Annual Groundwater Monitoring and Corrective Action Report

Columbia Water & Light Department

Columbia Municipal Power Plant
Inactive Surface Impoundment – More's Lake
Project No. 93647

7/29/2019

Annual Groundwater Monitoring and Corrective Action Report

prepared for

Columbia Water & Light Department
Columbia Municipal Power Plant
Inactive Surface Impoundment – More's Lake
Columbia, Missouri

Project No. 93647

Revision 0

7/29/2019

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

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INDEX AND CERTIFICATION

Columbia Water & Light Department
Annual Groundwater Monitoring and Corrective Action Report
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Certification

I hereby certify, as a Professional Engineer in the state of Missouri, that the information in this document was assembled under my direct personal charge. This report is not intended or represented to be suitable for reuse by the Columbia Water & Light Department or others without specific verification or adaptation by the Engineer.

Brian C. Weis, PE, Missouri PE-2011000962

Date: July 29, 2019

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
amsl	above mean sea level
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CCR	coal combustion residuals
CFR	Code of Federal Regulations
CMPP	City of Columbia Municipal Power Plant
CWLD	Columbia Water & Light Department
GMP	Groundwater Monitoring Program
MDNR	Missouri Department of Natural Resources
SAP	Sampling and Analysis Plan
SSI	statistically significant increase
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

This Annual Groundwater Monitoring Report (Report) was prepared by Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) on behalf of Columbia Water & Light Department (CWLD) to present groundwater monitoring activities performed under the United States Environmental Protection Agency's (USEPA's) *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule*, 40 Code of Federal Regulations (CFR) § 257 and 261, dated April 17, 2015 (USEPA, 2015) (Final Rule) at the existing utility's inactive bottom ash pond (known locally, and hereinafter referred to as, "More's Lake") located at CWLD's City of Columbia Municipal Power Plant (CMPP or Site) in Columbia, Missouri. This Report has been prepared in accordance with the initial annual groundwater monitoring and corrective action report requirements presented in 40 CFR §257.90(e). This Report provides an account of groundwater monitoring and well installations activities performed in accordance with the *Groundwater Monitoring Plan for More's Lake* (Burns & McDonnell, 2018) (GMP) that includes the *Groundwater Sampling and Analysis Plan for More's Lake* (Burns & McDonnell, 2018) (SAP) as Appendix A to the GMP. Groundwater monitoring activities completed to date at the Site in 2017, 2018, and 2019 included:

- The establishment of a groundwater monitoring well network in accordance with Final Rule requirements;
- Hydraulic conductivity testing at each of the wells included in the More's Lake monitoring well network;
- Routine gauging of Site monitoring wells to assess the direction of groundwater flow beneath the More's Lake;
- Collecting and analyzing at least 8 rounds of groundwater samples from each of the nine wells included in the More's Lake well network prior to April 17, 2019 for analysis of Appendix III and Appendix IV parameters in accordance with 40 CFR §257.94(b) and additional Missouri Department of Natural Resources (MDNR) water quality parameters; and
- Initiating evaluation of groundwater monitoring data for statistically significant increases over background levels for constituents listed in Appendix III of 40 CFR §257, as required by 40 CFR §257.94 and include the additional MDNR water quality parameters.

1.1 Purpose and Scope

This Report has been prepared in accordance with 40 CFR §257.90(e), which states:

"For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year."

This document is the initial annual groundwater monitoring report and has been prepared for More's Lake. Future annual groundwater monitoring reports will present information from the corresponding preceding years.

1.2 Facility Description and History

The CMPP facility is owned and operated by the CWLD. The CMPP is located at 1501 Business Loop 70 East, Columbia, Missouri in Boone County, Missouri, illustrated in Figures 1-1 and 1-2. The CMPP facility occupies approximately 25.4 acres and is situated in the Southeast ¼, of the Southwest ¼, of Section 6, in Township 48 North, Range 12 West, at a latitude of 38.964917° N and longitude of 92.317027° W.

Land use adjacent to the CMPP is residential to the east and is mixed industrial, commercial, and residential to the north, west, and south (Figure 1-2). The CMPP is located approximately 950 feet (0.18 miles) east of an unnamed intermittent tributary of Bear Creek, about 2,150 feet (0.41 miles) northwest of an unnamed intermittent tributary of Hinkson Creek, and approximately 5,750 feet (1.09 miles) northeast of Flat Branch Creek. Bear Creek and Hinkson Creek are approximately 4,100 feet (0.78 miles) northwest and 4,500 feet (0.85 miles) southeast of the CMPP, respectively.

The CMPP has one CCR unit that is comprised of an inactive surface impoundment that formerly received CCR from facility operations. The original surface impoundment, known locally as More's Lake, was constructed as a farm pond no later than 1896, prior to being used for CCR disposal. The first power production at the CMPP occurred around 1914. Through the years, the impoundment received sluiced bottom ash, fly ash, boiler blow-down, cooling tower blow-down, and storm water runoff from the CMPP. The impoundment ceased receipt of CCR in 2015, in accordance with the Federal CCR Final Rule (40 CFR §257.53), allowing it to be classified as an inactive Surface Impoundment.

The inactive Surface Impoundment area is situated at the northern portion of the CMPP facility, within the property boundary, as shown on Figures 1-1 and 1-2. The impoundment was not constructed with an

engineered liner and covers about 7.0 acres. The impoundment is operated under MDNR Permit No. 0004979. The base elevation of the inactive surface impoundment is around 745 feet above mean sea level (amsl) based on test pits dug in the fall of 2016 (Burns & McDonnell, 2016).

The CWLD began the closure by removal process in the summer of 2017, hauling the material to the Columbia, MO Landfill for final disposal. The CCR material was substantially removed from the impoundment in the fall of 2018 and the CWLD continued to remove residual material and underlying soil. A Closure by Removal Verification Plan (Plan) and submitted to the MDNR Solid Waste Management Program (SWMP) for review and comment in August 2018. Removal verification inspections began in September of 2018. Follow up inspections were conducted in October of 2018 before winter weather postponed completion of the removal and verification process.

The CWLD continued removal of residual material and underlying soil in the winter and spring of 2019. Burns & McDonnell conducted inspections on May 14, 2019 and May 30, 2019, during which residual material locations were identified for removal. The CWLD completed final removal of the material within the identified areas and on May 31, 2019, the final inspection was made to visually verify all CCR material within the historical impoundment footprint had been removed.

1.3 Overview

This Report is organized in sections as summarized below:

- **Section 1.0 Introduction**
- **Section 2.0 Monitoring Well Installation Activities** - Section 2.0 describes monitoring well installation activities and a description of the More's Lake monitoring well network.
- **Section 3.0 Groundwater Monitoring Activities and Results–** Section 3.0 presents a narrative of the background and detection monitoring activities that have been performed during the reporting period. Groundwater monitoring results are also included in this section.
- **Section 4.0 Statistical Analysis –** Section 4.0 discusses statistical analyses of data generated during the reporting period.
- **Section 5.0 Certifications and Notifications to the Operating Record –** Section 5.0 presents certifications and notifications that were prepared during the reporting period and placed in the operating record.
- **Section 6.0 – Key Activities for the Upcoming Year** – Section 6.0 presents an account of anticipated activities for August 2019 through July 2020.

- **Section 7.0 References** - Section 7.0 includes a full bibliography for references made within this report.

2.0 MONITORING WELL INSTALLATION

2.1 Scope of Well Installation Activities

To meet the requirements presented in the Final Rule, eight new monitoring wells (MW-1 through MW-8) were installed around More's Lake to supplement the existing monitoring well network (PZ-1 through PZ-6). These new wells were installed to provide both upgradient and downgradient monitoring locations. Figure 2-1 presents the More's Lake monitoring well network relative to the inactive CCR surface impoundment.

2.2 Drilling and Well Installation Activities

Drilling and well installation activities for Monitoring Wells MW-1 through MW-8 were conducted in May 2017 by a Missouri-licensed driller. All drilling, sampling and investigation equipment was decontaminated prior to beginning field activities, between boring/well locations, and upon completion of well installation activities. Existing Monitoring Wells PZ-1 through PZ-6 were installed in January 2014 as part of a geotechnical engineering study for a stability analysis of More's Lake dam (Crockett, 2014) and located along the western portion of More's Lake and trending southwest to northeast. These existing wells were incorporated into the More's Lake groundwater monitoring well network with PZ-2 included in list of downgradient wells sampled while the remaining five existing wells (PZ-1 and PZ-3 through PZ-6) utilized for water level gauging purposes only. Existing Monitoring Wells PZ-1, PZ-3, and PZ-5 are located along the top crest of the More's Lake dam and screened within the earthen dam, above the uppermost aquifer, to monitor potential water seepage through the berm from More's Lake.

Appendix A includes drilling logs and well construction diagrams for Monitoring Wells MW-1 through MW-8 and PZ-2.

2.3 Well Development

Newly installed monitoring wells and existing Monitoring Well PZ-2 were developed following procedures presented in the SAP by intermittently surging the well screen and purging the wells until development had been achieved. Monitoring well development forms are presented in Appendix A.

2.4 Hydrologic Testing

Following development, slug testing was performed on newly installed monitoring wells and existing Monitoring Well PZ-2 to assess the hydraulic conductivity of the aquifer materials adjacent to the monitoring well screen interval. The resulting data was used to calculate the hydraulic conductivity of the

aquifer. Table 2-1 presents the results of each test as well as the averages of the tests performed at each location. Hydraulic test data is presented in Appendix B.

2.5 Pump Installation

Dedicated low-flow pneumatic pumps supplied by QED Environmental Systems were installed in Monitoring Wells MW-1 through MW-8 and PZ-2. The pumps were installed so that the pump inlet was suspended approximately 1 foot above the bottom of the screened interval.

2.6 Well Surveying

The new and existing groundwater monitoring wells were surveyed for both vertical and horizontal control by a licensed Missouri Professional Land Surveyor on June 23, 2017. The well locations were surveyed horizontally to the nearest 0.1 foot and tied into the Missouri State Plane coordinate system. The top of well casing elevations of each well was measured to the nearest 0.01 foot relative to mean annual sea level and reported using North American Vertical Datum 1988. Survey data is provided in Appendix C.

3.0 GROUNDWATER MONITORING

Groundwater samples were collected using low-flow purging and sampling techniques following the procedures presented in the SAP and in accordance with the requirements of the GMP and the Final Rule.

3.1 Description of the Groundwater Monitoring Program

A total of eight background monitoring events were completed at More's Lake beginning in December 2017 and ending in March 2019 to provide a minimum of eight independent groundwater samples for each of the parameters listed in 40 CFR §257 Appendix III and IV and the additional MDNR water quality parameters listed in the MDNR CCR Storage and Disposal Sites in Missouri White Paper (MDNR, 2016). A summary of the eight groundwater monitoring events that occurred during the reporting period is as follows:

- December 2017 – Groundwater sampling activities were performed on December 20 and 21, 2017.
- February 2018 – Groundwater sampling activities were performed on February 20-23, 2018.
- April 2018 – Groundwater sampling activities were performed on April 23-26, 2018.
- June 2018 – Groundwater sampling activities were performed on June 26-29, 2018.
- August 2018 – Groundwater sampling activities were performed on August 21-23, 2018.
- October 2018 – Groundwater sampling activities were performed on October 22-25, 2018.
- December 2018 – Groundwater sampling activities were performed on December 17-20, 2018.
- March 2019 – Groundwater sampling activities were performed on March 11-14, 2019.

During each monitoring event, the depth to groundwater was gauged prior to sampling using a decontaminated water level probe. The measured depth to groundwater and calculated water level elevations for each event are presented in Tables 3-1 through 3-8. Potentiometric surface maps were then generated based on calculated groundwater elevations and are presented as Figures 3-1 through 3-8. As shown on Figures 3-1 through 3-8, the primary groundwater gradients observed during the reporting period predominantly indicate flow towards the north-northwest.

Collected samples were submitted to Pace Analytical Services, LLC located in Lenexa, Kansas for analysis. Field sampling forms are included in Appendix D, copies of laboratory analytical reports are included as Appendix E, copies of data validation reports prepared by Burns & McDonnell are provided in Appendix F (all data are considered valid for use in reporting as qualified), and a table summarizing the

analytical results collected from each monitoring well in the groundwater monitoring system is included in Table 3-9.

As discussed in Section 4.0 of this report, the evaluations of the groundwater monitoring data for statistically significant increases (SSIs) over background levels for the constituents listed in Appendix III of 40 CFR § 257, per 40 CFR § 257.93(h) and § 257.94(a), was initiated and identified SSIs over background in one or more down-gradient monitoring wells. Statistical analysis was also performed on additional MDNR water quality parameters and identified SSIs over background in one or more down-gradient monitoring wells.

Due to SSIs above background levels observed in Final Rule Appendix III detection monitoring parameters, per 40 CFR §257.94(e), CWLD established an assessment monitoring program on July 15, 2019. Notification of the establishment of an Assessment Monitoring Program was prepared and will be placed in the operating record and on the publicly available website in accordance with 40 CFR § 257.106(h), § 257.105(h), and § 257.107(h), respectively. Results of the assessment monitoring program implementation will be provided in subsequent Annual Groundwater Monitoring and Corrective Action Reports, in accordance with 40 CFR § 257.90(e).

4.0 STATISTICAL ANALYSIS

The analysis of the groundwater monitoring data for SSIs over background levels for the constituents listed in Appendix III of 40 CFR §257, was initiated prior to April 17, 2019 and in accordance with the Selected Statistical Method Certification, dated April 15, 2019 (Burns & McDonnell, 2019b). Additional MDNR water quality parameters were included in the statistical analysis. In accordance with 40 CFR §257.93(h)(2), statistical analysis of the background groundwater quality data collected from December 2017 through March 2019 was completed by July 15, 2019, within 90 days following analysis of the samples collected during the final background sampling event (8th event in March 2019; with last lab report dated April 15, 2019).

This statistical analysis identified SSIs over background in the concentrations of the following constituents in one or more down-gradient monitoring wells:

<u>Appendix III to Part 257 Constituents for Detection Monitoring</u>

- Boron (MW-1 and PZ-2),
- Calcium (MW-8 and PZ-2)
- Chloride (PZ-2),
- Sulfate (MW-8 and PZ-2); and
- Total dissolved solids (MW-8 and PZ-2)

<u>MDNR CCR White Paper Water Quality Constituents</u>

- Aluminum (MW-8)
- Iron (MW-8)
- Manganese (MW-8)
- Sodium (PZ-2); and
- Total hardness (PZ-2)

The results of the Sanitas™ statistical output for this analysis are provided in Appendix G.

Per 40 CFR §257.94(e), CWLD established an assessment monitoring program on July 15, 2019 in response to the findings that an SSI above background for an Appendix III constituent has been observed in groundwater monitoring data collected as part of the detection monitoring program implemented at More's Lake. The assessment monitoring program was developed in accordance with 40 CFR §257.95.

Results of the assessment monitoring program implementation will be provided in the 2019 Annual Groundwater Monitoring and Corrective Action Report, in accordance with 40 CFR § 257.90(e).

5.0 GROUNDWATER MONITORING CERTIFICATIONS AND NOTIFICATIONS TO THE OPERATING RECORD

The following certifications and notifications regarding the groundwater monitoring activities were made to the operating record and/or were posted to the CWLD's publicly accessible CCR website during the reporting period:

- Certification of the Inactive Surface Impoundment Groundwater Monitoring Network - *Groundwater Monitoring System Certification for City of Columbia Water & Light Department Inactive Surface Impoundment (More's Lake)* (Burns & McDonnell, 2019a)
- Selection of Statistical Method – *Statistical Method for Evaluating Groundwater at City of Columbia Water & Light Department Inactive Surface Impoundment (More's Lake)* (Burns & McDonnell, 2019b)
- Notification of Assessment Monitoring Program – *Notification of the Establishment of Assessment Monitoring Program at City of Columbia Water & Light Department Inactive Surface Impoundment (More's Lake)* (Burns & McDonnell, 2019c)

6.0 KEY ACTIVITIES FOR THE UPCOMING YEAR

Groundwater monitoring and statistical evaluations are expected to be performed in August 2019 through June 2020 as required by the More's Lake assessment monitoring program, established in accordance with 40 CFR §257.95. The anticipated activities for the upcoming year include:

- Groundwater Monitoring Event 1: Subsequent Assessment Trigger Event (per 40 CFR §257.95(b), within 90 days of SSI determination), by October 12, 2019;
- Establish Groundwater Protection Standards (GWPS) (per §257.95(d)(2) after obtaining results from the subsequent sampling Event 1);
- If Groundwater Monitoring Event 1 data indicates constituents above the established GWPS, a nature and extent characterization will be planned and executed, along with an assessment of corrective measures, per §257.95(g);
- Groundwater Monitoring Event 2: Semi-Annual Assessment Monitoring Event (per §257.95(d)(1), within 90 days of receipt of 'Subsequent' event data and semi-annually thereafter), by January 10, 2020;
- Groundwater Monitoring Event 3: Semi-Annual Assessment Monitoring Event (per 40 CFR §257.95(d)(1)), June 2020;
- The second annual Groundwater Monitoring Report will be drafted and posted by August 1, 2020.

7.0 REFERENCES

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell), 2016, Re: Technical Memorandum – Additional Stability Considerations, December 14th.

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell), 2018, *Groundwater Monitoring Program for More's Lake, Columbia Municipal Power Plant*, August 2017, revised February 2018.

Burns & McDonnell, 2019a, *Groundwater Monitoring System Certification for City of Columbia Water & Light Department Inactive Surface Impoundment (More's Lake)*, April 15.

Burns & McDonnell, 2019b, *Statistical Method for Evaluating Groundwater at City of Columbia Water & Light Department Inactive Surface Impoundment (More's Lake)*, April 15.

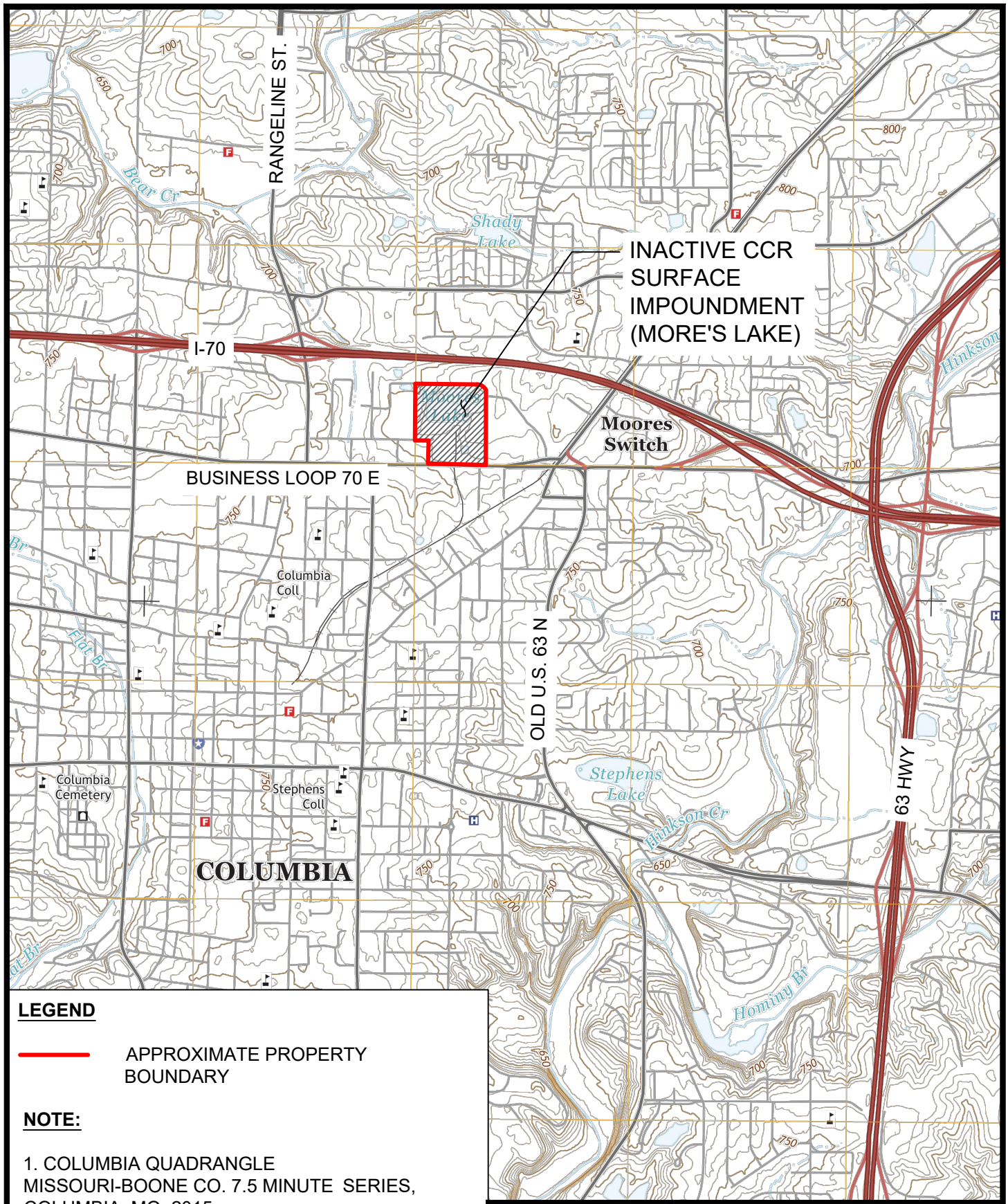
Burns & McDonnell, 2019c, *Notification of the Establishment of Assessment Monitoring Program at City of Columbia Water & Light Department Inactive Surface Impoundment (More's Lake),* July 30.

Crockett Geotechnical Testing Lab, 2014, Mores Lake Dam Global Stability Analysis, Columbia, Geotechnical Report for City of Columbia, July 25, 2014, 35 pp.

MDNR, 2016, Coal Combustion Residual Storage and Disposal Sites in Missouri, Division of Environmental Quality, CCR White Paper, http://dnr.mo.gov/env/swmp/ccr.htm, July 29, 2016, pp. 27.

United States Environmental Protection Agency, 2015, *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, 40 CFR Parts 257 and 261, Federal Register, Vol. 80, No. 74, April 17, 2015, http://www.gpo.gov/fdsys/pkg/FR-2015-04-17/pdf/2015-00257.pdf.

FIGURES



LEGEND

APPROXIMATE PROPERTY BOUNDARY

NOTE:

1. COLUMBIA QUADRANGLE MISSOURI-BOONE CO. 7.5 MINUTE SERIES, COLUMBIA, MO, 2015.
2. CONTOUR INTERVAL 10 FEET.

N

0 2000' 4000'

SCALE IN FEET

BURNS McDONNELL

FIGURE 1-1
SITE VICINITY TOPOGRAPHIC MAP
COLUMBIA MUNICIPAL POWER PLANT, COLUMBIA, MO

COPYRIGHT © 2017 BURNS & McDONNELL ENGINEERING COMPANY, INC.

Z:\Clients\ENS\ColumbiaMO\93647_MoresLake\Design\CADD\Dwgs\Groundwater Work Plan\2018 GW and CA Report\FIG1-Site Map.dwgTMCOLLINS

LEGEND

APPROXIMATE PROPERTY BOUNDARY

NOTE:

1. COLUMBIA QUADRANGLE MISSOURI-BOONE CO. 7.5 MINUTE SERIES, COLUMBIA, MO, 2015.

N

0 2000' 4000'

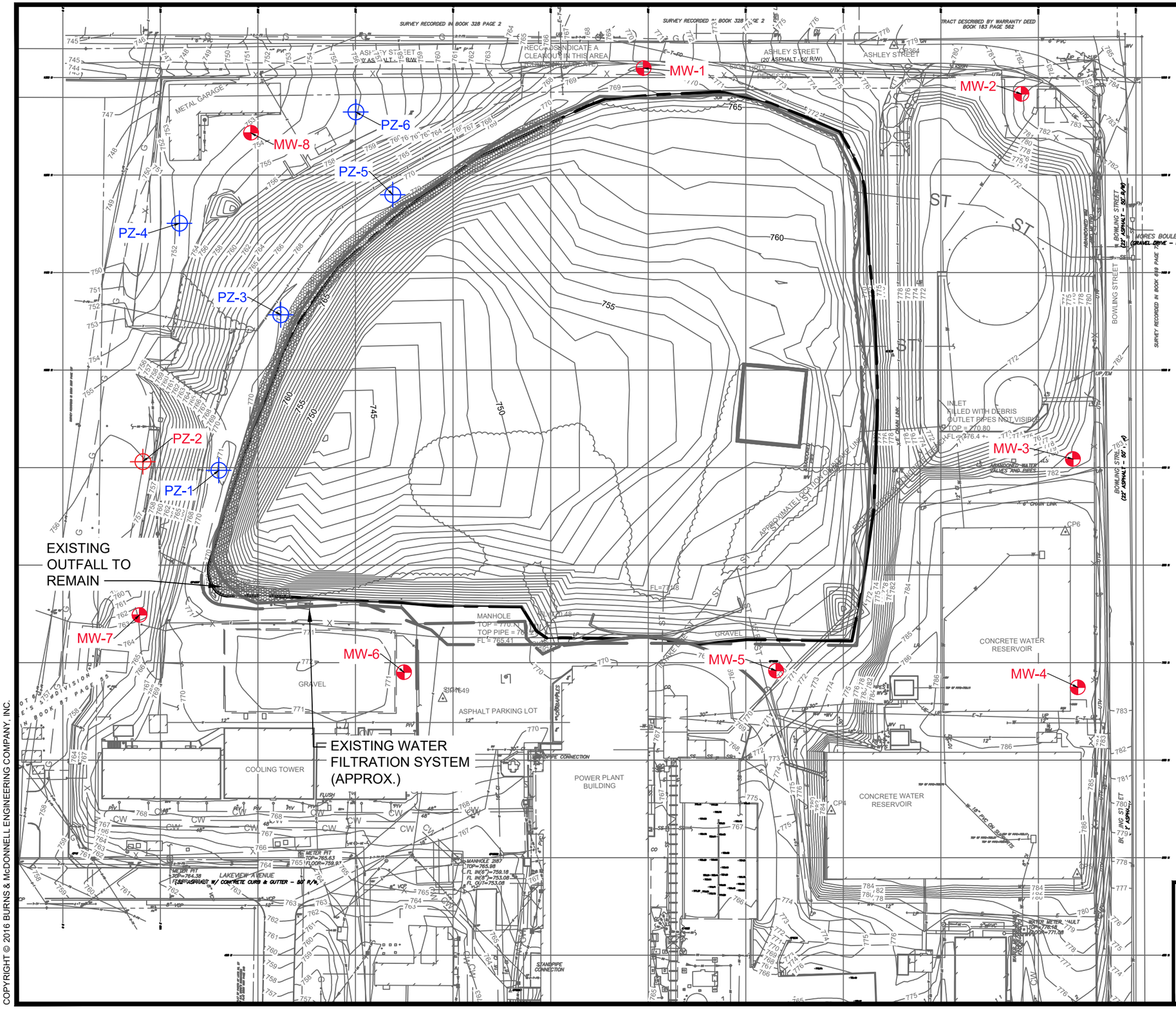
SCALE IN FEET

BURNS McDONNELL

FIGURE 1-2
SITE VICINITY AERIAL MAP
COLUMBIA MUNICIPAL POWER PLANT, COLUMBIA, MO

COPYRIGHT © 2017 BURNS & McDONNELL ENGINEERING COMPANY, INC.

Z:\Clients\ENS\ColumbiaMO\93647_MoresLake\Design\CADD\Dwgs\Groundwater Work Plan\2018 GW and CA Report\FIG2-Map.dwgTMCOLLINS



LEGEND

- PIEZOMETER
- MONITORING WELL
- USED FOR WATER LEVEL OR TOTAL DEPTH ONLY
- APPROXIMATE PROPERTY BOUNDARY

NOTE:

1. COLUMBIA QUADRANGLE MISSOURI-BOONE CO. 7.5 MINUTE SERIES, COLUMBIA, MO, 2015.
2. CONTOUR INTERVAL 1 FEET.
3. WELLS COLORED IN RED ARE INCLUDED IN THE SAMPLING NETWORK.

N

0 100' 200'

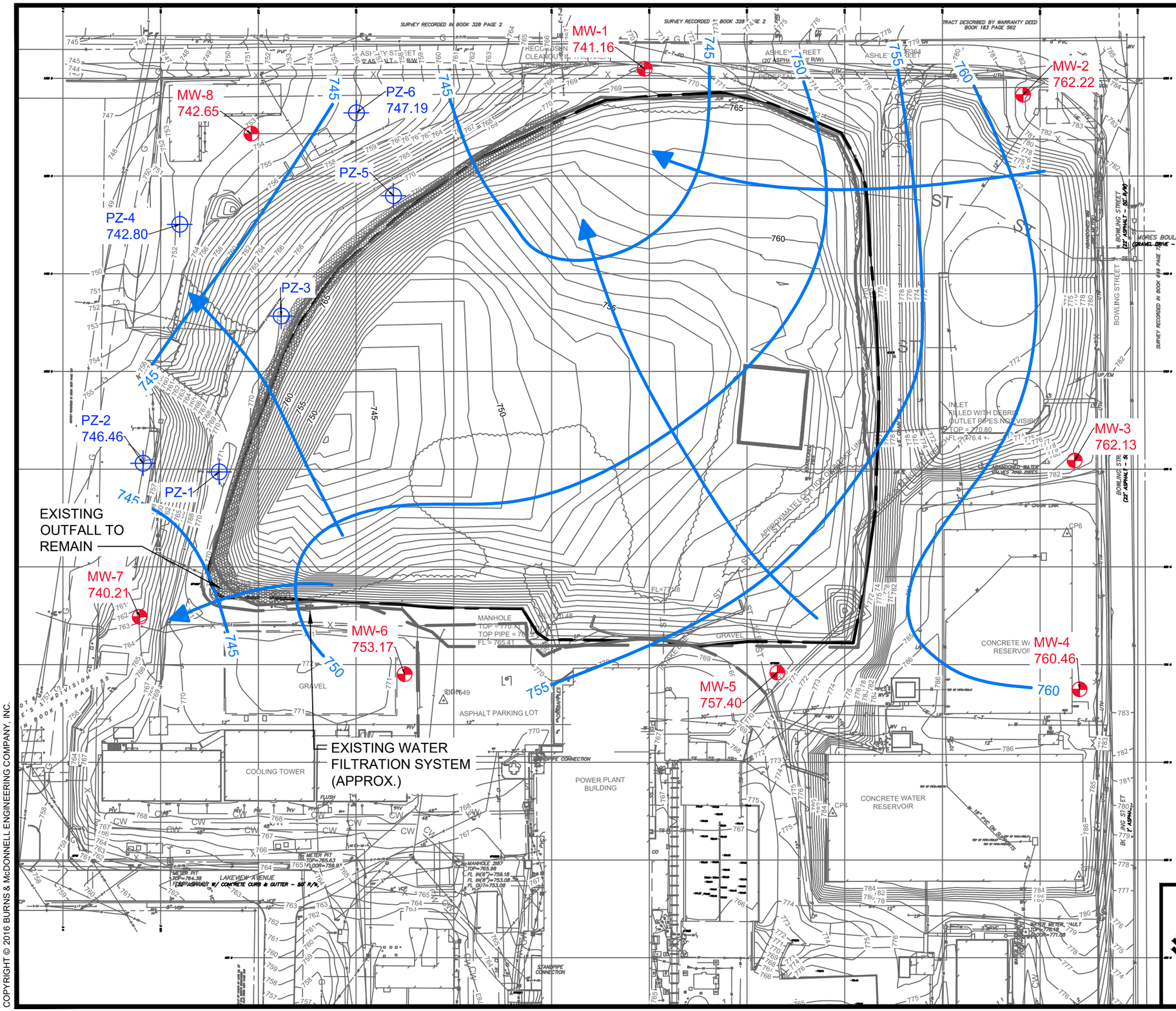
SCALE IN FEET

BURNS McDONNELL

FIGURE 2-1
MONITORING WELL NETWORK
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MISSOURI

COPYRIGHT © 2016 BURNS & McDONNELL ENGINEERING COMPANY, INC.

Z:\CLIENTS\ENS\COLUMBIAMO\93647_MORESLAKE\DESIGN\CADD\DWGS\GROUNDWATER WORK PLAN\2018 GW AND CA REPORT\FIG3-MONITORING WELL LOCATIONS.DWG TMCOLLINS



LEGEND

- EXISTING PIEZOMETER
- NEW MONITORING WELL
- APPROXIMATE PROPERTY BOUNDARY
- 762.23 GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:

1. MONITORING WELL AND PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY ENGINEERING SURVEYS AND SERVICES OF COLUMBIA, MO ON JUNE 23, 2017.
2. TOPOGRAPHIC CONTOUR INTERVAL 1 FEET.
3. N/C = NO DATA COLLECTED.
4. GROUNDWATER ELEVATIONS WERE COLLECTED ON DECEMBER 20, 2017.
5. BERM PIEZOMETERS PZ-1, PZ-3, AND PZ-5 NOT INCLUDED IN GROUNDWATER CONTOURING.
6. MW-7 WATER LEVEL WAS NOT STATIC AT THE TIME IT WAS MEASURED.

N

0 100' 200'

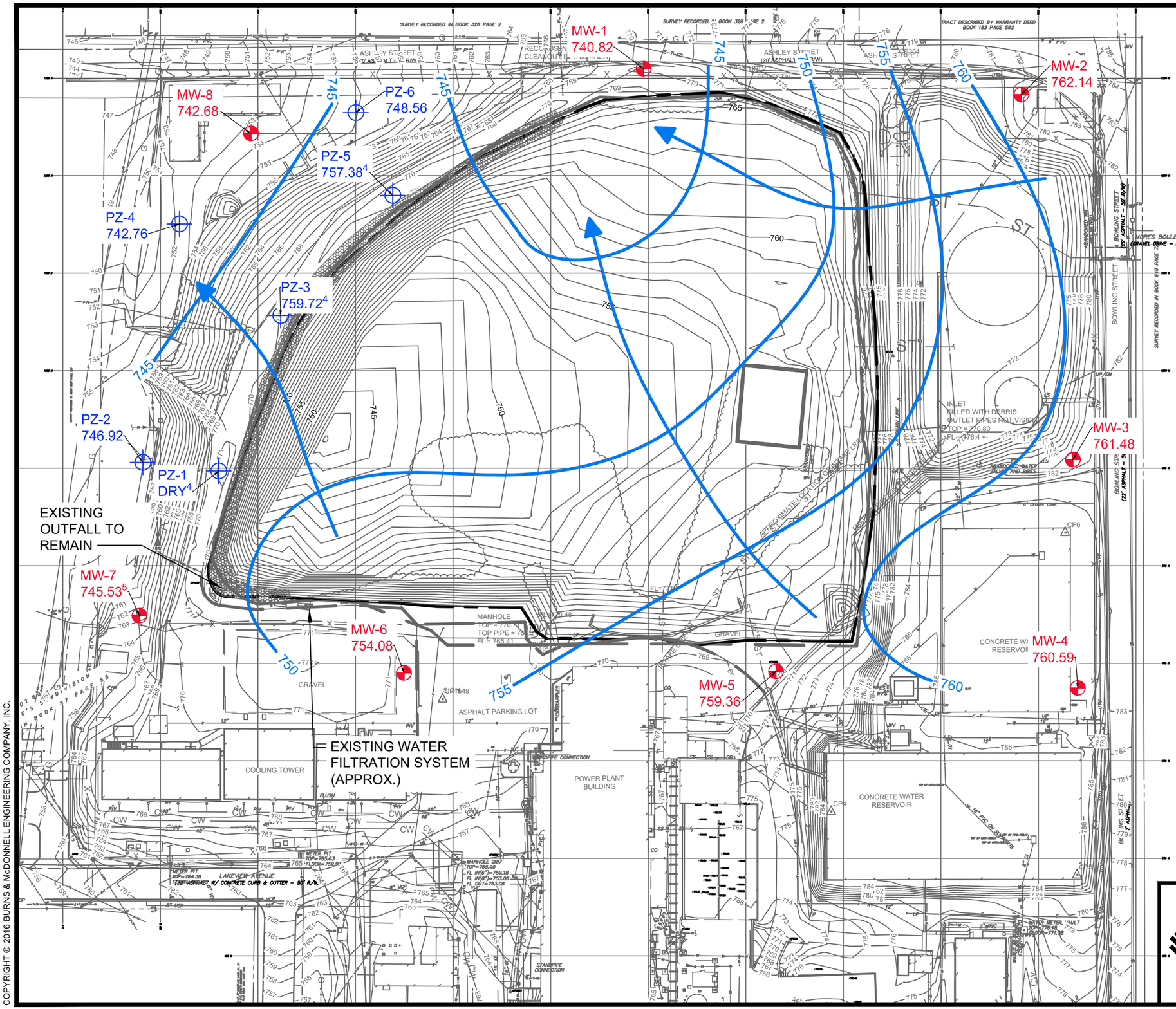
SCALE IN FEET

BURNS McDONNELL

FIGURE 3-1
POTENTIOMETRIC SURFACE MAP
DECEMBER 20, 2017
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MO

COPYRIGHT © 2016 BURNS & McDONNELL ENGINEERING COMPANY, INC.

Z:\CLIENTS\ENS\COLUMBIAMO\93647_MORESLAKE\DESIGN\CADD\DWGS\GROUNDWATER WORK PLAN\2018 GW AND CA REPORT\FIG1-POTENTIOMETIC SURFACE MAP_DECEMBER 2017.DWG TMCOLLINS



LEGEND

- EXISTING PIEZOMETER
- NEW MONITORING WELL
- APPROXIMATE PROPERTY BOUNDARY
- 762.23 GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:

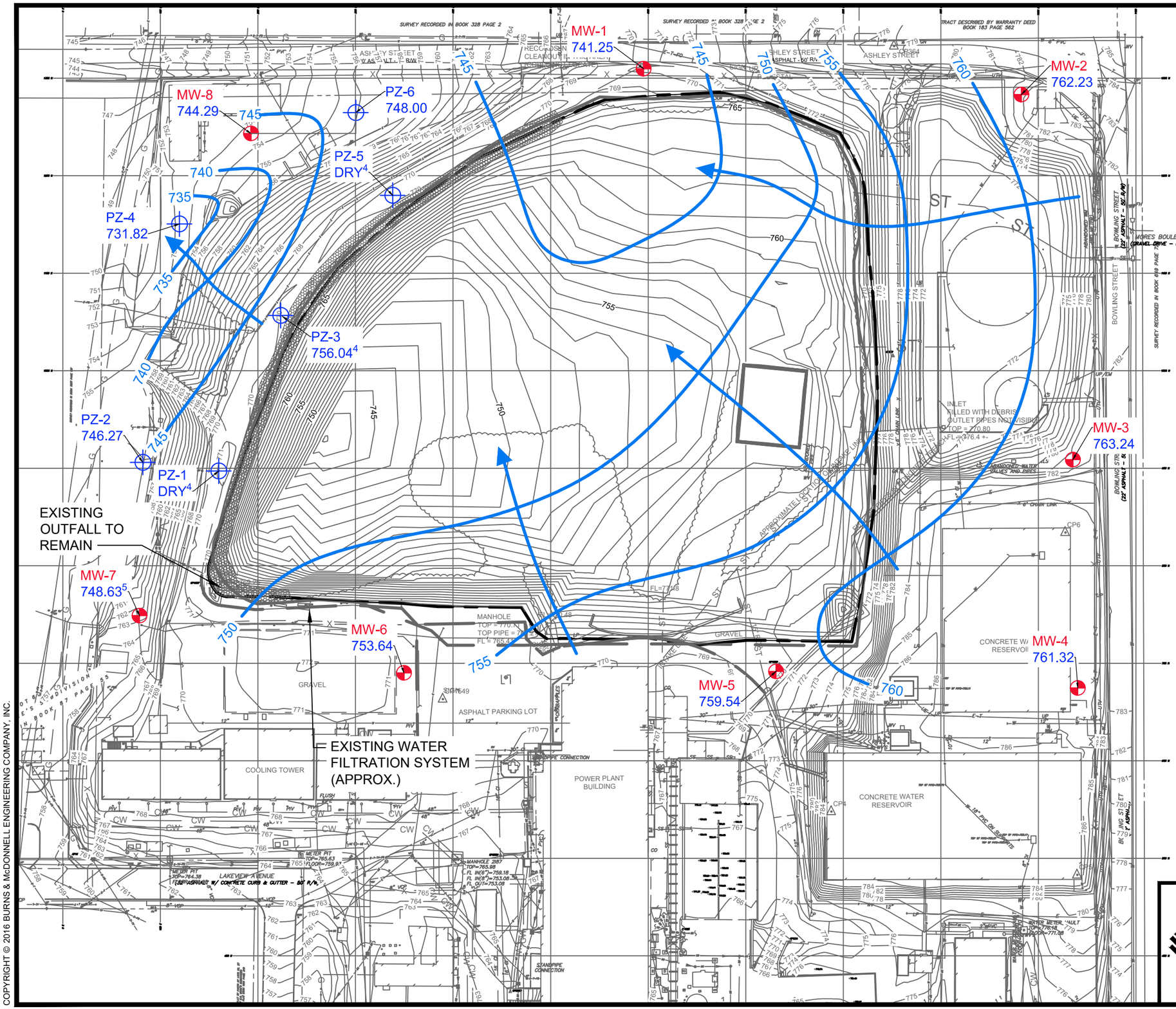
1. MONITORING WELL AND PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY ENGINEERING SURVEYS AND SERVICES OF COLUMBIA, MO ON JUNE 23, 2017.
2. TOPOGRAPHIC CONTOUR INTERVAL 1 FEET.
3. GROUNDWATER ELEVATIONS WERE COLLECTED ON FEBRUARY 21, 2018.
4. BERM PIEZOMETERS PZ-1, PZ-3 AND PZ-5 NOT INCLUDED IN GROUNDWATER CONTOURING.
5. MW-7 WAS NOT STATIC AT THE TIME IT WAS MEASURED.

BURNS McDONNELL

FIGURE 3-2
POTENTIOMETRIC SURFACE MAP
FEBRUARY 21, 2018
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MO

COPYRIGHT © 2016 BURNS & McDONNELL ENGINEERING COMPANY, INC.

Z:\CLIENTS\ENS\COLUMBIAMO\93647_MORESLAKE\DESIGN\CADD\DWGS\GROUNDWATER WORK PLAN\2018 GW AND CA REPORT\FIG1-POTENTIOMETIC SURFACE MAP_FEBRUARY 2018.DWG TMCOLLINS



LEGEND

- EXISTING PIEZOMETER
- NEW MONITORING WELL
- APPROXIMATE PROPERTY BOUNDARY
- 762.23 GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:

1. MONITORING WELL AND PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY ENGINEERING SURVEYS AND SERVICES OF COLUMBIA, MO ON JUNE 23, 2017.
2. TOPOGRAPHIC CONTOUR INTERVAL 1 FEET.
3. GROUNDWATER ELEVATIONS WERE COLLECTED ON APRIL 23, 2018.
4. BERM PIEZOMETER PZ-1, PZ-3 AND PZ-5 NOT INCLUDED IN CONTOURING.
5. MW-7 WAS NOT STATIC AT THE TIME IT WAS MEASURED.

