch: 468232 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

METHOD BLANK: 1916540 Matrix: Water
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	03/10/17 11:51	

LABORATORY CONTROL SAMPLE: 1916541

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1916542 1916543

Parameter	Units	60239191001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.9	5.2	97	103	75-125	6	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60239191

QC Batch: 468087 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

METHOD BLANK: 1915728 Matrix: Water
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	03/10/17 12:11	
Calcium	mg/L	ND	0.10	03/10/17 12:11	
Lithium	ug/L	ND	10.0	03/10/17 12:11	

LABORATORY CONTROL SAMPLE: 1915729

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	972	97	80-120	
Calcium	mg/L	10	9.9	99	80-120	
Lithium	ug/L	1000	1010	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1915730 1915731

Parameter	Units	60239184001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	0.22 mg/L	1000	1000	1240	1250	102	103	75-125	1	20	
Calcium	mg/L	91.1	10	10	103	102	116	114	75-125	0	20	
Lithium	ug/L	0.030 mg/L	1000	1000	1060	1080	103	105	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60239191

QC Batch: 468150 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

METHOD BLANK: 1916084 Matrix: Water
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	03/10/17 17:22	
Arsenic	ug/L	ND	1.0	03/10/17 17:22	
Barium	ug/L	ND	1.0	03/10/17 17:22	
Beryllium	ug/L	ND	0.50	03/10/17 17:22	
Cadmium	ug/L	ND	0.50	03/10/17 17:22	
Chromium	ug/L	ND	1.0	03/10/17 17:22	
Cobalt	ug/L	ND	1.0	03/10/17 17:22	
Lead	ug/L	ND	1.0	03/10/17 17:22	
Molybdenum	ug/L	ND	1.0	03/10/17 17:22	
Selenium	ug/L	ND	1.0	03/10/17 17:22	
Thallium	ug/L	ND	1.0	03/10/17 17:22	

LABORATORY CONTROL SAMPLE: 1916085

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.7	99	80-120	
Arsenic	ug/L	40	40.8	102	80-120	
Barium	ug/L	40	40.9	102	80-120	
Beryllium	ug/L	40	37.8	94	80-120	
Cadmium	ug/L	40	40.2	100	80-120	
Chromium	ug/L	40	41.8	104	80-120	
Cobalt	ug/L	40	40.9	102	80-120	
Lead	ug/L	40	38.9	97	80-120	
Molybdenum	ug/L	40	42.4	106	80-120	
Selenium	ug/L	40	38.2	96	80-120	
Thallium	ug/L	40	39.8	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1916086 1916087

Parameter	Units	60239191007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	40.6	40.8	100	101	75-125	1	20	
Arsenic	ug/L	3.2	40	40	43.4	43.1	100	100	75-125	1	20	
Barium	ug/L	104	40	40	143	147	98	108	75-125	3	20	
Beryllium	ug/L	ND	40	40	39.9	39.8	100	99	75-125	0	20	
Cadmium	ug/L	ND	40	40	39.7	39.3	99	98	75-125	1	20	
Chromium	ug/L	ND	40	40	41.1	40.6	102	100	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60239191

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1916086 1916087

Parameter	Units	60239191007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	39.0	38.7	97	97	75-125	1	20	
Lead	ug/L	ND	40	40	38.0	37.9	95	95	75-125	0	20	
Molybdenum	ug/L	7.5	40	40	50.7	51.1	108	109	75-125	1	20	
Selenium	ug/L	8.7	40	40	46.1	45.7	93	92	75-125	1	20	
Thallium	ug/L	ND	40	40	39.1	38.8	98	97	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60239191

QC Batch: 468090 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

METHOD BLANK: 1915736 Matrix: Water
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	03/09/17 09:42	

LABORATORY CONTROL SAMPLE: 1915737

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	987	99	80-120	

SAMPLE DUPLICATE: 1915738

Parameter	Units	60239184001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	430	436	1	10	

SAMPLE DUPLICATE: 1915739

Parameter	Units	60239191007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	376	382	2	10	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60239191

QC Batch: 468193 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

SAMPLE DUPLICATE: 1916362

Parameter	Units	60238980001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.9	6.9	0	10	H6

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60239191

QC Batch: 468375 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

METHOD BLANK: 1917745 Matrix: Water
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/12/17 19:07	
Fluoride	mg/L	ND	0.20	03/12/17 19:07	

LABORATORY CONTROL SAMPLE: 1917746

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.3	106	80-120	
Fluoride	mg/L	2.5	2.7	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1917747 1917748

Parameter	Units	60239117001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.52	2.5	2.5	3.3	3.3	112	113	80-120	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60239191

QC Batch: 468595 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

METHOD BLANK: 1918238 Matrix: Water
Associated Lab Samples: 60239191001, 60239191002, 60239191003, 60239191004, 60239191005, 60239191006, 60239191007, 60239191008, 60239191009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/14/17 20:11	
Sulfate	mg/L	ND	1.0	03/14/17 20:11	

LABORATORY CONTROL SAMPLE: 1918239

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	99	80-120	
Sulfate	mg/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1918240 1918241

Parameter	Units	60239191001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	50.1	25	25	79.5	78.1	118	112	80-120	2	15	

SAMPLE DUPLICATE: 1918242

Parameter	Units	60239191002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	46.8	46.2	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60239191

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60239191

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60239191001	**MW-1**	EPA 3010	468087	EPA 6010	468246
60239191002	**MW-2**	EPA 3010	468087	EPA 6010	468246
60239191003	**MW-3**	EPA 3010	468087	EPA 6010	468246
60239191004	**MW-4R**	EPA 3010	468087	EPA 6010	468246
60239191005	**MW-5**	EPA 3010	468087	EPA 6010	468246
60239191006	**MW-6**	EPA 3010	468087	EPA 6010	468246
60239191007	**MW-7**	EPA 3010	468087	EPA 6010	468246
60239191008	**MW-8**	EPA 3010	468087	EPA 6010	468246
60239191009	**DUPLICATE**	EPA 3010	468087	EPA 6010	468246
60239191001	**MW-1**	EPA 3010	468150	EPA 6020	468227
60239191002	**MW-2**	EPA 3010	468150	EPA 6020	468227
60239191003	**MW-3**	EPA 3010	468150	EPA 6020	468227
60239191004	**MW-4R**	EPA 3010	468150	EPA 6020	468227
60239191005	**MW-5**	EPA 3010	468150	EPA 6020	468227
60239191006	**MW-6**	EPA 3010	468150	EPA 6020	468227
60239191007	**MW-7**	EPA 3010	468150	EPA 6020	468227
60239191008	**MW-8**	EPA 3010	468150	EPA 6020	468227
60239191009	**DUPLICATE**	EPA 3010	468150	EPA 6020	468227
60239191001	**MW-1**	EPA 7470	468232	EPA 7470	468243
60239191002	**MW-2**	EPA 7470	468232	EPA 7470	468243
60239191003	**MW-3**	EPA 7470	468232	EPA 7470	468243
60239191004	**MW-4R**	EPA 7470	468232	EPA 7470	468243
60239191005	**MW-5**	EPA 7470	468232	EPA 7470	468243
60239191006	**MW-6**	EPA 7470	468232	EPA 7470	468243
60239191007	**MW-7**	EPA 7470	468232	EPA 7470	468243
60239191008	**MW-8**	EPA 7470	468232	EPA 7470	468243
60239191009	**DUPLICATE**	EPA 7470	468232	EPA 7470	468243
60239191001	**MW-1**	SM 2540C	468090		
60239191002	**MW-2**	SM 2540C	468090		
60239191003	**MW-3**	SM 2540C	468090		
60239191004	**MW-4R**	SM 2540C	468090		
60239191005	**MW-5**	SM 2540C	468090		
60239191006	**MW-6**	SM 2540C	468090		
60239191007	**MW-7**	SM 2540C	468090		
60239191008	**MW-8**	SM 2540C	468090		
60239191009	**DUPLICATE**	SM 2540C	468090		
60239191001	**MW-1**	EPA 9040	468193		
60239191002	**MW-2**	EPA 9040	468193		
60239191003	**MW-3**	EPA 9040	468193		
60239191004	**MW-4R**	EPA 9040	468193		
60239191005	**MW-5**	EPA 9040	468193		
60239191006	**MW-6**	EPA 9040	468193		
60239191007	**MW-7**	EPA 9040	468193		
60239191008	**MW-8**	EPA 9040	468193		
60239191009	**DUPLICATE**	EPA 9040	468193		
60239191001	**MW-1**	EPA 9056	468375		

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60239191

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60239191001	**MW-1**	EPA 9056	468595		
60239191002	**MW-2**	EPA 9056	468375		
60239191002	**MW-2**	EPA 9056	468595		
60239191003	**MW-3**	EPA 9056	468375		
60239191003	**MW-3**	EPA 9056	468595		
60239191004	**MW-4R**	EPA 9056	468375		
60239191004	**MW-4R**	EPA 9056	468595		
60239191005	**MW-5**	EPA 9056	468375		
60239191005	**MW-5**	EPA 9056	468595		
60239191006	**MW-6**	EPA 9056	468375		
60239191006	**MW-6**	EPA 9056	468595		
60239191007	**MW-7**	EPA 9056	468375		
60239191007	**MW-7**	EPA 9056	468595		
60239191008	**MW-8**	EPA 9056	468375		
60239191008	**MW-8**	EPA 9056	468595		
60239191009	**DUPLICATE**	EPA 9056	468375		
60239191009	**DUPLICATE**	EPA 9056	468595		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60239191

60239191

Client Name: SCS Eng

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☐ No ☐ Seals intact: Yes ☐ No ☐

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

Thermometer Used: T-266 (CF +1.5) / T-239 (CF +0.9) **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.6/0.5 **Corr. Factor** CF +1.5 CF +0.9 **Corrected** 2.1/2.0

Date and initials of person examining contents: pv 3/10/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [signature] Date: 3.8.17

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical
www.pacelabs.com

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Korey Brunken	Attention:	Korey Brunken
Address:	14755 Grover Street	Copy To:		Company Name:	SCS Engineers
	Omaha NE 68144			Address:	
Email To:	kbrunken@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	30857 (JR)
Phone:	402-884-6202 Fax:	Project Name:	FDU	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:	Standard	Project Number:	27216302	Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Requested Analysis Filtered (Y/N)

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G	xxx	xxx	3.6.17	12:22		2	1		1						N	X	X	X	X	X	X		60239191 IBP3N20 IBP2H 01
2	MW-2	WT	G			3.6.17	13:16		2	1		1						N	X	X	X	X	X	X		02
3	MW-3	WT	G			3.6.17	10:21		2	1		1						N	X	X	X	X	X	X		03
4	MW-4R	WT	G			3.6.17	09:31		2	1		1						N	X	X	X	X	X	X		04
5	MW-5	WT	G			3.6.17	11:16		2	1		1						N	X	X	X	X	X	X		05
6	MW-6	WT	G			3.6.17	16:05		2	1		1						N	X	X	X	X	X	X		06
7	MW-7	WT	G			3.6.17	15:18		2	1		1						N	X	X	X	X	X	X		07
8	MW-8	WT	G			3.6.17	14:10		2	1		1						N	X	X	X	X	X	X		08
9	Duplicate	WT	G			3.6.17	23:59		2	1		1						N	X	X	X	X	X	X		09
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	3.7.17	08:00	Pace	3/8/17	0730	2.1	X	Y	Y
* Sb-As-Ba-Be-Cd-Co-Cr-Pb-Mo-Se-Tl							2.0	X	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: Bret Stephens

DATE Signed (MM/DD/YY): 3/7/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

March 28, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60239216

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on March 08, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60239216

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60239216

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60239216001	**MW-1**	Water	03/06/17 12:22	03/08/17 07:30
60239216002	**MW-2**	Water	03/06/17 13:16	03/08/17 07:30
60239216003	**MW-3**	Water	03/06/17 10:21	03/08/17 07:30
60239216004	**MW-4R**	Water	03/06/17 09:31	03/08/17 07:30
60239216005	**MW-5**	Water	03/06/17 11:16	03/08/17 07:30
60239216006	**MW-6**	Water	03/06/17 16:05	03/08/17 07:30
60239216007	**MW-7**	Water	03/06/17 15:18	03/08/17 07:30
60239216008	**MW-8**	Water	03/06/17 14:10	03/08/17 07:30
60239216009	**DUPLICATE**	Water	03/06/17 23:59	03/08/17 07:30

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60239216

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60239216001	**MW-1**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60239216002	**MW-2**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60239216003	**MW-3**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60239216004	**MW-4R**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60239216005	**MW-5**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60239216006	**MW-6**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60239216007	**MW-7**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60239216008	**MW-8**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60239216009	**DUPLICATE**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: MW-1 **Lab ID: 60239216001** Collected: 03/06/17 12:22 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.792 ± 0.650 (0.967) C:NA T:92%**	pCi/L	03/27/17 10:28	13982-63-3	
Radium-228	EPA 904.0	**2.67 ± 0.762 (0.901) C:72% T:78%**	pCi/L	03/24/17 12:08	15262-20-1	
Total Radium	Total Radium Calculation	**3.46 ± 1.41 (1.87)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: MW-2 **Lab ID: 60239216002** Collected: 03/06/17 13:16 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.354 ± 0.369 (0.521) C:NA T:87%**	pCi/L	03/27/17 10:42	13982-63-3	
Radium-228	EPA 904.0	**2.18 ± 0.712 (0.952) C:64% T:77%**	pCi/L	03/24/17 12:08	15262-20-1	
Total Radium	Total Radium Calculation	**2.53 ± 1.08 (1.47)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: MW-3 **Lab ID: 60239216003** Collected: 03/06/17 10:21 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.249 ± 0.457 (0.816) C:NA T:91%**	pCi/L	03/27/17 10:42	13982-63-3	
Radium-228	EPA 904.0	**1.26 ± 0.543 (0.889) C:67% T:81%**	pCi/L	03/24/17 12:09	15262-20-1	
Total Radium	Total Radium Calculation	**1.51 ± 1.000 (1.71)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: MW-4R **Lab ID: 60239216004** Collected: 03/06/17 09:31 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.744 ± 0.520 (0.628) C:NA T:88%**	pCi/L	03/27/17 10:42	13982-63-3	
Radium-228	EPA 904.0	**1.70 ± 0.650 (0.984) C:65% T:73%**	pCi/L	03/24/17 12:09	15262-20-1	
Total Radium	Total Radium Calculation	**2.44 ± 1.17 (1.61)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: MW-5 **Lab ID: 60239216005** Collected: 03/06/17 11:16 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.425 ± 0.432 (0.654) C:NA T:97%**	pCi/L	03/27/17 10:42	13982-63-3	
Radium-228	EPA 904.0	**2.20 ± 0.697 (0.924) C:66% T:81%**	pCi/L	03/24/17 12:09	15262-20-1	
Total Radium	Total Radium Calculation	**2.63 ± 1.13 (1.58)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: MW-6 **Lab ID: 60239216006** Collected: 03/06/17 16:05 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.065 ± 0.525 (1.08) C:NA T:89%**	pCi/L	03/27/17 10:42	13982-63-3	
Radium-228	EPA 904.0	**2.42 ± 0.691 (0.783) C:69% T:82%**	pCi/L	03/24/17 12:09	15262-20-1	
Total Radium	Total Radium Calculation	**2.42 ± 1.22 (1.86)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: MW-7 **Lab ID: 60239216007** Collected: 03/06/17 15:18 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.585 ± 0.542 (0.825) C:NA T:96%**	pCi/L	03/27/17 10:54	13982-63-3	
Radium-228	EPA 904.0	**1.55 ± 0.571 (0.834) C:68% T:79%**	pCi/L	03/24/17 12:09	15262-20-1	
Total Radium	Total Radium Calculation	**2.14 ± 1.11 (1.66)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: MW-8 **Lab ID: 60239216008** Collected: 03/06/17 14:10 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.459 ± 0.706 (1.21) C:NA T:86%**	pCi/L	03/27/17 10:42	13982-63-3	
Radium-228	EPA 904.0	**2.23 ± 0.692 (0.895) C:70% T:78%**	pCi/L	03/24/17 12:10	15262-20-1	
Total Radium	Total Radium Calculation	**2.69 ± 1.40 (2.11)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

Sample: DUPLICATE **Lab ID: 60239216009** Collected: 03/06/17 23:59 Received: 03/08/17 07:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.123 ± 0.342 (0.808) C:NA T:92%**	pCi/L	03/27/17 10:52	13982-63-3	
Radium-228	EPA 904.0	**2.80 ± 0.866 (1.21) C:69% T:81%**	pCi/L	03/24/17 12:12	15262-20-1	
Total Radium	Total Radium Calculation	**2.95 ± 1.23 (2.02)**	pCi/L	03/28/17 11:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

QC Batch: 252565 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60239216001, 60239216002, 60239216003, 60239216004, 60239216005, 60239216006, 60239216007, 60239216008, 60239216009

METHOD BLANK: 1242496 Matrix: Water
Associated Lab Samples: 60239216001, 60239216002, 60239216003, 60239216004, 60239216005, 60239216006, 60239216007, 60239216008, 60239216009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.070 ± 0.321 (0.756) C:NA T:82%	pCi/L	03/27/17 10:28	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60239216

QC Batch: 252575 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60239216001, 60239216002, 60239216003, 60239216004, 60239216005, 60239216006, 60239216007, 60239216008, 60239216009

METHOD BLANK: 1242511 Matrix: Water
Associated Lab Samples: 60239216001, 60239216002, 60239216003, 60239216004, 60239216005, 60239216006, 60239216007, 60239216008, 60239216009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.782 ± 0.425 (0.732) C:72% T:70%	pCi/L	03/24/17 12:11	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60239216

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60239216

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60239216001	**MW-1**	EPA 903.1	252565		
60239216002	**MW-2**	EPA 903.1	252565		
60239216003	**MW-3**	EPA 903.1	252565		
60239216004	**MW-4R**	EPA 903.1	252565		
60239216005	**MW-5**	EPA 903.1	252565		
60239216006	**MW-6**	EPA 903.1	252565		
60239216007	**MW-7**	EPA 903.1	252565		
60239216008	**MW-8**	EPA 903.1	252565		
60239216009	**DUPLICATE**	EPA 903.1	252565		
60239216001	**MW-1**	EPA 904.0	252575		
60239216002	**MW-2**	EPA 904.0	252575		
60239216003	**MW-3**	EPA 904.0	252575		
60239216004	**MW-4R**	EPA 904.0	252575		
60239216005	**MW-5**	EPA 904.0	252575		
60239216006	**MW-6**	EPA 904.0	252575		
60239216007	**MW-7**	EPA 904.0	252575		
60239216008	**MW-8**	EPA 904.0	252575		
60239216009	**DUPLICATE**	EPA 904.0	252575		
60239216001	**MW-1**	Total Radium Calculation	253522		
60239216002	**MW-2**	Total Radium Calculation	253522		
60239216003	**MW-3**	Total Radium Calculation	253522		
60239216004	**MW-4R**	Total Radium Calculation	253522		
60239216005	**MW-5**	Total Radium Calculation	253522		
60239216006	**MW-6**	Total Radium Calculation	253522		
60239216007	**MW-7**	Total Radium Calculation	253522		
60239216008	**MW-8**	Total Radium Calculation	253522		
60239216009	**DUPLICATE**	Total Radium Calculation	253522		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60239216

60239216

Client Name: SCS Eng

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: CF +1.5 T-266 / CF +0.9 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read -0.4/-0.2 **Corr. Factor** CF +1.5 CF +0.9 **Corrected** 1.1/1.3

Date and initials of person examining contents: PV 3/8/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: DMS Date: 3-8-17

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com

Page: 1 of 1

Section A — Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	kbrunken@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B — Required Project Information:

Report To:	Korey Brunken
Copy To:	
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C — Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D — Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G	xxx	xxx	3.6.17	12:22		2			2						Y	X	X	X		60239216
2	MW-2	WT	G			3.6.17	13:16		2			2						Y	X	X	X		
3	MW-3	WT	G			3.6.17	10:21		2			2						Y	X	X	X		
4	MW-4R	WT	G			3.6.17	09:31		2			2						Y	X	X	X		
5	MW-5	WT	G			3.6.17	11:16		2			2						Y	X	X	X		
6	MW-6	WT	G			3.6.17	16:05		2			2						Y	X	X	X		
7	MW-7	WT	G			3.6.17	15:18		2			2						Y	X	X	X		
8	MW-8	WT	G			3.6.17	14:10		2			2						Y	X	X	X		
9	Duplicate	WT	G			3.6.17	23:59		2			2						Y	X	X	X		
10																							
11																							
12																							

Requested Analysis Filtered (Y/N): N N N

2BPLN

60239216

2B9002-0 3/9/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	B Stephens / SCS	3.7.17	08:00	[signature] PACE	3/8/17	0730

SAMPLE CONDITIONS

	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1-1	Y	Y	Y	
1-3	Y	Y	Y	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: B Stephens

DATE Signed (MM/DD/YY): 3/7/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60239216 **Workorder Name:** FDU/27216302 **Owner Received Date:** 3/8/2017 **Results Requested By:** 4/4/2017

Report To	Subcontract To
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1405	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#:30213141

30213141

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: 903.1 Radium-226	904.0 Radium-228	Total Radium									LAB USE ONLY
1	MW-1	PS	3/6/2017 12:22	60239216001	Water	2						X	X	X									001
2	MW-2	PS	3/6/2017 13:16	60239216002	Water	2						X	X	X									002
3	MW-3	PS	3/6/2017 10:21	60239216003	Water	2						X	X	X									003
4	MW-4R	PS	3/6/2017 09:31	60239216004	Water	2						X	X	X									004
5	MW-5	PS	3/6/2017 11:16	60239216005	Water	2						X	X	X									005
6	MW-6	PS	3/6/2017 16:05	60239216006	Water	2						X	X	X									006
7	MW-7	PS	3/6/2017 15:18	60239216007	Water	2						X	X	X									007
8	MW-8	PS	3/6/2017 14:10	60239216008	Water	2						X	X	X									008
9	DUPLICATE	PS	3/6/2017 23:59	60239216009	Water	2						X	X	X									009

234

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature] Pace	3/9/17 1700	Pace Analytical	3-11-17/0940
2				
3				

Comments

Cooler Temperature on Receipt N/A °C Custody Seal Y or (N) Received on Ice Y or (N) Samples Intact (Y) or N

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

Sample Condition Upon Receipt Pittsburgh

30213141

AML

Pace Analytical

Client Name: Pace, KS Project #

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

Tracking #: 7044 6060 5773

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: QANR 3-11-17

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used: -Pace Containers Used:	X			10.
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Organic Samples checked for dechlorination:			X	13.
Filtered volume received for Dissolved tests			X	14.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	X			15. PHL2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed QANR Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	16.
Trip Blank Present:		X		17.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: QANR Date: 3-11-17

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

May 22, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #5 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the April 24, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

May 08, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60242807

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on April 26, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60242807

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60242807

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60242807001	**MW-1**	Water	04/24/17 11:54	04/26/17 07:09
60242807002	**MW-2**	Water	04/24/17 12:44	04/26/17 07:09
60242807003	**MW-3**	Water	04/24/17 09:52	04/26/17 07:09
60242807004	**MW-4R**	Water	04/24/17 09:00	04/26/17 07:09
60242807005	**MW-5**	Water	04/24/17 10:51	04/26/17 07:09
60242807006	**MW-6**	Water	04/24/17 14:58	04/26/17 07:09
60242807007	**MW-7**	Water	04/24/17 14:14	04/26/17 07:09
60242807008	**MW-8**	Water	04/24/17 13:34	04/26/17 07:09
60242807009	**DUPLICATE**	Water	04/24/17 23:59	04/26/17 07:09

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60242807

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60242807001	**MW-1**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242807002	**MW-2**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242807003	**MW-3**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242807004	**MW-4R**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242807005	**MW-5**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242807006	**MW-6**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242807007	**MW-7**	EPA 6010	TDS	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60242807

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242807008	**MW-8**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242807009	**DUPLICATE**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: MW-1 **Lab ID: 60242807001** Collected: 04/24/17 11:54 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**144**	ug/L	100	1	05/01/17 17:45	05/02/17 14:23	7440-42-8	
Calcium	**106**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:23	7440-70-2	
Lithium	**30.6**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:23	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7440-36-0	
Arsenic	**3.3**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7440-38-2	
Barium	**142**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 18:38	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 18:38	7440-43-9	
Chromium	**1.7**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7439-92-1	
Molybdenum	**8.3**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7439-98-7	
Selenium	**13.3**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 12:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**465**	mg/L	5.0	1		04/26/17 12:14		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		04/27/17 08:47		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**12.1**	mg/L	1.0	1		04/27/17 12:53	16887-00-6	
Fluoride	**1.4**	mg/L	0.20	1		04/27/17 12:53	16984-48-8	
Sulfate	**52.5**	mg/L	5.0	5		04/27/17 13:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: MW-2 **Lab ID: 60242807002** Collected: 04/24/17 12:44 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**118**	ug/L	100	1	05/01/17 17:45	05/02/17 14:29	7440-42-8	
Calcium	**103**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:29	7440-70-2	
Lithium	**24.8**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:29	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7440-36-0	
Arsenic	**4.1**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7440-38-2	
Barium	**87.4**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 18:42	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 18:42	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7439-92-1	
Molybdenum	**8.4**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7439-98-7	
Selenium	**14.0**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:42	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 12:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**437**	mg/L	5.0	1		04/26/17 12:15		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		04/27/17 08:49		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**14.1**	mg/L	1.0	1		04/27/17 13:51	16887-00-6	
Fluoride	**0.95**	mg/L	0.20	1		04/27/17 13:51	16984-48-8	
Sulfate	**49.1**	mg/L	5.0	5		04/27/17 14:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: MW-3 **Lab ID: 60242807003** Collected: 04/24/17 09:52 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	05/01/17 17:45	05/02/17 14:31	7440-42-8	
Calcium	**94.0**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:31	7440-70-2	
Lithium	**25.2**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:31	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7440-36-0	
Arsenic	**3.1**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7440-38-2	
Barium	**163**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 18:46	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 18:46	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7439-92-1	
Molybdenum	**11.1**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7439-98-7	
Selenium	**8.5**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:46	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 13:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**412**	mg/L	5.0	1		04/26/17 12:15		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		04/27/17 08:45		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**28.6**	mg/L	2.0	2		04/27/17 14:36	16887-00-6	
Fluoride	**0.85**	mg/L	0.20	1		04/27/17 14:21	16984-48-8	
Sulfate	**52.1**	mg/L	5.0	5		04/27/17 14:50	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: MW-4R **Lab ID: 60242807004** Collected: 04/24/17 09:00 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**336**	ug/L	100	1	05/01/17 17:45	05/02/17 14:33	7440-42-8	
Calcium	**85.3**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:33	7440-70-2	
Lithium	**21.5**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:33	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7440-36-0	
Arsenic	**3.7**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7440-38-2	
Barium	**120**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 18:59	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 18:59	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7439-92-1	
Molybdenum	**7.1**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7439-98-7	
Selenium	**6.9**	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 18:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 13:07	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**381**	mg/L	5.0	1		04/26/17 12:15		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		04/27/17 08:43		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**16.4**	mg/L	1.0	1		04/27/17 15:49	16887-00-6	
Fluoride	**0.85**	mg/L	0.20	1		04/27/17 15:49	16984-48-8	
Sulfate	**42.1**	mg/L	5.0	5		04/27/17 15:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: MW-5 **Lab ID: 60242807005** Collected: 04/24/17 10:51 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**127**	ug/L	100	1	05/01/17 17:45	05/02/17 14:36	7440-42-8	
Calcium	**126**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:36	7440-70-2	
Lithium	**29.7**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:36	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7440-36-0	
Arsenic	**4.3**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7440-38-2	
Barium	**155**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:03	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:03	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7439-92-1	
Molybdenum	**7.9**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7439-98-7	
Selenium	**9.1**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:03	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 13:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**500**	mg/L	5.0	1		04/26/17 12:16		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		04/27/17 08:46		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**9.5**	mg/L	1.0	1		04/27/17 16:03	16887-00-6	
Fluoride	**1.3**	mg/L	0.20	1		04/27/17 16:03	16984-48-8	
Sulfate	**42.7**	mg/L	5.0	5		04/27/17 16:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: MW-6 **Lab ID: 60242807006** Collected: 04/24/17 14:58 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**143**	ug/L	100	1	05/01/17 17:45	05/02/17 14:38	7440-42-8	
Calcium	**102**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:38	7440-70-2	
Lithium	**29.8**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:38	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7440-36-0	
Arsenic	**2.9**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7440-38-2	
Barium	**170**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:08	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:08	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7439-92-1	
Molybdenum	**7.3**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7439-98-7	
Selenium	**12.5**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 13:11	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**561**	mg/L	5.0	1		04/26/17 12:16		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		04/27/17 08:53		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**53.3**	mg/L	5.0	5		04/27/17 16:47	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	1		04/27/17 16:33	16984-48-8	
Sulfate	**74.9**	mg/L	5.0	5		04/27/17 16:47	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: MW-7 **Lab ID: 60242807007** Collected: 04/24/17 14:14 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**193**	ug/L	100	1	05/01/17 17:45	05/02/17 14:40	7440-42-8	
Calcium	**96.5**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:40	7440-70-2	
Lithium	**25.1**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:40	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7440-36-0	
Arsenic	**3.4**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7440-38-2	
Barium	**112**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:21	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:21	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7439-92-1	
Molybdenum	**7.7**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7439-98-7	
Selenium	**11.2**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:21	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 13:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**432**	mg/L	5.0	1		04/26/17 12:17		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		04/27/17 08:52		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**18.4**	mg/L	1.0	1		04/27/17 17:02	16887-00-6	
Fluoride	**0.82**	mg/L	0.20	1		04/27/17 17:02	16984-48-8	
Sulfate	**53.1**	mg/L	5.0	5		04/27/17 17:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: MW-8 **Lab ID: 60242807008** Collected: 04/24/17 13:34 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**134**	ug/L	100	1	05/01/17 17:45	05/02/17 14:47	7440-42-8	
Calcium	**84.5**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:47	7440-70-2	
Lithium	**27.2**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:47	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7440-36-0	
Arsenic	**2.7**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7440-38-2	
Barium	**137**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:25	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:25	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7439-92-1	
Molybdenum	**8.3**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7439-98-7	
Selenium	**10.4**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 13:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**381**	mg/L	5.0	1		04/26/17 12:17		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		04/27/17 08:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**22.0**	mg/L	2.0	2		04/27/17 17:46	16887-00-6	
Fluoride	**0.88**	mg/L	0.20	1		04/27/17 17:31	16984-48-8	
Sulfate	**37.5**	mg/L	2.0	2		04/27/17 17:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60242807

Sample: DUPLICATE **Lab ID: 60242807009** Collected: 04/24/17 23:59 Received: 04/26/17 07:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**144**	ug/L	100	1	05/01/17 17:45	05/02/17 14:49	7440-42-8	
Calcium	**101**	mg/L	0.10	1	05/01/17 17:45	05/02/17 14:49	7440-70-2	
Lithium	**29.9**	ug/L	10.0	1	05/01/17 17:45	05/02/17 14:49	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7440-36-0	
Arsenic	**3.1**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7440-38-2	
Barium	**176**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:29	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/01/17 17:45	05/05/17 19:29	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7440-48-4	
Lead	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7439-92-1	
Molybdenum	**7.6**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7439-98-7	
Selenium	**13.0**	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/01/17 17:45	05/05/17 19:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	04/27/17 14:30	04/28/17 13:18	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**563**	mg/L	5.0	1		04/26/17 12:17		
9040 pH	Analytical Method: EPA 9040							
pH	**6.9**	Std. Units	0.10	1		04/27/17 08:56		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**53.9**	mg/L	5.0	5		04/27/17 19:14	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	1		04/27/17 18:45	16984-48-8	
Sulfate	**76.1**	mg/L	5.0	5		04/27/17 19:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60242807

QC Batch: 474524 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

METHOD BLANK: 1943391 Matrix: Water
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	04/28/17 12:29	

LABORATORY CONTROL SAMPLE: 1943392

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1943393 1943394

Parameter	Units	60242633001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.1	5.1	101	103	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60242807

QC Batch: 474966 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

METHOD BLANK: 1945291 Matrix: Water
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	05/02/17 14:20	
Calcium	mg/L	ND	0.10	05/02/17 14:20	
Lithium	ug/L	ND	10.0	05/02/17 14:20	

LABORATORY CONTROL SAMPLE: 1945292

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1020	102	80-120	
Calcium	mg/L	10	10.8	108	80-120	
Lithium	ug/L	1000	969	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1945293 1945294

Parameter	Units	60242807001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	144	1000	1000	1160	1150	102	101	75-125	1	20	
Calcium	mg/L	106	10	10	117	114	111	84	75-125	2	20	
Lithium	ug/L	30.6	1000	1000	1060	1060	103	103	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60242807

QC Batch: 474967 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

METHOD BLANK: 1945295 Matrix: Water
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	05/05/17 18:29	
Arsenic	ug/L	ND	1.0	05/05/17 18:29	
Barium	ug/L	ND	1.0	05/05/17 18:29	
Beryllium	ug/L	ND	0.50	05/05/17 18:29	
Cadmium	ug/L	ND	0.50	05/05/17 18:29	
Chromium	ug/L	ND	1.0	05/05/17 18:29	
Cobalt	ug/L	ND	1.0	05/05/17 18:29	
Lead	ug/L	ND	1.0	05/05/17 18:29	
Molybdenum	ug/L	ND	1.0	05/05/17 18:29	
Selenium	ug/L	ND	1.0	05/05/17 18:29	
Thallium	ug/L	ND	1.0	05/05/17 18:29	

LABORATORY CONTROL SAMPLE: 1945296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.5	99	80-120	
Arsenic	ug/L	40	39.0	97	80-120	
Barium	ug/L	40	39.1	98	80-120	
Beryllium	ug/L	40	40.1	100	80-120	
Cadmium	ug/L	40	39.1	98	80-120	
Chromium	ug/L	40	40.9	102	80-120	
Cobalt	ug/L	40	39.8	99	80-120	
Lead	ug/L	40	39.4	99	80-120	
Molybdenum	ug/L	40	41.5	104	80-120	
Selenium	ug/L	40	38.3	96	80-120	
Thallium	ug/L	40	37.7	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1945297 1945298

Parameter	Units	60242807003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	40.2	40.4	100	100	75-125	0	20	
Arsenic	ug/L	3.1	40	40	42.1	43.0	98	100	75-125	2	20	
Barium	ug/L	163	40	40	205	207	107	110	75-125	1	20	
Beryllium	ug/L	ND	40	40	38.4	38.4	96	96	75-125	0	20	
Cadmium	ug/L	ND	40	40	38.2	39.0	95	97	75-125	2	20	
Chromium	ug/L	ND	40	40	40.1	41.1	99	102	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60242807

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1945297 1945298

Parameter	Units	60242807003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	38.6	38.9	96	97	75-125	1	20	
Lead	ug/L	ND	40	40	40.9	41.5	102	104	75-125	1	20	
Molybdenum	ug/L	11.1	40	40	54.5	54.8	108	109	75-125	1	20	
Selenium	ug/L	8.5	40	40	44.6	46.8	90	96	75-125	5	20	
Thallium	ug/L	ND	40	40	39.6	40.2	99	100	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60242807

QC Batch: 474288 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

METHOD BLANK: 1942527 Matrix: Water
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	04/26/17 12:13	

LABORATORY CONTROL SAMPLE: 1942528

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	964	96	80-120	

SAMPLE DUPLICATE: 1942529

Parameter	Units	60242807001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	465	463	0	10	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60242807

QC Batch: 474264 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

SAMPLE DUPLICATE: 1942399

Parameter	Units	60242501006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	5.3	5.9	10	10	H6

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60242807

QC Batch: 474409 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

METHOD BLANK: 1942841 Matrix: Water
Associated Lab Samples: 60242807001, 60242807002, 60242807003, 60242807004, 60242807005, 60242807006, 60242807007, 60242807008, 60242807009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/27/17 07:44	
Fluoride	mg/L	ND	0.20	04/27/17 07:44	
Sulfate	mg/L	ND	1.0	04/27/17 07:44	

LABORATORY CONTROL SAMPLE: 1942842

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	80-120	
Fluoride	mg/L	2.5	2.5	98	80-120	
Sulfate	mg/L	5	4.9	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1942843 1942844

Parameter	Units	60242652006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	11.5	5	5	16.8	16.7	106	105	80-120	0	15	
Fluoride	mg/L	ND	2.5	2.5	2.7	2.7	104	104	80-120	0	15	
Sulfate	mg/L	214	125	125	338	337	100	98	80-120	1	15	

SAMPLE DUPLICATE: 1942845

Parameter	Units	60242807001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	12.1	12.1	0	15	
Fluoride	mg/L	1.4	1.5	1	15	
Sulfate	mg/L	52.5	52.0	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60242807

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60242807

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60242807001	**MW-1**	EPA 3010	474966	EPA 6010	475008
60242807002	**MW-2**	EPA 3010	474966	EPA 6010	475008
60242807003	**MW-3**	EPA 3010	474966	EPA 6010	475008
60242807004	**MW-4R**	EPA 3010	474966	EPA 6010	475008
60242807005	**MW-5**	EPA 3010	474966	EPA 6010	475008
60242807006	**MW-6**	EPA 3010	474966	EPA 6010	475008
60242807007	**MW-7**	EPA 3010	474966	EPA 6010	475008
60242807008	**MW-8**	EPA 3010	474966	EPA 6010	475008
60242807009	**DUPLICATE**	EPA 3010	474966	EPA 6010	475008
60242807001	**MW-1**	EPA 3010	474967	EPA 6020	475007
60242807002	**MW-2**	EPA 3010	474967	EPA 6020	475007
60242807003	**MW-3**	EPA 3010	474967	EPA 6020	475007
60242807004	**MW-4R**	EPA 3010	474967	EPA 6020	475007
60242807005	**MW-5**	EPA 3010	474967	EPA 6020	475007
60242807006	**MW-6**	EPA 3010	474967	EPA 6020	475007
60242807007	**MW-7**	EPA 3010	474967	EPA 6020	475007
60242807008	**MW-8**	EPA 3010	474967	EPA 6020	475007
60242807009	**DUPLICATE**	EPA 3010	474967	EPA 6020	475007
60242807001	**MW-1**	EPA 7470	474524	EPA 7470	474554
60242807002	**MW-2**	EPA 7470	474524	EPA 7470	474554
60242807003	**MW-3**	EPA 7470	474524	EPA 7470	474554
60242807004	**MW-4R**	EPA 7470	474524	EPA 7470	474554
60242807005	**MW-5**	EPA 7470	474524	EPA 7470	474554
60242807006	**MW-6**	EPA 7470	474524	EPA 7470	474554
60242807007	**MW-7**	EPA 7470	474524	EPA 7470	474554
60242807008	**MW-8**	EPA 7470	474524	EPA 7470	474554
60242807009	**DUPLICATE**	EPA 7470	474524	EPA 7470	474554
60242807001	**MW-1**	SM 2540C	474288		
60242807002	**MW-2**	SM 2540C	474288		
60242807003	**MW-3**	SM 2540C	474288		
60242807004	**MW-4R**	SM 2540C	474288		
60242807005	**MW-5**	SM 2540C	474288		
60242807006	**MW-6**	SM 2540C	474288		
60242807007	**MW-7**	SM 2540C	474288		
60242807008	**MW-8**	SM 2540C	474288		
60242807009	**DUPLICATE**	SM 2540C	474288		
60242807001	**MW-1**	EPA 9040	474264		
60242807002	**MW-2**	EPA 9040	474264		
60242807003	**MW-3**	EPA 9040	474264		
60242807004	**MW-4R**	EPA 9040	474264		
60242807005	**MW-5**	EPA 9040	474264		
60242807006	**MW-6**	EPA 9040	474264		
60242807007	**MW-7**	EPA 9040	474264		
60242807008	**MW-8**	EPA 9040	474264		
60242807009	**DUPLICATE**	EPA 9040	474264		
60242807001	**MW-1**	EPA 9056	474409		

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60242807

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60242807002	**MW-2**	EPA 9056	474409		
60242807003	**MW-3**	EPA 9056	474409		
60242807004	**MW-4R**	EPA 9056	474409		
60242807005	**MW-5**	EPA 9056	474409		
60242807006	**MW-6**	EPA 9056	474409		
60242807007	**MW-7**	EPA 9056	474409		
60242807008	**MW-8**	EPA 9056	474409		
60242807009	**DUPLICATE**	EPA 9056	474409		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60242807

60242807

Client Name: SCS Eng

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☐ No ☐

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

Thermometer Used: CF +1.5 T-266 / CF +0.2 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.1 **Corr. Factor** CF +1.5 CF +0.2 **Corrected** 2-6

Temperature should be above freezing to 6°C pw 4/26/17

Date and initials of person examining contents: pw 4/26/17

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 4-26-17

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Korey Brunken	Attention:	Korey Brunken
Address:	14755 Grover Street	Copy To:		Company Name:	SCS Engineers
	Omaha NE 68144			Address:	
Email To:	kbrunken@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	30857 (JR)
Phone:	402-884-6202 Fax:	Project Name:	FDU	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:	Standard	Project Number:	27216302	Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Requested Analysis Filtered (Y/N)

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH *	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60247807
1	MW-1	WT	G	xxx	xxx	4.24.17	11:54		2	1		1						N	X	X	X	X	X	X		IBP2U IBP2N 20 001
2	MW-2	WT	G			4.24.17	12:44		2	1		1						N	X	X	X	X	X	X		002
3	MW-3	WT	G			4.24.17	09:52		2	1		1						N	X	X	X	X	X	X		003
4	MW-4R	WT	G			4.24.17	09:00		2	1		1						N	X	X	X	X	X	X		004
5	MW-5	WT	G			4.24.17	10:51		2	1		1						N	X	X	X	X	X	X		005
6	MW-6	WT	G			4.24.17	14:58		2	1		1						N	X	X	X	X	X	X		006
7	MW-7	WT	G			4.24.17	14:14		2	1		1						N	X	X	X	X	X	X		007
8	MW-8	WT	G			4.24.17	13:34		2	1		1						N	X	X	X	X	X	X		008
9	Duplicate	WT	G			4.24.17	23:59		2	1		1						N	X	X	X	X	X	X		009
10																										
11																										
12																										

262

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	4.25.17	08:00		4/26/17	0709	2.6	Y	Y	Y
* Sb-As-Ba-Be-Cd-Co-Cr-Pb-Mo-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: Bret Stephens

DATE Signed (MM/DD/YY): 4.25.17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

May 18, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60242819

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on April 26, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60242819

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60242819

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60242819001	**MW-1**	Water	04/24/17 11:54	04/26/17 07:09
60242819002	**MW-2**	Water	04/24/17 12:44	04/26/17 07:09
60242819003	**MW-3**	Water	04/24/17 09:52	04/26/17 07:09
60242819004	**MW-4R**	Water	04/24/17 09:00	04/26/17 07:09
60242819005	**MW-5**	Water	04/24/17 10:51	04/26/17 07:09
60242819006	**MW-6**	Water	04/24/17 14:58	04/26/17 07:09
60242819007	**MW-7**	Water	04/24/17 14:14	04/26/17 07:09
60242819008	**MW-8**	Water	04/24/17 13:34	04/26/17 07:09
60242819009	**DUPLICATE**	Water	04/24/17 23:59	04/26/17 07:09

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60242819

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60242819001	**MW-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242819002	**MW-2**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242819003	**MW-3**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242819004	**MW-4R**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242819005	**MW-5**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242819006	**MW-6**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242819007	**MW-7**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242819008	**MW-8**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242819009	**DUPLICATE**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: MW-1 **Lab ID: 60242819001** Collected: 04/24/17 11:54 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.124 ± 0.420 (0.811) C:NA T:91%**	pCi/L	05/09/17 21:31	13982-63-3	
Radium-228	EPA 904.0	**1.66 ± 0.537 (0.713) C:76% T:85%**	pCi/L	05/09/17 11:14	15262-20-1	
Total Radium	Total Radium Calculation	**1.78 ± 0.957 (1.52)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: MW-2 **Lab ID: 60242819002** Collected: 04/24/17 12:44 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.465 ± 0.540 (0.871) C:NA T:83%**	pCi/L	05/09/17 21:31	13982-63-3	
Radium-228	EPA 904.0	**1.56 ± 0.491 (0.621) C:77% T:92%**	pCi/L	05/09/17 11:14	15262-20-1	
Total Radium	Total Radium Calculation	**2.03 ± 1.03 (1.49)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: MW-3 **Lab ID: 60242819003** Collected: 04/24/17 09:52 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.12 ± 0.658 (0.816) C:NA T:89%**	pCi/L	05/09/17 21:31	13982-63-3	
Radium-228	EPA 904.0	**1.73 ± 0.531 (0.652) C:79% T:83%**	pCi/L	05/09/17 11:14	15262-20-1	
Total Radium	Total Radium Calculation	**2.85 ± 1.19 (1.47)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: MW-4R **Lab ID: 60242819004** Collected: 04/24/17 09:00 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.716 ± 0.502 (0.662) C:NA T:101%**	pCi/L	05/09/17 21:31	13982-63-3	
Radium-228	EPA 904.0	**1.07 ± 0.442 (0.680) C:79% T:76%**	pCi/L	05/09/17 14:55	15262-20-1	
Total Radium	Total Radium Calculation	**1.79 ± 0.944 (1.34)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: MW-5 **Lab ID: 60242819005** Collected: 04/24/17 10:51 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.773 ± 0.541 (0.714) C:NA T:92%**	pCi/L	05/09/17 21:51	13982-63-3	
Radium-228	EPA 904.0	**1.67 ± 0.522 (0.642) C:79% T:80%**	pCi/L	05/09/17 14:55	15262-20-1	
Total Radium	Total Radium Calculation	**2.44 ± 1.06 (1.36)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: MW-6 **Lab ID: 60242819006** Collected: 04/24/17 14:58 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.312 ± 0.443 (0.750) C:NA T:87%**	pCi/L	05/09/17 21:51	13982-63-3	
Radium-228	EPA 904.0	**0.477 ± 0.369 (0.729) C:70% T:89%**	pCi/L	05/09/17 14:55	15262-20-1	
Total Radium	Total Radium Calculation	**0.789 ± 0.812 (1.48)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: MW-7 **Lab ID: 60242819007** Collected: 04/24/17 14:14 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.529 ± 0.522 (0.795) C:NA T:90%**	pCi/L	05/09/17 21:51	13982-63-3	
Radium-228	EPA 904.0	**1.53 ± 0.551 (0.803) C:78% T:73%**	pCi/L	05/09/17 14:55	15262-20-1	
Total Radium	Total Radium Calculation	**2.06 ± 1.07 (1.60)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: MW-8 **Lab ID: 60242819008** Collected: 04/24/17 13:34 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.361 ± 0.473 (0.788) C:NA T:99%**	pCi/L	05/09/17 21:51	13982-63-3	
Radium-228	EPA 904.0	**0.940 ± 0.420 (0.687) C:78% T:81%**	pCi/L	05/09/17 14:55	15262-20-1	
Total Radium	Total Radium Calculation	**1.30 ± 0.893 (1.48)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

Sample: DUPLICATE **Lab ID: 60242819009** Collected: 04/24/17 23:59 Received: 04/26/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.683 ± 0.604 (0.895) C:NA T:88%**	pCi/L	05/09/17 21:51	13982-63-3	
Radium-228	EPA 904.0	**1.33 ± 0.480 (0.689) C:76% T:82%**	pCi/L	05/09/17 14:55	15262-20-1	
Total Radium	Total Radium Calculation	**2.01 ± 1.08 (1.58)**	pCi/L	05/18/17 15:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

QC Batch: 257059 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60242819001, 60242819002, 60242819003, 60242819004, 60242819005, 60242819006, 60242819007, 60242819008, 60242819009

METHOD BLANK: 1266315 Matrix: Water
Associated Lab Samples: 60242819001, 60242819002, 60242819003, 60242819004, 60242819005, 60242819006, 60242819007, 60242819008, 60242819009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0727 ± 0.307 (0.742) C:74% T:74%	pCi/L	05/09/17 11:14	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60242819

QC Batch: 257058 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60242819001, 60242819002, 60242819003, 60242819004, 60242819005, 60242819006, 60242819007, 60242819008, 60242819009

METHOD BLANK: 1266314 Matrix: Water
Associated Lab Samples: 60242819001, 60242819002, 60242819003, 60242819004, 60242819005, 60242819006, 60242819007, 60242819008, 60242819009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.182 ± 0.277 (0.728) C:NA T:95%	pCi/L	05/09/17 21:31	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60242819

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60242819

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60242819001	**MW-1**	EPA 903.1	257058		
60242819002	**MW-2**	EPA 903.1	257058		
60242819003	**MW-3**	EPA 903.1	257058		
60242819004	**MW-4R**	EPA 903.1	257058		
60242819005	**MW-5**	EPA 903.1	257058		
60242819006	**MW-6**	EPA 903.1	257058		
60242819007	**MW-7**	EPA 903.1	257058		
60242819008	**MW-8**	EPA 903.1	257058		
60242819009	**DUPLICATE**	EPA 903.1	257058		
60242819001	**MW-1**	EPA 904.0	257059		
60242819002	**MW-2**	EPA 904.0	257059		
60242819003	**MW-3**	EPA 904.0	257059		
60242819004	**MW-4R**	EPA 904.0	257059		
60242819005	**MW-5**	EPA 904.0	257059		
60242819006	**MW-6**	EPA 904.0	257059		
60242819007	**MW-7**	EPA 904.0	257059		
60242819008	**MW-8**	EPA 904.0	257059		
60242819009	**DUPLICATE**	EPA 904.0	257059		
60242819001	**MW-1**	Total Radium Calculation	258987		
60242819002	**MW-2**	Total Radium Calculation	258987		
60242819003	**MW-3**	Total Radium Calculation	258987		
60242819004	**MW-4R**	Total Radium Calculation	258987		
60242819005	**MW-5**	Total Radium Calculation	258987		
60242819006	**MW-6**	Total Radium Calculation	258987		
60242819007	**MW-7**	Total Radium Calculation	258987		
60242819008	**MW-8**	Total Radium Calculation	258987		
60242819009	**DUPLICATE**	Total Radium Calculation	258987		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60242819

60242819

Client Name: SCS Eng

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☑ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: CF +1.5 T-266 CF +0.2 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.1 **Corr. Factor** CF +1.5 CF +0.2 **Corrected** 2.6

Date and initials of person examining contents: 4.5 JE 4/26/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: water	☐Yes ☐No ☑N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JDS Date: 4-26-17

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	kbrunken@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Korey Brunken
Copy To:	
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G	xxx	xxx	4.24.17	11:54		2			2						X	X	X		60242819 2(BP1N) a1
2	MW-2	WT	G			4.24.17	12:44		2			2						X	X	X		a2
3	MW-3	WT	G			4.24.17	09:52		2			2						X	X	X		a3
4	MW-4R	WT	G			4.24.17	09:00		2			2						X	X	X		a4
5	MW-5	WT	G			4.24.17	10:51		2			2						X	X	X		a5
6	MW-6	WT	G			4.24.17	14:58		2			2						X	X	X		a6
7	MW-7	WT	G			4.24.17	14:14		2			2						X	X	X		a7
8	MW-8	WT	G			4.24.17	13:34		2			2						X	X	X		a8
9	Duplicate	WT	G			4.24.17	23:59		2			2						X	X	X		a9
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	4.25.17	08:00		4/26/17	709	2.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: Bret Stephens DATE Signed (MM/DD/YY): 4.25.17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
2.6	Y	Y	Y

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60242819 **Workorder Name:** FDU/27216302 **Owner Received Date:** 4/26/2017 **Results Requested By:** 5/19/2017

Report To	Subcontract To
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1405	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#:30217251

30217251

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: 903.1 Radium-226	904.0 Radium-228	Total Radium									LAB USE ONLY
1	MW-1	PS	4/24/2017 11:54	60242819001	Water	2						X	X	X									001
2	MW-2	PS	4/24/2017 12:44	60242819002	Water	2						X	X	X									002
3	MW-3	PS	4/24/2017 09:52	60242819003	Water	2						X	X	X									003
4	MW-4R	PS	4/24/2017 09:00	60242819004	Water	2						X	X	X									004
5	MW-5	PS	4/24/2017 10:51	60242819005	Water	2						X	X	X									005
6	MW-6	PS	4/24/2017 14:58	60242819006	Water	2						X	X	X									006
7	MW-7	PS	4/24/2017 14:14	60242819007	Water	2						X	X	X									007
8	MW-8	PS	4/24/2017 13:34	60242819008	Water	2						X	X	X									008
9	DUPLICATE	PS	4/24/2017 23:59	60242819009	Water	2						X	X	X									009