N

0 100' 200'

SCALE IN FEET

BURNS McDONNELL

FIGURE 3-3
POTENTIOMETRIC SURFACE MAP
APRIL 23, 2018
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MO

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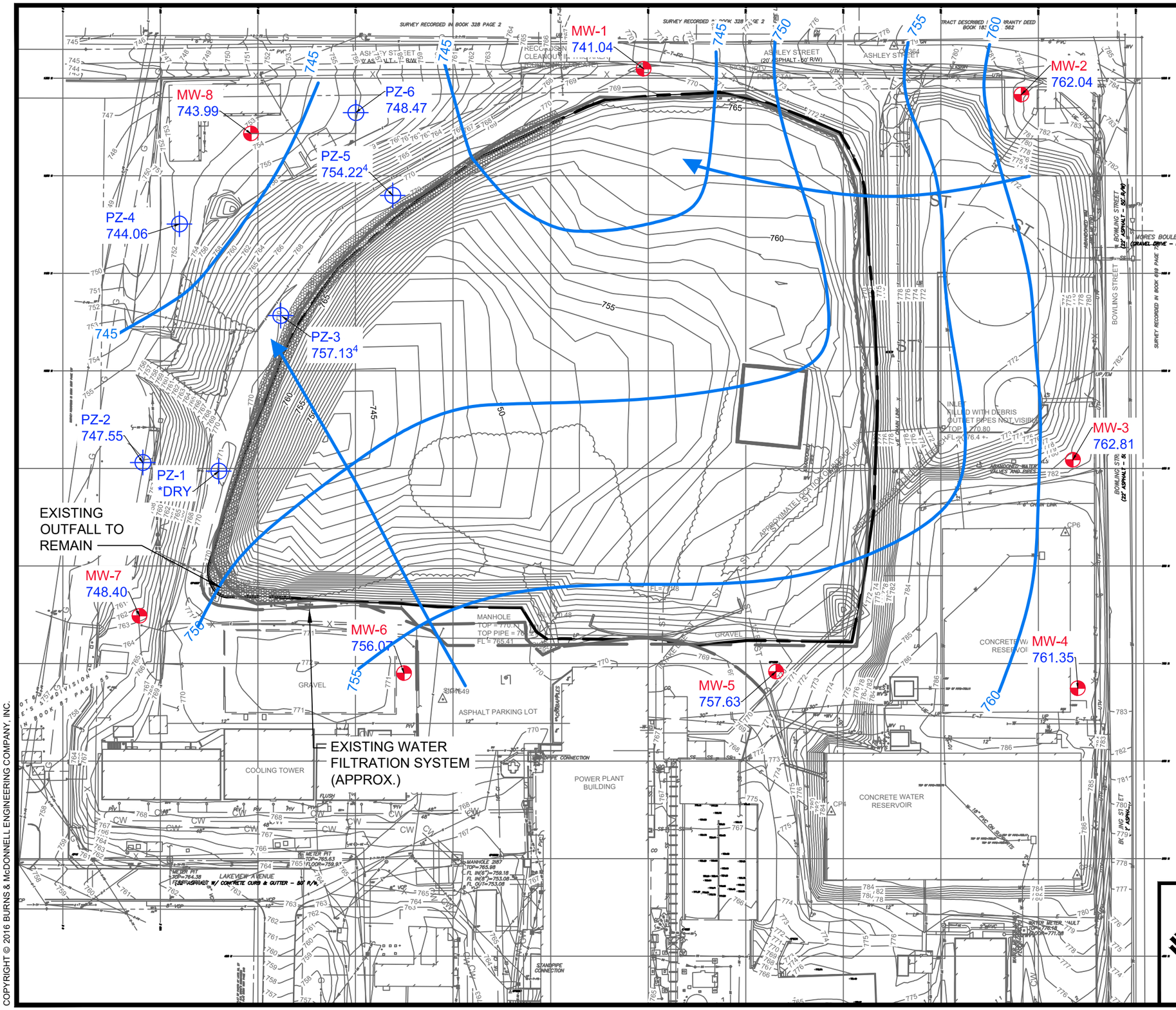
Z:\CLIENTS\ENS\COLUMBIAMO\93647_MORESLAKE\DESIGN\CADD\DWGS\GROUNDWATER WORK PLAN\2018 GW AND CA REPORT\FIG5-POTENTIOMETIC SURFACE MAP_APRIL 2018.DWG TMCOLLINS



LEGEND

⊕	EXISTING PIEZOMETER
⊕	MONITORING WELL
— —	APPROXIMATE PROPERTY BOUNDARY
762.23	GROUNDWATER ELEVATION
~	GROUNDWATER ELEVATION CONTOUR
←	GROUNDWATER FLOW DIRECTION
*DRY	GROUNDWATER ELEVATION NOT USED IN CONTOURING

NOTE:

1. MONITORING WELL AND PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY ENGINEERING SURVEYS AND SERVICES OF COLUMBIA, MO ON JUNE 23, 2017.
2. TOPOGRAPHIC CONTOUR INTERVAL 1 FEET.
3. GROUNDWATER ELEVATIONS WERE COLLECTED ON JUNE 29, 2018.
4. BERM PIEZOMETER PZ-1, PZ-3, & PZ-5 NOT INCLUDED IN CONTOURING.

N

0 100' 200'

SCALE IN FEET

BURNS McDONNELL

FIGURE 3-4
POTENTIOMETRIC SURFACE MAP
JUNE 29, 2018
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MO

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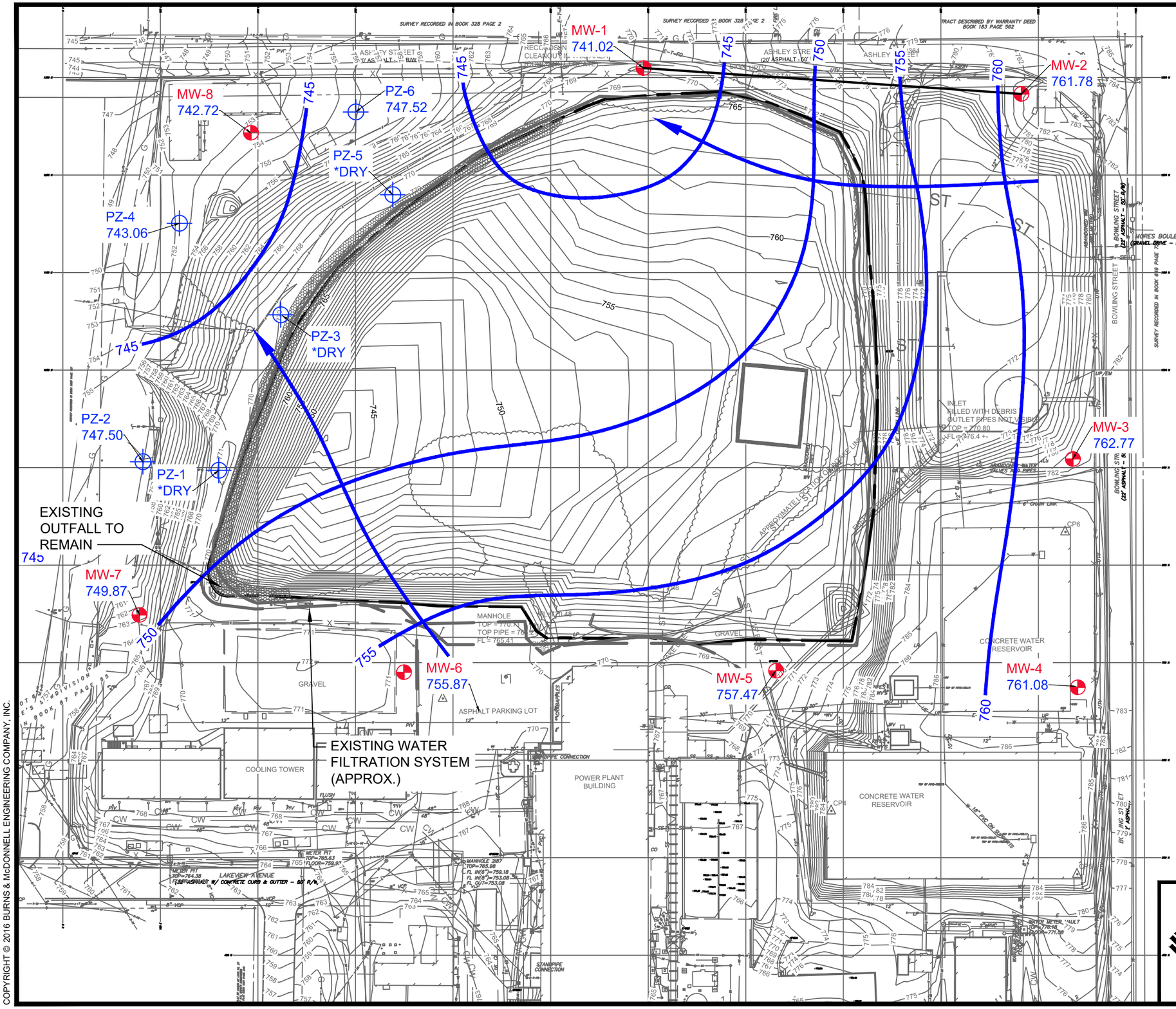

LEGEND

- EXISTING PIEZOMETER
- MONITORING WELL
- APPROXIMATE PROPERTY BOUNDARY
- 761.78 GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- *DRY GROUNDWATER ELEVATIONS NOT USED IN CONTOURING.

NOTE:

1. MONITORING WELL AND PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY ENGINEERING SURVEYS AND SERVICES OF COLUMBIA, MO ON JUNE 23, 2017.
2. TOPOGRAPHIC CONTOUR INTERVAL 1 FEET.
3. GROUNDWATER ELEVATIONS WERE COLLECTED ON AUGUST 20, 2018.
4. BERM PIEZOMETER PZ-1, PZ-3, & PZ-5 NOT INCLUDED IN CONTOURING.

N

0 100' 200'

SCALE IN FEET

BURNS McDONNELL

FIGURE 3-5
POTENTIOMETRIC SURFACE MAP
AUGUST 20, 2018
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MO

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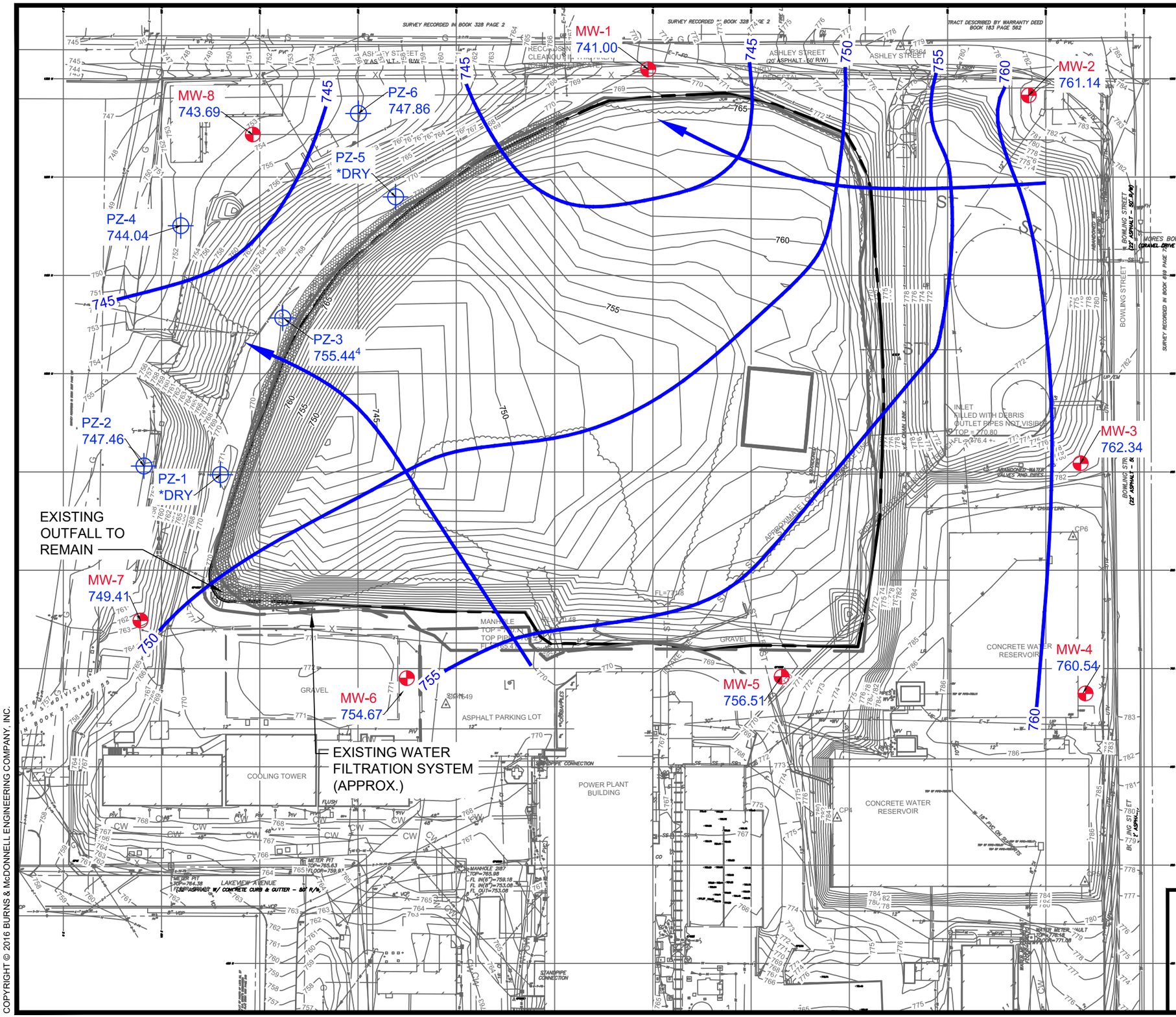
Z:\CLIENTS\ENS\COLUMBIAMO\93647_MORESLAKE\DESIGN\CADD\DWGS\GROUNDWATER WORK PLAN\2018 GW AND CA REPORT\FIG5-POTENTIOMETIC SURFACE MAP_AUGUST 2018.DWG TMCOLLINS



LEGEND

- EXISTING PIEZOMETER
- MONITORING WELL
- APPROXIMATE PROPERTY BOUNDARY
- 761.78 GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- *DRY GROUNDWATER ELEVATIONS NOT USED IN CONTOURING.

NOTE:

1. MONITORING WELL AND PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY ENGINEERING SURVEYS AND SERVICES OF COLUMBIA, MO ON JUNE 23, 2017.
2. TOPOGRAPHIC CONTOUR INTERVAL 1 FEET.
3. GROUNDWATER ELEVATIONS WERE COLLECTED ON OCTOBER 22, 2018.
4. BERM PIEZOMETER PZ-1, PZ-3, & PZ-5 NOT INCLUDED IN CONTOURING.

N

0 100' 200'

SCALE IN FEET

BURNS McDONNELL

FIGURE 3-6
POTENTIOMETRIC SURFACE MAP
OCTOBER 22, 2018
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MO

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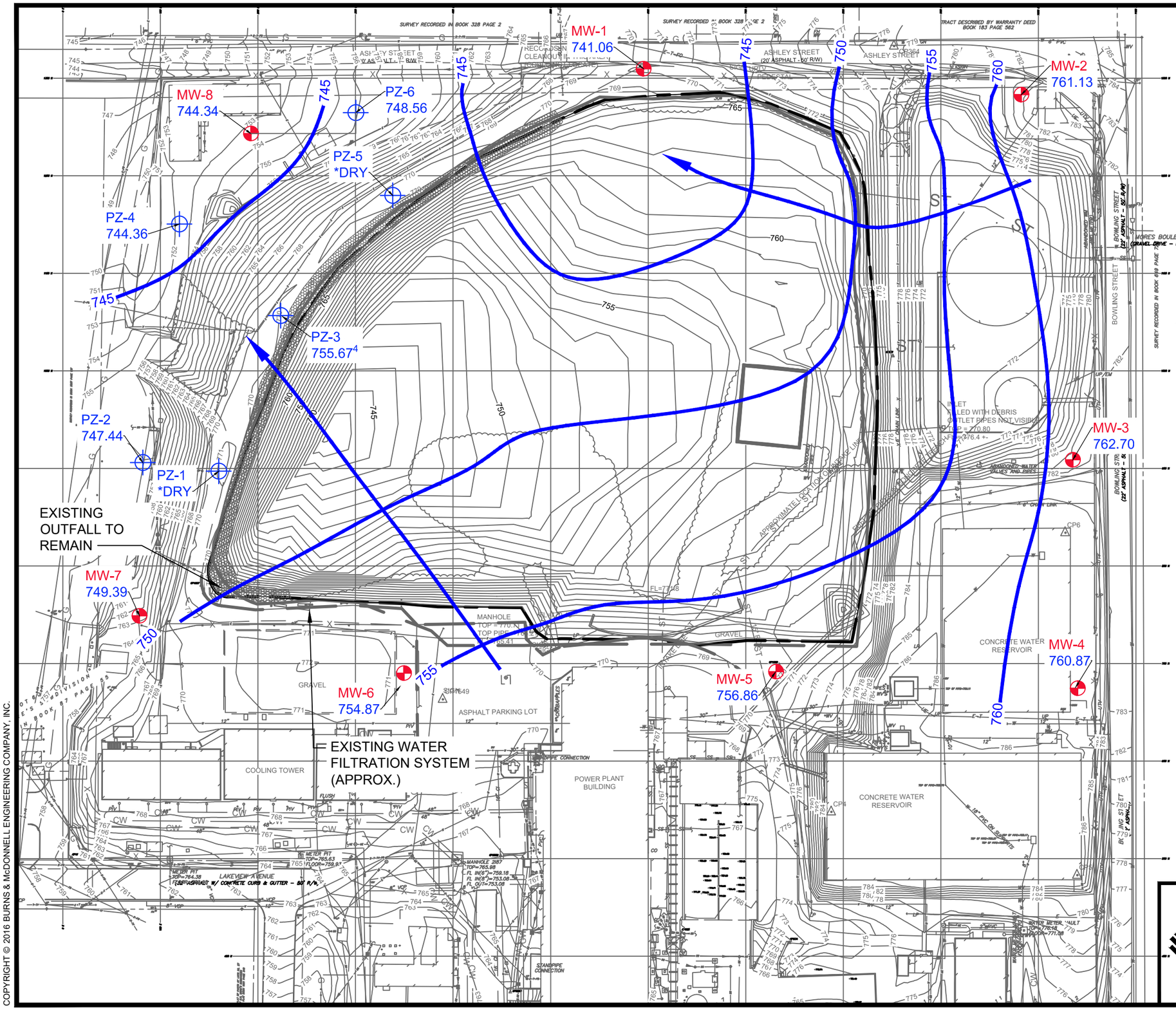

LEGEND

- EXISTING PIEZOMETER
- MONITORING WELL
- APPROXIMATE PROPERTY BOUNDARY
- 761.78 GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- *DRY GROUNDWATER ELEVATIONS NOT USED IN CONTOURING.

NOTE:

1. MONITORING WELL AND PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY ENGINEERING SURVEYS AND SERVICES OF COLUMBIA, MO ON JUNE 23, 2017.
2. TOPOGRAPHIC CONTOUR INTERVAL 1 FEET.
3. GROUNDWATER ELEVATIONS WERE COLLECTED ON DECEMBER 17, 2018.
4. BERM PIEZOMETER PZ-1, PZ-3, & PZ-5 NOT INCLUDED IN CONTOURING.

N

0 100' 200'

SCALE IN FEET

BURNS McDONNELL

FIGURE 3-7
POTENTIOMETRIC SURFACE MAP
DECEMBER 17, 2018
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MO

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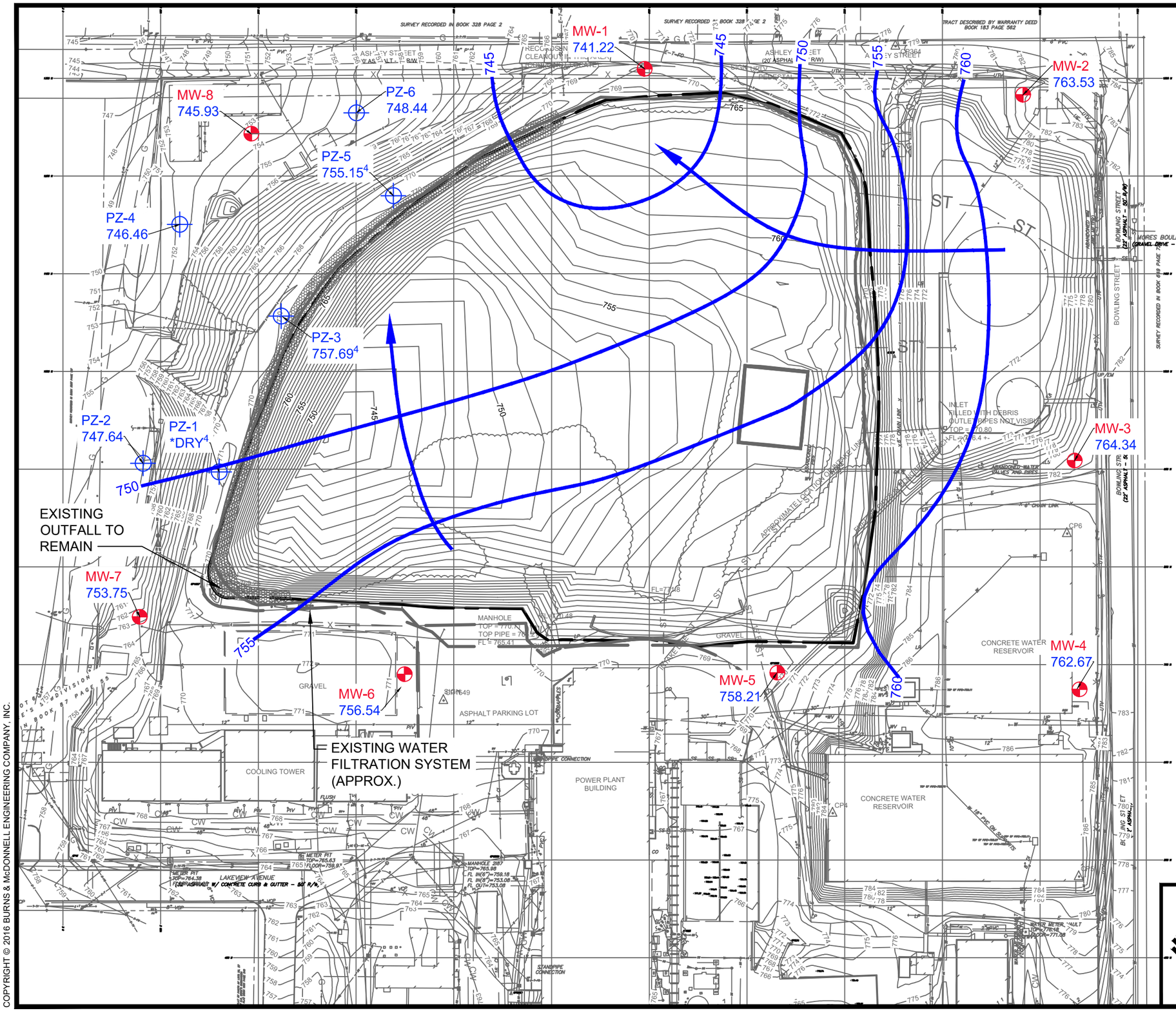

LEGEND

⊕	EXISTING PIEZOMETER
●	MONITORING WELL
— —	APPROXIMATE PROPERTY BOUNDARY
757.55	GROUNDWATER ELEVATION
∼	GROUNDWATER ELEVATION CONTOUR
→	GROUNDWATER FLOW DIRECTION
*DRY	GROUNDWATER ELEVATIONS NOT USED IN CONTOURING.

NOTE:

1. MONITORING WELL AND PIEZOMETER LOCATIONS AND ELEVATIONS SURVEYED BY ENGINEERING SURVEYS AND SERVICES OF COLUMBIA, MO ON JUNE 23, 2017.
2. WELLS COLORED IN RED ARE INCLUDED IN THE SAMPLING NETWORK.
3. GROUNDWATER ELEVATIONS WERE COLLECTED ON MARCH 11, 2019.
4. BERM PIEZOMETERS PZ-1, PZ-3, AND PZ-5 NOT INCLUDED IN GROUNDWATER CONTOURING.

N

0 100' 200'

SCALE IN FEET

BURNS McDONNELL

FIGURE 3-8
POTENTIOMETRIC SURFACE MAP
MARCH 11, 2019
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, MO

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Z:\CLIENTS\ENS\COLUMBIAMO\93647_MORESLAKE\DESIGN\CADD\DWGS\GROUNDWATER WORK PLAN\2018 GW AND CA REPORT\FIG5-POTENTIOMETIC SURFACE MAP_MARCH 2019.DWG TMCOLLINS

TABLES

Table 2-1
Summary of Hydraulic Conductivity Results
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Monitoring Well	Test Date	Rising Head Test Method	Estimated Hydraulic Conductivity (cm/sec)		Average Hydraulic Conductivity		
			Bouwer-Rice	Hvorslev	(cm/sec)	(ft/sec)	(ft/day)
Sand C							
MW-1	6/14/2017	Pump	4.17E-04	8.16E-05	2.49E-04	8.18E-06	0.71
MW-2	6/14/2017	Pump	5.22E-07	9.54E-08	3.09E-07	1.01E-08	0.00088
MW-3	6/13-14/2017	Pump	9.60E-05	1.89E-05	5.74E-05	1.88E-06	0.163
MW-4	6/13-14/2017	Pump	6.01E-05	1.03E-05	3.52E-05	1.15E-06	0.100
MW-5	6/19-25/2017	Pump	3.82E-07	7.74E-08	2.30E-07	7.54E-09	0.00065
MW-6	6/19-22/2017	Pump	5.95E-06	1.04E-06	3.50E-06	1.15E-07	0.0099
MW-7	6/13/2017	Bailer	2.86E-07	1.04E-07	1.89E-07	6.21E-09	0.00054
	6/19-22/2017	Bailer	2.65E-07	1.02E-07			
MW-8	6/14-15/2017	Pump	3.03E-05	5.68E-06	1.80E-05	5.90E-07	0.051
PZ-2	6/15-16/2017	Pump	1.22E-05	3.36E-06	7.77E-06	2.55E-07	0.022
				Maximum K	**2.49E-04**	**8.18E-06**	**0.71**
				Average K	**4.13E-05**	**1.36E-06**	**0.12**
				Minimum K	**1.89E-07**	**6.21E-09**	**0.00054**

cm/sec. - centimeters per second

K = hydraulic conductivity

Notes:

1. Bouwer-Rice (1976) and Hvorslev (1951) calculations computed by AQTESOLV software by inputting slug test field data.
2. Slug out using bailer for MW-7 test due to minimal water column.
3. AQTESOLV K plots provided in Appendix K.

Table 3-1
Summary of Groundwater Depths and Elevations - December 20, 2017
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Well ID	Top of Casing Elev. (feet)	Depth to Water (ft)	Water Elev. (ft)
MW-1	769.82	28.66	741.16
MW-2	781.03	18.81	762.22
MW-3	781.13	19.00	762.13
MW-4	785.02	24.56	760.46
MW-5	769.61	12.21	757.40
MW-6	770.07	16.90	753.17
MW-7	762.23	22.02	740.21
MW-8	753.09	10.44	742.65
PZ-1	770.78	Dry	na
PZ-2	755.91	9.45	746.46
PZ-3	769.94	16.20	753.74
PZ-4	752.06	9.26	742.80
PZ-5	770.02	Dry	na
PZ-6	755.60	8.41	747.19

ft - feet
ft bTOC - feet below top of casing
ft MSL - feet above mean sea level.
na - not available (dry)

Notes:
PZ-1 TD = 16.42
PZ-5 TD = 16.09

Table 3-2
Summary of Groundwater Depths and Elevations - February 21, 2018
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Well ID	Top of Casing Elev. (feet)	Depth to Water (ft)	Water Elev. (ft)
MW-1	769.82	29.00	740.82
MW-2	781.03	18.89	762.14
MW-3	781.13	19.65	761.48
MW-4	785.02	24.43	760.59
MW-5	769.61	10.25	759.36
MW-6	770.07	15.99	754.08
MW-7	762.23	16.70	745.53
MW-8	753.09	10.41	742.68
PZ-1	770.78	Dry	na
PZ-2	755.91	8.99	746.92
PZ-3	769.94	10.22	759.72
PZ-4	752.06	9.30	742.76
PZ-5	770.02	12.64	757.38
PZ-6	755.60	7.04	748.56

ft - feet
ft bTOC - feet below top of casing
ft MSL - feet above mean sea level.
na - not available (dry)

Notes:
PZ-1 TD = 16.42

Table 3-3
Summary of Groundwater Depths and Elevations - April 23, 2018
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Well ID	Top of Casing Elev. (feet)	Depth to Water (ft)	Water Elev. (ft)
MW-1	769.82	28.57	741.25
MW-2	781.03	18.80	762.23
MW-3	781.13	17.89	763.24
MW-4	785.02	23.70	761.32
MW-5	769.61	10.07	759.54
MW-6	770.07	16.43	753.64
MW-7	762.23	13.60	748.63
MW-8	753.09	8.80	744.29
PZ-1	770.78	Dry	na
PZ-2	755.91	9.64	746.27
PZ-3	769.94	13.90	756.04
PZ-4	752.06	20.24	731.82
PZ-5	770.02	Dry	na
PZ-6	755.60	7.60	748.00

ft - feet
ft bTOC - feet below top of casing
ft MSL - feet above mean sea level.
na - not available (dry)

Notes:
PZ-1 TD = 16.42
PZ-5 TD = 16.09

Table 3-4
Summary of Groundwater Depths and Elevations - June 29, 2018
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Well ID	Top of Casing Elev. (feet)	Depth to Water (ft)	Water Elev. (ft)
MW-1	769.82	28.78	741.04
MW-2	781.03	18.99	762.04
MW-3	781.13	18.32	762.81
MW-4	785.02	23.67	761.35
MW-5	769.61	11.98	757.63
MW-6	770.07	14.00	756.07
MW-7	762.23	13.83	748.40
MW-8	753.09	9.10	743.99
PZ-1	770.78	Dry	na
PZ-2	755.91	8.36	747.55
PZ-3	769.94	12.81	757.13
PZ-4	752.06	8.00	744.06
PZ-5	770.02	15.80	754.22
PZ-6	755.60	7.13	748.47

ft - feet
ft bTOC - feet below top of casing
ft MSL - feet above mean sea level.
na - not available (dry)

Notes:
PZ-1 TD = 16.58

Table 3-5
Summary of Groundwater Depths and Elevations - August 20, 2018
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Well ID	Top of Casing Elev. (feet)	Depth to Water (ft)	Water Elev. (ft)
MW-1	769.82	28.80	741.02
MW-2	781.03	19.25	761.78
MW-3	781.13	18.36	762.77
MW-4	785.02	23.94	761.08
MW-5	769.61	12.14	757.47
MW-6	770.07	14.20	755.87
MW-7	762.23	12.36	749.87
MW-8	753.09	10.37	742.72
PZ-1	770.78	Dry	na
PZ-2	755.91	8.41	747.50
PZ-3	769.94	Dry	na
PZ-4	752.06	9.00	743.06
PZ-5	770.02	Dry	na
PZ-6	755.60	8.08	747.52

ft - feet
ft bTOC - feet below top of casing
ft MSL - feet above mean sea level.
na - not available (dry)

Notes:
PZ-1 TD = 16.50
PZ-3 TD = 16.58
PZ-5 TD = 16.33

Table 3-6
Summary of Groundwater Depths and Elevations - October 22, 2018
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Well ID	Top of Casing Elev. (feet)	Depth to Water (ft)	Water Elev. (ft)
MW-1	769.82	28.82	741.00
MW-2	781.03	19.89	761.14
MW-3	781.13	18.79	762.34
MW-4	785.02	24.48	760.54
MW-5	769.61	13.10	756.51
MW-6	770.07	15.40	754.67
MW-7	762.23	12.82	749.41
MW-8	753.09	9.40	743.69
PZ-1	770.78	Dry	na
PZ-2	755.91	8.45	747.46
PZ-3	769.94	14.50	755.44
PZ-4	752.06	8.02	744.04
PZ-5	770.02	Dry	na
PZ-6	755.60	7.74	747.86

ft - feet
ft bTOC - feet below top of casing
ft MSL - feet above mean sea level.
na - not available (dry)

Notes:
PZ-1 TD = 16.50
PZ-5 TD = 16.33

Table 3-7
Summary of Groundwater Depths and Elevations - December 17, 2018
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Well ID	Top of Casing Elev. (feet)	Depth to Water (ft)	Water Elev. (ft)
MW-1	769.82	28.76	741.06
MW-2	781.03	19.90	761.13
MW-3	781.13	18.43	762.70
MW-4	785.02	24.15	760.87
MW-5	769.61	12.75	756.86
MW-6	770.07	15.20	754.87
MW-7	762.23	12.84	749.39
MW-8	753.09	8.75	744.34
PZ-1	770.78	Dry	na
PZ-2	755.91	8.47	747.44
PZ-3	769.94	14.27	755.67
PZ-4	752.06	7.70	744.36
PZ-5	770.02	Dry	na
PZ-6	755.60	7.04	748.56

ft - feet
ft bTOC - feet below top of casing
ft MSL - feet above mean sea level.
na - not available (dry)

Notes:
PZ-1 TD = 16.50
PZ-5 TD = 16.33

Table 3-8
Summary of Groundwater Depths and Elevations - March 11, 2019
Columbia Water and Light Department - Columbia Municipal Power Plant
Columbia, Missouri

Well ID	Top of Casing Elev. (feet)	Depth to Water (ft)	Water Elev. (ft)
MW-1	769.82	28.60	741.22
MW-2	781.03	17.50	763.53
MW-3	781.13	16.79	764.34
MW-4	785.02	22.35	762.67
MW-5	769.61	11.40	758.21
MW-6	770.07	13.53	756.54
MW-7	762.23	8.48	753.75
MW-8	753.09	7.16	745.93
PZ-1	770.78	Dry	na
PZ-2	755.91	8.27	747.64
PZ-3	769.94	12.25	757.69
PZ-4	752.06	5.60	746.46
PZ-5	770.02	14.87	755.15
PZ-6	755.60	7.16	748.44

ft - feet
ft bTOC - feet below top of casing
ft MSL - feet above mean sea level.
na - not available (dry)

Notes:
PZ-1 TD = 16.60
MW-2 depth to water measured 3/13/2019.

Table 3-9
Summary Groundwater Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-1 12/21/2017 60260936001	MW-1 2/23/2018 60264569001	MW-1 4/26/2018 60269085011	MW-1 6/29/2018 60273890009	MW-1 8/23/2018 60278591006	MW-1 10/25/2018 60284830001	MW-1 12/20/2018 60290219010	MW-1 3/14/2019 60296854009
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	˚C	**15.84**	**13.85**	**16.63**	**17.86**	**17.46**	**15.98**	**14.70**	**14.96**
In Situ (Field)	Conductivity	NA	mS/cm	**0.862**	**1.09**	**1.11**	**1.09**	**1.03**	**1.16**	**1.02**	**1.05**
In Situ (Field)	pH	NA	s.u.	**6.67**	**6.78**	**7.66**	**6.87**	**7.97**	**7.16**	**6.66**	**6.83**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**58**	**92**	**64**	**114**	**126**	**137**	**106**	**94**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.43**	**0.47**	**0.0**	**0.27**	**0.30**	**0.19**	**0.00**	**0.59**
In Situ (Field)	Turbidity	NA	NTUs	**0.0**	**0.0**	**0.0**	**1.2**	**0.0**	**0.0**	**0.0**	**0.3**
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	**2.01**	**2.09**	**2.15**	**2.25**	**2.42**	**2.11**	**2.31**	**2.25**
6010	Calcium	196	mg/l	**146**	**158**	**164**	**152**	**164**	**163**	**172**	**163**
300	Chloride	73.2	mg/l	**81.7**	**81.1**	**47.3**	**63.5**	**67.6**	**70.6**	**66.3**	**71.8**
300	Fluoride	0.6833	mg/l	**0.53**	**0.47**	**0.46**	**0.55**	**0.56 J**	**0.53**	**0.45**	**0.54**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**7.7 J**	**7.2 J**	**7.5 J**	**7.6 J**	**7.1 J**	**7.2 J**	**7.0 J**	**7.5 J**
300	Sulfate	283	mg/l	**239**	**247**	**662**	**205**	**230**	**226**	**234**	**235**
2540 C	Total Dissolved Solids	869.6	mg/l	**783**	**832**	**811**	**824**	**828**	**871**	**816**	**833**
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.015 U	0.015 U	0.0010 U	0.001 U	0.001 U	0.0010 U
6010	Arsenic	--	mg/l	0.01 U	0.01 U	**0.005 J**	0.01 U	0.010 U	0.01 U	0.01 U	0.0100 U
6010	Barium	--	mg/l	**0.0603**	**0.0628**	**0.067**	**0.0667**	**0.0576**	**0.0754 J+**	**0.0581**	**0.0585**
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.0010 U	0.001 U	0.001 U	0.0010 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.0050 U	0.005 U	0.005 U	0.0050 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	**0.0013 J**	0.005 U	0.005 U	0.0050 U
6010	Cobalt	--	mg/l	0.005 U	0.005 U	**0.0012 J**	**0.0017 J**	**0.0017 J**	0.005 U	0.005 U	**0.0012 J**
300	Fluoride	--	mg/l	**0.53**	**0.47**	**0.46**	**0.55**	**0.56 J**	**0.53**	**0.45**	**0.54**
6010	Lead	--	mg/l	0.005 U	0.005 U	0.010 U	0.01 U	0.010 U	0.01 U	0.01 U	0.0100 U
6010	Lithium	--	mg/l	**0.0487**	0.02 U	**0.0749**	**0.0452**	**0.0432**	**0.0368**	**0.0403**	**0.0455**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00020 U	0.0002 U	0.0002 U	0.00020 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	**0.005 J**	**0.0037 J**	**0.0035 J**	**0.0044 J**	**0.0037 J**	**0.0039 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.0150 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.001 U	0.001 U	0.0010 U	0.0005 U	0.001 U	0.0010 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**1.34 ± 0.989 J**	**0.965 ± 0.830 J**	**1.02 ± 0.730 J**	**0.620 ± 0.800**	**1.51 ± 0.880 J**	**0.579 ± 0.948 J**	**1.56 ± 1.01 J**	**0.951 ± 1.01 J**
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	0.075 U	0.075 U	0.075 U	**0.0212 J**	0.050 U	**0.0055 J+**	0.0121 JU	0.0095 JU
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	10 U	10 U	10 U	10 U	10.00 U	10.0 U	10 U	10.0 U
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 UJ	0.010 U	0.010 U	0.01 U	0.010 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.005 U	0.01 UJ	0.01 UJ	0.010 U	0.010 U	0.01 U	0.010 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.010 U	0.01 U	0.010 U	0.010 U	0.01 U	0.0071 JU
6010	Iron	1.506	mg/l	**0.13**	**0.20**	**0.163**	**0.107**	**0.0866**	**0.0478 J**	**0.0608**	**0.0932**
6010	Magnesium	43	mg/l	**38.5**	**41.7**	**42.8**	**42.2**	**45**	**42.1**	**43.6**	**42.9**
6010	Manganese	0.9526	mg/l	**0.242**	**0.253**	**0.266**	**0.254**	**0.249**	**0.241**	**0.207**	**0.234**
6010	Nickel	0.0317	mg/l	**0.006**	**0.0053**	**0.005**	**0.0054**	**0.0056**	**0.0055**	**0.0055**	**0.0058**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.0070 U	0.007 U	0.007 U	0.0070 U
6010	Sodium	80.37	mg/l	**69.1**	**70.4**	**73.0**	**72**	**71.1**	**63.7**	**71.4**	**78.4**
2340B	Total Hardness	659	mg/l	**522**	**566**	**585.0**	**553**	**593**	**559**	**599**	**578**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	1.0 U	1.0 U	**0.470 J**	**0.49 J**	**0.75 J**	1.0 U	1.0 U	**0.81 J**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	**0.0223 J**	**0.0239 J**	**0.041 J**	**0.049 J**	**0.129**	**0.0144 J**	0.1 U	0.1 U
6010	Zinc	0.603	mg/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.050 U	0.05 U	0.0500 U

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-2 12/21/2017 60260933004	DUP-1 12/21/2017 60260933005	MW-2 2/22/2018 60264569003	DUP-1 2/22/2018 60264569004	MW-2 4/25/2018 60269085007	DUP-1 4/25/2018 60269085008	MW-2 6/28/2018 60273890007	DUP-1 6/28/2018 60273890008	MW-2 8/22/2018 60278591003	DUP-1 8/22/2018 60278591004
Analytical Method	**Analyte**		**Unit**	*Duplicate Pair*		*Duplicate Pair*		*Duplicate Pair*		*Duplicate Pair*		*Duplicate Pair*	
Field Water Quality Parameters													
In Situ (Field)	Temperature	NA	˚C	**16.27**	**16.27**	**13.24**	**13.24**	**16.01**	**16.01**	**18.17**	**18.17**	**17.65**	**17.65**
In Situ (Field)	Conductivity	NA	mS/cm	**0.693**	**0.693**	**0.853**	**0.853**	**0.8**	**0.8**	**0.725**	**0.725**	**0.687**	**0.687**
In Situ (Field)	pH	NA	s.u.	**6.86**	**6.86**	**6.39**	**6.39**	**7.60**	**7.60**	**6.73**	**6.73**	**8.08**	**8.08**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**61**	**61**	**67**	**67**	**18**	**18**	**-3**	**-3**	**24**	**24**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.07**	**0.07**	**0.00**	**0.00**
In Situ (Field)	Turbidity	NA	NTUs	**0.0**	**0.0**	**1.3**	**1.3**	**0.0**	**0.0**	**0.6**	**0.6**	**1.8**	**1.8**
Appendix III - Detection Monitoring													
6010	Boron	0.415	mg/l	0.1 U	0.1 U	0.1 U	0.1 U	**0.0891 J**	**0.0892 J**	**0.0889 J**	**0.0891 J**	**0.0972 J**	**0.0889 J**
6010	Calcium	196	mg/l	**115**	**113**	**117**	**118**	**118**	**117**	**106**	**105**	**112**	**111**
300	Chloride	73.2	mg/l	**4.0**	**4.2**	**3.7**	**3.7**	**3.5**	**3.5**	**3.5**	**3.5**	**3.4**	**3.3**
300	Fluoride	0.6833	mg/l	**0.63**	**0.59**	**0.60**	**0.57**	**0.57**	**0.58**	**0.59**	**0.58**	**0.74**	**0.62**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**7.6 J**	**7.9 J**	**7.2 J**	**7.2 J**	**7.3 J**	**7.4 J**	**7.4 J**	**7.6 J**	**7.1 J**	**7.1 J**
300	Sulfate	283	mg/l	**57.7**	**57.6**	**56.4**	**56.4**	**56.6**	**56.6**	**58.3**	**57.6**	**58.5**	**58.8**
2540 C	Total Dissolved Solids	869.6	mg/l	**498**	**508**	**520**	**524**	**521**	**541**	**551**	**470**	**536**	**534**
Appendix IV - Assessment Monitoring													
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.015 U	0.015 U	0.015 U	0.015 U	0.001 U	0.001 U
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	**0.0058 J**	**0.0055 J**	0.01 U	0.01 U	0.01 U	0.01 U
6010	Barium	--	mg/l	**0.157**	**0.154**	**0.158**	**0.158**	**0.162**	**0.16**	**0.152**	**0.152**	**0.142**	**0.146**
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	**0.0011 J**
6010	Cobalt	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	**0.001 J**	**0.0011 J**	**0.0016 J**	**0.0019 J**	**0.00091 J**	**0.0011 J**
300	Fluoride	--	mg/l	**0.63**	**0.59**	**0.60**	**0.57**	**0.57**	**0.58**	**0.59**	**0.58**	**0.74**	**0.62**
6010	Lead	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Lithium	--	mg/l	**0.0379**	**0.0384**	**0.0342**	**0.0334**	**0.0607**	**0.0581**	**0.0401**	**0.0421**	**0.0394**	**0.0416**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	0.02 U	0.02 U	**0.0069 J**	**0.0071** J	**0.0068 J**	**0.0064 J**	**0.0061 J**	**0.0061 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.02 U	0.02 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**1.14 ± 0.885 J**	**0.806 ± 0.804 J**	**2.17 ± 1.09**	**1.07 ± 1.05 J**	**0.529 ± 0.855 J**	**1.06 ± 1.06 J**	**1.12 ± 0.848**	**0.506 ± 0.786**	**1.69 ± 0.913 J**	**1.04 ± 0.802 J**
MDNR Water Quality Parameters													
6010	Aluminum	1.878	mg/l	0.075 U	0.075 U	0.075 U	0.075 U	0.075 U	0.075 U	**0.103**	**0.0934**	**0.0101 J**	**0.0112 J**
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.01 U	0.005 U	0.005 U	0.01 U	0.01 U	**0.003**	**0.003 J**	0.010 U	0.01 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Iron	1.506	mg/l	**0.122**	**0.124**	**0.105**	**0.0968**	**0.101**	**0.162**	**0.105**	**0.1**	**0.106**	**0.111**
6010	Magnesium	43	mg/l	**41.4**	**41.0**	**42.1**	**42.3**	**42.4**	**42.0**	**40.1**	**40**	**43**	**43.8**
6010	Manganese	0.9526	mg/l	**0.492**	**0.487**	**0.471**	**0.473**	**0.467**	**0.461**	**0.407**	**0.407**	**0.394**	**0.409**
6010	Nickel	0.0317	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	**0.0015 J**	**0.0017 J**	**0.0018 J**	0.005 U	**0.002 J**	**0.0019 J**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	**30**	**29.5**	**29.6**	**29.8**	**30.5**	**30.2**	**29.4**	**29.2**	**28.8**	**29.5**
2340B	Total Hardness	659	mg/l	**458**	**451**	**467**	**468**	**471**	**466**	**431**	**428**	**468**	**473**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	**1.0**	1.0 U	**1.1**	**1.0**	**0.83 J**	**0.81 J**	**0.85 J**	**0.85 J**	**0.7 J**	**0.73 J**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	0.1 U	0.0189	0.1 U	0.1 U	**0.026 J+**	**0.0124 J**	**0.0235 J**	0.1 U	0.0237 JU	0.0458 JU
6010	Zinc	0.603	mg/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.0227 J**	**0.0211 J**	**0.039 J**	**0.0402 J**

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-2 10/24/2018 60284690004	DUP-1 10/24/2018 60284690005	MW-2 12/19/2018 60290219007	DUP-1 12/19/2018 60290219008	MW-2 3/13/2019 60296854006	DUP-1 3/13/2019 60296854007
Analytical Method	**Analyte**		**Unit**	*Duplicate Pair*		*Duplicate Pair*		*Duplicate Pair*	
Field Water Quality Parameters									
In Situ (Field)	Temperature	NA	˚C	**15.68**	**15.68**	**15.2**	**15.2**	**14.32**	**14.32**
In Situ (Field)	Conductivity	NA	mS/cm	**0.806**	**0.806**	**0.7**	**0.7**	**0.782**	**0.782**
In Situ (Field)	pH	NA	s.u.	**7.61**	**7.61**	**6.76**	**6.76**	**7**	**7**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**78**	**78**	**51**	**51**	**70**	**70**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.01**	**0.01**	**0.00**	**0.00**	**0.08**	**0.08**
In Situ (Field)	Turbidity	NA	NTUs	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.5**
Appendix III - Detection Monitoring									
6010	Boron	0.415	mg/l	**0.0847 J**	**0.0916 J**	**0.0804 J**	**0.0789 J**	**0.0774 J**	**0.0745 J**
6010	Calcium	196	mg/l	**111**	**112**	**118**	**117**	**114**	**113**
300	Chloride	73.2	mg/l	3.3 U	3.3 U	**3.0**	**3.1**	**3.6**	**3.5**
300	Fluoride	0.6833	mg/l	**0.57**	**0.57**	**0.55**	**0.54**	**0.57**	**0.58**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**7.2 J**	**7.3 J**	**7.1 J**	**7.1 J**	**7.3 J**	**7.1 J**
300	Sulfate	283	mg/l	**58.6**	**58.2**	**61.5**	**58.5**	**56.1**	**55.4**
2540 C	Total Dissolved Solids	869.6	mg/l	**328 J**	**530 J**	**521**	**520**	**528**	**530**
Appendix IV - Assessment Monitoring									
6010	Antimony	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.0055 J**
6010	Barium	--	mg/l	**0.156**	**0.16**	**0.139**	**0.141**	**0.138**	**0.138**
6010	Beryllium	--	mg/l	0.00017 JU	0.00038 JU	0.001 U	0.001 U	0.001 U	0.001 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Cobalt	--	mg/l	**0.0011 J**	0.005 U	0.005 U	0.005 U	**0.00094 J**	**0.0011 J**
300	Fluoride	--	mg/l	**0.57**	**0.57**	**0.55**	**0.54**	**0.57**	**0.58**
6010	Lead	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Lithium	--	mg/l	**0.0372**	**0.0359**	**0.0394**	**0.0415**	**0.0461**	**0.0406**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	**0.0062 J**	**0.0063 J**	**0.0063 J**	**0.0061 J**	**0.0063 J**	**0.0063 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
6010	Thallium	--	mg/l	0.0005 U	0.0005 U	0.001 U	0.001 U	0.001 U	0.001 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**1.30 ± 1.16 J**	**1.13 ± 0.877 J**	**1.31 ± 1.07 J**	**1.08 ± 0.884 J**	**0.788 ± 1.17 J**	**1.04 ± 1.27 J**
MDNR Water Quality Parameters									
6010	Aluminum	1.878	mg/l	0.1 U	0.1 U	0.012 JU	0.0103 JU	0.0205 JU	0.0169 JU
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	10 U	10 U	10 U	10 U	10.0 U	10.0 U
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.010 U	0.010 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	**0.005 J**	**0.005**	0.010 U	0.01 U	0.010 U	0.010 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.0046 JU	0.0058 JU
6010	Iron	1.506	mg/l	**0.51 J**	**0.146 J**	**0.0405 J**	**0.0492 J**	**0.0512**	**0.0491 J**
6010	Magnesium	43	mg/l	**40.2**	**40**	**41.2**	**41.6**	**39.8**	**40.8**
6010	Manganese	0.9526	mg/l	**0.362**	**0.358**	**0.351**	**0.353**	**0.381**	**0.394**
6010	Nickel	0.0317	mg/l	**0.0317 J**	**0.0015 J**	**0.002 J**	**0.0016 J**	0.0050 U	**0.0019 J**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.0070 U	0.0070 U
6010	Sodium	80.37	mg/l	**30.3**	**30.1**	**29.2**	**29.5**	**31.3**	**32.0**
2340B	Total Hardness	659	mg/l	**456**	**454**	**458**	**462**	**435**	**448**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	**0.68 J**	**0.66 J**	**0.8 J**	**0.77 J**	**1.7**	**0.88 J**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	**0.0356 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
6010	Zinc	0.603	mg/l	0.05 U	**0.0044 J**	0.0284 JU	0.0288 JU	**0.0303 J**	**0.0288 J**

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
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JU = Result qualified as nondetect during data validation
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Field parameters measured during purging/sampling on December 20-22, 2017.
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Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-3 12/21/2017 60260933003	MW-3 2/22/2018 60264511007	MW-3 4/25/2018 60269085006	MW-3 6/28/2018 60273890006	MW-3 8/22/2018 60278591002	MW-3 10/24/2018 60284690003	MW-3 12/19/2018 60290219006	MW-3 3/13/2019 60296854005
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	˚C	**14.01**	**12.39**	**15.20**	**16.55**	**16.07**	**14.78**	**13.89**	**13.59**
In Situ (Field)	Conductivity	NA	mS/cm	**0.702**	**0.867**	**0.81**	**0.73**	**0.695**	**0.808**	**0.717**	**0.787**
In Situ (Field)	pH	NA	s.u.	**6.79**	**6.93**	**7.75**	**6.82**	**8.09**	**7.6**	**6.76**	**7.02**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**68**	**60**	**18**	**89**	**130**	**99**	**94**	**70**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.04**	**4.39**	**0.00**	**2.09**	**0.00**	**0.05**	**3.87**	**0.42**
In Situ (Field)	Turbidity	NA	NTUs	**0.0**	**1.0**	**0.0**	**2.9**	**1.4**	**0.0**	**0.0**	**0.2**
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	0.1 U	0.1 U	**0.0648 J**	**0.0665 J**	**0.0742 J**	**0.0606 J**	**0.049 J**	**0.0517 J**
6010	Calcium	196	mg/l	**114**	**117**	**117**	**105**	**118**	**112**	**112**	**110**
300	Chloride	73.2	mg/l	**9.0**	**8.0**	**8.1**	**8.1**	**8 J+**	**8.1**	**7.8**	**8.3**
300	Fluoride	0.6833	mg/l	**0.62**	**0.54**	**0.58**	**0.57**	**0.67 J+**	**0.61**	**0.51**	**0.53**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**7.7 J**	**7.2 J**	**7.3 J**	**7.5 J**	**7.3 J**	**7.3 J**	**7.1 J**	**7.3 J**
300	Sulfate	283	mg/l	**48.1**	**46.1**	**43.9**	**55.8**	**44.8**	**40.2**	**35.8**	**34.7**
2540 C	Total Dissolved Solids	869.6	mg/l	**516**	**398**	**533**	**542**	**531**	**509**	**493**	**519**
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.015 U	0.015 U	**0.00016 J**	**0.0001 J**	**0.00009 J**	0.001 U
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Barium	--	mg/l	**0.215**	**0.202**	**0.22**	**0.208**	**0.19**	**0.207**	**0.205**	**0.212**
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Cobalt	--	mg/l	0.005 U	0.005 U	0.005 U	**0.00092 J**	0.005 U	0.005 U	0.005 U	**0.0013 J**
300	Fluoride	--	mg/l	**0.62**	**0.54**	**0.58**	**0.57**	**0.67 J+**	**0.61**	**0.51**	**0.53**
6010	Lead	--	mg/l	0.005 U	0.005 U	**0.004 J**	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Lithium	--	mg/l	**0.0361**	**0.0342**	**0.0664**	**0.046**	**0.0369**	**0.0338**	**0.032**	**0.0313**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	**0.0072 J**	**0.0067 J**	**0.0063 J**	**0.0073 J**	**0.0059 J**	**0.0065 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.001 U	0.001 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**1.51 ± 1.07 J**	**1.76 ± 0.922 J**	**0.708± 0.996 J**	**1.07 ± 0.871**	**1.41 ± 0.834 J**	**1.61 ± 1.05 J**	**1.34 ± 0.989 J**	**3.65 ± 1.99**
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	0.075 U	0.075 U	**0.0282 J**	**0.0995**	**0.0286 J**	0.1 U	0.05 U	0.05 U
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	10 U	10 U	10 U	10 U	10 U	**7.7 J**	10 U	10 U
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.005 U	**0.003 J**	0.01 U	0.010 U	**0.004 J**	0.010 U	0.01 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0058 JU
6010	Iron	1.506	mg/l	**0.15**	**0.144**	**0.149**	**0.0706**	**0.0514**	0.05 U	**0.017 J**	0.0264 JU
6010	Magnesium	43	mg/l	**39.6**	**40.8**	**40.6**	**38.6**	**40.9**	**38.7**	**38**	**37.1**
6010	Manganese	0.9526	mg/l	**0.371**	**0.341**	**0.302**	**0.0933**	**0.103**	**0.229**	**0.302**	**0.427**
6010	Nickel	0.0317	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	**0.002 J**	0.005 U	**0.0024 J**	**0.004 J**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	**32.8**	**33.3**	**38.1**	**34.7**	**36.3**	**39.4**	**42.6**	**45**
2340B	Total Hardness	659	mg/l	**448**	**461**	**459**	**422**	**453**	**449**	**434**	**414**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	**1.1**	1.0 U	**0.93 J**	**0.89 J**	**0.8 J**	**0.7 J**	**0.8 J**	**0.85 J**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	0.1 U	**0.016 J**	**0.0235 J**	**0.0332 J**	**0.0642 J**	**0.0404 J**	0.1 U	0.1 U
6010	Zinc	0.603	mg/l	0.05 U	0.05 U	**0.0041 J**	**0.0035 J**	**0.0037 J**	0.05 U	0.05 U	0.05 U

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-4 12/21/2017 60260933001	MW-4 2/22/2018 60264511006	MW-4 4/25/2018 60269085005	MW-4 6/28/2018 60273890005	MW-4 8/22/2018 60278591001	MW-4 10/24/2018 60284690001	MW-4 12/19/2018 60290219005	MW-4 3/14/2019 60296854012
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	˚C	**14.66**	**13.30**	**15.77**	**16.54**	**16.4**	**15.29**	**13.98**	**12.85**
In Situ (Field)	Conductivity	NA	mS/cm	**0.776**	**0.934**	**0.886**	**0.818**	**0.776**	**0.891**	**0.783**	**0.18**
In Situ (Field)	pH	NA	s.u.	**6.62**	**6.82**	**7.7**	**6.59**	**7.79**	**7.25**	**6.68**	**6.68**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**34**	**15**	**-29**	**-1**	**137**	**53**	**24**	**1**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.44**	**1.15**	**0.00**	**0.20**	**1.11**	**0.15**	**0.00**	**0.00**
In Situ (Field)	Turbidity	NA	NTUs	**2.4**	**0.9**	**0.1**	**4.9**	**0.3**	**0.0**	**0.0**	**20.4**
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	0.1 U	0.1 U	**0.0508 J**	**0.0553 J**	**0.0687 J**	**0.0512 J**	**0.0445 J**	0.1 U
6010	Calcium	196	mg/l	**124**	**123**	**122**	**112**	**129**	**118**	**120**	**31**
300	Chloride	73.2	mg/l	**24.0**	**24.9**	**26.4**	**26.3**	**26.3**	**29.4**	**29.7**	**1.8**
300	Fluoride	0.6833	mg/l	**0.58**	**0.51**	**0.53**	**0.58**	**0.53**	**0.56**	**0.42**	**0.081 J**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**7.4 J**	**7.0 J**	**7.1 J**	**7.4 J**	**7.1 J**	**7.6 J**	**7.0 J**	**7.0 J**
300	Sulfate	283	mg/l	**92.3**	**85.5**	**83.1**	**89.1**	**92.7**	**84.1**	**83.9**	**4.1**
2540 C	Total Dissolved Solids	869.6	mg/l	**593**	**419**	**600**	**618**	**610**	**576**	**565**	**160**
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.015 U	0.015 U	0.001 U	0.001 U	0.001 U	0.00026 JU
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	**0.006 J**	0.01 U	0.01 U	0.01 U	0.01 U
6010	Barium	--	mg/l	**0.106**	**0.0936**	**0.09**	**0.111**	**0.08**	**0.0824**	**0.0754**	**0.0514**
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	**0.00028 J**
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.00051 JU	0.005 U	**0.00073 J**
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Cobalt	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
300	Fluoride	--	mg/l	**0.58**	**0.51**	**0.53**	**0.58**	**0.53**	**0.56**	**0.42**	**0.081 J**
6010	Lead	--	mg/l	0.005 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.0056 J**
6010	Lithium	--	mg/l	**0.0386**	**0.0336**	**0.0592**	**0.034**	**0.0594**	**0.0478**	**0.0415**	**0.0092 J**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	**0.0036 J**	**0.0033 J**	**0.0033 J**	**0.0037 J**	**0.0032 J**	**0.0017 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.001 U	0.00015 JU
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**0.755 ± 0.923 J**	**1.04 ± 0.784 J**	**0.593 ± 0.851 J**	**0.724 ± 0.836**	**0.887 ± 0.879 J**	**1.73 ± 1.12 J**	**1.16 ± 1.05 J**	**1.69 ± 1.39 J**
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	**0.0821**	**0.075 U**	**0.075 U**	**0.099**	**0.0139 J**	0.1 U	0.0152 JU	**0.642**
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	**60.8**
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.005 U	0.01 UJ	0.01 U	0.010 U	**0.004 J**	0.010 U	0.01 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Iron	1.506	mg/l	**0.426**	**0.449**	**0.402**	**0.492**	**0.101**	**0.244**	**0.175**	**0.5**
6010	Magnesium	43	mg/l	**39.9**	**39.6**	**39.2**	**38.3**	**40.3**	**37.4**	**38.2**	**4.44**
6010	Manganese	0.9526	mg/l	**0.266**	**0.215**	**0.178**	**0.213**	**0.0764**	**0.1**	**0.106**	**0.0826**
6010	Nickel	0.0317	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	**0.0018 J**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	**44.8**	**45.5**	**49**	**47.3**	**48**	**49.9**	**50**	**2.99**
2340B	Total Hardness	659	mg/l	**473**	**469**	**467**	**439**	**469**	**451**	**458**	**96.4**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	1.0 U	1.0 U	**0.7 J**	**0.8 J**	**0.8 J**	1.0 U	**0.8 J**	**16.3**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	**0.0162**	**0.0174 J**	**0.0289 J**	**0.0453 J**	**0.16**	**0.0807 J**	0.1 U	0.1 U
6010	Zinc	0.603	mg/l	0.05 U	0.05 U	0.05 U	0.05 U	**0.0046 J**	**0.0036 J**	0.05 U	**0.172**

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-5 12/20/2017 60260827003	MW-5 2/22/2018 60264511005	MW-5 4/24/2018 60269085004	MW-5 6/27/2018 60273890004	MW-5 8/21/2018 60278444004	MW-5 10/23/2018 60284534004	MW-5 12/18/2018 60290219004	MW-5 3/12/2019 60296854004
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	˚C	**15.37**	**12.83**	**18.10**	**18.34**	**18.53**	**17.21**	**15.72**	**14.25**
In Situ (Field)	Conductivity	NA	mS/cm	**0.633**	**1.09**	**0.939**	**0.808**	**0.959**	**0.915**	**0.767**	**0.892**
In Situ (Field)	pH	NA	s.u.	**7.24**	**6.97**	**7.76**	**6.21**	**8.08**	**7.26**	**6.86**	**7.11**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**120**	**109**	**78**	**82**	**90**	**62**	**51**	**95**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.41**	**0.76**	**0.44**	**0.54**	**0.59**	**0.14**	**0.00**	**2.08**
In Situ (Field)	Turbidity	NA	NTUs	**0.0**	**1.9**	**0.0**	**0.0**	**22.6**	**1.7**	**1.0**	**1.6**
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	**0.292**	**0.284**	**0.24**	**0.226**	**0.415**	**0.28**	**0.236**	**0.255**
6010	Calcium	196	mg/l	**85.6**	**113**	**108**	**99**	**136**	**116**	**114**	**118**
300	Chloride	73.2	mg/l	**19.5**	**73.2**	**67.9**	**52.2**	**69.4**	**42.1**	**35.4**	**35.5**
300	Fluoride	0.6833	mg/l	**0.51**	**0.39**	**0.54**	**0.57**	**0.12 J**	**0.56**	**0.47**	**0.46**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**8.0 J**	**7.4 J**	**7.5 J**	**7.7 J**	**7.4 J**	**7.4 J**	**7.3 J**	**7.4 J**
300	Sulfate	283	mg/l	**95.8**	**185**	**152**	**141**	**277**	**157**	**114**	**125**
2540 C	Total Dissolved Solids	869.6	mg/l	**542**	**541**	**657**	**625**	**806**	**1340**	**586**	**628**
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.015 U	0.015 U	**0.00027 J**	**0.00015 J**	0.001 U	0.001 U
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.005 J**
6010	Barium	--	mg/l	**0.657**	**0.198**	**0.215**	**0.227**	**0.209**	**0.254**	**0.197**	**0.184**
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.0003 JU	0.001 U	0.001 U	0.001 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	**0.00068 J**	0.005 U	0.005 U	0.005 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Cobalt	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
300	Fluoride	--	mg/l	**0.51**	**0.39**	**0.54**	**0.57**	**0.12 J**	**0.56**	**0.47**	**0.46**
6010	Lead	--	mg/l	0.005 U	0.005 U	0.01 U	0.01 U	**0.0052 J**	0.01 U	0.01 U	0.01 U
6010	Lithium	--	mg/l	**0.0443**	**0.0468**	**0.0642**	**0.0426**	**0.0839**	**0.0456**	**0.0429**	**0.0422**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	**0.0072 J**	**0.0053 J**	**0.0193 J**	**0.0073 J**	**0.0057 J**	**0.004 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.001 U	0.001 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**1.36 ± 1.09 J**	**1.20 ± 0.789 J**	**1.18 ± 0.825 J**	**0.812 ± 0.788**	**1.23 ± 0.900 J**	**1.08 ± 0.980 J**	**1.34 ± 0.991 J**	**0.218 ± 1.15 J**
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	**0.075 U**	**0.084**	**0.075 U**	**0.106**	**0.207**	0.1 U	0.0191 JU	0.0488 JU
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	10 U	10 U	10 U	10 U	**4.2 J**	10 U	10 U	10 U
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.005 U	0.01 U	0.01 U	0.010 U	**0.007 J**	0.010 U	0.01 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	**0.0051 J**	0.01 U	0.01 U	0.0053 JU
6010	Iron	1.506	mg/l	**0.299**	**0.131**	**0.0698**	**0.0538**	**0.375**	**0.28**	**0.0643**	**0.171**
6010	Magnesium	43	mg/l	**23.8**	**27.6**	**28.1**	**28.9**	**29.6**	**30.3**	**30.7**	**30.1**
6010	Manganese	0.9526	mg/l	**0.112**	**0.0292**	**0.0563**	**0.0313**	**0.0728**	**0.058**	**0.0467**	**0.0296**
6010	Nickel	0.0317	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	**0.0029 J**	0.005 U	0.005 U	**0.0015 J**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	**31.5**	**107**	**87.6**	**72.2**	**74.4**	**64.4**	**60.5**	**64**
2340B	Total Hardness	659	mg/l	**312**	**397**	**385**	**366**	**445**	**414**	**410**	**409**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	**1.8**	**1.6**	**1.2**	**1.2**	**1.9**	**1.2**	**1.2**	**1.5**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	**0.0196**	**0.1 U**	**0.045 J**	**0.0327 J**	**0.310**	**0.255**	**0.015 J**	0.1 U
6010	Zinc	0.603	mg/l	0.05 U	0.05 U	0.05 U	0.05 U	**0.141**	**0.0196 J**	0.0102 JU	**0.017 J**

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-6 12/20/2017 60260827001	MW-6 2/21/2018 60264511002	MW-6 4/24/2018 60269085001	MW-6 6/27/2018 60273890001	MW-6 8/21/2018 60278444001	MW-6 10/23/2018 60284534001	MW-6 12/18/2018 60290219001	MW-6 3/12/2019 60296854001
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	°C	**15.50**	**14.15**	**18.36**	**17.76**	**17.91**	**16.97**	**15.78**	**14.45**
In Situ (Field)	Conductivity	NA	mS/cm	**0.879**	**1.11**	**1.08**	**0.587**	**0.86**	**1.08**	**0.861**	**0.753**
In Situ (Field)	pH	NA	s.u.	**6.62**	**6.74**	**7.38**	**6.97**	**7.63**	**6.72**	**6.87**	**7.1**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**99**	**46**	**56**	**141**	**30**	**50**	**-27**	**48**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.25**	**0**	**0.00**	**2.07**	**0.59**	**1.80**	**0**	**0.78**
In Situ (Field)	Turbidity	NA	NTUs	**0.0**	**5.0**	**0.0**	**162.0**	**17.4**	**4.7**	**35.5**	**130.0**
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	0.1 U	**0.11**	**0.0941 J**	**0.0466 J**	**0.0813 J**	**0.087 J**	**0.0727 J**	**0.0559 J**
6010	Calcium	196	mg/l	**180**	**196**	**195**	**104**	**182**	**191**	**162**	**130**
300	Chloride	73.2	mg/l	**22.8**	**23.3**	**23.8**	**10.8**	**24.5**	**31.0**	**34.1**	**29.9**
300	Fluoride	0.6833	mg/l	**0.42**	**0.32**	**0.42**	**0.25**	**0.42**	**0.32**	**0.37**	**0.29**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**7.7 J**	**6.8 J**	**7.3 J**	**7.6 J**	**6.9 J**	**7.2 J**	**6.8 J**	**6.9 J**
300	Sulfate	283	mg/l	**207**	**201**	**203**	**96.2**	**197**	**219**	**196**	**139**
2540 C	Total Dissolved Solids	869.6	mg/l	**854**	**852**	**841**	**465**	**813**	**884**	**1500**	**608**
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.015 U	0.015 U	0.001 U	0.001 U	**0.00017 J**	0.00017 JU
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.007 J**	0.01 U	0.01 U
6010	Barium	--	mg/l	**0.0867**	**0.085**	**0.0841**	**0.0825**	**0.081**	**0.076**	**0.0698**	**0.0711**
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.00042 JU	0.00062 JU	0.001 U	0.001 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	**0.00072** J	0.00064 JU	0.005 U	0.005 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	**0.0046 J**	0.005 U	0.005 U	**0.0011 J**	0.005 U
6010	Cobalt	--	mg/l	0.005 U	0.005 U	0.005 U	**0.003 J**	**0.0043 J**	**0.0025 J**	**0.0018 J**	**0.0019 J**
300	Fluoride	--	mg/l	**0.42**	**0.32**	**0.42**	**0.25**	**0.42**	**0.32**	**0.37**	**0.29**
6010	Lead	--	mg/l	0.005 U	0.005 U	0.01 U	**0.0047 J**	**0.0032 J**	0.01 U	0.01 U	**0.0045 J**
6010	Lithium	--	mg/l	**0.056**	**0.0551**	**0.0913**	**0.0227**	**0.0541 J**	**0.0544**	**0.0457**	**0.0376**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	**0.003 J**	**0.0025 J**	0.0032 JU	**0.002 J**	**0.0027 J**	**0.0016 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.001 U	0.001 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**1.82 ± 1.104 J**	**2.66 ± 1.28 J**	**1.72 ± 1.05 J**	**2.14 ± 1.34**	**2.39 ± 1.31 J**	**2.06 ± 1.20 J**	**1.82 ± 1.16 J**	**1.33 ± 1.68 J**
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	0.075 U	0.075 U	0.075 U	**1.7**	**0.112**	**0.0427 J**	**0.568**	**1.83**
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	**11.9**	10 U	10 U	**8.5 J**	**5.4 J**	**6.2 J**	10 U	**6.2 J**
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.005 U	0.01 U	0.01 U	0.010 UJ	0.01 U	0.01 U	0.01 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	**0.0052 J**	**0.0045 J**	0.01 U	0.01 U	0.0079 JU
6010	Iron	1.506	mg/l	**0.24**	**0.447**	**0.112**	**2.25**	**0.565**	**1.06**	**0.684**	**0.496**
6010	Magnesium	43	mg/l	**37.0**	**41.5**	**41.2**	**18.2**	**36**	**37.8**	**32.1**	**25.1**
6010	Manganese	0.9526	mg/l	**0.938**	**1.03**	**0.673**	**0.398**	**0.921**	**0.796**	**0.672**	**0.56**
6010	Nickel	0.0317	mg/l	**0.0108**	**0.0073**	**0.0087**	**0.0071**	**0.0067**	**0.005**	**0.0048 J**	**0.0046 J**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	**44.2**	**47.5**	**49.2**	**18.5**	**49.1**	**51.5**	**43.7**	**42**
2340B	Total Hardness	659	mg/l	**602**	**659**	**656**	**336**	**585**	**621**	**542**	**422**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	**2.0**	**1.8**	**2.0**	**1.7**	**2.8**	**2.7**	**2.8**	**2.1**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	**0.0277**	**0.0161 J**	0.1 U	**0.0192 J**	**0.30**	**0.066 J**	**0.016 J**	0.1 U
6010	Zinc	0.603	mg/l	0.05 U	0.05 U	**0.0043 J**	**0.0855**	**0.0155 J**	**0.0124 J**	0.0269 JU	**0.0287 J**

Notes:

°C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-7 12/20/2017 60260827002	MW-7 2/21/2018 60264511004	MW-7 4/24/2018 60269085002	MW-7 6/27/2018 60273890002	MW-7 8/21/2018 60278444002	MW-7 10/23/2018 60284534002	MW-7 12/18/2018 60290219002	MW-7 3/12/2019 60296854002
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	˚C	15.93	13.29	17.35	17.67	17.96	16.22	16.5	13.66
In Situ (Field)	Conductivity	NA	mS/cm	0.821	1.22	0.898	0.839	0.856	0.964	0.822	0.887
In Situ (Field)	pH	NA	s.u.	6.93	7.11	7.65	6.95	7.99	7.15	6.9	7.3
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	101	92	-16	-7	10	17	-53	-22
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	0.52	1.44	0.00	0.34	0.00	0.04	3.21	0.00
In Situ (Field)	Turbidity	NA	NTUs	53.2	22.2	16.9	10.2	6.8	0.0	2.2	15.9
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	0.1 U	0.145	0.184	0.206	0.248	0.221	0.221	0.184
6010	Calcium	196	mg/l	153	97.9	123	129	145	141	145	127
300	Chloride	73.2	mg/l	42.2	22.2	33.1	30.6	71	47.1	43.9	48.7
300	Fluoride	0.6833	mg/l	0.48	0.29	0.52	0.53	0.082 J	0.48	0.54	0.49
SM4500-H+B	pH	7.734 - 6.853	s.u.	7.8 J	7.0 J	7.3 J	7.5 J	7.2 J	7.3 J	7.1 J	7.1 J
300	Sulfate	283	mg/l	285	144	211	246	217	182	193	179
2540 C	Total Dissolved Solids	869.6	mg/l	810	478	731	714	779	746	449	720
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.015 U	0.015 U	0.00021 J	0.000082 J	0.000096 J	0.000098 JU
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Barium	--	mg/l	0.005 U	0.0805	0.0823	0.079	0.0878	0.0876	0.0819	0.0811
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.00061 JU	0.00054 JU	0.001 U	0.001 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.00062 J	0.00073 JU	0.005 U	0.005 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Cobalt	--	mg/l	0.005 U	0.005 U	0.0017 J	0.0015 J	0.005 U	0.00095 J	0.005 U	0.005 U
300	Fluoride	--	mg/l	0.48	0.29	0.52	0.53	0.082 J	0.48	0.00054	0.49
6010	Lead	--	mg/l	0.005 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Lithium	--	mg/l	0.0483	0.0392	0.0703	0.0466	0.0601	0.0462	0.045	0.0456
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	0.007 J	0.0079 J	0.0094 J	0.0093 J	0.0081 J	0.0067 J
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.001 U	0.001 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	1.16 ± 1.03 J	0.918 ± 0.830 J	1.13 ± 0.848 J	0.922 ± 0.870	1.55 ± 1.04 J	1.07 ± 0.964 J	1.30 ± 0.952 J	0.387 ± 1.13 J
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	0.075 U	0.319	0.0556 J	0.101	0.0244 J	0.1 U	0.0305 JU	0.18
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	10.5	10 U	3.2 J	10 U	10 U	10 U	10 U	7 J
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.005 U	0.01 U	0.01 U	0.010 U	0.01 U	0.01 U	0.01 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.008 JU
6010	Iron	1.506	mg/l	1.33	0.946	0.836	0.922	0.885	1.08	1.18	1.64
6010	Magnesium	43	mg/l	38.2	23.4	29.3	33.7	32.7	35	35.8	31.4
6010	Manganese	0.9526	mg/l	0.876	0.450	0.43	0.356	0.289	0.568	0.47	0.282
6010	Nickel	0.0317	mg/l	0.0134	0.0052	0.0044 J	0.0042 J	0.0045 J	0.0072	0.0054	0.0035 J
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	0.5 U	35.3	44.4	50.8	75.1	61.2	58.5	57.2
2340B	Total Hardness	659	mg/l	539	341	428	461	475	504	505	434
5310C	Total Organic Carbon (TOC)	2.479	mg/l	1.4	1.6	1.4	1.2	1.2	0.9 J	1.0	1.3
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	0.237	0.0194 J	0.0239 J	0.028 J	0.399	0.189	0.1 U	0.1 U
6010	Zinc	0.603	mg/l	0.05 U	0.0823	0.603	0.131	0.166	0.0874	0.0558	0.0654

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	MW-8 12/21/2017 60260936002	MW-8 2/23/2018 60264569002	MW-8 4/25/2018 60269085009	MW-8 6/29/2018 60273890010	MW-8 8/22/2018 60278591005	MW-8 10/24/2018 60284690006	MW-8 12/19/2018 60290219009	MW-8 3/13/2019 60296854008
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	°C	**14.81**	**12.86**	**15.03**	**18.52**	**18.64**	**17.6**	**15.86**	**14.01**
In Situ (Field)	Conductivity	NA	mS/cm	**3.09**	**3.39**	**3.28**	**2.92**	**1.69**	**2.92**	**1.58**	**1.02**
In Situ (Field)	pH	NA	s.u.	**6.33**	**6.61**	**6.96**	**6.57**	**6.38**	**6.65**	**6.87**	**6.62**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**51**	**37**	**-11**	**-2**	**19**	**32**	**3**	**42**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.61**	**0.00**	**0.00**	**0.16**	**0.00**	**8.75**	**0.23**	**6.04**
In Situ (Field)	Turbidity	NA	NTUs	**0.0**	**0.0**	**0.0**	**3.2**	**0.0**	**0.0**	**0.0**	**279.0**
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	**0.455**	**0.390**	**0.308**	**0.384**	**0.418**	**0.386**	**0.422**	**0.213**
6010	Calcium	196	mg/l	**255**	**268**	**288**	**248**	**270**	**272**	**261**	**210**
300	Chloride	73.2	mg/l	**74.9**	**70.6**	**12.9**	**68.6**	**71.2**	**68.3**	**75.4**	**43.2**
300	Fluoride	0.6833	mg/l	**0.29**	**0.22**	**0.21**	**0.26**	**0.31**	**0.39**	0.2 U	**0.16 J**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**7.6 J**	**7.0 J**	**7.4 J**	**7.8 J**	**6.9 J**	**6.9 J**	**7 J**	**6.9 J**
300	Sulfate	283	mg/l	**495**	**453**	**174**	**807**	**529**	**1100**	**532**	**390**
2540 C	Total Dissolved Solids	869.6	mg/l	**1180**	**1160**	**1570**	**1870**	**1300**	**1420**	**1240**	**896**
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.015 U	0.015 U	0.001 U	0.001 U	0.001 U	0.00011 JU
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	**0.0063 J**	0.01 U	0.01 U	0.01 U
6010	Barium	--	mg/l	**0.025**	**0.0224**	**0.0214**	**0.022**	**0.0211**	**0.0223**	**0.0219**	**0.0412**
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00033 JU	0.001 U	0.001 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Cobalt	--	mg/l	0.005 U	0.005 U	**0.0011 J**	**0.001 J**	0.005 U	0.005 U	0.005 U	**0.0014 J**
300	Fluoride	--	mg/l	**0.29**	**0.22**	**0.21**	**0.26**	**0.31**	**0.39**	0.20 U	**0.16 J**
6010	Lead	--	mg/l	0.005 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.0047 J**
6010	Lithium	--	mg/l	**0.0313**	**0.025**	**0.0807**	**0.0272**	**0.0283**	**0.0282**	**0.0243**	**0.0239**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	**0.0012 J**	**0.0016 J**	0.02 U	**0.0013 J**	0.02 U	**0.0012 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.001 U	0.001 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**0.607 ± 0.904 J**	**1.16 ± 0.903 J**	**0.742 ± 0.871 J**	**0.291 ± 0.702**	**1.83 ± 1.02 J**	**1.24 ± 0.925 J**	**1.51 ± 0.969 J**	**1.30 ± 1.16 J**
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	0.075 U	0.075 U	0.075 U	**0.0726 J**	0.05 U	0.1 U	0.0108 JU	**1.91**
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	10 U	10 U	10 U	**3.8 J**	10 U	10 U	10 U	**8.2 J**
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	**0.004 J**	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.005 U	**0.004 J**	0.01 U	0.01 U	**0.008 J**	0.01 U	0.01 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0089 JU
6010	Iron	1.506	mg/l	**0.549**	**0.686**	**0.925**	**0.718**	**0.959**	**0.959**	**0.85**	**2.12**
6010	Magnesium	43	mg/l	**37**	**39.4**	**42.7**	**38.8**	**41**	**39.3**	**38**	**28.8**
6010	Manganese	0.9526	mg/l	**1.05**	**0.95**	**1.22**	**0.987**	**0.996**	**1.08**	**0.888**	**1.04**
6010	Nickel	0.0317	mg/l	**0.0073**	**0.0057**	**0.0054**	**0.0054**	**0.0055**	**0.005**	**0.0052**	**0.0069**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	**77.5**	**76.3**	**76.3**	**77.4**	**76.3**	**78.4**	**76**	**50.5**
2340B	Total Hardness	659	mg/l	**790**	**883**	**894**	**778**	**829**	**853**	**807**	**629**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	**1.2**	**1.3**	**0.86 J**	**0.80 J**	**1.4**	**0.8 J**	**0.9 J**	**0.87 J**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	**0.0471**	**0.0303 J**	**0.0489 J**	**0.0659 J**	**0.147**	**0.0527 J**	**0.0202 J**	0.1 U
6010	Zinc	0.603	mg/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.0409 J**

Notes:

°C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	PZ-2 12/21/2017 60260933006	PZ-2 2/21/2018 60264511003	PZ-2 4/24/2018 60269085003	PZ-2 6/27/2018 60273890003	PZ-2 8/21/2018 60278444003	PZ-2 10/23/2018 60284534003	PZ-2 12/18/2018 60290219003	PZ-2 3/12/2019 60296854003
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	˚C	**16.32**	**11.88**	**15.69**	**18.38**	**19.51**	**18.55**	**16.03**	**12.45**
In Situ (Field)	Conductivity	NA	mS/cm	**1.55**	**1.62**	**1.53**	**1.59**	**1.76**	**1.8**	**1.64**	**1.67**
In Situ (Field)	pH	NA	s.u.	**6.29**	**6.90**	**7.12**	**5.64**	**7.44**	**6.48**	**6.54**	**6.54**
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	**78**	**100**	**40**	**50**	**57**	**70**	**37**	**33**
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	**0.52**	**0.23**	**6.25**	**3.5**	**4.60**	**0.15**	**0.40**	**1.60**
In Situ (Field)	Turbidity	NA	NTUs	**0.0**	**1.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	**0.811**	**0.732**	**0.622**	**0.627**	**0.737**	**0.809**	**0.702**	**0.578**
6010	Calcium	196	mg/l	**196**	**196**	**219**	**202**	**227**	**221**	**216**	**216**
300	Chloride	73.2	mg/l	**129**	**101**	**118**	**207**	**460**	**187**	**178**	**177**
300	Fluoride	0.6833	mg/l	**0.49**	**0.35**	**0.44**	**0.49**	**0.13 J**	**0.5**	**0.36**	**0.37**
SM4500-H+B	pH	7.734 - 6.853	s.u.	**7.9 J**	**6.8 J**	**6.8 J**	**7.2 J**	**6.8 J**	**6.9 J**	**6.8 J**	**6.8 J**
300	Sulfate	283	mg/l	**318**	**294**	**317**	**351**	**828**	**335**	**326**	**329**
2540 C	Total Dissolved Solids	869.6	mg/l	**987**	**975**	**1120**	**1240**	**1810**	**1180**	**1220**	**1160**
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.01 U	0.015 U	0.015 U	**0.00023 J**	**0.00011 J**	**0.000079 J**	0.001 U
6010	Arsenic	--	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Barium	--	mg/l	**0.0525**	**0.0454**	**0.0476**	**0.0582**	**0.0615**	**0.0566**	**0.0528**	**0.0463**
6010	Beryllium	--	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.00059 JU	0.00044 JU	0.001 U	0.001 U
6010	Cadmium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.00084 JU	0.005 U	0.005 U
6010	Chromium	--	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
6010	Cobalt	--	mg/l	0.005 U	0.005 U	0.005 U	**0.0014 J**	0.005 U	**0.0011 J**	0.005 U	0.005 U
300	Fluoride	--	mg/l	**0.49**	**0.35**	**0.44**	**0.49**	**0.13 J**	**0.5**	**0.36**	**0.37**
6010	Lead	--	mg/l	0.005 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
6010	Lithium	--	mg/l	**0.0116**	0.01 U	**0.05**	**0.0076 J**	**0.0125**	**0.013**	**0.0097 J**	**0.0124**
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.02 U	0.02 U	**0.0012 J**	**0.0015 J**	0.0028 JU	**0.0017 J**	**0.0015 J**	**0.0016 J**
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	**0.0071 J**	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.02 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.001 U	0.001 U
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	**0.666 ± 0.893 J**	**0.201 ± 0.747 J**	**0.000 ± 0.743 J**	**0.391 ± 0.740**	**1.12 ± 0.923 J**	**1.87 ± 1.10 J**	**1.12 ± 0.968 J**	**0.0874 ± 1.14 J**
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	0.075 U	0.075 U	0.075 U	**0.074 J**	**0.0227 J**	0.1 U	0.03 JU	0.0291 JU
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	**12.8**	**10 U**	**7.7 J**	**17.4**	**22.1**	**17**	**13.8**	**8.6 J**
Calculate 6010/7196	Chromium III	0.01	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.010 U	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.01 U	0.005 UJ	0.01 U	0.01 U	0.010 U	**0.006 J**	0.01 U	0.01 U
6010	Copper	0.008	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0074 JU
6010	Iron	1.506	mg/l	**0.158**	**0.218**	**0.342**	**0.38**	**0.401**	**0.431**	**0.318**	**0.437**
6010	Magnesium	43	mg/l	**42.7**	**41.2**	**43.1**	**42.1**	**43**	**41.6**	**43**	**42.5**
6010	Manganese	0.9526	mg/l	**1.11**	**0.412**	**0.419**	**0.403**	**0.48**	**0.511**	**0.384**	**0.378**
6010	Nickel	0.0317	mg/l	**0.0074**	**0.0056**	**0.0046 J**	**0.0039 J**	**0.0046 J**	**0.0052**	**0.0051**	**0.0042 J**
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	**99.7**	**91.1**	**97.9**	**127**	**136**	**127**	**122**	**120**
2340B	Total Hardness	659	mg/l	**665**	**658**	**725**	**678**	**725**	**719**	**716**	**702**
5310C	Total Organic Carbon (TOC)	2.479	mg/l	**2.6**	**2.2**	**1.8**	**1.8**	**4.7**	**2.5**	**2.3**	**2.2**
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	**0.0593**	**0.0451 J**	**0.075 J**	**0.0965 J**	**0.645**	**0.452**	**0.0606 J**	49.8 JU
6010	Zinc	0.603	mg/l	0.05 U	0.05 U	**0.0064 J**	0.05 U	**0.0059 J**	**0.0077 J**	0.0056 JU	**0.0054 J**