282

Comments

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature] 4/26/17	1700	Karen Hess	4/27/17 1030
2				
3				

Cooler Temperature on Receipt NA °C Custody Seal (Y) or N Received on Ice Y or (N) Samples Intact (Y) or N

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

Sample Condition Upon Receipt Pittsburgh 30217251

Pace Analytical

Client Name: Pace Kansas Project #

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

Tracking #: 7285 6592 3097

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Thermometer Used NA Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp NA °C Correction Factor: NA °C Final Temp: NA °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KH 4/27/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation.	✓			15. pH <2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed KH / Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:		✓		17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: KH / Date: 4/27/17

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

July 7, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #6 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the June 12, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

June 26, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60246392

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on June 14, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60246392

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60246392

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60246392001	**MW-1**	Water	06/12/17 11:46	06/14/17 08:00
60246392002	**MW-2**	Water	06/12/17 12:25	06/14/17 08:00
60246392003	**MW-3**	Water	06/12/17 10:21	06/14/17 08:00
60246392004	**MW-4R**	Water	06/12/17 09:21	06/14/17 08:00
60246392005	**MW-5**	Water	06/12/17 11:00	06/14/17 08:00
60246392006	**MW-6**	Water	06/12/17 14:05	06/14/17 08:00
60246392007	**MW-7**	Water	06/12/17 13:33	06/14/17 08:00
60246392008	**MW-8**	Water	06/12/17 13:00	06/14/17 08:00
60246392009	**DUPLICATE**	Water	06/12/17 23:59	06/14/17 08:00

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60246392

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60246392001	**MW-1**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60246392002	**MW-2**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60246392003	**MW-3**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60246392004	**MW-4R**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60246392005	**MW-5**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60246392006	**MW-6**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60246392007	**MW-7**	EPA 6010	TDS	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60246392

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60246392008	**MW-8**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60246392009	**DUPLICATE**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: MW-1 **Lab ID: 60246392001** Collected: 06/12/17 11:46 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**138**	ug/L	100	1	06/20/17 11:00	06/21/17 17:19	7440-42-8	
Calcium	**107**	mg/L	0.10	1	06/20/17 11:00	06/21/17 17:19	7440-70-2	
Lithium	**38.5**	ug/L	10.0	1	06/20/17 11:00	06/21/17 17:19	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7440-38-2	
Barium	**139**	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 19:56	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 19:56	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7439-92-1	
Molybdenum	**8.3**	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7439-98-7	
Selenium	**12.6**	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 19:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:28	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**469**	mg/L	5.0	1		06/15/17 08:20		
9040 pH	Analytical Method: EPA 9040							
pH	**6.8**	Std. Units	0.10	1		06/14/17 13:37		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**13.4**	mg/L	1.0	1		06/19/17 10:50	16887-00-6	
Fluoride	**1.5**	mg/L	0.20	1		06/19/17 10:50	16984-48-8	
Sulfate	**53.5**	mg/L	5.0	5		06/19/17 11:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: MW-2 **Lab ID: 60246392002** Collected: 06/12/17 12:25 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**153**	ug/L	100	1	06/20/17 11:00	06/21/17 17:30	7440-42-8	
Calcium	**115**	mg/L	0.10	1	06/20/17 11:00	06/21/17 17:30	7440-70-2	
Lithium	**43.7**	ug/L	10.0	1	06/20/17 11:00	06/21/17 17:30	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7440-36-0	
Arsenic	**3.9**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7440-38-2	
Barium	**106**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:00	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:00	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7439-92-1	
Molybdenum	**8.9**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7439-98-7	
Selenium	**18.0**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:35	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**470**	mg/L	5.0	1		06/15/17 08:21		
9040 pH	Analytical Method: EPA 9040							
pH	**6.7**	Std. Units	0.10	1		06/14/17 13:39		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**14.3**	mg/L	1.0	1		06/19/17 12:59	16887-00-6	
Fluoride	**1.0**	mg/L	0.20	1		06/19/17 12:59	16984-48-8	
Sulfate	**75.7**	mg/L	5.0	5		06/19/17 13:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: MW-3 **Lab ID: 60246392003** Collected: 06/12/17 10:21 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**115**	ug/L	100	1	06/20/17 11:00	06/21/17 17:33	7440-42-8	
Calcium	**102**	mg/L	0.10	1	06/20/17 11:00	06/21/17 17:33	7440-70-2	
Lithium	**33.2**	ug/L	10.0	1	06/20/17 11:00	06/21/17 17:33	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7440-36-0	
Arsenic	**2.8**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7440-38-2	
Barium	**176**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:13	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:13	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7439-92-1	
Molybdenum	**12.5**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7439-98-7	
Selenium	**8.7**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:13	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:37	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**451**	mg/L	5.0	1		06/15/17 08:22		
9040 pH	Analytical Method: EPA 9040							
pH	**6.9**	Std. Units	0.10	1		06/14/17 13:35		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**33.0**	mg/L	2.0	2		06/19/17 13:48	16887-00-6	
Fluoride	**0.94**	mg/L	0.20	1		06/19/17 13:32	16984-48-8	
Sulfate	**69.7**	mg/L	5.0	5		06/19/17 14:04	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: MW-4R **Lab ID: 60246392004** Collected: 06/12/17 09:21 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**292**	ug/L	100	1	06/20/17 11:00	06/21/17 17:37	7440-42-8	
Calcium	**80.6**	mg/L	0.10	1	06/20/17 11:00	06/21/17 17:37	7440-70-2	
Lithium	**30.4**	ug/L	10.0	1	06/20/17 11:00	06/21/17 17:37	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7440-38-2	
Barium	**129**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:17	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:17	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7439-92-1	
Molybdenum	**8.5**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7439-98-7	
Selenium	**6.4**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:39	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**389**	mg/L	5.0	1		06/15/17 08:22		
9040 pH	Analytical Method: EPA 9040							
pH	**6.8**	Std. Units	0.10	1		06/14/17 13:32		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**13.7**	mg/L	1.0	1		06/19/17 14:20	16887-00-6	
Fluoride	**1.0**	mg/L	0.20	1		06/19/17 14:20	16984-48-8	
Sulfate	**41.7**	mg/L	5.0	5		06/19/17 14:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: MW-5 **Lab ID: 60246392005** Collected: 06/12/17 11:00 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**137**	ug/L	100	1	06/20/17 11:00	06/21/17 17:41	7440-42-8	
Calcium	**120**	mg/L	0.10	1	06/20/17 11:00	06/21/17 17:41	7440-70-2	
Lithium	**41.9**	ug/L	10.0	1	06/20/17 11:00	06/21/17 17:41	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7440-36-0	
Arsenic	**4.1**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7440-38-2	
Barium	**150**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:21	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:21	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7439-92-1	
Molybdenum	**7.3**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7439-98-7	
Selenium	**8.5**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:21	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**499**	mg/L	5.0	1		06/15/17 08:22		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		06/14/17 13:36		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**11.7**	mg/L	1.0	1		06/19/17 14:53	16887-00-6	
Fluoride	**1.3**	mg/L	0.20	1		06/19/17 14:53	16984-48-8	
Sulfate	**44.7**	mg/L	5.0	5		06/20/17 16:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: MW-6 **Lab ID: 60246392006** Collected: 06/12/17 14:05 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**127**	ug/L	100	1	06/20/17 11:00	06/21/17 17:44	7440-42-8	
Calcium	**104**	mg/L	0.10	1	06/20/17 11:00	06/21/17 17:44	7440-70-2	
Lithium	**33.8**	ug/L	10.0	1	06/20/17 11:00	06/21/17 17:44	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7440-36-0	
Arsenic	**2.4**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7440-38-2	
Barium	**174**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:25	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:25	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7439-92-1	
Molybdenum	**8.0**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7439-98-7	
Selenium	**12.4**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**544**	mg/L	5.0	1		06/15/17 08:23		
9040 pH	Analytical Method: EPA 9040							
pH	**6.8**	Std. Units	0.10	1		06/14/17 13:43		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**57.4**	mg/L	5.0	5		06/19/17 16:14	16887-00-6	
Fluoride	**0.61**	mg/L	0.20	1		06/19/17 15:58	16984-48-8	
Sulfate	**76.6**	mg/L	5.0	5		06/19/17 16:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: MW-7 **Lab ID: 60246392007** Collected: 06/12/17 13:33 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**191**	ug/L	100	1	06/20/17 11:00	06/21/17 17:55	7440-42-8	
Calcium	**105**	mg/L	0.10	1	06/20/17 11:00	06/21/17 17:55	7440-70-2	
Lithium	**36.2**	ug/L	10.0	1	06/20/17 11:00	06/21/17 17:55	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7440-38-2	
Barium	**116**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:37	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:37	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7439-92-1	
Molybdenum	**7.9**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7439-98-7	
Selenium	**12.4**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:50	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**434**	mg/L	5.0	1		06/15/17 08:23		
9040 pH	Analytical Method: EPA 9040							
pH	**6.8**	Std. Units	0.10	1		06/14/17 13:41		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.1**	mg/L	1.0	1		06/19/17 16:30	16887-00-6	
Fluoride	**0.99**	mg/L	0.20	1		06/19/17 16:30	16984-48-8	
Sulfate	**58.0**	mg/L	5.0	5		06/19/17 16:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: MW-8 **Lab ID: 60246392008** Collected: 06/12/17 13:00 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**552**	ug/L	100	1	06/20/17 11:00	06/21/17 17:59	7440-42-8	
Calcium	**88.9**	mg/L	0.10	1	06/20/17 11:00	06/21/17 17:59	7440-70-2	
Lithium	**38.8**	ug/L	10.0	1	06/20/17 11:00	06/21/17 17:59	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7440-36-0	
Arsenic	**2.5**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7440-38-2	
Barium	**134**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:41	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:41	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7439-92-1	
Molybdenum	**14.6**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7439-98-7	
Selenium	**9.8**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:41	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**402**	mg/L	5.0	1		06/15/17 08:24		
9040 pH	Analytical Method: EPA 9040							
pH	**6.8**	Std. Units	0.10	1		06/14/17 13:40		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**22.4**	mg/L	2.0	2		06/19/17 17:18	16887-00-6	
Fluoride	**0.96**	mg/L	0.20	1		06/19/17 17:02	16984-48-8	
Sulfate	**50.9**	mg/L	5.0	5		06/19/17 17:34	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60246392

Sample: DUPLICATE **Lab ID: 60246392009** Collected: 06/12/17 23:59 Received: 06/14/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**129**	ug/L	100	1	06/20/17 11:00	06/21/17 18:03	7440-42-8	
Calcium	**106**	mg/L	0.10	1	06/20/17 11:00	06/21/17 18:03	7440-70-2	
Lithium	**35.4**	ug/L	10.0	1	06/20/17 11:00	06/21/17 18:03	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7440-36-0	
Arsenic	**2.4**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7440-38-2	
Barium	**174**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7440-39-3	
Beryllium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:45	7440-41-7	
Cadmium	ND	ug/L	0.50	1	06/20/17 11:00	06/22/17 20:45	7440-43-9	
Chromium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7440-47-3	
Cobalt	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7440-48-4	
Lead	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7439-92-1	
Molybdenum	**8.1**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7439-98-7	
Selenium	**12.5**	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7782-49-2	
Thallium	ND	ug/L	1.0	1	06/20/17 11:00	06/22/17 20:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	06/21/17 16:42	06/22/17 11:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**565**	mg/L	5.0	1		06/15/17 08:24		
9040 pH	Analytical Method: EPA 9040							
pH	**6.8**	Std. Units	0.10	1		06/14/17 13:53		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**58.6**	mg/L	5.0	5		06/19/17 18:23	16887-00-6	
Fluoride	**0.64**	mg/L	0.20	1		06/19/17 17:50	16984-48-8	
Sulfate	**78.1**	mg/L	5.0	5		06/19/17 18:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60246392

QC Batch: 481961 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

METHOD BLANK: 1974124 Matrix: Water
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	06/22/17 11:24	

LABORATORY CONTROL SAMPLE: 1974125

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1974126 1974127

Parameter	Units	60246392001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.1	5.0	102	99	75-125	3	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60246392

QC Batch: 481709 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

METHOD BLANK: 1973372 Matrix: Water
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	06/21/17 17:15	
Calcium	mg/L	ND	0.10	06/21/17 17:15	
Lithium	ug/L	ND	10.0	06/21/17 17:15	

LABORATORY CONTROL SAMPLE: 1973373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1010	101	80-120	
Calcium	mg/L	10	10.1	101	80-120	
Lithium	ug/L	1000	1060	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1973374 1973375

Parameter	Units	60246392001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	138	1000	1000	1170	1180	103	104	75-125	1	20	
Calcium	mg/L	107	10	10	116	117	91	102	75-125	1	20	
Lithium	ug/L	38.5	1000	1000	1110	1120	107	108	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60246392

QC Batch: 481711 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

METHOD BLANK: 1973378 Matrix: Water
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	06/22/17 19:48	
Arsenic	ug/L	ND	1.0	06/22/17 19:48	
Barium	ug/L	ND	1.0	06/22/17 19:48	
Beryllium	ug/L	ND	0.50	06/22/17 19:48	
Cadmium	ug/L	ND	0.50	06/22/17 19:48	
Chromium	ug/L	ND	1.0	06/22/17 19:48	
Cobalt	ug/L	ND	1.0	06/22/17 19:48	
Lead	ug/L	ND	1.0	06/22/17 19:48	
Molybdenum	ug/L	ND	1.0	06/22/17 19:48	
Selenium	ug/L	ND	1.0	06/22/17 19:48	
Thallium	ug/L	ND	1.0	06/22/17 19:48	

LABORATORY CONTROL SAMPLE: 1973379

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.5	99	80-120	
Arsenic	ug/L	40	39.4	98	80-120	
Barium	ug/L	40	39.8	100	80-120	
Beryllium	ug/L	40	39.5	99	80-120	
Cadmium	ug/L	40	38.7	97	80-120	
Chromium	ug/L	40	39.6	99	80-120	
Cobalt	ug/L	40	39.5	99	80-120	
Lead	ug/L	40	39.6	99	80-120	
Molybdenum	ug/L	40	40.8	102	80-120	
Selenium	ug/L	40	37.2	93	80-120	
Thallium	ug/L	40	37.6	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1973380 1973381

Parameter	Units	60246392002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	39.4	39.4	97	97	75-125	0	20	
Arsenic	ug/L	3.9	40	40	43.1	43.3	98	99	75-125	1	20	
Barium	ug/L	106	40	40	144	143	94	92	75-125	1	20	
Beryllium	ug/L	ND	40	40	37.5	38.0	94	95	75-125	1	20	
Cadmium	ug/L	ND	40	40	36.5	36.4	91	91	75-125	0	20	
Chromium	ug/L	ND	40	40	38.9	38.8	97	97	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60246392

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1973380 1973381

Parameter	Units	60246392002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	37.7	37.7	94	94	75-125	0	20	
Lead	ug/L	ND	40	40	37.4	37.4	93	94	75-125	0	20	
Molybdenum	ug/L	8.9	40	40	51.3	50.9	106	105	75-125	1	20	
Selenium	ug/L	18.0	40	40	52.8	53.2	87	88	75-125	1	20	
Thallium	ug/L	ND	40	40	36.5	36.5	91	91	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60246392

QC Batch: 481025 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

METHOD BLANK: 1970344 Matrix: Water
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	06/15/17 08:19	

LABORATORY CONTROL SAMPLE: 1970345

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	952	95	80-120	

SAMPLE DUPLICATE: 1970346

Parameter	Units	60246392001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	469	465	1	10	

SAMPLE DUPLICATE: 1970347

Parameter	Units	60246398001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	960	955	1	10	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60246392

QC Batch: 481021 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

SAMPLE DUPLICATE: 1970343

Parameter	Units	60246392004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.8	6.9	1	10	H6

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60246392

QC Batch: 481553 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

METHOD BLANK: 1972950 Matrix: Water
Associated Lab Samples: 60246392001, 60246392002, 60246392003, 60246392004, 60246392005, 60246392006, 60246392007, 60246392008, 60246392009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	06/19/17 09:01	
Fluoride	mg/L	ND	0.20	06/19/17 09:01	
Sulfate	mg/L	ND	1.0	06/19/17 09:01	

LABORATORY CONTROL SAMPLE: 1972951

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	80-120	
Fluoride	mg/L	2.5	2.7	108	80-120	
Sulfate	mg/L	5	5.1	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1972952 1972953

Parameter	Units	60246392001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	13.4	5	5	19.1	19.2	113	114	80-120	0	15	
Fluoride	mg/L	1.5	2.5	2.5	4.3	4.3	111	113	80-120	1	15	
Sulfate	mg/L	53.5	25	25	80.1	80.0	106	106	80-120	0	15	

SAMPLE DUPLICATE: 1972954

Parameter	Units	60246398001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	21.5	21.2	1	15	
Fluoride	mg/L	0.23	0.21	12	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60246392

QC Batch: 481713 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60246392005

METHOD BLANK: 1973386 Matrix: Water
Associated Lab Samples: 60246392005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	06/20/17 08:41	

LABORATORY CONTROL SAMPLE: 1973387

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1973388 1973389

Parameter	Units	2056122002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	361	125	125	497	496	109	108	80-120	0	15	

SAMPLE DUPLICATE: 1973390

Parameter	Units	60246747002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	529	531	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60246392

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60246392

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60246392001	**MW-1**	EPA 3010	481709	EPA 6010	481885
60246392002	**MW-2**	EPA 3010	481709	EPA 6010	481885
60246392003	**MW-3**	EPA 3010	481709	EPA 6010	481885
60246392004	**MW-4R**	EPA 3010	481709	EPA 6010	481885
60246392005	**MW-5**	EPA 3010	481709	EPA 6010	481885
60246392006	**MW-6**	EPA 3010	481709	EPA 6010	481885
60246392007	**MW-7**	EPA 3010	481709	EPA 6010	481885
60246392008	**MW-8**	EPA 3010	481709	EPA 6010	481885
60246392009	**DUPLICATE**	EPA 3010	481709	EPA 6010	481885
60246392001	**MW-1**	EPA 3010	481711	EPA 6020	481881
60246392002	**MW-2**	EPA 3010	481711	EPA 6020	481881
60246392003	**MW-3**	EPA 3010	481711	EPA 6020	481881
60246392004	**MW-4R**	EPA 3010	481711	EPA 6020	481881
60246392005	**MW-5**	EPA 3010	481711	EPA 6020	481881
60246392006	**MW-6**	EPA 3010	481711	EPA 6020	481881
60246392007	**MW-7**	EPA 3010	481711	EPA 6020	481881
60246392008	**MW-8**	EPA 3010	481711	EPA 6020	481881
60246392009	**DUPLICATE**	EPA 3010	481711	EPA 6020	481881
60246392001	**MW-1**	EPA 7470	481961	EPA 7470	482096
60246392002	**MW-2**	EPA 7470	481961	EPA 7470	482096
60246392003	**MW-3**	EPA 7470	481961	EPA 7470	482096
60246392004	**MW-4R**	EPA 7470	481961	EPA 7470	482096
60246392005	**MW-5**	EPA 7470	481961	EPA 7470	482096
60246392006	**MW-6**	EPA 7470	481961	EPA 7470	482096
60246392007	**MW-7**	EPA 7470	481961	EPA 7470	482096
60246392008	**MW-8**	EPA 7470	481961	EPA 7470	482096
60246392009	**DUPLICATE**	EPA 7470	481961	EPA 7470	482096
60246392001	**MW-1**	SM 2540C	481025		
60246392002	**MW-2**	SM 2540C	481025		
60246392003	**MW-3**	SM 2540C	481025		
60246392004	**MW-4R**	SM 2540C	481025		
60246392005	**MW-5**	SM 2540C	481025		
60246392006	**MW-6**	SM 2540C	481025		
60246392007	**MW-7**	SM 2540C	481025		
60246392008	**MW-8**	SM 2540C	481025		
60246392009	**DUPLICATE**	SM 2540C	481025		
60246392001	**MW-1**	EPA 9040	481021		
60246392002	**MW-2**	EPA 9040	481021		
60246392003	**MW-3**	EPA 9040	481021		
60246392004	**MW-4R**	EPA 9040	481021		
60246392005	**MW-5**	EPA 9040	481021		
60246392006	**MW-6**	EPA 9040	481021		
60246392007	**MW-7**	EPA 9040	481021		
60246392008	**MW-8**	EPA 9040	481021		
60246392009	**DUPLICATE**	EPA 9040	481021		
60246392001	**MW-1**	EPA 9056	481553		

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60246392

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60246392002	**MW-2**	EPA 9056	481553		
60246392003	**MW-3**	EPA 9056	481553		
60246392004	**MW-4R**	EPA 9056	481553		
60246392005	**MW-5**	EPA 9056	481553		
60246392005	**MW-5**	EPA 9056	481713		
60246392006	**MW-6**	EPA 9056	481553		
60246392007	**MW-7**	EPA 9056	481553		
60246392008	**MW-8**	EPA 9056	481553		
60246392009	**DUPLICATE**	EPA 9056	481553		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60246392

60246392

Client Name: SCS ENG

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: CF +2.9 T-266 / CF +0.2 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.2 **Corr. Factor** CF +2.9 CF +0.2 **Corrected** 1.4

Date and initials of person examining contents: PM 6/14/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr): PM 6/14/17	☑Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 6-14-17

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical™ www.pacelabs.com

Page: | of |

Section A Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	kbrunken@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Korey Brunken
Copy To:	
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60246392
1	MW-1	WT	G	xxx	xxx	6.12.17	11:46		2	1		1							X	X	X	X	X	X		1BBN20 1BPH1 01
2	MW-2	WT	G			6.12.17	12:25		2	1		1							X	X	X	X	X	X		02
3	MW-3	WT	G			6.12.17	10:21		2	1		1							X	X	X	X	X	X		03
4	MW-4R	WT	G			6.12.17	09:21		2	1		1							X	X	X	X	X	X		04
5	MW-5	WT	G			6.12.17	11:00		2	1		1							X	X	X	X	X	X		05
6	MW-6	WT	G			6.12.17	14:05		2	1		1							X	X	X	X	X	X		06
7	MW-7	WT	G			6.12.17	13:33		2	1		1							X	X	X	X	X	X		07
8	MW-8	WT	G			6.12.17	13:00		2	1		1							X	X	X	X	X	X		08
9	Duplicate	WT	G			6.12.17	23:59		2	1		1							X	X	X	X	X	X		09
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	6.13.17	08:00		6/14/17	0800	1.4	Y	Y	Y
* Sb-As-Ba-Be-Cd-Co-Cr-Pb-Mo-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: Bret Stephens

DATE Signed (MM/DD/YY): 6.13.17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

July 03, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60246410

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on June 14, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60246410

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60246410

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60246410001	**MW-1**	Water	06/12/17 11:46	06/14/17 08:00
60246410002	**MW-2**	Water	06/12/17 12:25	06/14/17 08:00
60246410003	**MW-3**	Water	06/12/17 10:21	06/14/17 08:00
60246410004	**MW-4R**	Water	06/12/17 09:21	06/14/17 08:00
60246410005	**MW-5**	Water	06/12/17 11:00	06/14/17 08:00
60246410006	**MW-6**	Water	06/12/17 14:05	06/14/17 08:00
60246410007	**MW-7**	Water	06/12/17 13:33	06/14/17 08:00
60246410008	**MW-8**	Water	06/12/17 13:00	06/14/17 08:00
60246410009	**DUPLICATE**	Water	06/12/17 23:59	06/14/17 08:00

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60246410

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60246410001	**MW-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60246410002	**MW-2**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60246410003	**MW-3**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60246410004	**MW-4R**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60246410005	**MW-5**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60246410006	**MW-6**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60246410007	**MW-7**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60246410008	**MW-8**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60246410009	**DUPLICATE**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: MW-1 **Lab ID: 60246410001** Collected: 06/12/17 11:46 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.589 ± 0.412 (0.497) C:NA T:99%**	pCi/L	06/27/17 11:35	13982-63-3	
Radium-228	EPA 904.0	**1.76 ± 0.539 (0.658) C:76% T:81%**	pCi/L	06/28/17 15:40	15262-20-1	
Total Radium	Total Radium Calculation	**2.35 ± 0.951 (1.16)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: MW-2 **Lab ID: 60246410002** Collected: 06/12/17 12:25 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.747 ± 0.552 (0.748) C:NA T:90%**	pCi/L	06/27/17 11:54	13982-63-3	
Radium-228	EPA 904.0	**1.41 ± 0.462 (0.564) C:76% T:79%**	pCi/L	06/28/17 15:40	15262-20-1	
Total Radium	Total Radium Calculation	**2.16 ± 1.01 (1.31)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: MW-3 **Lab ID: 60246410003** Collected: 06/12/17 10:21 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.03 ± 0.539 (0.531) C:NA T:93%**	pCi/L	06/27/17 11:54	13982-63-3	
Radium-228	EPA 904.0	**2.36 ± 0.733 (1.03) C:77% T:78%**	pCi/L	06/28/17 15:44	15262-20-1	
Total Radium	Total Radium Calculation	**3.39 ± 1.27 (1.56)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: MW-4R **Lab ID: 60246410004** Collected: 06/12/17 09:21 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0621 ± 0.472 (0.933) C:NA T:86%**	pCi/L	06/27/17 11:54	13982-63-3	
Radium-228	EPA 904.0	**1.48 ± 0.507 (0.741) C:80% T:89%**	pCi/L	06/28/17 15:44	15262-20-1	
Total Radium	Total Radium Calculation	**1.54 ± 0.979 (1.67)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: MW-5 **Lab ID: 60246410005** Collected: 06/12/17 11:00 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.480 ± 0.482 (0.752) C:NA T:99%**	pCi/L	06/27/17 11:54	13982-63-3	
Radium-228	EPA 904.0	**2.50 ± 0.716 (0.910) C:79% T:84%**	pCi/L	06/28/17 15:44	15262-20-1	
Total Radium	Total Radium Calculation	**2.98 ± 1.20 (1.66)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: MW-6 **Lab ID: 60246410006** Collected: 06/12/17 14:05 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.446 ± 0.515 (0.837) C:NA T:95%**	pCi/L	06/27/17 11:54	13982-63-3	
Radium-228	EPA 904.0	**2.10 ± 0.665 (0.931) C:80% T:79%**	pCi/L	06/28/17 15:44	15262-20-1	
Total Radium	Total Radium Calculation	**2.55 ± 1.18 (1.77)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: MW-7 **Lab ID: 60246410007** Collected: 06/12/17 13:33 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.243 ± 0.559 (1.01) C:NA T:92%**	pCi/L	06/27/17 11:54	13982-63-3	
Radium-228	EPA 904.0	**1.59 ± 0.552 (0.825) C:78% T:87%**	pCi/L	06/28/17 15:44	15262-20-1	
Total Radium	Total Radium Calculation	**1.83 ± 1.11 (1.84)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: MW-8 **Lab ID: 60246410008** Collected: 06/12/17 13:00 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.756 ± 0.450 (0.428) C:NA T:92%**	pCi/L	06/27/17 12:13	13982-63-3	
Radium-228	EPA 904.0	**2.17 ± 0.663 (0.810) C:80% T:91%**	pCi/L	06/28/17 18:50	15262-20-1	
Total Radium	Total Radium Calculation	**2.93 ± 1.11 (1.24)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

Sample: DUPLICATE **Lab ID: 60246410009** Collected: 06/12/17 23:59 Received: 06/14/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.419 ± 0.457 (0.719) C:NA T:87%**	pCi/L	06/27/17 12:13	13982-63-3	
Radium-228	EPA 904.0	**1.71 ± 0.614 (0.931) C:76% T:81%**	pCi/L	06/27/17 11:13	15262-20-1	
Total Radium	Total Radium Calculation	**2.13 ± 1.07 (1.65)**	pCi/L	07/03/17 15:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

QC Batch: 262416 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60246410009

METHOD BLANK: 1292443 Matrix: Water
Associated Lab Samples: 60246410009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.152 ± 0.313 (0.691) C:79% T:89%	pCi/L	06/27/17 11:09	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

QC Batch: 262264 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60246410001, 60246410002, 60246410003, 60246410004, 60246410005, 60246410006, 60246410007, 60246410008

METHOD BLANK: 1291823 Matrix: Water
Associated Lab Samples: 60246410001, 60246410002, 60246410003, 60246410004, 60246410005, 60246410006, 60246410007, 60246410008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.686 ± 0.396 (0.155) C:NA T:93%	pCi/L	06/27/17 11:00	1e

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

QC Batch: 262265 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60246410009

METHOD BLANK: 1291824 Matrix: Water
Associated Lab Samples: 60246410009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.427 ± 0.466 (0.733) C:NA T:85%	pCi/L	06/27/17 12:13	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60246410

QC Batch: 262271 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60246410001, 60246410002, 60246410003, 60246410004, 60246410005, 60246410006, 60246410007, 60246410008

METHOD BLANK: 1291831 Matrix: Water
Associated Lab Samples: 60246410001, 60246410002, 60246410003, 60246410004, 60246410005, 60246410006, 60246410007, 60246410008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.217 ± 0.337 (0.730) C:77% T:86%	pCi/L	06/28/17 15:39	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60246410

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

1e	A LCS duplicate was prepared with the batch to assess duplicate precision, however, the LCSD was inadvertently not spiked. Batch duplicate precision was assessed using the MB and the unspiked LCSD results.

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60246410

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60246410001	**MW-1**	EPA 903.1	262264		
60246410002	**MW-2**	EPA 903.1	262264		
60246410003	**MW-3**	EPA 903.1	262264		
60246410004	**MW-4R**	EPA 903.1	262264		
60246410005	**MW-5**	EPA 903.1	262264		
60246410006	**MW-6**	EPA 903.1	262264		
60246410007	**MW-7**	EPA 903.1	262264		
60246410008	**MW-8**	EPA 903.1	262264		
60246410009	**DUPLICATE**	EPA 903.1	262265		
60246410001	**MW-1**	EPA 904.0	262271		
60246410002	**MW-2**	EPA 904.0	262271		
60246410003	**MW-3**	EPA 904.0	262271		
60246410004	**MW-4R**	EPA 904.0	262271		
60246410005	**MW-5**	EPA 904.0	262271		
60246410006	**MW-6**	EPA 904.0	262271		
60246410007	**MW-7**	EPA 904.0	262271		
60246410008	**MW-8**	EPA 904.0	262271		
60246410009	**DUPLICATE**	EPA 904.0	262416		
60246410001	**MW-1**	Total Radium Calculation	263937		
60246410002	**MW-2**	Total Radium Calculation	263937		
60246410003	**MW-3**	Total Radium Calculation	263937		
60246410004	**MW-4R**	Total Radium Calculation	263937		
60246410005	**MW-5**	Total Radium Calculation	263937		
60246410006	**MW-6**	Total Radium Calculation	263937		
60246410007	**MW-7**	Total Radium Calculation	263937		
60246410008	**MW-8**	Total Radium Calculation	263937		
60246410009	**DUPLICATE**	Total Radium Calculation	263937		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60246410

60246410

Client Name: SCS

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: CF +2.9 / CF +0.2 T-266 / T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 2.2 / 4.4 **Corr. Factor** CF +2.9 CF +0.2 **Corrected** 2.4 / 4.6

Temperature should be above freezing to 6°C

Date and initials of person examining contents: BB 6/14/17

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	Received on Ice →
Samples arrived within holding time:	☑Yes ☐No ☐N/A	Thermal pres. not needed.
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐N/A ☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☑No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [signature] Date: 6.14.17

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Korey Brunken	Attention:	Korey Brunken
Address:	14755 Grover Street	Copy To:		Company Name:	SCS Engineers
	Omaha NE 68144			Address:	
Email To:	kbrunken@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	30857 (JR)
Phone:	402-884-6202 Fax:	Project Name:	FDU	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:	Standard	Project Number:	27216302	Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Requested Analysis Filtered (Y/N)

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G	xxx	xxx	6.12.17	11:46		2			2							X	X	X		60246410 01
2	MW-2	WT	G			6.12.17	12:25		2			2							X	X	X		02
3	MW-3	WT	G			6.12.17	10:21		2			2							X	X	X		03
4	MW-4R	WT	G			6.12.17	09:21		2			2							X	X	X		04
5	MW-5	WT	G			6.12.17	11:00		2			2							X	X	X		05
6	MW-6	WT	G			6.12.17	14:05		2			2							X	X	X		06
7	MW-7	WT	G			6.12.17	13:33		2			2							X	X	X		07
8	MW-8	WT	G			6.12.17	13:00		2			2							X	X	X		08
9	Duplicate	WT	G			6.12.17	23:59		2			2							X	X	X		09
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens/SCS	6.13.17	08:00	[signature]	6/14/17	0900	2.4	Y	Y	Y
							4.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephens

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

30221857

Pace Analytical
www.pacelabs.com

Workorder: 60246410 **Workorder Name:** FDU/27216302 **Owner Received Date:** 6/14/2017 **Results Requested By:** 7/7/2017

Report To	Subcontract To
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1405	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: 903.1 Radium-226	904.0 Radium-228	Total Radium									LAB USE ONLY
1	MW-1	PS	6/12/2017 11:46	60246410001	Water	2						X	X	X									001
2	MW-2	PS	6/12/2017 12:25	60246410002	Water	2						X	X	X									002
3	MW-3	PS	6/12/2017 10:21	60246410003	Water	2						X	X	X									003
4	MW-4R	PS	6/12/2017 09:21	60246410004	Water	2						X	X	X									004
5	MW-5	PS	6/12/2017 11:00	60246410005	Water	2						X	X	X									005
6	MW-6	PS	6/12/2017 14:05	60246410006	Water	2						X	X	X									006
7	MW-7	PS	6/12/2017 13:33	60246410007	Water	2						X	X	X									007
8	MW-8	PS	6/12/2017 13:00	60246410008	Water	2						X	X	X									008
9	DUPLICATE	PS	6/12/2017 23:59	60246410009	Water	2						X	X	X									009

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	6/14/17 1700	[signature]	6/14/17 1015
2				
3				

Comments

Cooler Temperature on Receipt N/A °C Custody Seal Y or (N) Received on Ice Y or (N) Samples Intact Y or N

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

WO#:30221857

30221857

Sample Condition Upon Receipt Pittsburgh ML

30221857

Pace Analytical

Client Name: PACE - KANSAS Project #

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

Tracking #: 734076875090

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ZH 6/16/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓ ✓			15. PHLZ
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed ZH Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:			✓	17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ZH Date: 6/16/17

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

September 12, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #7 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the July 31 and August 1, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 15, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60250086

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on August 03, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60250086

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60250086

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60250086001	**MW-1**	Water	07/31/17 14:12	08/03/17 08:10
60250086002	**MW-2**	Water	08/01/17 11:44	08/03/17 08:10
60250086003	**MW-3**	Water	07/31/17 12:28	08/03/17 08:10
60250086004	**MW-4R**	Water	07/31/17 11:40	08/03/17 08:10
60250086005	**MW-5**	Water	07/31/17 13:20	08/03/17 08:10
60250086006	**MW-6**	Water	08/01/17 13:39	08/03/17 08:10
60250086007	**MW-7**	Water	08/01/17 13:07	08/03/17 08:10
60250086008	**MW-8**	Water	08/01/17 12:20	08/03/17 08:10
60250086009	**DUPLICATE**	Water	08/01/17 23:59	08/03/17 08:10

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60250086

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60250086001	**MW-1**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60250086002	**MW-2**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60250086003	**MW-3**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60250086004	**MW-4R**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60250086005	**MW-5**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60250086006	**MW-6**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60250086007	**MW-7**	EPA 6010	SMW	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60250086

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60250086008	**MW-8**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60250086009	**DUPLICATE**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: MW-1 **Lab ID: 60250086001** Collected: 07/31/17 14:12 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**149**	ug/L	100	1	08/11/17 16:53	08/13/17 12:07	7440-42-8	
Calcium	**105**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:07	7440-70-2	
Lithium	**33.8**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:07	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7440-36-0	
Arsenic	**3.5**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7440-38-2	
Barium	**114**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:06	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:06	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7440-48-4	
Lead	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7439-92-1	
Molybdenum	**7.9**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7439-98-7	
Selenium	**11.4**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 17:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**469**	mg/L	5.0	1		08/07/17 14:09		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		08/04/17 11:36		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**12.0**	mg/L	1.0	1		08/09/17 14:02	16887-00-6	
Fluoride	**1.3**	mg/L	0.20	1		08/09/17 14:02	16984-48-8	
Sulfate	**49.6**	mg/L	5.0	5		08/11/17 14:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: MW-2 **Lab ID: 60250086002** Collected: 08/01/17 11:44 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**120**	ug/L	100	1	08/11/17 16:53	08/13/17 12:09	7440-42-8	
Calcium	**104**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:09	7440-70-2	
Lithium	**28.4**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:09	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7440-36-0	
Arsenic	**3.3**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7440-38-2	
Barium	**98.3**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:10	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:10	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7440-48-4	
Lead	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7439-92-1	
Molybdenum	**7.7**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7439-98-7	
Selenium	**10.9**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:10	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 12:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**426**	mg/L	5.0	1		08/07/17 14:17		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		08/04/17 11:37		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**15.9**	mg/L	1.0	1		08/09/17 14:15	16887-00-6	
Fluoride	**0.91**	mg/L	0.20	1		08/09/17 14:15	16984-48-8	
Sulfate	**40.4**	mg/L	5.0	5		08/11/17 14:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: MW-3 **Lab ID: 60250086003** Collected: 07/31/17 12:28 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	08/11/17 16:53	08/13/17 12:12	7440-42-8	
Calcium	**96.9**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:12	7440-70-2	
Lithium	**28.8**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:12	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7440-36-0	
Arsenic	**2.9**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7440-38-2	
Barium	**166**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:15	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:15	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7440-48-4	
Lead	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7439-92-1	
Molybdenum	**11.1**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7439-98-7	
Selenium	**8.6**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:15	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 12:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**460**	mg/L	5.0	1		08/07/17 14:10		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		08/04/17 11:38		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**32.9**	mg/L	5.0	5		08/11/17 15:25	16887-00-6	
Fluoride	**0.76**	mg/L	0.20	1		08/09/17 14:27	16984-48-8	
Sulfate	**58.4**	mg/L	5.0	5		08/11/17 15:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: MW-4R **Lab ID: 60250086004** Collected: 07/31/17 11:40 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	08/11/17 16:53	08/13/17 12:18	7440-42-8	
Calcium	**75.2**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:18	7440-70-2	
Lithium	**26.2**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:18	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7440-36-0	
Arsenic	**3.7**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7440-38-2	
Barium	**108**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:19	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:19	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7440-48-4	
Lead	**1.4**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7439-92-1	
Molybdenum	**4.3**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7439-98-7	
Selenium	**4.3**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:19	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 12:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**414**	mg/L	5.0	1		08/07/17 14:10		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		08/04/17 11:39		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**63.2**	mg/L	5.0	5		08/11/17 15:51	16887-00-6	
Fluoride	**0.82**	mg/L	0.20	1		08/09/17 15:06	16984-48-8	
Sulfate	**24.1**	mg/L	2.0	2		08/11/17 15:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: MW-5 **Lab ID: 60250086005** Collected: 07/31/17 13:20 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**113**	ug/L	100	1	08/11/17 16:53	08/13/17 12:25	7440-42-8	
Calcium	**113**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:25	7440-70-2	
Lithium	**33.4**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:25	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7440-36-0	
Arsenic	**4.1**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7440-38-2	
Barium	**136**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:23	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:23	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7440-48-4	
Lead	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7439-92-1	
Molybdenum	**6.6**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7439-98-7	
Selenium	**8.0**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 12:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**498**	mg/L	5.0	1		08/07/17 14:10		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		08/04/17 11:41		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**10.8**	mg/L	1.0	1		08/09/17 15:19	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	1		08/09/17 15:19	16984-48-8	
Sulfate	**36.0**	mg/L	5.0	5		08/11/17 16:04	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: MW-6 **Lab ID: 60250086006** Collected: 08/01/17 13:39 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**104**	ug/L	100	1	08/11/17 16:53	08/13/17 12:27	7440-42-8	
Calcium	**87.0**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:27	7440-70-2	
Lithium	**27.7**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:27	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7440-36-0	
Arsenic	**3.0**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7440-38-2	
Barium	**138**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:27	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:27	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7440-48-4	
Lead	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7439-92-1	
Molybdenum	**6.6**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7439-98-7	
Selenium	**9.1**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:27	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 12:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**509**	mg/L	5.0	1		08/07/17 14:18		
9040 pH	Analytical Method: EPA 9040							
pH	**6.9**	Std. Units	0.10	1		08/04/17 11:42		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**48.1**	mg/L	5.0	5		08/11/17 16:17	16887-00-6	
Fluoride	**0.51**	mg/L	0.20	1		08/09/17 15:32	16984-48-8	
Sulfate	**64.2**	mg/L	5.0	5		08/11/17 16:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: MW-7 **Lab ID: 60250086007** Collected: 08/01/17 13:07 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**176**	ug/L	100	1	08/11/17 16:53	08/13/17 12:30	7440-42-8	
Calcium	**98.3**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:30	7440-70-2	
Lithium	**33.2**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:30	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7440-36-0	
Arsenic	**3.4**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7440-38-2	
Barium	**109**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:32	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:32	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7440-48-4	
Lead	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7439-92-1	
Molybdenum	**9.7**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7439-98-7	
Selenium	**11.1**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:32	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 12:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**473**	mg/L	5.0	1		08/07/17 14:20		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		08/04/17 11:43		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**18.0**	mg/L	1.0	1		08/09/17 15:45	16887-00-6	
Fluoride	**0.97**	mg/L	0.20	1		08/09/17 15:45	16984-48-8	
Sulfate	**54.4**	mg/L	5.0	5		08/11/17 16:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: MW-8 **Lab ID: 60250086008** Collected: 08/01/17 12:20 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**104**	ug/L	100	1	08/11/17 16:53	08/13/17 12:32	7440-42-8	
Calcium	**75.9**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:32	7440-70-2	
Lithium	**28.6**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:32	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7440-36-0	
Arsenic	**2.6**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7440-38-2	
Barium	**131**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:36	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:36	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7440-48-4	
Lead	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7439-92-1	
Molybdenum	**7.2**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7439-98-7	
Selenium	**7.3**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 12:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**360**	mg/L	5.0	1		08/07/17 14:20		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		08/04/17 11:46		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**18.9**	mg/L	1.0	1		08/09/17 15:58	16887-00-6	
Fluoride	**0.84**	mg/L	0.20	1		08/09/17 15:58	16984-48-8	
Sulfate	**30.9**	mg/L	2.0	2		08/11/17 17:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60250086

Sample: DUPLICATE **Lab ID: 60250086009** Collected: 08/01/17 23:59 Received: 08/03/17 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**102**	ug/L	100	1	08/11/17 16:53	08/13/17 12:34	7440-42-8	
Calcium	**75.0**	mg/L	0.10	1	08/11/17 16:53	08/13/17 12:34	7440-70-2	
Lithium	**29.0**	ug/L	10.0	1	08/11/17 16:53	08/13/17 12:34	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7440-36-0	
Arsenic	**2.6**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7440-38-2	
Barium	**130**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:40	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/04/17 17:08	08/07/17 17:40	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7440-48-4	
Lead	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7439-92-1	
Molybdenum	**7.1**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7439-98-7	
Selenium	**6.9**	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/04/17 17:08	08/07/17 17:40	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/11/17 13:30	08/14/17 12:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**352**	mg/L	5.0	1		08/07/17 14:21		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		08/04/17 11:47		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**18.9**	mg/L	1.0	1		08/09/17 16:11	16887-00-6	
Fluoride	**0.83**	mg/L	0.20	1		08/09/17 16:11	16984-48-8	
Sulfate	**31.0**	mg/L	2.0	2		08/11/17 17:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60250086

QC Batch: 489325 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

METHOD BLANK: 2003038 Matrix: Water
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/14/17 17:36	

LABORATORY CONTROL SAMPLE: 2003039

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.2	83	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2003040 2003041

Parameter	Units	60250086001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.9	5.2	98	105	75-125	6	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60250086

QC Batch: 489524 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

METHOD BLANK: 2003971 Matrix: Water
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	08/13/17 12:05	
Calcium	mg/L	ND	0.10	08/13/17 12:05	
Lithium	ug/L	ND	10.0	08/13/17 12:05	

LABORATORY CONTROL SAMPLE: 2003972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1010	101	80-120	
Calcium	mg/L	10	10.1	101	80-120	
Lithium	ug/L	1000	1060	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2003974 2003975

Parameter	Units	60250086004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	ND	1000	1000	1090	1080	101	100	75-125	1	20	
Calcium	mg/L	75.2	10	10	85.6	85.5	104	102	75-125	0	20	
Lithium	ug/L	26.2	1000	1000	1080	1090	105	106	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60250086

QC Batch: 488525 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

METHOD BLANK: 2000426 Matrix: Water
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	08/07/17 16:09	
Arsenic	ug/L	ND	1.0	08/07/17 16:09	
Barium	ug/L	6.6	1.0	08/07/17 16:09	
Beryllium	ug/L	ND	0.50	08/07/17 16:09	
Cadmium	ug/L	ND	0.50	08/07/17 16:09	
Chromium	ug/L	ND	1.0	08/07/17 16:09	
Cobalt	ug/L	ND	1.0	08/07/17 16:09	
Lead	ug/L	ND	1.0	08/07/17 16:09	
Molybdenum	ug/L	ND	1.0	08/07/17 16:09	
Selenium	ug/L	ND	1.0	08/07/17 16:09	
Thallium	ug/L	ND	1.0	08/07/17 16:09	

LABORATORY CONTROL SAMPLE: 2000427

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.3	98	80-120	
Arsenic	ug/L	40	38.6	97	80-120	
Barium	ug/L	40	39.0	98	80-120	
Beryllium	ug/L	40	37.4	94	80-120	
Cadmium	ug/L	40	39.3	98	80-120	
Chromium	ug/L	40	40.0	100	80-120	
Cobalt	ug/L	40	38.7	97	80-120	
Lead	ug/L	40	39.9	100	80-120	
Molybdenum	ug/L	40	39.7	99	80-120	
Selenium	ug/L	40	37.2	93	80-120	
Thallium	ug/L	40	39.6	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2000430 2000431

Parameter	Units	60249908002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	38.7	38.4	96	95	75-125	1	20	
Arsenic	ug/L	2.2	40	40	40.1	40.1	95	95	75-125	0	20	
Barium	ug/L	168	40	40	204	201	90	83	75-125	2	20	
Beryllium	ug/L	ND	40	40	35.5	35.2	89	88	75-125	1	20	
Cadmium	ug/L	ND	40	40	37.0	37.1	92	93	75-125	0	20	
Chromium	ug/L	ND	40	40	40.1	40.3	99	99	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60250086

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2000430 2000431

Parameter	Units	60249908002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	38.4	38.5	95	95	75-125	0	20	
Lead	ug/L	ND	40	40	39.2	39.5	96	97	75-125	1	20	
Molybdenum	ug/L	1.8	40	40	41.8	41.5	100	99	75-125	1	20	
Selenium	ug/L	ND	40	40	34.6	34.0	85	83	75-125	2	20	
Thallium	ug/L	ND	40	40	39.1	39.4	98	98	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60250086

QC Batch: 488701 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

METHOD BLANK: 2000988 Matrix: Water
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	08/07/17 14:08	

LABORATORY CONTROL SAMPLE: 2000989

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1030	103	80-120	

SAMPLE DUPLICATE: 2000990

Parameter	Units	60250086001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	469	480	2	10	

SAMPLE DUPLICATE: 2000991

Parameter	Units	60250164001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	831	825	1	10	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60250086

QC Batch: 488094 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

SAMPLE DUPLICATE: 1998614

Parameter	Units	60249681001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	8.3	8.3	0	10	H6

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60250086

QC Batch: 489076 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

METHOD BLANK: 2002070 Matrix: Water
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/09/17 08:38	
Fluoride	mg/L	ND	0.20	08/09/17 08:38	

LABORATORY CONTROL SAMPLE: 2002071

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Fluoride	mg/L	2.5	2.5	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2002072 2002073

Parameter	Units	60249765001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	34900	25000	25000	60300	60200	102	101	80-120	0	15	
Fluoride	mg/L	ND	500	500	487	488	97	98	80-120	0	15	

SAMPLE DUPLICATE: 2002074

Parameter	Units	60249765002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	27400	28900	5	15	
Fluoride	mg/L	ND	ND		15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60250086

QC Batch: 489509 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

METHOD BLANK: 2003805 Matrix: Water
Associated Lab Samples: 60250086001, 60250086002, 60250086003, 60250086004, 60250086005, 60250086006, 60250086007, 60250086008, 60250086009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/11/17 13:04	
Sulfate	mg/L	ND	1.0	08/11/17 13:04	

LABORATORY CONTROL SAMPLE: 2003806

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	80-120	
Sulfate	mg/L	5	4.8	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2003807 2003808

Parameter	Units	60250086001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	49.6	25	25	73.9	73.6	97	96	80-120	0	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60250086

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60250086

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60250086001	**MW-1**	EPA 3010	489524	EPA 6010	489577
60250086002	**MW-2**	EPA 3010	489524	EPA 6010	489577
60250086003	**MW-3**	EPA 3010	489524	EPA 6010	489577
60250086004	**MW-4R**	EPA 3010	489524	EPA 6010	489577
60250086005	**MW-5**	EPA 3010	489524	EPA 6010	489577
60250086006	**MW-6**	EPA 3010	489524	EPA 6010	489577
60250086007	**MW-7**	EPA 3010	489524	EPA 6010	489577
60250086008	**MW-8**	EPA 3010	489524	EPA 6010	489577
60250086009	**DUPLICATE**	EPA 3010	489524	EPA 6010	489577
60250086001	**MW-1**	EPA 3010	488525	EPA 6020	488627
60250086002	**MW-2**	EPA 3010	488525	EPA 6020	488627
60250086003	**MW-3**	EPA 3010	488525	EPA 6020	488627
60250086004	**MW-4R**	EPA 3010	488525	EPA 6020	488627
60250086005	**MW-5**	EPA 3010	488525	EPA 6020	488627
60250086006	**MW-6**	EPA 3010	488525	EPA 6020	488627
60250086007	**MW-7**	EPA 3010	488525	EPA 6020	488627
60250086008	**MW-8**	EPA 3010	488525	EPA 6020	488627
60250086009	**DUPLICATE**	EPA 3010	488525	EPA 6020	488627
60250086001	**MW-1**	EPA 7470	489325	EPA 7470	489538
60250086002	**MW-2**	EPA 7470	489325	EPA 7470	489538
60250086003	**MW-3**	EPA 7470	489325	EPA 7470	489538
60250086004	**MW-4R**	EPA 7470	489325	EPA 7470	489538
60250086005	**MW-5**	EPA 7470	489325	EPA 7470	489538
60250086006	**MW-6**	EPA 7470	489325	EPA 7470	489538
60250086007	**MW-7**	EPA 7470	489325	EPA 7470	489538
60250086008	**MW-8**	EPA 7470	489325	EPA 7470	489538
60250086009	**DUPLICATE**	EPA 7470	489325	EPA 7470	489538
60250086001	**MW-1**	SM 2540C	488701		
60250086002	**MW-2**	SM 2540C	488701		
60250086003	**MW-3**	SM 2540C	488701		
60250086004	**MW-4R**	SM 2540C	488701		
60250086005	**MW-5**	SM 2540C	488701		
60250086006	**MW-6**	SM 2540C	488701		
60250086007	**MW-7**	SM 2540C	488701		
60250086008	**MW-8**	SM 2540C	488701		
60250086009	**DUPLICATE**	SM 2540C	488701		
60250086001	**MW-1**	EPA 9040	488094		
60250086002	**MW-2**	EPA 9040	488094		
60250086003	**MW-3**	EPA 9040	488094		
60250086004	**MW-4R**	EPA 9040	488094		
60250086005	**MW-5**	EPA 9040	488094		
60250086006	**MW-6**	EPA 9040	488094		
60250086007	**MW-7**	EPA 9040	488094		
60250086008	**MW-8**	EPA 9040	488094		
60250086009	**DUPLICATE**	EPA 9040	488094		
60250086001	**MW-1**	EPA 9056	489076		