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

Table 3-9 (continued)
Summary December 2017 Analytical Results: December 2017 - March 2019
Inactive Ash Pond (More's Lake)
Columbia Municipal Power Plant - Columbia, MO

		Calculated Background Limits	Sample Location Sample Date Lab ID	Pond Surface Water 2/20/2018 60264375001	Pond Surface Water 4/26/2018 60269085011	Pond* 5/8/2018 60269871001	Pond 6/29/2018 60273890011	Pond SW 8/23/2018 60278591007	Pond SW 10/25/2018 60284830002	Pond SW 12/20/2018 60290219012	Pond SW 3/14/2019 60296854010
Analytical Method	**Analyte**		**Unit**								
Field Water Quality Parameters											
In Situ (Field)	Temperature	NA	˚C	12.7	13.4	20.1	29.86	21.17	13.94	6.54	8.37
In Situ (Field)	Conductivity	NA	mS/cm	2.01	3.01	1.79	0.828	1.22	1.39	0.62	0.48
In Situ (Field)	pH	NA	s.u.	6.03	7.62	7.6	7.7	7.93	7.67	7.87	8.1
In Situ (Field)	Oxidation-Reduction Potential (ORP)	NA	mV	168	162	na	-12	161	173	149	195
In Situ (Field)	Dissolved Oxygen (DO)	NA	mg/L	na	11.35	na	10.01	7.95	9.05	12.65	12.29
In Situ (Field)	Turbidity	NA	NTUs	40.4	225.0	na	25.7	55.2	0.0	20.8	77.4
Appendix III - Detection Monitoring											
6010	Boron	0.415	mg/l	1.43	5.0	4.2	1.34	2.24	2.71	0.764	0.433
6010	Calcium	196	mg/l	169	247	133	78.1	111	139	87.5	60.4
300	Chloride	73.2	mg/l	195	439	448	87.1	123	184	31.8	26
300	Fluoride	0.6833	mg/l	2.2	1.1	1.1	0.71	1.2	0.86	0.49	0.48
SM4500-H+B	pH	7.734 - 6.853	s.u.	8.4 J	7.7 J	8.3 J	8.6 J	8 J	7.9 J	8.2 J	7.8 J
300	Sulfate	283	mg/l	765	707	528	255	333	335	231	29.6
2540 C	Total Dissolved Solids	869.6	mg/l	1520	2540	1580	592	837	1170 J	475	366
Appendix IV - Assessment Monitoring											
6010	Antimony	--	mg/l	0.01 U	0.0071 J	0.0065 U	0.015 U	0.001	0.00027 J	0.00031 J	0.0003 JU
6010	Arsenic	--	mg/l	0.0208	0.0336	0.0293	0.01 U	0.0078 J	0.01 U	0.01 U	0.01 U
6010	Barium	--	mg/l	0.0878	0.256	0.157	0.0539	0.0956	0.0549	0.0583	0.0629
6010	Beryllium	--	mg/l	0.001 U	0.00076 J	0.0003 J	0.001 U	0.00021 J	0.00035 J	0.001 U	0.00051 J
6010	Cadmium	--	mg/l	0.005 U	0.002 J	0.0015 J	0.005 U	0.0017 J	0.00076 J	0.005 U	0.0011 J
6010	Chromium	--	mg/l	0.0174	0.0613	0.0243	0.002 J	0.027	0.005 U	0.005 U	0.0028 J
6010	Cobalt	--	mg/l	0.005 U	0.0107	0.0048 J	0.0013 J	0.0043 J	0.0032 J	0.005 U	0.00094 J
300	Fluoride	--	mg/l	2.2	1.1	1.1	0.71	1.2	0.86	0.49	0.48
6010	Lead	--	mg/l	0.0093	0.048	0.0282	0.01 U	0.0103	0.01 U	0.01 U	0.0045 J
6010	Lithium	--	mg/l	0.124	0.204	0.122	0.0299	0.0452	0.0297	0.0148	0.014
7470	Mercury	--	mg/l	0.0002 U	0.0002 U	0.00009 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
6010	Molybdenum	--	mg/l	0.487	0.316	0.281	0.129	0.163	0.0184 J	0.0128 J	0.0099 J
6010	Selenium	--	mg/l	0.015 U	0.015 U	0.0061 U	0.0161	0.015 U	0.015 U	0.0099 J	0.015 U
6010	Thallium	--	mg/l	0.02 U	0.001 U	0.00027 J	0.00016 J	0.00028 J	0.0005 U	0.00011 J	0.00011 JU
Calculated 903.1/904	Radium 226/228 Combined	--	pCi/L	1.15 ± 0.886 J	2.00 ± 1.18	0.772 ± 0.733	0.304 ± 0.724	0.730 ± 1.04 J	0.616 ± 0.758 J	0.438 ± 1.08 J	0.726 ± 1.38 J
MDNR Water Quality Parameters											
6010	Aluminum	1.878	mg/l	1.01	6.26	2.45	0.666	2.28	0.0736 J	1.16	2.2
410.4	Chemical Oxygen Demand (COD)	60.8	mg/l	36	88.2	122	8.3 J	9.6 J	17.7	11.7	8.6 J
Calculate 6010/7196	Chromium III	0.01	mg/l	0.017	0.061	0.024	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7196 / 3500-Cr B	Chromium VI	7.00E-03	mg/l	0.005 U	0.01 U	0.0022 U	0.01 U	0.027 U	0.01 U	0.01 U	0.01 U
6010	Copper	0.008	mg/l	0.137	0.0368	0.0182	0.0107	0.0111	0.01 U	0.01 U	0.0052 JU
6010	Iron	1.506	mg/l	1.17	6.8	2.51	0.746	2.2	0.439	0.386	0.432
6010	Magnesium	43	mg/l	70.1	71.1	46.2	18.4	33.4	41.6	18.9	13.1
6010	Manganese	0.9526	mg/l	0.0753	2.03	0.537	0.0248	0.122	0.598	0.161	0.0602
6010	Nickel	0.0317	mg/l	0.0103	0.0205	0.0133	0.0037 J	0.0102	0.0088	0.0026 J	0.0025 J
6010	Silver	0.007	mg/l	0.007 U	0.007 U	0.002 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
6010	Sodium	80.37	mg/l	215	287	278	76.3	102	99.2	33.8	24.6
2340B	Total Hardness	659	mg/l	712	910	523	271	422	495	297	207
5310C	Total Organic Carbon (TOC)	2.479	mg/l	6.7	1.9	3.9	2.4	2.9	0.78 J	2.4	2.7
9020B	Total Organic Halogens (TOX)	0.3946	mg/l	0.802	0.527	0.888	0.0472 J	0.206	0.0575 J	0.1 U	0.1 U
6010	Zinc	0.603	mg/l	0.261	0.199	0.0784	0.0318 J	0.0975	0.0146 J	0.0081 JU	0.019 J

* Note - Pond sample (collected 5/8/2018) was filtered by lab for Radium 226 & 228 analysis due to suspended solids/material present in the water sample that were not settling out (floating about and easily disturbed) and would interfere with the radium prep/analtyical methods.

Notes:

˚C = degree Celsius
BA = Bottom Ash
J = Result as an estimated value
J+ = Result qualified as estimated; biased high
JU = Result qualified as nondetect during data validation
mg/l = milligram per liter

mS/cm = millisiemens/meter
mV = millivolt
NA = Not Available
NM = Not Measured
NTU = Nephelometric Turbidity Units
pCi/L = picocurie per liter

s.u. = Standard Units
U = Non Detect at the identified concentration
UJ = Result qualified as estimated at the reporting limit during data validation
V = The sample concentration is too high to evaluate accurate spike recoveries
Field parameters measured during purging/sampling on December 20-22, 2017.
* = pH measurement was collected on 5/4/2016

APPENDIX A – MONITORING WELL BORING LOGS, CONSTRUCTION DIAGRAMS, AND DEVELOPMENT FORMS

Drilling Log

Project Name: HYDRO INV More's Lake	Project Number: 93647	Boring Number: MW-1
Ground Elevation:	Location: More's Lake	Page: 1 of 3
Air Monitoring Equipment: PID / LEL - 4 GAS		Total Footage: 43'

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	43	NA	3	NA

Drilling Company: Geotechnology	Driller(s): Patrick Hart
Drilling Rig: CME	Type of Sampler: Split spoon ~ 20'
Date: 5/23/17 To: 5/24/17	Field Observer(s): Lewis Turner LT

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
1	CLAY, some silt, very dark gray (10YR3/1) damp, medium plasticity, medium consistency.	CL	1, 1, 2	2/2						1446 START
2	CLAY, trace silt dark yellowish brown (10YR4/4) damp medium plasticity, stiff. mottling w/ brownish gray (10YR6/2). roots trace medium sand.	CL	3, 2, 2	2/2						PID=0.0 LEL=0 CO=0 O_2=20.9% H_2S=0
3			4							
4	Some oxidization veins black (10YR2/1)		8							
5			1, 2	2/2						1451
6	trace fine grain sand.		3, 5			1615 6-8' JARS 8-10' Bag				
7			1, 2, 5, 6	2/2		MW-1/ SB01				
8										
9			1, 2, 3, 7	2/2						1615
10	SHELBY TUBE		NA			1628 10-12' MW-1/ ST01				
11										
12	CLAY, trace silt, fine sand, gravel, yellowish brown (10YR5/4) damp, trace plasticity, stiff.	CL	2, 4, 7, 16	2/2						PID=0.0 LEL=0 CO=0 O_2=20.8% H_2S=0
13	6" sand lens fine grain, trace medium and fine gravel.									
14										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-2-1

Drilling Log Continuation

Boring Number	MW-1
Project Name	HYDRO INV More's Lake
Page	2 of 3
Project Number	93647
Date	5/23/17 - 5/24/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
14	CLAY, trace silt, fine to medium sand, fine gravel. Yellowish brown (10YR 5/4) grayish brown (10YR 5/2) mottling. black oxidization.	CL	7 8	2/2						1640
15			18 22							
16	Becomes yellowish brown (10YR 5/6) 0.1" sand lens.		2 5	1.5/2						
17	0.2" sand lens		9 15							
18	SAND, fine grain, light grayish brown (10YR 6/2) and dark yellowish brown (10YR 4/6) damp, loose, subangular, poorly graded.	SP	4 10	2/2						▽
19	Becomes some silt and clay CLAY with silt and fine sand. yellowish brown (10YR 5/4) moist, trace plasticity, medium consistency.	CL	15 23							wet 1655
20	Sand lenses throughout. (< 0.01" - 0.1") Sand is light brownish gray (10YR 6/2)		5 11	2/2						H_2S=0 PID=0.0 LEL=0 CO=0 O_2=20.9
21			17 31							1705 stop for day 5/23
22	2" sand lens wet.		8 14	2/2						0721 resume drilling 5/24
23			21 34							
24	SAND, fine to coarse, trace fine gravel. brown (10YR 5/3) damp, loose, subangular, well graded., top 1' is silty	SW	12 31	2/2						Chert fragments in split spoon. 0733
25			48 50							
26	CLAY, trace silt, trace sand and gravel. Yellowish brown (10YR 5/4) damp, trace plasticity, stiff. 0.1" sand lens	CL	21 36	2/2						
27			23 20							
28			5 12	2/2						
29			16 22							0747
30	No sample.									Auger grinding hard to advance Drill to 31'
31	CLAY, trace silt, some sand and gravel, yellowish brown (10YR 5/4) damp. trace plasticity, very stiff.	CL	12 14	1/1						
32										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	MW-1
Project Name	Hydro Inv More's Lake
Page	3 of 3
Project Number	93647
Date	5/24/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
32	SAND. Fine to coarse, trace fine gravel, brown (10YR 5/3) wet, loose, subangular, well graded.	SW	20	1.5/2		0810 32-34' MW-1/ SB02 Bag.				
			29							
33			50							Drive 3IN ID SS SS = 18" HARD Boring is wet.
	CLAY, trace silt, sand and gravel, yellowish brown (10YR 5/4) damp. trace plasticity. very stiff.	CL	NA							
34			8							
	CLAY, some fine to coarse sand. Fine gravel very dark greenish gray (10YR 3/10Y) damp trace plasticity stiff. to very stiff. 0.1" sand lens fine to medium grain.	CL	12	2/2						0817
35			16							
			21							
36			7							PID=0 LEL=0 CO=0 O_2=20.8% H_2S=0
			14	2/2						
37	37-38' with sand fine/medium trace coarse.		40							
			49							
38			6							
			14	1.5/2						
39			25							
			37							0834
40			10							
			34	2/2						
41	0.1" sand lens		39							
			43							
42	0.2" sand lens		10	1/1						
	1" SAND. fine sand.		15							0850 STOP
43	Bottom of Boring.									

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Project Name	HYDROENV INV MORES LAKE
Project Number	93647
Boring Number	SB-1
Page	1 of 3
Date	6/6/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
32	CONTINUED FROM MW-1 DRILLING LOG.									* CONTINUED FROM MW-1 DRILLING LOG. SEE LOG FOR INFO.
33										
34										
35										
36										
37										
38										
39										1410 HSA ADVANCE. 1427 15' OF HSA.
40										1441 BEGIN MUD ROTARY.
41										1540 AT 43' BEGIN SAMPLING
42										
43	CLAY, some silt and fine sand, very dark greenish gray (3/10Y GLEY1) damp, trace to medium plasticity, stiff - hard.		NA							1540 START 8 1/4" HSA TO 15' IN SEAL. MUD ROTARY DRILLING THROUGH AUGER. START LOGGING AT 43'
44			6	2/2						
45	less silt/sand. weathered shale. Becomes clay		19 30 41							
46	SHALE, light olive gray (5Y6/1) and olive gray (5Y4/1) highly weathered, trace plasticity. weak, blocky. damp. plastic when wet. some light brown (5YR5/6) and pale yellowish orange (10YR8/6) staining.	Sh	7 18 34 47	2/2						
47										
48			7 21 33 50	2/2						
49										
50.										1610

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

	Boring Number SB-1
Project Name HYDRO INV MORES LAKE	Page 2 of 3
Project Number 93647	Date 6/6-6/7/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
50	SHALE, light olive gray (5Y 6/1) and olive gray (5Y 4/1) highly weathered, trace to medium plasticity. damp, weak blocky.	Sh								1617 6/6/17 Switch rig over to rock core.
51	Several Limestone fragments in core cuttings.			2.0/5						1640 outer casing in, stop for day.
52	NO Recovery									0716 6/7/17 start Rock coring at 50'.
53										
54										Washing away Little recovery
55										0748
56	SHALE, greenish gray (5G 6/1), dusky yellow (5Y 6/4), and grayish red (10R 4/2) damp, weak, weathered, trace plasticity, blocky.	Sh		3.3/5						0755 Clay / Shale washing away w/water coring.
57										
58	NO Recovery									
59										
60	SANDSTONE. fine grain, weak.									0840
61	SHALE, greenish gray (5G 6/1) damp, weak, plastic. LIMESTONE w/shale intermixed, light olive gray (5Y 5/2) yellowish gray (5Y 7/2) weathered, shale partings. olive gray (5Y 4/1) greenish gray (5GY 4/1) shale parting. or 61.4. damp, weak sh. strong ls. Fossiliferous horn coral pyrite. Fine grain	Sh		3.5/5						0845
62	Shale parting. Stylolite									
63	NO Recovery.									
64										
65										0858
66	LIMESTONE w/shale partings, light olive gray (5Y 5/2) yellowish gray (5Y 7/2), weathered shale partings, Olive gray (5Y 4/1) greenish gray 5GY 4/1) Ls strong, sh weak plastic, damp. Fossiliferous stylolite. pyrite.	Sh Cherty		5/5						0905
67	Stylolite	Sh cherty								
68		Sh grav								

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Project Name	HYDRO INV MORRIS LAKE
Project Number	93647
Boring Number	SB-1
Page	3 of 3
Date	6/7/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
68	Limestone, light olive gray yellowish gray (5Y7/2) weathered shale partings olive gray (5Y4/1) damp. Ls. strong, sh weak plastic,	Ls								
69	sh partings and stylolites throughout. Chert nodules throughout/stylolites throughout.									
70										0935
		Cherty sh								0936
71		sh								
		sh								
72		sh		5/5						
		sh								
		Ls								
73		sh								
		Ls								
		Cherty sh								
74		sh								
		sh								
		Ls								0951
75		sh								
		Ls								1005
76		Fracture sh								
77		healed		5/5						
	SHALE, greenish grey (5G4/1) damp, weak to moderate, blocky, slightly plastic when wet.									
78										
79	Limestone, light olive grey (5Y7/2) olive grey (5Y4/1), damp, moderate to strong, non weathered, weak on stylolite.									
		stylolite Ls								1036
80	Bottom of Boring.									Boring abandoned

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log

Project Name: Hydro Inv. More's Lake	Project Number: 93647	Boring Number: MW-2
Ground Elevation:	Location: More's Lake	Page: 1 of 4
Air Monitoring Equipment: PID / LEL - Y gas		Total Footage: 53

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	53	0	1	NA

Drilling Company: Geotechnology	Driller(s): Patrick Hart
Drilling Rig: CME	Type of Sampler: Split spoon - 2'
Date: 5/22/17 To: 5/23/17	Field Observer(s): Lewis Turner

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
1	CLAY, some silt, very dark grayish brown (10YR 3/2) damp, medium plasticity, medium consistency, roots	CL	NA							1415 START
2	CLAY, trace silt, dark yellowish brown (10YR 4/4) mottling, damp, medium plasticity, medium consistency. trace medium sand.	CL	2 3 4 5	2/2						PID=0 LEL=0 CO=0 O_2=20.9% H_2S=0
3	light brownish gray mottling (10YR 6/2)									
4			2 3	2/2						
5	Oxidization coloration black (10YR 2/1) veins. trace fine grain sand.		5 7							1423
6			2			6-8 Sand 8-10 Clay MW-2/SB01				
7			3 3	2/2						
8			6							
9	CLAY, trace silt and sand, dark yellowish brown (10YR 6/4), damp, trace plasticity, stiff.	CL	2 3 4 6	2/2						1432
10	0.1" sand lens 0.5" sand lens trace gravel		4 10 14	2/2						
11										PID=0 LEL=0 CO=0 O_2=20.8% H_2S=0
12	SAND, some clay, dark yellowish brown (10YR 4/4) damp, fine grain, loose, subangular, poorly graded.	SP	14							
13	CLAY, trace silt and fine sand, yellowish brown (10YR 5/6) damp, trace plasticity, stiff. Some black veins oxidization.	CL	2 3 10 14	2/2						
14										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-2-1

Drilling Log Continuation

Project Name	Hydro Inv More's Lake
Project Number	93647
Boring Number	MW-2
Page	2 of 4
Date	5/22/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
14	CLAY. Some fine sand. yellowish brown (10YR5/6) damp, trace plasticity. stiff.	CL	7 21 23	2/2						1451
15	SAND, fine to medium grain trace gravel. Yellowish brown (10YR5/6) moist, dense to loose. Subangular, moderately graded.	SP/SW	24							▽
16			7 8 19 25	2/2						
17	2" some clay.									
18			6 10 20 26	2/2						
19	trace fine gravel.									
20			10 18 26 37	2/2						1502
21										PID=0 LEL=0 CO=0 O_2=20.8% H_2S=0 Boring is wet.
22	Trace clay 2.0".		16 11 13 20	2/2						
23	CLAY, trace silt, fine sand. gravel, dark yellowish brown (10YR4/6) damp, trace plasticity, stiff	CL								
24	Some pale brown (10YR6/3) mottling. Oxidization veins.									
25	SAND, trace gravel, fine to coarse sand. fine gravel (10YR5/4) yellowish brown, wet, loose, subangular, well graded.	SW	6 8	2/2						1522
26	CLAY, trace silt and sand, fine gravel, yellowish brown (10YR5/4) damp, medium plasticity, stiff.	CL	13 13 4 7 12 11	2/2						
27										
28	3" fine to medium sand trace coarse.		5 7 12 16	2/2						
29	Becomes light brownish gray (10YR6/3) 3" silt and fine sand.									
30										1546
31	SAND, trace clay lenses, trace fine gravel, sand is fine to medium grain, Yellowish brown (10YR5/4) wet, loose, subangular, well graded. Clay layers brown (10YR 5/3).	SW	31 24 43 44	2/2						
32	two 1" chert fragments in bottom.									

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	MW-2
Project Name	Hydro Inv More's Lake
Page	3 of 4
Project Number	93647
Date	5/22/17 - 5/23/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
32	SILT, trace clay and fine sand. Yellowish brown (10YR 5/6) wet, non plastic stiff.	ML	15							
			25	2/2						PID = 0
33			36							CEL = 0
	0.1" sand lens.		48							CO = 0
										O_2 = 20.8%
34			10							H_2S = 0
			12	2/2						1615
35	CLAY, trace silt, some sand at bottom 1.0', brown (10YR 5/3) damp, trace plasticity stiff to medium consistency.	CL	27							
			30							
36	0.3" sand lens.		13							
	4" sand		17							
37	8" silt w/ clay and sand.		36	2/2						
	SAND, fine to medium, brown (10YR 5/3) wet, loose, subangular, poorly graded/moderately graded.	SP/SW	37							
38			11							
	CLAY, trace silt, sand, gravel, brown (10YR 5/3) damp, medium plasticity, stiff	CL	17	2/2						
39			30							Stop for Day.
			35							1645 5/22
40	CLAY, trace silt, sand, gravel, yellowish brown (10YR 5/4) damp, trace plasticity very stiff. several fine sand stringers throughout.	CL	8							0715 START FOR DAY 5/23
			15	2/2						
41			21							
			30							PID = 0
42	Becomes dark grayish brown (10YR 4/2) and dark yellowish brown (10YR 4/6).		10							CEL = 0
			20	2/2						CO = 0
43			37							O_2 = 20.8%
	SAND, fine to coarse, trace gravel, Brown (10YR 5/3) wet, loose, subangular, well graded	SW	41							H_2S = 0
44			11							
			15	2/2						0736
45			18							
			48							
46			26							
			43	1/2						SPLIT SPOON STOPPED ADVANCING 8.42 IN.
47			NA							
	SILT, trace fine sand, yellowish brown (10YR 5/6) damp. nonplastic, medium to soft.	ML	NA							
48			13							
	CLAY, some silt, trace fine sand/gravel, very dark greenish gray (GLEY1 3/10Y) damp, trace plasticity stiff. top 1' is silty and sandy.	CL	25	2/2						
49			24							
50			31							0814

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	MW-2
Project Name	Hydro Inv More's Lake
Page	4 of 4
Project Number	93647
Date	5/28/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
50	CLAY, trace silt, fine sand/gravel (very dark greenish gray (GLEY1 3/10Y) damp, trace plasticity, stiff.	CL	9							
			17	2/4						PID=0
51			18							LEL=0
			24							CO=0
52										O_2=20.8%
			10	1/1						H_2S=0
			12							
53										0838 Stop
	Bottom of Boring.									

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log

Project Name: Hydro Inv More's Lake	Project Number: 93647	Boring Number: MW-3
Ground Elevation:	Location: More's Lake	Page: 1 of 3
Air Monitoring Equipment: PID / LEL-4 GAS		Total Footage: 5/17/17 50'

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	50	NA	2	NA

Drilling Company: Geotechnology	Driller(s): Patrick Hart
Drilling Rig: CME	Type of Sampler: Split spoon ~ 2.0'
Date: 5/17/17 To: 5/17/17	Field Observer(s): Lewis Turner LT

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
1	CLAY, with silt, very dark grayish brown (10YR3/2) damp, medium plasticity, medium consistency, roots.	CL	NA							1250 START
2	CLAY, trace silt, yellowish brown (10YR5/4) mottling, damp, medium plasticity, medium consistency light brownish gray mottling (10YR6/2)	CL	2 3 4 4	2/2						PID = 0.0 LEL = 0 CO = 0 O_2 = 20.8% H_2S = 0
3										
4			2 5	2/2						1257
5	trace fine sand and gravel throughout		6 8							
6			3 5 7 9	2/2		MW/3/ SB01 1305 6-8 8-10				
7	some oxidization coloration veins.									
8			1 3 3 6	2/2						
9										
10										1308
11			2 2 4 6	2/2						PID = 0.0 LEL = 0 CO = 0 O_2 = 20.9% H_2S = 0
12	SAND, dark yellowish brown (10YR4/4) damp, fine grain, loose, subangular, poorly graded.	SP	1 3 10 15	2/2						
13	CLAY, trace fine sand and gravel, yellowish brown (10YR5/6) damp, medium plasticity, stiff	CL								
14										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-2-1

Drilling Log Continuation

Boring Number	MW-3
Project Name	Hydro Inv More's Lake
Page	2 of 3
Project Number	93647
Date	5/17/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
14	CLAY, trace gravel and sand, yellowish brown (10YR5/6) damp, trace plasticity, stiff. black oxidization veins.	CL	6 19	2/2						1324
15	1" sand layer fine									
	1" sand layer fine.		20 25							
16										
17	SAND, trace clay/silt, fine to medium grain, yellowish brown (10YR5/6) and light brownish gray (10YR6/2) damp, loose, subangular, poorly graded/moderately graded.	SP	4 7 15 27	1.5/2						
18										
19			3 9 11 17	2/2						1331
20										▽ Sampler wet on outside.
21	CLAY, trace silt, fine sand and gravel (10YR5/4) damp, trace plasticity, very stiff, mottling (10YR6/1) oxidization veins.	CL	5 8 12 18	2/2						
22										PID = 0.0 LEL = 0 CO = 0 O_2 = 20.9% H_2S = 0
23			5 6 9 15	2/2						
24	becomes pale brown (10YR6/3) trace medium grain sand.		5 8	2/2						1405
25	2" fine to medium sand lens.		10 15							
26	SAND, trace gravel, fine to coarse sand, fine gravel (10YR5/4) yellowish brown, damp to moist, loose, subangular, well graded.	SW	8 12 23 38	1.5/2						boring has water in bottom
27										
28	CLAY, with sand and gravel, yellowish brown (10YR5/4) moist, nonplastic, stiff. fine to coarse sand, fine gravel.	CL	9 12 24 41	2/2						1422
29	3" sand layer.									
30	sand, trace gravel, clay (10YR5/4) moist, loose well graded	SW	20							
31	CLAY, some silt, trace sand fine to coarse Brown (10YR4/3) damp, trace plasticity, very stiff 2" sand layer	CL	17 10 20	2/2						
32										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	MW-3
Project Name	Hydro Inv More's Lake
Page	3 of 3
Project Number	93647
Date	5/17/2017

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
32	SAND. Some Clay layers, brown (10YR 5/3) damp to moist, loose, subangular, poorly graded.	SP	8	1.5/2						
			10							PID=0
33			20							LEL=0
	CLAY, trace sand Brown (10YR 5/3) damp, nonplastic, stiff.	CL	23							CO=0
34	SAND. fine grain (brown (10YR 5/3) moist, loose subangular, poorly graded.	SP	10							O_2=20.9%
	CLAY, trace sand fine to coarse Brown (10YR 5/3) damp. trace plasticity, stiff.	CL	15	2/2						H_2S=0
35	1" sand lense trace gravel Fine grain		18							1449
			19							
36			28	2/2						Hard at bottom
			29							
37	Sand lense 0.5"		35							
			38							
38	NO sample.		N/A							
39										Very hard cant advance SS
40										1507
			NA							Cant advance SS, Drill down 2' more Rt w/HSA.
41										
42	Chert fragments in slough									
	CLAY, trace silt and sand, trace gravel, very dark greenish gray (GLEY 1 3/10y) damp. trace plasticity, very stiff.	CL	8	2/2		1551 42-46 MW-3/ SB02 Bag.				
43	0.5" sand lenses		17							PID=0
			23							LEL=0
			42							CO=20.9%
44										O_2=20.9%
	0.2" sand seam		9							H_2S=0
			20	2/						1551
45			24	2						Collected Bag Samples 42-46'
			41							
46	0.2" sand seam		5							Cant push Shelby Tube
			11	2/2						
47			23							
			18							
48			6							
			18	2/2						
49			23							
	Bottom of boring.		23							1621 STOP
50										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log

Project Name: Hydro Inv. More's Lake	Project Number: 93647	Boring Number: MW-4
Ground Elevation:	Location: More's Lake	Page: 1 of 4
Air Monitoring Equipment: PID / LEL-4 gas		Total Footage: 57

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	57	NA	1	NA

Drilling Company: Geotechnology	Driller(s): Patrick Hart
Drilling Rig: CME	Type of Sampler: Spl.7 spoon - 2'
Date: 5/16/17 To: 5/16/17	Field Observer(s): Lewis Turner

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
1	CLAY, with silt very dark grayish brown (10YR 3/2) damp, medium plasticity, medium consistency, roots.	CL	NA	-						1139 START Drilling.
2	CLAY, trace silt, yellowish brown (10YR 5/4) damp, medium plasticity, medium consistency.	CL	2 3 4 4	2/2						PID=0 LEL=0 CO=0 O_2=20.9% H_2S=0
3										
4	trace gravel and light brownish gray (10YR 6/2) mottling, dark black oxidization layers.		2 4	2/2						1146
5			5 7							
6			1 3 3 5	2/2		1200, 6-8' Jars 8-10' Bags MW-4/ SB01				
7										
8			1 3 3 4	2/2						
9	CLAY, some silt, dark greenish gray (GLEY 1 4/5GY)	CL								1200
10			2 1 2 4	2/2						
11	1" sand layer moist.									▽ water on outside of SS.
12	SAND, dark yellowish brown (10YR 4/4) moist, Fine grain, Subangular, loose, well graded, gravel	SW/SP	1							
13	CLAY, with gravel, trace sand, yellowish brown (10YR 5/6) damp, trace plasticity, very stiff. Sand throughout.	CL	3 9 17	2/2						PID=0 LEL=0 CO=0 O_2=20.9% H_2S=0
14										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-2-1

Drilling Log Continuation

Boring Number	MW-4
Project Name	Hydro Inv. Mort's Lake
Page	2 of 4
Project Number	93647
Date	5/16/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
14	CLAY, some gravel, trace sand, yellowish brown (10YR 5/6) damp, trace plasticity, very stiff	CL	6 18 20	2/2						1211
15			21							
16			3 6							
17			17	2/2						
	CLAY with sand, yellowish brown (10YR 5/6) damp, nonplastic, loose, stiff/soft.	CL	22							
18										
19	SAND, fine to medium grain, yellowish brown (10YR 5/6) damp, loose, subangular, poorly graded.	SP	4 9 19 21	2/2						1225
20	Some gravel		- -							
21			8 10	1/1						
22	SAND, fine grain, light brownish gray (10YR 6/2) some clay zones w/sand, damp, subangular, poorly graded.	SP	5 8 12 16	2/2						PID=0 LEL=0 CO=0 O_2=20.8% H_2S=0
23										
24	CLAY, trace silt yellowish brown (10YR 5/4) damp, trace plasticity, very stiff. trace gravel rounded. trace fine sand.	CL	5 10	2/						1306
25			13 17	2						
26	Some gray mottling (10YR 6/1)		5 6 9 12	2/2						
27										
28	trace fine sand		5 8 10 15	2/2						
29										1332
30			7 23 34 36	2/2						
31										
32										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	MW-4
Project Name	Hydro Inv. More's Lake
Page	3 of 4
Project Number	97647
Date	5/16/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
32	Clay Continued, yellowish brown (10YR5/4) damp, trace plasticity, stiff.	CL	9							
			12	2/2						PID=0
33			38							LEL=0
			50							CO=0
	SAND, fine grain Dark yellowish brown (10YR 4/6) wet, loose, subangular, poorly graded.	SP								O_2=20.9%
34			10							H_2S=0
			12	2/2						1403
35	Some clay throughout.									
			40							
			46							
36	CLAY, trace silt and fine sand, trace gravel, light yellowish brown (10YR 6/4) damp, non plastic, very stiff. trace gravel.	CL	3							
			6							
			8							
37			10	2/2						
	CLAY, brown (10YR 5/3) damp, medium plasticity, stiff.	CL								
38			8							
	1" sand layer fine to medium grain		12							
			23							
39			36	2/2						
	SAND, brown (10YR 5/3) fine grain, damp loose, subangular, poorly graded.	SP								1436
40										
	Becomes wet.		8							
			15							
41			19	2/2						PID=0
			22							LEL=0
42	CLAY, trace silt and sand, gravel. yellowish brown (10YR 6/4) damp, trace plasticity, very stiff.	CL	7							CO=0
			15							O_2=20.9%
43			17	2/2						H_2S=0
			19							
44										
			9							
			13	2/2						1500
45										
			28							
			41							
46	CLAY, trace silt and sand, trace gravel, very dark greenish gray (GLEY1 3/10Y) damp, trace plasticity, very stiff.	CL								
			17							
			23	2/2						
47	0.5" SAND seam brown (10YR 4/3) clay near is same color.		38							
			43							
48										
			17							SS is wet
			25							on outside
49			38	2/2						
			44							
50										1532

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Project Name	Hydro Inv. More's Lake
Project Number	93647
Boring Number	MW-4
Page	4 of 4
Date	5/16/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
50	CLAY, trace sand and gravel, dark greenish gray (GLEY1 3/10Y) damp, trace plasticity, very stiff.	CL	19							
			25	2/2						
51	SAND, fine grain, trace medium grain (GLEY1 3/10Y) damp, loose, subangular, poorly graded.	SP	29							
			38							PID=0.0 LEL=0 CO=0 O_2=20.8% H_2S=0
52	SILT with fine sand, dark greenish gray (GLEY1 3/10Y) damp, non plastic, medium consistency.	ML	18							
			17	2/2						
53	4" CLAY seam black (10YR 2/1) damp, medium plasticity, very stiff		25							
			30							
54			15							water in bottom of boring 1600
			21	2/2						
55	3" SAND seam fine grain		29							
			37							
56	CLAY, some silt trace sand and gravel black (10YR 2/1) damp, medium plasticity, stiff.	CL	27	1/1						
	1" sand layer		74							1607 STOP
57	Bottom of Boring									

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log

Project Name: Hydro Inv More's Lake	Project Number: 93647	Boring Number: MW-5
Ground Elevation:	Location: More's Lake	Page: 1 of 3
Air Monitoring Equipment: PID/LEL-4gas		Total Footage: 41

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	41	0	1	NA

Drilling Company: Geotechnology	Driller(s): Patrick Hart
Drilling Rig: CME	Type of Sampler: Split spoon - 2'
Date: 5/19/17 To: 5/19/17	Field Observer(s): Lewis Turner LT

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
	REMOVED.									0820 START
1			NA							Top 1-1.5' Removed gravel/CCR.
2	CLAY, dark yellowish brown (10YR4/4) damp, trace to medium plasticity, black veins oxidization.	CL								to clean soil
3			1, 3, 4, 9	2/2						
4			1, 2	2/2						
5										0825
			3, 5							
6			2, 4, 7, 9	2/2		0830 6-8' Jars 8-10 Bag MW-5/ S801				PID=0.0 LEL=0 CO=0 H2S=0 O2=20.8%
7										
8										
9	trace gravel 2" some sand throughout.		3, 6, 10, 9	2/2						
10	thin sand lens throughout									0835
11	CLAY, trace silt, some fine sand, trace gravel (yellowish brown (10YR5/6) and light brownish gray (10YR6/2) damp. medium plasticity, stiff	CL	6, 9, 11, 12	2/2						
12			4, 5, 9, 17	2/2						
13										
14										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-2-1

Drilling Log Continuation

Project Name	Hydro Inv. More's Lake
Project Number	93647
Boring Number	MW-5
Page	2 of 3
Date	5/19/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
14	SAND, brown (10YR 5/3) damp to moist, loose, subangular, poorly graded.	SP	5 7	2/2						0855
15	CLAY, trace silt, sand, and gravel (fine) yellowish brown (10YR 5/6) damp, trace plasticity, stiff.	CL	9 12							
16	becomes some sand throughout. 0.1" sand		4	2/2						PID=0.0 LEL=0 CO=0 O_2=20.9% H_2S=0
17	0.1" sand 0.1" sand		3 3 9							
18	SILT, trace sand, yellowish brown (10YR 5/6) damp non plastic, medium plasticity.	ML	5							
19	CLAY, yellowish brown (10YR 5/4) damp, trace plasticity, very stiff. trace sand lens	CL	7 9	2/2						▽
20	SAND, trace gravel, fine to coarse sand, fine gravel (yellowish brown (10YR 5/4), wet, loose, subangular, well graded.	SW	12							wet 0917
21			3 9 9	2/2						
22	CLAY with silt, some sand, trace gravel, dark yellowish brown (10YR 4/6) wet, trace plasticity, stiff.	CL	12							
23	0.5" sand lens		4 7 9	2/2						
24	0.3" sand lens 0.8" sand lens.		11							
25	SAND, fine to medium grain, yellowish brown (10YR 4/6) wet, loose, subangular, moderately graded.	SP/SW	15 21	2/2						0932
26			28 31							
27			12 14	2/2						PID=0 LEL=0 CO=0 O_2=20.8% H_2S=0
28	CLAY, trace silt, some sand, trace gravel, brown (10YR 4/3) damp, trace plasticity, stiff.	CL	19 25							
29	SAND, fine grain, yellowish brown (10YR 4/6) trace gravel, wet, loose, subangular, moderately to poorly graded.	SP	15 17 24	2/2						
30	CLAY, trace silt, sand, gravel, brown (10YR 5/3) damp, trace plasticity, very stiff.	CL	32							0940
31	3" SAND seam, wet. becomes silty		12 17	2/2						
32	CLAY, trace silt and sand very dark gray to black (10YR 3/1, 2/1) damp, trace plasticity very stiff.	CL	22 30							

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	MW-5
Project Name	Hydro Inv. More's Lake
Page	3 of 3
Project Number	93647
Date	5/19/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
32	CLAY, trace silt, sand, and gravel, very dark gray to black (10YR 3/1, 2/1) damp, trace plasticity, very stiff.	CL	11	2/2						
			15							
33			20							
			24							
34	3" sand lens									water in cuttings
	2" silt brown (10YR 5/3)		20							
			31	2/2						1010
35	Chert fragments 0.2-1.5"		17							
			20							
36										
			9							PID=0
37			13	2/2						LEL=0
			20							CO=0
			27							H2S=0
38										O2=20.9%
			12							
39			19	2/2						
	1" silt.		24							
	wood fragments		31							1045
40										
			13	1/1						
41			18							1050 stop.
	Bottom of Boring									

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Project Name	HYDRO INV MORRIS LAKE
Project Number	93647
Boring Number	SB-2
Page	1 of 3
Date	5/31/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
32	CONTINUED FROM MW-5 DRILLING LOG.									* CONTINUED FROM MW-5 DRILLING LOG. SEE LOG FOR INFO
33										
34										
35										
36										
37										0815 Advance 8 1/4 HSA to 18' bgs.
38										0905 Begin mud rotary 4" bit
39										1005 at 41' depth. Start sampling
40										
41	CLAY, trace silt, some fine to medium sand and fine gravel, very dark gray (10YR 3/1) damp, trace to medium plasticity. Stiff.	CL								1005 START
42	several <0.1" sand lens, fine to med.		12							Begin split spoon sampling w/ mud rotary.
43			19	2/2						
			24							
44			33							
	CLAY, some silt, fine to coarse sand, some fine to medium gravel. dark gray (10YR 4/1) dark greenish gray (GLEY1 4/10Y) and greenish gray (GLEY1 5/5GY) mottling. damp, trace plasticity. stiff.		8							
45		CL	31	2/2						
			24							
46			25							
	Larger gravel fragments in sample fragments from bit.		8	0.5/2	~~0.5~~ 1/4					
47			12							
			37		1.5					
			39							
48	CLAY, gray (10YR 5/1) damp to dry, nonplastic (plastic when wet), stiff. highly weathered shale.		8							plastic when wet.
49		CL/sh	21	2/2						
			37							
50			50							1045

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Project Name	HYDRO INV MORES LAKE
Project Number	93647
Boring Number	SB-2
Page	2 of 3
Date	5/31/17 - 6/1/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
50	CLAY, gray (10YR5/1) damp to dry, non plastic (when dry). Stiff, blocky highly weathered shale.	SH	36							Slow drilling
51			47							
			50							Clay is highly plastic w/water added.
			refusal							
52										
			47							
53			50 refusal							
54	becomes silty weak friable.	SH	50 refusal							
55										1220
56										missing wireline catch. 1415 5/31/17 stop.
57				4/4						6/1/17 0719 Begin rock coring 56-60'
58										
59	SHALE, medium dark grey (N4) and olive grey (5Y4/1) highly weathered, weak, damp. Some plastic layers, massive, blocky.		SH							
60										0751
										0407
61	Becomes dark greenish gray (5G4/1) 61-62' 30°-45° fractures		SH							
62	45° fracture.			5/5						
63										
64	45° fracture									
	some olive gray 5Y4/1 layers									0836
65	Becomes black (N1) to greyish black (N2) moderately less weathered. 45° angles/amination									
66	Limestone, olive black (5Y2/1) highly weathered, strong, damp. some pyrite. fine grain. some shale partings.		sh partings. LS	4.3/5						0870
67		LS								
68										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Project Name	HYDRO INV MORRIS LAKE
Project Number	93647
Boring Number	SB-2
Page	3 of 3
Date	6/1/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
68	LIMESTONE, with clay and shale. interbedded.									
69	Limestone olive black (5Y 2/1) shale greenish gray (5GY 4/1) Ls strong, sh plastic, highly weathered. finely bedded.	Ls								
70										0900
	Ls becomes yellowish gray (5Y 7/2) and light olive gray (5Y 5/2) shale dark greenish gray (5GY 4/1)	Ls/sh								0906
71	0.3' Ls pyrite inclusion									
72	Finely bedded Ls/sh			5/5						
	0.7' CHERTY LS									(Hard drilling change 6.7 -chert/Ls
73	Ls									
	0.6' SHALE									
74	Sh									
	Cherty Ls.									
75										~~0977~~ 1020
	Shale and Ls nodules/cherty. greenish gray (5GY 6/1) shale, Ls yellowish gray (5Y 7/2)/									1024
76	light olive gray (5Y 5/2)	Ls								
	Ls gravel in shale.									
77				5/5						
	Limestone, light olive gray (5Y 5/2)/ yellowish gray (5Y 7/2) strong, non weathered), dense.	Ls								
78	Stylolites throughout. fracture at 78'									
	Fracture 30° pyrite nodules									
	Chert nodules 0.3'									
79										
	fracture 25°									
80										1038
	0.2' shale/clay dark greenish gray (5GY 4/1)		sh							1040
	Stylolites									
81										
	shale parting solution cavity fracture. stylolite.			5/5						
82	Stylolite									
	fracture w/ shale parting weathered.									
83	Fracture									
	Stylolite. Fracture weathered solution.									
84										
	Clay shale parting eroded.									
	Cherty									
85										1120
	Bottom of Boring.									Boring Abandoned.

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log

Project Name: Hydro Inv Moro's Lake	Project Number: 93647	Boring Number: MW-6
Ground Elevation:	Location: Moro's Lake	Page: 1 of 3
Air Monitoring Equipment: PID / LEL-4gas		Total Footage: 42

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	42	NA	1	NA

Drilling Company: Geotechnology	Driller(s): Patrick Hart
Drilling Rig: CME	Type of Sampler: Split spoon - 2'
Date: 5/25/17 To: 5/25/17	Field Observer(s): Lewis Turner LT

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
	REMOVED -(GRAVEL /CCR)									0930 START
1	CLAY		NA							TOP 4' removed. to clean soil
2										
3										
4	CLAY, trace silt, gravel Dark yellowish brown (10YR 4/4) damp, medium plasticity, stiff mottling. gray (Gley 1 5/10Y)	CL	1 3	2/2						one small fleck of coal in top 2" of sample. rest clean.
5			4 7							0945 Decon splitspoons
6			2 4	2/2		0954 6-8 Soils 8-10 Bag MW-6 SB01				
7	0.2" decayed wood fragments.		6 7							PID=0 LEL=0 CO=0 O2=20.8% H2S=0
8	CLAY, some silt, fine sand and gravel, yellowish brown (10YR 5/6) damp, trace to medium plasticity, stiff. mottling light greyish brown (10YR 6/2) black oxidization along veins.	CL	1 3	2/2						
9			3 5							0954
10			2 4	2/2						
11			6 10							
12			3 6	2/2						
13			9 12							
14										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-2-1

Drilling Log Continuation

Project Name	Hydro Inv. Moe's Lake
Project Number	93647
Boring Number	MW-6
Page	2 of 3
Date	5/25/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
14	CLAY, trace silt, some sand, yellowish brown (10YR 5/6) and grayish brown (10YR 5/2) damp, trace plasticity, stiff.	CL	4	2/2						
15			6							1005
			18							
16	Sand lenses throughout.		25							
			4	2/2						
17			7							
	SAND, fine to medium grain, dark yellowish brown (10YR 4/4) wet, loose, subangular, poorly graded.	SP	11							▽ wet.
18			22							
			9							PID=0 LEL=0 CO=0 O_2=20.8% H_2S=0
19			18	2/2						
	SILT, some clay and fine sand, trace gravel yellowish brown (10YR 5/6) damp, trace plasticity, medium consistency, some light brownish gray (10YR 6/2) sand lenses.	ML	29							
20			33							1011
			NA							
			NA	1.0/2						Boring is wet.
21			10							1' SS.
	SAND, dark yellowish brown (10YR 4/4) trace coarse sand gravel, wet, loose, subangular, well graded.	SW	36							
22	becomes yellowish brown (10YR 5/4) fine grain with silt.		6 10							
23			21	2/2						
			24							
24	CLAY, some silt, some fine sand lenses, trace gravel, yellowish brown (10YR 5/4) and light brownish gray sand (10YR 6/2) damp, trace plasticity, very stiff. sand lenses throughout.	CL	8							
25			20	2/2						1026
			20							
26			33							
	0.9-1.2' Limestone Fragments, 1" sand lens.		10	1.5/2						
27	2" sand lens.		16							15" refusal - SS
			50							
			NA							PID=0 LEL=0 CO=0 O_2=20.8% H_2S=0
28	SAND, trace clay and silt. fine to medium grain dark yellowish brown (10YR 4/6) wet loose, subangular, moderately graded.	SP/SW	7							
29			30	2/2						
	CLAY, some silt, fine to coarse sand, fine gravel, yellowish brown (10YR 5/4) damp, non plastic, stiff.	CL	31							
30			34							1042
			NA							
			NA	1/2						
31	trace black (10YR 2/1) organic matter		17							
32			21							

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	MW-6
Project Name	Hydro Inv More's Lake
Page	3 of 3
Project Number	93647
Date	5/25/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
32	CLAY, trace silt, fine sand and gravel, greenish black (Gley1 2.5/10y) damp, trace plasticity	CL	7							
33	stiff.		9	2/2						
			19							
			21							
34	trace. Black organic material, reeds and peat, throughout		8							
			21	2/2						1117
35										
			34							
	SILT, very dark greenish gray (GLEY1 3/10y)	ML	38							
36	damp, nonplastic, medium consistency.		9							PID=0
			22	2/2						LEL=0
37										CO=0
			35							O_2=20.9%
			41							H_2S=0
38										
	SAND, fine grain, dark yellowish brown (10yr 4/4), wet, loose, subangular, poorly graded.	SP	9							
39			20	2/2						
	CLAY, trace to some silt dark gray (10yr 4/1) damp, nonplastic, very stiff.	CL	25							
40			41							1130
			10							
	SAND, fine grain, dark yellowish brown (10yr 4/4) wet, loose, subangular, poorly graded.	SP	21							
41			30	2/2						
	CLAY, trace to some silt, dark gray (10yr 4/1) damp, trace plasticity, very stiff.	CL	42							1139 stop.
42										
	Bottom of Boring									

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log

Project Name: Hydro Inv. More's Lake	Project Number: 93647	Boring Number: MW-7
Ground Elevation:	Location: More's Lake	Page: 1 of 3
Air Monitoring Equipment: PID / LEL - 4 gas		Total Footage: 34

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	34	0	4	NA

Drilling Company: Geotechnology	Driller(s): Patrick Hart
Drilling Rig: CME	Type of Sampler: Split spoon - 2'
Date: 5/15/17 To: 5/16/17	Field Observer(s): Lewis Turner LT

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
1	CLAY, with silt, brown (10YR 5/3) damp medium plasticity, medium consistency roots.	CL								1508 START
2										
3	CLAY, trace silt, grayish brown (10YR 5/2) damp, medium plasticity, stiff.	CL	1 1 2 2	2/2						
4	2" layer very dark gray (10YR 2/1).									one small coal fragment.
5	SAND, with clay and silt, dark yellowish brown (10YR 4/6) damp, trace plasticity, medium - stiff. poorly graded, subangular fine sand.	SP/CL	1 2	2/2						1527
6			2 3			1540 6-8 Bag 8-10 Jars MW-7/ SB01				PID=0 LEL=0 CO=0 H_2S=0 O_2=20.9%
7	CLAY, trace silt, brownish gray (10YR 6/2) damp, trace plasticity stiff, roots	CL	2 3 8 10	2/2						
8	some silt becomes (10YR 5/6)									
9			2 6 8 6	2/2						
10	SAND, trace silt, light gray (10YR 7/2) damp, loose, subangular, fine to medium grain, poorly graded.	SP								1540
11	SAND, with silt, very fine, yellowish brown (10YR 5/4) damp, subangular, loose, poorly graded	SP	4 8 8 10	2/2						▽
12	SAND, fine to coarse, dark yellowish brown (10YR 4/4) wet, subangular, poorly graded	SP								
13	SHELBY TUBE		NA			1550 12-14' MW-7/ ST01				19"
14										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-2-1

Drilling Log Continuation

Boring Number	MW-7
Project Name	Hydro Inv. More's Lake
Page	2 of 3
Project Number	93647
Date	5/15/17 - 5/16/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
14	SAND w/ trace gravel and silt, yellowish brown, (10YR 5/6) wet, dense, subangular fine to gravel. poorly graded	SP	25 38	1.5/2						
15										1611
			50 -							
16	becomes fine grain sand									
			8 17 19	2/2						PID=0 LEL=0 CO=0
17	CLAY w trace silt and gravel, yellowish brown (10YR 5/6) wet, trace plasticity. very stiff glacial till	CL	22							O_2=20.8% H_2S=0
18			10 19	2/2						
19			21 36							1629
20	CLAY with trace silt, some sand and gravel. Yellowish brown (10YR 5/4) damp, trace plasticity, very stiff glacial till. Some charcoal fragments.	CL	11 18 26 33	2/2						
21										
22	becomes silty (some silt.) light brownish grey throughout (10YR 6/2).		12 7 25 34	2/2						
23										
24	CLAY, trace silt. dark gray (10YR 5/1) Damp, trace plasticity, very stiff. sand to coarse gravel throughout. till.	CL	13 18	2/2						1710
25			26 37							STOP Drilling For Day 5/15
26			17 17 26 33	2/2						START DRILLING 5/16 0721
27										PID=0 LEL=0 CO=0
28	1" dark reddish brown (5YR 3/2)		11 18 27 34	2/2						O_2=20.8% H_2S=0
29	Trace fine sand inclusion 2"									0749
30	SHELBY TUBE					0759 30-32' MW-7/ ST02				3-4" material collected, low volume.
31										
32										

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	MW-7
Project Name	Hydro Inv. More's Lake
Page	3 of 3
Project Number	93647
Date	5/16/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
32	CLAY, trace silt, some sand and gravel.	CL	17			0809 32-34'				
			15	2/2		MW-7/				
33	sand, trace silt and clay dark grey (10YR 4/1) damp, well graded, fine grain, gravel	SW	22			SB02				
			29							
34	CLAY, grey (10YR 6/1) damp to dry, non plastic very stiff	CL								0815 STOP
	BOTTOM OF BORING.									

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Project Name	HYDRO INV MOREES LAKE
Project Number	93647
Boring Number	SB-3
Page	1 of 2
Date	6/2/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
32	CONTINUED FROM MW-7 DRILLING LOG.									* CONTINUED FROM MW-7 DRILLING LOG. SEE LOG FOR INFO
33									8¼"	0940 HSA TO 15' 1031 MUD ROTARY TO 34'
34	CLAY, trace silt, fine to medium sand, fine gravel very dark gray (10YR3/1) damp trace to no plasticity. stiff.	CL	6 9	2/2						1051 START split spoon sampling w/mud rotary.
35	CLAY, gray (10YR5/1) damp to dry, non plastic when dry. becomes highly plastic w/ water. stiff. highly weathered shale.	CL/CH Sh.	17 31							
36	Becomes more dry, friable.		23 31	1.5/2						
37	SHALE, medium light gray (N6) to light olive gray (5Y6/1) dry, highly weathered, weak massive, blocky. becomes plastic when wet.	Sh	50							
38			37 50	0.6/2						
39										40' split spoon refusal. 1124
40		Sh								Switch to NQ core.
41				4/4						1200 set 0.39' OUTER CASING TO 38' BGS
42	SHALE, light olive gray (5Y6/1), damp, highly weathered, blocky, plastic when wet.	Sh				1430 SB-3/ SB01 42-44 BAG				1314 BEGIN CORING 0.34' RET.
43										6/2/17 40-44 1406
44	LIMESTONE olive black (5Y 2/1) to grayish black (N2) slightly weathered, damp, pyrite. Shale partings greenish gray (5GY 6/1). 45 fracture at 45"			1/1						6/6/17 0951 44-45' 0957
45	LIMESTONE with clay and shale interbedded, Limestone olive black (5Y 2/1). Shale greenish gray (5GY 4/1) Ls strong some chert, shale plastic to weak, Finely bedded. pyrite nodules.	Ls		4/5						0958
46										
47										
48	Shale 0.5"	Ls								
49	Shale partings / fracture Shale partings.									
50	Shale/Ls rubble in bit.									1081

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log Continuation

Boring Number	SB-3
Project Name	Hydro Inv. Mark's Lake
Page	2 of 2
Project Number	63647
Date	6/6/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	PID (ppm) BH	PID (ppm) S	Remarks/ Water Levels
50	LIMESTONE light olive grey (5Y 5/3) yellowish grey (5Y 7/3) strong weathered at fractures. Dense, pyrite									
	stylolite eroded by water-solution									
51	Stylolites throughout.									
	4" pyrite nodule layer.									
52	shale parting 45° fracture. 0.04' thick.			5/5						
	Becomes more shale layers. Shale is olive grey (5Y 4/1).	Ls								
53	Sh/Ls intermixed.									
54	weathered, stylolites weak at stylolites.	Ls								
										1055
55		Ls								1057
	0.3' shale olive grey (5Y 4/1).									
	stylolites									
56	0.1' shale									
57	sh			5/5						
	sh	Ls								
58	stylolites									
59	stylolite.	Ls								
	eroded stylolite fracture.									
	fossiliferous.	Ls								1110
60										1112
61	shale parting. fracture									
	shale parting along stylolite.									
62	shale parting fracture	Ls		5/5						
	shale parting 0.02" fracture	Ls								
63		Ls								
64	shale parting fracture.									
	healed fractures gravel									
	shale parting fracture									
65		Ls								1127 Stop.
	Bottom of Boring									Boring Abandoned

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Drilling Log

Project Name: Hydro Inv More's Lake	Project Number: 93647	Boring Number: MW-8
Ground Elevation:	Location: More's Lake	Page: 1 of 2
Air Monitoring Equipment: PID/LEL-4gas		Total Footage: 30

Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	30	NA	9	NA

Drilling Company: Geotechnology	Driller(s): Patrick Hart
Drilling Rig: CME	Type of Sampler: Split spoon - 2'
Date: 5/18/17 To: 5/18/17	Field Observer(s): Lewis-Turner LTT

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
1	GRAVEL FILL		N/A	–						1210 START
2–3	CLAY, trace silt and fine gravel fill, very dark greenish gray (GLEY1 3/10Y) damp medium plasticity, medium consistency	CL	2 1 4 7	2/2						PID=0 LEL=0 CO=0 O_2=20.9% H_2S=0
4–5	becomes greenish black (GLEY1 2.5/10Y)		1 4	2/2						1222
6–7	SILT, some clay, very dark grayish brown (10YR 3/2) damp. medium plasticity, soft. becomes wet	ML	2 3 1 3 4 8	2/2						▽ wet.
8–9	CLAY, trace silt, brown (10YR 4/3) damp, medium plasticity, stiff	CL	1 2 3 5	0.5/2						rock in SS low recovery 1235
11–12	CLAY, some silt, yellowish brown (10YR 5/6) damp, medium plasticity, stiff, trace black (10YR 2/1) veins.	CL	2 3 5 7	2/2						PID=0 LEL=0 CO=0 O_2=20.8% H_2S=0
13	3" sand and fine gravel layer. sand fine to coarse. wet		3 4 6	2/2						
14	CLAY, trace silt, brown (10YR 5/3) damp, medium plasticity stiff. trace sand/gravel throughout.	CL	9							1241

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-2-1

Drilling Log Continuation

Project Name	Hydro Inv More's Lake
Project Number	93647
Boring Number	MW-8
Page	2 of 2
Date	5/18/17

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm) BZ	BH	S	Remarks/ Water Levels
14	SAND, trace silt and clay, trace fine gravel, light yellowish brown (10YR 6/4) damp, loose, subangular, poorly graded to moderate.	SP	5 9	2/2						1246
15			12 21			1259 16-18 MW8/ SB01 Bag.				
16			7 8 20 22	2/2						
17	CLAY, trace silt, some sand and gravel brownish yellow (10YR 6/6), damp, trace plasticity, very stiff.	CL								
18			3 5 9 17	2/2						
19	CLAY, trace silt and sand, very dark grayish brown (10YR 3/2) damp, trace plasticity, very stiff	CL								
20	Chert fragments 1.5" Color change to yellowish brown (10YR 5/4) 2" sand lens.		3 4 7 9	2/2		1315 20-23 MW-8/ SB02 MW-8/ SB11 (Dup) Jars			1304 Large Chert Fragments.
21	Becomes brown (10YR 3/2)									
22			4 7 9 15	2/2						PID = 0 LEL = 0 CO = 0 O_2 = 20.9% H_2S = 0
23										
24	SILT, trace clay, dark gray (10YR 4/1) damp, nonplastic, stiff.	ML	5 8	2/2						1335
25			9 15							
26	Some clay		5 7 10 31	2/2						
27	CLAY, trace silt, light yellowish brown (2.5Y 6/4) damp, trace plasticity, very stiff.	CL								(Hard Drilling.
28			15 25 31 39	2/2						
29	damp.									(weathered) shale, Possibly - Clay Stop 1356
30										
	Bottom of Boring									

BZ=Breathing Zone BH=Bore Hole S=Sample

Burns & McDonnell SINCE 1898

051601 Form WCD-KC-2-2

Crockett Geotechnical - Testing Lab
500 Big Bear Boulevard
Columbia, MO 65202
Telephone: 573-447-3981

BORING NUMBER B-1

CLIENT City of Columbia
PROJECT NAME Power Plant Dam Stability Analyses
PROJECT NUMBER G13043
PROJECT LOCATION Columbia, Missouri
DATE STARTED 1/2/14 **COMPLETED** 1/2/14
GROUND ELEVATION 772 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR IPES
GROUND WATER LEVELS:
DRILLING METHOD 6" HSA
AT TIME OF DRILLING 16.00 ft / Elev 756.00 ft
LOGGED BY Lidholm **CHECKED BY** Lidholm
AT END OF DRILLING ---
NOTES Piezometer installed upon completion of drilling
24hrs AFTER DRILLING 11.50 ft / Elev 760.50 ft

DEPTH (ft)	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY LENGTH	BLOW COUNTS (N VALUE)	POCKET PEN. (psf)	UNC. COMP. (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	0.1 TOPSOIL (<1")	771.9										
	3.0 FILL: Fat Clay, brown, trace gray, trace sand, hard	769.0	SH 1	14		9000		120	15			
	5.0 FILL: Lean to Fat Clay, brown, very stiff	767.0	SH 2	19		7000		118	10			
	FILL: Lean Clay, silty, dark brownish gray, stiff		SH 3	20		4000		97	26	36	22	14
10	10.0	762.0	SH 4	15		3000	4970	104	20			
	FILL: Fat Clay, brown, trace gray, trace sand, soft to stiff		SH 5	12		3500	1540	95	29			
	Torvane = 350 psf		SH 6	17		1500	1540	97	26	50	16	34
20	Torvane = 500 psf		SH 7 top	11		1000		97	29			
	--: more sand, dark gray, soft			12		1000	890	86	24			
	Torvane = 500 psf		SH 7 bot									
	26.0 Torvane = 200 psf	746.0	SH 8 top	12		8500		95	30			
	LEAN TO FAT CLAY: brown, trace gray, trace sand and fine gravel, very stiff to hard (Glacial Drift)		SH 8 bot	12								
30	32.5	739.5	SH 9	10		9000		120	15	33	18	15
	COBBLES AND BOULDERS: Dense to very dense (Glacial Drift)											
	35.5	736.5										
	LEAN TO FAT CLAY: Dark gray, with gravel, trace sand, occasional cobbles and boulders, very stiff to hard (Glacial Drift)		SPT 10	14	30-26-32 (58)	7000			14			
40			SPT 11	12	27-39-50/3"	5000			17			
	47.0	725.0	SPT 12	12	8-17-38 (55)				24			
	CLAYEY SAND: Silty, gray, variable grain size (silt to coarse sand), dense (Glacial Drift)											
50			SPT 13	18	11-12-28 (40)				18			
			SPT 14	8	6-14-31 (45)				21			
60	60.0	712.0	SPT 15	6	9-12-30 (42)				22			

Bottom of borehole at 60.0 feet.

SAMPLE LENGTH REPORT - LAT-LONG TEMPLATE.GDT - 7/25/14 15:34 - C:\SERVER FILES\GEOTECH GENERAL\===PROJECTS===\GEOT PROJECTS\2013\G13043 - MORES LAKE DAM STABILITY ANALYSES\G13043.GPJ

Crockett Geotechnical - Testing Lab
500 Big Bear Boulevard
Columbia, MO 65202
Telephone: 573-447-3981

BORING NUMBER B-2

CLIENT City of Columbia
PROJECT NAME Power Plant Dam Stability Analyses
PROJECT NUMBER G13043
PROJECT LOCATION Columbia, Missouri
DATE STARTED 1/10/14 **COMPLETED** 1/10/14
GROUND ELEVATION 758 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR IPES
GROUND WATER LEVELS:
DRILLING METHOD 6" HSA
AT TIME OF DRILLING 9.00 ft / Elev 749.00 ft
LOGGED BY Lidholm **CHECKED BY** Lidholm
AT END OF DRILLING ---
NOTES Piezometer installed upon completion of drilling
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY LENGTH	BLOW COUNTS (N VALUE)	POCKET PEN. (psf)	UNC. COMP. (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0		1.0 FILL: Gravel, parking lot surface, 1-inch minus crushed limestone aggregate	757.0										
		3.0 FILL: Fat Clay, brown, trace gray, trace sand, very stiff	755.0	SH 1	16		4500						
		FILL: Lean to Fat Clay, brown, stiff		SH 2	5		3000	3150	105	20			
		8.0 LEAN TO FAT CLAY: brown, trace gray, trace sand and fine gravel, medium to very stiff (Glacial Drift)	750.0	SH 3	18		3000	2330	109	19			
10				SH 4	22		8000	1630	110	19			
		17.0	741.0										
		18.5 COBBLES AND BOULDERS: Dense to very dense (Glacial Drift)	739.5										
20		LEAN TO FAT CLAY: Dark gray, with gravel, trace sand, occasional cobbles and boulders, stiff to hard (Glacial Drift)		SPT 5	18	13-21-31 (52)	9000			14			
				SPT 6	16	11-20-35 (55)	3000			16			
		27.0 CLAYEY SAND: Silty, gray, variable grain size (silt to coarse sand), very dense (Glacial Drift)	731.0										
30		30.0	728.0	SPT 7	12	14-26-49 (75)	4500			24			

Bottom of borehole at 30.0 feet.

SAMPLE LENGTH REPORT - LAT-LONG TEMPLATE.GDT - 7/25/14 15:34 - C:\SERVER FILES\GEOTECH GENERAL\===PROJECTS===\GEOT PROJECTS\2013\G13043 - MORES LAKE DAM STABILITY ANALYSES\G13043.GPJ

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500 Big Bear Boulevard
Columbia, MO 65202
Telephone: 573-447-3981

BORING NUMBER B-3

CLIENT City of Columbia
PROJECT NAME Power Plant Dam Stability Analyses
PROJECT NUMBER G13043
PROJECT LOCATION Columbia, Missouri
DATE STARTED 1/3/14 **COMPLETED** 1/3/14
GROUND ELEVATION 771 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR IPES
GROUND WATER LEVELS:
DRILLING METHOD 6" HSA
AT TIME OF DRILLING 19.00 ft / Elev 752.00 ft
LOGGED BY Lidholm **CHECKED BY** Lidholm
AT END OF DRILLING ---
NOTES Piezometer installed upon completion of drilling
AFTER DRILLING ---

DEPTH (ft)	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY LENGTH	BLOW COUNTS (N VALUE)	POCKET PEN. (psf)	UNC. COMP. (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0	0.1 TOPSOIL (<1")	770.9										
	3.0 FILL: Fat Clay, brown, trace gray, trace sand, medium to stiff	768.0	SH 1	12		9000		108	19			
	FILL: Lean to Fat Clay, brown, soft to very stiff		SH 2	11		4000	1610	98	25			
10			SH 3	12		3000	1830	103	22			
			SH 4	13		2000	2670	101	26	51	15	36
	13.0 FILL: Lean Clay, silty, dark brownish gray, stiff	758.0										
			SH 5	18		1500	1620	98	25			
20			SH 6	24		5000		97	26	38	15	23
			SH 7	24		1000	1280	101	21			
30												
	32.0 LEAN TO FAT CLAY: brown, trace gray, trace sand and fine gravel, very stiff to hard (Glacial Drift)	739.0	SH 8	24		0	1730	89	33			
			SH 9	19		5000		104	24	44	17	27
40												
	42.0 --: sandy zone	729.0	SH 10	22				97	26			
	COBBLES AND BOULDERS: Dense to very dense (Glacial Drift)											
	45.0 LEAN TO FAT CLAY: Brown and dark gray, with gravel, trace sand, occasional cobbles and boulders, very stiff to hard (Glacial Drift)	726.0	SPT 11	8	13-20-26 (46)				21			
50	50.6	720.4	SPT 12	6	50-50/1"	4000			23			

Refusal at 50.7 feet.
Bottom of borehole at 50.7 feet.

SAMPLE LENGTH REPORT - LAT-LONG TEMPLATE.GDT - 7/25/14 15:34 - C:\SERVER FILES\GEOTECH GENERAL\===PROJECTS===\GEOT PROJECTS\2013\G13043 - MORES LAKE DAM STABILITY ANALYSES\G13043.GPJ

Crockett Geotechnical - Testing Lab
500 Big Bear Boulevard
Columbia, MO 65202
Telephone: 573-447-3981

BORING NUMBER B-4

CLIENT City of Columbia
PROJECT NAME Power Plant Dam Stability Analyses
PROJECT NUMBER G13043
PROJECT LOCATION Columbia, Missouri
DATE STARTED 1/9/14 **COMPLETED** 1/9/14
GROUND ELEVATION 752 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR IPES
GROUND WATER LEVELS:
DRILLING METHOD 6" HSA
AT TIME OF DRILLING --- Not Encounteed
LOGGED BY Lidholm **CHECKED BY** Lidholm
AT END OF DRILLING --- Not Encounteed
NOTES Piezometer installed upon completion of drilling
2hrs AFTER DRILLING --- Not Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY LENGTH	BLOW COUNTS (N VALUE)	POCKET PEN. (psf)	UNC. COMP. (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0		1.5 FILL: Gravel, parking lot surface, 1-inch minus crushed limestone aggregate	750.5										
		4.5 FILL: Fat Clay, brown, trace gray, trace sand, stiff	747.5	SH 1	17		3000	2300	98	26			
		8.0 FILL: Lean to Fat Clay, brown, trace gray, stiff	744.0	SH 2	21		4000	3930	107	21			
10		FILL: Cinders, black, loose		SPT 3	5	2-1-1 (2)				44			
		12.5 FILL: Lean to Fat Clay, brown, trace gray, trace sand, very soft to medium Torvane = 100 psf	739.5	SPT 4	1	1-2-3 (5)				41			
				SPT 5	16	1-1-1 (2)	0			28			
		17.0 LEAN TO FAT CLAY: brown, trace gray, trace sand and fine gravel, very stiff to hard (Glacial Drift)	735.0	SPT 6	12	1-3-4 (7)	2000			26			
20				SPT 7	15	16-26-28 (54)	5000			19			
		28.0	724.0	SPT 8	10	5-8-10 (18)	9000			25			
30		30.0 LEAN TO FAT CLAY: Dark gray, with gravel, trace sand, occasional cobbles and boulders, very stiff to hard (Glacial Drift)	722.0	SPT 9	6	5-14-17 (31)	5500			20			

Bottom of borehole at 30.0 feet.

SAMPLE LENGTH REPORT - LAT-LONG TEMPLATE.GDT - 7/25/14 15:34 - C:\SERVER FILES\GEOTECH GENERAL\===PROJECTS===\GEOT PROJECTS\2013\G13043 - MORES LAKE DAM STABILITY ANALYSES\G13043.GPJ

Crockett Geotechnical - Testing Lab
500 Big Bear Boulevard
Columbia, MO 65202
Telephone: 573-447-3981

BORING NUMBER B-5

CLIENT City of Columbia
PROJECT NAME Power Plant Dam Stability Analyses
PROJECT NUMBER G13043
PROJECT LOCATION Columbia, Missouri
DATE STARTED 1/8/14 **COMPLETED** 1/8/14
GROUND ELEVATION 771 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR IPES
GROUND WATER LEVELS:
DRILLING METHOD 6" HSA
AT TIME OF DRILLING ---
LOGGED BY Lidholm **CHECKED BY** Lidholm
AT END OF DRILLING ---
NOTES Piezometer installed upon completion of drilling
AFTER DRILLING ---

DEPTH (ft)	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY LENGTH	BLOW COUNTS (N VALUE)	POCKET PEN. (psf)	UNC. COMP. (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	0.1 TOPSOIL (<1")	770.9										
	3.0 FILL: Fat Clay and Cinders, brown, trace gray, trace sand, very stiff	768.0	SH 1	19		7000			13			
	FILL: Fat Clay, brown, trace gray, trace sand, medium to stiff Torvane = 500 psf		SH 2	99		1500	1370	97	26	47	16	31
10	10.0	761.0	SH 3	9		3000		98	24			
	FILL: Lean to Fat Clay, brown, trace gray, trace sand, very soft Torvane = 300 psf		SH 4	24		0	340	94	28	36	15	21
	Torvane = 200 psf		SH 5	24		0			31			
20	19.0	752.0										
	LEAN TO FAT CLAY: brown, trace gray, trace sand and fine gravel, stiff to very stiff (Glacial Drift)		SH 6	24		5500	2490	113	13	40	14	26
			SPT 7	12	3-8-11 (19)	5500			19			
30	29.0	742.0										
	LEAN TO FAT CLAY: Brown and gray to dark gray, with gravel, trace sand, occasional cobbles and boulders, very stiff to hard (Glacial Drift)		SH 8	21		7500	4640	119	16			
	--: sandy zone		SPT 9	14	20-46-37 (83)	9000			17			
40			SPT 10	15	11-27-27 (54)	9000			18			
	43.5	727.5										
	COBBLES AND BOULDERS: Dense to very dense (Glacial Drift)		SPT 11	5	13-26-31 (57)	5500			19			
	47.7	723.3	SPT 12	2	50/3"				8			

Refusal at 47.7 feet.
Bottom of borehole at 47.7 feet.

SAMPLE LENGTH REPORT - LAT-LONG TEMPLATE.GDT - 7/25/14 15:34 - C:\SERVER FILES\GEOTECH GENERAL\===PROJECTS===\GEOT PROJECTS\2013\G13043 - MORES LAKE DAM STABILITY ANALYSES\G13043.GPJ

Crockett Geotechnical - Testing Lab
500 Big Bear Boulevard
Columbia, MO 65202
Telephone: 573-447-3981

BORING NUMBER B-6

CLIENT City of Columbia
PROJECT NAME Power Plant Dam Stability Analyses
PROJECT NUMBER G13043
PROJECT LOCATION Columbia, Missouri
DATE STARTED 1/9/14 **COMPLETED** 1/9/14
GROUND ELEVATION 755 ft **HOLE SIZE** 6"
DRILLING CONTRACTOR IPES
GROUND WATER LEVELS:
DRILLING METHOD 6" HSA
AT TIME OF DRILLING ---
LOGGED BY Lidholm **CHECKED BY** Lidholm
AT END OF DRILLING ---
NOTES Piezometer installed upon completion of drilling
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY LENGTH	BLOW COUNTS (N VALUE)	POCKET PEN. (psf)	UNC. COMP. (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX
0		1.5 FILL: Gravel, parking lot surface, 1-inch minus crushed limestone aggregate	753.5										
		4.0 FILL: Fat Clay, brown, trace gray, trace sand, hard	751.0	SH 1	12		3000		105	19			
		LEAN TO FAT CLAY: Brown, trace gray, trace sand and fine gravel, occasional cobbles and possible boulders, very stiff to hard (Glacial Drift)		SH 2	25		3500	1650	111	22			
10				SH 3	11		4000		119	15			
				SPT 4	10	20-50/5"	1000			18			
				SPT 5	8	31-50/5"	9000			10			
20				SPT 6	6	33-50/5"	9000			12			
				SPT 7	18	8-15-27 (42)	9000			17			
		28.0	727.0										
30		30.0 LEAN TO FAT CLAY: Dark gray, with gravel, trace sand, occasional cobbles and boulders, very stiff to hard (Glacial Drift)	725.0	SPT 8	16	10-13-20 (33)	8500			19			

Bottom of borehole at 30.0 feet.

SAMPLE LENGTH REPORT - LAT-LONG TEMPLATE.GDT - 7/25/14 15:34 - C:\SERVER FILES\GEOTECH GENERAL\===PROJECTS===\GEOT PROJECTS\2013\G13043 - MORES LAKE DAM STABILITY ANALYSES\G13043.GPJ

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

MONITORING WELL CERTIFICATION RECORD

NOTE: This form is not to be used for nested wells

OFFICE USE ONLY		DATE RECEIVED	
REFERENCE NO.		CHECK NO.	
STATE WELL NO.		REVENUE NO.	
ENTERED	APPROVED	DATE	ROUTE / /

OWNER AND SITE INFORMATION

PROPERTY OWNER NAME WHERE WELL IS LOCATED	PRIMARY PHONE NUMBER WITH AREA CODE	WELL NUMBER	WELL COMPLETION DATE
City of Columbia, Missouri	(573) 874-6236	MW-1	05/26/2017

PROPERTY OWNER MAILING ADDRESS	CITY	STATE	ZIP CODE
1501 Business Loop 70 East	Columbia	MO	65201

PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED	CITY	COUNTY
More's Lake: SW corner of Ashley Street and Bowling Street	Columbia	Boone

NAME OF SITE OR CLEANUP PROJECT	DNR/EPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF APPLICABLE)	VARIANCE NUMBER (IF ISSUED)
More's Lake		

PRIMARY CONTRACTOR NAME (PLEASE PRINT)	PERMIT NUMBER	
John C. Bostwick, R.G.	003839M	Section 256.607(3), RSMo, requires all primary contractors to comply with all rules and regulations promulgated pursuant to Sections 256.600 to 256.640 RSMo.

SURFACE COMPLETION

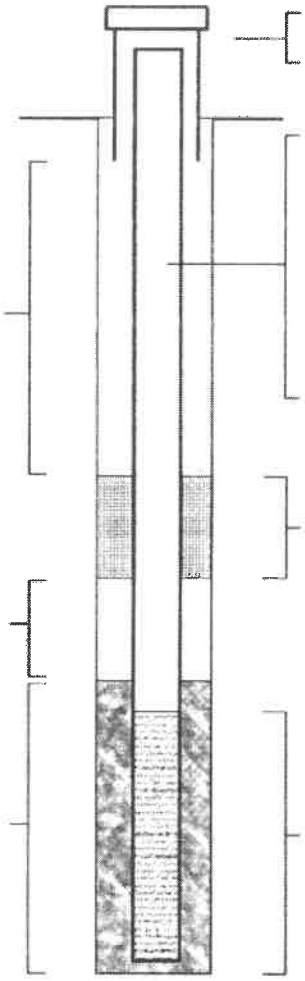
TYPE
- ☐ Above Ground
- ☑ Flush Mount

LENGTH AND DIAMETER OF SURFACE COMPLETION
Length 1 FT.
Diameter 8 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
Diameter 24 IN.
Length 1 FT.

SURFACE COMPLETION GROUT
- ☑ Concrete
- ☐ Other _____

☑ Locking Cap
☐ Weep Hole



SURFACE COMPLETION
☑ Steel ☐ Aluminum ☐ Plastic

Elevation _____ FT.

ANNULAR SEAL
Length 26 FT.
- ☑ Slurry ☐ Chips
- ☐ Pellets ☐ Granular
- ☐ Cement/Slurry

IF CEMENT/BENTONITE MIX:
Bags of Cement Used _____
% of Bentonite Used _____
Water Used Per Bag _____ GAL.

RISER OR CASING (IF OPEN HOLE COMPLETION)
Riser/Casing Diameter 2 IN.
Riser/Casing Length 33 FT.
Diameter Of Drill Hole 8 IN.
Weight Or SDR# S40

MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

BENTONITE SEAL
Length 3
- ☐ Chips ☑ Pellets ☐ Granular
- ☐ Saturated Zone ☐ Hydrated

SECONDARY FILTER PACK LENGTH
N/A FT.

DEPTH TO TOP OF PRIMARY FILTER PACK
30 FT.

LENGTH OF PRIMARY FILTER PACK
13 FT.

SCREEN
Screen Diameter 2 IN.
Screen Length 10 FT.
Diameter Of Drill Hole 8 IN.
Depth To Top 33 FT.

SCREEN MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

For cased wells, submit additional as-built diagrams showing well construction details including type and size of all casing, hole diameter and grout used.

LOCATION OF WELL (D/M/S FORMAT ONLY)
Latitude 38 ° 58 ' 2.2 "
Longitude -92 ° 19 ' 0.9 "

SMALLEST ____ ¼ ____ ¼ LARGEST ____ ¼
Section _____ Township _____ North
Range _____ ☐ E ☐ W

TYPE OF WELL (CHECK ONE)
- ☐ Direct Push ☐ Extraction ☐ Inclinometer
- ☐ Gas Migration ☐ Injection Lysimeter
- ☑ Observation ☐ Open Hole ☐ Other (specify)
- ☐ Piezometer ☐ Standard _____

MONITORING FOR (CHECK ALL THAT APPLY)
- ☐ Explosives ☑ Metals
- ☐ Pesticides/Herbicides ☐ Petroleum
- ☑ Radionuclides ☐ SVOCS
- ☐ VOCS (non-petroleum) ☐ Geotechnical Data

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (OR ATTACH BORING LOG*)
0	43	Clay, some silt, w/ sand lenses/seams

TOTAL DEPTH: 43 FT.
☐ *Boring Log Attached

STATIC WATER LEVEL N/A FT.
PUMP INSTALLED ☐ Yes ☑ No

I hereby certify that the monitoring well herein described was constructed in accordance with Missouri Department of Natural Resources requirements.

MONITORING WELL INSTALLATION CONTRACTOR	PERMIT NUMBER	DATE	MONITORING WELL INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE)	PERMIT NUMBER
	003469M	06/09/2017		

MO 780-1415 (8-16) **SEND COMPLETED FORM ALONG WITH $100 CERTIFICATION FEE TO: MISSOURI DEPARTMENT OF NATURAL RESOURCES, MISSOURI GEOLOGICAL SURVEY, WELLHEAD PROTECTION SECTION, PO BOX 250, ROLLA, MO 65402 PHONE: 573-368-2165 FAX: 573-368-2317 EMAIL: welldrillers@dnr.mo.gov**
RECORD (AND FEE) MAY BE SUBMITTED ONLINE: dnr.mo.gov/mowells

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

MONITORING WELL CERTIFICATION RECORD

NOTE: This form is not to be used for nested wells

OFFICE USE ONLY		DATE RECEIVED	
REFERENCE NO.		CHECK NO.	
STATE WELL NO.		REVENUE NO.	
ENTERED	APPROVED	DATE	ROUTE / /

OWNER AND SITE INFORMATION

PROPERTY OWNER NAME WHERE WELL IS LOCATED	PRIMARY PHONE NUMBER WITH AREA CODE	WELL NUMBER	WELL COMPLETION DATE
City of Columbia, Missouri	(573) 874-6236	MW-2	05/24/2017

PROPERTY OWNER MAILING ADDRESS	CITY	STATE	ZIP CODE
1501 Business Loop 70 East	Columbia	MO	65201

PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED	CITY	COUNTY
More's Lake: SW corner of Ashley Street and Bowling Street	Columbia	Boone

NAME OF SITE OR CLEANUP PROJECT	DNR/EPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF APPLICABLE)	VARIANCE NUMBER (IF ISSUED)
More's Lake		

PRIMARY CONTRACTOR NAME (PLEASE PRINT)	PERMIT NUMBER	
John C. Bostwick, R.G.	003839M	Section 256.607(3), RSMo, requires all primary contractors to comply with all rules and regulations promulgated pursuant to Sections 256.600 to 256.640 RSMo.

SURFACE COMPLETION

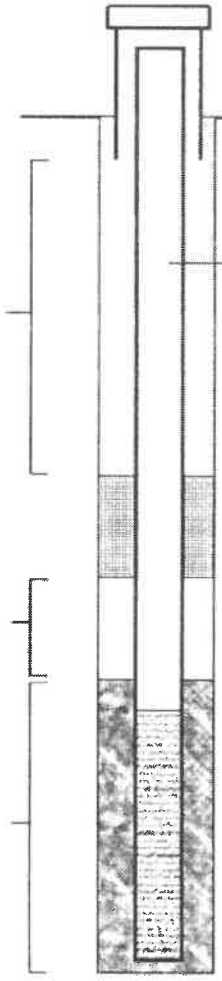
TYPE
- ☐ Above Ground
- ☑ Flush Mount

LENGTH AND DIAMETER OF SURFACE COMPLETION
Length 1 FT.
Diameter 8 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
Diameter 24 IN.
Length 1 FT.

SURFACE COMPLETION GROUT
- ☑ Concrete
- ☐ Other _____

☑ Locking Cap
☐ Weep Hole



SURFACE COMPLETION
☑ Steel ☐ Aluminum ☐ Plastic

Elevation _____ FT.

ANNULAR SEAL
Length 36 FT.
- ☑ Slurry ☐ Chips
- ☐ Pellets ☐ Granular
- ☐ Cement/Slurry

IF CEMENT/BENTONITE MIX:
Bags of Cement Used _____
% of Bentonite Used _____
Water Used Per Bag _____ GAL.

RISER OR CASING (IF OPEN HOLE COMPLETION)
Riser/Casing Diameter 2 IN.
Riser/Casing Length 43 FT.
Diameter Of Drill Hole 8 IN.
Weight Or SDR# S40

MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

BENTONITE SEAL
Length 3
- ☐ Chips ☑ Pellets ☐ Granular
- ☐ Saturated Zone ☐ Hydrated

SECONDARY FILTER PACK LENGTH
N/A FT.

DEPTH TO TOP OF PRIMARY FILTER PACK
40 FT.

LENGTH OF PRIMARY FILTER PACK
13 FT.

SCREEN
Screen Diameter 2 IN.
Screen Length 10 FT.
Diameter Of Drill Hole 8 IN.
Depth To Top 43 FT.

SCREEN MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

For cased wells, submit additional as-built diagrams showing well construction details including type and size of all casing, hole diameter and grout used.

LOCATION OF WELL (D/M/S FORMAT ONLY)
Latitude 38 ° 58 ' 1.9 "
Longitude -92 ° 18 ' 56.0 "

SMALLEST ____ ¼ ____ ¼ LARGEST ____ ¼
Section _____ Township _____ North
Range _____ ☐ E ☐ W

TYPE OF WELL (CHECK ONE)
- ☐ Direct Push ☐ Extraction ☐ Inclinometer
- ☐ Gas Migration ☐ Injection Lysimeter
- ☑ Observation ☐ Open Hole ☐ Other (specify)
- ☐ Piezometer ☐ Standard _____

MONITORING FOR (CHECK ALL THAT APPLY)
- ☐ Explosives ☑ Metals
- ☐ Pesticides/Herbicides ☐ Petroleum
- ☑ Radionuclides ☐ SVOCS
- ☐ VOCS (non-petroleum) ☐ Geotechnical Data

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (OR ATTACH BORING LOG*)
0	53	Clay, some silt, w/ sand lenses/seams

TOTAL DEPTH: 53 FT.
☐ *Boring Log Attached

STATIC WATER LEVEL N/A FT.
PUMP INSTALLED ☐ Yes ☑ No

I hereby certify that the monitoring well herein described was constructed in accordance with Missouri Department of Natural Resources requirements.