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60250086

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60250086001	**MW-1**	EPA 9056	489509		
60250086002	**MW-2**	EPA 9056	489076		
60250086002	**MW-2**	EPA 9056	489509		
60250086003	**MW-3**	EPA 9056	489076		
60250086003	**MW-3**	EPA 9056	489509		
60250086004	**MW-4R**	EPA 9056	489076		
60250086004	**MW-4R**	EPA 9056	489509		
60250086005	**MW-5**	EPA 9056	489076		
60250086005	**MW-5**	EPA 9056	489509		
60250086006	**MW-6**	EPA 9056	489076		
60250086006	**MW-6**	EPA 9056	489509		
60250086007	**MW-7**	EPA 9056	489076		
60250086007	**MW-7**	EPA 9056	489509		
60250086008	**MW-8**	EPA 9056	489076		
60250086008	**MW-8**	EPA 9056	489509		
60250086009	**DUPLICATE**	EPA 9056	489076		
60250086009	**DUPLICATE**	EPA 9056	489509		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60250086

60250086

Client Name: SCS Engineers

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

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

Thermometer Used: CF 0.0 T-266 / CF +0.3 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.1 **Corr. Factor** CF 0.0 CF +0.3 **Corrected** 1.1

Date and initials of person examining contents: 8/2/17 CB

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☒No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☒No	
Trip Blank present:	☐Yes ☒No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 8-3-17

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical
www.pacelabs.com

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

Page: of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Korey Brunken	Attention:	Korey Brunken
Address:	14755 Grover Street	Copy To:		Company Name:	SCS Engineers
	Omaha NE 68144			Address:	
Email To:	kbrunken@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	30857 (JR)
Phone:	402-884-6202 Fax:	Project Name:	FDU	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:	Standard	Project Number:	27216302	Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NE

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N	N	N					
1	MW-1	WT	G	xxx	xxx	7/31/17	1412		3	1		2						X	X	X	X	X	X		60250086 BP2U 2B3N 01
2	MW-2					8/1/17	1144		3	1		2						X	X	X	X	X	X		02
3	MW-3					7/31/17	1228		3	1		2						X	X	X	X	X	X		03
4	MW-4R					7/31/17	1440		3	1		2						X	X	X	X	X	X		04
5	MW-5					7/31/17	1320		3	1		2						X	X	X	X	X	X		05
6	MW-6					8/1/17	1359		3	1		2						X	X	X	X	X	X		06
7	MW-7					8/1/17	1307		3	1		2						X	X	X	X	X	X		07
8	MW-8					8/1/17	1220		3	1		2						X	X	X	X	X	X		08
9	DUPLICATE					8/1/17	2359		3	1		2						X	X	X	X	X	X		09
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	SCS	8/1/17	1715	Jamie Burrell pace	8/2/17	0810	1.1	Y	Y	Y
* Sb-As-Ba-Be-Cd-Co-Cr-Pb-Mo-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: KOREY BRUNKEN

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 8/1/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 23, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60250101

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on August 03, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60250101

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60250101

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60250101001	**MW-1**	Water	07/31/17 14:12	08/03/17 08:10
60250101002	**MW-2**	Water	08/01/17 11:44	08/03/17 08:10
60250101003	**MW-3**	Water	07/31/17 12:28	08/03/17 08:10
60250101004	**MW-4R**	Water	07/31/17 11:40	08/03/17 08:10
60250101005	**MW-5**	Water	07/31/17 13:20	08/03/17 08:10
60250101006	**MW-6**	Water	08/01/17 13:39	08/03/17 08:10
60250101007	**MW-7**	Water	08/01/17 13:07	08/03/17 08:10
60250101008	**MW-8**	Water	08/01/17 12:20	08/03/17 08:10
60250101009	**DUPLICATE**	Water	08/01/17 23:59	08/03/17 08:10

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60250101

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60250101001	**MW-1**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60250101002	**MW-2**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60250101003	**MW-3**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60250101004	**MW-4R**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60250101005	**MW-5**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60250101006	**MW-6**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60250101007	**MW-7**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60250101008	**MW-8**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60250101009	**DUPLICATE**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: MW-1 **Lab ID: 60250101001** Collected: 07/31/17 14:12 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.962 ± 0.655 (0.903) C:NA T:89%**	pCi/L	08/17/17 12:07	13982-63-3	
Radium-228	EPA 904.0	**1.72 ± 0.576 (0.749) C:79% T:90%**	pCi/L	08/17/17 18:13	15262-20-1	
Total Radium	Total Radium Calculation	**2.68 ± 1.23 (1.65)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: MW-2 **Lab ID: 60250101002** Collected: 08/01/17 11:44 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.229 ± 0.449 (0.806) C:NA T:95%**	pCi/L	08/17/17 11:55	13982-63-3	
Radium-228	EPA 904.0	**0.984 ± 0.431 (0.711) C:78% T:87%**	pCi/L	08/17/17 15:02	15262-20-1	
Total Radium	Total Radium Calculation	**1.21 ± 0.880 (1.52)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: MW-3 **Lab ID: 60250101003** Collected: 07/31/17 12:28 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.496 ± 0.573 (0.931) C:NA T:97%**	pCi/L	08/17/17 11:55	13982-63-3	
Radium-228	EPA 904.0	**2.29 ± 0.626 (0.661) C:79% T:88%**	pCi/L	08/17/17 15:02	15262-20-1	
Total Radium	Total Radium Calculation	**2.79 ± 1.20 (1.59)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: MW-4R **Lab ID: 60250101004** Collected: 07/31/17 11:40 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.252 ± 0.496 (0.890) C:NA T:87%**	pCi/L	08/17/17 11:55	13982-63-3	
Radium-228	EPA 904.0	**1.65 ± 0.496 (0.597) C:79% T:95%**	pCi/L	08/17/17 15:02	15262-20-1	
Total Radium	Total Radium Calculation	**1.90 ± 0.992 (1.49)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: MW-5 **Lab ID: 60250101005** Collected: 07/31/17 13:20 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.526 ± 0.528 (0.824) C:NA T:91%**	pCi/L	08/17/17 11:55	13982-63-3	
Radium-228	EPA 904.0	**1.83 ± 0.549 (0.666) C:76% T:91%**	pCi/L	08/17/17 15:02	15262-20-1	
Total Radium	Total Radium Calculation	**2.36 ± 1.08 (1.49)**	pCi/L	08/23/17 11:20	7440-14-4	

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: MW-6 **Lab ID: 60250101006** Collected: 08/01/17 13:39 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.977 ± 0.573 (0.657) C:NA T:93%**	pCi/L	08/17/17 12:21	13982-63-3	
Radium-228	EPA 904.0	**1.84 ± 0.564 (0.671) C:74% T:83%**	pCi/L	08/17/17 15:02	15262-20-1	
Total Radium	Total Radium Calculation	**2.82 ± 1.14 (1.33)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: MW-7 **Lab ID: 60250101007** Collected: 08/01/17 13:07 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.887 ± 0.472 (0.408) C:NA T:96%**	pCi/L	08/17/17 11:55	13982-63-3	
Radium-228	EPA 904.0	**1.46 ± 0.463 (0.533) C:76% T:86%**	pCi/L	08/17/17 15:03	15262-20-1	
Total Radium	Total Radium Calculation	**2.35 ± 0.935 (0.941)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: MW-8 **Lab ID: 60250101008** Collected: 08/01/17 12:20 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.599 ± 0.445 (0.557) C:NA T:94%**	pCi/L	08/17/17 12:17	13982-63-3	
Radium-228	EPA 904.0	**1.97 ± 0.549 (0.575) C:77% T:91%**	pCi/L	08/17/17 15:03	15262-20-1	
Total Radium	Total Radium Calculation	**2.57 ± 0.994 (1.13)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

Sample: DUPLICATE **Lab ID: 60250101009** Collected: 08/01/17 23:59 Received: 08/03/17 08:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.302 ± 0.517 (0.906) C:NA T:89%**	pCi/L	08/17/17 12:17	13982-63-3	
Radium-228	EPA 904.0	**1.60 ± 0.521 (0.685) C:76% T:85%**	pCi/L	08/17/17 15:03	15262-20-1	
Total Radium	Total Radium Calculation	**1.90 ± 1.04 (1.59)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

QC Batch: 267561 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60250101001, 60250101002, 60250101003, 60250101004, 60250101005, 60250101006, 60250101007, 60250101008, 60250101009

METHOD BLANK: 1317184 Matrix: Water
Associated Lab Samples: 60250101001, 60250101002, 60250101003, 60250101004, 60250101005, 60250101006, 60250101007, 60250101008, 60250101009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.430 ± 0.302 (0.146) C:NA T:96%	pCi/L	08/17/17 11:23	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60250101

QC Batch: 267562 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60250101001, 60250101002, 60250101003, 60250101004, 60250101005, 60250101006, 60250101007, 60250101008, 60250101009

METHOD BLANK: 1317185 Matrix: Water
Associated Lab Samples: 60250101001, 60250101002, 60250101003, 60250101004, 60250101005, 60250101006, 60250101007, 60250101008, 60250101009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.829 ± 0.431 (0.764) C:76% T:84%	pCi/L	08/17/17 15:54	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60250101

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60250101

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60250101001	**MW-1**	EPA 903.1	267561		
60250101002	**MW-2**	EPA 903.1	267561		
60250101003	**MW-3**	EPA 903.1	267561		
60250101004	**MW-4R**	EPA 903.1	267561		
60250101005	**MW-5**	EPA 903.1	267561		
60250101006	**MW-6**	EPA 903.1	267561		
60250101007	**MW-7**	EPA 903.1	267561		
60250101008	**MW-8**	EPA 903.1	267561		
60250101009	**DUPLICATE**	EPA 903.1	267561		
60250101001	**MW-1**	EPA 904.0	267562		
60250101002	**MW-2**	EPA 904.0	267562		
60250101003	**MW-3**	EPA 904.0	267562		
60250101004	**MW-4R**	EPA 904.0	267562		
60250101005	**MW-5**	EPA 904.0	267562		
60250101006	**MW-6**	EPA 904.0	267562		
60250101007	**MW-7**	EPA 904.0	267562		
60250101008	**MW-8**	EPA 904.0	267562		
60250101009	**DUPLICATE**	EPA 904.0	267562		
60250101001	**MW-1**	Total Radium Calculation	269244		
60250101002	**MW-2**	Total Radium Calculation	269244		
60250101003	**MW-3**	Total Radium Calculation	269244		
60250101004	**MW-4R**	Total Radium Calculation	269244		
60250101005	**MW-5**	Total Radium Calculation	269244		
60250101006	**MW-6**	Total Radium Calculation	269244		
60250101007	**MW-7**	Total Radium Calculation	269244		
60250101008	**MW-8**	Total Radium Calculation	269244		
60250101009	**DUPLICATE**	Total Radium Calculation	269244		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60250101

60250101

Client Name: SCS

Courier: FedEx ☐ UPS ☐ VIA ☑ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: ~~CF 0.0~~ T-266 / ~~CF +0.3~~ T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.8/1.9 **Corr. Factor** (CF 0.0) CF +0.3 **Corrected** 0.8/1.9

Date and initials of person examining contents: PM 8/3/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 8-3-17

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A — **Required** Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	kbrunken@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B — **Required** Project Information:

Report To:	Korey Brunken
Copy To:	
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C — Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D — **Required** Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G	xxx	xxx	7/31/17	1412		2			2						X	X	X		2B A/N	60250101
2	MW-2					8/1/17	1144		2			2						X	X	X			02
3	MW-3					7/31/17	1228		2			2						X	X	X			03
4	MW-4R					7/31/17	1140		2			2						X	X	X			04
5	MW-5					7/31/17	1320		2			2						X	X	X			05
6	MW-6					8/1/17	1339		2			2						X	X	X			06
7	MW-7					8/1/17	1307		2			2						X	X	X			07
8	MW-8					8/1/17	1220		2			2						X	X	X			08
9	DUPLICATE					8/1/17	2359		2			2						X	X	X			09
10																							
11																							
12																							

2 x COOLERS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	[signature] SCS	8/1/17	1715	[signature]	8/3/17	0810	0.8	X	X	X
							1.9	X	X	X

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: KOREY BRUNKEN

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 8/1/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 60250101 **Workorder Name:** FDU/27216302 **Owner Received Date:** 8/3/2017 **Results Requested By:** 8/25/2017

Report To

Trudy Gipson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1405

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

WO#:30226270

30226270

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	903.1 Radium-226	904.0 Radium-228	Total Radium	LAB USE ONLY
1	MW-1	PS	7/31/2017 14:12	60250101001	Water	2	X	X	X	001
2	MW-2	PS	8/1/2017 11:44	60250101002	Water	2	X	X	X	002
3	MW-3	PS	7/31/2017 12:28	60250101003	Water	2	X	X	X	003
4	MW-4R	PS	7/31/2017 11:40	60250101004	Water	2	X	X	X	004
5	MW-5	PS	7/31/2017 13:20	60250101005	Water	2	X	X	X	005
6	MW-6	PS	8/1/2017 13:39	60250101006	Water	2	X	X	X	006
7	MW-7	PS	8/1/2017 13:07	60250101007	Water	2	X	X	X	007
8	MW-8	PS	8/1/2017 12:20	60250101008	Water	2	X	X	X	008
9	DUPLICATE	PS	8/1/2017 23:59	60250101009	Water	2	X	X	X	009

382

Comments

Transfers	Released By	Date/Time	Received	Date/Time
1		8/3/17 1700		8/4/17 1020
2				
3				

Cooler Temperature on Receipt NA °C Custody Seal Y or (N) Received on Ice Y or (N) Samples Intact Y or N

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

Sample Condition Upon Receipt Pittsburgh

30226270

Pace Analytical

Client Name: PACE KS Project #

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

Label ZH

LIMS Login AMV

Tracking #: 772856595320

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals Intact: ☐ yes ☐ no

Thermometer Used Type of Ice: Wet Blue None

Cooler Temperature Observed Temp °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

Date and initials of person examining contents: ZH 8/4/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered				12.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation.	✓			15. Pace
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed ZH Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:			✓	17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ZH Date: 8/4/17

ZH 8/4/17

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ A check in this box indicates that additional information has been stored in ereports.

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

October 16, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #8 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the September 20, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

This report concludes the background groundwater sampling program. We appreciate this opportunity to serve the City of Fremont and look forward to continuing our relationship on future projects. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

October 04, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60253776

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on September 22, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60253776

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60253776

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60253776001	**MW-1**	Water	09/20/17 12:43	09/22/17 07:15
60253776002	**MW-2**	Water	09/20/17 13:21	09/22/17 07:15
60253776003	**MW-3**	Water	09/20/17 11:14	09/22/17 07:15
60253776004	**MW-4R**	Water	09/20/17 10:37	09/22/17 07:15
60253776005	**MW-5**	Water	09/20/17 12:03	09/22/17 07:15
60253776006	**MW-6**	Water	09/20/17 15:10	09/22/17 07:15
60253776007	**MW-7**	Water	09/20/17 14:38	09/22/17 07:15
60253776008	**MW-8**	Water	09/20/17 13:58	09/22/17 07:15
60253776009	**DUPLICATE**	Water	09/20/17 23:59	09/22/17 07:15

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60253776

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60253776001	**MW-1**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60253776002	**MW-2**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60253776003	**MW-3**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60253776004	**MW-4R**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60253776005	**MW-5**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60253776006	**MW-6**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60253776007	**MW-7**	EPA 6010	SMW	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60253776

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60253776008	**MW-8**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60253776009	**DUPLICATE**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: MW-1 **Lab ID: 60253776001** Collected: 09/20/17 12:43 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**138**	ug/L	100	1	09/29/17 10:22	10/02/17 17:20	7440-42-8	
Calcium	**104**	mg/L	0.10	1	09/29/17 10:22	10/02/17 17:20	7440-70-2	
Lithium	**35.5**	ug/L	10.0	1	09/29/17 10:22	10/02/17 17:20	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7440-36-0	
Arsenic	**3.6**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7440-38-2	
Barium	**116**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:28	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:28	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7439-92-1	
Molybdenum	**8.5**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7439-98-7	
Selenium	**11.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:28	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 14:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**474**	mg/L	5.0	1		09/26/17 15:10		
9040 pH	Analytical Method: EPA 9040							
pH	**7.5**	Std. Units	0.10	1		10/03/17 11:43		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**12.3**	mg/L	1.0	1		10/02/17 01:18	16887-00-6	
Fluoride	**1.3**	mg/L	0.20	1		10/02/17 01:18	16984-48-8	
Sulfate	**49.0**	mg/L	5.0	5		10/03/17 11:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: MW-2 **Lab ID: 60253776002** Collected: 09/20/17 13:21 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**106**	ug/L	100	1	09/29/17 10:22	10/02/17 17:31	7440-42-8	
Calcium	**97.3**	mg/L	0.10	1	09/29/17 10:22	10/02/17 17:31	7440-70-2	
Lithium	**25.8**	ug/L	10.0	1	09/29/17 10:22	10/02/17 17:31	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7440-36-0	
Arsenic	**3.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7440-38-2	
Barium	**97.9**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:32	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:32	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7439-92-1	
Molybdenum	**7.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7439-98-7	
Selenium	**12.0**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:32	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 15:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**435**	mg/L	5.0	1		09/26/17 15:11		
9040 pH	Analytical Method: EPA 9040							
pH	**7.4**	Std. Units	0.10	1		10/03/17 11:46		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**17.3**	mg/L	1.0	1		10/02/17 01:34	16887-00-6	
Fluoride	**0.90**	mg/L	0.20	1		10/02/17 01:34	16984-48-8	
Sulfate	**40.1**	mg/L	5.0	5		10/03/17 11:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: MW-3 **Lab ID: 60253776003** Collected: 09/20/17 11:14 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**101**	ug/L	100	1	09/29/17 10:22	10/02/17 17:34	7440-42-8	
Calcium	**99.9**	mg/L	0.10	1	09/29/17 10:22	10/02/17 17:34	7440-70-2	
Lithium	**24.0**	ug/L	10.0	1	09/29/17 10:22	10/02/17 17:34	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7440-36-0	
Arsenic	**3.0**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7440-38-2	
Barium	**183**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:37	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:37	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7439-92-1	
Molybdenum	**11.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7439-98-7	
Selenium	**9.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 15:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**451**	mg/L	5.0	1		09/26/17 15:12		
9040 pH	Analytical Method: EPA 9040							
pH	**7.4**	Std. Units	0.10	1		10/03/17 11:47		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**32.8**	mg/L	5.0	5		10/03/17 11:51	16887-00-6	
Fluoride	**0.75**	mg/L	0.20	1		10/02/17 02:20	16984-48-8	
Sulfate	**62.6**	mg/L	5.0	5		10/03/17 11:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: MW-4R **Lab ID: 60253776004** Collected: 09/20/17 10:37 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	09/29/17 10:22	10/02/17 17:45	7440-42-8	
Calcium	**90.6**	mg/L	0.10	1	09/29/17 10:22	10/02/17 17:45	7440-70-2	
Lithium	**23.4**	ug/L	10.0	1	09/29/17 10:22	10/02/17 17:45	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7440-36-0	
Arsenic	**4.0**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7440-38-2	
Barium	**125**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:50	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:50	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7439-92-1	
Molybdenum	**5.0**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7439-98-7	
Selenium	**7.8**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:50	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 15:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**437**	mg/L	5.0	1		09/26/17 15:14		
9040 pH	Analytical Method: EPA 9040							
pH	**7.9**	Std. Units	0.10	1		10/03/17 11:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**24.5**	mg/L	5.0	5		10/03/17 12:06	16887-00-6	
Fluoride	**0.84**	mg/L	0.20	1		10/02/17 02:35	16984-48-8	
Sulfate	**37.2**	mg/L	5.0	5		10/03/17 12:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: MW-5 **Lab ID: 60253776005** Collected: 09/20/17 12:03 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**114**	ug/L	100	1	09/29/17 10:22	10/02/17 17:49	7440-42-8	
Calcium	**110**	mg/L	0.10	1	09/29/17 10:22	10/02/17 17:49	7440-70-2	
Lithium	**29.0**	ug/L	10.0	1	09/29/17 10:22	10/02/17 17:49	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7440-36-0	
Arsenic	**4.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7440-38-2	
Barium	**136**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:54	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:54	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7439-92-1	
Molybdenum	**6.3**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7439-98-7	
Selenium	**8.5**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 15:07	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**482**	mg/L	5.0	1		09/26/17 15:14		
9040 pH	Analytical Method: EPA 9040							
pH	**7.5**	Std. Units	0.10	1		10/03/17 11:51		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**16.4**	mg/L	1.0	1		10/02/17 02:51	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	1		10/02/17 02:51	16984-48-8	
Sulfate	**37.9**	mg/L	5.0	5		10/03/17 12:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: MW-6 **Lab ID: 60253776006** Collected: 09/20/17 15:10 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	09/29/17 10:22	10/02/17 17:53	7440-42-8	
Calcium	**78.5**	mg/L	0.10	1	09/29/17 10:22	10/02/17 17:53	7440-70-2	
Lithium	**28.6**	ug/L	10.0	1	09/29/17 10:22	10/02/17 17:53	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7440-36-0	
Arsenic	**3.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7440-38-2	
Barium	**122**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:59	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 10:59	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7439-92-1	
Molybdenum	**8.9**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7439-98-7	
Selenium	**7.9**	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 10:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 15:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**451**	mg/L	5.0	1		09/26/17 15:15		
9040 pH	Analytical Method: EPA 9040							
pH	**7.6**	Std. Units	0.10	1		10/03/17 11:53		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**43.3**	mg/L	5.0	5		10/03/17 12:35	16887-00-6	
Fluoride	**0.60**	mg/L	0.20	1		10/02/17 03:06	16984-48-8	
Sulfate	**42.6**	mg/L	5.0	5		10/03/17 12:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: MW-7 **Lab ID: 60253776007** Collected: 09/20/17 14:38 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**138**	ug/L	100	1	09/29/17 10:22	10/02/17 17:57	7440-42-8	
Calcium	**100**	mg/L	0.10	1	09/29/17 10:22	10/02/17 17:57	7440-70-2	
Lithium	**28.4**	ug/L	10.0	1	09/29/17 10:22	10/02/17 17:57	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7440-36-0	
Arsenic	**3.7**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7440-38-2	
Barium	**113**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 11:12	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 11:12	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7439-92-1	
Molybdenum	**9.5**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7439-98-7	
Selenium	**9.3**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:12	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 15:12	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**439**	mg/L	5.0	1		09/26/17 15:15		
9040 pH	Analytical Method: EPA 9040							
pH	**7.3**	Std. Units	0.10	1		10/03/17 11:55		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**22.3**	mg/L	2.0	2		10/03/17 12:49	16887-00-6	
Fluoride	**0.96**	mg/L	0.20	1		10/02/17 03:22	16984-48-8	
Sulfate	**41.9**	mg/L	5.0	5		10/03/17 13:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: MW-8 **Lab ID: 60253776008** Collected: 09/20/17 13:58 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**134**	ug/L	100	1	09/29/17 10:22	10/02/17 18:00	7440-42-8	
Calcium	**91.4**	mg/L	0.10	1	09/29/17 10:22	10/02/17 18:00	7440-70-2	
Lithium	**28.4**	ug/L	10.0	1	09/29/17 10:22	10/02/17 18:00	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7440-36-0	
Arsenic	**2.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7440-38-2	
Barium	**152**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 11:17	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 11:17	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7439-92-1	
Molybdenum	**6.2**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7439-98-7	
Selenium	**12.9**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 15:14	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**422**	mg/L	5.0	1		09/26/17 15:16		
9040 pH	Analytical Method: EPA 9040							
pH	**7.3**	Std. Units	0.10	1		10/03/17 11:56		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.5**	mg/L	2.0	2		10/03/17 13:47	16887-00-6	
Fluoride	**0.72**	mg/L	0.20	1		10/02/17 03:37	16984-48-8	
Sulfate	**55.1**	mg/L	5.0	5		10/03/17 14:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: FDU/27216302
Pace Project No.: 60253776

Sample: DUPLICATE **Lab ID: 60253776009** Collected: 09/20/17 23:59 Received: 09/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**136**	ug/L	100	1	09/29/17 10:22	10/02/17 18:04	7440-42-8	
Calcium	**92.0**	mg/L	0.10	1	09/29/17 10:22	10/02/17 18:04	7440-70-2	
Lithium	**28.8**	ug/L	10.0	1	09/29/17 10:22	10/02/17 18:04	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7440-36-0	
Arsenic	**2.4**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7440-38-2	
Barium	**154**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7440-39-3	
Beryllium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 11:22	7440-41-7	
Cadmium	ND	ug/L	0.50	1	09/29/17 10:22	10/02/17 11:22	7440-43-9	
Chromium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7440-47-3	
Cobalt	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7440-48-4	
Lead	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7439-92-1	
Molybdenum	**6.0**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7439-98-7	
Selenium	**12.6**	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7782-49-2	
Thallium	ND	ug/L	1.0	1	09/29/17 10:22	10/02/17 11:22	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/29/17 10:16	09/30/17 15:21	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**419**	mg/L	5.0	1		09/26/17 15:17		
9040 pH	Analytical Method: EPA 9040							
pH	**7.2**	Std. Units	0.10	1		10/03/17 11:57		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.6**	mg/L	2.0	2		10/03/17 14:16	16887-00-6	
Fluoride	**0.72**	mg/L	0.20	1		10/02/17 03:52	16984-48-8	
Sulfate	**55.0**	mg/L	5.0	5		10/03/17 14:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60253776

QC Batch: 496480 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

METHOD BLANK: 2030876 Matrix: Water
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	09/30/17 14:36	

LABORATORY CONTROL SAMPLE: 2030877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030878 2030879

Parameter	Units	60253454001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.2	5.3	103	106	75-125	3	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60253776

QC Batch: 496503 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

METHOD BLANK: 2030962 Matrix: Water
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	10/02/17 17:16	
Calcium	mg/L	ND	0.10	10/02/17 17:16	
Lithium	ug/L	ND	10.0	10/02/17 17:16	

LABORATORY CONTROL SAMPLE: 2030963

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	966	97	80-120	
Calcium	mg/L	10	10.1	101	80-120	
Lithium	ug/L	1000	994	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030964 2030965

Parameter	Units	60253776001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	138	1000	1000	1120	1140	98	100	75-125	1	20	
Calcium	mg/L	104	10	10	114	113	93	85	75-125	1	20	
Lithium	ug/L	35.5	1000	1000	1040	1040	101	100	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60253776

QC Batch: 496504 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

METHOD BLANK: 2030966 Matrix: Water
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	10/02/17 10:19	
Arsenic	ug/L	ND	1.0	10/02/17 10:19	
Barium	ug/L	ND	1.0	10/02/17 10:19	
Beryllium	ug/L	ND	0.50	10/02/17 10:19	
Cadmium	ug/L	ND	0.50	10/02/17 10:19	
Chromium	ug/L	ND	1.0	10/02/17 10:19	
Cobalt	ug/L	ND	1.0	10/02/17 10:19	
Lead	ug/L	ND	1.0	10/02/17 10:19	
Molybdenum	ug/L	ND	1.0	10/02/17 10:19	
Selenium	ug/L	ND	1.0	10/02/17 10:19	
Thallium	ug/L	ND	1.0	10/02/17 10:19	

LABORATORY CONTROL SAMPLE: 2030967

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.0	100	80-120	
Arsenic	ug/L	40	41.0	103	80-120	
Barium	ug/L	40	40.5	101	80-120	
Beryllium	ug/L	40	40.4	101	80-120	
Cadmium	ug/L	40	40.3	101	80-120	
Chromium	ug/L	40	42.4	106	80-120	
Cobalt	ug/L	40	41.4	104	80-120	
Lead	ug/L	40	40.2	100	80-120	
Molybdenum	ug/L	40	41.2	103	80-120	
Selenium	ug/L	40	38.0	95	80-120	
Thallium	ug/L	40	38.2	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030968 2030969

Parameter	Units	60253776003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	41.5	41.6	103	103	75-125	0	20	
Arsenic	ug/L	3.0	40	40	44.0	44.1	103	103	75-125	0	20	
Barium	ug/L	183	40	40	223	225	100	104	75-125	1	20	
Beryllium	ug/L	ND	40	40	39.2	38.7	98	97	75-125	1	20	
Cadmium	ug/L	ND	40	40	40.0	40.1	100	100	75-125	0	20	
Chromium	ug/L	ND	40	40	41.1	41.2	102	102	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60253776

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2030968 2030969

Parameter	Units	60253776003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	40.0	40.0	100	100	75-125	0	20	
Lead	ug/L	ND	40	40	40.8	41.0	102	102	75-125	1	20	
Molybdenum	ug/L	11.4	40	40	52.6	53.2	103	105	75-125	1	20	
Selenium	ug/L	9.4	40	40	47.3	47.7	95	96	75-125	1	20	
Thallium	ug/L	ND	40	40	39.2	39.6	98	99	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60253776

QC Batch: 495941 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

METHOD BLANK: 2028668 Matrix: Water
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	09/26/17 15:07	

LABORATORY CONTROL SAMPLE: 2028669

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 2028670

Parameter	Units	60253684019 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	496	492	1	10	

SAMPLE DUPLICATE: 2028671

Parameter	Units	60253776008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	422	439	4	10	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60253776

QC Batch: 496950 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

SAMPLE DUPLICATE: 2033028

Parameter	Units	60253776001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.5	7.9	6	10	H6

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60253776

QC Batch: 496685 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

METHOD BLANK: 2032249 Matrix: Water
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/01/17 23:15	
Fluoride	mg/L	ND	0.20	10/01/17 23:15	

LABORATORY CONTROL SAMPLE: 2032250

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	80-120	
Fluoride	mg/L	2.5	2.5	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2032251 2032252

Parameter	Units	7574642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	7.1	5	5	12.2	12.4	102	105	80-120	1	15	
Fluoride	mg/L	0.21	2.5	2.5	2.6	2.7	96	99	80-120	3	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: FDU/27216302
Pace Project No.: 60253776

QC Batch: 496899 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

METHOD BLANK: 2032835 Matrix: Water
Associated Lab Samples: 60253776001, 60253776002, 60253776003, 60253776004, 60253776005, 60253776006, 60253776007, 60253776008, 60253776009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/03/17 08:28	
Sulfate	mg/L	ND	1.0	10/03/17 08:28	

LABORATORY CONTROL SAMPLE: 2032836

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2032837 2032838

Parameter	Units	7574642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	64.2	25	25	89.3	90.2	100	104	80-120	1	15	

SAMPLE DUPLICATE: 2032839

Parameter	Units	60253776001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	49.0	48.6	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60253776

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60253776

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60253776001	**MW-1**	EPA 3010	496503	EPA 6010	496672
60253776002	**MW-2**	EPA 3010	496503	EPA 6010	496672
60253776003	**MW-3**	EPA 3010	496503	EPA 6010	496672
60253776004	**MW-4R**	EPA 3010	496503	EPA 6010	496672
60253776005	**MW-5**	EPA 3010	496503	EPA 6010	496672
60253776006	**MW-6**	EPA 3010	496503	EPA 6010	496672
60253776007	**MW-7**	EPA 3010	496503	EPA 6010	496672
60253776008	**MW-8**	EPA 3010	496503	EPA 6010	496672
60253776009	**DUPLICATE**	EPA 3010	496503	EPA 6010	496672
60253776001	**MW-1**	EPA 3010	496504	EPA 6020	496673
60253776002	**MW-2**	EPA 3010	496504	EPA 6020	496673
60253776003	**MW-3**	EPA 3010	496504	EPA 6020	496673
60253776004	**MW-4R**	EPA 3010	496504	EPA 6020	496673
60253776005	**MW-5**	EPA 3010	496504	EPA 6020	496673
60253776006	**MW-6**	EPA 3010	496504	EPA 6020	496673
60253776007	**MW-7**	EPA 3010	496504	EPA 6020	496673
60253776008	**MW-8**	EPA 3010	496504	EPA 6020	496673
60253776009	**DUPLICATE**	EPA 3010	496504	EPA 6020	496673
60253776001	**MW-1**	EPA 7470	496480	EPA 7470	496544
60253776002	**MW-2**	EPA 7470	496480	EPA 7470	496544
60253776003	**MW-3**	EPA 7470	496480	EPA 7470	496544
60253776004	**MW-4R**	EPA 7470	496480	EPA 7470	496544
60253776005	**MW-5**	EPA 7470	496480	EPA 7470	496544
60253776006	**MW-6**	EPA 7470	496480	EPA 7470	496544
60253776007	**MW-7**	EPA 7470	496480	EPA 7470	496544
60253776008	**MW-8**	EPA 7470	496480	EPA 7470	496544
60253776009	**DUPLICATE**	EPA 7470	496480	EPA 7470	496544
60253776001	**MW-1**	SM 2540C	495941		
60253776002	**MW-2**	SM 2540C	495941		
60253776003	**MW-3**	SM 2540C	495941		
60253776004	**MW-4R**	SM 2540C	495941		
60253776005	**MW-5**	SM 2540C	495941		
60253776006	**MW-6**	SM 2540C	495941		
60253776007	**MW-7**	SM 2540C	495941		
60253776008	**MW-8**	SM 2540C	495941		
60253776009	**DUPLICATE**	SM 2540C	495941		
60253776001	**MW-1**	EPA 9040	496950		
60253776002	**MW-2**	EPA 9040	496950		
60253776003	**MW-3**	EPA 9040	496950		
60253776004	**MW-4R**	EPA 9040	496950		
60253776005	**MW-5**	EPA 9040	496950		
60253776006	**MW-6**	EPA 9040	496950		
60253776007	**MW-7**	EPA 9040	496950		
60253776008	**MW-8**	EPA 9040	496950		
60253776009	**DUPLICATE**	EPA 9040	496950		
60253776001	**MW-1**	EPA 9056	496685		

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60253776

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60253776001	**MW-1**	EPA 9056	496899		
60253776002	**MW-2**	EPA 9056	496685		
60253776002	**MW-2**	EPA 9056	496899		
60253776003	**MW-3**	EPA 9056	496685		
60253776003	**MW-3**	EPA 9056	496899		
60253776004	**MW-4R**	EPA 9056	496685		
60253776004	**MW-4R**	EPA 9056	496899		
60253776005	**MW-5**	EPA 9056	496685		
60253776005	**MW-5**	EPA 9056	496899		
60253776006	**MW-6**	EPA 9056	496685		
60253776006	**MW-6**	EPA 9056	496899		
60253776007	**MW-7**	EPA 9056	496685		
60253776007	**MW-7**	EPA 9056	496899		
60253776008	**MW-8**	EPA 9056	496685		
60253776008	**MW-8**	EPA 9056	496899		
60253776009	**DUPLICATE**	EPA 9056	496685		
60253776009	**DUPLICATE**	EPA 9056	496899		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60253776

60253776

TDG

Client Name: SCS Eng.

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

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

Thermometer Used: CF 0.0 T-266 / CF +0.3 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 3.8 **Corr. Factor** CF 0.0 / CF +0.3 **Corrected** 3.8

Date and initials of person examining contents: JS 9/22

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	
Cyanide water sample checks: ☒ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JS Date: 9.25.17

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Korey Brunken	Attention:	Korey Brunken
Address:	14755 Grover Street	Copy To:		Company Name:	SCS Engineers
	Omaha NE 68144			Address:	
Email To:	kbrunken@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	30857 (JR)
Phone:	402-884-6202 Fax:	Project Name:	FDU	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:	Standard	Project Number:	27216302	Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NE

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60253776
1	MW-1 (BP2N (2) BP3N)	WT	G	xxx	xxx	9/20/17	1243		3	1		2						X	X	X	X	X	X		001
2	MW-2						1321		3	1		2						X	X	X	X	X	X		002
3	MW-3						1114		3	1		2						X	X	X	X	X	X		003
4	MW-4R						1037		3	1		2						X	X	X	X	X	X		004
5	MW-5						1203		3	1		2						X	X	X	X	X	X		005
6	MW-6						1510		3	1		2						X	X	X	X	X	X		006
7	MW-7						1438		3	1		2						X	X	X	X	X	X		007
8	MW-8						1358		3	1		2						X	X	X	X	X	X		008
9	DUPLICATE						2359		3	1		2						X	X	X	X	X	X		009
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	SCS	9/21/17	1000		9/22	0715	3.8	Y	Y	Y
* Sb-As-Ba-Be-Cd-Co-Cr-Pb-Mo-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: KOREY BRUNKEN

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 9/21/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's N... terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

October 10, 2017

Mr. Korey Brunken
SCS Engineers
14755 Grover Street
Omaha, NE 68144

RE: Project: FDU/27216302
Pace Project No.: 60253780

Dear Mr. Brunken:
Enclosed are the analytical results for sample(s) received by the laboratory on September 22, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: FDU/27216302
Pace Project No.: 60253780

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: FDU/27216302
Pace Project No.: 60253780

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60253780001	**MW-1**	Water	09/20/17 12:43	09/22/17 07:15
60253780002	**MW-2**	Water	09/20/17 13:21	09/22/17 07:15
60253780003	**MW-3**	Water	09/20/17 11:14	09/22/17 07:15
60253780004	**MW-4R**	Water	09/20/17 10:37	09/22/17 07:15
60253780005	**MW-5**	Water	09/20/17 12:03	09/22/17 07:15
60253780006	**MW-6**	Water	09/20/17 15:10	09/22/17 07:15
60253780007	**MW-7**	Water	09/20/17 14:38	09/22/17 07:15
60253780008	**MW-8**	Water	09/20/17 13:58	09/22/17 07:15
60253780009	**DUPLICATE**	Water	09/20/17 23:59	09/22/17 07:15

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: FDU/27216302
Pace Project No.: 60253780

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60253780001	**MW-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60253780002	**MW-2**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60253780003	**MW-3**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60253780004	**MW-4R**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60253780005	**MW-5**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60253780006	**MW-6**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60253780007	**MW-7**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60253780008	**MW-8**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60253780009	**DUPLICATE**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: MW-1 **Lab ID: 60253780001** Collected: 09/20/17 12:43 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.584 ± 0.594 (0.898) C:NA T:86%**	pCi/L	10/02/17 12:02	13982-63-3	
Radium-228	EPA 904.0	**2.00 ± 0.572 (0.625) C:77% T:88%**	pCi/L	10/06/17 12:22	15262-20-1	
Total Radium	Total Radium Calculation	**2.58 ± 1.17 (1.52)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: MW-2 **Lab ID: 60253780002** Collected: 09/20/17 13:21 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.06 ± 0.745 (0.983) C:NA T:91%**	pCi/L	10/02/17 12:23	13982-63-3	
Radium-228	EPA 904.0	**0.967 ± 0.486 (0.852) C:77% T:82%**	pCi/L	10/06/17 12:14	15262-20-1	
Total Radium	Total Radium Calculation	**2.03 ± 1.23 (1.84)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: MW-3 **Lab ID: 60253780003** Collected: 09/20/17 11:14 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.49 ± 0.731 (0.238) C:NA T:85%**	pCi/L	10/02/17 12:23	13982-63-3	
Radium-228	EPA 904.0	**1.81 ± 0.586 (0.784) C:76% T:83%**	pCi/L	10/06/17 12:22	15262-20-1	
Total Radium	Total Radium Calculation	**3.30 ± 1.32 (1.02)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: MW-4R **Lab ID: 60253780004** Collected: 09/20/17 10:37 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.537 ± 0.546 (0.826) C:NA T:94%**	pCi/L	10/02/17 12:23	13982-63-3	
Radium-228	EPA 904.0	**2.82 ± 0.861 (1.17) C:75% T:75%**	pCi/L	10/06/17 12:22	15262-20-1	
Total Radium	Total Radium Calculation	**3.36 ± 1.41 (2.00)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: MW-5 **Lab ID: 60253780005** Collected: 09/20/17 12:03 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.903 ± 0.590 (0.604) C:NA T:89%**	pCi/L	10/02/17 12:23	13982-63-3	
Radium-228	EPA 904.0	**2.11 ± 0.660 (0.838) C:74% T:81%**	pCi/L	10/06/17 12:22	15262-20-1	
Total Radium	Total Radium Calculation	**3.01 ± 1.25 (1.44)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: MW-6 **Lab ID: 60253780006** Collected: 09/20/17 15:10 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.13 ± 0.659 (0.702) C:NA T:95%**	pCi/L	10/02/17 12:23	13982-63-3	
Radium-228	EPA 904.0	**1.20 ± 0.467 (0.719) C:78% T:89%**	pCi/L	10/06/17 12:22	15262-20-1	
Total Radium	Total Radium Calculation	**2.33 ± 1.13 (1.42)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: MW-7 **Lab ID: 60253780007** Collected: 09/20/17 14:38 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.29 ± 0.731 (0.820) C:NA T:95%**	pCi/L	10/02/17 12:23	13982-63-3	
Radium-228	EPA 904.0	**1.31 ± 0.489 (0.738) C:79% T:89%**	pCi/L	10/06/17 12:22	15262-20-1	
Total Radium	Total Radium Calculation	**2.60 ± 1.22 (1.56)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: MW-8 **Lab ID: 60253780008** Collected: 09/20/17 13:58 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.811 ± 0.785 (1.22) C:NA T:89%**	pCi/L	10/02/17 12:37	13982-63-3	
Radium-228	EPA 904.0	**1.45 ± 0.540 (0.806) C:76% T:81%**	pCi/L	10/06/17 12:22	15262-20-1	
Total Radium	Total Radium Calculation	**2.26 ± 1.33 (2.03)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

Sample: DUPLICATE **Lab ID: 60253780009** Collected: 09/20/17 23:59 Received: 09/22/17 07:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.642 ± 0.671 (1.05) C:NA T:92%**	pCi/L	10/02/17 12:37	13982-63-3	
Radium-228	EPA 904.0	**1.51 ± 0.533 (0.757) C:77% T:82%**	pCi/L	10/06/17 12:22	15262-20-1	
Total Radium	Total Radium Calculation	**2.15 ± 1.20 (1.81)**	pCi/L	10/10/17 10:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

QC Batch: 273266 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60253780001, 60253780002, 60253780003, 60253780004, 60253780005, 60253780006, 60253780007, 60253780008, 60253780009

METHOD BLANK: 1344226 Matrix: Water
Associated Lab Samples: 60253780001, 60253780002, 60253780003, 60253780004, 60253780005, 60253780006, 60253780007, 60253780008, 60253780009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.401 ± 0.419 (0.591) C:NA T:95%	pCi/L	10/02/17 12:02	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: FDU/27216302
Pace Project No.: 60253780

QC Batch: 273349 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60253780001, 60253780002, 60253780003, 60253780004, 60253780005, 60253780006, 60253780007, 60253780008, 60253780009

METHOD BLANK: 1344551 Matrix: Water
Associated Lab Samples: 60253780001, 60253780002, 60253780003, 60253780004, 60253780005, 60253780006, 60253780007, 60253780008, 60253780009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.433 ± 0.376 (0.760) C:78% T:82%	pCi/L	10/06/17 12:14	

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

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: FDU/27216302
Pace Project No.: 60253780

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FDU/27216302
Pace Project No.: 60253780

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60253780001	**MW-1**	EPA 903.1	273266		
60253780002	**MW-2**	EPA 903.1	273266		
60253780003	**MW-3**	EPA 903.1	273266		
60253780004	**MW-4R**	EPA 903.1	273266		
60253780005	**MW-5**	EPA 903.1	273266		
60253780006	**MW-6**	EPA 903.1	273266		
60253780007	**MW-7**	EPA 903.1	273266		
60253780008	**MW-8**	EPA 903.1	273266		
60253780009	**DUPLICATE**	EPA 903.1	273266		
60253780001	**MW-1**	EPA 904.0	273349		
60253780002	**MW-2**	EPA 904.0	273349		
60253780003	**MW-3**	EPA 904.0	273349		
60253780004	**MW-4R**	EPA 904.0	273349		
60253780005	**MW-5**	EPA 904.0	273349		
60253780006	**MW-6**	EPA 904.0	273349		
60253780007	**MW-7**	EPA 904.0	273349		
60253780008	**MW-8**	EPA 904.0	273349		
60253780009	**DUPLICATE**	EPA 904.0	273349		
60253780001	**MW-1**	Total Radium Calculation	274820		
60253780002	**MW-2**	Total Radium Calculation	274820		
60253780003	**MW-3**	Total Radium Calculation	274820		
60253780004	**MW-4R**	Total Radium Calculation	274820		
60253780005	**MW-5**	Total Radium Calculation	274820		
60253780006	**MW-6**	Total Radium Calculation	274820		
60253780007	**MW-7**	Total Radium Calculation	274820		
60253780008	**MW-8**	Total Radium Calculation	274820		
60253780009	**DUPLICATE**	Total Radium Calculation	274820		

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60253780

60253780

Client Name: SCS Engr

Courier: FedEx ☐ UPS ☐ VIA ☒ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

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

Thermometer Used: CF 0.0 T-266 / CF +0.3 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 4.2 5.1 **Corr. Factor** CF 0.0 CF +0.3 **Corrected** 4.2 5.2

Date and initials of person examining contents: JB 9/22/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	
Cyanide water sample checks: ☒N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 9.24.17

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical
www.pacelabs.com

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

Page: 1 of 1

Section A — **Required** Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	kbrunken@scsengineers.com
Phone: 402-884-6202	Fax:
Requested Due Date/TAT:	Standard

Section B — **Required** Project Information:

Report To:	Korey Brunken
Copy To:	
Purchase Order No.:	
Project Name:	FDU
Project Number:	27216302

Section C — Invoice Information:

Attention:	Korey Brunken
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	30857 (JR)
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D — **Required** Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1 (2) BP IN 2	WT	G	xxx	xxx	9/20/17	1243		2			2							X	X	X		001
2	MW-2						1321		2			2							X	X	X		002
3	MW-3						1114		2			2							X	X	X		003
4	MW-4R						1037		2			2							X	X	X		004
5	MW-5						1203		2			2							X	X	X		005
6	MW-6						1510		2			2							X	X	X		006
7	MW-7						1458		2			2							X	X	X		007
8	MW-8						1358		2			2							X	X	X		008
9	DUPLICATE						2359		2			2							X	X	X		009
10																							
11																							
12																							

2 x COOLERS
6025780

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	SCS	9/21/17	1000		9/22/17	0715	4.2	y	y	y
							5.1	y	y	y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	KOREY BRUNKEN					
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 9/21/17				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60253780 **Workorder Name:** FDU/27216302 **Owner Received Date:** 9/22/2017 **Results Requested By:** 10/16/2017

Report To	Subcontract To
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1405	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

						Preserved Containers						Requested Analysis												
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HNO3						903.1 Radium-226	904.0 Radium-228	Total Radium										LAB USE ONLY
1	MW-1	PS	9/20/2017 12:43	60253780001	Water	2						X	X	X										001
2	MW-2	PS	9/20/2017 13:21	60253780002	Water	2						X	X	X										002
3	MW-3	PS	9/20/2017 11:14	60253780003	Water	2						X	X	X										003
4	MW-4R	PS	9/20/2017 10:37	60253780004	Water	2						X	X	X										004
5	MW-5	PS	9/20/2017 12:03	60253780005	Water	2						X	X	X										005
6	MW-6	PS	9/20/2017 15:10	60253780006	Water	2						X	X	X										006
7	MW-7	PS	9/20/2017 14:38	60253780007	Water	2						X	X	X										007
8	MW-8	PS	9/20/2017 13:58	60253780008	Water	2						X	X	X										008
9	DUPLICATE	PS	9/20/2017 23:59	60253780009	Water	2						X	X	X										009

Transfers	Released By	Date/Time	Received	Date/Time
1		9/25/17 1700	C. Chaney	9/26/17 1000
2				
3				

Comments

Cooler Temperature on Receipt 0.4 °C Custody Seal Y or (N) Received on Ice Y or (N) Samples Intact (Y) or N

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

WO#:30231098

30231098

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KS Project # 30231098

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

Label CPC

LIMS Login ZH

Tracking #: 728565771564

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Thermometer Used NA Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp NA °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 9/26/17 CSC

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation.	✓			16. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed CSC Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: CSC Date: 9/26/17

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

APPENDIX 3

GROUNDWATER ELEVATIONS AND FLOW DATA

Groundwater Elevation and Flow Data

Well Number	Date	Casing Elevation (feet amsl)	Depth to Groundwater (feet)	Groundwater Elevation (feet amsl)	Groundwater Gradient (foot/foot)	Groundwater Flow Rate (feet/day)
MW – 1		1180.68				
	10.12.2016		17.31	1163.37	0.001	0.4
	11.28.2016		18.39	1162.29	0.001	0.4
	01.18.2017		19.26	1161.42	0.001	0.4
	03.06.2017		18.40	1162.28	0.001	0.4
	04.24.2017		19.35	1161.33	0.001	0.4
	06.12.2017		15.77	1164.91	0.001	0.4
	07.31.2017		19.16	1161.52	0.001	0.4
	09.20.2017		20.25	1160.43	0.001	0.4
MW – 2		1177.09				
	10.12.2016		13.41	1163.68		
	11.28.2016		14.68	1162.41		
	01.18.2017		15.55	1161.54		
	03.06.2017		14.51	1162.58		
	04.24.2017		15.47	1161.62		
	06.12.2017		12.14	1164.95		
	08.01.2017		15.61	1161.48		
	09.20.2017		16.61	1160.48		
MW – 3		1178.53				
	10.12.2016		14.47	1164.06		
	11.28.2016		15.85	1162.68		
	01.18.2017		16.61	1161.92		
	03.06.2017		15.60	1162.93		
	04.24.2017		16.53	1162.00		
	06.12.2017		13.17	1165.36		
	07.31.2017		16.97	1161.56		
	09.20.2017		17.88	1160.65		
MW – 4R		1177.77				
	10.12.2016		14.00	1163.77		
	11.28.2016		14.88	1162.89		
	01.18.2017		15.93	1161.84		
	03.06.2017		15.23	1162.54		
	04.24.2017		15.92	1161.85		
	06.12.2017		12.58	1165.19		
	07.31.2017		15.53	1162.24		
	09.20.2017		16.82	1160.95		
MW – 5		1177.61				
	10.12.2016		13.85	1163.76		
	11.28.2016		14.82	1162.79		
	01.18.2017		15.78	1161.83		
	03.06.2017		15.04	1162.57		
	04.24.2017		15.69	1161.92		
	06.12.2017		12.28	1165.33		
	07.31.2017		15.69	1161.92		
	09.20.2017		16.84	1160.77		
MW-6		1177.61				
	10.12.2016		14.36	1163.25		
	11.28.2016		15.38	1162.23		
	01.18.2017		16.24	1161.37		
	03.06.2017		15.46	1162.15		
	04.24.2017		16.11	1161.50		
	06.12.2017		12.76	1164.85		
	08.01.2017		16.10	1161.51		
	09.20.2017		17.20	1160.41		
MW-7		1177.3				
	10.12.2016		13.88	1163.42		
	11.28.2016		15.05	1162.25		
	01.18.2017		15.81	1161.49		
	03.06.2017		14.94	1162.36		
	04.24.2017		15.71	1161.59		
	06.12.2017		12.37	1164.93		
	08.01.2017		15.87	1161.43		
	09.20.2017		16.84	1160.46		
MW-8		1177.37				
	10.12.2016		13.84	1163.53		
	11.28.2016		15.23	1162.14		
	01.18.2017		15.90	1161.47		
	03.06.2017		14.94	1162.43		
	04.24.2017		15.83	1161.54		
	06.12.2017		12.55	1164.82		
	08.01.2017		16.18	1161.19		
	09.20.2017		16.99	1160.38		

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

November 17, 2016
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #1 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the October 12, 2016 background groundwater sampling event at the Lon D Wright Power Plant in Fremont, Nebraska. Depths to groundwater were measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived to the laboratory intact, within appropriate holding time and temperature. Field data sheets detailing well information and purge stabilization parameters, complete analytical results, and a groundwater flow direction map have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Data Sheets
Analytical Results
Groundwater Flow Direction Map

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-1
Date(s): 10/12/16

Field Team Members
Name: Bret Stephens Affiliation: SCS Engineers
Name: [illegible] Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 45 °F (Mean) Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: Good
Protective Casing: Good - Paint Chipping
Reference Mark/Identification: Good

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 10/12/16 / 12:17
Total Depth: 29 feet below TOC
Static Water Level: 17.31 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: Bret Stephens Purge Date: 10/12/16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.34 pH 8.18 ORP 116
Sp. Cond. 0.751 Turbidity 0.0 DO 9.85
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:27	1500	300	12.58	7.95	122	0.758	0.0	9.38	17.31
12:32	3000	300	12.62	7.85	125	0.759	0.0	9.01	17.31
12:37	4500	300	12.66	7.78	127	0.761	0.0	8.67	17.31

Sampling Activities
Sampled By: Bret Stephens Sample Date/Time: 10/12/16 / 12:42
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.66 pH 7.78 ORP 127
Sp. Cond. 0.761 Turbidity 0.0 DO 8.67
Water Level: 17.31 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
Water level measured from top of PVC casing at mark
WL for MW-1N = 18.21
WL for MW-1S = 18.16
Electronic Form Completed By: N/A **Date:** N/A

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-2
Date(s): 10/12/16

Field Team Members
Name: Bret Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 45 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: | – Paint Chipping
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 10/12/16 / 13:19
Total Depth: 28 feet below TOC
Static Water Level: 13.41 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: Bret Stephens — Purge Date: 10/12/16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.90 — pH 7.94 — ORP 122
Sp. Cond. 0.670 — Turbidity 0.0 — DO 7.02
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
13:27	1500	300	14.05	7.87	124	0.708	0.0	8.90	13.41
13:32	3000	300	14.05	7.85	125	0.716	0.0	9.28	13.41
13:37	4500	300	14.13	7.84	125	0.719	0.0	8.91	13.41

Sampling Activities
Sampled By: Bret Stephens — Sample Date/Time: 10/12/16 / 13:42
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.13 — pH 7.84 — ORP 125
Sp. Cond. 0.719 — Turbidity 0.0 — DO 8.91
Water Level: 13.41 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
Water level measured from top of PVC casing at mark

Electronic Form Completed By: N/A — **Date:** N/A

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-3
Date(s): 10/12/16

Field Team Members
Name: BRET STEPHENS Affiliation: SCS Engineers
Name: KOREY BRUNKEN Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 42 °F (Mean) Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: GOOD
Casing: GOOD - CAP FITS POORLY
Protective Casing: GOOD - PAINT CHIPPING
Reference Mark/Identification: GOOD

Locks	Yes	No
Protective Casing	✓	
Well		✓

Groundwater Level Measurements
Date/Time Measured: 10/12/16 10:23
Total Depth: _____ feet below TOC
Static Water Level: 14.47 feet below TOC
TD - SWL: ~~49.53~~ water column (ft.)