MONITORING WELL INSTALLATION CONTRACTOR	PERMIT NUMBER	DATE	MONITORING WELL INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE)	PERMIT NUMBER
	003469M	06/09/2017		

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

MONITORING WELL CERTIFICATION RECORD

NOTE: This form is not to be used for nested wells

OFFICE USE ONLY		DATE RECEIVED	
REFERENCE NO.		CHECK NO.	
STATE WELL NO.		REVENUE NO.	
ENTERED	APPROVED	DATE	ROUTE / /

OWNER AND SITE INFORMATION

PROPERTY OWNER NAME WHERE WELL IS LOCATED	PRIMARY PHONE NUMBER WITH AREA CODE	WELL NUMBER	WELL COMPLETION DATE
City of Columbia, Missouri	(573) 874-6236	MW-3	05/26/2017

PROPERTY OWNER MAILING ADDRESS	CITY	STATE	ZIP CODE
1501 Business Loop 70 East	Columbia	MO	65201

PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED	CITY	COUNTY
More's Lake: SW corner of Ashley Street and Bowling Street	Columbia	Boone

NAME OF SITE OR CLEANUP PROJECT	DNR/EPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF APPLICABLE)	VARIANCE NUMBER (IF ISSUED)
More's Lake		

PRIMARY CONTRACTOR NAME (PLEASE PRINT)	PERMIT NUMBER	
John C. Bostwick, R.G.	003839M	Section 256.607(3), RSMo, requires all primary contractors to comply with all rules and regulations promulgated pursuant to Sections 256.600 to 256.640 RSMo.

SURFACE COMPLETION

TYPE
- ☐ Above Ground
- ☑ Flush Mount

LENGTH AND DIAMETER OF SURFACE COMPLETION
Length 1 FT.
Diameter 8 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
Diameter 24 IN.
Length 1 FT.

SURFACE COMPLETION GROUT
- ☑ Concrete
- ☐ Other _____

- ☑ Locking Cap
- ☐ Weep Hole

Elevation _____ FT.

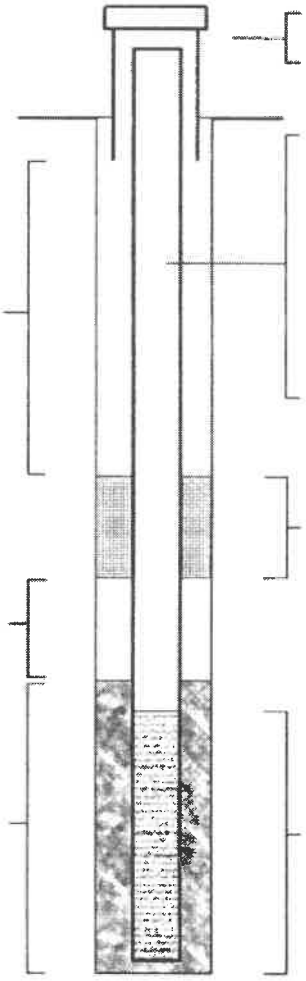
ANNULAR SEAL
Length 33 FT.
- ☑ Slurry ☐ Chips
- ☐ Pellets ☐ Granular
- ☐ Cement/Slurry

IF CEMENT/BENTONITE MIX:
Bags of Cement Used _____
% of Bentonite Used _____
Water Used Per Bag _____ GAL.

SECONDARY FILTER PACK LENGTH
N/A FT.

DEPTH TO TOP OF PRIMARY FILTER PACK
37 FT.

LENGTH OF PRIMARY FILTER PACK
13 FT.



SURFACE COMPLETION
- ☑ Steel ☐ Aluminum ☐ Plastic

RISER OR CASING (IF OPEN HOLE COMPLETION)
Riser/Casing Diameter 2 IN.
Riser/Casing Length 40 FT.
Diameter Of Drill Hole 8 IN.
Weight Or SDR# S40

MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

BENTONITE SEAL
Length 3
- ☑ Chips ☐ Pellets ☐ Granular
- ☐ Saturated Zone ☐ Hydrated

SCREEN
Screen Diameter 2 IN.
Screen Length 10 FT.
Diameter Of Drill Hole 8 IN.
Depth To Top 40 FT.

SCREEN MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

LOCATION OF WELL (D/M/S FORMAT ONLY)
Latitude 38 ° 57 ' 58.0 "
Longitude -92 ° 18 ' 55.4 "

SMALLEST ____ ¼ ____ ¼ LARGEST ____ ¼
Section _____ Township _____ North
Range _____ ☐ E ☐ W

TYPE OF WELL (CHECK ONE)
- ☐ Direct Push ☐ Extraction ☐ Inclinometer
- ☐ Gas Migration ☐ Injection ☐ Lysimeter
- ☑ Observation ☐ Open Hole ☐ Other (specify)
- ☐ Piezometer ☐ Standard _____

MONITORING FOR (CHECK ALL THAT APPLY)
- ☐ Explosives ☑ Metals
- ☐ Pesticides/Herbicides ☐ Petroleum
- ☑ Radionuclides ☐ SVOCS
- ☐ VOCS (non-petroleum) ☐ Geotechnical Data

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (OR ATTACH BORING LOG*)
0	50	Clay, some silt, w/ sand lenses/seams

TOTAL DEPTH: 50 FT.

☐ *Boring Log Attached

STATIC WATER LEVEL N/A FT.

PUMP INSTALLED ☐ Yes ☑ No

For cased wells, submit additional as-built diagrams showing well construction details including type and size of all casing, hole diameter and grout used.

I hereby certify that the monitoring well herein described was constructed in accordance with Missouri Department of Natural Resources requirements.

MONITORING WELL INSTALLATION CONTRACTOR	PERMIT NUMBER	DATE	MONITORING WELL INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE)	PERMIT NUMBER
	003469M	06/09/2017		

 SEND COMPLETED FORM ALONG WITH $100 CERTIFICATION FEE TO: MISSOURI DEPARTMENT OF NATURAL RESOURCES, MISSOURI GEOLOGICAL SURVEY, WELLHEAD PROTECTION SECTION, PO BOX 250, ROLLA, MO 65402 PHONE: 573-368-2165 FAX: 573-368-2317 EMAIL: welldrillers@dnr.mo.gov
RECORD (AND FEE) MAY BE SUBMITTED ONLINE: dnr.mo.gov/mowells

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

MONITORING WELL CERTIFICATION RECORD

NOTE: This form is not to be used for nested wells

OFFICE USE ONLY		DATE RECEIVED	
REFERENCE NO.		CHECK NO.	
STATE WELL NO.		REVENUE NO.	
ENTERED	APPROVED	DATE	ROUTE / /

OWNER AND SITE INFORMATION

PROPERTY OWNER NAME WHERE WELL IS LOCATED	PRIMARY PHONE NUMBER WITH AREA CODE	WELL NUMBER	WELL COMPLETION DATE
City of Columbia, Missouri	(573) 874-6236	MW-4	05/26/2017

PROPERTY OWNER MAILING ADDRESS	CITY	STATE	ZIP CODE
1501 Business Loop 70 East	Columbia	MO	65201

PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED	CITY	COUNTY
More's Lake: SW corner of Ashley Street and Bowling Street	Columbia	Boone

NAME OF SITE OR CLEANUP PROJECT	DNR/EPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF APPLICABLE)	VARIANCE NUMBER (IF ISSUED)
More's Lake		

PRIMARY CONTRACTOR NAME (PLEASE PRINT)	PERMIT NUMBER	
John C. Bostwick, R.G.	003839M	Section 256.607(3), RSMo, requires all primary contractors to comply with all rules and regulations promulgated pursuant to Sections 256.600 to 256.640 RSMo.

SURFACE COMPLETION

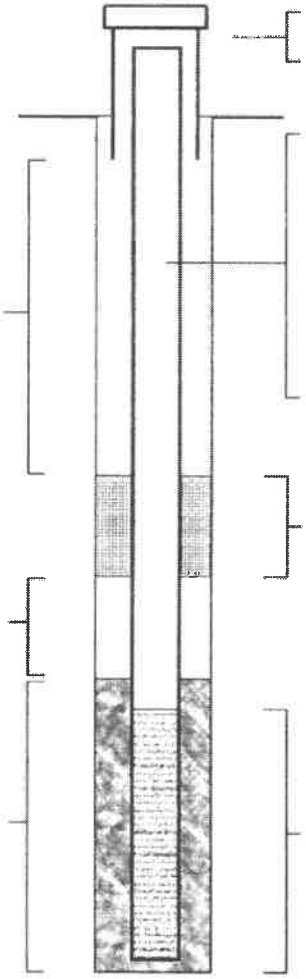
TYPE
- ☐ Above Ground
- ☑ Flush Mount

LENGTH AND DIAMETER OF SURFACE COMPLETION
Length 1 FT.
Diameter 8 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
Diameter 24 IN.
Length 1 FT.

SURFACE COMPLETION GROUT
- ☑ Concrete
- ☐ Other _____

- ☑ Locking Cap
- ☐ Weep Hole



SURFACE COMPLETION
☑ Steel ☐ Aluminum ☐ Plastic

Elevation _____ FT.

ANNULAR SEAL
Length 40 FT.
- ☑ Slurry ☐ Chips
- ☐ Pellets ☐ Granular
- ☐ Cement/Slurry

IF CEMENT/BENTONITE MIX:
Bags of Cement Used _____
% of Bentonite Used _____
Water Used Per Bag _____ GAL.

RISER OR CASING (IF OPEN HOLE COMPLETION)
Riser/Casing Diameter 2 IN.
Riser/Casing Length 47 FT.
Diameter Of Drill Hole 8 IN.
Weight Or SDR# S40

MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

BENTONITE SEAL
Length 3
- ☑ Chips ☐ Pellets ☐ Granular
- ☐ Saturated Zone ☐ Hydrated

SECONDARY FILTER PACK LENGTH
N/A FT.

DEPTH TO TOP OF PRIMARY FILTER PACK
44 FT.

LENGTH OF PRIMARY FILTER PACK
13 FT.

SCREEN
Screen Diameter 2 IN.
Screen Length 10 FT.
Diameter Of Drill Hole 8 IN.
Depth To Top 47 FT.

SCREEN MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

For cased wells, submit additional as-built diagrams showing well construction details including type and size of all casing, hole diameter and grout used.

LOCATION OF WELL (D/M/S FORMAT ONLY)
Latitude 38 ° 57 ' 55.8 "
Longitude -92 ° 18 ' 55.4 "

SMALLEST ¼ ¼ ¼ LARGEST
Section _____ Township _____ North
Range _____ ☐ E ☐ W

TYPE OF WELL (CHECK ONE)
- ☐ Direct Push ☐ Extraction ☐ Inclinometer
- ☐ Gas Migration ☐ Injection ☐ Lysimeter
- ☑ Observation ☐ Open Hole ☐ Other (specify)
- ☐ Piezometer ☐ Standard _____

MONITORING FOR (CHECK ALL THAT APPLY)
- ☐ Explosives ☑ Metals
- ☐ Pesticides/Herbicides ☐ Petroleum
- ☑ Radionuclides ☐ SVOCS
- ☐ VOCS (non-petroleum) ☐ Geotechnical Data

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (OR ATTACH BORING LOG*)
0	57	Clay, some silt w/ sand lenses/seams

TOTAL DEPTH: 57 FT.
☐ *Boring Log Attached

STATIC WATER LEVEL N/A FT.
PUMP INSTALLED ☐ Yes ☑ No

I hereby certify that the monitoring well herein described was constructed in accordance with Missouri Department of Natural Resources requirements.

MONITORING WELL INSTALLATION CONTRACTOR	PERMIT NUMBER	DATE	MONITORING WELL INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE)	PERMIT NUMBER
	003469M	06/09/2017		

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

MONITORING WELL CERTIFICATION RECORD

NOTE: This form is not to be used for nested wells

OFFICE USE ONLY		DATE RECEIVED	
REFERENCE NO.		CHECK NO.	
STATE WELL NO.		REVENUE NO.	
ENTERED	APPROVED	DATE	ROUTE / /

OWNER AND SITE INFORMATION

PROPERTY OWNER NAME WHERE WELL IS LOCATED	PRIMARY PHONE NUMBER WITH AREA CODE	WELL NUMBER	WELL COMPLETION DATE
City of Columbia, Missouri	(573) 874-6236	MW-5	05/30/2017

PROPERTY OWNER MAILING ADDRESS	CITY	STATE	ZIP CODE
1501 Business Loop 70 East	Columbia	MO	65201

PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED	CITY	COUNTY
More's Lake: SW corner of Ashley Street and Bowling Street	Columbia	Boone

NAME OF SITE OR CLEANUP PROJECT	DNR/EPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF APPLICABLE)	VARIANCE NUMBER (IF ISSUED)
More's Lake		

PRIMARY CONTRACTOR NAME (PLEASE PRINT)	PERMIT NUMBER	
John C. Bostwick, R.G.	003839M	Section 256.607(3), RSMo, requires all primary contractors to comply with all rules and regulations promulgated pursuant to Sections 256.600 to 256.640 RSMo.

SURFACE COMPLETION

TYPE
- ☐ Above Ground
- ☑ Flush Mount

LENGTH AND DIAMETER OF SURFACE COMPLETION
Length 1 FT.
Diameter 8 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
Diameter 24 IN.
Length 1 FT.

SURFACE COMPLETION GROUT
- ☑ Concrete
- ☐ Other _____

- ☑ Locking Cap
- ☐ Weep Hole

Elevation _____ FT.

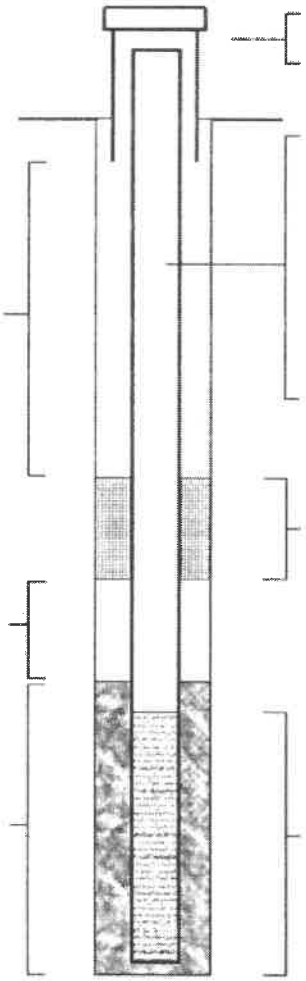
ANNULAR SEAL
Length 24 FT.
- ☑ Slurry ☐ Chips
- ☐ Pellets ☐ Granular
- ☐ Cement/Slurry

IF CEMENT/BENTONITE MIX:
Bags of Cement Used _____
% of Bentonite Used _____
Water Used Per Bag _____ GAL.

SECONDARY FILTER PACK LENGTH
N/A FT.

DEPTH TO TOP OF PRIMARY FILTER PACK
28 FT.

LENGTH OF PRIMARY FILTER PACK
13 FT.



SURFACE COMPLETION
- ☑ Steel ☐ Aluminum ☐ Plastic

RISER OR CASING (IF OPEN HOLE COMPLETION)
Riser/Casing Diameter 2 IN.
Riser/Casing Length 31 FT.
Diameter Of Drill Hole 8 IN.
Weight Or SDR# S40

MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

BENTONITE SEAL
Length 3
- ☑ Chips ☐ Pellets ☐ Granular
- ☐ Saturated Zone ☐ Hydrated

SCREEN
Screen Diameter 2 IN.
Screen Length 10 FT.
Diameter Of Drill Hole 8 IN.
Depth To Top 31 FT

SCREEN MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

For cased wells, submit additional as-built diagrams showing well construction details including type and size of all casing, hole diameter and grout used.

LOCATION OF WELL (D/M/S FORMAT ONLY)
Latitude 38 ° 57 ' 56.1 "
Longitude -92 ° 18 ' 59.3 "

SMALLEST ¼ ¼ LARGEST ¼
Section _____ Township _____ North
Range _____ ☐ E ☐ W

TYPE OF WELL (CHECK ONE)
- ☐ Direct Push ☐ Extraction ☐ Inclinometer
- ☐ Gas Migration ☐ Injection Lysimeter
- ☑ Observation ☐ Open Hole ☐ Other (specify)
- ☐ Piezometer ☐ Standard _____

MONITORING FOR (CHECK ALL THAT APPLY)
- ☐ Explosives ☑ Metals
- ☐ Pesticides/Herbicides ☐ Petroleum
- ☑ Radionuclides ☐ SVOCS
- ☐ VOCS (non-petroleum) ☐ Geotechnical Data

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (OR ATTACH BORING LOG*)
0	41	Clay, some silt, w/ sand lenses/seams

TOTAL DEPTH: 41 FT.
☐ *Boring Log Attached

STATIC WATER LEVEL N/A FT.
PUMP INSTALLED ☐ Yes ☑ No

I hereby certify that the monitoring well herein described was constructed in accordance with Missouri Department of Natural Resources requirements.

MONITORING WELL INSTALLATION CONTRACTOR	PERMIT NUMBER	DATE	MONITORING WELL INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE)	PERMIT NUMBER
	003469M	06/09/2017		

MO 780-1415 (8-16) **SEND COMPLETED FORM ALONG WITH $100 CERTIFICATION FEE TO: MISSOURI DEPARTMENT OF NATURAL RESOURCES, MISSOURI GEOLOGICAL SURVEY, WELLHEAD PROTECTION SECTION, PO BOX 250, ROLLA, MO 65402 PHONE: 573-368-2165 FAX: 573-368-2317 EMAIL: welldrillers@dnr.mo.gov**
RECORD (AND FEE) MAY BE SUBMITTED ONLINE: dnr.mo.gov/mowells

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

MONITORING WELL CERTIFICATION RECORD

NOTE: This form is not to be used for nested wells

OFFICE USE ONLY		DATE RECEIVED	
REFERENCE NO.		CHECK NO.	
STATE WELL NO.		REVENUE NO.	
ENTERED	APPROVED	DATE	ROUTE / /

OWNER AND SITE INFORMATION

PROPERTY OWNER NAME WHERE WELL IS LOCATED	PRIMARY PHONE NUMBER WITH AREA CODE	WELL NUMBER	WELL COMPLETION DATE
City of Columbia, Missouri	(573) 874-6236	MW-6	05/30/2017

PROPERTY OWNER MAILING ADDRESS	CITY	STATE	ZIP CODE
1501 Business Loop 70 East	Columbia	MO	65201

PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED	CITY	COUNTY
More's Lake: SW corner of Ashley Street and Bowling Street	Columbia	Boone

NAME OF SITE OR CLEANUP PROJECT	DNR/EPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF APPLICABLE)	VARIANCE NUMBER (IF ISSUED)
More's Lake		

PRIMARY CONTRACTOR NAME (PLEASE PRINT)	PERMIT NUMBER	
John C. Bostwick, R.G.	003839M	Section 256.607(3), RSMo, requires all primary contractors to comply with all rules and regulations promulgated pursuant to Sections 256.600 to 256.640 RSMo.

SURFACE COMPLETION

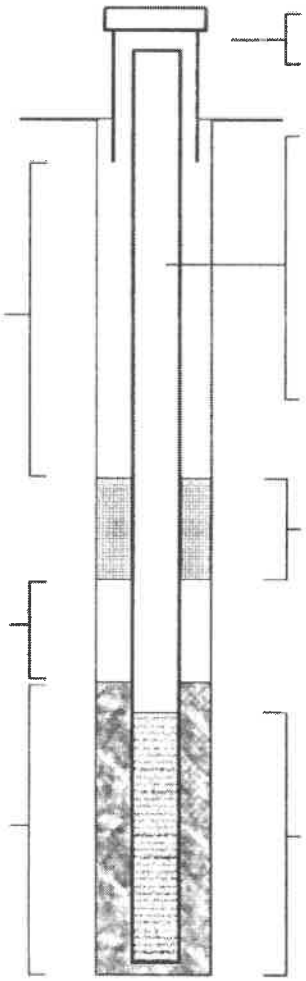
TYPE
- ☐ Above Ground
- ☑ Flush Mount

LENGTH AND DIAMETER OF SURFACE COMPLETION
Length 1 FT.
Diameter 8 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
Diameter 24 IN.
Length 1 FT.

SURFACE COMPLETION GROUT
- ☑ Concrete
- ☐ Other _____

☑ Locking Cap
☐ Weep Hole



SURFACE COMPLETION
☑ Steel ☐ Aluminum ☐ Plastic

Elevation _____ FT.

ANNULAR SEAL
Length 25 FT.
- ☑ Slurry ☐ Chips
- ☐ Pellets ☐ Granular
- ☐ Cement/Slurry

IF CEMENT/BENTONITE MIX:
Bags of Cement Used _____
% of Bentonite Used _____
Water Used Per Bag _____ GAL.

RISER OR CASING (IF OPEN HOLE COMPLETION)
Riser/Casing Diameter 2 IN.
Riser/Casing Length 32 FT.
Diameter Of Drill Hole 8 IN.
Weight Or SDR# S40

MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

BENTONITE SEAL
Length 3
- ☑ Chips ☑ Pellets ☐ Granular
- ☐ Saturated Zone ☐ Hydrated

SECONDARY FILTER PACK LENGTH
N/A FT.

DEPTH TO TOP OF PRIMARY FILTER PACK
29 FT.

LENGTH OF PRIMARY FILTER PACK
13 FT.

SCREEN
Screen Diameter 2 IN.
Screen Length 10 FT.
Diameter Of Drill Hole 8 IN.
Depth To Top 32 FT.

SCREEN MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

LOCATION OF WELL (D/M/S FORMAT ONLY)
Latitude 38 ° 57 ' 56.0 "
Longitude -92 ° 19 ' 4.3 "

SMALLEST ____ ¼ LARGEST ____ ¼ ____ ¼
Section _____ Township _____ North
Range _____ ☐ E ☐ W

TYPE OF WELL (CHECK ONE)
- ☐ Direct Push ☐ Extraction ☐ Inclinometer
- ☐ Gas Migration ☐ Injection ☐ Lysimeter
- ☑ Observation ☐ Open Hole ☐ Other (specify)
- ☐ Piezometer ☐ Standard

MONITORING FOR (CHECK ALL THAT APPLY)
- ☐ Explosives ☑ Metals
- ☐ Pesticides/Herbicides ☐ Petroleum
- ☑ Radionuclides ☐ SVOCS
- ☐ VOCS (non-petroleum) ☐ Geotechnical Data

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (OR ATTACH BORING LOG*)
0	42	Clay, some silt, w/ sand lenses/seams

TOTAL DEPTH: 42 FT.
☐ *Boring Log Attached

For cased wells, submit additional as-built diagrams showing well construction details including type and size of all casing, hole diameter and grout used.

STATIC WATER LEVEL N/A FT.
PUMP INSTALLED ☐ Yes ☑ No

I hereby certify that the monitoring well herein described was constructed in accordance with Missouri Department of Natural Resources requirements.

MONITORING WELL INSTALLATION CONTRACTOR	PERMIT NUMBER	DATE	MONITORING WELL INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE)	PERMIT NUMBER
	003469M	06/09/2017		

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

MONITORING WELL CERTIFICATION RECORD

NOTE: This form is not to be used for nested wells

OFFICE USE ONLY		DATE RECEIVED	
REFERENCE NO.		CHECK NO.	
STATE WELL NO.		REVENUE NO.	
ENTERED	APPROVED	DATE	ROUTE / /

OWNER AND SITE INFORMATION

PROPERTY OWNER NAME WHERE WELL IS LOCATED	PRIMARY PHONE NUMBER WITH AREA CODE	WELL NUMBER	WELL COMPLETION DATE
City of Columbia, Missouri	(573) 874-6236	MW-7	05/26/2017

PROPERTY OWNER MAILING ADDRESS	CITY	STATE	ZIP CODE
1501 Business Loop 70 East	Columbia	MO	65201

PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED	CITY	COUNTY
More's Lake: SW corner of Ashley Street and Bowling Street	Columbia	Boone

NAME OF SITE OR CLEANUP PROJECT	DNR/EPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF APPLICABLE)	VARIANCE NUMBER (IF ISSUED)
More's Lake		

PRIMARY CONTRACTOR NAME (PLEASE PRINT)	PERMIT NUMBER	
John C. Bostwick, R.G.	003839M	Section 256.607(3), RSMo, requires all primary contractors to comply with all rules and regulations promulgated pursuant to Sections 256.600 to 256.640 RSMo.

SURFACE COMPLETION

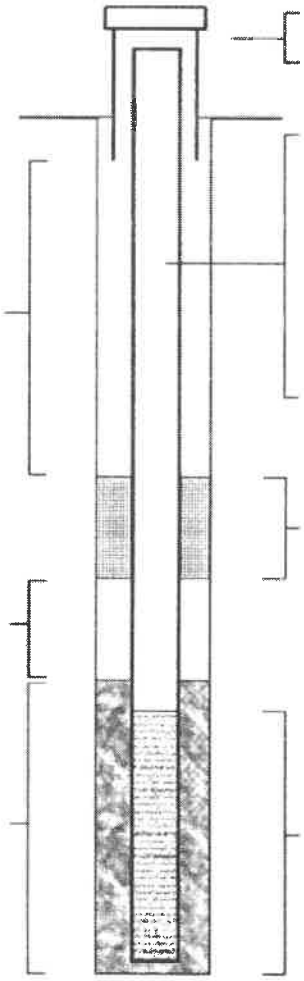
TYPE
- ☐ Above Ground
- ☑ Flush Mount

LENGTH AND DIAMETER OF SURFACE COMPLETION
Length 1 FT.
Diameter 8 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
Diameter 24 IN.
Length 1 FT.

SURFACE COMPLETION GROUT
- ☑ Concrete
- ☐ Other _____

- ☑ Locking Cap
- ☐ Weep Hole



SURFACE COMPLETION
☑ Steel ☐ Aluminum ☐ Plastic

Elevation _____ FT.

ANNULAR SEAL
Length 17 FT.
- ☑ Slurry ☐ Chips
- ☐ Pellets ☐ Granular
- ☐ Cement/Slurry

IF CEMENT/BENTONITE MIX:
Bags of Cement Used _____
% of Bentonite Used _____
Water Used Per Bag _____ GAL.

RISER OR CASING (IF OPEN HOLE COMPLETION)
Riser/Casing Diameter 2 IN.
Riser/Casing Length 24 FT.
Diameter Of Drill Hole 8 IN.
Weight Or SDR# S40

MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

BENTONITE SEAL
Length 3
- ☑ Chips ☐ Pellets ☐ Granular
- ☐ Saturated Zone ☐ Hydrated

SECONDARY FILTER PACK LENGTH
N/A FT.

DEPTH TO TOP OF PRIMARY FILTER PACK
21 FT.

LENGTH OF PRIMARY FILTER PACK
13 FT.

SCREEN
Screen Diameter 2 IN.
Screen Length 10 FT.
Diameter Of Drill Hole 8 IN.
Depth To Top 24 FT.

SCREEN MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

For cased wells, submit additional as-built diagrams showing well construction details including type and size of all casing, hole diameter and grout used.

LOCATION OF WELL (D/M/S FORMAT ONLY)
Latitude 38 ° 57 ' 56.8 "
Longitude -92 ° 19 ' 7.6 "

SMALLEST ¼ ¼ ¼ LARGEST
Section _____ Township _____ North
Range _____ ☐ E ☐ W

TYPE OF WELL (CHECK ONE)
- ☐ Direct Push
- ☐ Gas Migration
- ☑ Observation
- ☐ Piezometer
- ☐ Extraction
- ☐ Injection
- ☐ Open Hole
- ☐ Standard
- ☐ Inclinometer
- Lysimeter
- ☐ Other (specify) _____

MONITORING FOR (CHECK ALL THAT APPLY)
- ☐ Explosives
- ☐ Pesticides/Herbicides
- ☑ Radionuclides
- ☐ VOCS (non-petroleum)
- ☑ Metals
- ☐ Petroleum
- ☐ SVOCS
- ☐ Geotechnical Data

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (OR ATTACH BORING LOG*)
0	34	Clay, some silt, w/ sand lenses/seams

TOTAL DEPTH: 34 FT.

☐ *Boring Log Attached

STATIC WATER LEVEL N/A FT.

PUMP INSTALLED ☐ Yes ☑ No

I hereby certify that the monitoring well herein described was constructed in accordance with Missouri Department of Natural Resources requirements.

MONITORING WELL INSTALLATION CONTRACTOR	PERMIT NUMBER	DATE	MONITORING WELL INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE)	PERMIT NUMBER
	003469M	06/09/2017		

MISSOURI DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY PROGRAM

MONITORING WELL CERTIFICATION RECORD

NOTE: This form is not to be used for nested wells

OFFICE USE ONLY		DATE RECEIVED	
REFERENCE NO.		CHECK NO.	
STATE WELL NO.		REVENUE NO.	
ENTERED	APPROVED	DATE	ROUTE / /

OWNER AND SITE INFORMATION

PROPERTY OWNER NAME WHERE WELL IS LOCATED	PRIMARY PHONE NUMBER WITH AREA CODE	WELL NUMBER	WELL COMPLETION DATE
City of Columbia, Missouri	(573) 874-6236	MW-8	05/26/2017

PROPERTY OWNER MAILING ADDRESS	CITY	STATE	ZIP CODE
1501 Business Loop 70 East	Columbia	MO	65201

PHYSICAL ADDRESS OF PROPERTY WHERE WELL IS LOCATED	CITY	COUNTY
More's Lake: SW corner of Ashley Street and Bowling Street	Columbia	Boone

NAME OF SITE OR CLEANUP PROJECT	DNR/EPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF APPLICABLE)	VARIANCE NUMBER (IF ISSUED)
More's Lake		

PRIMARY CONTRACTOR NAME (PLEASE PRINT)	PERMIT NUMBER	
John C. Bostwick, R.G.	003839M	Section 256.607(3), RSMo, requires all primary contractors to comply with all rules and regulations promulgated pursuant to Sections 256.600 to 256.640 RSMo.

SURFACE COMPLETION

TYPE
- ☐ Above Ground
- ☑ Flush Mount

LENGTH AND DIAMETER OF SURFACE COMPLETION
Length 1 FT.
Diameter 8 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
Diameter 24 IN.
Length 1 FT.

SURFACE COMPLETION GROUT
- ☑ Concrete
- ☐ Other _____

- ☑ Locking Cap
- ☐ Weep Hole

Elevation _____ FT.

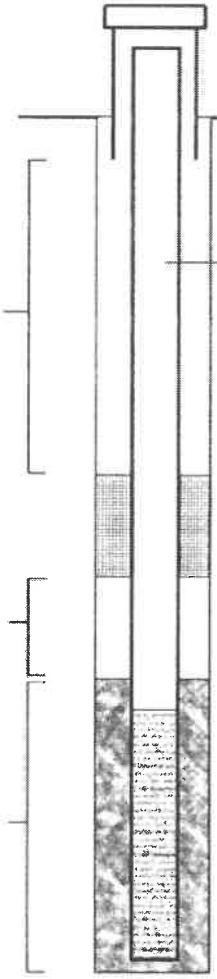
ANNULAR SEAL
Length N/A FT.
- ☐ Slurry ☐ Chips
- ☐ Pellets ☐ Granular
- ☐ Cement/Slurry

IF CEMENT/BENTONITE MIX:
Bags of Cement Used _____
% of Bentonite Used _____
Water Used Per Bag _____ GAL.

SECONDARY FILTER PACK LENGTH
N/A FT.

DEPTH TO TOP OF PRIMARY FILTER PACK
15 FT.

LENGTH OF PRIMARY FILTER PACK
13 FT.



SURFACE COMPLETION
☑ Steel ☐ Aluminum ☐ Plastic

RISER OR CASING (IF OPEN HOLE COMPLETION)
Riser/Casing Diameter 2 IN.
Riser/Casing Length 18 FT.
Diameter Of Drill Hole 8 IN.
Weight Or SDR# S40

MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

BENTONITE SEAL
Length 14
- ☑ Chips ☐ Pellets ☐ Granular
- ☐ Saturated Zone ☐ Hydrated

SCREEN
Screen Diameter 2 IN.
Screen Length 10 FT.
Diameter Of Drill Hole 8 IN.
Depth To Top 18 FT.

SCREEN MATERIAL
- ☐ Steel ☑ Thermoplastic (PVC)
- ☐ Other _____

For cased wells, submit additional as-built diagrams showing well construction details including type and size of all casing, hole diameter and grout used.

LOCATION OF WELL (D/M/S FORMAT ONLY)
Latitude 38 ° 58 ' 1.6 "
Longitude -92 ° 19 ' 6.1 "

SMALLEST ¼ ¼ LARGEST
Section _____ Township _____ North
Range _____ ☐ E ☐ W

TYPE OF WELL (CHECK ONE)
- ☐ Direct Push ☐ Extraction ☐ Inclinometer
- ☐ Gas Migration ☐ Injection Lysimeter
- ☑ Observation ☐ Open Hole ☐ Other (specify)
- ☐ Piezometer ☐ Standard _____

MONITORING FOR (CHECK ALL THAT APPLY)
- ☐ Explosives ☑ Metals
- ☐ Pesticides/Herbicides ☐ Petroleum
- ☑ Radionuclides ☐ SVOCS
- ☐ VOCS (non-petroleum) ☐ Geotechnical Data

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION (OR ATTACH BORING LOG*)
0	28	Clay, some silt, w/ sand lenses/seams

TOTAL DEPTH: 28 FT.

☐ *Boring Log Attached

STATIC WATER LEVEL N/A FT.

PUMP INSTALLED ☐ Yes ☑ No

I hereby certify that the monitoring well herein described was constructed in accordance with Missouri Department of Natural Resources requirements.

MONITORING WELL INSTALLATION CONTRACTOR	PERMIT NUMBER	DATE	MONITORING WELL INSTALLATION CONTRACTOR APPRENTICE (IF APPLICABLE)	PERMIT NUMBER
	003469M	06/09/2017		

MO 780-1415 (8-16) **SEND COMPLETED FORM ALONG WITH $100 CERTIFICATION FEE TO: MISSOURI DEPARTMENT OF NATURAL RESOURCES, MISSOURI GEOLOGICAL SURVEY, WELLHEAD PROTECTION SECTION, PO BOX 250, ROLLA, MO 65402 PHONE: 573-368-2165 FAX: 573-368-2317 EMAIL: welldrillers@dnr.mo.gov**
RECORD (AND FEE) MAY BE SUBMITTED ONLINE: dnr.mo.gov/mowells

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

MONITORING WELL CERTIFICATION RECORD

REF NO 01000598	DATE RECEIVED 01/15/2014
CR NO	CHECK NO. ONLINE
STATE WELL NO A900508	REVENUE NO. 011514
ENTERED 001233 PH1 PH2 PH3 01/15/2014 01/15/2014 01/15/2014	APPROVED BY / ROUTE

INFORMATION SUPPLIED BY PRIMARY CONTRACTOR OR DRILLING CONTRACTOR

NOTE: THIS FORM IS NOT TO BE USED FOR NESTED WELLS

OWNER NAME CITY OF COLUMBIA	CONTACT NAME CITY OF COLUMBIA			VARIANCE GRANTED BY DNR
OWNER ADDRESS PO BOX 6015	CITY COLUMBIA	STATE MO	ZIP 65205	NUMBER
SITE NAME MORES LAKE DAM		WELL NUMBER PZ1		COUNTY BOONE
SITE ADDRESS 1501 BUSINESS LOOP 70 EAST		CITY COLUMBIA		STATIC WATER LEVEL FT

SURFACE COMPLETION

TYPE
- [ ] ABOVE GROUND
- [X] FLUSH MOUNT

LENGTH AND DIAMETER OF SURFACE COMPLETION
LENGTH 1.0 FT.
DIAMETER 12.0 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
DIAMETER 6.0 IN.
LENGTH 1.0 FT.

SURFACE COMPLETION GROUT
- [X] CONCRETE
- [ ] OTHER

COPY

LOCATION OF WELL
LAT. 38 ° 57' 58.1"
LONG. 92 ° 19' 6.5"

SMALLEST _____ 1/4 LARGEST _____ 1/4 _____ 1/4

SEC. LG002753 TWN. _____ NORTH
RANGE _____ Direction

MONITORING FOR:
- [ ] RADIONUCLIDES
- [ ] EXPLOSIVES
- [ ] SVOCS
- [ ] PETROLEUM PRODUCTS ONLY
- [ ] METALS
- [ ] VOC
- [ ] PESTICIDES/HERBICIDESS

PROPOSED USE OF WELL
- [ ] GAS MIGRATION WELL
- [ ] EXTRACTION WELL
- [ ] PIEZOMETERS
- [ ] DIRECT PUSH
- [X] OBSERVATION
- [ ] OPEN HOLE

- [ ] LOCKING CAP
- [ ] WEEP HOLE

ELEVATION _____FT.

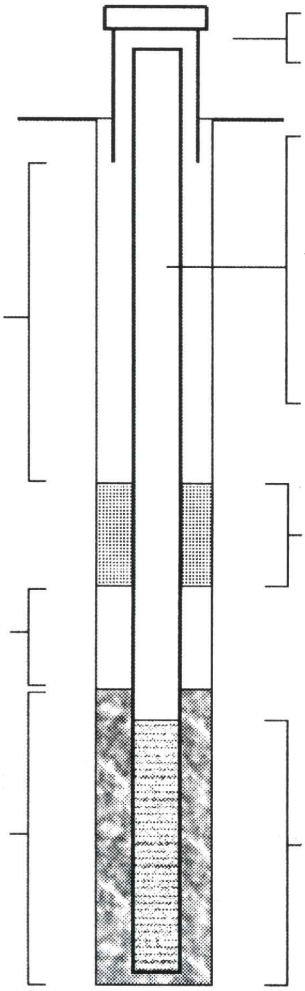
ANNULAR SEAL
LENGTH 2.0FT.
- [ ] SLURRY
- [ ] PELLETS
- [ ] CEMENT/SLURRY
- [ ] CHIPS
- [ ] GRANULAR

IF CEMENT/BENTONITE MIX:
BAGS OF CEMENT USED:
%OF BENTONITE USED:
WATER USED/BAG: GAL.

SECONDARY FILTER PACK
LENGTH: 0.0FT.

DEPTH TO TOP OF PRIMARY
FILTER PACK: 3.0FT.

LENGTH OF PRIMARY FILTER PACK: 17.0FT.



SURFACE COMPLETTION
- [X] STEEL
- [ ] ALUMINUM
- [ ] PLASTIC

RISER
RISER PIPE DIAMETER 2.0IN.
RISER PIPE LENGTH 5.0FT.
HOLE DIAMETER 7.0IN.
WEIGHT OR SDR# SCH40

MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

BENTONITE SEAL
LENGTH: 0.0
- [ ] CHIPS
- [ ] PELLETS
- [ ] GRANULAR
- [ ] SLURRY
- [ ] SATURATED ZONE
- [ ] HYDRATED

SCREEN
SCREEN DIAMETER: 2.0IN.
SCREEN LENGTH: 15.0FT.
DIAMETER OF DRILL HOLE: 7.0IN.
DEPTH TO TOP 5.0FT.

SCREEN MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0.0	20.0	CL, BROWN SILTY CLAY

TOTAL DEPTH: 20.0 FEET

FOR CASED WELLS, SUBMIT ADDITIONAL AS BUILT DIAGRAMS SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETER AND GROUT USED.

SIGNATURE (PRIMARY COUNTRACTOR) x JAMES CLINGMAN	PERMIT NUMBER 001233	DATE WELL DRILLING WAS COMPLETED 01/13/2014
I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH MISSOURI DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS		[ ] PUMP INSTALLED

SIGNATURE (WELL DRILLER) x JAMES CLINGMAN	PERMIT NUMBER 001233	SIGNATURE (APPRENTICE) x PAUL SCHEETZ	APPRENTICE PERMIT NUMBER 004707

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

MONITORING WELL CERTIFICATION RECORD

REF NO 01000599	DATE RECEIVED 01/15/2014
CR NO	CHECK NO. ONLINE
STATE WELL NO A900509	REVENUE NO. 011514
ENTERED 001233 PH1 PH2 PH3 01/15/2014 01/15/2014 01/15/2014	APPROVED BY / ROUTE

INFORMATION SUPPLIED BY PRIMARY CONTRACTOR OR DRILLING CONTRACTOR

NOTE: THIS FORM IS NOT TO BE USED FOR NESTED WELLS

OWNER NAME CITY OF COLUMBIA	CONTACT NAME CITY OF COLUMBIA			VARIANCE GRANTED BY DNR
OWNER ADDRESS PO BOX 6015	CITY COLUMBIA	STATE MO	ZIP 65205	NUMBER
SITE NAME MORES LAKE DAM		WELL NUMBER PZ2		COUNTY BOONE
SITE ADDRESS 1501 BUSINESS LOOP 70 EAST		CITY COLUMBIA		STATIC WATER LEVEL FT

SURFACE COMPLETION

TYPE	LENGTH AND DIAMETER OF SURFACE COMPLETION	DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED	SURFACE COMPLETION GROUT
[ ] ABOVE GROUND	LENGTH 1.0 FT.	DIAMETER 6.0 IN.	[X] CONCRETE
[X] FLUSH MOUNT	DIAMETER 12.0 IN.	LENGTH 1.0 FT.	[ ] OTHER

COPY

LOCATION OF WELL

LAT. 38 ° 57' 58.2"
LONG. 92 ° 19' 7.4"

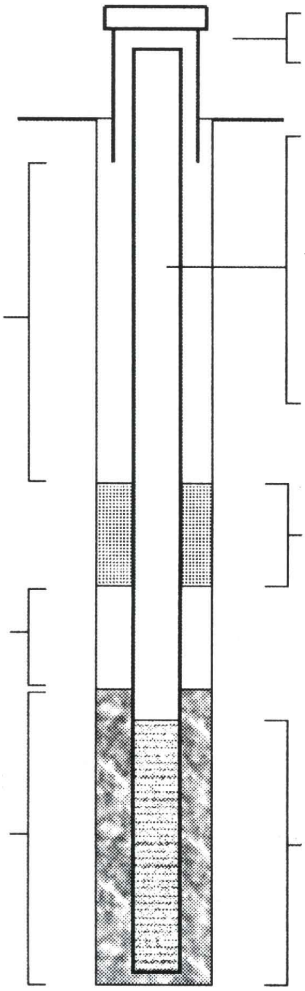
SMALLEST _____ 1/4 LARGEST _____ 1/4 _____ 1/4

SEC. LG002753 TWN. _____ NORTH
RANGE _____ Direction

MONITORING FOR:
[ ] RADIONUCLIDES [ ] PETROLEUM PRODUCTS ONLY
[ ] EXPLOSIVES [ ] METALS [ ] VOC
[ ] SVOCS [ ] PESTICIDES/HERBICIDESS

PROPOSED USE OF WELL
[ ] GAS MIGRATION WELL [X] OBSERVATION
[ ] EXTRACTION WELL [ ] OPEN HOLE
[ ] PIEZOMETERS
[ ] DIRECT PUSH

[ ] LOCKING CAP
[ ] WEEP HOLE



SURFACE COMPLETTION
[X] STEEL [ ] ALUMINUM [ ] PLASTIC

ELEVATION _____FT.