Purging Activities
Purged By: BRET STEPHENS Purge Date: 10/12/16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.22 pH 8.35 ORP 115 mV
Sp. Cond. 0.684 mS/cm Turbidity 0.0 DO 7.13
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1034	1500	300	12.77	8.23	118	0.658	0.0	9.48	14.49
1039	3000	300	12.69	8.12	119	0.654	0.0	8.89	14.46
1044	4500	300	12.68	8.06	120	0.657	0.0	8.92	14.49

Sampling Activities
Sampled By: BRET STEPHENS Sample Date/Time: 10/12/16 10:49
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.68 pH 8.06 ORP 120
Sp. Cond. 0.657 Turbidity 0.0 DO 8.92
Water Level: 14.49 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
WATER LEVEL MEASURED FROM MARK ON PVC CASING

Electronic Form Completed By: N/A **Date:** N/A

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-4R
Date(s): 10/12/16

Field Team Members
Name: BRET STEPHENS Affiliation: SCS Engineers
Name: KOREY BRUNKEN Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 42 °F (Mean) Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: GOOD
Casing: GOOD
Protective Casing: GOOD
Reference Mark/Identification: GOOD

Locks	Yes	No
Protective Casing	✓	
Well		✓

Groundwater Level Measurements
Date/Time Measured: 10/12/16
Total Depth: _____ feet below TOC
Static Water Level: 14.00 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: BRET STEPHENS Purge Date: 10/12/16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.52 pH 11.13 ORP 15.nV
Sp. Cond. 0.744 mS Turbidity 0.0 DO 10.98
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
0933	1500	300	13.32	10.00	83	0.722	0.0	10.88	14.00
0938	3000	300	13.32	9.38	94	0.713	0.0	9.83	14.00
0943	4500	300	13.36	8.74	105	0.721	0.0	9.40	14.00

Sampling Activities
Sampled By: BRET STEPHENS Sample Date/Time: 10/12/16 0948
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.36 pH 8.74 ORP 105
Sp. Cond. 0.721 Turbidity 0.0 DO 9.40
Water Level: 14.00 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
WATER LEVEL MEASURED FROM MARK ON PVC CASING

Electronic Form Completed By: N/A **Date:** N/A

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-5
Date(s): 10/12/16

Field Team Members
Name: BRET STEPHENS Affiliation: SCS Engineers
Name: KOLBY BRUNKEN Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 42 °F (Mean) Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny Partly

Well Observations

		Locks	Yes	No
Well Pad	GOOD	Protective Casing	✓	
Casing	GOOD	Well		✓
Protective Casing	GOOD - PAINT CHIPPING			
Reference Mark/Identification	GOOD			

Groundwater Level Measurements
Date/Time Measured: 10/12/16
Total Depth: _____ feet below TOC
Static Water Level: 13.85 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: BRET STEPHENS Purge Date: 10/12/16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.15 pH 8.05 ORP 130
Sp. Cond. 0.810 mS Turbidity 0.0 DO 6.84
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1123	1500	300	12.65	8.03	128	0.815	0.0	6.82	13.85
1128	3000	300	12.62	7.99	128	0.804	0.0	6.80	13.85
1133	4500	300	12.61	7.99	128	0.794	0.0	6.86	13.85

Sampling Activities
Sampled By: BRET STEPHENS Sample Date/Time: 10/12/16 1138
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.61 pH 7.99 ORP 128
Sp. Cond. 0.794 Turbidity 0.0 DO 6.86
Water Level: 13.85 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
WATER LEVEL MEASURED FROM TOP OF PVC CASING AT MARK

Electronic Form Completed By: N/A **Date:** N/A

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-6
Date(s): 10/12/16

Field Team Members
Name: Bret Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 47 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 10/12/16 / 15:52
Total Depth: _____ feet below TOC
Static Water Level: 14.36 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: Bret Stephens — Purge Date: 10/12/16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.80 — pH 7.93 — ORP 112
Sp. Cond. 0.693 — Turbidity 0.0 — DO 5.74
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
16:01	1500	300	13.10	7.79	121	0.711	0.0	5.35	14.36
16:06	3000	300	13.03	7.77	123	0.712	0.0	5.33	14.36
16:11	4500	300	13.05	7.75	125	0.712	0.0	5.29	14.36

Sampling Activities
Sampled By: Bret Stephens — Sample Date/Time: 10/12/16 / 16:16
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.05 — pH 7.75 — ORP 125
Sp. Cond. 0.712 — Turbidity 0.0 — DO 5.29
Water Level: 14.36 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
Water Level measured at top of PVC casing
Duplicate taken here at "23:59"

Electronic Form Completed By: N/A — **Date:** N/A

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-7
Date(s): 10/12/16

Field Team Members
Name: Bret Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 46 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 10/12/16 / 15:05
Total Depth: _____ feet below TOC
Static Water Level: 13.88 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: Bret Stephens — Purge Date: 10/12/16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.50 — pH 7.97 — ORP 117
Sp. Cond. 0.806 — Turbidity 0.0 — DO 5.54
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
15:13	1500	300	13.94	7.88	121	0.755	0.0	6.57	13.88
15:18	3000	300	13.99	7.81	121	0.751	0.0	6.37	13.88
15:23	4500	300	14.10	7.78	120	0.749	0.0	6.27	13.88

Sampling Activities
Sampled By: Bret Stephens — Sample Date/Time: 10/12/16 / 15:28
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.10 — pH 7.78 — ORP 120
Sp. Cond. 0.749 — Turbidity 0.0 — DO 6.27
Water Level: 13.88 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
Water level measured at top of PVC casing

Electronic Form Completed By: N/A — **Date:** N/A

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-8
Date(s): 10/12/16

Field Team Members
Name: Bret Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 46 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 10/12/16 / 14:18
Total Depth: _____ feet below TOC
Static Water Level: 13.84 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: Bret Stephens — Purge Date: 10/12/16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.25 — pH 8.02 — ORP 120
Sp. Cond. 0.706 — Turbidity 0.0 — DO 6.77
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
14:27	1500	300	13.21	7.93	122	0.705	0.0	6.13	13.84
14:32	3000	300	13.08	7.89	123	0.705	0.0	5.97	13.84
14:37	4500	300	13.04	7.84	123	0.704	0.0	5.78	13.84

Sampling Activities
Sampled By: Bret Stephens — Sample Date/Time: 10/12/16 / 14:42
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.04 — pH 7.84 — ORP 123
Sp. Cond. 0.704 — Turbidity 0.0 — DO 5.78
Water Level: 13.84 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
Water level measured on top of PVC casing → mark on protective casing level with top of PVC

Electronic Form Completed By: N/A — **Date:** N/A

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

December 30, 2016
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #2 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the November 28, 2016 background groundwater sampling event at the Lon D Wright Power Plant in Fremont, Nebraska. Depths to groundwater were measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. Field data sheets detailing well information and purge stabilization parameters, complete analytical results, and a groundwater flow direction map have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Project Name: City of Fremont Sampling Events
Project Location: Fremont, NE
Project Number: 27216362.00

Date: 11.28.16
Weather Information: AM: Sunny, Clear, low-mid 40s, 0-5 mph SW wind
PM: Overcast, mid-high 40's, 10-15 mph W wind
Personnel Onsite: Bret Stephens (SCS)
Equipment onsite - Ford F-250 (SCS)
Field Equipment: Horiba U-52-2 = S/N → 5 new ph 8y
↳ Calibrated 11.3.16
QED MP10 Bladder Pump Controller
↳ S/N → u47862x - test
↳ Calibrated 11.7.16
Nitrogen Cylinders (#3)

Work Comments / Observations:
08:17 - Arrive onsite. Meet with FOn (T. Sedlacek)
08:35 - Arrive at MW-4R
09:46 - Move to MW-3
10:41 - Move to MW-5
10:56 - FOn (T. Sedlacek) arrives onsite at MW-5.
11:21 - FOn (T. Sedlacek) offsite.
11:40 - Move to MW-1.
12:40 - Move to MW-2

11.28.16 cont'd
13:05 - FOu (T. Sedlacek) onsite.
13:38 - FOu (T. Sedlacek) offsite. Move to MW-8.
14:38 - Move to MW-7.
15:10 - FOu (T. Sedlacek) onsite.
15:27 - FOu (T. Sedlacek) offsite. Move to MW-6.
16:32 - B. Stephens offsite.
End of Log for 11.28.16

Bret Stephens, Senior Technician
B.t.St
11.28.16

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-1
Date(s): 11.28.16

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 48 °F (Mean) — Wind Direction: N S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: | - Paint Chipping
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 11.28.16 / 12:00
Total Depth: _____ feet below TOC
Static Water Level: 18.39 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 11.28.16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 11.95 — pH 8.25 — ORP 102
Sp. Cond. 0.556 — Turbidity 0.0 — DO 6.84
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:09	1500	300	11.99	7.51	142	0.576	0.0	6.52	18.39
12:14	3000	300	11.98	7.41	158	0.577	0.0	6.37	18.39
12:19	4500	300	12.02	7.34	165	0.574	0.0	6.27	18.39

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 11.28.16 / 12:24
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.02 — pH 7.34 — ORP 165
Sp. Cond. 0.574 — Turbidity 0.0 — DO 6.27
Water Level: 18.39 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
WL for MW-1N = 19.30'; 2 1/16" offset from top of PVC to top of casing; TD = 62.30'
WL for MW-1S = 19.29'; 2" " " " " " " " " " " " " " ; TD = 92.30'
Top of pump for MW-1 at 30.30'; offset is 2 7/8"

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-2
Date(s): 11.28.16

Field Team Members
Name: B. Stephens Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 47 °F (Mean) Wind Direction: N S E (W) (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: | - Paint chipping
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 11.28.16 / 12:56
Total Depth: _____ feet below TOC
Static Water Level: 14.68 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens Purge Date: 11.28.16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.38 pH 8.26 ORP 99
Sp. Cond. 0.518 Turbidity 0.0 DO 7.63
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:59	1500	300	13.00	7.38	150	0.511	0.0	6.21	14.68
13:04	3000	300	13.05	7.29	164	0.514	0.0	5.86	14.68
13:09	4500	300	13.11	7.19	171	0.510	0.0	5.91	14.68

Sampling Activities
Sampled By: B. Stephens Sample Date/Time: 11.28.16 / 13:14
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.11 pH 7.19 ORP 171
Sp. Cond. 0.510 Turbidity 0.0 DO 5.91
Water Level: 14.68 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-3
Date(s): 11.28.16

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 43 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad	Good
Casing	- Cap fits poorly
Protective Casing	- Paint chipping
Reference Mark/Identification	

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 11.28.16/09:59
Total Depth: _____ feet below TOC
Static Water Level: 15.85 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 11.28.16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.40 — pH 7.97 — ORP 110
Sp. Cond. 0.465 — Turbidity 0.0 — DO 7.24
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:08	1500	300	12.82	7.23	150	0.471	0.0	7.08	15.85
10:13	3000	300	12.89	7.17	162	0.471	0.0	7.06	15.85
10:18	4500	300	12.91	7.12	168	0.469	0.0	6.71	15.85

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 11.28.16/10:23
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.91 — pH 7.12 — ORP 168
Sp. Cond. 0.479 — Turbidity 0.0 — DO 6.71
Water Level: 15.85 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-4R
Date(s): 11.28.16

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 38 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 11.28.16 / 09:04
Total Depth: _____ feet below TOC
Static Water Level: 14.88 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 11.28.16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.24 — pH 9.08 — ORP 29
Sp. Cond. 0.491 — Turbidity 0.0 — DO 10.95
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
09:12	1500	300	12.73	7.72	106	0.450	0.0	6.76	14.88
09:17	3000	300	12.67	7.42	135	0.445	0.0	9.00	14.88
09:22	4500	300	12.59	7.32	149	0.449	0.0	8.30	14.88
09:27	6000	300	12.55	7.24	158	0.447	0.0	6.40	14.88

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 11.28.16 / 09:32
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.55 — pH 7.24 — ORP 158
Sp. Cond. 0.447 — Turbidity 0.0 — DO 6.40
Water Level: 14.88 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-5
Date(s): 11.28.16

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 46 °F (Mean) — Wind Direction: N S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

		Locks	Yes	No
Well Pad	Good	Protective Casing	X	
Casing		Well		X
Protective Casing	- Paint chipping			
Reference Mark/Identification				

Groundwater Level Measurements
Date/Time Measured: 11.28.16 / 10:56
Total Depth: _____ feet below TOC
Static Water Level: 14.82 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 11.28.16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.25 — pH 8.12 — ORP 105
Sp. Cond. 0.555 — Turbidity 0.0 — DO 7.49
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
11:06	1500	300	12.14	7.47	147	0.568	0.0	6.80	14.82
11:11	3000	300	12.19	7.38	160	0.563	0.0	7.12	14.82
11:16	4500	300	12.11	7.37	165	0.540	0.0	6.87	14.82

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 11.28.16 / 11:21
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.11 — pH 7.37 — ORP 0.540
Sp. Cond. 0.540 — Turbidity 0.0 — DO 6.87
Water Level: 14.82 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-6
Date(s): 11.28.16

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 50 °F (Mean) — Wind Direction: N S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 11.28.16 / 15:36
Total Depth: _____ feet below TOC
Static Water Level: 15.38 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 11.28.16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 11.54 — pH 8.15 — ORP 97
Sp. Cond. 0.500 — Turbidity 0.0 — DO 5.58
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
15:42	1500	300	11.72	7.45	134	0.531	0.0	6.05	15.38
15:47	3000	300	11.77	7.27	156	0.532	0.0	6.11	15.38
15:52	4500	300	11.79	7.22	168	0.535	0.0	6.10	15.38
15:57	6000	300	11.83	7.16	173	0.534	0.0	5.79	15.38

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 11.28.16 / 16:02
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 11.83 — pH 7.16 — ORP 173
Sp. Cond. 0.534 — Turbidity 0.0 — DO 5.79
Water Level: 15.38 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
DUP taken here @ "23:59"

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-7
Date(s): 11.28.16

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 47 °F (Mean) — Wind Direction: N S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations

Well Pad	Good
Casing	
Protective Casing	
Reference Mark/Identification	

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 11.28.16 / 14:49
Total Depth: _____ feet below TOC
Static Water Level: 15.05 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 11.28.16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 11.94 — pH 7.84 — ORP 114
Sp. Cond. 0.523 — Turbidity 0.0 — DO 3.95
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
14:58	1500	300	12.33	7.31	146	0.514	0.0	6.15	15.05
15:03	3000	300	12.44	7.25	163	0.512	0.0	6.46	15.05
15:08	4500	300	12.52	7.21	172	0.511	0.0	6.45	15.05

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 11.28.16 / 15:13
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.52 — pH 7.21 — ORP 172
Sp. Cond. 0.511 — Turbidity 0.0 — DO 6.45
Water Level: 15.05 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-8
Date(s): 11.28.16

Field Team Members
Name: B. Stephens Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 48 °F (Mean) Wind Direction: N S E (W) (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 11.28.16 / 14:05
Total Depth: _____ feet below TOC
Static Water Level: 15.23 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens Purge Date: 11.28.16
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.17 pH 8.35 ORP 88
Sp. Cond. 0.488 Turbidity 0.0 DO 6.11
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
14:12	1500	300	12.22	7.44	138	0.487	0.0	6.23	15.23
14:17	3000	300	12.25	7.34	157	0.483	0.0	5.95	15.23
14:22	4500	300	12.25	7.25	168	0.485	0.0	5.99	15.23

Sampling Activities
Sampled By: B. Stephens Sample Date/Time: 11.28.16 / 14:27
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.25 pH 7.25 ORP 168
Sp. Cond. 0.485 Turbidity 0.0 DO 5.99
Water Level: 15.23 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

February 15, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #3 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the January 18, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/CGJ

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Project Name: City of Fremont Sampling Events
Project Location: Fremont, NE
Project Number: 27216302.00

Date: 1/18/17
Weather Information: AM: Sunny, high 30's, 0-5mph S wind
PM: Sunny, mid 40's, 5-10 mph S wind
Personnel Onsite: B Stephens (SCS)
Equipment Onsite: Ford F-250 (SCS)
Field Equipment: Horiba U-52-2 = S/N → U658862X
↳ Calibrated 1.12.17
QED MP10 Bladder Pump Controller
↳ S/N → U56081X
↳ Calibrated 1.12.17
Nitrogen Cylinders (#3)

Work Comments/Observations:
08:17 - Arrive onsite. Met with FDN (T. Sedlacek)
08:35 - Arrive at MW-4R.
09:38 - Move to MW-3
10:34 - Move to MW-5.
11:32 - Move to MW-1
12:35 - Move to MW-2
13:27 - Move to MW-8
14:29 - Move to MW-7

1.18.17 Cont'd
15:20 - Move to MW-6
16:28 - B. Stephens offsite.
End of log for 1.18.17

Bret Stephens, Senior Technician
B. Stephens
1.18.17

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-1
Date(s): 1.18.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 40 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing: /
Protective Casing: / - Paint chipping
Reference Mark/Identification: _____

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 1.18.17 / 11:40
Total Depth: _____ feet below TOC
Static Water Level: 19.26 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 1.18.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.04 — pH 7.02 — ORP 159
Sp. Cond. 0.815 — Turbidity 0.0 — DO 9.55
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
11:56	1500	300	12.20	6.86	167	0.809	0.0	9.65	19.26
12:01	3000	300	12.32	6.78	172	0.804	0.0	9.19	19.26
12:06	4500	300	12.45	6.74	176	0.801	0.0	8.95	19.26

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 1.18.17 / 12:11
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.45 — pH 6.74 — ORP 176
Sp. Cond. 0.801 — Turbidity 0.0 — DO 8.95
Water Level: 19.26 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
WL for MW-1N = 20.11'
WL for MW-1S = 20.10'

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-2
Date(s): 1.18.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 44 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: | - Paint chipping
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 1.18.17 / 12:47
Total Depth: _____ feet below TOC
Static Water Level: 15.55 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 1.18.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.81 — pH 6.90 — ORP 173
Sp. Cond. 0.761 — Turbidity 0.0 — DO 7.78
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:56	1500	300	12.98	6.84	177	0.768	0.0	7.11	15.55
13:01	3000	300	13.03	6.82	180	0.767	0.0	6.84	15.55
13:06	4500	300	13.05	6.79	184	0.760	0.0	6.97	15.55

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 1.18.17 / 13:11
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.05 — pH 6.79 — ORP 184
Sp. Cond. 0.760 — Turbidity 0.0 — DO 6.97
Water Level: 15.55 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-3
Date(s): 1.18.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 34 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad	Good
Casing	- Cap fits poorly
Protective Casing	- Paint Chipping
Reference Mark/Identification	

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 1.18.17 / 09:45
Total Depth: _____ feet below TOC
Static Water Level: 16.61 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 1.18.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.20 — pH 6.91 — ORP 150
Sp. Cond. 0.712 — Turbidity 3.0 — DO 7.09
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:00	1500	300	13.08	6.79	157	0.723	5.9	6.89	16.61
10:05	3000	300	13.34	6.78	163	0.726	4.7	6.52	16.61
10:10	4500	300	13.48	6.76	168	0.725	1.3	6.42	16.61

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 1.18.17 / 10:15
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.48 — pH 6.76 — ORP 168
Sp. Cond. 0.725 — Turbidity 1.3 — DO 6.42
Water Level: 16.61 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-4R
Date(s): 1.18.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 30 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 1.18.17 / 08:57
Total Depth: _____ feet below TOC
Static Water Level: 15.93 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 1.18.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.31 — pH 7.78 — ORP 118
Sp. Cond. 0.670 — Turbidity 0.0 — DO 7.94
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
09:06	1500	300	12.55	7.32	145	0.645	0.0	8.98	15.93
09:11	3000	300	12.54	7.08	160	0.639	0.0	9.36	15.93
09:16	4500	300	12.54	6.99	169	0.644	0.0	9.55	15.93
09:21	6000	300	12.54	6.92	173	0.651	0.0	9.23	15.93

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 1.18.17 / 09:26
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.54 — pH 6.92 — ORP 173
Sp. Cond. 0.651 — Turbidity 0.0 — DO 9.23
Water Level: 15.93 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-5
Date(s): 1.18.17

Field Team Members
Name: B. Stephens Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 37 °F (Mean) Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing:
Protective Casing: - Paint chipping
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 1.18.17 / 10:45
Total Depth: _____ feet below TOC
Static Water Level: 15.78 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens Purge Date: 1.18.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.23 pH 7.01 ORP 167
Sp. Cond. 0.830 Turbidity 0.0 DO 12.19
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:57	1500	300	12.44	6.94	172	0.833	0.0	11.75	15.78
11:02	3000	300	12.52	6.91	176	0.837	0.0	11.20	15.78
11:07	4500	300	12.57	6.91	177	0.832	0.0	11.10	15.78

Sampling Activities
Sampled By: B. Stephens Sample Date/Time: 1.18.17 / 11:12
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.57 pH 6.91 ORP 177
Sp. Cond. 0.832 Turbidity 0.0 DO 11.10
Water Level: 15.78 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-6
Date(s): 1.18.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 51 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 1.18.17 / 15:36
Total Depth: _____ feet below TOC
Static Water Level: 16.24 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 1.18.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 11.60 — pH 7.05 — ORP -8
Sp. Cond. 0.810 — Turbidity 0.0 — DO 6.50
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
15:43	1500	300	12.39	6.84	54	0.839	0.0	6.16	16.24
15:48	3000	300	12.48	6.75	103	0.841	0.0	6.00	16.24
15:53	4500	300	12.50	6.71	123	0.842	0.0	5.90	16.24

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 1.18.17 / 15:58
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.50 — pH 6.71 — ORP 123
Sp. Cond. 0.842 — Turbidity 0.0 — DO 5.90
Water Level: 16.24 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
DUP taken here @ "23:59"

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-7
Date(s): 1.18.17

Field Team Members
Name: B. Stephens Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 49 °F (Mean) Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 1.18.17 / 14:38
Total Depth: _____ feet below TOC
Static Water Level: 15.81 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens Purge Date: 1.18.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.05 pH 6.96 ORP 169
Sp. Cond. 0.745 Turbidity 0.0 DO 5.70
Physical appearance of purge water: _____

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
14:48	1500	300	12.84	6.89	169	0.747	0.0	6.68	15.81
14:53	3000	300	13.07	6.88	171	0.747	0.0	6.85	15.81
14:58	4500	300	13.10	6.88	174	0.746	0.0	6.62	15.81

Sampling Activities
Sampled By: B. Stephens Sample Date/Time: 1.18.17 / 15:03
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.10 pH 6.88 ORP 174
Sp. Cond. 0.746 Turbidity 0.0 DO 6.62
Water Level: 15.81 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-8
Date(s): 1.18.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 47 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 1.18.17 / 13:41
Total Depth: _____ feet below TOC
Static Water Level: 15.90 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 1.18.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.68 — pH 6.99 — ORP 168
Sp. Cond. 0.707 — Turbidity 0.0 — DO 11.42
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
14:04	1500	300	13.71	6.90	173	0.708	0.0	10.85	15.90
14:09	3000	300	13.77	6.89	179	0.706	0.0	10.69	15.90
14:14	4500	300	13.82	6.86	175	0.705	0.0	10.04	15.90

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 1.18.17 / 14:19
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.82 — pH 6.86 — ORP 175
Sp. Cond. 0.705 — Turbidity 0.0 — DO 10.04
Water Level: 15.90 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

March 31, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #4 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the March 6, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Project Name: City of Fremont Sampling Events
Project Location: Fremont, NE
Project Number: 27216302.00

Date: 3/6/17
Weather Information: AM:
PM:
Personnel Onsite: B. Stephens (SCS)
Equipment Onsite: Ford F-250 (SCS)
Field Equipment: Horiba U-52-2 = S/N → U636354
↳ Calibrated 3/2/17
QED MP10 Bladder Pump Controller
↳ S/N → U48146X
↳ Calibrated 3/2/17
Nitrogen Cylinders (#3)

Work Comments / Observations:
08:37 - Arrive onsite at MW-4R.
09:49 - Move to MW-3.
10:39 - Move to MW-5
11:36 - Move to MW-1.
12:43 - Move to MW-2.
13:34 - Move to MW-8.
14:22 - Move to MW-7. Sampling delayed due to weather (rain/hail).

3.6.17 Cont'd

14:45 - Inclement weather has passed. Resumed Sampling activities.

15:31 - Move to MW-6.

16:33 - B. Stephens offsite.

End of Log for 3.6.17

Bret Stephens, Senior Technician

B t St

3.6.17

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-1
Date(s): 3.6.17

Field Team Members
Name: B. Stephens Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 72 °F (Mean) Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy Sky: Cloudy (Sunny) Partly

Well Observations

		Locks	Yes	No
Well Pad	Good			
Casing		Protective Casing	X	
Protective Casing	- Paint chipping	Well		X
Reference Mark/Identification				

Groundwater Level Measurements
Date/Time Measured: 3.6.17/11:56
Total Depth: _____ feet below TOC
Static Water Level: 18.40 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens Purge Date: 3.6.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.18 pH 7.44 ORP 59
Sp. Cond. 0.796 Turbidity 0.0 DO 6.18
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:07	1500	300	14.71	7.24	67	0.799	0.0	5.67	18.40
12:12	3000	300	14.59	7.15	73	0.789	0.0	6.05	18.40
12:17	4500	300	14.46	7.05	76	0.788	0.0	5.57	18.40

Sampling Activities
Sampled By: B. Stephens Sample Date/Time: 3.6.17/12:22
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.46 pH 7.05 ORP 76
Sp. Cond. 0.788 Turbidity 0.0 DO 5.57
Water Level: 18.40 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
WL for MW-1N = 19.28'
WL for MW-1S = 19.26'

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-2
Date(s): 3.6.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 74 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: | - Paint chipping
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3.6.17 / 12:53
Total Depth: _____ feet below TOC
Static Water Level: 14.51 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3.6.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.27 — pH 7.18 — ORP 66
Sp. Cond. 0.725 — Turbidity 0.0 — DO 7.31
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
13:01	1500	300	14.03	7.06	74	0.733	0.0	5.73	14.51
13:06	3000	300	13.94	6.96	83	0.733	0.0	5.47	14.51
13:11	4500	300	13.96	6.90	88	0.734	0.0	5.37	14.51

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3.6.17 / 13:16
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.96 — pH 6.90 — ORP 88
Sp. Cond. 0.734 — Turbidity 0.0 — DO 5.37
Water Level: 14.51 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-3
Date(s): 3.6.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 63 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: - Cap fits poorly
Protective Casing: - Paint chipping
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3.6.17/09:58
Total Depth: ____ feet below TOC
Static Water Level: 15.60 feet below TOC
TD - SWL: ____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3.6.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other ____ (circle one)
Purge Volume Calculation: ____ Min Purge Volume: ____ mL
Initial Parameter Readings: Temp (°C) 14.58 pH 7.62 ORP 67
Sp. Cond. 0.692 Turbidity 0.0 DO 8.25
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:06	1500	300	14.50	7.51	72	0.687	0.0	5.83	15.60
10:11	3000	300	15.33	7.42	74	0.683	0.0	5.20	15.60
10:16	4500	300	16.16	7.32	74	0.680	0.0	4.54	15.60

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3.6.17/10:21
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 16.16 pH 7.32 ORP 74
Sp. Cond. 0.680 Turbidity 0.0 DO 4.54
Water Level: 15.60 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: ____ **Date:** ____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-4R
Date(s): 3.6.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 63 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3.6.17 / 09:00
Total Depth: _____ feet below TOC
Static Water Level: 15.23 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3.6.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.79 — pH 10.04 — ORP 17
Sp. Cond. 0.669 — Turbidity 0.0 — DO 6.57
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
09:11	1500	300	13.37	9.17	39	0.668	0.0	5.44	15.23
09:16	3000	300	13.35	8.29	51	0.669	0.0	5.55	15.23
09:21	4500	300	13.35	8.19	57	0.670	0.0	5.76	15.23
09:26	6000	300	13.40	8.00	62	0.672	0.0	5.27	15.23

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3.6.17 / 09:31
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.40 — pH 8.00 — ORP 62
Sp. Cond. 0.672 — Turbidity 0.0 — DO 5.27
Water Level: 15.23 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-5
Date(s): 3.6.17

Field Team Members
Name: B. Stephens Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 68 °F (Mean) Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: _____
Protective Casing: - Paint chipping
Reference Mark/Identification: _____

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3.6.17 / 10:52
Total Depth: _____ feet below TOC
Static Water Level: 15.04 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens Purge Date: 3.6.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.57 pH 7.43 ORP 66
Sp. Cond. 0.816 Turbidity 0.0 DO 6.03
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
11:01	1500	300	14.46	7.35	70	0.837	0.0	9.16	15.04
11:06	3000	300	14.36	7.30	72	0.832	0.0	8.32	15.04
11:11	4500	300	14.46	7.28	70	0.819	0.0	7.69	15.04

Sampling Activities
Sampled By: B. Stephens Sample Date/Time: 3.6.17 / 11:16
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.46 pH 7.28 ORP 70
Sp. Cond. 0.819 Turbidity 0.0 DO 7.69
Water Level: 15.04 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-6
Date(s): 3.6.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 77 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: Good
Casing: /
Protective Casing: /
Reference Mark/Identification: /

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3.6.17 / 15:42
Total Depth: _____ feet below TOC
Static Water Level: 15.46 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3.6.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.83 — pH 6.93 — ORP 90
Sp. Cond. 0.849 — Turbidity 0.0 — DO 5.77
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
15:50	1500	300	13.09	6.87	96	0.942	0.0	3.82	15.46
15:55	3000	300	13.01	6.83	100	0.952	0.0	4.49	15.46
16:00	4500	300	12.95	6.80	103	0.952	0.0	4.10	15.46

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3.6.17 / 16:05
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.95 — pH 6.80 — ORP 103
Sp. Cond. 0.952 — Turbidity 0.0 — DO 4.10
Water Level: 15.46 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
DUP taken here at 1123:59"

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-7
Date(s): 3.6.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 77 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3.6.17 / 14:55
Total Depth: _____ feet below TOC
Static Water Level: 14.94 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3.6.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.81 — pH 7.17 — ORP 80
Sp. Cond. 0.704 — Turbidity 0.0 — DO 10.16
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
15:03	1500	300	13.61	7.07	86	0.664	0.0	8.62	14.94
15:08	3000	300	13.38	6.97	94	0.658	0.0	8.46	14.94
15:13	4500	300	13.46	6.91	99	0.659	0.0	8.08	14.94

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3.6.17 / 15:18
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.46 — pH 6.91 — ORP 99
Sp. Cond. 0.659 — Turbidity 0.0 — DO 8.08
Water Level: 14.94 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-8
Date(s): 3.6.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 77 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3.6.17 / 13:47
Total Depth: _____ feet below TOC
Static Water Level: 14.94 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3.6.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.66 — pH 7.19 — ORP 70
Sp. Cond. 0.677 — Turbidity 0.0 — DO 5.40
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
13:55	1500	300	15.14	7.09	75	0.686	0.0	8.11	14.94
14:00	3000	300	15.00	7.00	83	0.687	0.0	7.72	14.94
14:05	4500	300	14.82	6.96	87	0.687	0.0	7.67	14.94

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3.6.17 / 14:10
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.82 — pH 6.96 — ORP 87
Sp. Cond. 0.687 — Turbidity 0.0 — DO 7.67
Water Level: 14.94 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

May 22, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #5 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the April 24, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Project Name: City of Fremont Sampling Events
Project Location: Fremont, NE
Project Number: 27216302.00

Date: 4/24/17
Weather Information: AM: Partly Cloudy, mid 50's, 20-25 mph SE wind
~~Personnel Onsite~~ PM: Partly Cloudy, low 70's, 20-25 mph SE wind
Personnel Onsite: B. Stephens (SCS)
Equipment Onsite: Ford F-250 (SCS)
Field Equipment: Horiba U-52 = S/N → L7C36RWO
↳ Calibrated 4/6/17
QED MP10 Bladder Pump Controller
↳ S/N = 11771
↳ Calibrated 4/6/17
Nitrogen Cylinders (#2)

Work Comments / Observations:
08:10 - Arrive onsite at MW-4R.
09:16 - Move to MW-3.
10:08 - Move to MW-5.
11:08 - Move to MW-1.
12:07 - Move to MW-2.
12:53 - Move to MW-8.
13:40 - Move to MW-7.
14:21 - Move to MW-6.

4.24.17 Cont'd
15:15- B. Stephens offsite.
End of Log for 4.24.17

Bret Stephens, Senior Technician
B.t St
4.24.17

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-1
Date(s): 4.24.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 62 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: |
Protective Casing: | - Paint chipping
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 4.24.17 / 11:27
Total Depth: _____ feet below TOC
Static Water Level: 19.35 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 4.24.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.03 — pH 7.29 — ORP 47
Sp. Cond. 0.744 — Turbidity 0.0 — DO 6.56
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
11:39	1500	300	12.11	6.93	85	0.770	0.0	5.51	19.35
11:44	3000	300	12.00	6.89	100	0.772	0.0	5.13	19.35
11:49	4500	300	12.03	6.88	107	0.771	0.0	4.77	19.35

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 4.24.17 / 11:54
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.03 — pH 6.88 — ORP 107
Sp. Cond. 0.771 — Turbidity 0.0 — DO 4.77
Water Level: 19.35 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
WL for MW-1N = 20.03'
WL for MW-1S = 20.01'

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-2
Date(s): 4.24.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 67 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing:
Protective Casing: - Paint chipping
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 4.24.17 / 12:21
Total Depth: _____ feet below TOC
Static Water Level: 15.47 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 4.24.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.68 — pH 7.21 — ORP 61
Sp. Cond. 0.709 — Turbidity 0.0 — DO 7.47
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:29	1500	300	11.48	6.89	91	0.722	0.0	4.43	15.47
12:34	3000	300	11.35	6.86	103	0.722	0.0	3.74	15.47
12:39	4500	300	11.27	6.85	110	0.723	0.0	3.43	15.47

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 4.24.17 / 12:44
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 11.27 — pH 6.85 — ORP 110
Sp. Cond. 0.723 — Turbidity 0.0 — DO 3.43
Water Level: 15.47 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-3
Date(s): 4.24.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 55 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations

		Locks	Yes	No
Well Pad	Good			
Casing	- Cap fits poorly	Protective Casing	X	
Protective Casing	- Paint chipping	Well		X
Reference Mark/Identification				

Groundwater Level Measurements
Date/Time Measured: 4.24.17 / 09:29
Total Depth: _____ feet below TOC
Static Water Level: 16.53 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 4.24.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.20 — pH 7.56 — ORP 205
Sp. Cond. 0.671 — Turbidity 0.0 — DO 5.85
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
09:37	1500	300	11.84	7.03	184	0.702	0.0	4.23	16.53
09:42	3000	300	11.89	6.98	175	0.707	0.0	4.09	16.53
09:47	4500	300	11.92	6.96	169	0.708	0.0	3.82	16.53

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 4.24.17 / 09:52
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 11.92 — pH 6.96 — ORP 169
Sp. Cond. 0.708 — Turbidity 0.0 — DO 3.82
Water Level: 16.53 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-4R
Date(s): 4.24.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 52 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 4.24.17 / 08:37
Total Depth: _____ feet below TOC
Static Water Level: 15.92 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 4.24.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.55 — pH 8.03 — ORP 16
Sp. Cond. 0.645 — Turbidity 0.0 — DO 6.85
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
08:45	1500	300	11.01	7.18	56	0.645	0.0	5.57	15.92
08:50	3000	300	10.89	7.08	73	0.647	0.0	5.08	15.92
08:55	4500	300	10.84	7.04	84	0.650	0.0	4.33	15.92

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 4.24.17 / 09:00
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 10.84 — pH 7.04 — ORP 84
Sp. Cond. 0.650 — Turbidity 0.0 — DO 4.33
Water Level: 15.92 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-5
Date(s): 4.24.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 59 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing:
Protective Casing: - Paint chipping
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 4.24.17 / 10:27
Total Depth: _____ feet below TOC
Static Water Level: 15.69 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 4.24.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 11.91 — pH 7.28 — ORP 69
Sp. Cond. 0.812 — Turbidity 0.0 — DO 5.86
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:36	1500	300	11.36	7.06	93	0.844	0.0	5.31	15.69
10:41	3000	300	11.37	7.03	105	0.847	0.0	5.13	15.69
10:46	4500	300	11.56	7.01	112	0.846	0.0	5.06	15.69

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 4.24.17 / 10:51
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 11.56 — pH 7.01 — ORP 112
Sp. Cond. 0.846 — Turbidity 0.0 — DO 5.06
Water Level: 15.69 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-6
Date(s): 4.24.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 73 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 4.24.17 / 14:35
Total Depth: _____ feet below TOC
Static Water Level: 16.11 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 4.24.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.56 — pH 7.05 — ORP 75
Sp. Cond. 0.882 — Turbidity 0.0 — DO 5.42
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
14:43	1500	300	11.25	6.80	99	0.925	0.0	4.07	16.13
14:48	3000	300	11.09	6.77	111	0.928	0.0	3.77	16.13
14:53	4500	300	10.97	6.75	117	0.928	0.0	3.60	16.13

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 4.24.17 / 14:58
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 10.97 — pH 6.75 — ORP 117
Sp. Cond. 0.928 — Turbidity 0.0 — DO 3.60
Water Level: 16.13 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
Duplicate taken here at "23:59"

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-7
Date(s): 4.24.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 70 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 4.24.17 / 13:51
Total Depth: _____ feet below TOC
Static Water Level: 15.71 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 4.24.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 12.44 — pH 6.95 — ORP 86
Sp. Cond. 0.631 — Turbidity 0.0 — DO 4.28
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
13:59	1500	300	11.58	6.80	106	0.707	0.0	5.21	15.71
14:04	3000	300	11.42	6.78	116	0.715	0.0	4.93	15.71
14:09	4500	300	11.35	6.76	122	0.717	0.0	4.68	15.71

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 4.24.17 / 14:14
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 11.35 — pH 6.76 — ORP 122
Sp. Cond. 0.717 — Turbidity 0.0 — DO 4.68
Water Level: 15.71 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-8
Date(s): 4.24.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 69 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 4.24.17 / 13:12
Total Depth: _____ feet below TOC
Static Water Level: 15.83 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 4.24.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.25 — pH 7.07 — ORP 47
Sp. Cond. 0.653 — Turbidity 0.0 — DO 4.09
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
13:19	1500	300	12.68	6.91	73	0.656	0.0	4.89	15.83
13:24	3000	300	12.55	6.89	94	0.654	0.0	4.58	15.83
13:29	4500	300	12.45	6.87	104	0.655	0.0	4.39	15.83

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 4.24.17 / 13:34
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.45 — pH 6.87 — ORP 104
Sp. Cond. 0.655 — Turbidity 0.0 — DO 4.39
Water Level: 15.83 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

July 7, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #6 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the June 12, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

Project Name: City of Fremont Sampling Events
Project Location: Fremont, NE
Project Number: 27216302.00

Date: 6.12.17
Weather Information: AM: Overcast, Light precip, low 70's, 5 10 mph SE wind
PM: Overcast, mid 70's, 5-10 mph SW wind
Personnel Onsite: B. Stephens (SCS)
Equipment Onsite: Ford F-250 (SCS)
Field Equipment: Horiba U-52 = S/N → WB3854X
↳ Calibrated 6/8/17
QED MP10 Bladder Pump Controller
↳ S/N → 11774
↳ Calibrated 6.7.17
Nitrogen Cylinder (#1)

Work Comments / Observations:
08:15 - Arrive onsite. Gate is locked. FDN (Sedlacek) comes over + unlocks gate.
08:31 - Arrive at MW-4R.
09:28 - Move to MW-3. In weather delay to due thunderstorms.
09:52 - Resumed sampling activities at MW-3.
10:27 - Move to MW-5.
11:15 - Move to MW-1.

6.12.17 Cont'd
11:50 - Move to MW-2.
12:30 - Move to MW-8.
13:05 - Move to MW-7.
13:38 - Move to MW-6.
14:20 - Demos site
End of Log for 6.12.17

Bret Stephens, Senior Technician
B.t.S.
6.12.17

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-1
Date(s): 6.12.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 73 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: | - Paint Chipping
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 6.12.17 / 11:21
Total Depth: _____ feet below TOC
Static Water Level: 15.77 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 6.12.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.64 — pH 6.94 — ORP 182
Sp. Cond. 0.811 — Turbidity 0.0 — DO 6.71
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
11:31	1500	300	15.09	6.87	190	0.813	0.0	6.02	15.77
11:36	3000	300	14.76	6.81	195	0.814	0.0	5.91	15.77
11:41	4500	300	14.65	6.79	198	0.814	0.0	5.95	15.77

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 6.12.17 / 11:46
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.65 — pH 6.79 — ORP 198
Sp. Cond. 0.814 — Turbidity 0.0 — DO 5.95
Water Level 15.77 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
WL for MW-1N = 16.67'
WL for MW-1S = 16.64'

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-2
Date(s): 6.12.17

Field Team Members
Name: B. Stephes — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 72 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: | - Paint Chipping
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 6.12.17 / 12:05
Total Depth: _____ feet below TOC
Static Water Level: 12.14 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephes — Purge Date: 6.12.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.72 — pH 6.85 — ORP 193
Sp. Cond. 0.775 — Turbidity 0.0 — DO 6.30
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:10	1500	300	14.18	6.79	198	0.786	0.0	5.89	12.14
12:15	3000	300	13.73	6.71	204	0.799	0.0	5.18	12.14
12:20	4500	300	13.61	6.66	207	0.801	0.0	5.01	12.14

Sampling Activities
Sampled By: B. Stephes — Sample Date/Time: 6.12.17 / 12:25
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.61 — pH 6.66 — ORP 207
Sp. Cond. 0.801 — Turbidity 0.0 — DO 5.01
Water Level 12.14 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-3
Date(s): 6.12.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 72 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: None (Light) Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: - Cap fits poorly
Protective Casing: - Paint Chipping
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 6.12.17 / 09:59
Total Depth: _____ feet below TOC
Static Water Level: 13.17 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 6.12.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.87 — pH 6.64 — ORP 182
Sp. Cond. 0.769 — Turbidity 0.0 — DO 5.84
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:06	1500	300	15.64	6.67	184	0.776	0.0	5.52	13.17
10:11	3000	300	15.21	6.69	187	0.790	0.0	5.28	13.17
10:16	4500	300	14.95	6.67	190	0.796	0.0	5.28	13.17

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 6.12.17 / 10:21
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.95 — pH 6.67 — ORP 190
Sp. Cond. 0.796 — Turbidity 0.0 — DO 5.28
Water Level 13.17 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-4R
Date(s): 6.12.17

Field Team Members
Name: B. Stephes — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 73 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: None (Light) Heavy — Sky: (Cloudy) Sunny Partly

Well Observations

Well Pad	Good
Casing	
Protective Casing	
Reference Mark/Identification	

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 6.12.17 / 08:53
Total Depth: _____ feet below TOC
Static Water Level: 12.58 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephes — Purge Date: 6.12.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.82 — pH 6.20 — ORP 135
Sp. Cond. 0.673 — Turbidity 0.0 — DO 6.96
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
09:01	1500	300	15.01	6.42	136	0.668	0.0	6.53	12.59
09:06	3000	300	14.51	6.56	149	0.660	0.0	6.32	12.59
09:11	4500	300	14.34	6.57	162	0.658	0.0	6.13	12.59
09:16	6000	300	14.24	6.53	173	0.659	0.0	6.07	12.59

Sampling Activities
Sampled By: B. Stephes — Sample Date/Time: 6.12.17 / 09:21
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.24 — pH 6.53 — ORP 173
Sp. Cond. 0.659 — Turbidity 0.0 — DO 6.07
Water Level 12.59 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-5
Date(s): 6.12.17

Field Team Members
Name: B. Stephens Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 73 °F (Mean) Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: None (Light) Heavy Sky: (Cloudy) Sunny Partly

Well Observations

		Locks	Yes	No
Well Pad	Good	Protective Casing	X	
Casing		Well		X
Protective Casing	- Paint Chipping			
Reference Mark/Identification				

Groundwater Level Measurements
Date/Time Measured: 6.12.17 / 10:40
Total Depth: _____ feet below TOC
Static Water Level: 12.28 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens Purge Date: 6.12.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.32 pH 6.88 ORP 177
Sp. Cond. 0.870 Turbidity 0.0 DO 6.65
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:45	1500	300	14.96	6.87	182	0.873	0.0	6.01	12.28
10:50	3000	300	14.52	6.84	188	0.871	0.0	5.79	12.28
10:55	4500	300	14.35	6.82	192	0.868	0.0	5.79	12.28

Sampling Activities
Sampled By: B. Stephens Sample Date/Time: 6.12.17 / 11:00
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.35 pH 6.82 ORP 192
Sp. Cond. 0.868 Turbidity 0.0 DO 5.79
Water Level 12.28 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-6
Date(s): 6.12.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 77 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 6.12.17 / 13:45
Total Depth: _____ feet below TOC
Static Water Level: 12.76 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 6.12.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 17.40 — pH 6.97 — ORP 168
Sp. Cond. 0.973 — Turbidity 0.0 — DO 4.27
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
13:50	1500	300	15.86	6.89	165	0.981	0.0	4.66	12.76
13:55	3000	300	14.48	6.80	182	0.988	0.0	4.56	12.76
14:00	4500	300	13.98	6.74	193	0.989	0.0	4.41	12.76

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 6.12.17 / 14:05
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.98 — pH 6.74 — ORP 193
Sp. Cond. 0.989 — Turbidity 0.0 — DO 4.41
Water Level 12.76 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
Duplicate taken here at "23:59"

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-7
Date(s): 6.12.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 75 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations

Well Pad	Good
Casing	
Protective Casing	
Reference Mark/Identification	

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 6.12.17 / 13:12
Total Depth: _____ feet below TOC
Static Water Level: 12.37 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 6.12.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 16.62 — pH 6.84 — ORP 176
Sp. Cond. 0.758 — Turbidity 0.0 — DO 3.80
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
13:18	1500	300	15.15	6.79	177	0.759	0.0	4.83	12.37
13:23	3000	300	14.55	6.76	186	0.764	0.0	5.16	12.37
13:28	4500	300	14.54	6.73	192	0.765	0.0	5.28	12.37

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 6.12.17 / 13:33
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.54 — pH 6.73 — ORP 192
Sp. Cond. 0.765 — Turbidity 0.0 — DO 5.28
Water Level 12.37 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-8
Date(s): 6.12.17

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 75 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: Good
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 6.12.17 / 12:39
Total Depth: _____ feet below TOC
Static Water Level: 12.55 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 6.12.17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 16.05 — pH 7.01 — ORP 156
Sp. Cond. 0.690 — Turbidity 0.0 — DO 4.67
Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:45	1500	300	15.09	6.89	168	0.691	0.0	5.46	12.55
12:50	3000	300	14.78	6.80	186	0.691	0.0	5.58	12.55
12:55	4500	300	14.69	6.77	193	0.692	0.0	5.53	12.55

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 6.12.17 / 13:00
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.69 — pH 6.77 — ORP 193
Sp. Cond. 0.692 — Turbidity 0.0 — DO 5.53
Water Level 12.55 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

September 12, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #7 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the July 31 and August 1, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included as attachments. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

We appreciate this opportunity to serve the City of Fremont. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

PROJECT NAME: CITY OF FREMONT SAMPLING EVENTS

PROJECT LOCATION: FREMONT, NE

PROJECT NUMBER: 27216302.00

DATE: 7.31.17

WEATHER: CLOUDY, 73°F, CALM @ 1026 MDT

PERSONNEL ONSITE: BRUNKEN (SCS) VEHICLE: FORD F-250 (SCS)

FIELD EQUIPMENT:

WORK COMMENTS/OBSERVATIONS:

1026 ARRIVE ON SITE, AT MW-9R

1149 MOVE TO MW-3

1238 MOVE TO MW-5

DTW @ 1435

MW-2 = 15.57

MW-6 = 16.05

MW-7 = 15.82

CITY OF FREMONT SAMPLING CONTINUED

DATE: 8.1.17

EQUIPMENT SET SAME AS 7.31.17

1104 ONSITE AT MW-2

1155 MOVE TO MW-8 (DUPLICATE SAMPLE)

1232 MOVE TO MW-7

1309 MOVE TO MW-6

1350 DEMOB

END OF LOG FOR 7.31.17 - 8.1.17

KOREY BRUNKEN

SR. PROJ. PROF.

8.1.17

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-1
Date(s): 7/31/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 80 °F (Mean) — Wind Direction: (N) S E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: GOOD
Casing: GOOD
Protective Casing: OK - PAINT PEELING
Reference Mark/Identification: OK

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 7/31/17 1346
Total Depth: _____ feet below TOC
Static Water Level: 19.16 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 7/31/17
Purge Method: Bailer ~~Dedicated Pump~~ Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 19.24 — pH 6.99 — ORP 106
Sp. Cond. 0.816 — Turbidity 0.0 — DO 14.02
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1357	1500	300	18.53	6.86	119	0.814	0.0	5.88	19.17
1402	3000	300	18.81	6.79	127	0.813	0.0	5.67	19.17
1407	4500	300	18.64	6.77	131	0.815	0.0	5.78	19.17

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 7/31/17 1412
Sample Method: Bailer ~~Dedicated Pump~~ Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 18.64 — pH 6.77 — ORP 131
Sp. Cond. 0.815 — Turbidity 0.0 — DO 5.78
Water Level: 19.17 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
MW-1N DTW = 19.98
MW-1S DTW = 19.97

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-2
Date(s): 8/1/17

Field Team Members
Name: K. BRUNKEN Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 79 °F (Mean) Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: GOOD
Casing: GOOD
Protective Casing: OK - PAINT PEELING
Reference Mark/Identification: GOOD

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 8/1/17 1117
Total Depth: _____ feet below TOC
Static Water Level: 15.61 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN Purge Date: 8/1/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 17.27 pH 6.92 ORP 83
Sp. Cond. 0.777 Turbidity 0.0 DO 27.80
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1129	1500	300	16.56	6.90	93	0.767	0.0	6.59	15.62
1134	3000	300	15.79	6.88	97	0.766	0.0	5.66	15.63
1139	4500	300	15.91	6.86	101	0.764	0.0	5.40	15.63

Sampling Activities
Sampled By: K. BRUNKEN Sample Date/Time: 8/1/17 1144
Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 15.91 pH 6.86 ORP 101
Sp. Cond. 0.764 Turbidity 0.0 DO 5.40
Water Level: 15.63 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-3
Date(s): 7/31/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 75° °F (Mean) — Wind Direction: (N) S E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations

		Locks	Yes	No
Well Pad	OK			
Casing	OK CAP FITS POORLY	Protective Casing		
Protective Casing	PAINT PEELING	Well		
Reference Mark/Identification	OK			

Groundwater Level Measurements
Date/Time Measured: 7/31/17 1158
Total Depth: _____ feet below TOC
Static Water Level: 16.97 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 7/31/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 22.49 — pH 6.78 — ORP 112
Sp. Cond. 0.730 — Turbidity 0.0 — DO 4.52
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1208	1500	300	19.08	6.81	117	0.733	0.0	6.90	16.98
1213	3000	300	18.62	6.80	124	0.738	0.2	7.59	16.98
1218	4500	300	19.42	6.75	128	0.743	0.2	7.12	16.98
1223	6000	300	19.17	6.77	129	0.735	0.4	7.76	16.98

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 7/31/17 1228
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 19.17 — pH 6.77 — ORP 129
Sp. Cond. 0.735 — Turbidity 0.4 — DO 7.76
Water Level: 16.98 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-4R
Date(s): 7/31/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 74 °F (Mean) — Wind Direction: (N) S E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny Partly

Well Observations
Well Pad: GOOD
Casing: ↓
Protective Casing: ↓
Reference Mark/Identification: ↓

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 7/31/17 1042 hrs
Total Depth: _____ feet below TOC
Static Water Level: 15.53 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 7/31/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 20.99 — pH 6.50 — ORP 117
Sp. Cond. .717 mS/cm — Turbidity 0.0 — DO 6.88
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1125	1500	300	20.06	6.606	114	0.710	0.0	6.31	15.53
1130	3000	300	20.07	6.609	114	0.686	0.0	5.81	15.53
1135	4500	300	20.06	6.71	118	0.712	0.0	6.18	15.53

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 7/31/17 1140
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 20.06 — pH 6.71 — ORP 118
Sp. Cond. 0.712 — Turbidity 0.0 — DO 6.18
Water Level: 15.53 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-5
Date(s): 7/31/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: _____ °F (Mean) — Wind Direction: N S E W (circle two if needed)
Precipitation: None Light Heavy — Sky: Cloudy Sunny Partly

Well Observations
Well Pad: _____
Casing: OK - CAP FITS POORLY
Protective Casing: OK - PAINT PEELING
Reference Mark/Identification: _____

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 7/31/17 1254
Total Depth: _____ feet below TOC
Static Water Level: 15.69 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 7/31/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 18.81 — pH 6.82 — ORP 118
Sp. Cond. 0.842 — Turbidity 0.0 — DO 6.60
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1305	1500	300	17.65	6.81	126	0.862	0.0	6.10	15.69
1310	3000	300	17.55	6.77	135	0.863	0.0	5.44	15.68
1315	4500	300	17.59	6.73	140	0.866	0.0	5.45	15.68

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 7/31/17 1320
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 17.59 — pH 6.73 — ORP 140
Sp. Cond. 0.866 — Turbidity 0.0 — DO 5.45
Water Level: 15.68 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-6
Date(s): 8/1/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 81 °F (Mean) — Wind Direction: N (S) (E) W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) (Partly)

Well Observations
Well Pad: GOOD
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 8/1/17
Total Depth: _____ feet below TOC
Static Water Level: 16.10 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 8/1/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 16.18 — pH 6.604 — ORP 115
Sp. Cond. 0.956 — Turbidity 0.0 — DO 4.81
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1324	1500	300	14.38	6.57	119	0.930	0.0	4.23	16.10
1329	3000	300	14.21	6.54	122	0.927	0.0	4.16	16.11
1334	4500	300	14.14	6.52	124	0.927	0.0	4.11	16.11

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 8/1/17 1339
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.14 — pH 6.52 — ORP 124
Sp. Cond. 0.927 — Turbidity 0.0 — DO 4.11
Water Level: 16.11 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-7
Date(s): 8/1/17

Field Team Members
Name: K. BRUNKEN Affiliation: SCS Engineers
Name: _____ Affiliation: SCS Engineers

Weather Conditions
Mean Temp: _____ °F (Mean) Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: GOOD
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 8/1/17 1235
Total Depth: _____ feet below TOC
Static Water Level: 15.87 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN Purge Date: 8/1/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.53 pH 6.71 ORP 98
Sp. Cond. 0.825 Turbidity 0.0 DO 13.39
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1247	1500	300	15.05	6.69	105	0.833	0.0	6.47	15.88
1252	3000	300	14.90	6.67	109	0.834	0.0	9.65	15.88
1257	4500	300	14.97	6.65	112	0.830	0.0	10.42	15.88
1302	6000	300	14.91	6.63	115	0.827	0.0	10.08	15.88

Sampling Activities
Sampled By: K. BRUNKEN Sample Date/Time: 8/1/17 1307
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 14.91 pH 6.63 ORP 115
Sp. Cond. 0.827 Turbidity 0.0 DO 10.08
Water Level: 15.88 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-8
Date(s): 8/1/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 80 °F (Mean) — Wind Direction: N (S) E W (circle two if needed)
Precipitation: (None) Light Heavy — Sky: (Cloudy) Sunny (Partly)

Well Observations
Well Pad: GOOD
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 8/1/17 1158
Total Depth: _____ feet below TOC
Static Water Level: 16.18 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 8/1/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 16.29 — pH 6.85 — ORP 73
Sp. Cond. 0.655 — Turbidity 0.0 — DO 9.74
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C) / 15.55 ZD	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1206	1500	300	16.27	6.77	87	0.644	0.0	7.14	16.18
1211	3000	300	15.28	6.68	97	0.642	0.0	6.59	16.20
1216	4500	300	15.16	6.63	101	0.642	0.0	6.50	16.19

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 8/1/17 1220
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 15.16 — pH 6.63 — ORP 101
Sp. Cond. 0.642 — Turbidity 0.0 — DO 6.50
Water Level: 16.19 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Environmental Consultants
and Contractors

14755 Grover Street
Omaha, NE 68144

402 884-6202
FAX 402 884-6203
www.scsengineers.com

SCS ENGINEERS

October 16, 2017
File No: 27216302.00

Mr. Tony Sedlacek
Environmental Engineering Assistant
City of Fremont Department of Utilities
2701 E 1st Street
Fremont, NE 68025

(Transmitted via email to: Tony.Sedlacek@fremontne.gov)

Subject: Background Groundwater Sampling Event #8 Results
Lon D Wright Power Plant
Fremont, Nebraska

Mr. Sedlacek:

SCS Engineers (SCS) has prepared this letter to provide a summary of results from the September 20, 2017 background groundwater sampling event at the Lon D. Wright Power Plant in Fremont, Nebraska. Depth to static groundwater was measured at eight monitoring wells and two piezometers. Groundwater samples were collected from eight monitoring wells and submitted under chain of custody to Pace Analytical Services, Inc. for analysis. The samples arrived at the laboratory intact, and within the required holding time and temperature. A complete analytical technical report, groundwater flow direction map and field data sheets detailing well information and purge stabilization parameters have been included. A hard copy of these files and compact disc containing electronic versions has also been mailed to your office.

This report concludes the background groundwater sampling program. We appreciate this opportunity to serve the City of Fremont and look forward to continuing our relationship on future projects. Please contact us with any questions or concerns at (402) 884-6202.

Sincerely,

Korey Brunken, P.G., CHMM
Senior Project Professional
SCS ENGINEERS

Michael Miller, CHMM
Vice President
SCS ENGINEERS

KDB/MJM

Attachment: Field Work Documentation
Analytical Results
Groundwater Flow Direction Map

PROJECT NAME: CITY OF FREMONT SAMPLING EVENTS

PROJECT LOCATION: FREMONT, NE

PROJECT NUMBER: 27216302.00

DATE: 9/20/17 WEATHER: 65°F, CLEAR IN A.M.

PERSONNEL: K. BLUNK

EQUIPMENT: F-250 #RIBA LIS20 S/N 79072

QED MPIO CONTROLLER S/N LIG1535X

NITROGEN CYLINDERS (2)

WORK COMMENTS/OBSERVATIONS:

0938	ONSITE, OPENED GATE, AT MW-4R
1043	MOVE TO MW-3
~~1120~~	MOVE TO MW-5
1209	MOVE TO MW-21
1251	MOVE TO MW-2
1328	MOVE TO MW-8 (DUPLICATE SAMPLE)
1406	MOVE TO MW-7
1441	MOVE TO MW-6
1526	END SAMPLING, 8 SAMPLE SETS + 1 DUPLICATE
1528	DEMOB

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-1
Date(s): 9/20/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 68 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad	GOOD
Casing	OKAY - PAINT PEELING
Protective Casing	GOOD, NEED NEW CAP
Reference Mark/Identification	OKAY

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 9/20/17 1221
Total Depth: _____ feet below TOC
Static Water Level: 20.25 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 9/20/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.69 pH 7.05 ORP 91
Sp. Cond. 0.756 Turbidity 2.8 DO 4.60
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1228	1500	300	13.02	7.00	96	0.767	0.6	4.30	20.25
1233	3000	300	12.94	7.00	99	0.766	1.1	4.10	20.25
1238	4500	300	12.96	7.00	102	0.763	1.6	4.08	20.25

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 9/20/17 1243
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.96 pH 7.00 ORP 102
Sp. Cond. 0.763 Turbidity 1.6 DO 4.08
Water Level: 20.25 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
DTW @ MW-1N = 21.04
DTW @ MW-1S = 21.02

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-2
Date(s): 9/20/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 72 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: GOOD
Casing: GOOD - NEED CAP
Protective Casing: OKAY - PAINT PEELING
Reference Mark/Identification: OKAY

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 9/20/17 1259
Total Depth: _____ feet below TOC
Static Water Level: 16.61 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 9/20/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.46 pH 7.06 ORP 96
Sp. Cond. 0.700 Turbidity 2.6 DO 4.74
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1306	1500	300	13.36	7.00	100	0.692	0.7	3.79	16.62
1311	3000	300	13.19	7.00	101	0.692	1.0	3.69	16.62
1316	4500	300	13.15	6.99	104	0.690	1.6	3.66	16.62

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 9/20/17 1321
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.15 pH 6.99 ORP 104
Sp. Cond. 0.690 Turbidity 1.6 DO 3.66
Water Level: 16.62 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-3
Date(s): 9/20/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 65 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: SEATED/DRILLED OVER
Casing: OK - CAP NOT FIT PROPERLY
Protective Casing: GOOD - PAINT CHIPPING
Reference Mark/Identification: OK

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 9/20/17 1054
Total Depth: _____ feet below TOC
Static Water Level: 17.88 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 9/20/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.46 pH 7.02 ORP 75
Sp. Cond. 0.744 Turbidity 2.2 DO 4.71
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1059	1500	300	14.02	6.97	79	0.748	1.5	4.52	17.88
1104	3000	300	13.80	6.95	84	0.752	1.3	4.33	17.88
1109	4500	300	13.72	6.96	88	0.752	1.5	4.26	17.89

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 9/20/17 1114
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.72 pH 6.96 ORP 88
Sp. Cond. 0.752 Turbidity 1.5 DO 4.26
Water Level: 17.89 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-4R
Date(s): 9/20/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 65 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad	GOOD
Casing	
Protective Casing	
Reference Mark/Identification	

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 9/20/17 1012
Total Depth: _____ feet below TOC
Static Water Level: 16.82 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 9/20/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.57 — pH 7.11 — ORP 42
Sp. Cond. 0.705 — Turbidity 0.0 — DO 4.33
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1017	1500	300	14.39	7.09	52	0.697	0.0	4.10	16.82
1022	3000	300	14.05	7.07	63	0.699	0.0	3.88	16.83
1027	4500	300	13.67	7.06	71	0.700	0.0	3.70	16.83
1032	6000	300	13.53	7.05	74	0.701	0.0	3.71	16.83

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 9/20/17 1037
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.53 — pH 7.05 — ORP 74
Sp. Cond. 0.701 — Turbidity 0.0 — DO 3.71
Water Level: 16.83 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-5
Date(s): 9/20/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 67 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad	GOOD
Casing	OKAY - CAP ILL-FITTING
Protective Casing	OKAY - PAINT PEELING
Reference Mark/Identification	OKAY

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 9/20/17 1138
Total Depth: _____ feet below TOC
Static Water Level: 16.84 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 9/20/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.52 pH 7.15 ORP 80
Sp. Cond. 0.776 Turbidity 2.3 DO 4.96
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1148	1500	300	13.30	7.09	87	0.775	0.0	4.17	16.85
1153	3000	300	13.09	7.09	92	0.776	0.0	4.06	16.85
1158	4500	300	12.93	7.09	94	0.772	0.0	3.97	16.85

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 9/20/17 1203
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 12.93 pH 7.09 ORP 94
Sp. Cond. 0.772 Turbidity 0.0 DO 3.97
Water Level: 16.85 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-6
Date(s): 9/20/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 75 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad	GOOD
Casing	
Protective Casing	
Reference Mark/Identification	

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 9/20/17 1448
Total Depth: _____ feet below TOC
Static Water Level: 17.20 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 9/20/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 15.72 — pH 6.91 — ORP 114
Sp. Cond. 0.778 — Turbidity 3.6 — DO 2.88
Physical appearance of purge water: _____

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1455	1500	300	13.71	6.88	115	0.774	1.7	1.94	17.22
1500	3000	300	13.54	6.89	115	0.775	1.6	1.87	17.22
1505	4500	300	13.53	6.89	115	0.775	2.1	1.87	17.22

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 9/20/17 1510
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.53 — pH 6.89 — ORP 115
Sp. Cond. 0.775 — Turbidity 2.1 — DO 1.87
Water Level: 17.22 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-7
Date(s): 9/20/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 75 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad	GOOD
Casing	
Protective Casing	
Reference Mark/Identification	

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 9/20/17 1413
Total Depth: _____ feet below TOC
Static Water Level: 16.84 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 9/20/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 13.54 — pH 6.91 — ORP 108
Sp. Cond. 0.753 — Turbidity 3.0 — DO 4.69
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1423	1500	300	13.46	7.01	109	0.742	2.5	4.26	16.85
1428	3000	300	13.49	6.99	111	0.737	3.0	4.13	16.85
1433	4500	300	13.50	6.98	112	0.733	2.6	4.26	16.85

Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 9/20/17 1438
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.50 — pH 6.98 — ORP 112
Sp. Cond. 0.733 — Turbidity 2.6 — DO 4.26
Water Level: 16.85 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU Groundwater Sampling
Project Location: Fremont, Nebraska
Project Number: 27216302.00

Monitoring Point: MW-8
Date(s): 9/20/17

Field Team Members
Name: K. BRUNKEN — Affiliation: SCS Engineers
Name: _____ — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 73 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: GOOD
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 9/20/17 1337
Total Depth: _____ feet below TOC
Static Water Level: 10.99 feet below TOC
TD - SWL: _____ water column (ft.)

Purging Activities
Purged By: K. BRUNKEN — Purge Date: 9/20/17
Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Well Diameter: 1-inch 2-inch 3-inch (4-inch) Other _____ (circle one)
Purge Volume Calculation: _____ — Min Purge Volume: _____ mL
Initial Parameter Readings: Temp (°C) 14.41 — pH 6.88 — ORP 102
Sp. Cond. 0.602 — Turbidity 3.7 — DO 4.44
Physical appearance of purge water: CLEAR

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conduct-ivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
1343	1500	300	13.79	6.79	109	0.678	1.0	3.44	17.00
1348	3000	300	13.16	6.65	120	0.679	1.1	3.14	16.99
1353	4500	300	13.19	6.83	111	0.682	0.4	2.86	17.00

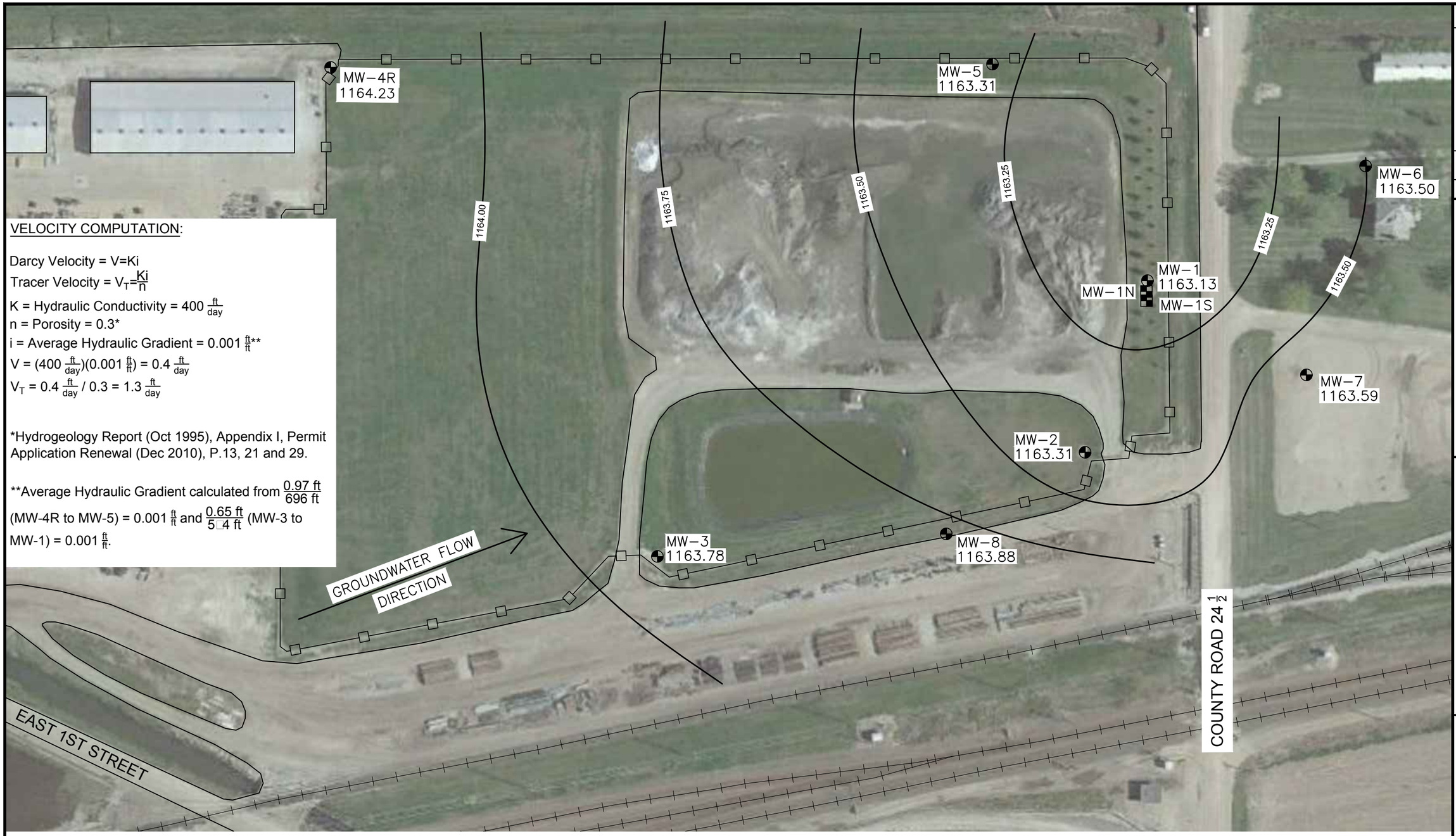
Sampling Activities
Sampled By: K. BRUNKEN — Sample Date/Time: 9/20/17 1358
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 13.19 — pH 6.83 — ORP 111
Sp. Cond. 0.682 — Turbidity 0.4 — DO 2.86
Water Level: 17.00 feet below TOC

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
DUPLICATE SAMPLE TIME LABELED "2359"

Electronic Form Completed By: _____ **Date:** _____

APPENDIX 4

GROUNDWATER CONTOUR MAPS



VELOCITY COMPUTATION:

Darcy Velocity = V=Ki

Tracer Velocity = $V_T=\frac{Ki}{n}$

K = Hydraulic Conductivity = 400 $\frac{ft}{day}$

n = Porosity = 0.3*

i = Average Hydraulic Gradient = 0.001 $\frac{ft}{ft}$**

V = (400 $\frac{ft}{day}$)(0.001 $\frac{ft}{ft}$) = 0.4 $\frac{ft}{day}$

V_T = 0.4 $\frac{ft}{day}$ / 0.3 = 1.3 $\frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Average Hydraulic Gradient calculated from $\frac{0.97\ ft}{696\ ft}$ (MW-4R to MW-5) = 0.001 $\frac{ft}{ft}$ and $\frac{0.65\ ft}{5\square4\ ft}$ (MW-3 to MW-1) = 0.001 $\frac{ft}{ft}$.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- GROUNDWATER CONTOURS
- 1163.21 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. Depths to groundwater measured 10/12/2016.
2. Groundwater data from MW-1N and MW-1S not utilized for groundwater contours but recorded on field data sheets.

100 0 100 200
SCALE FEET

521

REV.	DATE	CK. BY
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-

SHEET TITLE
GROUNDWATER FLOW DIRECTION MAP

PROJECT TITLE
BACKGROUND GROUNDWATER SAMPLING

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH. (402) 884-6202 FAX. (402) 884-6203

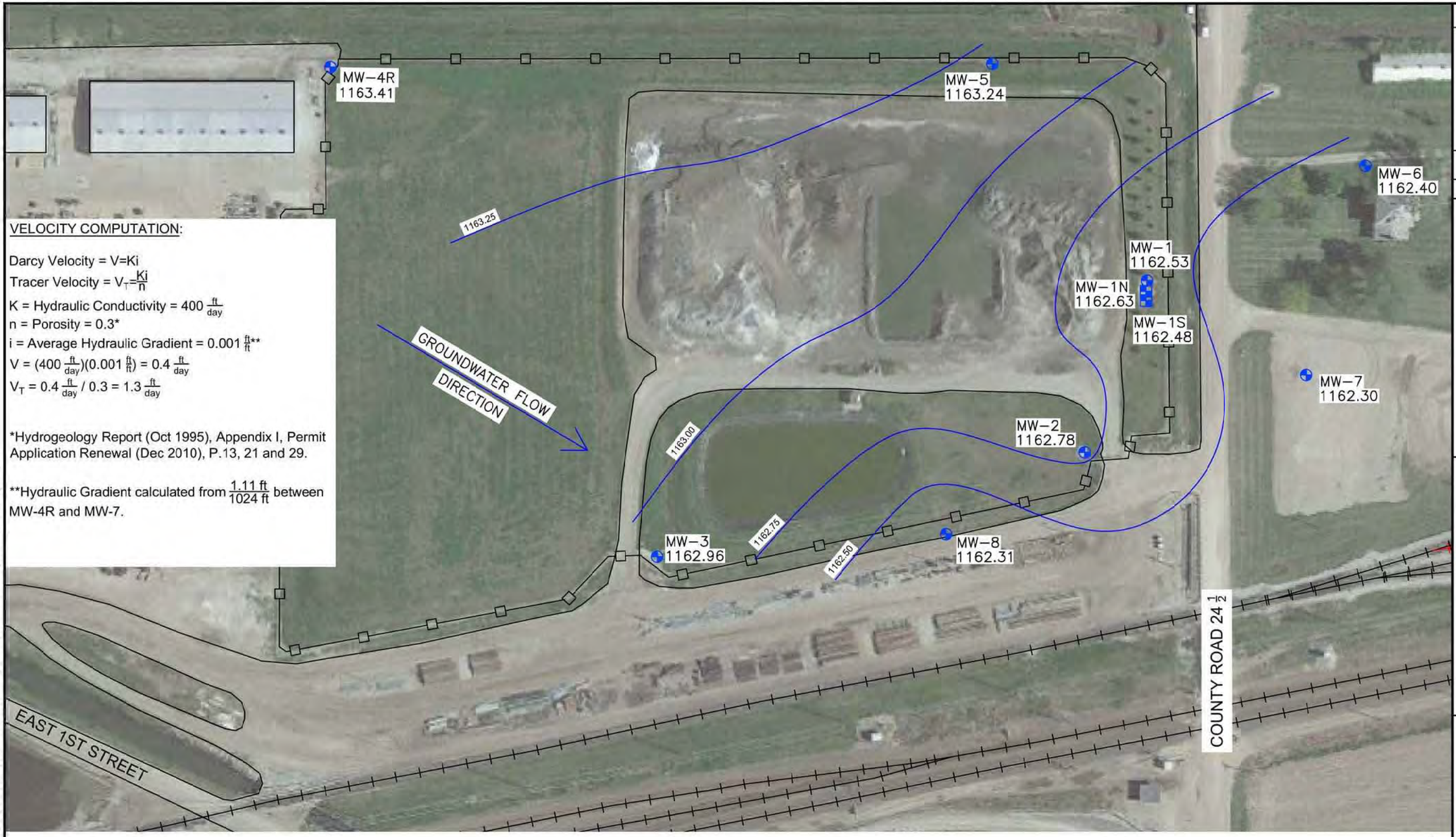
PROJ. NO. 27216302.00 | DWN. BY: REN | Q/A RVW BY: KB | PROJ. MGR: KB | CHK. BY: REN | CHK. BY: KB

CADD FILE:
GW CONTOUR MAP - OCT2016.DWG

DATE:
11/29/16

DRAWING NO.
1 of **1**

T:\27216302.00\Deliverables\20161012 GW Sampling\GW CONTOUR MAP - OCT2016.dwg Nov 29, 2016 - 11:24am Layout Name: 11x17 By: 4019ren



VELOCITY COMPUTATION:

Darcy Velocity = $V=Ki$

Tracer Velocity = $V_T=\frac{Ki}{n}$

K = Hydraulic Conductivity = 400 $\frac{ft}{day}$

n = Porosity = 0.3*

i = Average Hydraulic Gradient = 0.001 $\frac{ft}{ft}$**

$V = (400 \frac{ft}{day})(0.001 \frac{ft}{ft}) = 0.4 \frac{ft}{day}$

$V_T = 0.4 \frac{ft}{day} / 0.3 = 1.3 \frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{1.11 ft}{1024 ft}$ between MW-4R and MW-7.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- GROUNDWATER CONTOURS
- 1163.21 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. Depths to groundwater measured 11/28/2016.
2. Groundwater data from MW-1N and MW-1S not utilized in calculation of groundwater contours.

100 0 100 200
SCALE FEET

522

REV.	DATE	CK. BY
0	-	-
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-

SHEET TITLE
GROUNDWATER FLOW DIRECTION MAP

PROJECT TITLE
BACKGROUND GROUNDWATER SAMPLING

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH. (402) 884-6202 FAX. (402) 884-6203

PROJ. NO. 27216302.00
DSN. BY: KB
DWN. BY: KB
CHK. BY: CJ
Q/A RVW BY: CJ
PROJ. MGR: KB

CADD FILE: GW CONTOUR MAP - NOV2016.DWG
DATE: 12/30/16
FIGURE NO. 1

T:\27216302.00\Deliverables\20161122 GW Sampling\GW CONTOUR MAP - NOV2016.dwg Dec 30, 2016 - 11:33am Layout Name: 11x17 By: 4133kdb

MW-4R
1162.36

MW-5
1162.28

MW-6
1161.54

MW-1
1161.66

MW-1N
1161.82

MW-1S
1161.67

MW-7
1161.54

MW-2
1161.91

MW-3
1162.20

MW-8
1161.64

1162.30

1162.10

1161.90

1161.70

GROUNDWATER FLOW DIRECTION

EAST 1ST STREET

COUNTY ROAD 24 1/2

VELOCITY COMPUTATION:

Darcy Velocity = $V=Ki$

Tracer Velocity = $V_T=\frac{Ki}{n}$

K = Hydraulic Conductivity = 400 $\frac{ft}{day}$

n = Porosity = 0.3*

i = Average Hydraulic Gradient = 0.001 $\frac{ft}{ft}$**

$V = (400 \frac{ft}{day})(0.001 \frac{ft}{ft}) = 0.4 \frac{ft}{day}$

$V_T = 0.4 \frac{ft}{day} / 0.3 = 1.3 \frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{0.82 \text{ ft}}{1024 \text{ ft}}$ between MW-4R and MW-7.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- GROUNDWATER CONTOURS
- 1163.21 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. Depths to groundwater measured 1/18/2017.
2. Groundwater data from MW-1N and MW-1S not utilized in calculation of groundwater contours.

100 0 100 200
SCALE FEET

523

REV.	DATE	CK. BY
0	-	-
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-

SHEET TITLE
GROUNDWATER FLOW DIRECTION MAP

PROJECT TITLE
BACKGROUND GROUNDWATER SAMPLING

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH. (402) 884-6202 FAX. (402) 884-6203

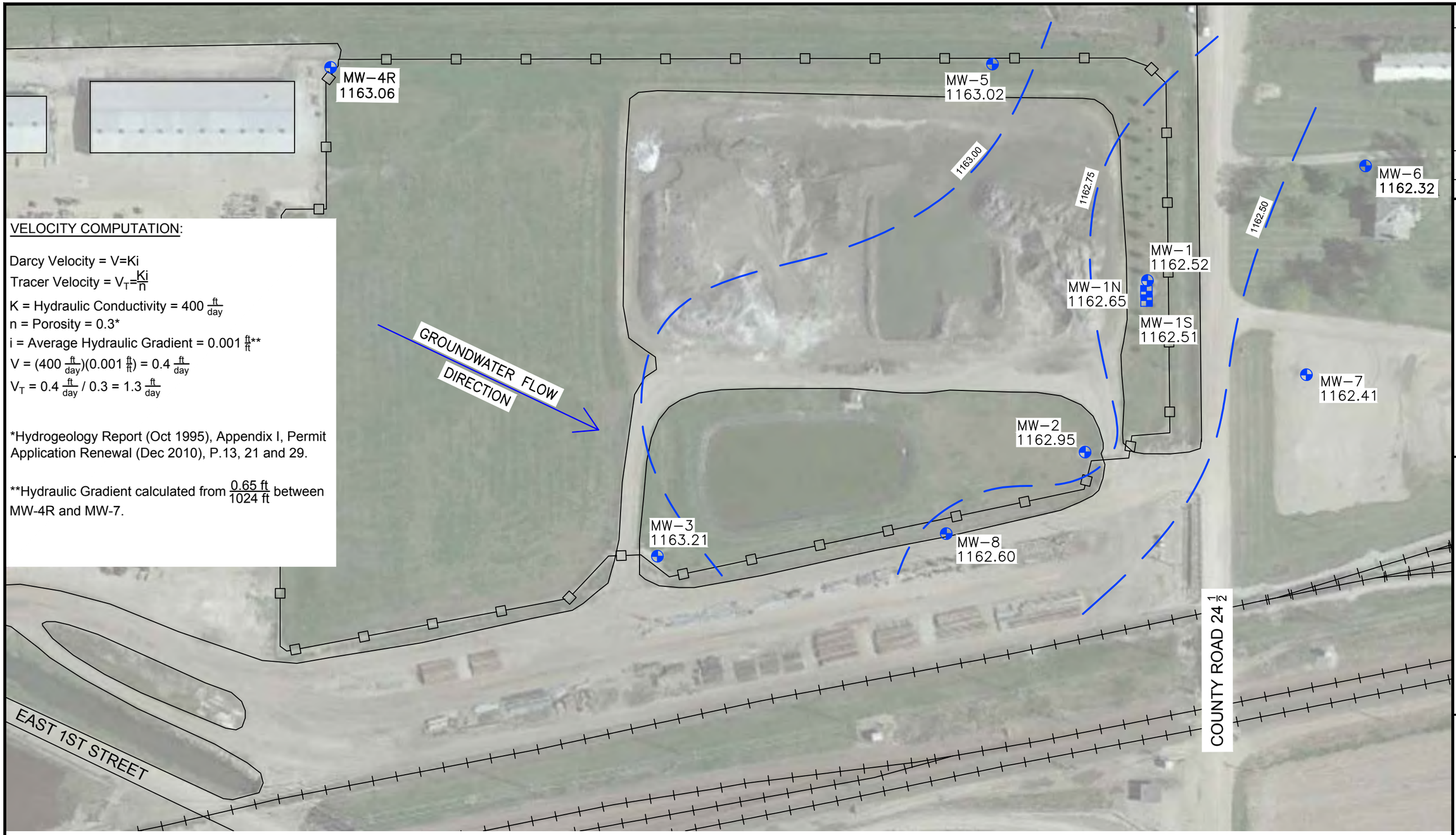
PROJ. NO. 27216302.00
DSN. BY: KB
DWN. BY: KB
CHK. BY: CJ
Q/A RVW BY: CJ
PROJ. MGR: KB

CADD FILE: GW CONTOUR MAP - JAN2017.DWG

DATE: 2/13/17

FIGURE NO. 1

T:\27216302.00\Deliverables\20170124 GW Sampling\GW CONTOUR MAP - JAN2017.dwg Feb 13, 2017 - 11:48am Layout Name: 11x17 By: 4133kdb



VELOCITY COMPUTATION:

Darcy Velocity = V=Ki

Tracer Velocity = $V_T=\frac{Ki}{n}$

K = Hydraulic Conductivity = 400 $\frac{ft}{day}$

n = Porosity = 0.3*

i = Average Hydraulic Gradient = 0.001 $\frac{ft}{ft}$**

V = (400 $\frac{ft}{day}$)(0.001 $\frac{ft}{ft}$) = 0.4 $\frac{ft}{day}$

V_T = 0.4 $\frac{ft}{day}$ / 0.3 = 1.3 $\frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{0.65\ ft}{1024\ ft}$ between MW-4R and MW-7.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- GROUNDWATER CONTOURS
- 1163.21 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. Depths to groundwater measured 3/6/2017.
2. Groundwater data from MW-1N and MW-1S not utilized in calculation of groundwater contours.

100 0 100 200

SCALE FEET

524

REV.	DATE	CK. BY
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-

SHEET TITLE
GROUNDWATER FLOW DIRECTION MAP

PROJECT TITLE
BACKGROUND GROUNDWATER SAMPLING

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH. (402) 884-6202 FAX. (402) 884-6203

PROJ. NO. 27216302.00 | DSN. BY: KB | DWN. BY: KB | CHK. BY: CJ | QA RVW BY: CJ | PROJ. MGR: KB

CADD FILE: GW CONTOUR MAP – MAR2017.DWG

DATE: 3/30/17

FIGURE NO. 1

T:\27216302.00\Deliverables\20170306 GW Sampling\GW CONTOUR MAP - MAR2017.dwg Mar 31, 2017 - 9:00am Layout Name: 11x17 By: 4019ren

MW-4R
1162.37

MW-5
1162.37

MW-6
1161.67

MW-1
1161.57

MW-1N
1161.90

MW-1S
1161.76

MW-7
1161.64

MW-2
1161.99

MW-3
1162.28

MW-8
1161.71

GROUNDWATER FLOW DIRECTION

1162.15

1161.95

1161.75

1161.95

1161.75

COUNTY ROAD 24 1/2

EAST 1ST STREET

VELOCITY COMPUTATION:

Darcy Velocity = $V=Ki$

Tracer Velocity = $V_T=\frac{Ki}{n}$

K = Hydraulic Conductivity = 400 $\frac{ft}{day}$

n = Porosity = 0.3*

i = Average Hydraulic Gradient = 0.001 $\frac{ft}{ft}$**

$V = (400 \frac{ft}{day})(0.001 \frac{ft}{ft}) = 0.4 \frac{ft}{day}$

$V_T = 0.4 \frac{ft}{day} / 0.3 = 1.3 \frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{0.73 \text{ ft}}{1024 \text{ ft}}$ between MW-4R and MW-7.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- GROUNDWATER CONTOURS
- 1163.21 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. Depths to groundwater measured 4/24/2017.
2. Groundwater data from MW-1N and MW-1S not utilized in calculation of groundwater contours.

100 0 100 200
SCALE FEET

N

REV.	DATE	CK. BY
0	-	-
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-

SHEET TITLE
GROUNDWATER FLOW DIRECTION MAP

PROJECT TITLE
BACKGROUND GROUNDWATER SAMPLING

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH: (402) 884-6202 FAX: (402) 884-6203

PROJ. NO. 27216302.00
DSN. BY: KB
CHK. BY: CJ
Q/A REV. BY: CJ
PROJ. MGR. KB
DSN. BY: KB

CADD FILE: GW CONTOUR MAP - APR2017.DWG
DATE: 5/22/17
FIGURE NO. 1

T:\27216302.00\Deliverables\20170424 GW Sampling\GW CONTOUR MAP - APR2017.dwg May 22, 2017 - 1:42pm Layout Name: 11x17 By: 4133kdb

MW-4R
1165.71

MW-5
1165.78

1165.75

MW-6
1165.02

MW-1
1165.15

MW-1N
1165.26

MW-1S
1165.13

MW-7
1164.98

MW-2
1165.32

MW-3
1165.64

1165.50

1165.25

1165.00

MW-8
1164.99

GROUNDWATER FLOW DIRECTION

COUNTY ROAD 24 1/2

EAST 1ST STREET

VELOCITY COMPUTATION:

Darcy Velocity = $V=Ki$

Tracer Velocity = $V_T=\frac{Ki}{n}$

K = Hydraulic Conductivity = 400 $\frac{ft}{day}$

n = Porosity = 0.3*

i = Average Hydraulic Gradient = 0.001 $\frac{ft}{ft}$**

$V = (400 \frac{ft}{day})(0.001 \frac{ft}{ft}) = 0.4 \frac{ft}{day}$

$V_T = 0.4 \frac{ft}{day} / 0.3 = 1.3 \frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{0.73 ft}{1024 ft}$ between MW-4R and MW-7.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- GROUNDWATER CONTOURS
- 1163.21 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. Depths to groundwater measured 6/12/2017.
2. Groundwater data from MW-1N and MW-1S not utilized in calculation of groundwater contours.

SCALE 100 0 100 200 FEET

REV.	DATE	CK. BY
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-

SHEET TITLE
GROUNDWATER FLOW DIRECTION MAP

PROJECT TITLE
BACKGROUND GROUNDWATER SAMPLING

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH: (402) 884-6202 FAX: (402) 884-6203

PROJ. NO. 27216302.00
DSN. BY: KB
CHK. BY: CJ
Q/A REW BY: CJ
PROJ. MGR: KB
DSN. BY: KB

CADD FILE: GW CONTOUR MAP - JUN2017.DWG

DATE: 6/15/17

FIGURE NO. 1

T:\27216302.00\Deliverables\20170612 GW Sampling\GW CONTOUR MAP - JUN2017.dwg Jul 06, 2017 - 4:21pm Layout Name: 11x17 By: 4133kdb

MW-4R
1162.76

MW-5
1162.37

MW-6
1161.73

MW-1
1161.76

MW-1N
1161.95

MW-1S
1161.80

MW-7
1161.53

MW-2
1161.89

MW-3
1161.84

MW-8
1161.37

1162.50

1162.25

1162.00

1161.75

1161.50

GROUNDWATER FLOW DIRECTION

COUNTY ROAD 24 1/2

EAST 1ST STREET

VELOCITY COMPUTATION:

Darcy Velocity = $V=Ki$

Tracer Velocity = $V_T=\frac{Ki}{n}$

K = Hydraulic Conductivity = 400 $\frac{ft}{day}$

n = Porosity = 0.3*

i = Average Hydraulic Gradient = 0.001 $\frac{ft}{ft}$**

$V = (400 \frac{ft}{day})(0.001 \frac{ft}{ft}) = 0.4 \frac{ft}{day}$

$V_T = 0.4 \frac{ft}{day} / 0.3 = 1.3 \frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{1.28 \text{ ft}}{1024 \text{ ft}}$ between MW-4R and MW-7.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- GROUNDWATER CONTOURS
- 1163.21 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. Depths to groundwater measured 7/31/2017.
2. Groundwater data from MW-1N and MW-1S not utilized in calculation of groundwater contours.

100 0 100 200
SCALE FEET

527

REV.	DATE	CK. BY
0	-	-
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-

SHEET TITLE
GROUNDWATER FLOW DIRECTION MAP

PROJECT TITLE
BACKGROUND GROUNDWATER SAMPLING

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH: (402) 884-6202 FAX: (402) 884-6203

PROJ. NO.	DWN. BY:	Q/A RVW BY:	PROJ. MGR.
27216302.00	KB	CJ	KB
DSN. BY: KB	CHK. BY: CJ		

CADD FILE: GW CONTOUR MAP - AUG2017.DWG

DATE: 9/12/17

FIGURE NO. 1

T:\27216302.00\Deliverables\20170801 GW Sampling\GW CONTOUR MAP - AUG2017.dwg Sep 12, 2017 - 10:56am Layout Name: 11x17 By: 4133kdb

MW-4R
1161.47

MW-5
1161.22

MW-6
1160.58

MW-1
1160.67

MW-1N
1160.89

MW-1S
1160.75

MW-7
1160.51

MW-2
1160.85

MW-3
1160.93

MW-8
1160.55

1161.40

1161.20

1161.00

1160.80

1160.60

1161.80

GROUNDWATER FLOW DIRECTION

COUNTY ROAD 24 1/2

EAST 1ST STREET

VELOCITY COMPUTATION:

Darcy Velocity = $V=Ki$

Tracer Velocity = $V_T=\frac{Ki}{n}$

K = Hydraulic Conductivity = 400 $\frac{ft}{day}$

n = Porosity = 0.3*

i = Average Hydraulic Gradient = 0.001 $\frac{ft}{ft}$**

$V = (400 \frac{ft}{day})(0.001 \frac{ft}{ft}) = 0.4 \frac{ft}{day}$

$V_T = 0.4 \frac{ft}{day} / 0.3 = 1.3 \frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{0.96\ ft}{1024\ ft}$ between MW-4R and MW-7.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- GROUNDWATER CONTOURS
- 1163.21 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. Depths to groundwater measured 9/20/2017.
2. Groundwater data from MW-1N and MW-1S not utilized in calculation of groundwater contours.

100 0 100 200
SCALE FEET

528

REV.	DATE	CK. BY

SHEET TITLE
GROUNDWATER FLOW DIRECTION MAP

PROJECT TITLE
BACKGROUND GROUNDWATER SAMPLING

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH: (402) 884-6202 FAX: (402) 884-6203

PROJ. NO. 27216302.00
DSN. BY: KB
CHK. BY: CJ
Q/A REV BY: CJ
PROJ. MGR: KB
DSN. BY: KB

CADD FILE: GW CONTOUR MAP - SEP2017.DWG

DATE: 9/26/17

FIGURE NO. 1

T:\27216302.00\Deliverables\20170920 GW Sampling\GW CONTOUR MAP - SEP2017.dwg Oct 16, 2017 - 9:50am Layout Name: 11x17 By: 4133kdb

APPENDIX 5

STATISTICAL DATA

APPENDIX 5A

ANOVA Statistical Output Files

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Arsenic

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Arsenic MW-4R	8	31.3	3.9125	0.186964
Arsenic MW-1	8	27.3	3.4125	0.06125
Arsenic MW-2	8	30.9	3.8625	0.119821
Arsenic MW-3	8	23.9	2.9875	0.015536
Arsenic MW-5	8	35.3	4.4125	0.055536
Arsenic MW-6	8	22.6	2.825	0.170714
Arsenic MW-7	8	27.5	3.4375	0.059821
Arsenic MW-8	8	20.9	2.6125	0.018393

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	20.92484	7	2.989263	34.75707	3.66E-18	2.178156
Within Groups	4.81625	56	0.086004			
Total	25.74109	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Arsenic

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Arsenic MW-4R	8	31.3	3.9125	0.186964286
Arsenic MW-1	8	27.3	3.4125	0.06125

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1	1	1	8.057553957	0.013142504	8.861592665
Within Groups	1.7375	14	0.124107143			
Total	2.7375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Arsenic MW-4R	8	31.3	3.9125	0.186964286
Arsenic MW-2	8	30.9	3.8625	0.119821429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.01	1	0.01	0.065192084	0.802183088	8.861592665
Within Groups	2.1475	14	0.153392857			
Total	2.1575	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Arsenic MW-4R	8	31.3	3.9125	0.186964286
Arsenic MW-3	8	23.9	2.9875	0.015535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3.4225	1	3.4225	33.80246914	4.49216E-05	8.861592665
Within Groups	1.4175	14	0.10125			
Total	4.84	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Arsenic MW-4R	8	31.3	3.9125	0.186964286
Arsenic MW-5	8	35.3	4.4125	0.055535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1	1	1	8.24742268	0.012308093	8.861592665
Within Groups	1.6975	14	0.12125			
Total	2.6975	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Arsenic MW-4R	8	31.3	3.9125	0.186964286
Arsenic MW-6	8	22.6	2.825	0.170714286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4.7306	1	4.730625	26.45182227	0.000149365	8.861592665
Within Groups	2.5038	14	0.178839286			
Total	7.2344	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Arsenic MW-4R	8	31.3	3.9125	0.186964286
Arsenic MW-7	8	27.5	3.4375	0.059821429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.9025	1	0.9025	7.314037627	0.017106979	8.861592665
Within Groups	1.7275	14	0.123392857			
Total	2.63	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Arsenic MW-4R	8	31.3	3.9125	0.186964286
Arsenic MW-8	8	20.9	2.6125	0.018392857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	6.76	1	6.76	65.83652174	1.16109E-06	8.861592665
Within Groups	1.4375	14	0.102678571			
Total	8.1975	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Barium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Barium MW-4R	8	946	118.25	51.92857143
Barium MW-1	8	1090	136.25	237.9285714
Barium MW-2	8	783	97.875	27.085
Barium MW-3	8	1340	167.5	105.4285714
Barium MW-5	8	1046	130.75	1483.071429
Barium MW-6	8	1236	154.5	627.4285714
Barium MW-7	8	893	111.625	25.41071429
Barium MW-8	8	1180	147.5	179.1428571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	30292.6875	7	4327.526786	12.64700341	1.33045E-09	2.178155555
Within Groups	19161.97	56	342.1780357			
Total	49454.6575	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Barium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Barium MW-4R	8	946	118.25	51.92857143
Barium MW-1	8	1090	136.25	237.9285714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1296	1	1296	8.942336126	0.009735479	8.861592665
Within Groups	2029	14	144.9285714			
Total	3325	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Barium MW-4R	8	946	118.25	51.92857143
Barium MW-2	8	783	97.875	27.085

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1660.5625	1	1660.5625	42.03233622	1.44118E-05	8.861592665
Within Groups	553.095	14	39.50678571			
Total	2213.6575	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Barium MW-4R	8	946	118.25	51.92857143
Barium MW-3	8	1340	167.5	105.4285714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	9702.25	1	9702.25	123.315025	2.5137E-08	8.861592665
Within Groups	1101.5	14	78.67857143			
Total	10803.75	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Barium MW-4R	8	946	118.25	51.92857143
Barium MW-5	8	1046	130.75	1483.071429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	625	1	625	0.814332248	0.382106186	8.861592665
Within Groups	10745	14	767.5			
Total	11370	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Barium MW-4R	8	946	118.25	51.92857143
Barium MW-6	8	1236	154.5	627.4285714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	5256.25	1	5256.25	15.47418778	0.001498946	8.861592665
Within Groups	4755.5	14	339.6785714			
Total	10011.75	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Barium MW-4R	8	946	118.25	51.92857143
Barium MW-7	8	893	111.625	25.41071429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	175.5625	1	175.5625	4.540060032	0.051323085	8.861592665
Within Groups	541.375	14	38.66964286			
Total	716.9375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Barium MW-4R	8	946	118.25	51.92857143
Barium MW-8	8	1180	147.5	179.1428571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3422.25	1	3422.25	29.62071097	8.67229E-05	8.861592665
Within Groups	1617.5	14	115.5357143			
Total	5039.75	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Boron

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Boron MW-4R	8	1663	207.875	10991.55357
Boron MW-1	8	1118	139.75	51.07142857
Boron MW-2	8	965	120.625	194.5535714
Boron MW-3	8	832	104	46.28571429
Boron MW-5	8	1007	125.875	76.98214286
Boron MW-6	8	1066	133.25	485.9285714
Boron MW-7	8	1378	172.25	379.0714286
Boron MW-8	8	1397	174.625	23403.69643

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	66706.9375	7	9529.5625	2.1397231	0.053983096	2.178155555
Within Groups	249404	56	4453.642857			
Total	316110.9375	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Boron

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Boron MW-4R	8	1663	207.875	10991.55357
Boron MW-1	8	1118	139.75	51.07142857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	18564.0625	1	18564.0625	3.362255351	0.088050022	8.861592665
Within Groups	77298.375	14	5521.3125			
Total	95862.4375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Boron MW-4R	8	1663	207.875	10991.55357
Boron MW-2	8	965	120.625	194.5535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	30450.25	1	30450.25	5.444297933	0.035060816	8.861592665
Within Groups	78302.75	14	5593.05357			
Total	108753	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Boron MW-4R	8	1663	207.875	10991.55357
Boron MW-3	8	832	104	46.28571429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	43160.0625	1	43160.0625	7.820382483	0.014278486	8.861592665
Within Groups	77264.875	14	5518.91964			
Total	120424.938	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Boron MW-4R	8	1663	207.875	10991.55357
Boron MW-5	8	1007	125.875	76.98214286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	26896	1	26896	4.859902103	0.04471982	8.861592665
Within Groups	77479.75	14	5534.26786			
Total	104375.75	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Boron MW-4R	8	1663	207.875	10991.55357
Boron MW-6	8	1066	133.25	485.9285714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	22275.5625	1	22275.5625	3.881611354	0.068926383	8.861592665
Within Groups	80342.375	14	5738.74107			
Total	102617.938	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Boron MW-4R	8	1663	207.875	10991.55357
Boron MW-7	8	1378	172.25	379.0714286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	5076.5625	1	5076.5625	0.892925851	0.360709647	8.861592665
Within Groups	79594.375	14	5685.3125			
Total	84670.9375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Boron MW-4R	8	1663	207.875	10991.55357
Boron MW-8	8	1397	174.625	23403.69643

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4422.25	1	4422.25	0.257143065	0.61998298	8.861592665
Within Groups	240766.75	14	17197.625			
Total	245189	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Calcium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Calcium MW-4R	8	664.8	83.1	26.17142857
Calcium MW-1	8	834.7	104.3375	11.68267857
Calcium MW-2	8	805.6	100.7	49.40857143
Calcium MW-3	8	734.8	91.85	66.30571429
Calcium MW-5	8	904	113	64
Calcium MW-6	8	715.1	89.3875	168.0555357
Calcium MW-7	8	761.4	95.175	37.725
Calcium MW-8	8	699.9	87.4875	30.34696429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	5440.062344	7	777.1517634	13.70348334	3.53394E-10	2.178155555
Within Groups	3175.87125	56	56.71198661			
Total	8615.933594	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Calcium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Calcium MW-4R	8	664.8	83.1	26.17142857
Calcium MW-1	8	834.7	104.3375	11.68267857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1804.13	1	1804.126	95.31994075	1.25596E-07	8.861592665
Within Groups	264.979	14	18.92705			
Total	2069.1	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Calcium MW-4R	8	664.8	83.1	26.17142857
Calcium MW-2	8	805.6	100.7	49.40857143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1239.04	1	1239.04	32.78750992	5.24016E-05	8.861592665
Within Groups	529.06	14	37.79			
Total	1768.1	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Calcium MW-4R	8	664.8	83.1	26.17142857
Calcium MW-3	8	734.8	91.85	66.30571429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	306.25	1	306.25	6.623258257	0.022083629	8.861592665
Within Groups	647.34	14	46.23857			
Total	953.59	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Calcium MW-4R	8	664.8	83.1	26.17142857
Calcium MW-5	8	904	113	64

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3576.04	1	3576.04	79.31647655	3.84531E-07	8.861592665
Within Groups	631.2	14	45.08571			
Total	4207.24	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Calcium MW-4R	8	664.8	83.1	26.17142857
Calcium MW-6	8	715.1	89.3875	168.0555357

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	158.131	1	158.1306	1.628307641	0.222701679	8.861592665
Within Groups	1359.59	14	97.11348			
Total	1517.72	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Calcium MW-4R	8	664.8	83.1	26.17142857
Calcium MW-7	8	761.4	95.175	37.725

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	583.223	1	583.2225	18.25524565	0.000773482	8.861592665
Within Groups	447.275	14	31.94821			
Total	1030.5	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Calcium MW-4R	8	664.8	83.1	26.17142857
Calcium MW-8	8	699.9	87.4875	30.34696429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	77.0006	1	77.00063	2.724798817	0.12104627	8.861592665
Within Groups	395.629	14	28.2592			
Total	472.629	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Chloride

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Chloride MW-4R	8	188.8	23.6	272.6742857
Chloride MW-1	8	94.2	11.775	1.050714286
Chloride MW-2	8	127.1	15.8875	2.829821429
Chloride MW-3	8	239.4	29.925	8.999285714
Chloride MW-5	8	117.2	14.65	14.76285714
Chloride MW-6	8	397.8	49.725	55.35071429
Chloride MW-7	8	165.1	20.6375	7.285535714
Chloride MW-8	8	170.5	21.3125	3.504107143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	8125.911094	7	1160.844442	25.34198389	3.30064E-15	2.178155555
Within Groups	2565.20125	56	45.80716518			
Total	10691.11234	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Chloride