ANNULAR SEAL
LENGTH 2.0FT.
[ ] SLURRY [ ] CHIPS
[ ] PELLETS [ ] GRANULAR
[ ] CEMENT/SLURRY

IF CEMENT/BENTONITE MIX:
BAGS OF CEMENT USED:
%OF BENTONITE USED:
WATER USED/BAG: GAL.

RISER
RISER PIPE DIAMETER 2.0IN.
RISER PIPE LENGTH 5.0FT.
HOLE DIAMETER 7.0IN.
WEIGHT OR SDR# SCH40

MATERIAL
[ ] STEEL [X] THERMOPLASTIC (PVC)
[ ] OTHER

BENTONITE SEAL
LENGTH: 0.0
[ ] CHIPS [ ] PELLETS [ ] GRANULAR
[ ] SLURRY
[ ] SATURATED ZONE [ ] HYDRATED

SECONDARY FILTER PACK
LENGTH: 0.0FT.

SCREEN
SCREEN DIAMETER: 2.0IN.
SCREEN LENGTH: 15.0FT.
DIAMETER OF DRILL HOLE: 7.0IN.
DEPTH TO TOP 5.0FT.

DEPTH TO TOP OF PRIMARY
FILTER PACK: 3.0FT.

SCREEN MATERIAL
[ ] STEEL [X] THERMOPLASTIC (PVC)
[ ] OTHER

LENGTH OF PRIMARY FILTER PACK: 17.0FT.

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0.0	20.0	CL, BROWN SILTY CLAY
TOTAL DEPTH:	20.0 FEET	

FOR CASED WELLS, SUBMIT ADDITIONAL AS BUILT DIAGRAMS SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETER AND GROUT USED.

SIGNATURE (PRIMARY COUNTRACTOR) x JAMES CLINGMAN	PERMIT NUMBER 001233	DATE WELL DRILLING WAS COMPLETED 01/13/2014
I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH MISSOURI DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS		[ ] PUMP INSTALLED

SIGNATURE (WELL DRILLER) x JAMES CLINGMAN	PERMIT NUMBER 001233	SIGNATURE (APPRENTICE) x PAUL SCHEETZ	APPRENTICE PERMIT NUMBER 004707

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

MONITORING WELL CERTIFICATION RECORD

REF NO 01000600	DATE RECEIVED 01/15/2014
CR NO	CHECK NO. ONLINE
STATE WELL NO A900510	REVENUE NO. 011514
ENTERED 001233 PH1 PH2 PH3 01/15/2014 01/15/2014 01/15/2014	APPROVED BY / ROUTE

INFORMATION SUPPLIED BY PRIMARY CONTRACTOR OR DRILLING CONTRACTOR

NOTE: THIS FORM IS NOT TO BE USED FOR NESTED WELLS

OWNER NAME CITY OF COLUMBIA	CONTACT NAME CITY OF COLUMBIA			VARIANCE GRANTED BY DNR
OWNER ADDRESS PO BOX 6015	CITY COLUMBIA	STATE MO	ZIP 65205	NUMBER
SITE NAME MORES LAKE DAM		WELL NUMBER PZ3		COUNTY BOONE
SITE ADDRESS 1501 BUSINESS LOOP 70 EAST		CITY COLUMBIA		STATIC WATER LEVEL FT

SURFACE COMPLETION

TYPE
- [ ] ABOVE GROUND
- [X] FLUSH MOUNT

LENGTH AND DIAMETER OF SURFACE COMPLETION
LENGTH 1.0 FT.
DIAMETER 12.0 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
DIAMETER 6.0 IN.
LENGTH 1.0 FT.

SURFACE COMPLETION GROUT
- [X] CONCRETE
- [ ] OTHER

COPY

LOCATION OF WELL
LAT. 38 ° 57' 59.7"
LONG. 92 ° 19' 5.7"

SMALLEST _____ 1/4 LARGEST _____ 1/4 _____ 1/4
SEC. LG002753 TWN. _____ NORTH
RANGE _____ Direction

MONITORING FOR:
- [ ] RADIONUCLIDES
- [ ] EXPLOSIVES
- [ ] SVOCS
- [ ] PETROLEUM PRODUCTS ONLY
- [ ] METALS
- [ ] VOC
- [ ] PESTICIDES/HERBICIDESS

PROPOSED USE OF WELL
- [ ] GAS MIGRATION WELL
- [ ] EXTRACTION WELL
- [ ] PIEZOMETERS
- [ ] DIRECT PUSH
- [X] OBSERVATION
- [ ] OPEN HOLE

- [ ] LOCKING CAP
- [ ] WEEP HOLE

ELEVATION _____FT.

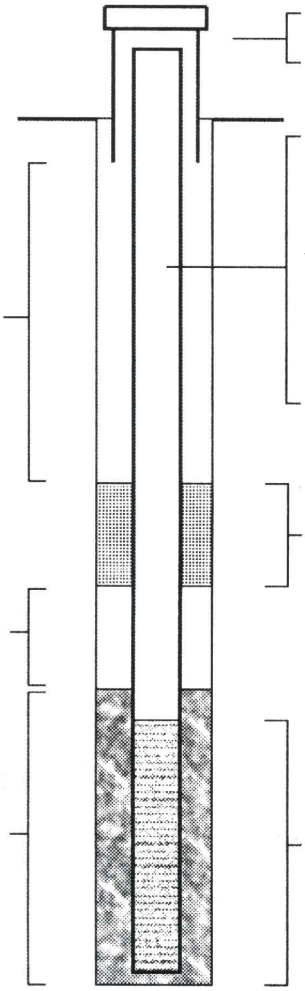
ANNULAR SEAL
LENGTH 2.0FT.
- [ ] SLURRY
- [ ] PELLETS
- [ ] CEMENT/SLURRY
- [ ] CHIPS
- [ ] GRANULAR

IF CEMENT/BENTONITE MIX:
BAGS OF CEMENT USED:
%OF BENTONITE USED:
WATER USED/BAG: GAL.

SECONDARY FILTER PACK
LENGTH: 0.0FT.

DEPTH TO TOP OF PRIMARY
FILTER PACK: 3.0FT.

LENGTH OF PRIMARY FILTER PACK: 17.0FT.



SURFACE COMPLETTION
- [X] STEEL
- [ ] ALUMINUM
- [ ] PLASTIC

RISER
RISER PIPE DIAMETER 2.0IN.
RISER PIPE LENGTH 5.0FT.
HOLE DIAMETER 7.0IN.
WEIGHT OR SDR# SCH40

MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

BENTONITE SEAL
LENGTH: 0.0
- [ ] CHIPS
- [ ] PELLETS
- [ ] GRANULAR
- [ ] SLURRY
- [ ] SATURATED ZONE
- [ ] HYDRATED

SCREEN
SCREEN DIAMETER: 2.0IN.
SCREEN LENGTH: 15.0FT.
DIAMETER OF DRILL HOLE: 7.0IN.
DEPTH TO TOP 5.0FT.

SCREEN MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0.0	20.0	CL, BROWN SILTY CLAY

TOTAL DEPTH: 20.0 FEET

FOR CASED WELLS, SUBMIT ADDITIONAL AS BUILT DIAGRAMS SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETER AND GROUT USED.

SIGNATURE (PRIMARY COUNTRACTOR) x JAMES CLINGMAN	PERMIT NUMBER 001233	DATE WELL DRILLING WAS COMPLETED 01/13/2014
I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH MISSOURI DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS		[ ] PUMP INSTALLED

SIGNATURE (WELL DRILLER) x JAMES CLINGMAN	PERMIT NUMBER 001233	SIGNATURE (APPRENTICE) x PAUL SCHEETZ	APPRENTICE PERMIT NUMBER 004707

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

MONITORING WELL CERTIFICATION RECORD

REF NO 01000601	DATE RECEIVED 01/15/2014
CR NO	CHECK NO. ONLINE
STATE WELL NO A900511	REVENUE NO. 011514
ENTERED 001233 PH1 PH2 PH3 01/15/2014 01/15/2014 01/15/2014	APPROVED BY / ROUTE

INFORMATION SUPPLIED BY PRIMARY CONTRACTOR OR DRILLING CONTRACTOR

NOTE: THIS FORM IS NOT TO BE USED FOR NESTED WELLS

OWNER NAME CITY OF COLUMBIA	CONTACT NAME CITY OF COLUMBIA			VARIANCE GRANTED BY DNR
OWNER ADDRESS PO BOX 6015	CITY COLUMBIA	STATE MO	ZIP 65205	NUMBER
SITE NAME MORES LAKE DAM		WELL NUMBER PZ4		COUNTY BOONE
SITE ADDRESS 1501 BUSINESS LOOP 70 EAST		CITY COLUMBIA		STATIC WATER LEVEL FT

SURFACE COMPLETION

TYPE
- [ ] ABOVE GROUND
- [X] FLUSH MOUNT

LENGTH AND DIAMETER OF SURFACE COMPLETION
LENGTH 1.0 FT.
DIAMETER 12.0 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
DIAMETER 6.0 IN.
LENGTH 1.0 FT.

SURFACE COMPLETION GROUT
- [X] CONCRETE
- [ ] OTHER

COPY

LOCATION OF WELL
LAT. 38 ° 58' 0.6"
LONG. 92 ° 19' 7.0"

SMALLEST ____ 1/4 ____ 1/4 ____ 1/4 LARGEST

SEC. LG002753 TWN. ____ NORTH
RANGE ____ Direction

MONITORING FOR:
- [ ] RADIONUCLIDES
- [ ] EXPLOSIVES
- [ ] SVOCS
- [ ] PETROLEUM PRODUCTS ONLY
- [ ] METALS
- [ ] VOC
- [ ] PESTICIDES/HERBICIDESS

PROPOSED USE OF WELL
- [ ] GAS MIGRATION WELL
- [ ] EXTRACTION WELL
- [ ] PIEZOMETERS
- [ ] DIRECT PUSH
- [X] OBSERVATION
- [ ] OPEN HOLE

- [ ] LOCKING CAP
- [ ] WEEP HOLE

ELEVATION ____FT.

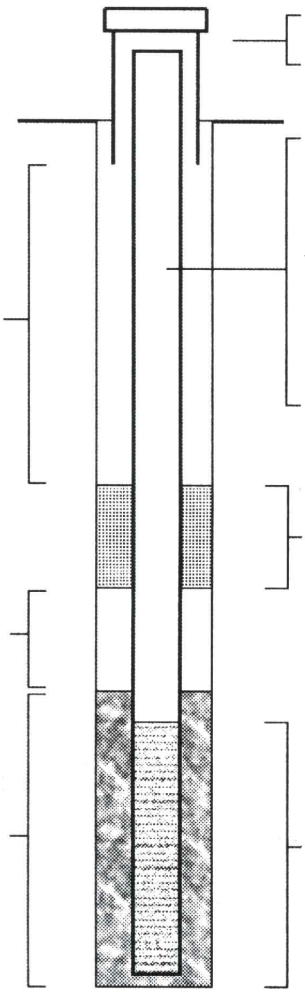
ANNULAR SEAL
LENGTH 2.0FT.
- [ ] SLURRY
- [ ] PELLETS
- [ ] CEMENT/SLURRY
- [ ] CHIPS
- [ ] GRANULAR

IF CEMENT/BENTONITE MIX:
BAGS OF CEMENT USED:
%OF BENTONITE USED:
WATER USED/BAG: GAL.

SECONDARY FILTER PACK
LENGTH: 0.0FT.

DEPTH TO TOP OF PRIMARY
FILTER PACK: 3.0FT.

LENGTH OF PRIMARY FILTER PACK: 17.0FT.



SURFACE COMPLETTION
- [X] STEEL
- [ ] ALUMINUM
- [ ] PLASTIC

RISER
RISER PIPE DIAMETER 2.0IN.
RISER PIPE LENGTH 5.0FT.
HOLE DIAMETER 7.0IN.
WEIGHT OR SDR# SCH40

MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

BENTONITE SEAL
LENGTH: 0.0
- [ ] CHIPS
- [ ] PELLETS
- [ ] GRANULAR
- [ ] SLURRY
- [ ] SATURATED ZONE
- [ ] HYDRATED

SCREEN
SCREEN DIAMETER: 2.0IN.
SCREEN LENGTH: 15.0FT.
DIAMETER OF DRILL HOLE: 7.0IN.
DEPTH TO TOP 5.0FT.

SCREEN MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0.0	20.0	CL, BROWN SILTY CLAY
TOTAL DEPTH:		20.0 FEET

FOR CASED WELLS, SUBMIT ADDITIONAL AS BUILT DIAGRAMS SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETER AND GROUT USED.

SIGNATURE (PRIMARY COUNTRACTOR) x JAMES CLINGMAN	PERMIT NUMBER 001233	DATE WELL DRILLING WAS COMPLETED 01/14/2014
I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH MISSOURI DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS		[ ] PUMP INSTALLED

SIGNATURE (WELL DRILLER) x JAMES CLINGMAN	PERMIT NUMBER 001233	SIGNATURE (APPRENTICE) x PAUL SCHEETZ	APPRENTICE PERMIT NUMBER 004707

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

MONITORING WELL CERTIFICATION RECORD

REF NO 01000602	DATE RECEIVED 01/15/2014
CR NO	CHECK NO. ONLINE
STATE WELL NO A900512	REVENUE NO. 011514
ENTERED 001233 PH1 PH2 PH3 01/15/2014 01/15/2014 01/15/2014	APPROVED BY / ROUTE

INFORMATION SUPPLIED BY PRIMARY CONTRACTOR OR DRILLING CONTRACTOR

NOTE: THIS FORM IS NOT TO BE USED FOR NESTED WELLS

OWNER NAME CITY OF COLUMBIA	CONTACT NAME CITY OF COLUMBIA			VARIANCE GRANTED BY DNR
OWNER ADDRESS PO BOX 6015	CITY COLUMBIA	STATE MO	ZIP 65205	NUMBER
SITE NAME MORES LAKE DAM		WELL NUMBER PZ5		COUNTY BOONE
SITE ADDRESS 1501 BUSINESS LOOP 70 EAST		CITY COLUMBIA		STATIC WATER LEVEL FT

SURFACE COMPLETION

TYPE
- [ ] ABOVE GROUND
- [X] FLUSH MOUNT

LENGTH AND DIAMETER OF SURFACE COMPLETION
LENGTH 1.0 FT.
DIAMETER 12.0 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
DIAMETER 6.0 IN.
LENGTH 1.0 FT.

SURFACE COMPLETION GROUT
- [X] CONCRETE
- [ ] OTHER

COPY

LOCATION OF WELL
LAT. 38 ° 58' 1.0"
LONG. 92 ° 19' 3.9"

SMALLEST ____ 1/4 ____ 1/4 ____ 1/4 LARGEST

SEC. LG002753 TWN. ____ NORTH
RANGE ____ Direction

MONITORING FOR:
- [ ] RADIONUCLIDES
- [ ] EXPLOSIVES
- [ ] SVOCS
- [ ] PETROLEUM PRODUCTS ONLY
- [ ] METALS
- [ ] VOC
- [ ] PESTICIDES/HERBICIDESS

PROPOSED USE OF WELL
- [ ] GAS MIGRATION WELL
- [ ] EXTRACTION WELL
- [ ] PIEZOMETERS
- [ ] DIRECT PUSH
- [X] OBSERVATION
- [ ] OPEN HOLE

- [ ] LOCKING CAP
- [ ] WEEP HOLE

ELEVATION ____FT.

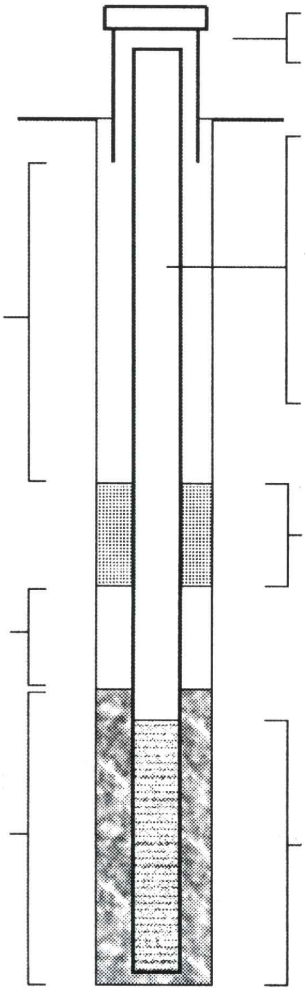
ANNULAR SEAL
LENGTH 2.0FT.
- [ ] SLURRY
- [ ] PELLETS
- [ ] CEMENT/SLURRY
- [ ] CHIPS
- [ ] GRANULAR

IF CEMENT/BENTONITE MIX:
BAGS OF CEMENT USED:
%OF BENTONITE USED:
WATER USED/BAG: GAL.

SECONDARY FILTER PACK
LENGTH: 0.0FT.

DEPTH TO TOP OF PRIMARY
FILTER PACK: 3.0FT.

LENGTH OF PRIMARY FILTER PACK: 17.0FT.



SURFACE COMPLETTION
- [X] STEEL
- [ ] ALUMINUM
- [ ] PLASTIC

RISER
RISER PIPE DIAMETER 2.0IN.
RISER PIPE LENGTH 5.0FT.
HOLE DIAMETER 7.0IN.
WEIGHT OR SDR# SCH40

MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

BENTONITE SEAL
LENGTH: 0.0
- [ ] CHIPS
- [ ] PELLETS
- [ ] GRANULAR
- [ ] SLURRY
- [ ] SATURATED ZONE
- [ ] HYDRATED

SCREEN
SCREEN DIAMETER: 2.0IN.
SCREEN LENGTH: 15.0FT.
DIAMETER OF DRILL HOLE: 7.0IN.
DEPTH TO TOP 5.0FT.

SCREEN MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0.0	20.0	CL, BROWN SILTY CLAY
TOTAL DEPTH:		20.0 FEET

FOR CASED WELLS, SUBMIT ADDITIONAL AS BUILT DIAGRAMS SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETER AND GROUT USED.

SIGNATURE (PRIMARY COUNTRACTOR) x JAMES CLINGMAN	PERMIT NUMBER 001233	DATE WELL DRILLING WAS COMPLETED 01/14/2014
I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH MISSOURI DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS		[ ] PUMP INSTALLED

SIGNATURE (WELL DRILLER) x JAMES CLINGMAN	PERMIT NUMBER 001233	SIGNATURE (APPRENTICE) x PAUL SCHEETZ	APPRENTICE PERMIT NUMBER 004707

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

MONITORING WELL CERTIFICATION RECORD

REF NO 01000603	DATE RECEIVED 01/15/2014
CR NO	CHECK NO. ONLINE
STATE WELL NO A900513	REVENUE NO. 011514
ENTERED 001233 PH1 PH2 PH3 01/15/2014 01/15/2014 01/15/2014	APPROVED BY / ROUTE

INFORMATION SUPPLIED BY PRIMARY CONTRACTOR OR DRILLING CONTRACTOR

NOTE: THIS FORM IS NOT TO BE USED FOR NESTED WELLS

OWNER NAME CITY OF COLUMBIA	CONTACT NAME CITY OF COLUMBIA			VARIANCE GRANTED BY DNR
OWNER ADDRESS PO BOX 6015	CITY COLUMBIA	STATE MO	ZIP 65205	NUMBER
SITE NAME MORES LAKE DAM		WELL NUMBER PZ6		COUNTY BOONE
SITE ADDRESS 1501 BUSINESS LOOP 70 EAST		CITY COLUMBIA		STATIC WATER LEVEL FT

SURFACE COMPLETION

TYPE
- [ ] ABOVE GROUND
- [X] FLUSH MOUNT

LENGTH AND DIAMETER OF SURFACE COMPLETION
LENGTH 1.0 FT.
DIAMETER 12.0 IN.

DIAMETER AND DEPTH OF THE HOLE SURFACE COMPLETION WAS PLACED
DIAMETER 6.0 IN.
LENGTH 1.0 FT.

SURFACE COMPLETION GROUT
- [X] CONCRETE
- [ ] OTHER

COPY

LOCATION OF WELL
LAT. 38 ° 58' 1.7"
LONG. 92 ° 19' 4.5"

SMALLEST ____ 1/4 ____ 1/4 ____ 1/4 LARGEST

SEC. LG002753 TWN. ____ NORTH
RANGE ____ Direction

MONITORING FOR:
- [ ] RADIONUCLIDES
- [ ] EXPLOSIVES
- [ ] SVOCS
- [ ] PETROLEUM PRODUCTS ONLY
- [ ] METALS
- [ ] VOC
- [ ] PESTICIDES/HERBICIDESS

PROPOSED USE OF WELL
- [ ] GAS MIGRATION WELL
- [ ] EXTRACTION WELL
- [ ] PIEZOMETERS
- [ ] DIRECT PUSH
- [X] OBSERVATION
- [ ] OPEN HOLE

- [ ] LOCKING CAP
- [ ] WEEP HOLE

ELEVATION ____FT.

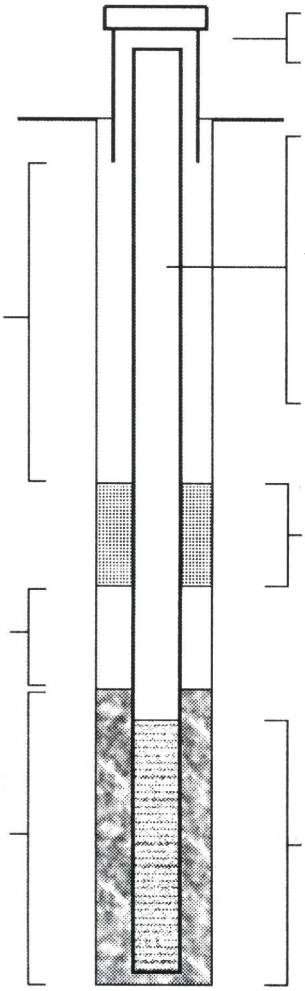
ANNULAR SEAL
LENGTH 2.0FT.
- [ ] SLURRY
- [ ] PELLETS
- [ ] CEMENT/SLURRY
- [ ] CHIPS
- [ ] GRANULAR

IF CEMENT/BENTONITE MIX:
BAGS OF CEMENT USED:
%OF BENTONITE USED:
WATER USED/BAG: GAL.

SECONDARY FILTER PACK
LENGTH: 0.0FT.

DEPTH TO TOP OF PRIMARY
FILTER PACK: 3.0FT.

LENGTH OF PRIMARY FILTER PACK: 17.0FT.



SURFACE COMPLETTION
- [X] STEEL
- [ ] ALUMINUM
- [ ] PLASTIC

RISER
RISER PIPE DIAMETER 2.0IN.
RISER PIPE LENGTH 5.0FT.
HOLE DIAMETER 7.0IN.
WEIGHT OR SDR# SCH40

MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

BENTONITE SEAL
LENGTH: 0.0
- [ ] CHIPS
- [ ] PELLETS
- [ ] GRANULAR
- [ ] SLURRY
- [ ] SATURATED ZONE
- [ ] HYDRATED

SCREEN
SCREEN DIAMETER: 2.0IN.
SCREEN LENGTH: 15.0FT.
DIAMETER OF DRILL HOLE: 7.0IN.
DEPTH TO TOP 5.0FT.

SCREEN MATERIAL
- [ ] STEEL
- [ ] OTHER
- [X] THERMOPLASTIC (PVC)

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0.0	20.0	CL, BROWN SILTY CLAY

TOTAL DEPTH: 20.0 FEET

FOR CASED WELLS, SUBMIT ADDITIONAL AS BUILT DIAGRAMS SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETER AND GROUT USED.

SIGNATURE (PRIMARY COUNTRACTOR) x JAMES CLINGMAN	PERMIT NUMBER 001233	DATE WELL DRILLING WAS COMPLETED 01/14/2014
I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH MISSOURI DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS		[ ] PUMP INSTALLED

SIGNATURE (WELL DRILLER) x JAMES CLINGMAN	PERMIT NUMBER 001233	SIGNATURE (APPRENTICE) x PAUL SCHEETZ	APPRENTICE PERMIT NUMBER 004707

WELL DEVELOPMENT RECORD

Project Name: More's Lake	**Project Number:** 93647	**Well Number:** **MW-1**

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	770.20
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	769.82

Well Information	
Date Well Installed:	05/24/17
Total Depth of Well:	42.87 feet from TOC
Depth to Top of Screen:	32.47 feet from TOC
Length of Casing Screened:	10.00 feet
Borehole Diameter:	8.25 inches
Well Casing Diameter:	2.00 inches
Type of Formation Screened:	Glacial Till/Drift

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 14.77 feet Filter Pack = 13.13 ft Saturated Filter Pack = 13.13 ft

1 Saturated Well Volume = 2.41 gallons

1 well volume (gallons) = initial height of water column (ft) x .16

Saturated Filter Pack Volume= **10.30 gallons**

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Saturated Borehole Volume = **38.12 gallons**

3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge		Bail		
Airlift		**Pump**	**X**	Drillers developed well with submersible pump (12v electric)

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/07/17	1515	28.10	42.74	0.0	0.0	22.6	7.7	0.640	OR	Begin surging screen
06/07/17	1525			0.0	0.0					Finish surging screen
06/07/17	1525			0.0	0.0	20.5	7.5	0.700	OR	Begin pumping - dark gray
06/07/17	1532			8.0	8.0	20.4	7.4	0.710	OR	dark gray
06/07/17	1535			4.5	12.5	20.3	7.4	0.710	OR	**Pumped dry** - allow 90% recharge
06/07/17	1550	28.59		0.0	12.5	23.3	7.7	0.910	OR	Begin surging screen
06/07/17	1555			0.0	12.5					Finish surging screen
06/07/17	1555			0.0	12.5	19.3	7.4	1.000	OR	Begin pumping - dark gray
06/07/17	1559			8.0	20.5	20.3	7.5	0.980	OR	Brown
06/07/17	1602			2.0	22.5	20.0	7.5	0.990	OR	**Pumped dry** - allow 90% recharge
06/07/17	1620	28.75		0.0	22.5	22.1	7.5	1.140	OR	Begin surging screen
06/07/17	1630			0.0	22.5					Finish surging screen

*from TOC unless otherwise noted in Remarks

091294 Form WCI OP6-1

WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake **Project Number:** 93647 **Well Number:** **MW-1**

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/07/17	1630			0.0	22.5	19.1	7.4	0.990	OR	Begin pumping - light brown
06/07/17	1636			8.0	30.5	19.2	7.4	0.990	OR	Light brown
06/07/17	1638	40.01	42.74	2.0	32.5	19.0	7.4	0.980	OR	**Pumped dry** third time - complete
06/14/17	1539	28.14	42.74	6.79	39.3	--	--	--	--	slug removal for rising head slug test

*from TOC unless otherwise noted in Remarks

091294 Form WCI OP6-1

WELL DEVELOPMENT RECORD

Project Name: More's Lake	**Project Number:** 93647	**Well Number:** MW-2

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	781.800
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	781.030

Well Information		
Date Well Installed:	05/23/17	
Total Depth of Well:	52.96	feet from TOC
Depth to Top of Screen:	42.59	feet from TOC
Length of Casing Screened:	10.00	feet
Borehole Diameter:	8.25	inches
Well Casing Diameter:	2.00	inches
Type of Formation Screened:	Glacial Till/Drift	

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 35.92 feet Filter Pack = 13.13 ft Saturated Filter Pack = 13.13 ft

1 Saturated Well Volume = 5.86

1 well volume (gallons) = initial height of water column (ft) x .16

Saturated Filter Pack Volume= **10.30**

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Saturated Borehole Volume = **48.47**

3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge		Bail		
Airlift		**Pump**	**X**	Drillers developed well with submersible pump (12v electric)

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
05/30/17	1530	17.04	52.92	0.0	0.0	20.2	8.1	0.510	295	Begin surging screen
05/30/17	1540			0.0	0.0					Finish surging screen
05/30/17	1541			0.0	0.0	17.9	7.3	0.770	OR	Begin pumping - brown
05/30/17	1549			11.5	11.5	17.7	7.2	0.840	1247 AU	Dark Brown
05/30/17	1557			11.5	23.0	17.0	7.1	0.850	OR	Dark Brown
05/30/17	1565			11.5	34.5	17.5	7.1	0.860	149	Light brown
05/30/17	1573			11.5	46.0	17.3	7.1	0.870	92.8	Light brown
05/30/17	1581			11.5	57.5	17.2	7.0	0.880	84.0	Light brown
05/30/17	1589			11.5	69.0	17.2	7.0	0.880	93.6	Light brown
05/30/17	1597			11.5	80.5	16.9	7.0	0.880	92.7	Light brown
05/30/17	1605			11.5	92.0	17.0	7.1	0.890	89.3	Light brown
05/30/17	1613			11.5	103.5	16.8	7.0	0.890	87.2	Light brown

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake **Project Number:** 93647 **Well Number:** **MW-2**

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
05/30/17	1621			11.5	115.0	16.7	7.0	0.900	84.6	Light brown
05/30/17	1630			11.5	126.5	17.0	7.0	0.900	83.9	Light brown
05/30/17	1640	37.18	52.92	11.5	138.0	16.9	7.0	0.910	85.1	Development complete - turbidity not below
										5 NTU (10% stable measurements)
06/14/17	930	20.10	52.92	139.0	277.0	--	--	--	OR	water removed for rising head slug test #1
06/19/17	1506	27.71	52.92	107.5	384.5	--	--	--	--	water removed for rising head slug test #2

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD

Project Name: More's Lake	**Project Number:** 93647	**Well Number:** **MW-3**

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	781.620
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	781.130

Well Information	
Date Well Installed:	05/18/17
Total Depth of Well:	49.58 feet from TOC
Depth to Top of Screen:	39.21 feet from TOC
Length of Casing Screened:	10.00 feet
Borehole Diameter:	8.25 inches
Well Casing Diameter:	2.00 inches
Type of Formation Screened:	Glacial Till/Drift

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 33.71 feet Filter Pack = 13.06 ft Saturated Filter Pack = 13.06 ft

1 Saturated Well Volume = 5.50 gallons

1 well volume (gallons) = initial height of water column (ft) x .16

Saturated Filter Pack Volume= **10.24 gallons**

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Saturated Borehole Volume = **47.23 gallons**

3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge		Bail		
Airlift		**Pump**	**X**	Drillers developed well with submersible pump (12v electric)

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
05/26/17	1410	15.87	49.54	0.0	0.0	18.1	7.7	0.710	OR	Begin surging screen
05/26/17	1420			0.0	0.0					Finish surging screen
05/26/17	1421			0.0	0.0	17.9	7.4	0.710	OR	Begin pumping - brown
05/26/17	1429			11.1	11.1	17.7	7.3	0.740	OR	Brown
05/26/17	1432			3.9	15.0	16.5	7.1	0.750	OR	**Pumped dry** - allow 90% recharge
05/30/17	1335	16.09	49.54	0.0	0.0	20.1	7.7	0.680	OR	Begin surging screen
05/30/17	1345			0.0	0.0					Finish surging screen
05/30/17	1345			0.0	0.0	17.6	7.5	0.670	OR	Begin pumping - brown
05/30/17	1349			11.1	26.1	17.2	7.4	0.680	OR	Brown
05/30/17	1352	47.20		4.9	31.0	17.1	7.4	0.680	OR	**Pumped dry** - allow 90% recharge
06/07/17	1343	16.28		0.0	0.0	19.7	7.4	0.840	OR	Begin surging screen
06/07/17	1353			0.0	0.0					Finish surging screen

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake | **Project Number:** 93647 | **Well Number:** **MW-3**

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/07/17	1354			0.0	0.0	17.6	7.3	0.860	OR	Begin pumping - brown
06/07/17	1402			11.1	42.1	17.0	7.2	0.860	OR	Brown
06/07/17	1405	47.01	49.56	2.9	45.0	17.1	7.2	0.850	OR	**Pumped dry** third time - complete
06/13/17	1129	16.29	49.50	11.5	56.5	--	--	--	--	pumped for rising head slug test and well yeild test

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD

Project Name: More's Lake	**Project Number:** 93647	**Well Number:** **MW-4**

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	785.390
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	785.020

Well Information	
Date Well Installed:	05/17/17
Total Depth of Well:	57.16 feet from TOC
Depth to Top of Screen:	46.78 feet from TOC
Length of Casing Screened:	10.01 feet
Borehole Diameter:	8.25 inches
Well Casing Diameter:	2.00 inches
Type of Formation Screened:	Glacial Till/Drift

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 35.42 feet Filter Pack = 13.03 ft Saturated Filter Pack = 13.03 ft

1 Saturated Well Volume = 5.78 gallons

1 well volume (gallons) = initial height of water column (ft) x .16

Saturated Filter Pack Volume= **10.22 gallons**

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Saturated Borehole Volume = **47.99 gallons**

3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge		**Bail**	**X**	
Airlift		**Pump**	**X**	Drillers developed well with submersible pump (12v electric) followed by BMcD development with disposable bailer.

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
05/26/17	1020	21.74		0.0	0.0	18.3	7.8	0.690	980	Begin surging screen
05/26/17	1030			0.0	0.0					Finish surging screen
05/26/17	1030			0.0	0.0	18.8	7.7	0.700	OR	Begin pumping - brown
05/26/17	1040			11.5	11.5	16.8	7.4	0.740	OR	Brown
05/26/17	1041			0.5	12.0	16.1	7.2	0.750	OR	**Pumped dry** - allow 90% recharge
05/30/17	1248	22.32		0.0	0.0	18.3	7.6	0.960	OR	Begin surging/purging with bailer
05/30/17	1320			11.5	0.0	17.1	7.3	0.970	OR	Brown
05/30/17	1323	55.80		0.5	0.0	16.9	7.2	0.970	OR	**Bailed dry** - allow 90% recharge
06/07/17	1303	22.25		0.0	0.0	21.1	7.9	0.910	869	Begin surging screen
06/07/17	1313			0.0	0.0					Finish surging screen
06/07/17	1313			0.0	0.0	15.6	7.0	0.990	OR	Begin pumping - brown
06/07/17	1327			11.5	35.5	17.6	7.1	1.000	OR	Brown

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake | **Project Number:** 93647 | **Well Number:** **MW-4**

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/07/17	1328	55.08	57.05	0.5	36.0	16.1	7.0	1.000	OR	**Pumped dry** third time - complete
06/13/17	1354	22.30	57.05	11.2	47.2	--	--	--	--	Pumped for rising head slug test and well yield test

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD

Project Name: More's Lake	**Project Number:** 93647	**Well Number:** **MW-5**

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	770.080
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	769.610

Well Information		
Date Well Installed:	05/19/17	
Total Depth of Well:	41.18	feet from TOC
Depth to Top of Screen:	30.80	feet from TOC
Length of Casing Screened:	10.01	feet
Borehole Diameter:	8.25	inches
Well Casing Diameter:	2.00	inches
Type of Formation Screened:	Glacial Till/Drift	

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 29.29 feet Filter Pack = 13.11 ft Saturated Filter Pack = 13.11 ft

1 Saturated Well Volume = 4.78 gallons

1 well volume (gallons) = initial height of water column (ft) x .16

Saturated Filter Pack Volume= **10.28 gallons**

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Saturated Borehole Volume = **45.18 gallons**

3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge		Bail		
Airlift		**Pump**	**X**	Drillers developed well with submersible pump (12v electric)

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/08/17	857	11.89	41.04	0.0	0.0	18.7	7.6	0.780	567	Begin surging screen
06/08/17	907			0.0	0.0					Finish surging screen
06/08/17	907			0.0	0.0	18.1	7.5	0.780	OR	Begin pumping - dark gray
06/08/17	915			10.4	10.4	17.7	7.5	0.780	OR	dark gray
06/08/17	917			1.6	12.0	17.6	7.4	0.790	OR	**Pumped dry** - allow 90% recharge
06/09/17	755	20.71		0.0	12.0	17.4	7.5	0.840	OR	Begin surging screen
06/09/17	805			0.0	12.0					Finish surging screen
06/09/17	805			0.0	12.0	16.7	7.4	0.890	OR	Begin pumping - brown
06/09/17	812			9.0	21.0	16.9	7.4	0.890	OR	**Pumped dry** - allow 90% recharge
06/12/17	1211	18.41		0.0	21.0	17.8	7.5	0.840	OR	Begin surging screen
06/12/17	1222			0.0	21.0					Finish surging screen
06/12/17	1222			0.0	21.0	16.5	7.4	0.890	OR	Begin pumping - light brown

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake | **Project Number:** 93647 | **Well Number:** **MW-5**

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/12/17	1232			10.4	31.4	16.6	7.4	0.890	OR	Light brown
06/12/17	1233	39.07	41.09	0.6	32.0	16.6	7.4	0.900	OR	**Pumped dry** third time - complete
06/19/17	1227	13.45	--	9.32	41.3	--	--	--	--	Pumped for rising head slug test and well yield test

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD

Project Name: More's Lake	**Project Number:** 93647	**Well Number:** MW-6

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	770.470
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	770.070

Well Information	
Date Well Installed:	05/25/17
Total Depth of Well:	41.83 feet from TOC
Depth to Top of Screen:	31.45 feet from TOC
Length of Casing Screened:	10.01 feet
Borehole Diameter:	8.25 inches
Well Casing Diameter:	2.00 inches
Type of Formation Screened:	Glacial Till/Drift

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 27.41 feet Filter Pack = 13.06 ft Saturated Filter Pack = 13.06 ft

1 Saturated Well Volume = 4.47 gallons

1 well volume (gallons) = initial height of water column (ft) x .16

Saturated Filter Pack Volume= **10.24 gallons**

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Saturated Borehole Volume = **44.14 gallons**

3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge		Bail		
Airlift		**Pump**	**X**	Drillers developed well with submersible pump (12v electric)

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/08/17	757	14.42	41.76	0.0	0.0	18.2	7.7	0.710	OR	Begin surging screen
06/08/17	807			0.0	0.0					Finish surging screen
06/08/17	807			0.0	0.0	18.9	7.4	0.930	OR	Begin pumping - dark gray
06/08/17	815			10.1	10.1	18.8	7.1	0.940	OR	Gray
06/08/17	817			2.9	13.0	19.1	7.1	0.800	OR	**Pumped dry** - allow 90% recharge
06/09/17	725	16.08		0.0	13.0	17.8	6.9	0.990	OR	Begin surging screen
06/09/17	735			0.0	13.0					Finish surging screen
06/09/17	735			0.0	13.0	17.3	7.1	0.990	OR	Begin pumping - light brown
06/09/17	744			10.1	23.1	17.2	7.1	1.000	OR	Light brown
06/09/17	745			1.9	25.0	17.2	7.0	1.000	OR	**Pumped dry** - allow 90% recharge
06/12/17	1105	15.36		0.0	25.0	17.9	7.3	0.980	OR	Begin surging screen
06/12/17	1115			0.0	25.0					Finish surging screen

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake **Project Number:** 93647 **Well Number:** **MW-6**

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/12/17	1115			0.0	25.0	17.2	7.1	0.990	OR	Begin pumping - light brown
06/12/17	1127			10.1	35.1	17.0	7.1	0.990	OR	Light brown
06/12/17	1128	40.55	41.75	1.9	37.0	17.1	7.0	1.000	OR	**Pumped dry** third time - complete
06/19/17	1133	15.15	--	9.32	46.3	--	--	--	--	Pumped for rising head slug test and well yield test

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD

Project Name:	More's Lake	**Project Number:**	93647	**Well Number:**	**MW-7**

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	762.670
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	762.230

Well Information		**Borehole Volume Calculation:**	Filter Pack Porosity = 30%
Date Well Installed:	05/16/17	Water Column = 11.96 feet	Filter Pack = 13.02 ft Saturated Filter Pack = 11.96 ft
Total Depth of Well:	33.46 feet from TOC	1 Saturated Well Volume = 1.95	
Depth to Top of Screen:	23.08 feet from TOC	1 well volume (gallons) = initial height of water column (ft) x .16	
Length of Casing Screened:	10.01 feet	Saturated Filter Pack Volume= **9.38**	
Borehole Diameter:	8.25 inches	Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume	
Well Casing Diameter:	2.00 inches	3 Saturated Borehole Volume = **33.99**	
Type of Formation Screened:	Glacial Till/Drift	3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)	

Development Method

Equipment:				Method Description:
Surge		**Bail**	**X**	Drillers developed well with submersible pump (12v electric) followed by BMcD developing with disposable bailer. November redevelopment effort included introducing water to well, surging and pumping (12v electric) followed by developing with a disposable bailer.
Airlift		**Pump**	**X**	

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
05/26/17	900	26.61	31.90	0.0	0.0	23.9	7.6	0.580	OR	Begin surging screen
05/26/17	915			0.0	0.0					Finish surging screen
05/26/17	915			0.0	0.0	21.8	7.4	0.670	OR	Begin pumping - dark gray
05/26/17	917			1.5	1.5	19.9	7.2	0.850	OR	**Pumped dry** - allow 90% recharge
05/30/17	1425	28.24	33.40	0.0	1.5	21.8	7.4	0.670	OR	Begin surging/bailing
05/30/17	1440	32.95		1.5	3.0	19.4	7.2	0.690	OR	**Bailed dry** - allow 90% recharge
06/08/17	725	28.41	33.40	0.0	3.0	16.4	7.6	1.220	OR	Begin surging/bailing
06/08/17	733	32.90	33.43	1.5	4.5	16.1	7.2	1.110	OR	**Bailed dry** third time - complete
06/13/17	1545	28.98	33.43	1.0	5.5	--	--	--	--	Bailed for rising head slug test and well yield test
06/19/17	1019	29.44		1.3	6.8	--	--	--	--	Bailed for rising head slug test and well yield test
11/16/17	1348	21.50	33.43	0.0	0.0	17.9	7.1	1.030	72.7	Initial reading
11/16/17	1400	19.80		0.0	0.0	-	-	-	-	Added water; begin surging; slightly cloudy

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake | **Project Number:** 93647 | **Well Number:** MW-7

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
11/16/17	1434	-	-	0.0	0.0	-	-	-	-	Begin pumping
11/16/17	1436	-	-	2.0	5.0	15.6	7.2	0.950	OR	Finished pumping; dark brown
11/16/17	1440	19.51	-	0.0	2.0	-	-	-	-	Added water; begin surging
11/16/17	1450	-	-	0.0	5.0	-	-	-	-	Begin pumping
11/16/17	1454	-	-	4.0	9.0	15.4	7.1	0.850	OR	Finished pumping; light brown
11/16/17	1456	19.31	-	0.0	9.0	-	-	-	-	Added water; begin surging
11/16/17	1506	-	-	0.0	9.0	-	-	-	-	Begin pumping
11/16/17	1510	-	-	4.0	13.0	15.3	7.6	0.470	OR	Finished pumping; dark brown
11/16/17	1523	20.08	-	0.0	13.0	-	-	-	-	Added water; begin surging
11/16/17	1533	-	-	0.0	13.0	-	-	-	-	Begin pumping
11/16/17	1536	-	-	4.0	17.0	15.3	7.5	0.470	OR	Finished pumping; dark brown
11/16/17	1538	20.16	-	0.0	17.0	-	-	-	-	Added water; begin surging
11/16/17	1553	-	-	0.0	17.0	-	-	-	-	Pump not working; switch to bailing
11/16/17	1620	32.45	-	4.0	21.0	14.9	7.2	0.420	OR	Bailed Dry
11/16/17	1643	9.50	-	0.0	21.0	-	-	-	-	Added water; begin bailing
11/16/17	1718	32.35	33.43	6.0	27.0	14.90	8.1	0.410	OR	Bailed dry

*from TOC unless otherwise noted in Remarks

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WELL DEVELOPMENT RECORD

Project Name: More's Lake	**Project Number:** 93647	**Well Number:** **MW-8**

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	753.460
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	753.090

Well Information	
Date Well Installed:	05/18/17
Total Depth of Well:	27.92 feet from TOC
Depth to Top of Screen:	17.54 feet from TOC
Length of Casing Screened:	10.01 feet
Borehole Diameter:	8.25 inches
Well Casing Diameter:	2.00 inches
Type of Formation Screened:	Glacial Till/Drift

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 21.39 feet Filter Pack = 13.09 ft Saturated Filter Pack = 13.09 ft

1 Saturated Well Volume = 3.49

1 well volume (gallons) = initial height of water column (ft) x .16

Saturated Filter Pack Volume= **10.26**

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Saturated Borehole Volume = **41.27**

3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge		Bail		
Airlift		**Pump**	**X**	Drillers developed well with submersible pump (12v electric).