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Chloride MW-4R	8	188.8	23.6	272.6742857
Chloride MW-1	8	94.2	11.775	1.050714286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	559.3225	1	559.3225	4.086747648	0.062766382	8.861592665
Within Groups	1916.075	14	136.8625			
Total	2475.3975	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Chloride MW-4R	8	188.8	23.6	272.6742857
Chloride MW-2	8	127.1	15.8875	2.829821429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	237.93063	1	237.9306	1.727238316	0.209890271	8.861592665
Within Groups	1928.5288	14	137.7521			
Total	2166.4594	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Chloride MW-4R	8	188.8	23.6	272.6742857
Chloride MW-3	8	239.4	29.925	8.999285714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	160.0225	1	160.0225	1.136226584	0.304489557	8.861592665
Within Groups	1971.715	14	140.8368			
Total	2131.7375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Chloride MW-4R	8	188.8	23.6	272.6742857
Chloride MW-5	8	117.2	14.65	14.76285714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	320.41	1	320.41	2.229426558	0.157595424	8.861592665
Within Groups	2012.06	14	143.7186			
Total	2332.47	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Chloride MW-4R	8	188.8	23.6	272.6742857
Chloride MW-6	8	397.8	49.725	55.35071429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	2730.0625	1	2730.063	16.64545385	0.001125509	8.861592665
Within Groups	2296.175	14	164.0125			
Total	5026.2375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Chloride MW-4R	8	188.8	23.6	272.6742857
Chloride MW-7	8	165.1	20.6375	7.285535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	35.105625	1	35.10562	0.250790451	0.624299938	8.861592665
Within Groups	1959.7188	14	139.9799			
Total	1994.8244	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Chloride MW-4R	8	188.8	23.6	272.6742857
Chloride MW-8	8	170.5	21.3125	3.504107143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	20.930625	1	20.93063	0.151573226	0.702894193	8.861592665
Within Groups	1933.2488	14	138.0892			
Total	1954.1794	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Fluoride

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Fluoride MW-4R	8	6.76	0.845	0.005628571
Fluoride MW-1	8	10.8	1.35	0.005714286
Fluoride MW-2	8	7.41	0.92625	0.002483929
Fluoride MW-3	8	6.49	0.81125	0.0042125
Fluoride MW-5	8	9	1.125	0.013571429
Fluoride MW-6	8	4.57	0.57125	0.014183929
Fluoride MW-7	8	6.98	0.8725	0.007935714
Fluoride MW-8	8	6.5	0.8125	0.006478571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3.036698438	7	0.433814063	57.64116025	2.70116E-23	2.178155555
Within Groups	0.4214625	56	0.007526116			
Total	3.458160938	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Fluoride

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Fluoride MW-4R	8	6.76	0.845	0.005628571
Fluoride MW-1	8	10.8	1.35	0.005714286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1.0201	1	1.0201	179.8664987	2.21661E-09	8.861592665
Within Groups	0.0794	14	0.005671429			
Total	1.0995	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Fluoride MW-4R	8	6.76	0.845	0.005628571
Fluoride MW-2	8	7.41	0.92625	0.002483929

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.0264	1	0.02640625	6.510015408	0.023051435	8.861592665
Within Groups	0.0568	14	0.00405625			
Total	0.0832	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Fluoride MW-4R	8	6.76	0.845	0.005628571
Fluoride MW-3	8	6.49	0.81125	0.0042125

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.0046	1	0.00455625	0.925966249	0.352240267	8.861592665
Within Groups	0.0689	14	0.004920536			
Total	0.0734	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Fluoride MW-4R	8	6.76	0.845	0.005628571
Fluoride MW-5	8	9	1.125	0.013571429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.3136	1	0.3136	32.66666667	5.33836E-05	8.861592665
Within Groups	0.1344	14	0.0096			
Total	0.448	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Fluoride MW-4R	8	6.76	0.845	0.005628571
Fluoride MW-6	8	4.57	0.57125	0.014183929

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.2998	1	0.29975625	30.25930599	7.81117E-05	8.861592665
Within Groups	0.1387	14	0.00990625			
Total	0.4384	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Fluoride MW-4R	8	6.76	0.845	0.005628571
Fluoride MW-7	8	6.98	0.8725	0.007935714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.003	1	0.003025	0.446024223	0.515088571	8.861592665
Within Groups	0.095	14	0.006782143			
Total	0.098	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Fluoride MW-4R	8	6.76	0.845	0.005628571
Fluoride MW-8	8	6.5	0.8125	0.006478571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.0042	1	0.004225	0.697935103	0.417508321	8.861592665
Within Groups	0.0848	14	0.006053571			
Total	0.089	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Lithium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Lithium MW-4R	8	203.3	25.4125	7.452678571
Lithium MW-1	8	279.5	34.9375	7.694107143
Lithium MW-2	8	234.7	29.3375	36.41696429
Lithium MW-3	8	217.5	27.1875	8.326964286
Lithium MW-5	8	251.9	31.4875	20.31267857
Lithium MW-6	8	242.5	30.3125	9.495535714
Lithium MW-7	8	225.2	28.15	18.88285714
Lithium MW-8	8	231.9	28.9875	16.41839286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	466.7135938	7	66.67337054	4.267089618	0.000772613	2.178155555
Within Groups	875.00125	56	15.62502232			
Total	1341.714844	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Lithium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Lithium MW-4R	8	203.3	25.4125	7.452678571
Lithium MW-1	8	279.5	34.9375	7.694107143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	362.9025	1	362.9025	47.91808729	7.06843E-06	8.861592665
Within Groups	106.0275	14	7.573392857			
Total	468.93	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Lithium MW-4R	8	203.3	25.4125	7.452678571
Lithium MW-2	8	234.7	29.3375	36.41696429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	61.6225	1	61.6225	2.80934587	0.11589584	8.861592665
Within Groups	307.0875	14	21.93482143			
Total	368.71	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Lithium MW-4R	8	203.3	25.4125	7.452678571
Lithium MW-3	8	217.5	27.1875	8.326964286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	12.6025	1	12.6025	1.597311183	0.226923978	8.861592665
Within Groups	110.4575	14	7.889821429			
Total	123.06	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Lithium MW-4R	8	203.3	25.4125	7.452678571
Lithium MW-5	8	251.9	31.4875	20.31267857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	147.6225	1	147.6225	10.63357473	0.005687825	8.861592665
Within Groups	194.3575	14	13.88267857			
Total	341.98	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Lithium MW-4R	8	203.3	25.4125	7.452678571
Lithium MW-6	8	242.5	30.3125	9.495535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	96.04	1	96.04	11.33334738	0.004610079	8.861592665
Within Groups	118.6375	14	8.474107143			
Total	214.6775	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Lithium MW-4R	8	203.3	25.4125	7.452678571
Lithium MW-7	8	225.2	28.15	18.88285714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	29.97563	1	29.975625	2.276439357	0.153586764	8.861592665
Within Groups	184.3488	14	13.16776786			
Total	214.3244	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Lithium MW-4R	8	203.3	25.4125	7.452678571
Lithium MW-8	8	231.9	28.9875	16.41839286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	51.1225	1	51.1225	4.283217882	0.057470256	8.861592665
Within Groups	167.0975	14	11.93553571			
Total	218.22	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Molybdenum

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Molybdenum MW-4R	8	51.1	6.3875	1.684107143
Molybdenum MW-1	8	64.8	8.1	0.4
Molybdenum MW-2	8	67.8	8.475	0.416428571
Molybdenum MW-3	8	86.1	10.7625	1.445535714
Molybdenum MW-5	8	54	6.75	0.431428571
Molybdenum MW-6	8	68.5	8.5625	0.996964286
Molybdenum MW-7	8	69.1	8.6375	0.819821429
Molybdenum MW-8	8	69.8	8.725	6.282142857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	100.465	7	14.35214286	9.202725139	1.60392E-07	2.178155555
Within Groups	87.335	56	1.559553571			
Total	187.8	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Molybdenum

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Molybdenum MW-4R	8	51.1	6.3875	1.684107143
Molybdenum MW-1	8	64.8	8.1	0.4

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	11.730625	1	11.730625	11.25721875	0.004715139	8.861592665
Within Groups	14.58875	14	1.042053571			
Total	26.319375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Molybdenum MW-4R	8	51.1	6.3875	1.684107143
Molybdenum MW-2	8	67.8	8.475	0.416428571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	17.430625	1	17.430625	16.59636147	0.001138834	8.861592665
Within Groups	14.70375	14	1.050267857			
Total	32.134375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Molybdenum MW-4R	8	51.1	6.3875	1.684107143
Molybdenum MW-3	8	86.1	10.7625	1.445535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	76.5625	1	76.5625	48.927308	6.29954E-06	8.861592665
Within Groups	21.9075	14	1.564821429			
Total	98.47	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Molybdenum MW-4R	8	51.1	6.3875	1.684107143
Molybdenum MW-5	8	54	6.75	0.431428571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.525625	1	0.525625	0.496919051	0.492418838	8.861592665
Within Groups	14.80875	14	1.057767857			
Total	15.334375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Molybdenum MW-4R	8	51.1	6.3875	1.684107143
Molybdenum MW-6	8	68.5	8.5625	0.996964286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	18.9225	1	18.9225	14.11562542	0.002123468	8.861592665
Within Groups	18.7675	14	1.340535714			
Total	37.69	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Molybdenum MW-4R	8	51.1	6.3875	1.684107143
Molybdenum MW-7	8	69.1	8.6375	0.819821429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	20.25	1	20.25	16.1745828	0.001261088	8.861592665
Within Groups	17.5275	14	1.251964286			
Total	37.7775	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Molybdenum MW-4R	8	51.1	6.3875	1.684107143
Molybdenum MW-8	8	69.8	8.725	6.282142857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	21.855625	1	21.855625	5.487054762	0.034455764	8.861592665
Within Groups	55.76375	14	3.983125			
Total	77.619375	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Selenium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Selenium MW-4R	8	56.1	7.0125	2.064107143
Selenium MW-1	8	108.4	13.55	3.565714286
Selenium MW-2	8	110.8	13.85	5.291428571
Selenium MW-3	8	67.7	8.4625	1.025535714
Selenium MW-5	8	70	8.75	0.162857143
Selenium MW-6	8	85.8	10.725	4.387857143
Selenium MW-7	8	83.9	10.4875	1.329821429
Selenium MW-8	8	89.7	11.2125	4.175535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	323.6775	7	46.23964286	16.81223218	9.84051E-12	2.178155555
Within Groups	154.02	56	2.750357143			
Total	477.6975	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Selenium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Selenium MW-4R	8	56.1	7.0125	2.064107143
Selenium MW-1	8	108.4	13.55	3.565714286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	170.955625	1	170.955625	60.73216608	1.85542E-06	8.861592665
Within Groups	39.40875	14	2.814910714			
Total	210.364375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Selenium MW-4R	8	56.1	7.0125	2.064107143
Selenium MW-2	8	110.8	13.85	5.291428571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	187.005625	1	187.005625	50.84758807	5.08589E-06	8.861592665
Within Groups	51.48875	14	3.677767857			
Total	238.494375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Selenium MW-4R	8	56.1	7.0125	2.064107143
Selenium MW-3	8	67.7	8.4625	1.025535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	8.41	1	8.41	5.443994914	0.035065148	8.861592665
Within Groups	21.6275	14	1.544821429			
Total	30.0375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Selenium MW-4R	8	56.1	7.0125	2.064107143
Selenium MW-5	8	70	8.75	0.162857143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	12.075625	1	12.075625	10.84492021	0.005334365	8.861592665
Within Groups	15.58875	14	1.113482143			
Total	27.664375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Selenium MW-4R	8	56.1	7.0125	2.064107143
Selenium MW-6	8	85.8	10.725	4.387857143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	55.130625	1	55.130625	17.08956298	0.001012757	8.861592665
Within Groups	45.16375	14	3.225982143			
Total	100.294375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Selenium MW-4R	8	56.1	7.0125	2.064107143
Selenium MW-7	8	83.9	10.4875	1.329821429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	48.3025	1	48.3025	28.46406398	0.00010524	8.861592665
Within Groups	23.7575	14	1.696964286			
Total	72.06	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Selenium MW-4R	8	56.1	7.0125	2.064107143
Selenium MW-8	8	89.7	11.2125	4.175535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	70.56	1	70.56	22.61667907	0.000307133	8.861592665
Within Groups	43.6775	14	3.119821429			
Total	114.2375	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Sulfate

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Sulfate MW-4R	8	296.7	37.0875	60.13267857
Sulfate MW-1	8	412.1	51.5125	10.66125
Sulfate MW-2	8	397.3	49.6625	124.4798214
Sulfate MW-3	8	408.6	51.075	141.9535714
Sulfate MW-5	8	316.5	39.5625	9.074107143
Sulfate MW-6	8	471.9	58.9875	313.2898214
Sulfate MW-7	8	384.5	48.0625	41.95982143
Sulfate MW-8	8	332.1	41.5125	66.18410714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	2978.444844	7	425.4921205	4.433738429	0.000559941	2.178155555
Within Groups	5374.14625	56	95.96689732			
Total	8352.591094	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Sulfate

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Sulfate MW-4R	8	296.7	37.0875	60.13267857
Sulfate MW-1	8	412.1	51.5125	10.66125

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	832.3225	1	832.3225	23.51395146	0.000257687	8.861592665
Within Groups	495.5575	14	35.39696429			
Total	1327.88	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Sulfate MW-4R	8	296.7	37.0875	60.13267857
Sulfate MW-2	8	397.3	49.6625	124.4798214

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	632.5225	1	632.5225	6.852434153	0.020265979	8.861592665
Within Groups	1292.288	14	92.30625			
Total	1924.81	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Sulfate MW-4R	8	296.7	37.0875	60.13267857
Sulfate MW-3	8	408.6	51.075	141.9535714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	782.6006	1	782.600625	7.745213987	0.014661978	8.861592665
Within Groups	1414.604	14	101.043125			
Total	2197.204	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Sulfate MW-4R	8	296.7	37.0875	60.13267857
Sulfate MW-5	8	316.5	39.5625	9.074107143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	24.5025	1	24.5025	0.708095304	0.414219818	8.861592665
Within Groups	484.4475	14	34.60339286			
Total	508.95	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Sulfate MW-4R	8	296.7	37.0875	60.13267857
Sulfate MW-6	8	471.9	58.9875	313.2898214

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1918.44	1	1918.44	10.27490309	0.006351337	8.861592665
Within Groups	2613.958	14	186.71125			
Total	4532.398	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Sulfate MW-4R	8	296.7	37.0875	60.13267857
Sulfate MW-7	8	384.5	48.0625	41.95982143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	481.8025	1	481.8025	9.438548375	0.008276572	8.861592665
Within Groups	714.6475	14	51.04625			
Total	1196.45	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Sulfate MW-4R	8	296.7	37.0875	60.13267857
Sulfate MW-8	8	332.1	41.5125	66.18410714

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	78.3225	1	78.3225	1.240096469	0.284206967	8.861592665
Within Groups	884.2175	14	63.15839286			
Total	962.54	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Total Dissolved Solids

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Dissolved Solids MW-4R	8	3179	397.375	925.9821429
Total Dissolved Solids MW-1	8	3705	463.125	89.55357143
Total Dissolved Solids MW-2	8	3463	432.875	268.125
Total Dissolved Solids MW-3	8	3350	418.75	1075.928571
Total Dissolved Solids MW-5	8	3875	484.375	235.6964286
Total Dissolved Solids MW-6	8	3933	491.625	3869.982143
Total Dissolved Solids MW-7	8	3460	432.5	798
Total Dissolved Solids MW-8	8	3171	396.375	401.9821429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	75572.25	7	10796.03571	11.26751061	8.26951E-09	2.178155555
Within Groups	53656.75	56	958.15625			
Total	129229	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Total Dissolved Solids

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Dissolved Solids MW-4R	8	3179	397.375	925.9821429
Total Dissolved Solids MW-1	8	3705	463.125	89.55357143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	17292.25	1	17292.25	34.05542465	4.32527E-05	8.861592665
Within Groups	7108.75	14	507.7678571			
Total	24401	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Dissolved Solids MW-4R	8	3179	397.375	925.9821429
Total Dissolved Solids MW-2	8	3463	432.875	268.125

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	5041	1	5041	8.443128458	0.011511501	8.861592665
Within Groups	8358.75	14	597.0535714			
Total	13399.75	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Dissolved Solids MW-4R	8	3179	397.375	925.9821429
Total Dissolved Solids MW-3	8	3350	418.75	1075.928571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1827.563	1	1827.5625	1.825818192	0.19805517	8.861592665
Within Groups	14013.38	14	1000.955357			
Total	15840.94	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Dissolved Solids MW-4R	8	3179	397.375	925.9821429
Total Dissolved Solids MW-5	8	3875	484.375	235.6964286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	30276	1	30276	52.12457343	4.42693E-06	8.861592665
Within Groups	8131.75	14	580.8392857			
Total	38407.75	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Dissolved Solids MW-4R	8	3179	397.375	925.9821429
Total Dissolved Solids MW-6	8	3933	491.625	3869.982143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	35532.25	1	35532.25	14.81756239	0.001769783	8.861592665
Within Groups	33571.75	14	2397.982143			
Total	69104	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Dissolved Solids MW-4R	8	3179	397.375	925.9821429
Total Dissolved Solids MW-7	8	3460	432.5	798

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4935.063	1	4935.0625	5.725189812	0.031301191	8.861592665
Within Groups	12067.88	14	861.9910714			
Total	17002.94	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Dissolved Solids MW-4R	8	3179	397.375	925.9821429
Total Dissolved Solids MW-8	8	3171	396.375	401.9821429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4	1	4	0.006024258	0.939231822	8.861592665
Within Groups	9295.75	14	663.9821429			
Total	9299.75	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Radium 226

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 226 MW-4R	8	5.914	0.73925	0.019950214
Radium 226 MW-1	8	5.983	0.747875	0.029894411
Radium 226 MW-2	8	5.921	0.740125	0.028998982
Radium 226 MW-3	8	5.259	0.657375	0.084227411
Radium 226 MW-5	8	5.409	0.676125	0.007496125
Radium 226 MW-6	8	7.122	0.89025	0.016286214
Radium 226 MW-7	8	5.928	0.741	0.042494286
Radium 226 MW-8	8	6.798	0.84975	0.081993357

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.349901938	7	0.049985991	1.284404973	0.274846304	2.178155555
Within Groups	2.179387	56	0.038917625			
Total	2.529288938	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Radium 226

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 226 MW-4R	8	5.914	0.73925	0.019950214
Radium 226 MW-1	8	5.983	0.747875	0.029894411

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.000297563	1	0.000297563	0.011939602	0.914540299	8.861592665
Within Groups	0.348912375	14	0.024922313			
Total	0.349209938	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 226 MW-4R	8	5.914	0.73925	0.019950214
Radium 226 MW-2	8	5.921	0.740125	0.028998982

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3.0625E-06	1	3.0625E-06	0.00012513	0.99123278	8.861592665
Within Groups	0.342644375	14	0.024474598			
Total	0.342647438	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 226 MW-4R	8	5.914	0.73925	0.019950214
Radium 226 MW-3	8	5.259	0.657375	0.084227411

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.026814063	1	0.026814063	0.514775846	0.48487892	8.861592665
Within Groups	0.729243375	14	0.052088813			
Total	0.756057438	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 226 MW-4R	8	5.914	0.73925	0.019950214
Radium 226 MW-5	8	5.409	0.676125	0.007496125

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.015939063	1	0.015939063	1.161470922	0.299380724	8.861592665
Within Groups	0.192124375	14	0.01372317			
Total	0.208063438	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 226 MW-4R	8	5.914	0.73925	0.019950214
Radium 226 MW-6	8	7.122	0.89025	0.016286214

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.091204	1	0.091204	5.033829414	0.041550604	8.861592665
Within Groups	0.253655	14	0.018118214			
Total	0.344859	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 226 MW-4R	8	5.914	0.73925	0.019950214
Radium 226 MW-7	8	5.928	0.741	0.042494286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1.225E-05	1	1.225E-05	0.000392348	0.984476242	8.861592665
Within Groups	0.4371115	14	0.03122225			
Total	0.43712375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 226 MW-4R	8	5.914	0.73925	0.019950214
Radium 226 MW-8	8	6.798	0.84975	0.081993357

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.048841	1	0.048841	0.958196762	0.344254942	8.861592665
Within Groups	0.713605	14	0.050971786			
Total	0.762446	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Radium 228

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 228 MW-4R	8	7.297	0.912125	0.055956411
Radium 228 MW-1	8	6.741	0.842625	0.063735696
Radium 228 MW-2	8	6.649	0.831125	0.051265268
Radium 228 MW-3	8	6.976	0.872	0.052461429
Radium 228 MW-5	8	6.467	0.808375	0.016059982
Radium 228 MW-6	8	7.136	0.892	0.052
Radium 228 MW-7	8	6.332	0.7915	0.016284286
Radium 228 MW-8	8	6.763	0.845375	0.041804839

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.093531859	7	0.013361694	0.30578766	0.948396758	2.178155555
Within Groups	2.446975375	56	0.043695989			
Total	2.540507234	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Radium 228

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 228 MW-4R	8	7.297	0.912125	0.055956411
Radium 228 MW-1	8	6.741	0.842625	0.063735696

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.019321	1	0.019321	0.322845014	0.578902904	8.861592665
Within Groups	0.83784475	14	0.059846054			
Total	0.85716575	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 228 MW-4R	8	7.297	0.912125	0.055956411
Radium 228 MW-2	8	6.649	0.831125	0.051265268

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.026244	1	0.026244	0.489527871	0.495599961	8.861592665
Within Groups	0.75055175	14	0.053610839			
Total	0.77679575	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 228 MW-4R	8	7.297	0.912125	0.055956411
Radium 228 MW-3	8	6.976	0.872	0.052461429

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.00644006	1	0.006440063	0.11880079	0.735461809	8.861592665
Within Groups	0.75892488	14	0.05420892			
Total	0.76536494	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 228 MW-4R	8	7.297	0.912125	0.055956411
Radium 228 MW-5	8	6.467	0.808375	0.016059982

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.04305625	1	0.04305625	1.195734701	0.292634497	8.861592665
Within Groups	0.50411475	14	0.036008196			
Total	0.547171	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 228 MW-4R	8	7.297	0.912125	0.055956411
Radium 228 MW-6	8	7.136	0.892	0.052

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.00162006	1	0.001620063	0.030013271	0.864939956	8.861592665
Within Groups	0.75569488	14	0.053978205			
Total	0.75731494	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 228 MW-4R	8	7.297	0.912125	0.055956411
Radium 228 MW-7	8	6.332	0.7915	0.016284286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.05820156	1	0.058201562	1.611323406	0.225002432	8.861592665
Within Groups	0.50568488	14	0.036120348			
Total	0.56388644	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Radium 228 MW-4R	8	7.297	0.912125	0.055956411
Radium 228 MW-8	8	6.763	0.845375	0.041804839

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.01782225	1	0.01782225	0.364607654	0.555616807	8.861592665
Within Groups	0.68432875	14	0.048880625			
Total	0.702151	15				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Total Radium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Radium MW-4R	8	13.16	1.645	0.051742857
Total Radium MW-1	8	12.73	1.59125	0.082983929
Total Radium MW-2	8	12.57	1.57125	0.029555357
Total Radium MW-3	8	12.24	1.53	0.181828571
Total Radium MW-5	8	11.89	1.48625	0.010341071
Total Radium MW-6	8	13.78	1.7225	0.042707143
Total Radium MW-7	8	12.271	1.533875	0.090885839
Total Radium MW-8	8	13.58	1.6975	0.147592857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.396716984	7	0.056673855	0.711047814	0.662762153	2.178155555
Within Groups	4.463463375	56	0.079704703			
Total	4.860180359	63				

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - Analysis of Variance (Oct 2016 - Sept 2017)

Total Radium

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Radium MW-4R	8	13.16	1.645	0.051742857
Total Radium MW-1	8	12.73	1.59125	0.082983929

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.01155625	1	0.01155625	0.17155089	0.68501299	8.861592665
Within Groups	0.9430875	14	0.067363393			
Total	0.95464375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Radium MW-4R	8	13.16	1.645	0.051742857
Total Radium MW-2	8	12.57	1.57125	0.029555357

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.02175625	1	0.02175625	0.535220858	0.47648838	8.861592665
Within Groups	0.5690875	14	0.040649107			
Total	0.59084375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Radium MW-4R	8	13.16	1.645	0.051742857
Total Radium MW-3	8	12.24	1.53	0.181828571

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.0529	1	0.0529	0.452966361	0.51188701	8.861592665
Within Groups	1.635	14	0.116785714			
Total	1.6879	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Radium MW-4R	8	13.16	1.645	0.051742857
Total Radium MW-5	8	11.89	1.48625	0.010341071

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.10080625	1	0.10080625	3.247418529	0.0931021	8.861592665
Within Groups	0.4345875	14	0.031041964			
Total	0.53539375	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Radium MW-4R	8	13.16	1.645	0.051742857
Total Radium MW-6	8	13.78	1.7225	0.042707143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.024025	1	0.024025	0.50873478	0.48740709	8.861592665
Within Groups	0.66115	14	0.047225			
Total	0.685175	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Radium MW-4R	8	13.16	1.645	0.051742857
Total Radium MW-7	8	12.27	1.533875	0.090885839

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.04939506	1	0.049395062	0.692638491	0.41923895	8.861592665
Within Groups	0.99840088	14	0.071314348			
Total	1.04779594	15				

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Total Radium MW-4R	8	13.16	1.645	0.051742857
Total Radium MW-8	8	13.58	1.6975	0.147592857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.011025	1	0.011025	0.110617408	0.74437003	8.861592665
Within Groups	1.39535	14	0.099667857			
Total	1.406375	15				

APPENDIX 5B

DISTRIBUTION STATISTICAL OUTPUT FILES

DISTRIBUTION RESULTS

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska (Oct 2016 - Sept 2017)

Summary of Distribution Determination

Parameter	MW-1	MW-2	MW-3	MW-4R	MW-5	MW-6	MW-7	MW-8
Antimony	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Arsenic	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Barium	Normal	Normal	Normal	Normal	Nonparametric	Normal	Normal	Normal
Beryllium	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Boron	Normal	Normal	Nonparametric	Normal	Normal	Normal	Normal	Nonparametric
Cadmium	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Calcium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Chloride	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Chromium	N/A	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Cobalt	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Fluoride	Nonparametric	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lead	All ND	All ND	All ND	Nonparametric	All ND	All ND	All ND	All ND
Lithium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Nonparametric
Mercury	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Molybdenum	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Lognormal
Selenium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Sulfate	Normal	Lognormal	Normal	Normal	Normal	Normal	Normal	Normal
Thallium	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND
Total Dissolved Soilds	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Radium-226	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Radium-228	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Total Radium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)	
Distribution Determination	
	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:00:19 PM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	0.99

Arsenic MW-1	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	6
Minimum	3.2
Maximum	3.9
Mean of Raw Data	3.413
Standard Deviation of Raw Data	0.247
Khat	225.7
Theta hat	0.0151
Kstar	141.1
Theta star	0.0242
Mean of Log Transformed Data	1.225
Standard Deviation of Log Transformed Data	0.0705
Normal GOF Test Results	
Correlation Coefficient R	0.932
Shapiro Wilk Test Statistic	0.862
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.146
Lilliefors Test Statistic	0.195
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.941
A-D Test Statistic	0.471
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.2
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.938
Shapiro Wilk Test Statistic	0.872
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.19
Lilliefors Test Statistic	0.189
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Barium MW-1							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	7						
Minimum	114						
Maximum	160						
Mean of Raw Data	136.3						
Standard Deviation of Raw Data	15.42						
Khat	87.05						
Theta hat	1.565						
Kstar	54.49						
Theta star	2.5						
Mean of Log Transformed Data	4.909						
Standard Deviation of Log Transformed Data	0.115						
Normal GOF Test Results							
Correlation Coefficient R	0.968						
Shapiro Wilk Test Statistic	0.933						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.577						
Lilliefors Test Statistic	0.196						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.965						
A-D Test Statistic	0.392						
A-D Critical (0.01) Value	0.954						
K-S Test Statistic	0.213						
K-S Critical(0.01) Value	0.338						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.962						
Shapiro Wilk Test Statistic	0.921						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.477						
Lilliefors Test Statistic	0.213						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Boron MW-1							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	5						
Minimum	126						
Maximum	149						
Mean of Raw Data	139.8						

Standard Deviation of Raw Data	7.146
Khat	426.1
Theta hat	0.328
Kstar	266.4
Theta star	0.525
Mean of Log Transformed Data	4.939
Standard Deviation of Log Transformed Data	0.0521
Normal GOF Test Results	
Correlation Coefficient R	0.954
Shapiro Wilk Test Statistic	0.921
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.373
Lilliefors Test Statistic	0.224
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.951
A-D Test Statistic	0.412
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.238
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.948
Shapiro Wilk Test Statistic	0.911
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.301
Lilliefors Test Statistic	0.225
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Calcium MW-1	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	97.7
Maximum	108
Mean of Raw Data	104.3
Standard Deviation of Raw Data	3.418
Khat	1043
Theta hat	0.1
Kstar	652.1
Theta star	0.16
Mean of Log Transformed Data	4.647
Standard Deviation of Log Transformed Data	0.0333
Normal GOF Test Results	

Correlation Coefficient R	0.943
Shapiro Wilk Test Statistic	0.891
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.233
Lilliefors Test Statistic	0.211
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.939
A-D Test Statistic	0.481
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.212
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.938
Shapiro Wilk Test Statistic	0.884
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.197
Lilliefors Test Statistic	0.217
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Chloride MW-1

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	9.9
Maximum	13.4
Mean of Raw Data	11.78
Standard Deviation of Raw Data	1.025
Khat	146.3
Theta hat	0.0805
Kstar	91.54
Theta star	0.129
Mean of Log Transformed Data	2.463
Standard Deviation of Log Transformed Data	0.0892

Normal GOF Test Results

Correlation Coefficient R	0.956
Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.416
Lilliefors Test Statistic	0.26
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.955
A-D Test Statistic	0.42
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.271
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.95
Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.322
Lilliefors Test Statistic	0.275
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Fluoride MW-1	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	3
Minimum	1.3
Maximum	1.5
Mean of Raw Data	1.35
Standard Deviation of Raw Data	0.0756
Khat	377.3
Theta hat	0.00358
Kstar	235.9
Theta star	0.00572
Mean of Log Transformed Data	0.299
Standard Deviation of Log Transformed Data	0.0546
Normal GOF Test Results	
Correlation Coefficient R	0.852
Shapiro Wilk Test Statistic	0.723
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.00488
Lilliefors Test Statistic	0.371
Lilliefors Critical (0.01) Value	0.365
Data not Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.861
A-D Test Statistic	1.142
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.387
K-S Critical(0.01) Value	0.339
Data not Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.854
Shapiro Wilk Test Statistic	0.725
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.00524
Lilliefors Test Statistic	0.373
Lilliefors Critical (0.01) Value	0.365
Data not Lognormal at (0.01) Significance Level	
Lithium MW-1	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	30.6
Maximum	38.5
Mean of Raw Data	34.94
Standard Deviation of Raw Data	2.774
Khat	177.5
Theta hat	0.197
Kstar	111
Theta star	0.315
Mean of Log Transformed Data	3.551
Standard Deviation of Log Transformed Data	0.0807
Normal GOF Test Results	
Correlation Coefficient R	0.982
Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.836
Lilliefors Test Statistic	0.157
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.976
A-D Test Statistic	0.269
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.173
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.943
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.762
Lilliefors Test Statistic	0.157
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Molybdenum MW-1	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	6
Minimum	7.2
Maximum	9
Mean of Raw Data	8.1
Standard Deviation of Raw Data	0.632
Khat	183.2
Theta hat	0.0442
Kstar	114.6
Theta star	0.0707
Mean of Log Transformed Data	2.089
Standard Deviation of Log Transformed Data	0.0795
Normal GOF Test Results	
Correlation Coefficient R	0.953
Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.343
Lilliefors Test Statistic	0.249
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.95
A-D Test Statistic	0.506
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.264
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.947
Shapiro Wilk Test Statistic	0.888
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.273
Lilliefors Test Statistic	0.259
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Selenium MW-1	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	11.4
Maximum	16.3
Mean of Raw Data	13.55

Standard Deviation of Raw Data	1.888						
Khat	59.73						
Theta hat	0.227						
Kstar	37.41						
Theta star	0.362						
Mean of Log Transformed Data	2.598						
Standard Deviation of Log Transformed Data	0.138						
Normal GOF Test Results							
Correlation Coefficient R	0.967						
Shapiro Wilk Test Statistic	0.911						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.546						
Lilliefors Test Statistic	0.178						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.97						
A-D Test Statistic	0.348						
A-D Critical (0.01) Value	0.953						
K-S Test Statistic	0.165						
K-S Critical(0.01) Value	0.338						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.97						
Shapiro Wilk Test Statistic	0.917						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.604						
Lilliefors Test Statistic	0.155						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Sulfate MW-1							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	46.6						
Maximum	56.7						
Mean of Raw Data	51.51						
Standard Deviation of Raw Data	3.265						
Khat	284.7						
Theta hat	0.181						
Kstar	178						
Theta star	0.289						
Mean of Log Transformed Data	3.94						
Standard Deviation of Log Transformed Data	0.0634						
Normal GOF Test Results							

Correlation Coefficient R	0.989
Shapiro Wilk Test Statistic	0.977
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.955
Lilliefors Test Statistic	0.167
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.99
A-D Test Statistic	0.201
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.173
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.99
Shapiro Wilk Test Statistic	0.978
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.959
Lilliefors Test Statistic	0.159
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Total Dissolved Solids MW-1

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	6
Minimum	444
Maximum	474
Mean of Raw Data	463.1
Standard Deviation of Raw Data	9.463
Khat	2700
Theta hat	0.172
Kstar	1687
Theta star	0.274
Mean of Log Transformed Data	6.138
Standard Deviation of Log Transformed Data	0.0206

Normal GOF Test Results

Correlation Coefficient R	0.93
Shapiro Wilk Test Statistic	0.878
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.143
Lilliefors Test Statistic	0.287
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.93
A-D Test Statistic	0.553
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.292
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.927
Shapiro Wilk Test Statistic	0.872
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.126
Lilliefors Test Statistic	0.29
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 226 MW-1	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.497
Maximum	0.967
Mean of Raw Data	0.748
Standard Deviation of Raw Data	0.173
Khat	20.23
Theta hat	0.037
Kstar	12.73
Theta star	0.0588
Mean of Log Transformed Data	-0.315
Standard Deviation of Log Transformed Data	0.243
Normal GOF Test Results	
Correlation Coefficient R	0.979
Shapiro Wilk Test Statistic	0.938
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.77
Lilliefors Test Statistic	0.182
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.965
A-D Test Statistic	0.31
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.197
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.974
Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.68
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 228 MW-1	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.625
Maximum	1.38
Mean of Raw Data	0.843
Standard Deviation of Raw Data	0.252
Khat	15.1
Theta hat	0.0558
Kstar	9.523
Theta star	0.0885
Mean of Log Transformed Data	-0.205
Standard Deviation of Log Transformed Data	0.266
Normal GOF Test Results	
Correlation Coefficient R	0.901
Shapiro Wilk Test Statistic	0.819
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0403
Lilliefors Test Statistic	0.27
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.941
A-D Test Statistic	0.544
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.266
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.937
Shapiro Wilk Test Statistic	0.88
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.188
Lilliefors Test Statistic	0.249
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Total Radium MW-1							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	7						
Minimum	1.16						
Maximum	2.02						
Mean of Raw Data	1.591						
Standard Deviation of Raw Data	0.288						
Khat	33.73						
Theta hat	0.0472						
Kstar	21.17						
Theta star	0.0752						
Mean of Log Transformed Data	0.45						
Standard Deviation of Log Transformed Data	0.187						
Normal GOF Test Results							
Correlation Coefficient R	0.991						
Shapiro Wilk Test Statistic	0.975						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.966						
Lilliefors Test Statistic	0.152						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.987						
A-D Test Statistic	0.208						
A-D Critical (0.01) Value	0.954						
K-S Test Statistic	0.168						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.985						
Shapiro Wilk Test Statistic	0.963						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.889						
Lilliefors Test Statistic	0.184						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

Distribution Determination

	Goodness-of-Fit Test Statistics for Data Sets with Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:05:15 PM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	0.99

Chromium MW-1

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	8	0	8	1	7	87.50%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Chromium MW-1 was not processed!

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)	
Distribution Determination	
	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:08:37 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	0.99

Arsenic MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	5
Minimum	3.3
Maximum	4.3
Mean of Raw Data	3.863
Standard Deviation of Raw Data	0.346
Khat	136.7
Theta hat	0.0283
Kstar	85.51
Theta star	0.0452
Mean of Log Transformed Data	1.348
Standard Deviation of Log Transformed Data	0.0925
Normal GOF Test Results	
Correlation Coefficient R	0.943
Shapiro Wilk Test Statistic	0.885
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.231
Lilliefors Test Statistic	0.293
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.936
A-D Test Statistic	0.592
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.306
K-S Critical(0.01) Value	0.339
Data not Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.935
Shapiro Wilk Test Statistic	0.87
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.165
Lilliefors Test Statistic	0.307
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Barium MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	87.4
Maximum	106
Mean of Raw Data	97.88
Standard Deviation of Raw Data	5.204
Khat	393.8
Theta hat	0.249
Kstar	246.2
Theta star	0.398
Mean of Log Transformed Data	4.582
Standard Deviation of Log Transformed Data	0.0543
Normal GOF Test Results	
Correlation Coefficient R	0.926
Shapiro Wilk Test Statistic	0.892
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.127
Lilliefors Test Statistic	0.252
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.927
A-D Test Statistic	0.575
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.259
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.919
Shapiro Wilk Test Statistic	0.879
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0958
Lilliefors Test Statistic	0.261
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Boron MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	106
Maximum	153
Mean of Raw Data	120.6

Standard Deviation of Raw Data	13.95
Khat	94.94
Theta hat	1.271
Kstar	59.42
Theta star	2.03
Mean of Log Transformed Data	4.787
Standard Deviation of Log Transformed Data	0.107
Normal GOF Test Results	
Correlation Coefficient R	0.845
Shapiro Wilk Test Statistic	0.747
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.00405
Lilliefors Test Statistic	0.364
Lilliefors Critical (0.01) Value	0.365
Data appear Approximate Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.864
A-D Test Statistic	0.885
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.349
K-S Critical(0.01) Value	0.339
Data follow Appr. Gamma Distribution at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.869
Shapiro Wilk Test Statistic	0.789
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0112
Lilliefors Test Statistic	0.344
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Calcium MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	91.8
Maximum	115
Mean of Raw Data	100.7
Standard Deviation of Raw Data	7.029
Khat	242.8
Theta hat	0.415
Kstar	151.8
Theta star	0.663
Mean of Log Transformed Data	4.61
Standard Deviation of Log Transformed Data	0.0681
Normal GOF Test Results	

Correlation Coefficient R	0.954
Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.374
Lilliefors Test Statistic	0.194
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.962
A-D Test Statistic	0.293
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.174
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.964
Shapiro Wilk Test Statistic	0.943
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.528
Lilliefors Test Statistic	0.182
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Chloride MW-2

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	14.1
Maximum	18.9
Mean of Raw Data	15.89
Standard Deviation of Raw Data	1.682
Khat	105
Theta hat	0.151
Kstar	65.7
Theta star	0.242
Mean of Log Transformed Data	2.761
Standard Deviation of Log Transformed Data	0.104

Normal GOF Test Results

Correlation Coefficient R	0.966
Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.551
Lilliefors Test Statistic	0.187
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.974
A-D Test Statistic	0.302
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.206
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.645
Lilliefors Test Statistic	0.191
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Fluoride MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	0.85
Maximum	1
Mean of Raw Data	0.926
Standard Deviation of Raw Data	0.0498
Khat	393.1
Theta hat	0.00236
Kstar	245.8
Theta star	0.00377
Mean of Log Transformed Data	-0.0779
Standard Deviation of Log Transformed Data	0.054
Normal GOF Test Results	
Correlation Coefficient R	0.991
Shapiro Wilk Test Statistic	0.975
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.964
Lilliefors Test Statistic	0.183
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.989
A-D Test Statistic	0.206
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.199
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.99
Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.958
Lilliefors Test Statistic	0.189
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Lithium MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	24.8
Maximum	43.7
Mean of Raw Data	29.34
Standard Deviation of Raw Data	6.035
Khat	33
Theta hat	0.889
Kstar	20.71
Theta star	1.417
Mean of Log Transformed Data	3.364
Standard Deviation of Log Transformed Data	0.178
Normal GOF Test Results	
Correlation Coefficient R	0.808
Shapiro Wilk Test Statistic	0.68
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	9.1767E-4
Lilliefors Test Statistic	0.312
Lilliefors Critical (0.01) Value	0.365
Data appear Approximate Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.846
A-D Test Statistic	1.022
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.301
K-S Critical(0.01) Value	0.339
Data follow Appr. Gamma Distribution at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.847
Shapiro Wilk Test Statistic	0.742
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.00425
Lilliefors Test Statistic	0.289
Lilliefors Critical (0.01) Value	0.365
Data appear Approximate_Lognormal at (0.01) Significance Level	

Molybdenum MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	7.4
Maximum	9.4
Mean of Raw Data	8.475
Standard Deviation of Raw Data	0.645
Khat	191.9
Theta hat	0.0442
Kstar	120
Theta star	0.0706
Mean of Log Transformed Data	2.135
Standard Deviation of Log Transformed Data	0.0778
Normal GOF Test Results	
Correlation Coefficient R	0.963
Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.507
Lilliefors Test Statistic	0.204
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.96
A-D Test Statistic	0.421
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.215
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.957
Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.413
Lilliefors Test Statistic	0.218
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Selenium MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	10.9
Maximum	18
Mean of Raw Data	13.85

Standard Deviation of Raw Data	2.3
Khat	42.16
Theta hat	0.329
Kstar	26.43
Theta star	0.524
Mean of Log Transformed Data	2.616
Standard Deviation of Log Transformed Data	0.165
Normal GOF Test Results	
Correlation Coefficient R	0.964
Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.527
Lilliefors Test Statistic	0.184
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.97
A-D Test Statistic	0.34
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.179
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.971
Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.64
Lilliefors Test Statistic	0.18
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Sulfate MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	40.1
Maximum	75.7
Mean of Raw Data	49.66
Standard Deviation of Raw Data	11.16
Khat	27.3
Theta hat	1.819
Kstar	17.15
Theta star	2.896
Mean of Log Transformed Data	3.887
Standard Deviation of Log Transformed Data	0.196
Normal GOF Test Results	

Correlation Coefficient R	0.828
Shapiro Wilk Test Statistic	0.713
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.002
Lilliefors Test Statistic	0.377
Lilliefors Critical (0.01) Value	0.365

Data not Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.862
A-D Test Statistic	0.911
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.352
K-S Critical(0.01) Value	0.339

Data follow Appr. Gamma Distribution at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.869
Shapiro Wilk Test Statistic	0.78
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0111
Lilliefors Test Statistic	0.34
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Total Dissolved Solids MW-2

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	416
Maximum	470
Mean of Raw Data	432.9
Standard Deviation of Raw Data	16.37
Khat	827.1
Theta hat	0.523
Kstar	517
Theta star	0.837
Mean of Log Transformed Data	6.07
Standard Deviation of Log Transformed Data	0.0369

Normal GOF Test Results

Correlation Coefficient R	0.878
Shapiro Wilk Test Statistic	0.797
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.016
Lilliefors Test Statistic	0.276
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.887
A-D Test Statistic	0.732
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.263
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.886
Shapiro Wilk Test Statistic	0.811
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0225
Lilliefors Test Statistic	0.267
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 226 MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.521
Maximum	0.983
Mean of Raw Data	0.74
Standard Deviation of Raw Data	0.17
Khat	20.68
Theta hat	0.0358
Kstar	13.01
Theta star	0.0569
Mean of Log Transformed Data	-0.325
Standard Deviation of Log Transformed Data	0.239
Normal GOF Test Results	
Correlation Coefficient R	0.97
Shapiro Wilk Test Statistic	0.923
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.613
Lilliefors Test Statistic	0.183
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.964
A-D Test Statistic	0.409
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.192
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.963
Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.477
Lilliefors Test Statistic	0.183
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 228 MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.564
Maximum	1.19
Mean of Raw Data	0.831
Standard Deviation of Raw Data	0.226
Khat	15.79
Theta hat	0.0526
Kstar	9.953
Theta star	0.0835
Mean of Log Transformed Data	-0.217
Standard Deviation of Log Transformed Data	0.27
Normal GOF Test Results	
Correlation Coefficient R	0.976
Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.726
Lilliefors Test Statistic	0.202
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.985
A-D Test Statistic	0.263
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.198
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.985
Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.885
Lilliefors Test Statistic	0.177
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Total Radium MW-2	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	1.31
Maximum	1.84
Mean of Raw Data	1.571
Standard Deviation of Raw Data	0.172
Khat	96.3
Theta hat	0.0163
Kstar	60.27
Theta star	0.0261
Mean of Log Transformed Data	0.447
Standard Deviation of Log Transformed Data	0.109
Normal GOF Test Results	
Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.947
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.675
Lilliefors Test Statistic	0.197
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.975
A-D Test Statistic	0.297
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.19
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.975
Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.733
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)	
Distribution Determination	
	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:13:54 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	0.99

Arsenic MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	5
Minimum	2.8
Maximum	3.2
Mean of Raw Data	2.988
Standard Deviation of Raw Data	0.125
Khat	659.7
Theta hat	0.00453
Kstar	412.4
Theta star	0.00724
Mean of Log Transformed Data	1.094
Standard Deviation of Log Transformed Data	0.0416
Normal GOF Test Results	
Correlation Coefficient R	0.975
Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.73
Lilliefors Test Statistic	0.21
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.977
A-D Test Statistic	0.292
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.202
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.976
Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.754
Lilliefors Test Statistic	0.203
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Barium MW-3							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	149						
Maximum	183						
Mean of Raw Data	167.5						
Standard Deviation of Raw Data	10.27						
Khat	299.9						
Theta hat	0.559						
Kstar	187.5						
Theta star	0.893						
Mean of Log Transformed Data	5.119						
Standard Deviation of Log Transformed Data	0.062						
Normal GOF Test Results							
Correlation Coefficient R	0.968						
Shapiro Wilk Test Statistic	0.951						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.602						
Lilliefors Test Statistic	0.206						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.968						
A-D Test Statistic	0.324						
A-D Critical (0.01) Value	0.955						
K-S Test Statistic	0.201						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.964						
Shapiro Wilk Test Statistic	0.944						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.527						
Lilliefors Test Statistic	0.215						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Calcium MW-3							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	76.7						
Maximum	102						
Mean of Raw Data	91.85						

Standard Deviation of Raw Data	8.143
Khat	140.1
Theta hat	0.656
Kstar	87.62
Theta star	1.048
Mean of Log Transformed Data	4.517
Standard Deviation of Log Transformed Data	0.0913
Normal GOF Test Results	
Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.947
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.663
Lilliefors Test Statistic	0.176
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.966
A-D Test Statistic	0.284
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.174
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.962
Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.497
Lilliefors Test Statistic	0.191
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Chloride MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	25
Maximum	33
Mean of Raw Data	29.93
Standard Deviation of Raw Data	3
Khat	110.7
Theta hat	0.27
Kstar	69.25
Theta star	0.432
Mean of Log Transformed Data	3.394
Standard Deviation of Log Transformed Data	0.102
Normal GOF Test Results	

Correlation Coefficient R	0.953
Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.331
Lilliefors Test Statistic	0.206
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.943
A-D Test Statistic	0.464
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.219
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.951
Shapiro Wilk Test Statistic	0.889
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.311
Lilliefors Test Statistic	0.201
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Fluoride MW-3

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	6
Minimum	0.75
Maximum	0.94
Mean of Raw Data	0.811
Standard Deviation of Raw Data	0.0649
Khat	186.4
Theta hat	0.00435
Kstar	116.6
Theta star	0.00696
Mean of Log Transformed Data	-0.212
Standard Deviation of Log Transformed Data	0.0775

Normal GOF Test Results

Correlation Coefficient R	0.926
Shapiro Wilk Test Statistic	0.858
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.119
Lilliefors Test Statistic	0.237
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.936
A-D Test Statistic	0.534
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.252
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.935
Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.166
Lilliefors Test Statistic	0.238
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Lithium MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	24
Maximum	33.2
Mean of Raw Data	27.19
Standard Deviation of Raw Data	2.886
Khat	107.7
Theta hat	0.252
Kstar	67.42
Theta star	0.403
Mean of Log Transformed Data	3.298
Standard Deviation of Log Transformed Data	0.102
Normal GOF Test Results	
Correlation Coefficient R	0.94
Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.219
Lilliefors Test Statistic	0.193
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.953
A-D Test Statistic	0.341
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.175
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.956
Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.403
Lilliefors Test Statistic	0.173
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Molybdenum MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	8.5
Maximum	12.5
Mean of Raw Data	10.76
Standard Deviation of Raw Data	1.202
Khat	86.46
Theta hat	0.124
Kstar	54.12
Theta star	0.199
Mean of Log Transformed Data	2.37
Standard Deviation of Log Transformed Data	0.117
Normal GOF Test Results	
Correlation Coefficient R	0.954
Shapiro Wilk Test Statistic	0.927
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.375
Lilliefors Test Statistic	0.236
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.947
A-D Test Statistic	0.462
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.252
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.941
Shapiro Wilk Test Statistic	0.904
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.231
Lilliefors Test Statistic	0.248
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Selenium MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	6.5
Maximum	9.8
Mean of Raw Data	8.463
Standard Deviation of Raw Data	1.013
Khat	74.48
Theta hat	0.114
Kstar	46.63
Theta star	0.181
Mean of Log Transformed Data	2.129
Standard Deviation of Log Transformed Data	0.126
Normal GOF Test Results	
Correlation Coefficient R	0.954
Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.372
Lilliefors Test Statistic	0.265
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.946
A-D Test Statistic	0.446
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.281
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.937
Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.196
Lilliefors Test Statistic	0.285
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Sulfate MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	34.2
Maximum	69.7
Mean of Raw Data	51.08

Standard Deviation of Raw Data	11.91
Khat	20.78
Theta hat	2.458
Kstar	13.07
Theta star	3.908
Mean of Log Transformed Data	3.909
Standard Deviation of Log Transformed Data	0.237
Normal GOF Test Results	
Correlation Coefficient R	0.994
Shapiro Wilk Test Statistic	0.98
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.988
Lilliefors Test Statistic	0.137
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.995
A-D Test Statistic	0.151
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.132
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.996
Shapiro Wilk Test Statistic	0.984
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.994
Lilliefors Test Statistic	0.123
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Total Dissolved Solids MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	373
Maximum	460
Mean of Raw Data	418.8
Standard Deviation of Raw Data	32.8
Khat	185.5
Theta hat	2.257
Kstar	116
Theta star	3.609
Mean of Log Transformed Data	6.035
Standard Deviation of Log Transformed Data	0.0786
Normal GOF Test Results	

Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.917
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.585
Lilliefors Test Statistic	0.212
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.965
A-D Test Statistic	0.373
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.228
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.97
Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.6
Lilliefors Test Statistic	0.211
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Radium 226 MW-3

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	0.22
Maximum	0.931
Mean of Raw Data	0.657
Standard Deviation of Raw Data	0.29
Khat	4.063
Theta hat	0.162
Kstar	2.623
Theta star	0.251
Mean of Log Transformed Data	-0.548
Standard Deviation of Log Transformed Data	0.598

Normal GOF Test Results

Correlation Coefficient R	0.91
Shapiro Wilk Test Statistic	0.807
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0554
Lilliefors Test Statistic	0.322
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.834
A-D Test Statistic	0.955
A-D Critical (0.01) Value	0.96
K-S Test Statistic	0.348
K-S Critical(0.01) Value	0.341
Data follow Appr. Gamma Distribution at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.875
Shapiro Wilk Test Statistic	0.75
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0127
Lilliefors Test Statistic	0.336
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 228 MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.62
Maximum	1.18
Mean of Raw Data	0.872
Standard Deviation of Raw Data	0.229
Khat	16.73
Theta hat	0.0521
Kstar	10.54
Theta star	0.0828
Mean of Log Transformed Data	-0.167
Standard Deviation of Log Transformed Data	0.263
Normal GOF Test Results	
Correlation Coefficient R	0.956
Shapiro Wilk Test Statistic	0.884
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.367
Lilliefors Test Statistic	0.197
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.958
A-D Test Statistic	0.429
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.216
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.961
Shapiro Wilk Test Statistic	0.892
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.43
Lilliefors Test Statistic	0.201
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Total Radium MW-3	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.84
Maximum	2.08
Mean of Raw Data	1.53
Standard Deviation of Raw Data	0.426
Khat	12.82
Theta hat	0.119
Kstar	8.095
Theta star	0.189
Mean of Log Transformed Data	0.386
Standard Deviation of Log Transformed Data	0.313
Normal GOF Test Results	
Correlation Coefficient R	0.974
Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.701
Lilliefors Test Statistic	0.194
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.953
A-D Test Statistic	0.397
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.231
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.95
Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.305
Lilliefors Test Statistic	0.249
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

Distribution Determination

	Goodness-of-Fit Test Statistics for Data Sets with Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:15:14 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	0.99

Boron MW-3

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	8	0	8	4	4	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	100	100	100	100	0
Statistics (Detects Only)	4	101	115	108	108	8.083
Statistics (All: NDs treated as DL value)	8	100	115	104	100.5	6.803
Statistics (All: NDs treated as DL/2 value)	8	50	115	79	75.5	31.45
Statistics (Normal ROS Imputed Data)	8	75.75	115	96.35	96.64	14.31
Statistics (Gamma ROS Imputed Data)	8	77.17	115	96.74	96.8	13.85
Statistics (Lognormal ROS Imputed Data)	8	79.92	115	97.48	97.07	12.97

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	237.7	59.59	0.454	4.68	0.0749	0.016
Statistics (NDs = DL)	279.1	174.5	0.373	4.643	0.0633	0.0136
Statistics (NDs = DL/2)	6.972	4.441	11.33	4.296	0.413	0.0962
Statistics (Gamma ROS Estimates)	55.61	34.84	1.74	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	4.572	0.133	0.029

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.874	0.788	0.881	0.864

	Test value	Crit. (0.01)	Conclusion with Alpha(0.01)
Shapiro-Wilk (Detects Only)	0.731	0.687	Data Appear Normal
Lilliefors (Detects Only)	0.307	0.516	Data Appear Normal
Shapiro-Wilk (NDs = DL)	0.61	0.749	Data Not Normal
Lilliefors (NDs = DL)	0.42	0.365	Data Not Normal
Shapiro-Wilk (NDs = DL/2)	0.742	0.749	Data Not Normal
Lilliefors (NDs = DL/2)	0.322	0.365	Data Appear Normal
Shapiro-Wilk (Normal ROS Estimates)	0.94	0.749	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.154	0.365	Data Appear Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.87	0.798	0.879	0.974

	Test value	Crit. (0.01)	Conclusion with Alpha(0.01)
Anderson-Darling (Detects Only)	0.719	0.81	
Kolmogorov-Smirnov (Detects Only)	0.341	0.437	Detected Data Appear Gamma Distributed

Anderson-Darling (NDs = DL)	1.663	0.955			
Kolmogorov-Smirnov (NDs = DL)	0.43	0.339	Data Not Gamma Distributed		
Anderson-Darling (NDs = DL/2)	1.138	0.959			
Kolmogorov-Smirnov (NDs = DL/2)	0.339	0.34	Detected Data appear Approximate Gamma Distri		
Anderson-Darling (Gamma ROS Estimates)	0.264	0.953			
Kolmogorov-Smirnov (Gamma ROS Est.)	0.165	0.338	Data Appear Gamma Distributed		
Lognormal GOF Test Results					
	No NDs	NDs = DL	NDs = DL/2	Log ROS	
Correlation Coefficient R	0.874	0.79	0.871	0.979	
	Test value	Crit. (0.01)	Conclusion with Alpha(0.01)		
Shapiro-Wilk (Detects Only)	0.731	0.687	Data Appear Lognormal		
Lilliefors (Detects Only)	0.307	0.516	Data Appear Lognormal		
Shapiro-Wilk (NDs = DL)	0.613	0.749	Data Not Lognormal		
Lilliefors (NDs = DL)	0.418	0.365	Data Not Lognormal		
Shapiro-Wilk (NDs = DL/2)	0.722	0.749	Data Not Lognormal		
Lilliefors (NDs = DL/2)	0.324	0.365	Data Appear Lognormal		
Shapiro-Wilk (Lognormal ROS Estimates)	0.94	0.749	Data Appear Lognormal		
Lilliefors (Lognormal ROS Estimates)	0.154	0.365	Data Appear Lognormal		
Note: Substitution methods such as DL or DL/2 are not recommended.					

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-4R (Oct 2016 - Sept 2017)	
Distribution Determination	
	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:27:26 PM
From File	MW-4R.xls
Full Precision	OFF
Confidence Coefficient	0.99

Arsenic MW-4R	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	6
Minimum	3.2
Maximum	4.6
Mean of Raw Data	3.913
Standard Deviation of Raw Data	0.432
Khat	92.52
Theta hat	0.0423
Kstar	57.91
Theta star	0.0676
Mean of Log Transformed Data	1.359
Standard Deviation of Log Transformed Data	0.112
Normal GOF Test Results	
Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.789
Lilliefors Test Statistic	0.188
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.979
A-D Test Statistic	0.271
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.191
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.975
Shapiro Wilk Test Statistic	0.959
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.726
Lilliefors Test Statistic	0.201
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Barium MW-4R	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	108
Maximum	129
Mean of Raw Data	118.3
Standard Deviation of Raw Data	7.206
Khat	307
Theta hat	0.385
Kstar	192
Theta star	0.616
Mean of Log Transformed Data	4.771
Standard Deviation of Log Transformed Data	0.0611
Normal GOF Test Results	
Correlation Coefficient R	0.993
Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.981
Lilliefors Test Statistic	0.142
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.992
A-D Test Statistic	0.185
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.155
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.993
Shapiro Wilk Test Statistic	0.973
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.977
Lilliefors Test Statistic	0.138
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Calcium MW-4R	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	75.2
Maximum	90.6
Mean of Raw Data	83.1

Standard Deviation of Raw Data	5.116
Khat	300.5
Theta hat	0.277
Kstar	187.9
Theta star	0.442
Mean of Log Transformed Data	4.418
Standard Deviation of Log Transformed Data	0.0618
Normal GOF Test Results	
Correlation Coefficient R	0.997
Shapiro Wilk Test Statistic	0.987
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.997
Lilliefors Test Statistic	0.104
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.996
A-D Test Statistic	0.138
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.119
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.996
Shapiro Wilk Test Statistic	0.986
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.996
Lilliefors Test Statistic	0.102
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Chloride MW-4R	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	12.5
Maximum	63.2
Mean of Raw Data	23.6
Standard Deviation of Raw Data	16.51
Khat	3.746
Theta hat	6.299
Kstar	2.425
Theta star	9.733
Mean of Log Transformed Data	3.022
Standard Deviation of Log Transformed Data	0.508
Normal GOF Test Results	

Correlation Coefficient R	0.792
Shapiro Wilk Test Statistic	0.653
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	4.8077E-4
Lilliefors Test Statistic	0.353
Lilliefors Critical (0.01) Value	0.365

Data appear Approximate Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.89
A-D Test Statistic	0.818
A-D Critical (0.01) Value	0.961
K-S Test Statistic	0.278
K-S Critical(0.01) Value	0.341

Data not Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.903
Shapiro Wilk Test Statistic	0.833
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0456
Lilliefors Test Statistic	0.239
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Fluoride MW-4R

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	0.74
Maximum	1
Mean of Raw Data	0.845
Standard Deviation of Raw Data	0.075
Khat	150.6
Theta hat	0.00561
Kstar	94.23
Theta star	0.00897
Mean of Log Transformed Data	-0.172
Standard Deviation of Log Transformed Data	0.0864

Normal GOF Test Results

Correlation Coefficient R	0.935
Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.181
Lilliefors Test Statistic	0.244
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.944
A-D Test Statistic	0.419
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.224
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.947
Shapiro Wilk Test Statistic	0.923
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.293
Lilliefors Test Statistic	0.229
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Lithium MW-4R	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	21.5
Maximum	30.4
Mean of Raw Data	25.41
Standard Deviation of Raw Data	2.73
Khat	100.4
Theta hat	0.253
Kstar	62.82
Theta star	0.405
Mean of Log Transformed Data	3.23
Standard Deviation of Log Transformed Data	0.107
Normal GOF Test Results	
Correlation Coefficient R	0.967
Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.577
Lilliefors Test Statistic	0.181
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.971
A-D Test Statistic	0.314
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.198
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.671
Lilliefors Test Statistic	0.2
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Molybdenum MW-4R	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	4.3
Maximum	8.5
Mean of Raw Data	6.388
Standard Deviation of Raw Data	1.298
Khat	26.16
Theta hat	0.244
Kstar	16.44
Theta star	0.389
Mean of Log Transformed Data	1.835
Standard Deviation of Log Transformed Data	0.214
Normal GOF Test Results	
Correlation Coefficient R	0.973
Shapiro Wilk Test Statistic	0.956
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.691
Lilliefors Test Statistic	0.19
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.967
A-D Test Statistic	0.348
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.217
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.963
Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.515
Lilliefors Test Statistic	0.221
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Selenium MW-4R							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	6						
Minimum	4.3						
Maximum	9.3						
Mean of Raw Data	7.013						
Standard Deviation of Raw Data	1.437						
Khat	24.43						
Theta hat	0.287						
Kstar	15.35						
Theta star	0.457						
Mean of Log Transformed Data	1.927						
Standard Deviation of Log Transformed Data	0.225						
Normal GOF Test Results							
Correlation Coefficient R	0.959						
Shapiro Wilk Test Statistic	0.945						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.463						
Lilliefors Test Statistic	0.21						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.952						
A-D Test Statistic	0.412						
A-D Critical (0.01) Value	0.955						
K-S Test Statistic	0.228						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.932						
Shapiro Wilk Test Statistic	0.894						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.16						
Lilliefors Test Statistic	0.251						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Sulfate MW-4R							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	24.1						
Maximum	45.5						
Mean of Raw Data	37.09						

Standard Deviation of Raw Data	7.755						
Khat	22.84						
Theta hat	1.624						
Kstar	14.36						
Theta star	2.583						
Mean of Log Transformed Data	3.591						
Standard Deviation of Log Transformed Data	0.233						
Normal GOF Test Results							
Correlation Coefficient R	0.931						
Shapiro Wilk Test Statistic	0.859						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.142						
Lilliefors Test Statistic	0.251						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.905						
A-D Test Statistic	0.708						
A-D Critical (0.01) Value	0.956						
K-S Test Statistic	0.278						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.911						
Shapiro Wilk Test Statistic	0.824						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.061						
Lilliefors Test Statistic	0.288						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Total Dissolved Solids MW-4R							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	355						
Maximum	440						
Mean of Raw Data	397.4						
Standard Deviation of Raw Data	30.43						
Khat	196.5						
Theta hat	2.022						
Kstar	122.9						
Theta star	3.233						
Mean of Log Transformed Data	5.982						
Standard Deviation of Log Transformed Data	0.0762						
Normal GOF Test Results							

Correlation Coefficient R	0.975
Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.703
Lilliefors Test Statistic	0.208
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.975
A-D Test Statistic	0.299
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.205
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.943
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.766
Lilliefors Test Statistic	0.196
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Radium 226 MW-4R

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.605
Maximum	0.983
Mean of Raw Data	0.739
Standard Deviation of Raw Data	0.141
Khat	33.4
Theta hat	0.0221
Kstar	20.96
Theta star	0.0353
Mean of Log Transformed Data	-0.317
Standard Deviation of Log Transformed Data	0.183

Normal GOF Test Results

Correlation Coefficient R	0.933
Shapiro Wilk Test Statistic	0.856
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.149
Lilliefors Test Statistic	0.28
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.95
A-D Test Statistic	0.583
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.278
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.942
Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.219
Lilliefors Test Statistic	0.262
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 228 MW-4R	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.597
Maximum	1.2
Mean of Raw Data	0.912
Standard Deviation of Raw Data	0.237
Khat	16.44
Theta hat	0.0555
Kstar	10.36
Theta star	0.0881
Mean of Log Transformed Data	-0.123
Standard Deviation of Log Transformed Data	0.268
Normal GOF Test Results	
Correlation Coefficient R	0.966
Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.531
Lilliefors Test Statistic	0.185
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.955
A-D Test Statistic	0.38
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.202
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.914
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.572
Lilliefors Test Statistic	0.186
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Total Radium MW-4R	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	1.34
Maximum	2
Mean of Raw Data	1.645
Standard Deviation of Raw Data	0.227
Khat	59.75
Theta hat	0.0275
Kstar	37.43
Theta star	0.044
Mean of Log Transformed Data	0.489
Standard Deviation of Log Transformed Data	0.139
Normal GOF Test Results	
Correlation Coefficient R	0.991
Shapiro Wilk Test Statistic	0.97
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.967
Lilliefors Test Statistic	0.127
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.992
A-D Test Statistic	0.185
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.148
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.992
Shapiro Wilk Test Statistic	0.971
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.975
Lilliefors Test Statistic	0.136
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-4R (Oct 2016 - Sept 2017)

Distribution Determination

	Goodness-of-Fit Test Statistics for Data Sets with Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:29:47 PM
From File	MW-4R.xls
Full Precision	OFF
Confidence Coefficient	0.99

Boron MW-4R

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	8	0	8	5	3	37.50%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	100	100	100	100	0
Statistics (Detects Only)	5	180	341	272.6	292	72.6
Statistics (All: NDs treated as DL value)	8	100	341	207.9	197	104.8
Statistics (All: NDs treated as DL/2 value)	8	50	341	189.1	197	127.6
Statistics (Normal ROS Imputed Data)	8	25.64	341	199.4	197	118
Statistics (Gamma ROS Imputed Data)	8	63	341	208.6	197	105.9
Statistics (Lognormal ROS Imputed Data)	8	101.6	341	217.5	197	94.65

	K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	16.26	6.636	16.77	5.577	0.285	0.0511
Statistics (NDs = DL)	4.178	2.695	49.75	5.213	0.547	0.105
Statistics (NDs = DL/2)	1.875	1.255	100.9	4.953	0.888	0.179
Statistics (Gamma ROS Estimates)	3.742	2.422	55.74	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	5.293	0.458	0.0865

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.953	0.941	0.939	0.623

	Test value	Crit. (0.01)	Conclusion with Alpha(0.01)
Shapiro-Wilk (Detects Only)	0.883	0.686	Data Appear Normal
Lilliefors (Detects Only)	0.209	0.461	Data Appear Normal
Shapiro-Wilk (NDs = DL)	0.851	0.749	Data Appear Normal
Lilliefors (NDs = DL)	0.223	0.365	Data Appear Normal
Shapiro-Wilk (NDs = DL/2)	0.847	0.749	Data Appear Normal
Lilliefors (NDs = DL/2)	0.237	0.365	Data Appear Normal
Shapiro-Wilk (Normal ROS Estimates)	0.938	0.749	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.159	0.365	Data Appear Normal

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.927	0.934	0.895	0.946

	Test value	Crit. (0.01)	Conclusion with Alpha(0.01)
Anderson-Darling (Detects Only)	0.415	0.88	
Kolmogorov-Smirnov (Detects Only)	0.242	0.409	Detected Data Appear Gamma Distributed

Anderson-Darling (NDs = DL)	0.584	0.96				
Kolmogorov-Smirnov (NDs = DL)	0.252	0.341	Data Appear Gamma Distributed			
Anderson-Darling (NDs = DL/2)	0.739	0.972				
Kolmogorov-Smirnov (NDs = DL/2)	0.266	0.344	Data Appear Gamma Distributed			
Anderson-Darling (Gamma ROS Estimates)	0.263	0.961				
Kolmogorov-Smirnov (Gamma ROS Est.)	0.18	0.341	Data Appear Gamma Distributed			

Lognormal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.948	0.933	0.905	0.977

	Test value	Crit. (0.01)	Conclusion with Alpha(0.01)
Shapiro-Wilk (Detects Only)	0.877	0.686	Data Appear Lognormal
Lilliefors (Detects Only)	0.237	0.461	Data Appear Lognormal
Shapiro-Wilk (NDs = DL)	0.835	0.749	Data Appear Lognormal
Lilliefors (NDs = DL)	0.242	0.365	Data Appear Lognormal
Shapiro-Wilk (NDs = DL/2)	0.785	0.749	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.254	0.365	Data Appear Lognormal
Shapiro-Wilk (Lognormal ROS Estimates)	0.931	0.749	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.174	0.365	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Lead MW-4R

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	8	0	8	2	6	75.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	N/A	N/A	N/A	N/A	N/A
Statistics (Detects Only)	2	N/A	N/A	N/A	N/A	N/A
Statistics (All: NDs treated as DL value)	8	N/A	N/A	N/A	N/A	N/A
Statistics (All: NDs treated as DL/2 value)	8	N/A	N/A	N/A	N/A	N/A
Statistics (Normal ROS Imputed Data)	8	N/A	N/A	N/A	N/A	N/A

Normal GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	N/A	N/A	N/A	N/A

	Test value	Crit. (0.01)	Conclusion with Alpha(0.01)
Shapiro-Wilk (Detects Only)	N/A	N/A	
Lilliefors (Detects Only)	N/A	N/A	
Shapiro-Wilk (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	N/A	N/A	
Shapiro-Wilk (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	N/A	N/A	
Shapiro-Wilk (Normal ROS Estimates)	N/A	N/A	
Lilliefors (Normal ROS Estimates)	N/A	N/A	

Gamma GOF Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	N/A	N/A	N/A	N/A

	Test value	Crit. (0.01)	Conclusion with Alpha(0.01)		
Anderson-Darling (Detects Only)	N/A	N/A			
Kolmogorov-Smirnov (Detects Only)	N/A	N/A			
Anderson-Darling (NDs = DL)	N/A	N/A			
Kolmogorov-Smirnov (NDs = DL)	N/A	N/A			
Anderson-Darling (NDs = DL/2)	N/A	N/A			
Kolmogorov-Smirnov (NDs = DL/2)	N/A	N/A			
Anderson-Darling (Gamma ROS Estimates)	N/A	N/A			
Kolmogorov-Smirnov (Gamma ROS Est.)	N/A	N/A			
Note: Substitution methods such as DL or DL/2 are not recommended.					

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)	
Distribution Determination	
	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:32:53 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	0.99

Arsenic MW-5	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	5
Minimum	4.1
Maximum	4.7
Mean of Raw Data	4.413
Standard Deviation of Raw Data	0.236
Khat	397.9
Theta hat	0.0111
Kstar	248.7
Theta star	0.0177
Mean of Log Transformed Data	1.483
Standard Deviation of Log Transformed Data	0.0537
Normal GOF Test Results	
Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.906
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.513
Lilliefors Test Statistic	0.158
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.961
A-D Test Statistic	0.364
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.174
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.964
Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.488
Lilliefors Test Statistic	0.161
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Barium MW-5	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	6
Minimum	38
Maximum	155
Mean of Raw Data	130.8
Standard Deviation of Raw Data	38.51
Khat	7.14
Theta hat	18.31
Kstar	4.546
Theta star	28.76
Mean of Log Transformed Data	4.802
Standard Deviation of Log Transformed Data	0.474
Normal GOF Test Results	
Correlation Coefficient R	0.778
Shapiro Wilk Test Statistic	0.632
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	2.8831E-4
Lilliefors Test Statistic	0.388
Lilliefors Critical (0.01) Value	0.365
Data not Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.695
A-D Test Statistic	1.681
A-D Critical (0.01) Value	0.959
K-S Test Statistic	0.435
K-S Critical(0.01) Value	0.34
Data not Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.715
Shapiro Wilk Test Statistic	0.54
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	3.0053E-5
Lilliefors Test Statistic	0.443
Lilliefors Critical (0.01) Value	0.365
Data not Lognormal at (0.01) Significance Level	
Boron MW-5	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	113
Maximum	137
Mean of Raw Data	125.9

Standard Deviation of Raw Data	8.774						
Khat	230						
Theta hat	0.547						
Kstar	143.9						
Theta star	0.875						
Mean of Log Transformed Data	4.833						
Standard Deviation of Log Transformed Data	0.0709						
Normal GOF Test Results							
Correlation Coefficient R	0.962						
Shapiro Wilk Test Statistic	0.909						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.46						
Lilliefors Test Statistic	0.181						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.956						
A-D Test Statistic	0.435						
A-D Critical (0.01) Value	0.955						
K-S Test Statistic	0.196						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.957						
Shapiro Wilk Test Statistic	0.9						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.388						
Lilliefors Test Statistic	0.187						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Calcium MW-5							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	101						
Maximum	126						
Mean of Raw Data	113						
Standard Deviation of Raw Data	8						
Khat	229						
Theta hat	0.493						
Kstar	143.2						
Theta star	0.789						
Mean of Log Transformed Data	4.725						
Standard Deviation of Log Transformed Data	0.0706						
Normal GOF Test Results							

Correlation Coefficient R	0.991
Shapiro Wilk Test Statistic	0.983
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.972
Lilliefors Test Statistic	0.146
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.993
A-D Test Statistic	0.172
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.149
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.993
Shapiro Wilk Test Statistic	0.985
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.982
Lilliefors Test Statistic	0.137
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Chloride MW-5

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	9.5
Maximum	19.8
Mean of Raw Data	14.65
Standard Deviation of Raw Data	3.842
Khat	16.1
Theta hat	0.91
Kstar	10.15
Theta star	1.444
Mean of Log Transformed Data	2.653
Standard Deviation of Log Transformed Data	0.271

Normal GOF Test Results

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.938
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.789
Lilliefors Test Statistic	0.154
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.973
A-D Test Statistic	0.279
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.18
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.789
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Fluoride MW-5	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	3
Minimum	1
Maximum	1.3
Mean of Raw Data	1.125
Standard Deviation of Raw Data	0.116
Khat	110.4
Theta hat	0.0102
Kstar	69.07
Theta star	0.0163
Mean of Log Transformed Data	0.113
Standard Deviation of Log Transformed Data	0.101
Normal GOF Test Results	
Correlation Coefficient R	0.904
Shapiro Wilk Test Statistic	0.805
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0438
Lilliefors Test Statistic	0.335
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.91
A-D Test Statistic	0.8
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.331
K-S Critical(0.01) Value	0.339
Data not Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results							
Correlation Coefficient R	0.912						
Shapiro Wilk Test Statistic	0.819						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.0615						
Lilliefors Test Statistic	0.32						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Lithium MW-5							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	28.3						
Maximum	41.9						
Mean of Raw Data	31.49						
Standard Deviation of Raw Data	4.507						
Khat	63.83						
Theta hat	0.493						
Kstar	39.97						
Theta star	0.788						
Mean of Log Transformed Data	3.442						
Standard Deviation of Log Transformed Data	0.13						
Normal GOF Test Results							
Correlation Coefficient R	0.828						
Shapiro Wilk Test Statistic	0.705						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.00197						
Lilliefors Test Statistic	0.279						
Lilliefors Critical (0.01) Value	0.365						
Data appear Approximate Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.857						
A-D Test Statistic	0.999						
A-D Critical (0.01) Value	0.953						
K-S Test Statistic	0.288						
K-S Critical(0.01) Value	0.338						
Data follow Appr. Gamma Distribution at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.85						
Shapiro Wilk Test Statistic	0.74						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.00489						
Lilliefors Test Statistic	0.277						
Lilliefors Critical (0.01) Value	0.365						
Data appear Approximate_Lognormal at (0.01) Significance Level							

Molybdenum MW-5							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	7						
Minimum	5.8						
Maximum	7.9						
Mean of Raw Data	6.75						
Standard Deviation of Raw Data	0.657						
Khat	122.6						
Theta hat	0.055						
Kstar	76.73						
Theta star	0.088						
Mean of Log Transformed Data	1.905						
Standard Deviation of Log Transformed Data	0.0963						
Normal GOF Test Results							
Correlation Coefficient R	0.981						
Shapiro Wilk Test Statistic	0.967						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.834						
Lilliefors Test Statistic	0.215						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.985						
A-D Test Statistic	0.225						
A-D Critical (0.01) Value	0.955						
K-S Test Statistic	0.211						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.985						
Shapiro Wilk Test Statistic	0.976						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.904						
Lilliefors Test Statistic	0.201						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Selenium MW-5							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	5						
Minimum	8						
Maximum	9.2						
Mean of Raw Data	8.75						

Standard Deviation of Raw Data	0.404
Khat	526.5
Theta hat	0.0166
Kstar	329.1
Theta star	0.0266
Mean of Log Transformed Data	2.168
Standard Deviation of Log Transformed Data	0.0468
Normal GOF Test Results	
Correlation Coefficient R	0.957
Shapiro Wilk Test Statistic	0.914
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.406
Lilliefors Test Statistic	0.182
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.953
A-D Test Statistic	0.385
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.196
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.953
Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.351
Lilliefors Test Statistic	0.181
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Sulfate MW-5	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	36
Maximum	44.7
Mean of Raw Data	39.56
Standard Deviation of Raw Data	3.012
Khat	200.9
Theta hat	0.197
Kstar	125.7
Theta star	0.315
Mean of Log Transformed Data	3.675
Standard Deviation of Log Transformed Data	0.0751
Normal GOF Test Results	

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.813
Lilliefors Test Statistic	0.15
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.984
A-D Test Statistic	0.22
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.154
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.985
Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.885
Lilliefors Test Statistic	0.142
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Total Dissolved Solids MW-5

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	455
Maximum	500
Mean of Raw Data	484.4
Standard Deviation of Raw Data	15.35
Khat	1120
Theta hat	0.432
Kstar	700.2
Theta star	0.692
Mean of Log Transformed Data	6.182
Standard Deviation of Log Transformed Data	0.0321

Normal GOF Test Results

Correlation Coefficient R	0.949
Shapiro Wilk Test Statistic	0.897
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.295
Lilliefors Test Statistic	0.189
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.945
A-D Test Statistic	0.409
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.202
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.946
Shapiro Wilk Test Statistic	0.893
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.263
Lilliefors Test Statistic	0.195
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 226 MW-5	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.562
Maximum	0.824
Mean of Raw Data	0.676
Standard Deviation of Raw Data	0.0866
Khat	70.91
Theta hat	0.00953
Kstar	44.4
Theta star	0.0152
Mean of Log Transformed Data	-0.398
Standard Deviation of Log Transformed Data	0.127
Normal GOF Test Results	
Correlation Coefficient R	0.988
Shapiro Wilk Test Statistic	0.971
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.934
Lilliefors Test Statistic	0.156
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.993
A-D Test Statistic	0.177
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.17
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.992
Shapiro Wilk Test Statistic	0.979
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.979
Lilliefors Test Statistic	0.154
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 228 MW-5	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.642
Maximum	0.974
Mean of Raw Data	0.808
Standard Deviation of Raw Data	0.127
Khat	45.34
Theta hat	0.0178
Kstar	28.42
Theta star	0.0284
Mean of Log Transformed Data	-0.224
Standard Deviation of Log Transformed Data	0.16
Normal GOF Test Results	
Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.916
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.588
Lilliefors Test Statistic	0.185
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.963
A-D Test Statistic	0.398
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.197
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.908
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.511
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Total Radium MW-5							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	1.36						
Maximum	1.66						
Mean of Raw Data	1.486						
Standard Deviation of Raw Data	0.102						
Khat	248						
Theta hat	0.00599						
Kstar	155.1						
Theta star	0.00959						
Mean of Log Transformed Data	0.394						
Standard Deviation of Log Transformed Data	0.0677						
Normal GOF Test Results							
Correlation Coefficient R	0.984						
Shapiro Wilk Test Statistic	0.96						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.879						
Lilliefors Test Statistic	0.175						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.987						
A-D Test Statistic	0.209						
A-D Critical (0.01) Value	0.955						
K-S Test Statistic	0.182						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.988						
Shapiro Wilk Test Statistic	0.966						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.93						
Lilliefors Test Statistic	0.169						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)	
Distribution Determination	
	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:36:47 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	0.99

Arsenic MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	2.1
Maximum	3.4
Mean of Raw Data	2.825
Standard Deviation of Raw Data	0.413
Khat	49.98
Theta hat	0.0565
Kstar	31.32
Theta star	0.0902
Mean of Log Transformed Data	1.028
Standard Deviation of Log Transformed Data	0.154
Normal GOF Test Results	
Correlation Coefficient R	0.973
Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.688
Lilliefors Test Statistic	0.197
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.963
A-D Test Statistic	0.355
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.217
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.959
Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.447
Lilliefors Test Statistic	0.218
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Barium MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	122
Maximum	191
Mean of Raw Data	154.5
Standard Deviation of Raw Data	25.05
Khat	43.43
Theta hat	3.558
Kstar	27.22
Theta star	5.675
Mean of Log Transformed Data	5.029
Standard Deviation of Log Transformed Data	0.163
Normal GOF Test Results	
Correlation Coefficient R	0.966
Shapiro Wilk Test Statistic	0.917
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.536
Lilliefors Test Statistic	0.245
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.966
A-D Test Statistic	0.429
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.252
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.967
Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.552
Lilliefors Test Statistic	0.233
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Boron MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	104
Maximum	176
Mean of Raw Data	133.3

Standard Deviation of Raw Data	22.04
Khat	43.59
Theta hat	3.057
Kstar	27.33
Theta star	4.876
Mean of Log Transformed Data	4.881
Standard Deviation of Log Transformed Data	0.161
Normal GOF Test Results	
Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.614
Lilliefors Test Statistic	0.188
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.979
A-D Test Statistic	0.208
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.16
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.983
Shapiro Wilk Test Statistic	0.975
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.877
Lilliefors Test Statistic	0.165
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Calcium MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	71.6
Maximum	106
Mean of Raw Data	89.39
Standard Deviation of Raw Data	12.96
Khat	54.06
Theta hat	1.654
Kstar	33.87
Theta star	2.639
Mean of Log Transformed Data	4.484
Standard Deviation of Log Transformed Data	0.146
Normal GOF Test Results	

Correlation Coefficient R	0.964
Shapiro Wilk Test Statistic	0.909
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.503
Lilliefors Test Statistic	0.21
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.96
A-D Test Statistic	0.401
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.225
K-S Critical(0.01) Value	0.338

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.967
Shapiro Wilk Test Statistic	0.915
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.548
Lilliefors Test Statistic	0.208
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Chloride MW-6

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	41.9
Maximum	61.7
Mean of Raw Data	49.73
Standard Deviation of Raw Data	7.44
Khat	53.2
Theta hat	0.935
Kstar	33.34
Theta star	1.492
Mean of Log Transformed Data	3.897
Standard Deviation of Log Transformed Data	0.145

Normal GOF Test Results

Correlation Coefficient R	0.954
Shapiro Wilk Test Statistic	0.892
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.348
Lilliefors Test Statistic	0.211
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.963
A-D Test Statistic	0.429
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.207
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.962
Shapiro Wilk Test Statistic	0.906
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.464
Lilliefors Test Statistic	0.192
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Fluoride MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	0.48
Maximum	0.83
Mean of Raw Data	0.571
Standard Deviation of Raw Data	0.119
Khat	30.35
Theta hat	0.0188
Kstar	19.05
Theta star	0.03
Mean of Log Transformed Data	-0.576
Standard Deviation of Log Transformed Data	0.188
Normal GOF Test Results	
Correlation Coefficient R	0.879
Shapiro Wilk Test Statistic	0.781
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0158
Lilliefors Test Statistic	0.26
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.912
A-D Test Statistic	0.709
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.261
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.905
Shapiro Wilk Test Statistic	0.821
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0469
Lilliefors Test Statistic	0.247
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Lithium MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	26.3
Maximum	35.4
Mean of Raw Data	30.31
Standard Deviation of Raw Data	3.081
Khat	112.4
Theta hat	0.27
Kstar	70.34
Theta star	0.431
Mean of Log Transformed Data	3.407
Standard Deviation of Log Transformed Data	0.101
Normal GOF Test Results	
Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.778
Lilliefors Test Statistic	0.178
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.982
A-D Test Statistic	0.273
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.176
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.983
Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.857
Lilliefors Test Statistic	0.163
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Molybdenum MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	7.1
Maximum	9.9
Mean of Raw Data	8.563
Standard Deviation of Raw Data	0.998
Khat	83.19
Theta hat	0.103
Kstar	52.08
Theta star	0.164
Mean of Log Transformed Data	2.141
Standard Deviation of Log Transformed Data	0.118
Normal GOF Test Results	
Correlation Coefficient R	0.984
Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.872
Lilliefors Test Statistic	0.178
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.981
A-D Test Statistic	0.252
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.179
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.984
Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.863
Lilliefors Test Statistic	0.163
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Selenium MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	8.1
Maximum	13
Mean of Raw Data	10.73

Standard Deviation of Raw Data	2.095						
Khat	28.65						
Theta hat	0.374						
Kstar	17.99						
Theta star	0.596						
Mean of Log Transformed Data	2.355						
Standard Deviation of Log Transformed Data	0.203						
Normal GOF Test Results							
Correlation Coefficient R	0.936						
Shapiro Wilk Test Statistic	0.845						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.166						
Lilliefors Test Statistic	0.259						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.922						
A-D Test Statistic	0.632						
A-D Critical (0.01) Value	0.955						
K-S Test Statistic	0.278						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.933						
Shapiro Wilk Test Statistic	0.84						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.146						
Lilliefors Test Statistic	0.265						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Sulfate MW-6							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	33.9						
Maximum	87.1						
Mean of Raw Data	58.99						
Standard Deviation of Raw Data	17.7						
Khat	12.02						
Theta hat	4.908						
Kstar	7.595						
Theta star	7.767						
Mean of Log Transformed Data	4.035						
Standard Deviation of Log Transformed Data	0.317						
Normal GOF Test Results							

Correlation Coefficient R	0.988
Shapiro Wilk Test Statistic	0.971
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.936
Lilliefors Test Statistic	0.139
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.986
A-D Test Statistic	0.227
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.169
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.815
Lilliefors Test Statistic	0.192
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Total Dissolved Solids MW-6

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	411
Maximum	565
Mean of Raw Data	491.6
Standard Deviation of Raw Data	62.21
Khat	70.49
Theta hat	6.975
Kstar	44.14
Theta star	11.14
Mean of Log Transformed Data	6.191
Standard Deviation of Log Transformed Data	0.128

Normal GOF Test Results

Correlation Coefficient R	0.968
Shapiro Wilk Test Statistic	0.906
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.55
Lilliefors Test Statistic	0.166
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.961
A-D Test Statistic	0.362
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.183
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.967
Shapiro Wilk Test Statistic	0.906
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.545
Lilliefors Test Statistic	0.168
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 226 MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.723
Maximum	1.08
Mean of Raw Data	0.89
Standard Deviation of Raw Data	0.128
Khat	55.9
Theta hat	0.0159
Kstar	35.02
Theta star	0.0254
Mean of Log Transformed Data	-0.125
Standard Deviation of Log Transformed Data	0.143
Normal GOF Test Results	
Correlation Coefficient R	0.97
Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.62
Lilliefors Test Statistic	0.201
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.971
A-D Test Statistic	0.319
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.18
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.973
Shapiro Wilk Test Statistic	0.934
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.675
Lilliefors Test Statistic	0.177
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 228 MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.644
Maximum	1.22
Mean of Raw Data	0.892
Standard Deviation of Raw Data	0.228
Khat	18.23
Theta hat	0.0489
Kstar	11.48
Theta star	0.0777
Mean of Log Transformed Data	-0.142
Standard Deviation of Log Transformed Data	0.249
Normal GOF Test Results	
Correlation Coefficient R	0.949
Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.28
Lilliefors Test Statistic	0.223
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.957
A-D Test Statistic	0.435
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.227
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.962
Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.457
Lilliefors Test Statistic	0.208
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Total Radium MW-6	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	1.35
Maximum	2.02
Mean of Raw Data	1.723
Standard Deviation of Raw Data	0.207
Khat	75.59
Theta hat	0.0228
Kstar	47.33
Theta star	0.0364
Mean of Log Transformed Data	0.537
Standard Deviation of Log Transformed Data	0.125
Normal GOF Test Results	
Correlation Coefficient R	0.967
Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.577
Lilliefors Test Statistic	0.216
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.96
A-D Test Statistic	0.377
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.234
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.956
Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.401
Lilliefors Test Statistic	0.232
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)	
Distribution Determination	
	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:38:58 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	0.99

Arsenic MW-7	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	5
Minimum	3.2
Maximum	3.9
Mean of Raw Data	3.438
Standard Deviation of Raw Data	0.245
Khat	234.1
Theta hat	0.0147
Kstar	146.4
Theta star	0.0235
Mean of Log Transformed Data	1.233
Standard Deviation of Log Transformed Data	0.0693
Normal GOF Test Results	
Correlation Coefficient R	0.927
Shapiro Wilk Test Statistic	0.858
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.123
Lilliefors Test Statistic	0.311
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.936
A-D Test Statistic	0.564
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.308
K-S Critical(0.01) Value	0.339
Data not Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.934
Shapiro Wilk Test Statistic	0.869
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.164
Lilliefors Test Statistic	0.301
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Barium MW-7							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	104						
Maximum	119						
Mean of Raw Data	111.6						
Standard Deviation of Raw Data	5.041						
Khat	557						
Theta hat	0.2						
Kstar	348.2						
Theta star	0.321						
Mean of Log Transformed Data	4.714						
Standard Deviation of Log Transformed Data	0.0454						
Normal GOF Test Results							
Correlation Coefficient R	0.991						
Shapiro Wilk Test Statistic	0.975						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.97						
Lilliefors Test Statistic	0.155						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.99						
A-D Test Statistic	0.193						
A-D Critical (0.01) Value	0.955						
K-S Test Statistic	0.162						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.99						
Shapiro Wilk Test Statistic	0.972						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.957						
Lilliefors Test Statistic	0.162						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Boron MW-7							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	7						
Minimum	138						
Maximum	193						
Mean of Raw Data	172.3						

Standard Deviation of Raw Data	19.47						
Khat	84.37						
Theta hat	2.042						
Kstar	52.82						
Theta star	3.261						
Mean of Log Transformed Data	5.143						
Standard Deviation of Log Transformed Data	0.118						
Normal GOF Test Results							
Correlation Coefficient R	0.955						
Shapiro Wilk Test Statistic	0.902						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.362						
Lilliefors Test Statistic	0.245						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.942						
A-D Test Statistic	0.455						
A-D Critical (0.01) Value	0.954						
K-S Test Statistic	0.259						
K-S Critical(0.01) Value	0.338						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.944						
Shapiro Wilk Test Statistic	0.885						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.243						
Lilliefors Test Statistic	0.265						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Calcium MW-7							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	85						
Maximum	105						
Mean of Raw Data	95.18						
Standard Deviation of Raw Data	6.142						
Khat	272.9						
Theta hat	0.349						
Kstar	170.6						
Theta star	0.558						
Mean of Log Transformed Data	4.554						
Standard Deviation of Log Transformed Data	0.0649						
Normal GOF Test Results							

Correlation Coefficient R	0.991
Shapiro Wilk Test Statistic	0.99
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.976
Lilliefors Test Statistic	0.132
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.992
A-D Test Statistic	0.158
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.134
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.99
Shapiro Wilk Test Statistic	0.987
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.964
Lilliefors Test Statistic	0.123
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Chloride MW-7

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	18
Maximum	25.5
Mean of Raw Data	20.64
Standard Deviation of Raw Data	2.699
Khat	69.95
Theta hat	0.295
Kstar	43.8
Theta star	0.471
Mean of Log Transformed Data	3.02
Standard Deviation of Log Transformed Data	0.127

Normal GOF Test Results

Correlation Coefficient R	0.947
Shapiro Wilk Test Statistic	0.887
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.274
Lilliefors Test Statistic	0.216
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.959
A-D Test Statistic	0.447
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.225
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.955
Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.362
Lilliefors Test Statistic	0.211
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Fluoride MW-7	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.76
Maximum	0.99
Mean of Raw Data	0.873
Standard Deviation of Raw Data	0.0891
Khat	110.6
Theta hat	0.00789
Kstar	69.24
Theta star	0.0126
Mean of Log Transformed Data	-0.141
Standard Deviation of Log Transformed Data	0.102
Normal GOF Test Results	
Correlation Coefficient R	0.954
Shapiro Wilk Test Statistic	0.887
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.338
Lilliefors Test Statistic	0.222
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.953
A-D Test Statistic	0.497
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.23
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.957
Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.387
Lilliefors Test Statistic	0.215
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Lithium MW-7	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	23.5
Maximum	36.2
Mean of Raw Data	28.15
Standard Deviation of Raw Data	4.345
Khat	51.59
Theta hat	0.546
Kstar	32.33
Theta star	0.871
Mean of Log Transformed Data	3.328
Standard Deviation of Log Transformed Data	0.147
Normal GOF Test Results	
Correlation Coefficient R	0.931
Shapiro Wilk Test Statistic	0.866
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.143
Lilliefors Test Statistic	0.264
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.947
A-D Test Statistic	0.532
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.264
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.946
Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.269
Lilliefors Test Statistic	0.251
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Molybdenum MW-7							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	7						
Minimum	7.5						
Maximum	9.7						
Mean of Raw Data	8.638						
Standard Deviation of Raw Data	0.905						
Khat	103.3						
Theta hat	0.0837						
Kstar	64.62						
Theta star	0.134						
Mean of Log Transformed Data	2.151						
Standard Deviation of Log Transformed Data	0.106						
Normal GOF Test Results							
Correlation Coefficient R	0.947						
Shapiro Wilk Test Statistic	0.867						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.254						
Lilliefors Test Statistic	0.205						
Lilliefors Critical (0.01) Value	0.365						
Data appear Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.941						
A-D Test Statistic	0.562						
A-D Critical (0.01) Value	0.955						
K-S Test Statistic	0.22						
K-S Critical(0.01) Value	0.339						
Data appear Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.947						
Shapiro Wilk Test Statistic	0.868						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.261						
Lilliefors Test Statistic	0.206						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Selenium MW-7							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	8						
Minimum	8.7						
Maximum	12.4						
Mean of Raw Data	10.49						

Standard Deviation of Raw Data	1.153
Khat	93.59
Theta hat	0.112
Kstar	58.58
Theta star	0.179
Mean of Log Transformed Data	2.345
Standard Deviation of Log Transformed Data	0.111
Normal GOF Test Results	
Correlation Coefficient R	0.987
Shapiro Wilk Test Statistic	0.98
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.933
Lilliefors Test Statistic	0.143
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.987
A-D Test Statistic	0.197
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.143
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.986
Shapiro Wilk Test Statistic	0.977
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.915
Lilliefors Test Statistic	0.149
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Sulfate MW-7	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	41.9
Maximum	58
Mean of Raw Data	48.06
Standard Deviation of Raw Data	6.478
Khat	64.25
Theta hat	0.748
Kstar	40.24
Theta star	1.194
Mean of Log Transformed Data	3.865
Standard Deviation of Log Transformed Data	0.133
Normal GOF Test Results	

Correlation Coefficient R	0.94
Shapiro Wilk Test Statistic	0.858
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.194
Lilliefors Test Statistic	0.25
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.946
A-D Test Statistic	0.59
A-D Critical (0.01) Value	0.953
K-S Test Statistic	0.261
K-S Critical(0.01) Value	0.338

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.94
Shapiro Wilk Test Statistic	0.856
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.193
Lilliefors Test Statistic	0.244
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Total Dissolved Solids MW-7

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	376
Maximum	473
Mean of Raw Data	432.5
Standard Deviation of Raw Data	28.25
Khat	258.6
Theta hat	1.672
Kstar	161.7
Theta star	2.674
Mean of Log Transformed Data	6.068
Standard Deviation of Log Transformed Data	0.0671

Normal GOF Test Results

Correlation Coefficient R	0.946
Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.286
Lilliefors Test Statistic	0.243
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.945
A-D Test Statistic	0.447
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.251
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.937
Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.196
Lilliefors Test Statistic	0.255
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 226 MW-7	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.408
Maximum	1.01
Mean of Raw Data	0.741
Standard Deviation of Raw Data	0.206
Khat	12.99
Theta hat	0.057
Kstar	8.203
Theta star	0.0903
Mean of Log Transformed Data	-0.339
Standard Deviation of Log Transformed Data	0.31
Normal GOF Test Results	
Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.742
Lilliefors Test Statistic	0.228
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.954
A-D Test Statistic	0.379
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.261
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.957
Shapiro Wilk Test Statistic	0.911
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.398
Lilliefors Test Statistic	0.263
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 228 MW-7	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.533
Maximum	0.95
Mean of Raw Data	0.792
Standard Deviation of Raw Data	0.128
Khat	38.89
Theta hat	0.0204
Kstar	24.39
Theta star	0.0325
Mean of Log Transformed Data	-0.247
Standard Deviation of Log Transformed Data	0.178
Normal GOF Test Results	
Correlation Coefficient R	0.951
Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.332
Lilliefors Test Statistic	0.213
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.937
A-D Test Statistic	0.45
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.228
K-S Critical(0.01) Value	0.338
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.921
Shapiro Wilk Test Statistic	0.866
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0973
Lilliefors Test Statistic	0.249
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Total Radium MW-7

Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	0.941
Maximum	1.84
Mean of Raw Data	1.534
Standard Deviation of Raw Data	0.301
Khat	25.17
Theta hat	0.0609
Kstar	15.82
Theta star	0.097
Mean of Log Transformed Data	0.408
Standard Deviation of Log Transformed Data	0.223

Normal GOF Test Results	
Correlation Coefficient R	0.935
Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.17
Lilliefors Test Statistic	0.285
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.908
A-D Test Statistic	0.607
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.31
K-S Critical(0.01) Value	0.339

Data not Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.905
Shapiro Wilk Test Statistic	0.827
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0485
Lilliefors Test Statistic	0.316
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)	
Distribution Determination	
	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects
User Selected Options	
Date/Time of Computation	1/18/2018 1:40:51 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	0.99

Arsenic MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	5
Minimum	2.4
Maximum	2.8
Mean of Raw Data	2.613
Standard Deviation of Raw Data	0.136
Khat	420.1
Theta hat	0.00622
Kstar	262.7
Theta star	0.00995
Mean of Log Transformed Data	0.959
Standard Deviation of Log Transformed Data	0.0523
Normal GOF Test Results	
Correlation Coefficient R	0.967
Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.561
Lilliefors Test Statistic	0.241
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.964
A-D Test Statistic	0.411
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.257
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.536
Lilliefors Test Statistic	0.243
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Barium MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	131
Maximum	166
Mean of Raw Data	147.5
Standard Deviation of Raw Data	13.38
Khat	139.4
Theta hat	1.058
Kstar	87.18
Theta star	1.692
Mean of Log Transformed Data	4.99
Standard Deviation of Log Transformed Data	0.0905
Normal GOF Test Results	
Correlation Coefficient R	0.974
Shapiro Wilk Test Statistic	0.925
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.684
Lilliefors Test Statistic	0.159
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.973
A-D Test Statistic	0.325
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.173
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.976
Shapiro Wilk Test Statistic	0.927
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.704
Lilliefors Test Statistic	0.156
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Boron MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	102
Maximum	552
Mean of Raw Data	174.6

Standard Deviation of Raw Data	153
Khat	2.874
Theta hat	60.77
Kstar	1.879
Theta star	92.91
Mean of Log Transformed Data	4.979
Standard Deviation of Log Transformed Data	0.55
Normal GOF Test Results	
Correlation Coefficient R	0.681
Shapiro Wilk Test Statistic	0.495
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	1.0138E-5
Lilliefors Test Statistic	0.48
Lilliefors Critical (0.01) Value	0.365
Data not Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.812
A-D Test Statistic	1.763
A-D Critical (0.01) Value	0.965
K-S Test Statistic	0.465
K-S Critical(0.01) Value	0.342
Data not Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.755
Shapiro Wilk Test Statistic	0.599
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	1.2115E-4
Lilliefors Test Statistic	0.433
Lilliefors Critical (0.01) Value	0.365
Data not Lognormal at (0.01) Significance Level	
Calcium MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	75.9
Maximum	92.8
Mean of Raw Data	87.49
Standard Deviation of Raw Data	5.509
Khat	274.1
Theta hat	0.319
Kstar	171.4
Theta star	0.51
Mean of Log Transformed Data	4.47
Standard Deviation of Log Transformed Data	0.0654
Normal GOF Test Results	

Correlation Coefficient R	0.929
Shapiro Wilk Test Statistic	0.87
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.134
Lilliefors Test Statistic	0.176
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.921
A-D Test Statistic	0.492
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.186
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.918
Shapiro Wilk Test Statistic	0.852
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.0844
Lilliefors Test Statistic	0.185
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Chloride MW-8

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	18.9
Maximum	23.6
Mean of Raw Data	21.31
Standard Deviation of Raw Data	1.872
Khat	144.9
Theta hat	0.147
Kstar	90.64
Theta star	0.235
Mean of Log Transformed Data	3.056
Standard Deviation of Log Transformed Data	0.0894

Normal GOF Test Results

Correlation Coefficient R	0.935
Shapiro Wilk Test Statistic	0.851
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.158
Lilliefors Test Statistic	0.268
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.929
A-D Test Statistic	0.691
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.285
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.93
Shapiro Wilk Test Statistic	0.842
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.131
Lilliefors Test Statistic	0.278
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Fluoride MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	6
Minimum	0.72
Maximum	0.96
Mean of Raw Data	0.813
Standard Deviation of Raw Data	0.0805
Khat	119.6
Theta hat	0.00679
Kstar	74.84
Theta star	0.0109
Mean of Log Transformed Data	-0.212
Standard Deviation of Log Transformed Data	0.0972
Normal GOF Test Results	
Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.928
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.527
Lilliefors Test Statistic	0.187
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.972
A-D Test Statistic	0.304
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.18
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.97
Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.626
Lilliefors Test Statistic	0.171
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Lithium MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	7
Minimum	26.2
Maximum	38.8
Mean of Raw Data	28.99
Standard Deviation of Raw Data	4.052
Khat	68.36
Theta hat	0.424
Kstar	42.81
Theta star	0.677
Mean of Log Transformed Data	3.36
Standard Deviation of Log Transformed Data	0.125
Normal GOF Test Results	
Correlation Coefficient R	0.768
Shapiro Wilk Test Statistic	0.619
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	1.9516E-4
Lilliefors Test Statistic	0.413
Lilliefors Critical (0.01) Value	0.365
Data not Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.797
A-D Test Statistic	1.343
A-D Critical (0.01) Value	0.954
K-S Test Statistic	0.403
K-S Critical(0.01) Value	0.338
Data not Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.791
Shapiro Wilk Test Statistic	0.656
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	4.7939E-4
Lilliefors Test Statistic	0.395
Lilliefors Critical (0.01) Value	0.365
Data not Lognormal at (0.01) Significance Level	

Molybdenum MW-8							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	7						
Minimum	6.2						
Maximum	14.6						
Mean of Raw Data	8.725						
Standard Deviation of Raw Data	2.506						
Khat	17.31						
Theta hat	0.504						
Kstar	10.9						
Theta star	0.8						
Mean of Log Transformed Data	2.137						
Standard Deviation of Log Transformed Data	0.246						
Normal GOF Test Results							
Correlation Coefficient R	0.817						
Shapiro Wilk Test Statistic	0.703						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.00131						
Lilliefors Test Statistic	0.395						
Lilliefors Critical (0.01) Value	0.365						
Data not Normal at (0.01) Significance Level							
Gamma GOF Test Results							
Correlation Coefficient R	0.856						
A-D Test Statistic	0.989						
A-D Critical (0.01) Value	0.956						
K-S Test Statistic	0.367						
K-S Critical(0.01) Value	0.339						
Data not Gamma Distributed at (0.01) Significance Level							
Lognormal GOF Test Results							
Correlation Coefficient R	0.87						
Shapiro Wilk Test Statistic	0.793						
Shapiro Wilk Critical (0.01) Value	0.749						
Approximate Shapiro Wilk P Value	0.0115						
Lilliefors Test Statistic	0.351						
Lilliefors Critical (0.01) Value	0.365						
Data appear Lognormal at (0.01) Significance Level							
Selenium MW-8							
Raw Statistics							
Number of Valid Observations	8						
Number of Distinct Observations	7						
Minimum	7.3						
Maximum	13.4						
Mean of Raw Data	11.21						

Standard Deviation of Raw Data	2.043
Khat	30.5
Theta hat	0.368
Kstar	19.15
Theta star	0.586
Mean of Log Transformed Data	2.401
Standard Deviation of Log Transformed Data	0.201
Normal GOF Test Results	
Correlation Coefficient R	0.957
Shapiro Wilk Test Statistic	0.915
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.41
Lilliefors Test Statistic	0.171
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.936
A-D Test Statistic	0.407
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.185
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.934
Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.162
Lilliefors Test Statistic	0.19
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Sulfate MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	30.9
Maximum	55.1
Mean of Raw Data	41.51
Standard Deviation of Raw Data	8.135
Khat	30.84
Theta hat	1.346
Kstar	19.36
Theta star	2.144
Mean of Log Transformed Data	3.71
Standard Deviation of Log Transformed Data	0.192
Normal GOF Test Results	

Correlation Coefficient R	0.974
Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.702
Lilliefors Test Statistic	0.213
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.983
A-D Test Statistic	0.253
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.199
K-S Critical(0.01) Value	0.339

Data appear Gamma Distributed at (0.01) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.985
Shapiro Wilk Test Statistic	0.966
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.901
Lilliefors Test Statistic	0.184
Lilliefors Critical (0.01) Value	0.365

Data appear Lognormal at (0.01) Significance Level

Total Dissolved Solids MW-8

Raw Statistics

Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	360
Maximum	422
Mean of Raw Data	396.4
Standard Deviation of Raw Data	20.05
Khat	439.1
Theta hat	0.903
Kstar	274.5
Theta star	1.444
Mean of Log Transformed Data	5.981
Standard Deviation of Log Transformed Data	0.0513

Normal GOF Test Results

Correlation Coefficient R	0.98
Shapiro Wilk Test Statistic	0.961
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.819
Lilliefors Test Statistic	0.121
Lilliefors Critical (0.01) Value	0.365

Data appear Normal at (0.01) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.977
A-D Test Statistic	0.222
A-D Critical (0.01) Value	0.955
K-S Test Statistic	0.123
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.976
Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.747
Lilliefors Test Statistic	0.126
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 226 MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.428
Maximum	1.22
Mean of Raw Data	0.85
Standard Deviation of Raw Data	0.286
Khat	9.245
Theta hat	0.0919
Kstar	5.861
Theta star	0.145
Mean of Log Transformed Data	-0.218
Standard Deviation of Log Transformed Data	0.366
Normal GOF Test Results	
Correlation Coefficient R	0.979
Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.784
Lilliefors Test Statistic	0.158
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.964
A-D Test Statistic	0.262
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.146
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	

Lognormal GOF Test Results	
Correlation Coefficient R	0.973
Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.667
Lilliefors Test Statistic	0.173
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	
Radium 228 MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	0.575
Maximum	1.27
Mean of Raw Data	0.845
Standard Deviation of Raw Data	0.204
Khat	21.14
Theta hat	0.04
Kstar	13.3
Theta star	0.0636
Mean of Log Transformed Data	-0.192
Standard Deviation of Log Transformed Data	0.23
Normal GOF Test Results	
Correlation Coefficient R	0.937
Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.195
Lilliefors Test Statistic	0.223
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.956
A-D Test Statistic	0.346
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.186
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.964
Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.536
Lilliefors Test Statistic	0.186
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

Total Radium MW-8	
Raw Statistics	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	1.13
Maximum	2.11
Mean of Raw Data	1.698
Standard Deviation of Raw Data	0.384
Khat	20.59
Theta hat	0.0824
Kstar	12.95
Theta star	0.131
Mean of Log Transformed Data	0.505
Standard Deviation of Log Transformed Data	0.242
Normal GOF Test Results	
Correlation Coefficient R	0.953
Shapiro Wilk Test Statistic	0.884
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.329
Lilliefors Test Statistic	0.244
Lilliefors Critical (0.01) Value	0.365
Data appear Normal at (0.01) Significance Level	
Gamma GOF Test Results	
Correlation Coefficient R	0.931
A-D Test Statistic	0.504
A-D Critical (0.01) Value	0.956
K-S Test Statistic	0.263
K-S Critical(0.01) Value	0.339
Data appear Gamma Distributed at (0.01) Significance Level	
Lognormal GOF Test Results	
Correlation Coefficient R	0.947
Shapiro Wilk Test Statistic	0.875
Shapiro Wilk Critical (0.01) Value	0.749
Approximate Shapiro Wilk P Value	0.261
Lilliefors Test Statistic	0.25
Lilliefors Critical (0.01) Value	0.365
Data appear Lognormal at (0.01) Significance Level	

APPENDIX 5C

STATISTICAL COMPARISON OUTPUT DATA

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:39:19 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Arsenic MW-1

Sample 2 Data: Arsenic MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	6	6
Minimum	3.2	3.2
Maximum	3.9	4.6
Mean	3.413	3.913
Median	3.35	3.85
SD	0.247	0.432
SE of Mean	0.0875	0.153

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-2.839	2.624	0.993
Welch-Satterthwaite (Unequal Varian	11.1	-2.839	2.718	0.992

Pooled SD 0.352

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0613
Variance of Sample 2	0.187

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.052	0.164

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:43:13 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Barium MW-1

Sample 2 Data: Barium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	114	108
Maximum	160	129
Mean	136.3	118.3
Median	140.5	119
SD	15.42	7.206
SE of Mean	5.454	2.548

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.990	2.624	0.005
Welch-Satterthwaite (Unequal Varian	9.9	2.990	2.764	0.007

Pooled SD 12.039

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	237.9
Variance of Sample 2	51.93

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	4.582	0.062

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/18/2018 9:45:01 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Boron MW-1

Sample 2 Data: Boron MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	8	8
Number of Non-Detects	0	3
Number of Detect Data	8	5
Minimum Non-Detect	N/A	100
Maximum Non-Detect	N/A	100
Percent Non-detects	0.00%	37.50%
Minimum Detect	126	180
Maximum Detect	149	341
Mean of Detects	139.8	272.6
Median of Detects	141	292
SD of Detects	7.146	72.6

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	60
WMW U-Stat	24
Mean (U)	32
SD(U) - Adj ties	9.487
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	-0.899
Approximate P-Value	0.816

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/22/2018 3:07:15 PM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Calcium MW-1

Sample 2 Data: Calcium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	97.7	75.2
Maximum	108	90.6
Mean	104.3	83.1
Median	105.5	83.05
SD	3.418	5.116
SE of Mean	1.208	1.809

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	9.763	2.624	0.000
Welch-Satterthwaite (Unequal Varian	12.2	9.763	2.681	0.000

Pooled SD 4.351

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	11.68
Variance of Sample 2	26.17

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.240	0.309

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:06:42 PM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Chloride MW-1

Sample 2 Data: Chloride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	9.9	12.5
Maximum	13.4	63.2
Mean	11.78	23.6
Median	11.9	18.05
SD	1.025	16.51
SE of Mean	0.362	5.838

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-2.022	2.624	0.969
Welch-Satterthwaite (Unequal Varian	7.1	-2.022	2.998	0.959

Pooled SD 11.699

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	1.051
Variance of Sample 2	272.7

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	259.513	0.000

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

Gehan Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/19/2018 2:31:06 PM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Chromium MW-1

Sample 2 Data: Chromium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	8	8
Number of Non-Detects	7	8
Number of Detect Data	1	0
Minimum Non-Detect	0.5	0.5
Maximum Non-Detect	0.5	0.5
Percent Non-detects	87.50%	100.00%
Minimum Detect	1.7	N/A
Maximum Detect	1.7	N/A
Mean of Detects	1.7	N/A
Median of Detects	1.7	N/A
SD of Detects	N/A	N/A

Sample 1 vs Sample 2 Gehan Test

H0: Mean/Median of Sample 1 <= Mean/Median of background

Gehan z Test Value	1
Critical z (0.01)	2.326
P-Value	0.159

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

P-Value >= alpha (0.01)

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 1:03:50 PM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Fluoride MW-1

Sample 2 Data: Fluoride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	3	7
Minimum	1.3	0.74
Maximum	1.5	1
Mean	1.35	0.845
Median	1.3	0.845
SD	0.0756	0.075
SE of Mean	0.0267	0.0265

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	100
WMW U-Stat	64
Mean (U)	32
SD(U) - Adj ties	9.374
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	3.363
Approximate P-Value	3.8549E-4

Conclusion with Alpha = 0.01

Reject H0, Conclude Sample 1 > Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 10:02:02 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Lithium MW-1

Sample 2 Data: Lithium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	30.6	21.5
Maximum	38.5	30.4
Mean	34.94	25.41
Median	35.25	25.9
SD	2.774	2.73
SE of Mean	0.981	0.965

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	6.922	2.624	0.000
Welch-Satterthwaite (Unequal Varian	14.0	6.922	2.624	0.000

Pooled SD 2.752

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	7.694
Variance of Sample 2	7.453

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.032	0.968

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 10:03:50 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Molybdenum MW-1

Sample 2 Data: Molybdenum MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	6	7
Minimum	7.2	4.3
Maximum	9	8.5
Mean	8.1	6.388
Median	8.3	6.7
SD	0.632	1.298
SE of Mean	0.224	0.459

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.355	2.624	0.002
Welch-Satterthwaite (Unequal Varian	10.1	3.355	2.764	0.004

Pooled SD 1.021

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	0.4
Variance of Sample 2	1.684

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	4.210	0.077

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 10:04:49 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Selenium MW-1

Sample 2 Data: Selenium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	6
Minimum	11.4	4.3
Maximum	16.3	9.3
Mean	13.55	7.013
Median	13.05	7.2
SD	1.888	1.437
SE of Mean	0.668	0.508

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	7.793	2.624	0.000
Welch-Satterthwaite (Unequal Varian	13.1	7.793	2.650	0.000

Pooled SD 1.678

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	3.566
Variance of Sample 2	2.064

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.727	0.488

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 10:05:51 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Sulfate MW-1

Sample 2 Data: Sulfate MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	46.6	24.1
Maximum	56.7	45.5
Mean	51.51	37.09
Median	51.3	39.45
SD	3.265	7.755
SE of Mean	1.154	2.742

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	4.849	2.624	0.000
Welch-Satterthwaite (Unequal Varian	9.4	4.849	2.821	0.000

Pooled SD 5.950

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	10.66
Variance of Sample 2	60.13

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	5.640	0.036

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 10:11:15 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Dissolved Solids MW-1

Sample 2 Data: Total Dissolved Solids MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	6	8
Minimum	444	355
Maximum	474	440
Mean	463.1	397.4
Median	465	390
SD	9.463	30.43
SE of Mean	3.346	10.76

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	5.836	2.624	0.000
Welch-Satterthwaite (Unequal Varian	8.3	5.836	2.896	0.000

Pooled SD 22.534

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	89.55
Variance of Sample 2	926

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	10.340	0.006

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 10:12:20 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 226 MW-1

Sample 2 Data: Radium 226 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.497	0.605
Maximum	0.967	0.983
Mean	0.748	0.739
Median	0.758	0.673
SD	0.173	0.141
SE of Mean	0.0611	0.0499

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.109	2.624	0.457
Welch-Satterthwaite (Unequal Varian	13.5	0.109	2.650	0.457

Pooled SD 0.158

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0299
Variance of Sample 2	0.02

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.498	0.607

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 10:13:24 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 228 MW-1

Sample 2 Data: Radium 228 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.625	0.597
Maximum	1.38	1.2
Mean	0.843	0.912
Median	0.731	0.895
SD	0.252	0.237
SE of Mean	0.0893	0.0836

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.568	2.624	0.711
Welch-Satterthwaite (Unequal Varian	13.9	-0.568	2.624	0.711

Pooled SD 0.245

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0637
Variance of Sample 2	0.056

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.139	0.868

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-1 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 10:14:18 AM
From File	MW-1.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Radium MW-1

Sample 2 Data: Total Radium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	1.16	1.34
Maximum	2.02	2
Mean	1.591	1.645
Median	1.585	1.64
SD	0.288	0.227
SE of Mean	0.102	0.0804

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.414	2.624	0.657
Welch-Satterthwaite (Unequal Varian	13.3	-0.414	2.650	0.657

Pooled SD 0.260

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.083
Variance of Sample 2	0.0517

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.604	0.548

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:42:47 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Arsenic MW-2

Sample 2 Data: Arsenic MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	5	6
Minimum	3.3	3.2
Maximum	4.3	4.6
Mean	3.863	3.913
Median	3.9	3.85
SD	0.346	0.432
SE of Mean	0.122	0.153

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.255	2.624	0.599
Welch-Satterthwaite (Unequal Varian	13.4	-0.255	2.650	0.599

Pooled SD 0.392

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.12
Variance of Sample 2	0.187

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.560	0.572

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:43:38 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Barium MW-2

Sample 2 Data: Barium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	87.4	108
Maximum	106	129
Mean	97.88	118.3
Median	98.4	119
SD	5.204	7.206
SE of Mean	1.84	2.548

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-6.483	2.624	1.000
Welch-Satterthwaite (Unequal Varian	12.7	-6.483	2.650	1.000

Pooled SD 6.285

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	27.09
Variance of Sample 2	51.93

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.917	0.410

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/18/2018 2:44:43 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Boron MW-2

Sample 2 Data: Boron MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	8	8
Number of Non-Detects	0	3
Number of Detect Data	8	5
Minimum Non-Detect	N/A	100
Maximum Non-Detect	N/A	100
Percent Non-detects	0.00%	37.50%
Minimum Detect	106	180
Maximum Detect	153	341
Mean of Detects	120.6	272.6
Median of Detects	118.5	292
SD of Detects	13.95	72.6

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	60
WMW U-Stat	24
Mean (U)	32
SD(U) - Adj ties	9.522
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	-0.895
Approximate P-Value	0.815

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:45:34 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Calcium MW-2

Sample 2 Data: Calcium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	91.8	75.2
Maximum	115	90.6
Mean	100.7	83.1
Median	99.5	83.05
SD	7.029	5.116
SE of Mean	2.485	1.809

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	5.726	2.624	0.000
Welch-Satterthwaite (Unequal Varian	12.8	5.726	2.650	0.000

Pooled SD 6.147

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	49.41		
Variance of Sample 2	26.17		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.888	0.421

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:46:31 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Chloride MW-2

Sample 2 Data: Chloride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	14.1	12.5
Maximum	18.9	63.2
Mean	15.89	23.6
Median	15.7	18.05
SD	1.682	16.51
SE of Mean	0.595	5.838

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-1.314	2.624	0.895
Welch-Satterthwaite (Unequal Varian	7.1	-1.314	2.998	0.885

Pooled SD 11.737

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	2.83
Variance of Sample 2	272.7

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	96.357	0.000

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:47:35 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Fluoride MW-2

Sample 2 Data: Fluoride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	7
Minimum	0.85	0.74
Maximum	1	1
Mean	0.926	0.845
Median	0.93	0.845
SD	0.0498	0.075
SE of Mean	0.0176	0.0265

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.551	2.624	0.012
Welch-Satterthwaite (Unequal Varian	12.2	2.551	2.681	0.013

Pooled SD 0.064

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.00248
Variance of Sample 2	0.00563

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.266	0.303

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:49:14 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Lithium MW-2

Sample 2 Data: Lithium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	24.8	21.5
Maximum	43.7	30.4
Mean	29.34	25.41
Median	27.5	25.9
SD	6.035	2.73
SE of Mean	2.134	0.965

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	1.676	2.624	0.058
Welch-Satterthwaite (Unequal Varian	9.7	1.676	2.764	0.063

Pooled SD 4.683

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	36.42		
Variance of Sample 2	7.453		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	4.886	0.053

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:50:09 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Molybdenum MW-2

Sample 2 Data: Molybdenum MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	7
Minimum	7.4	4.3
Maximum	9.4	8.5
Mean	8.475	6.388
Median	8.65	6.7
SD	0.645	1.298
SE of Mean	0.228	0.459

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	4.074	2.624	0.001
Welch-Satterthwaite (Unequal Varian	10.3	4.074	2.764	0.001

Pooled SD 1.025

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	0.416
Variance of Sample 2	1.684

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	4.044	0.085

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:51:05 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Selenium MW-2

Sample 2 Data: Selenium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	6
Minimum	10.9	4.3
Maximum	18	9.3
Mean	13.85	7.013
Median	14.3	7.2
SD	2.3	1.437
SE of Mean	0.813	0.508

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	7.131	2.624	0.000
Welch-Satterthwaite (Unequal Varian	11.7	7.131	2.681	0.000

Pooled SD 1.918

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	5.291
Variance of Sample 2	2.064

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.564	0.237

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:52:10 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Sulfate MW-2

Sample 2 Data: Sulfate MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	40.1	24.1
Maximum	75.7	45.5
Mean	49.66	37.09
Median	47.8	39.45
SD	11.16	7.755
SE of Mean	3.945	2.742

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	92
WMW U-Stat	56
Mean (U)	32
SD(U) - Adj ties	9.522
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	2.468
Approximate P-Value	0.00679

Conclusion with Alpha = 0.01

Reject H0, Conclude Sample 1 > Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:53:37 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Dissolved Solids MW-2

Sample 2 Data: Total Dissolved Solids MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	416	355
Maximum	470	440
Mean	432.9	397.4
Median	428	390
SD	16.37	30.43
SE of Mean	5.789	10.76

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.906	2.624	0.006
Welch-Satterthwaite (Unequal Varian	10.7	2.906	2.718	0.007

Pooled SD 24.435

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	268.1
Variance of Sample 2	926

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.454	0.124

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:54:42 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 226 MW-2

Sample 2 Data: Radium 226 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.521	0.605
Maximum	0.983	0.983
Mean	0.74	0.739
Median	0.777	0.673
SD	0.17	0.141
SE of Mean	0.0602	0.0499

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.011	2.624	0.496
Welch-Satterthwaite (Unequal Varian	13.5	0.011	2.624	0.496

Pooled SD 0.156

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.029
Variance of Sample 2	0.02

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.454	0.634

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:55:28 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 228 MW-2

Sample 2 Data: Radium 228 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.564	0.597
Maximum	1.19	1.2
Mean	0.831	0.912
Median	0.782	0.895
SD	0.226	0.237
SE of Mean	0.0801	0.0836

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.700	2.624	0.752
Welch-Satterthwaite (Unequal Varian	14.0	-0.700	2.624	0.752

Pooled SD 0.232

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0513
Variance of Sample 2	0.056

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.092	0.911

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-2 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:56:16 PM
From File	MW-2.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Radium MW-2

Sample 2 Data: Total Radium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	1.31	1.34
Maximum	1.84	2
Mean	1.571	1.645
Median	1.53	1.64
SD	0.172	0.227
SE of Mean	0.0608	0.0804

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.732	2.624	0.762
Welch-Satterthwaite (Unequal Varian	13.0	-0.732	2.650	0.761

Pooled SD 0.202

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0296
Variance of Sample 2	0.0517

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.751	0.477

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 2:59:50 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Arsenic MW-3

Sample 2 Data: Arsenic MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	5	6
Minimum	2.8	3.2
Maximum	3.2	4.6
Mean	2.988	3.913
Median	3	3.85
SD	0.125	0.432
SE of Mean	0.0441	0.153

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-5.814	2.624	1.000
Welch-Satterthwaite (Unequal Varian	8.2	-5.814	2.896	1.000

Pooled SD 0.318

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0155
Variance of Sample 2	0.187

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	12.034	0.004

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:00:40 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Barium MW-3

Sample 2 Data: Barium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	149	108
Maximum	183	129
Mean	167.5	118.3
Median	165.5	119
SD	10.27	7.206
SE of Mean	3.63	2.548

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	11.105	2.624	0.000
Welch-Satterthwaite (Unequal Varian	12.5	11.105	2.650	0.000

Pooled SD 8.870

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	105.4
Variance of Sample 2	51.93

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.030	0.371

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/18/2018 3:01:45 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Boron MW-3

Sample 2 Data: Boron MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	8	8
Number of Non-Detects	4	3
Number of Detect Data	4	5
Minimum Non-Detect	100	100
Maximum Non-Detect	100	100
Percent Non-detects	50.00%	37.50%
Minimum Detect	101	180
Maximum Detect	115	341
Mean of Detects	108	272.6
Median of Detects	108	292
SD of Detects	8.083	72.6

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	54
WMW U-Stat	18
Mean (U)	32
SD(U) - Adj ties	9.508
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	-1.592
Approximate P-Value	0.944

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:02:47 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Calcium MW-3

Sample 2 Data: Calcium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	76.7	75.2
Maximum	102	90.6
Mean	91.85	83.1
Median	91.7	83.05
SD	8.143	5.116
SE of Mean	2.879	1.809

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.574	2.624	0.011
Welch-Satterthwaite (Unequal Varian	11.8	2.574	2.681	0.012

Pooled SD 6.800

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	66.31		
Variance of Sample 2	26.17		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.534	0.243

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:16:55 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Chloride MW-3

Sample 2 Data: Chloride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	25	12.5
Maximum	33	63.2
Mean	29.93	23.6
Median	29.95	18.05
SD	3	16.51
SE of Mean	1.061	5.838

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	1.066	2.624	0.152
Welch-Satterthwaite (Unequal Varian	7.5	1.066	2.998	0.160

Pooled SD 11.867

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	8.999
Variance of Sample 2	272.7

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	30.300	0.000

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:18:02 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Fluoride MW-3

Sample 2 Data: Fluoride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	6	7
Minimum	0.75	0.74
Maximum	0.94	1
Mean	0.811	0.845
Median	0.785	0.845
SD	0.0649	0.075
SE of Mean	0.0229	0.0265

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.962	2.624	0.824
Welch-Satterthwaite (Unequal Varian	13.7	-0.962	2.624	0.824

Pooled SD 0.070

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.00421
Variance of Sample 2	0.00563

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.336	0.712

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:19:19 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Lithium MW-3

Sample 2 Data: Lithium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	24	21.5
Maximum	33.2	30.4
Mean	27.19	25.41
Median	26.85	25.9
SD	2.886	2.73
SE of Mean	1.02	0.965

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	1.264	2.624	0.113
Welch-Satterthwaite (Unequal Varian	14.0	1.264	2.624	0.113

Pooled SD 2.809

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	8.327		
Variance of Sample 2	7.453		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.117	0.887

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:20:21 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Molybdenum MW-3

Sample 2 Data: Molybdenum MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	7
Minimum	8.5	4.3
Maximum	12.5	8.5
Mean	10.76	6.388
Median	11.1	6.7
SD	1.202	1.298
SE of Mean	0.425	0.459

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	6.995	2.624	0.000
Welch-Satterthwaite (Unequal Varian	13.9	6.995	2.624	0.000

Pooled SD 1.251

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	1.446
Variance of Sample 2	1.684

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.165	0.845

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:21:59 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Selenium MW-3

Sample 2 Data: Selenium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	6
Minimum	6.5	4.3
Maximum	9.8	9.3
Mean	8.463	7.013
Median	8.55	7.2
SD	1.013	1.437
SE of Mean	0.358	0.508

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.333	2.624	0.018
Welch-Satterthwaite (Unequal Varian	12.6	2.333	2.650	0.018

Pooled SD 1.243

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	1.026
Variance of Sample 2	2.064

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.013	0.376

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:22:56 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Sulfate MW-3

Sample 2 Data: Sulfate MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	34.2	24.1
Maximum	69.7	45.5
Mean	51.08	37.09
Median	49.5	39.45
SD	11.91	7.755
SE of Mean	4.212	2.742

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.783	2.624	0.007
Welch-Satterthwaite (Unequal Varian	12.0	2.783	2.681	0.008

Pooled SD 10.052

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	142
Variance of Sample 2	60.13

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.361	0.280

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:27:20 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Dissolved Solids MW-3

Sample 2 Data: Total Dissolved Solids MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	373	355
Maximum	460	440
Mean	418.8	397.4
Median	417	390
SD	32.8	30.43
SE of Mean	11.6	10.76

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	1.351	2.624	0.099
Welch-Satterthwaite (Unequal Varian	13.9	1.351	2.624	0.099

Pooled SD 31.638

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	1076
Variance of Sample 2	926

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.162	0.848

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:28:16 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 226 MW-3

Sample 2 Data: Radium 226 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	0.22	0.605
Maximum	0.931	0.983
Mean	0.657	0.739
Median	0.812	0.673
SD	0.29	0.141
SE of Mean	0.103	0.0499

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.717	2.624	0.758
Welch-Satterthwaite (Unequal Varian	10.1	-0.717	2.764	0.755

Pooled SD 0.228

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0842
Variance of Sample 2	0.02

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	4.222	0.077

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:29:17 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 228 MW-3

Sample 2 Data: Radium 228 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.62	0.597
Maximum	1.18	1.2
Mean	0.872	0.912
Median	0.837	0.895
SD	0.229	0.237
SE of Mean	0.081	0.0836

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.345	2.624	0.632
Welch-Satterthwaite (Unequal Varian	14.0	-0.345	2.624	0.632

Pooled SD 0.233

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0525
Variance of Sample 2	0.056

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.067	0.934

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-3 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:30:15 PM
From File	MW-3.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Radium MW-3

Sample 2 Data: Total Radium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.84	1.34
Maximum	2.08	2
Mean	1.53	1.645
Median	1.575	1.64
SD	0.426	0.227
SE of Mean	0.151	0.0804

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.673	2.624	0.744
Welch-Satterthwaite (Unequal Varian	10.7	-0.673	2.718	0.742

Pooled SD 0.342

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.182
Variance of Sample 2	0.0517

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.514	0.119

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:32:46 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Arsenic MW-5

Sample 2 Data: Arsenic MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	5	6
Minimum	4.1	3.2
Maximum	4.7	4.6
Mean	4.413	3.913
Median	4.45	3.85
SD	0.236	0.432
SE of Mean	0.0833	0.153

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.872	2.624	0.006
Welch-Satterthwaite (Unequal Varian	10.8	2.872	2.718	0.008

Pooled SD 0.348

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0555
Variance of Sample 2	0.187

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.367	0.132

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:34:45 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Barium MW-5

Sample 2 Data: Barium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	6	8
Minimum	38	108
Maximum	155	129
Mean	130.8	118.3
Median	140	119
SD	38.51	7.206
SE of Mean	13.62	2.548

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	92
WMW U-Stat	56
Mean (U)	32
SD(U) - Adj ties	9.515
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	2.472
Approximate P-Value	0.00672

Conclusion with Alpha = 0.01

Reject H0, Conclude Sample 1 > Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/18/2018 3:36:26 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Boron MW-5

Sample 2 Data: Boron MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	8	8
Number of Non-Detects	0	3
Number of Detect Data	8	5
Minimum Non-Detect	N/A	100
Maximum Non-Detect	N/A	100
Percent Non-detects	0.00%	37.50%
Minimum Detect	113	180
Maximum Detect	137	341
Mean of Detects	125.9	272.6
Median of Detects	128.5	292
SD of Detects	8.774	72.6

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	60
WMW U-Stat	24
Mean (U)	32
SD(U) - Adj ties	9.515
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	-0.896
Approximate P-Value	0.815

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:37:41 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Calcium MW-5

Sample 2 Data: Calcium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	101	75.2
Maximum	126	90.6
Mean	113	83.1
Median	111.5	83.05
SD	8	5.116
SE of Mean	2.828	1.809

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	8.906	2.624	0.000
Welch-Satterthwaite (Unequal Varian	11.9	8.906	2.681	0.000

Pooled SD 6.715

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	64		
Variance of Sample 2	26.17		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.445	0.261

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:38:40 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Chloride MW-5

Sample 2 Data: Chloride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	9.5	12.5
Maximum	19.8	63.2
Mean	14.65	23.6
Median	14.9	18.05
SD	3.842	16.51
SE of Mean	1.358	5.838

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-1.493	2.624	0.921
Welch-Satterthwaite (Unequal Varian	7.8	-1.493	2.896	0.913

Pooled SD 11.988

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	14.76
Variance of Sample 2	272.7

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	18.470	0.001

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:39:53 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Fluoride MW-5

Sample 2 Data: Fluoride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	3	7
Minimum	1	0.74
Maximum	1.3	1
Mean	1.125	0.845
Median	1.1	0.845
SD	0.116	0.075
SE of Mean	0.0412	0.0265

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	5.715	2.624	0.000
Welch-Satterthwaite (Unequal Varian	12.0	5.715	2.681	0.000

Pooled SD 0.098

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0136
Variance of Sample 2	0.00563

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.411	0.268

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:40:59 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Lithium MW-5

Sample 2 Data: Lithium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	28.3	21.5
Maximum	41.9	30.4
Mean	31.49	25.41
Median	29.5	25.9
SD	4.507	2.73
SE of Mean	1.593	0.965

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.261	2.624	0.003
Welch-Satterthwaite (Unequal Varian	11.5	3.261	2.681	0.004

Pooled SD 3.726

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	20.31		
Variance of Sample 2	7.453		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.726	0.209

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:42:07 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Molybdenum MW-5

Sample 2 Data: Molybdenum MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	7
Minimum	5.8	4.3
Maximum	7.9	8.5
Mean	6.75	6.388
Median	6.6	6.7
SD	0.657	1.298
SE of Mean	0.232	0.459

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.705	2.624	0.246
Welch-Satterthwaite (Unequal Varian	10.4	0.705	2.764	0.248

Pooled SD 1.028

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.431
Variance of Sample 2	1.684

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.904	0.093

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:43:23 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Selenium MW-5

Sample 2 Data: Selenium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	5	6
Minimum	8	4.3
Maximum	9.2	9.3
Mean	8.75	7.013
Median	8.8	7.2
SD	0.404	1.437
SE of Mean	0.143	0.508

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.293	2.624	0.003
Welch-Satterthwaite (Unequal Varian	8.1	3.293	2.896	0.005

Pooled SD 1.055

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	0.163		
Variance of Sample 2	2.064		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	12.674	0.003

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:45:15 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Sulfate MW-5

Sample 2 Data: Sulfate MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	36	24.1
Maximum	44.7	45.5
Mean	39.56	37.09
Median	39.05	39.45
SD	3.012	7.755
SE of Mean	1.065	2.742

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.841	2.624	0.207
Welch-Satterthwaite (Unequal Varian	9.1	0.841	2.821	0.211

Pooled SD 5.882

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	9.074		
Variance of Sample 2	60.13		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	6.627	0.023

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:46:12 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Dissolved Solids MW-5

Sample 2 Data: Total Dissolved Solids MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	455	355
Maximum	500	440
Mean	484.4	397.4
Median	484	390
SD	15.35	30.43
SE of Mean	5.428	10.76

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	7.220	2.624	0.000
Welch-Satterthwaite (Unequal Varian	10.3	7.220	2.764	0.000

Pooled SD 24.101

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	235.7
Variance of Sample 2	926

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.929	0.092

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:48:47 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 226 MW-5

Sample 2 Data: Radium 226 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.562	0.605
Maximum	0.824	0.983
Mean	0.676	0.739
Median	0.672	0.673
SD	0.0866	0.141
SE of Mean	0.0306	0.0499

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-1.078	2.624	0.850
Welch-Satterthwaite (Unequal Varian	11.6	-1.078	2.681	0.848

Pooled SD 0.117

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0075
Variance of Sample 2	0.02

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.661	0.220

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:49:40 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 228 MW-5

Sample 2 Data: Radium 228 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.642	0.597
Maximum	0.974	1.2
Mean	0.808	0.912
Median	0.827	0.895
SD	0.127	0.237
SE of Mean	0.0448	0.0836

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-1.093	2.624	0.854
Welch-Satterthwaite (Unequal Varian	10.7	-1.093	2.718	0.851

Pooled SD 0.190

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0161
Variance of Sample 2	0.056

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.484	0.122

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-5 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:51:17 PM
From File	MW-5.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Radium MW-5

Sample 2 Data: Total Radium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	1.36	1.34
Maximum	1.66	2
Mean	1.486	1.645
Median	1.465	1.64
SD	0.102	0.227
SE of Mean	0.036	0.0804

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-1.802	2.624	0.953
Welch-Satterthwaite (Unequal Varian	9.7	-1.802	2.764	0.949

Pooled SD 0.176

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0103
Variance of Sample 2	0.0517

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	5.004	0.050

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:57:24 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Arsenic MW-6

Sample 2 Data: Arsenic MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	6
Minimum	2.1	3.2
Maximum	3.4	4.6
Mean	2.825	3.913
Median	2.95	3.85
SD	0.413	0.432
SE of Mean	0.146	0.153

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-5.143	2.624	1.000
Welch-Satterthwaite (Unequal Varian	14.0	-5.143	2.624	1.000

Pooled SD 0.423

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.171
Variance of Sample 2	0.187

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.095	0.908

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 3:58:23 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Barium MW-6

Sample 2 Data: Barium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	122	108
Maximum	191	129
Mean	154.5	118.3
Median	151.5	119
SD	25.05	7.206
SE of Mean	8.856	2.548

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.934	2.624	0.001
Welch-Satterthwaite (Unequal Varian	8.2	3.934	2.896	0.002

Pooled SD 18.430

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	627.4
Variance of Sample 2	51.93

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	12.083	0.004

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/18/2018 4:10:54 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Boron MW-6

Sample 2 Data: Boron MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	8	8
Number of Non-Detects	0	3
Number of Detect Data	8	5
Minimum Non-Detect	N/A	100
Maximum Non-Detect	N/A	100
Percent Non-detects	0.00%	37.50%
Minimum Detect	104	180
Maximum Detect	176	341
Mean of Detects	133.3	272.6
Median of Detects	132.5	292
SD of Detects	22.04	72.6

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	60
WMW U-Stat	24
Mean (U)	32
SD(U) - Adj ties	9.522
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	-0.895
Approximate P-Value	0.815

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:12:07 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Calcium MW-6

Sample 2 Data: Calcium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	71.6	75.2
Maximum	106	90.6
Mean	89.39	83.1
Median	87.65	83.05
SD	12.96	5.116
SE of Mean	4.583	1.809

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	1.276	2.624	0.111
Welch-Satterthwaite (Unequal Varian	9.1	1.276	2.821	0.117

Pooled SD 9.855

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	168.1		
Variance of Sample 2	26.17		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	6.421	0.025

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:14:01 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Chloride MW-6

Sample 2 Data: Chloride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	41.9	12.5
Maximum	61.7	63.2
Mean	49.73	23.6
Median	46.95	18.05
SD	7.44	16.51
SE of Mean	2.63	5.838

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	4.080	2.624	0.001
Welch-Satterthwaite (Unequal Varian	9.7	4.080	2.764	0.001

Pooled SD 12.807

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	55.35
Variance of Sample 2	272.7

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	4.926	0.052

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:24:35 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Fluoride MW-6

Sample 2 Data: Fluoride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	7
Minimum	0.48	0.74
Maximum	0.83	1
Mean	0.571	0.845
Median	0.515	0.845
SD	0.119	0.075
SE of Mean	0.0421	0.0265

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-5.501	2.624	1.000
Welch-Satterthwaite (Unequal Varian	11.8	-5.501	2.681	1.000

Pooled SD 0.100

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0142
Variance of Sample 2	0.00563

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.520	0.246

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:25:40 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Lithium MW-6

Sample 2 Data: Lithium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	26.3	21.5
Maximum	35.4	30.4
Mean	30.31	25.41
Median	29.45	25.9
SD	3.081	2.73
SE of Mean	1.089	0.965

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.367	2.624	0.002
Welch-Satterthwaite (Unequal Varian	13.8	3.367	2.624	0.002

Pooled SD 2.911

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	9.496		
Variance of Sample 2	7.453		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.274	0.757

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:26:34 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Molybdenum MW-6

Sample 2 Data: Molybdenum MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	7
Minimum	7.1	4.3
Maximum	9.9	8.5
Mean	8.563	6.388
Median	8.5	6.7
SD	0.998	1.298
SE of Mean	0.353	0.459

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.757	2.624	0.001
Welch-Satterthwaite (Unequal Varian	13.1	3.757	2.650	0.001

Pooled SD 1.158

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	0.997
Variance of Sample 2	1.684

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.689	0.506

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:27:25 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Selenium MW-6

Sample 2 Data: Selenium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	6
Minimum	8.1	4.3
Maximum	13	9.3
Mean	10.73	7.013
Median	11.2	7.2
SD	2.095	1.437
SE of Mean	0.741	0.508

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	4.134	2.624	0.001
Welch-Satterthwaite (Unequal Varian	12.4	4.134	2.681	0.001

Pooled SD 1.796

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	4.388		
Variance of Sample 2	2.064		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.126	0.341

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:28:19 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Sulfate MW-6

Sample 2 Data: Sulfate MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	33.9	24.1
Maximum	87.1	45.5
Mean	58.99	37.09
Median	58.8	39.45
SD	17.7	7.755
SE of Mean	6.258	2.742

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.205	2.624	0.003
Welch-Satterthwaite (Unequal Varian	9.6	3.205	2.764	0.005

Pooled SD 13.664

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	313.3
Variance of Sample 2	60.13

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	5.210	0.045

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:29:17 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Dissolved Solids MW-6

Sample 2 Data: Total Dissolved Solids MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	411	355
Maximum	565	440
Mean	491.6	397.4
Median	491	390
SD	62.21	30.43
SE of Mean	21.99	10.76

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.849	2.624	0.001
Welch-Satterthwaite (Unequal Varian	10.2	3.849	2.764	0.002

Pooled SD 48.969

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	3870
Variance of Sample 2	926

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	4.179	0.079

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:30:23 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 226 MW-6

Sample 2 Data: Radium 226 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.723	0.605
Maximum	1.08	0.983
Mean	0.89	0.739
Median	0.891	0.673
SD	0.128	0.141
SE of Mean	0.0451	0.0499

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.244	2.624	0.021
Welch-Satterthwaite (Unequal Varian	13.9	2.244	2.624	0.021

Pooled SD 0.135

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0163
Variance of Sample 2	0.02

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.225	0.796

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:31:08 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 228 MW-6

Sample 2 Data: Radium 228 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.644	0.597
Maximum	1.22	1.2
Mean	0.892	0.912
Median	0.844	0.895
SD	0.228	0.237
SE of Mean	0.0806	0.0836

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.173	2.624	0.568
Welch-Satterthwaite (Unequal Varian	14.0	-0.173	2.624	0.568

Pooled SD 0.232

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.052
Variance of Sample 2	0.056

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.076	0.925

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-6 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 4:31:53 PM
From File	MW-6.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Radium MW-6

Sample 2 Data: Total Radium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	1.35	1.34
Maximum	2.02	2
Mean	1.723	1.645
Median	1.79	1.64
SD	0.207	0.227
SE of Mean	0.0731	0.0804

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.713	2.624	0.244
Welch-Satterthwaite (Unequal Varian	13.9	0.713	2.624	0.244

Pooled SD 0.217

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0427
Variance of Sample 2	0.0517

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.212	0.807

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:28:38 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Arsenic MW-7

Sample 2 Data: Arsenic MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	5	6
Minimum	3.2	3.2
Maximum	3.9	4.6
Mean	3.438	3.913
Median	3.4	3.85
SD	0.245	0.432
SE of Mean	0.0865	0.153

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-2.704	2.624	0.991
Welch-Satterthwaite (Unequal Varian	11.1	-2.704	2.718	0.990

Pooled SD 0.351

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0598
Variance of Sample 2	0.187

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.125	0.156

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:29:58 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Barium MW-7

Sample 2 Data: Barium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	104	108
Maximum	119	129
Mean	111.6	118.3
Median	112.5	119
SD	5.041	7.206
SE of Mean	1.782	2.548

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-2.131	2.624	0.974
Welch-Satterthwaite (Unequal Varian	12.5	-2.131	2.650	0.973

Pooled SD 6.218

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	25.41
Variance of Sample 2	51.93

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.044	0.366

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/18/2018 8:31:41 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Boron MW-7

Sample 2 Data: Boron MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	8	8
Number of Non-Detects	0	3
Number of Detect Data	8	5
Minimum Non-Detect	N/A	100
Maximum Non-Detect	N/A	100
Percent Non-detects	0.00%	37.50%
Minimum Detect	138	180
Maximum Detect	193	341
Mean of Detects	172.3	272.6
Median of Detects	174	292
SD of Detects	19.47	72.6

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	63
WMW U-Stat	27
Mean (U)	32
SD(U) - Adj ties	9.515
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	-0.58
Approximate P-Value	0.719

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:33:22 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Calcium MW-7

Sample 2 Data: Calcium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	85	75.2
Maximum	105	90.6
Mean	95.18	83.1
Median	94.8	83.05
SD	6.142	5.116
SE of Mean	2.172	1.809

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	4.273	2.624	0.000
Welch-Satterthwaite (Unequal Varian	13.6	4.273	2.624	0.000

Pooled SD 5.652

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	37.73		
Variance of Sample 2	26.17		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.441	0.642

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:34:36 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Chloride MW-7

Sample 2 Data: Chloride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	18	12.5
Maximum	25.5	63.2
Mean	20.64	23.6
Median	19.7	18.05
SD	2.699	16.51
SE of Mean	0.954	5.838

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.501	2.624	0.688
Welch-Satterthwaite (Unequal Varian	7.4	-0.501	2.998	0.684

Pooled SD 11.831

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	7.286
Variance of Sample 2	272.7

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	37.427	0.000

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:36:06 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Fluoride MW-7

Sample 2 Data: Fluoride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	7
Minimum	0.76	0.74
Maximum	0.99	1
Mean	0.873	0.845
Median	0.845	0.845
SD	0.0891	0.075
SE of Mean	0.0315	0.0265

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.668	2.624	0.258
Welch-Satterthwaite (Unequal Varian	13.6	0.668	2.624	0.258

Pooled SD 0.082

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.00794
Variance of Sample 2	0.00563

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.410	0.662

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:37:25 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Lithium MW-7

Sample 2 Data: Lithium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	23.5	21.5
Maximum	36.2	30.4
Mean	28.15	25.41
Median	26.45	25.9
SD	4.345	2.73
SE of Mean	1.536	0.965

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	1.509	2.624	0.077
Welch-Satterthwaite (Unequal Varian	11.8	1.509	2.681	0.079

Pooled SD 3.629

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	18.88		
Variance of Sample 2	7.453		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.534	0.243

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:39:27 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Molybdenum MW-7

Sample 2 Data: Molybdenum MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	7
Minimum	7.5	4.3
Maximum	9.7	8.5
Mean	8.638	6.388
Median	8.65	6.7
SD	0.905	1.298
SE of Mean	0.32	0.459

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	4.022	2.624	0.001
Welch-Satterthwaite (Unequal Varian	12.5	4.022	2.650	0.001

Pooled SD 1.119

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	0.82
Variance of Sample 2	1.684

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.054	0.363

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:40:38 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Selenium MW-7

Sample 2 Data: Selenium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	6
Minimum	8.7	4.3
Maximum	12.4	9.3
Mean	10.49	7.013
Median	10.55	7.2
SD	1.153	1.437
SE of Mean	0.408	0.508

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	5.335	2.624	0.000
Welch-Satterthwaite (Unequal Varian	13.4	5.335	2.650	0.000

Pooled SD 1.303

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	1.33
Variance of Sample 2	2.064

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.552	0.576

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:42:43 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Sulfate MW-7

Sample 2 Data: Sulfate MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	41.9	24.1
Maximum	58	45.5
Mean	48.06	37.09
Median	46.45	39.45
SD	6.478	7.755
SE of Mean	2.29	2.742

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	3.072	2.624	0.004
Welch-Satterthwaite (Unequal Varian	13.6	3.072	2.624	0.004

Pooled SD 7.145

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	41.96		
Variance of Sample 2	60.13		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.433	0.647

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:45:03 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Dissolved Solids MW-7

Sample 2 Data: Total Dissolved Solids MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	376	355
Maximum	473	440
Mean	432.5	397.4
Median	434.5	390
SD	28.25	30.43
SE of Mean	9.987	10.76

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	2.393	2.624	0.016
Welch-Satterthwaite (Unequal Varian	13.9	2.393	2.624	0.016

Pooled SD 29.360

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	798
Variance of Sample 2	926

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.160	0.849

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:46:45 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 226 MW-7

Sample 2 Data: Radium 226 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.408	0.605
Maximum	1.01	0.983
Mean	0.741	0.739
Median	0.808	0.673
SD	0.206	0.141
SE of Mean	0.0729	0.0499

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.020	2.624	0.492
Welch-Satterthwaite (Unequal Varian	12.4	0.020	2.681	0.492

Pooled SD 0.177

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0425
Variance of Sample 2	0.02

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.130	0.340

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:48:16 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 228 MW-7

Sample 2 Data: Radium 228 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.533	0.597
Maximum	0.95	1.2
Mean	0.792	0.912
Median	0.814	0.895
SD	0.128	0.237
SE of Mean	0.0451	0.0836

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-1.269	2.624	0.887
Welch-Satterthwaite (Unequal Varian	10.8	-1.269	2.718	0.884

Pooled SD 0.190

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0163
Variance of Sample 2	0.056

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.436	0.126

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-7 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:50:04 PM
From File	MW-7.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Radium MW-7

Sample 2 Data: Total Radium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	0.941	1.34
Maximum	1.84	2
Mean	1.534	1.645
Median	1.585	1.64
SD	0.301	0.227
SE of Mean	0.107	0.0804

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.832	2.624	0.790
Welch-Satterthwaite (Unequal Varian	13.0	-0.832	2.650	0.790

Pooled SD 0.267

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0909
Variance of Sample 2	0.0517

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.756	0.475

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:55:39 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Arsenic MW-8

Sample 2 Data: Arsenic MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	5	6
Minimum	2.4	3.2
Maximum	2.8	4.6
Mean	2.613	3.913
Median	2.65	3.85
SD	0.136	0.432
SE of Mean	0.0479	0.153

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-8.114	2.624	1.000
Welch-Satterthwaite (Unequal Varian	8.4	-8.114	2.896	1.000

Pooled SD 0.320

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0184
Variance of Sample 2	0.187

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	10.165	0.007

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 8:57:20 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Barium MW-8

Sample 2 Data: Barium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	131	108
Maximum	166	129
Mean	147.5	118.3
Median	147	119
SD	13.38	7.206
SE of Mean	4.732	2.548

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	5.442	2.624	0.000
Welch-Satterthwaite (Unequal Varian	10.7	5.442	2.718	0.000

Pooled SD 10.749

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	179.1
Variance of Sample 2	51.93

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	3.450	0.125

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	1/18/2018 8:58:26 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Boron MW-8

Sample 2 Data: Boron MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	8	8
Number of Non-Detects	0	3
Number of Detect Data	8	5
Minimum Non-Detect	N/A	100
Maximum Non-Detect	N/A	100
Percent Non-detects	0.00%	37.50%
Minimum Detect	102	180
Maximum Detect	552	341
Mean of Detects	174.6	272.6
Median of Detects	125.5	292
SD of Detects	153	72.6

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	65
WMW U-Stat	29
Mean (U)	32
SD(U) - Adj ties	9.515
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	-0.369
Approximate P-Value	0.644

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:00:11 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Calcium MW-8

Sample 2 Data: Calcium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	75.9	75.2
Maximum	92.8	90.6
Mean	87.49	83.1
Median	88.55	83.05
SD	5.509	5.116
SE of Mean	1.948	1.809

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	1.651	2.624	0.061
Welch-Satterthwaite (Unequal Varian	13.9	1.651	2.624	0.061

Pooled SD 5.316

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	30.35		
Variance of Sample 2	26.17		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.160	0.850

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:01:36 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Chloride MW-8

Sample 2 Data: Chloride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	18.9	12.5
Maximum	23.6	63.2
Mean	21.31	23.6
Median	22.15	18.05
SD	1.872	16.51
SE of Mean	0.662	5.838

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.389	2.624	0.649
Welch-Satterthwaite (Unequal Varian	7.2	-0.389	2.998	0.646

Pooled SD 11.751

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	3.504
Variance of Sample 2	272.7

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	77.816	0.000

Conclusion with Alpha = 0.01

Two variances are not equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:03:57 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Fluoride MW-8

Sample 2 Data: Fluoride MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	6	7
Minimum	0.72	0.74
Maximum	0.96	1
Mean	0.813	0.845
Median	0.795	0.845
SD	0.0805	0.075
SE of Mean	0.0285	0.0265

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.835	2.624	0.791
Welch-Satterthwaite (Unequal Varian	13.9	-0.835	2.624	0.791

Pooled SD 0.078

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.00648
Variance of Sample 2	0.00563

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.151	0.858

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:05:43 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Lithium MW-8

Sample 2 Data: Lithium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	8
Minimum	26.2	21.5
Maximum	38.8	30.4
Mean	28.99	25.41
Median	28	25.9
SD	4.052	2.73
SE of Mean	1.433	0.965

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	90.5
WMW U-Stat	54.5
Mean (U)	32
SD(U) - Adj ties	9.515
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	2.314
Approximate P-Value	0.0103

Conclusion with Alpha = 0.01

Reject H0, Conclude Sample 1 > Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:07:30 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median <= Sample 2 Mean/Median (Form 1)
Alternative Hypothesis	Sample 1 Mean/Median > Sample 2 Mean/Median

Sample 1 Data: Molybdenum MW-8

Sample 2 Data: Molybdenum MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	7
Minimum	6.2	4.3
Maximum	14.6	8.5
Mean	8.725	6.388
Median	8.3	6.7
SD	2.506	1.298
SE of Mean	0.886	0.459

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 <= Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	90
WMW U-Stat	54
Mean (U)	32
SD(U) - Adj ties	9.515
WMW U-Stat Critical Value (0.01)	54
Standardized WMW U-Stat	2.261
Approximate P-Value	0.0119

Conclusion with Alpha = 0.01

Do Not Reject H0, Conclude Sample 1 <= Sample 2

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:10:16 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Selenium MW-8

Sample 2 Data: Selenium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	7	6
Minimum	7.3	4.3
Maximum	13.4	9.3
Mean	11.21	7.013
Median	11.4	7.2
SD	2.043	1.437
SE of Mean	0.722	0.508

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	4.756	2.624	0.000
Welch-Satterthwaite (Unequal Varian	12.6	4.756	2.650	0.000

Pooled SD 1.766

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Reject H0, Conclude Sample 1 > Sample 2

Welch-Satterthwaite Test: Reject H0, Conclude Sample 1 > Sample 2

Test of Equality of Variances

Variance of Sample 1	4.176		
Variance of Sample 2	2.064		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.023	0.373

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:11:37 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Sulfate MW-8

Sample 2 Data: Sulfate MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	30.9	24.1
Maximum	55.1	45.5
Mean	41.51	37.09
Median	39.1	39.45
SD	8.135	7.755
SE of Mean	2.876	2.742

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	1.114	2.624	0.142
Welch-Satterthwaite (Unequal Varian	14.0	1.114	2.624	0.142

Pooled SD 7.947

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	66.18		
Variance of Sample 2	60.13		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.101	0.903

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:12:32 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Dissolved Solids MW-8

Sample 2 Data: Total Dissolved Solids MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	360	355
Maximum	422	440
Mean	396.4	397.4
Median	399	390
SD	20.05	30.43
SE of Mean	7.089	10.76

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.078	2.624	0.530
Welch-Satterthwaite (Unequal Varian	12.1	-0.078	2.681	0.530

Pooled SD 25.768

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	402
Variance of Sample 2	926

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.304	0.293

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:13:48 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 226 MW-8

Sample 2 Data: Radium 226 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.428	0.605
Maximum	1.22	0.983
Mean	0.85	0.739
Median	0.807	0.673
SD	0.286	0.141
SE of Mean	0.101	0.0499

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.979	2.624	0.172
Welch-Satterthwaite (Unequal Varian	10.2	0.979	2.764	0.175

Pooled SD 0.226

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.082
Variance of Sample 2	0.02

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	4.110	0.082

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:14:53 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Radium 228 MW-8

Sample 2 Data: Radium 228 MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	0.575	0.597
Maximum	1.27	1.2
Mean	0.845	0.912
Median	0.808	0.895
SD	0.204	0.237
SE of Mean	0.0723	0.0836

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	-0.604	2.624	0.722
Welch-Satterthwaite (Unequal Varian	13.7	-0.604	2.624	0.722

Pooled SD 0.221

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.0418
Variance of Sample 2	0.056

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	1.339	0.710

Conclusion with Alpha = 0.01

Two variances appear to be equal

Groundwater Monitoring Statistics for the Lon D Wright Power Plant in Fremont, Nebraska - MW-8 (Oct 2016 - Sept 2017)

t-Test Sample 1 vs Sample 2 Comparison for Uncensored Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	1/18/2018 9:16:11 PM
From File	MW-8.xls
Full Precision	OFF
Confidence Coefficient	99%
Substantial Difference (S)	0.000
Selected Null Hypothesis	Sample 1 Mean <= Sample 2 Mean (Form 1)
Alternative Hypothesis	Sample 1 Mean > the Sample 2 Mean

Sample 1 Data: Total Radium MW-8

Sample 2 Data: Total Radium MW-4R

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	8	8
Number of Distinct Observations	8	8
Minimum	1.13	1.34
Maximum	2.11	2
Mean	1.698	1.645
Median	1.785	1.64
SD	0.384	0.227
SE of Mean	0.136	0.0804

Sample 1 vs Sample 2 Two-Sample t-Test

H0: Mean of Sample 1 - Mean of Sample 2 <= 0

		t-Test	Critical	
Method	DF	Value	t (0.01)	P-Value
Pooled (Equal Variance)	14	0.333	2.624	0.372
Welch-Satterthwaite (Unequal Varian	11.4	0.333	2.718	0.373

Pooled SD 0.316

Conclusion with Alpha = 0.010

Student t (Pooled) Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Welch-Satterthwaite Test: Do Not Reject H0, Conclude Sample 1 <= Sample 2

Test of Equality of Variances

Variance of Sample 1	0.148		
Variance of Sample 2	0.0517		

Numerator DF	Denominator DF	F-Test Value	P-Value
7	7	2.852	0.190

Conclusion with Alpha = 0.01

Two variances appear to be equal