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
05/26/17	1317	6.53	27.88	0.0	0.0	17.8	7.1	0.870	125	Begin surging screen
05/26/17	1327			0.0	0.0					Finish surging screen
05/26/17	1328			0.0	0.0	16.5	6.9	2.300	OR	Begin pumping - light brown
05/26/17	1339			9.0	9.0	15.9	7.1	1.470	OR	**Pumped dry** - allow 90% recharge
06/07/17	1430	7.54		0.0	9.0	19.2	7.4	1.420	225	Begin surging screen
06/07/17	1440			0.0	9.0					Finish surging screen
06/07/17	1440			0.0	9.0	17.4	7.2	1.450	OR	Begin pumping - light brown
06/07/17	1446			7.0	16.0	16.9	7.1	1.470	OR	**Pumped dry** - allow 90% recharge
06/08/17	1000	7.68		0.0	16.0	19.1	7.1	0.890	75	Begin surging screen
06/08/17	1005			0.0	16.0					Finish surging screen
06/08/17	1005			0.0	16.0	17.1	7.1	1.460	OR	Begin pumping - light brown
06/08/17	1010	26.81	27.85	7.0	23.0	16.8	7.0	1.590	OR	**Pumped dry** third time - complete

*from TOC unless otherwise noted in Remarks

091294 Form WCI OP6-1

WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake | **Project Number:** 93647 | **Well Number:** **MW-8**

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/14/17	1131	7.96	27.85	6.79	29.8	--	--	--	--	Pump for rising head slug test and well yield test

*from TOC unless otherwise noted in Remarks

091294 Form WCI OP6-1

WELL DEVELOPMENT RECORD

Project Name: More's Lake	**Project Number:** 93647	**Well Number:** **PZ-2**

Project Information		**Elevation of Monitoring Well**	
Facility Name:	Columbia Municipal Power Plant	Ground Surface Elevation (GS):	4624.000
Location:	Columbia, Missouri	Top of Casing Elevation (TOC):	4623.500

Well Information		
Date Well Installed:	01/13/14	
Total Depth of Well:	19.80	feet from TOC
Depth to Top of Screen:	4.40	feet from TOC
Length of Casing Screened:	15.00	feet
Borehole Diameter:	8.25	inches
Well Casing Diameter:	2.00	inches
Type of Formation Screened:	Glacial Till/Drift	

Borehole Volume Calculation: Filter Pack Porosity = 30%

Water Column = 11.39 feet Filter Pack = 17.00 ft Saturated Filter Pack = 11.39 ft

1 Saturated Well Volume = 1.86

1 well volume (gallons) = initial height of water column (ft) x .16

Saturated Filter Pack Volume= **8.93**

Filter pack volume (gallons) = saturated borehole filter pack volume (assuming 30% porosity) - saturated well filter pack volume

3 Saturated Borehole Volume = **32.37**

3 Saturated Borehole Volumes (gallons) = 3 x (saturated well casing volume + saturated filter pack)

Development Method

Equipment:				Method Description:
Surge		Bail	X	
Airlift		**Pump**	**X**	Drillers developed well with submersible pump (12v electric).

Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/08/17	1235	8.41	19.40	0.0	0.0	19.6	7.2	1.600	126	Begin surging screen
06/08/17	1245			0.0	0.0					Finish surging screen
06/08/17	1245			0.0	0.0	19.5	6.9	1.670	OR	Begin pumping - brown
06/08/17	1250			6.0	6.0	19.1	7.0	1.670	OR	**Pumped dry** - allow 90% recharge
06/08/17	1625	9.45		0.0	6.0	19.2	7.0	1.430	OR	Begin surging screen
06/08/17	1632			0.0	6.0					Finish surging screen
06/08/17	1632			0.0	6.0	19.3	6.9	1.630	OR	Begin pumping - brown
06/08/17	1637			4.0	10.0	19.4	6.8	1.630	OR	**Pumped dry** - allow 90% recharge
06/09/17	924	8.52		0.0	10.0	19.2	7.2	1.430	OR	Begin surging screen
06/09/17	934			0.0	10.0					Finish surging screen
06/09/17	934			0.0	10.0	17.1	6.8	1.280	OR	Begin pumping - brown
06/09/17	940	18.76	19.80	6.0	16.0	17.4	6.9	1.300	OR	**Pumped dry** third time - complete

*from TOC unless otherwise noted in Remarks

091294 Form WCI OP6-1

WELL DEVELOPMENT RECORD (Continued)

Project Name: More's Lake | **Project Number:** 93647 | **Well Number:** **PZ-2**

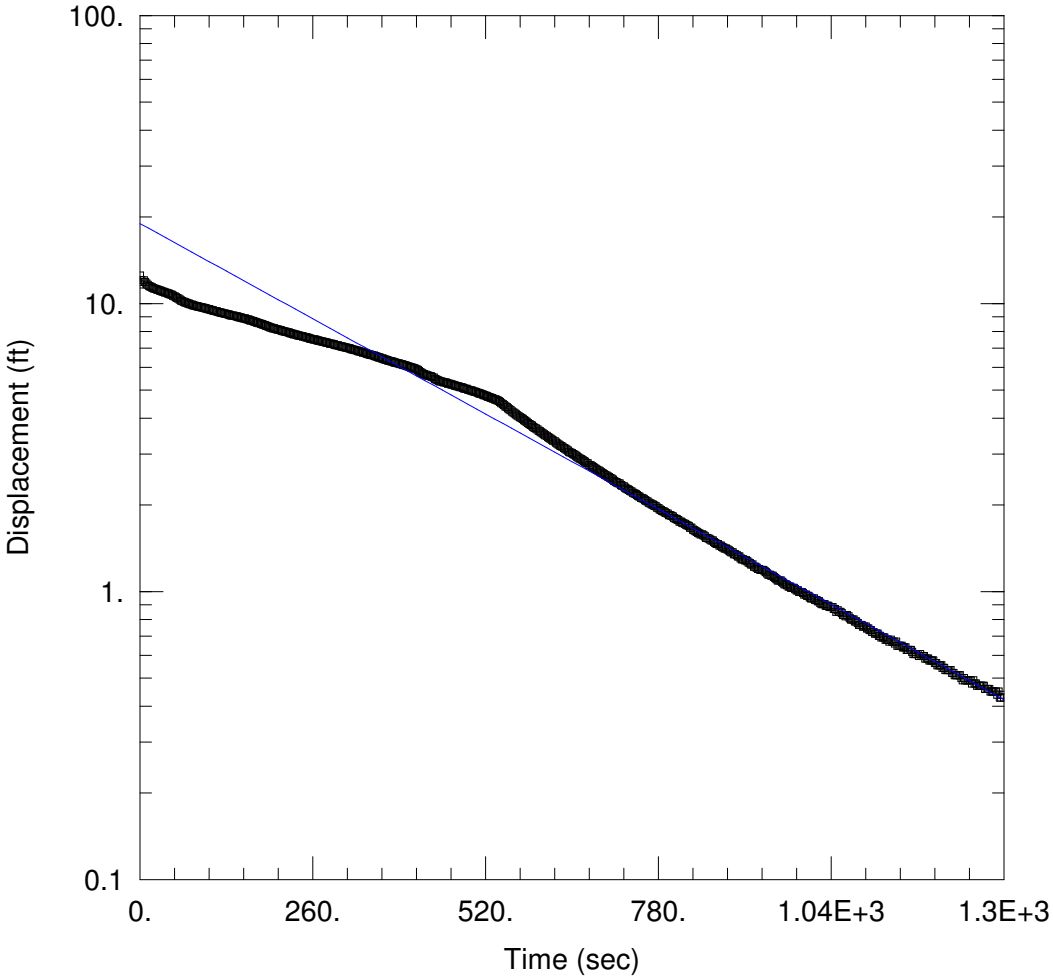
Observations During Development

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed Gallons	Fluid Removed Total	Temp. (ºC)	pH (units)	S.C. (µS/cm)	Turbidity	Fluid Appearance and Remarks (turbidity, color, odor, etc.)
06/15/17	1009	8.47	19.80	3.71	19.7	--	--	--	--	Pumped for rising head slug test and well yield test

*from TOC unless otherwise noted in Remarks

091294 Form WCI OP6-1

APPENDIX B – HYDRAULIC TEST DATA



MW-1 RISING HEAD TEST #1

Data Set: Z:\...\MW-1_BR.aqt
Date: 08/31/17 Time: 10:22:26

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-1
Test Date: 6/14/2017

AQUIFER DATA

Saturated Thickness: 14.73 ft
Anisotropy Ratio (Kz/Kr): 1.

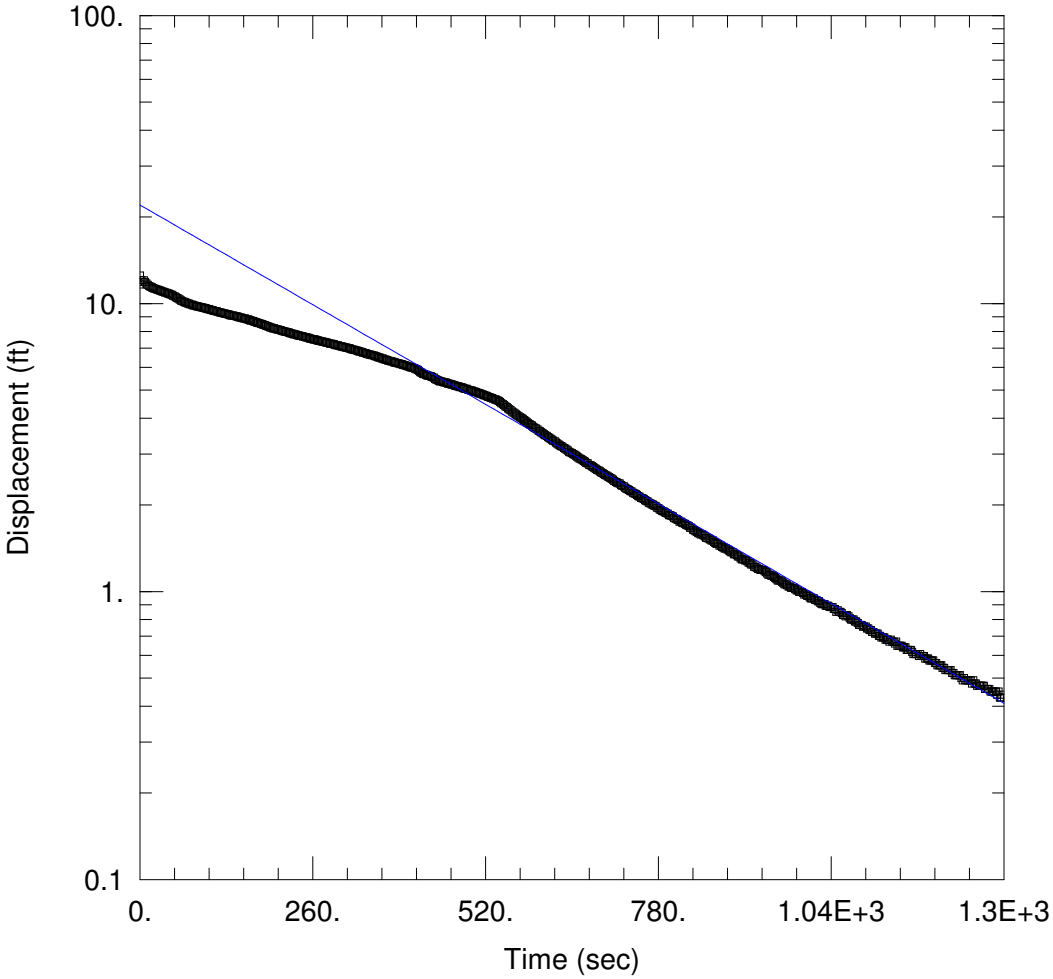
WELL DATA (MW-1)

Initial Displacement: 12.5 ft
Total Well Penetration Depth: 14.36 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 14.73 ft
Screen Length: 10. ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0003109 cm/sec
y0 = 18.96 ft



MW-1 RISING HEAD TEST #1

Data Set: Z:\...\MW-1_HV.aqt
Date: 08/31/17 Time: 10:24:35

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-1
Test Date: 6/14/2017

AQUIFER DATA

Saturated Thickness: 14.73 ft Anisotropy Ratio (Kz/Kr): 1.

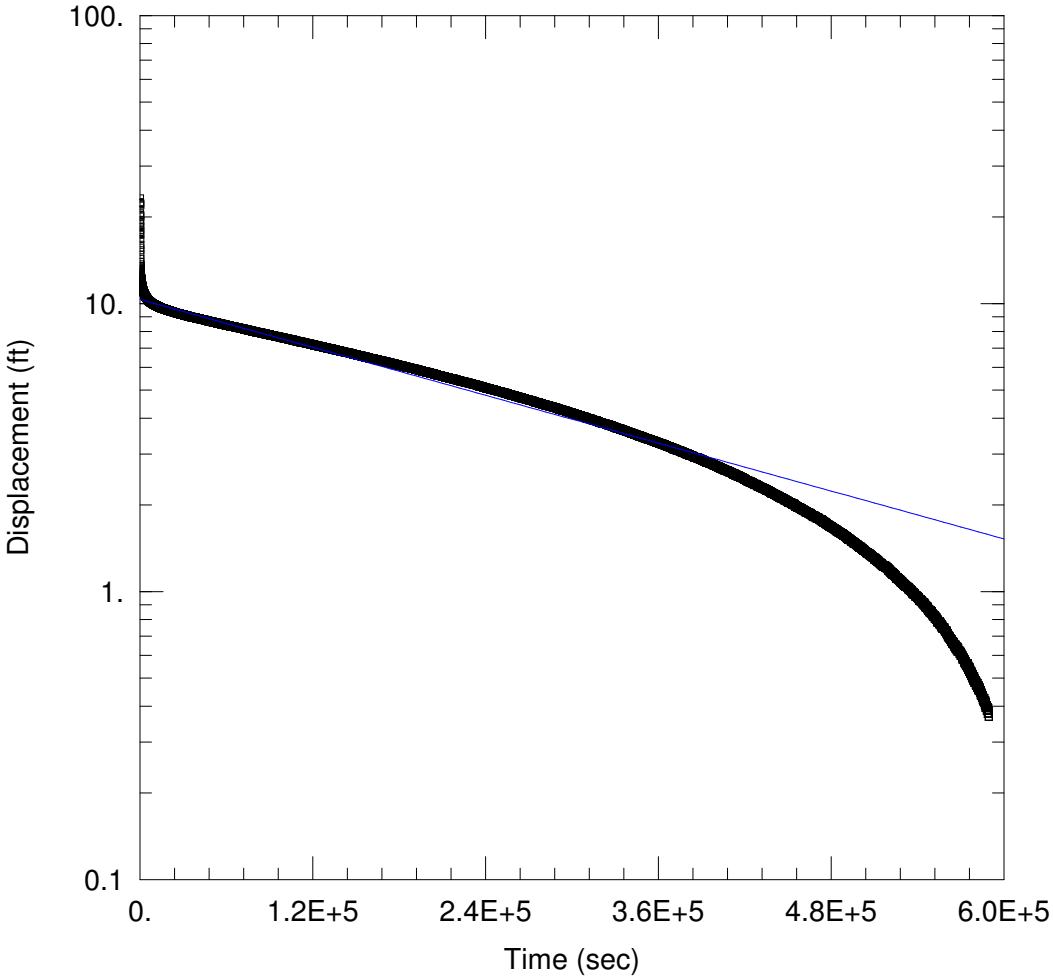
WELL DATA (MW-1)

Initial Displacement: 12.5 ft Static Water Column Height: 14.73 ft
Total Well Penetration Depth: 14.36 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.0001029 cm/sec y0 = 21.98 ft



MW-2 RISING HEAD TEST

Data Set: Z:\...\MW-2_test2_BR.aqt
Date: 08/31/17 Time: 10:58:27

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-2
Test Date: 6/19/2017

AQUIFER DATA

Saturated Thickness: 27.71 ft
Anisotropy Ratio (Kz/Kr): 1.

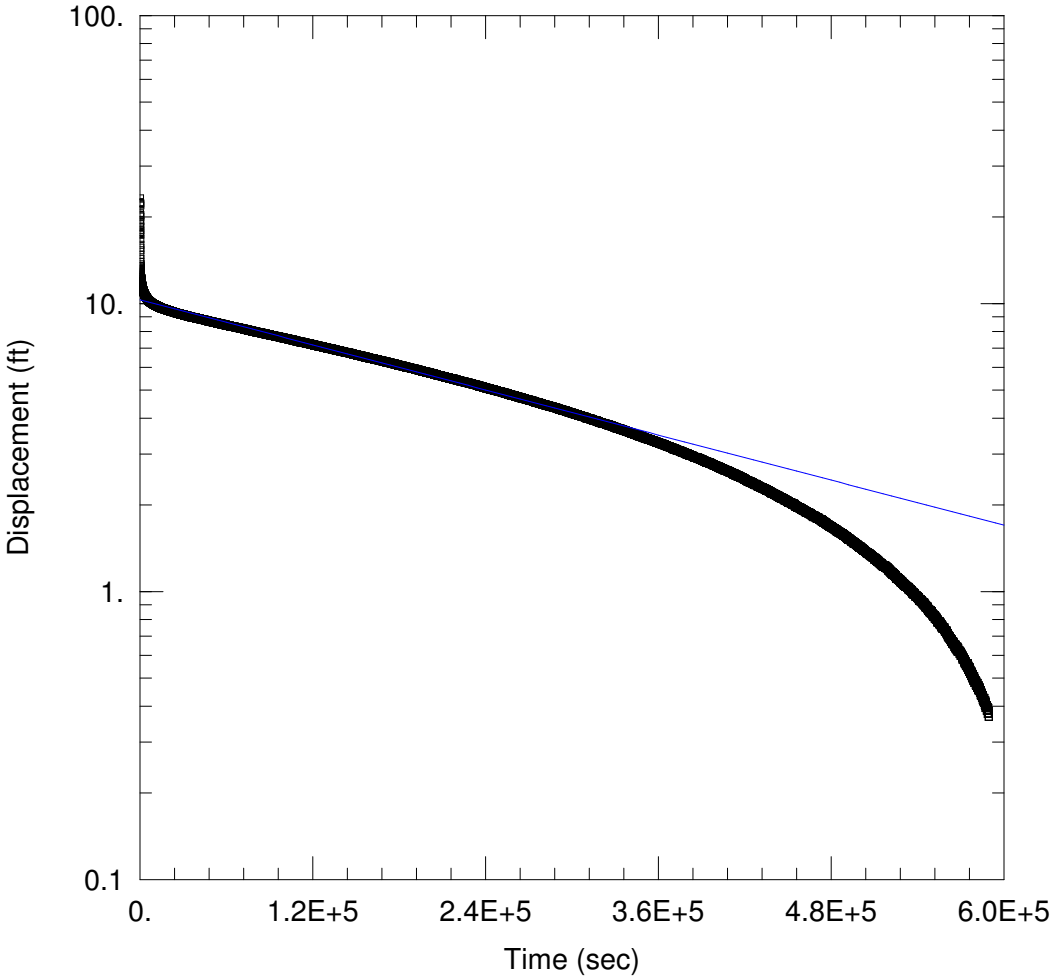
WELL DATA (MW-2)

Initial Displacement: 23.2 ft
Total Well Penetration Depth: 24.88 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 27.71 ft
Screen Length: 10. ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.485E-7 cm/sec
y0 = 10.33 ft



MW-2 RISING HEAD TEST

Data Set: Z:\...\MW-2_test2_HV.aqt
Date: 08/31/17 Time: 11:00:20

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-2
Test Date: 6/19/2017

AQUIFER DATA

Saturated Thickness: 27.71 ft Anisotropy Ratio (Kz/Kr): 1.

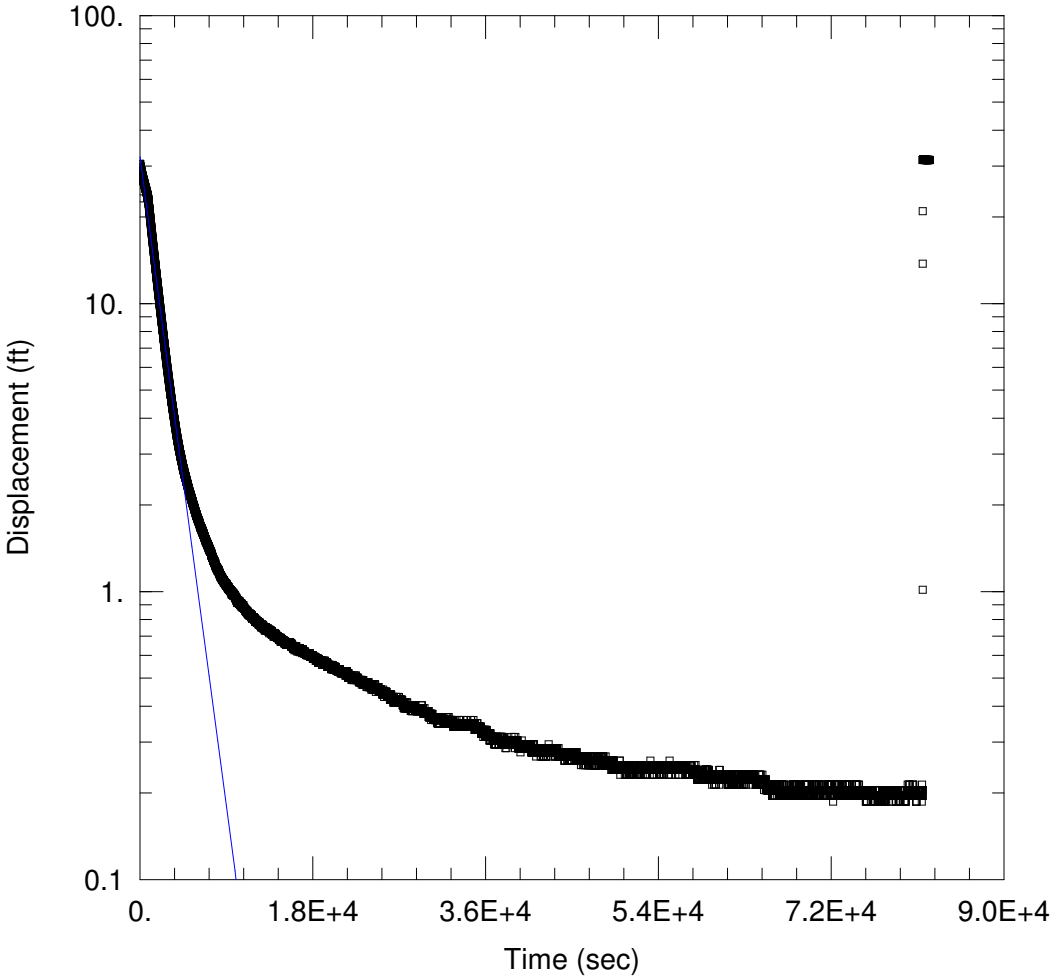
WELL DATA (MW-2)

Initial Displacement: 23.2 ft
Total Well Penetration Depth: 24.88 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 27.71 ft
Screen Length: 10. ft
Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.009E-7 cm/sec y0 = 10.31 ft



MW-3 RISING HEAD TEST

Data Set: Z:\...\MW-3_test_BR.aqt
Date: 08/31/17 Time: 11:01:56

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-3
Test Date: 6/14/2017

AQUIFER DATA

Saturated Thickness: 33.29 ft
Anisotropy Ratio (Kz/Kr): 1.

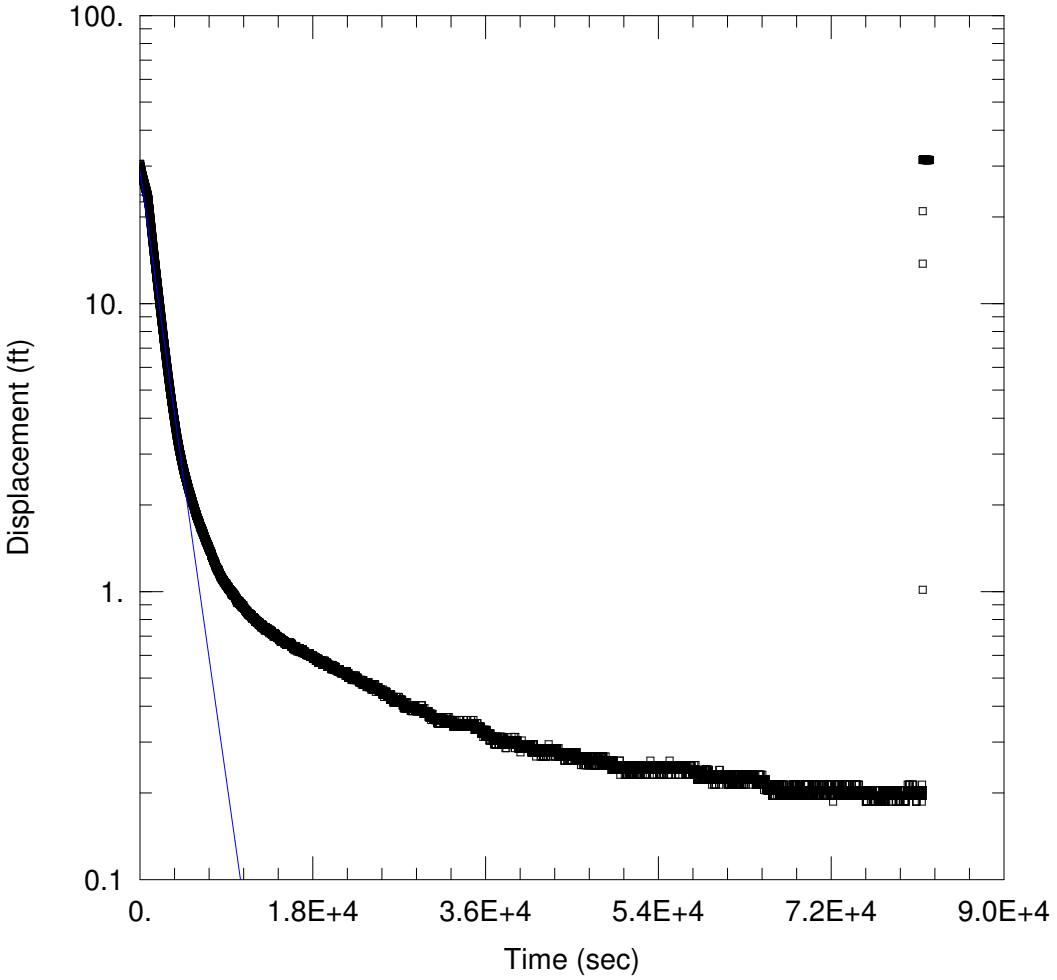
WELL DATA (MW-2)

Initial Displacement: 23.2 ft
Total Well Penetration Depth: 24.88 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 27.71 ft
Screen Length: 10. ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 6.072E-5 cm/sec
y0 = 32.31 ft



MW-3 RISING HEAD TEST

Data Set: Z:\...\MW-3_test_HV.aqt
Date: 08/31/17 Time: 11:03:10

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-3
Test Date: 6/14/2017

AQUIFER DATA

Saturated Thickness: 33.29 ft Anisotropy Ratio (Kz/Kr): 1.

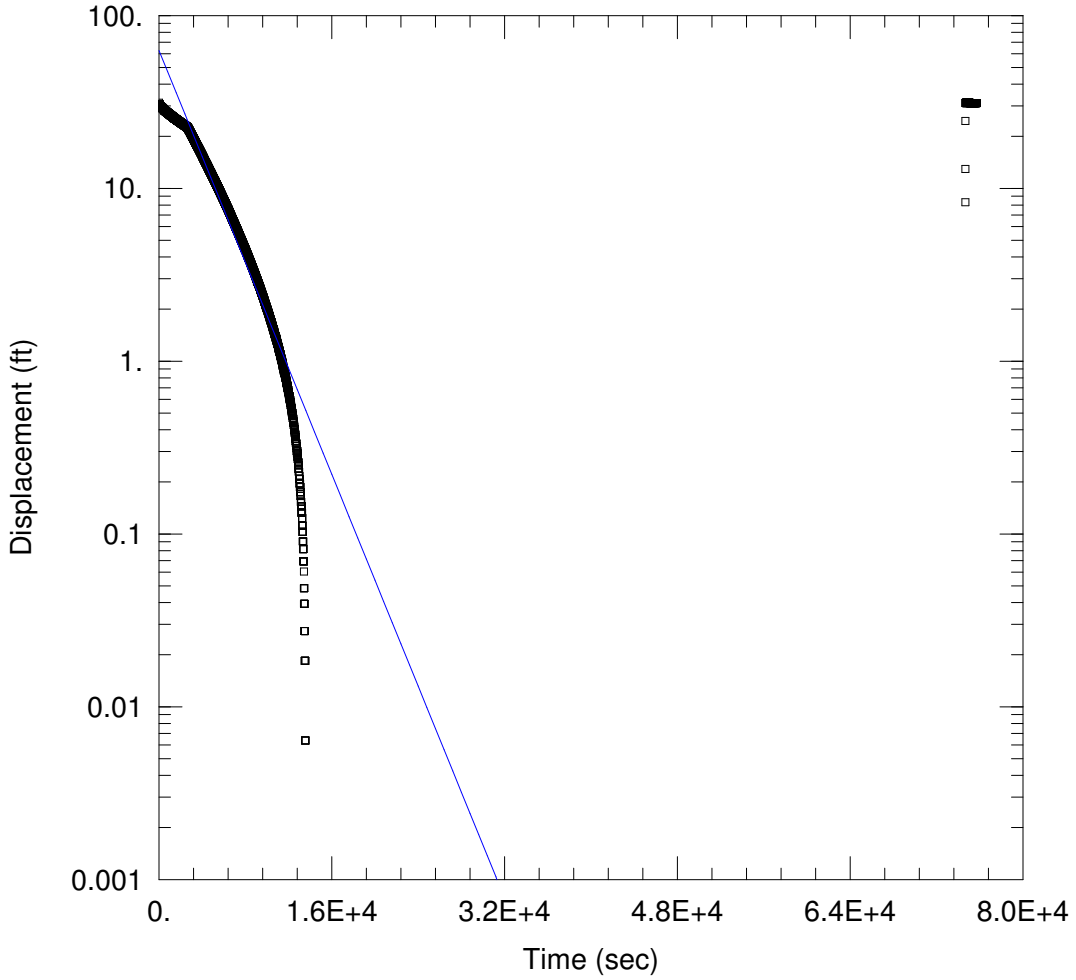
WELL DATA (MW-2)

Initial Displacement: 23.2 ft Static Water Column Height: 27.71 ft
Total Well Penetration Depth: 24.88 ft Screen Length: 10. ft
Casing Radius: 0.0833 ft Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.819E-5 cm/sec y0 = 29.04 ft



MW-4 RISING HEAD TEST

Data Set: Z:\...\MW-4_test_BR.aqt
Date: 08/31/17 Time: 11:05:18

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-4
Test Date: 6/13/2017

AQUIFER DATA

Saturated Thickness: 34.86 ft
Anisotropy Ratio (Kz/Kr): 1.

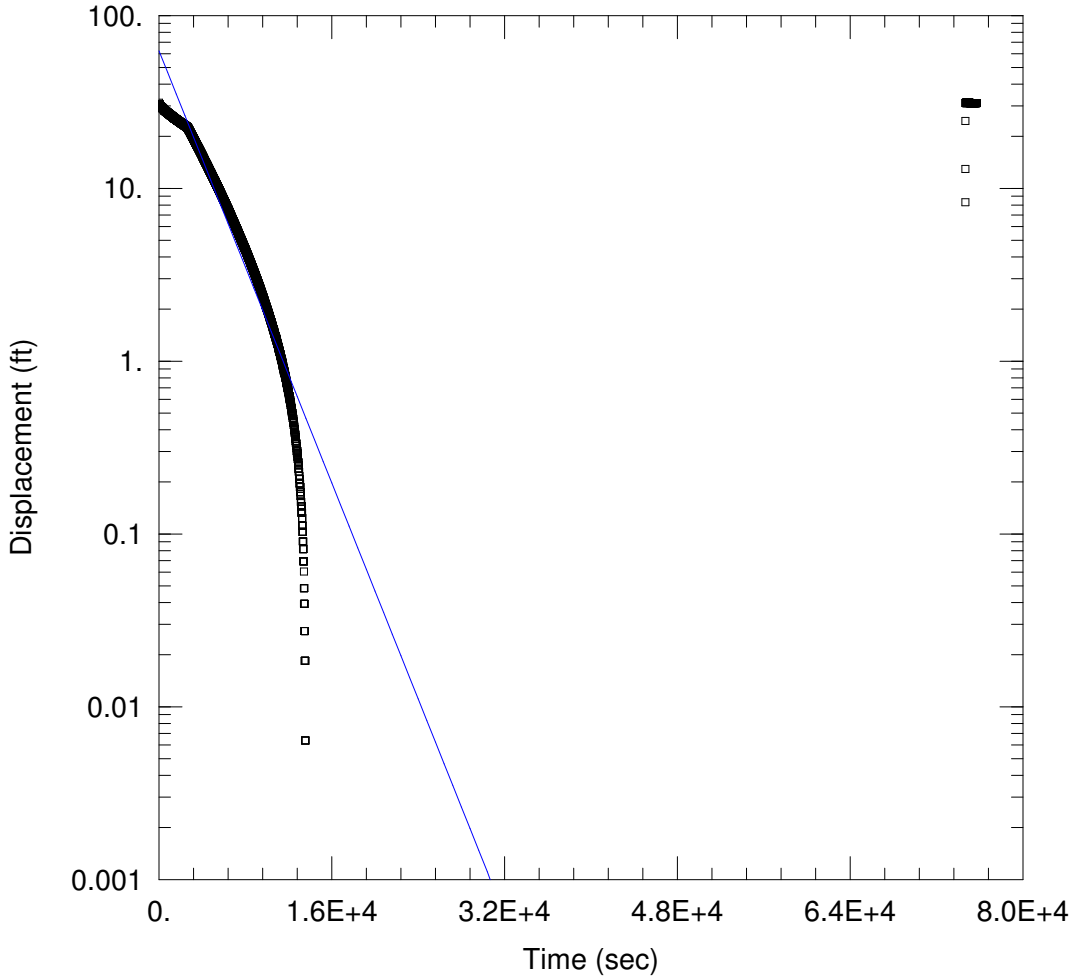
WELL DATA (MW-4)

Initial Displacement: 31.26 ft
Total Well Penetration Depth: 34.48 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 34.86 ft
Screen Length: 10. ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 4.358E-5 cm/sec
y0 = 62.79 ft



MW-4 RISING HEAD TEST

Data Set: Z:\...\MW-4_test_HV.aqt
Date: 08/31/17 Time: 11:06:30

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-4
Test Date: 6/13/2017

AQUIFER DATA

Saturated Thickness: 34.86 ft
Anisotropy Ratio (Kz/Kr): 1.

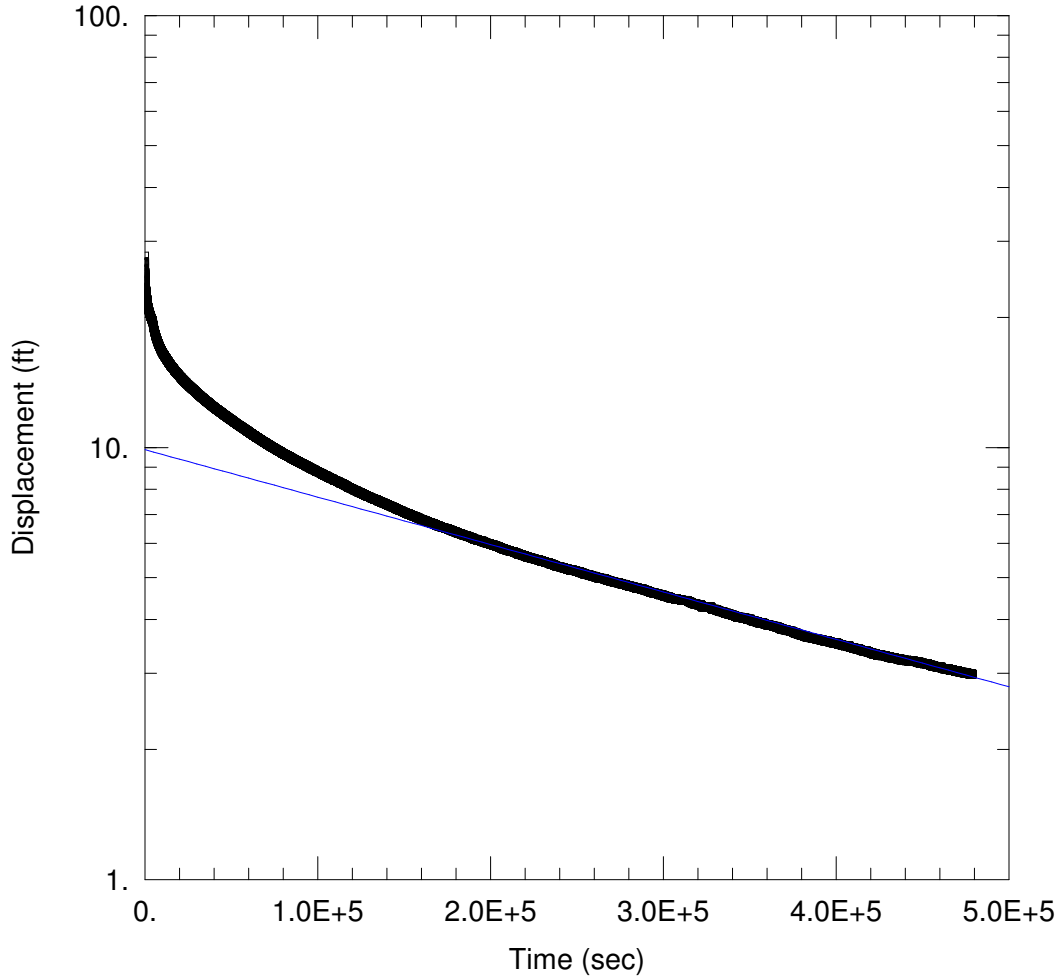
WELL DATA (MW-4)

Initial Displacement: 31.26 ft
Total Well Penetration Depth: 34.48 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 34.86 ft
Screen Length: 10. ft
Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 1.208E-5 cm/sec
y0 = 62.45 ft



MW-5 RISING HEAD TEST

Data Set: Z:\...\MW-5_test_BR.aqt
Date: 08/31/17 Time: 11:07:35

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-5
Test Date: 6/19/2017

AQUIFER DATA

Saturated Thickness: 27.73 ft
Anisotropy Ratio (Kz/Kr): 1.

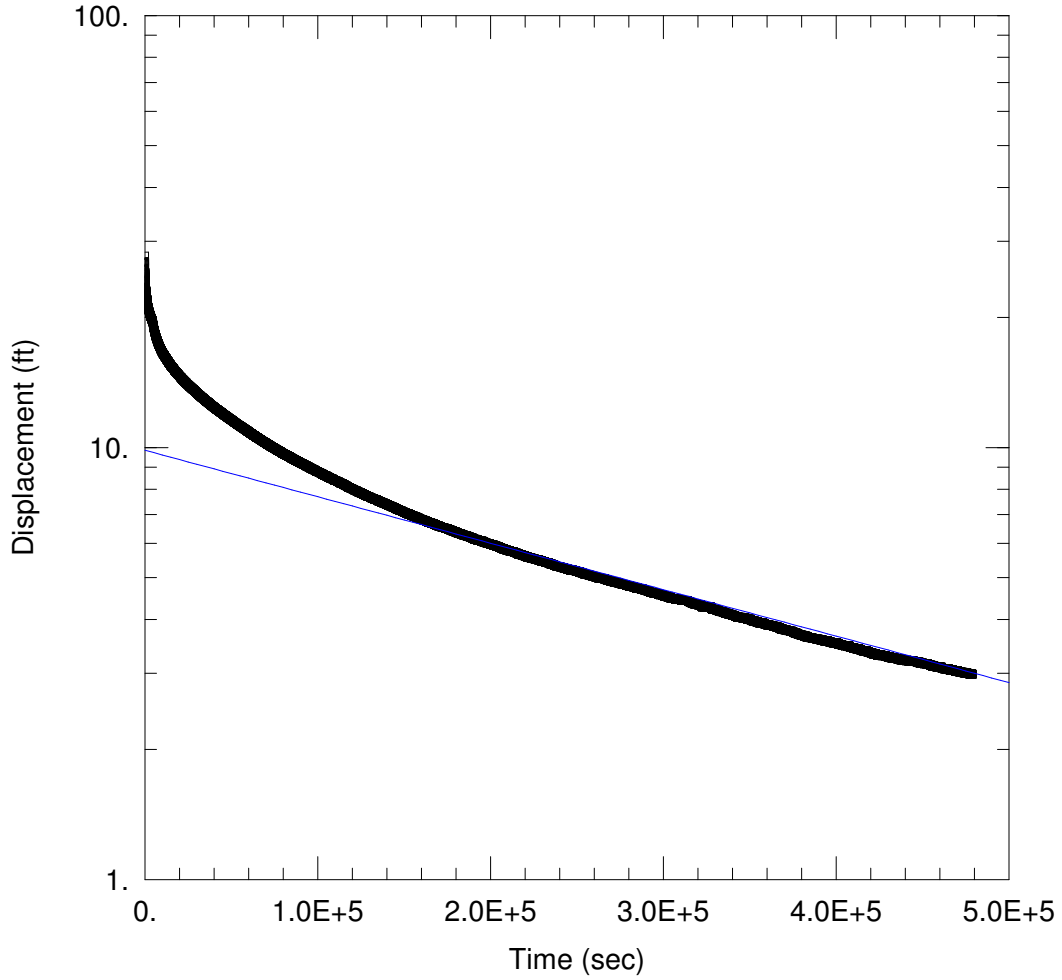
WELL DATA (MW-5)

Initial Displacement: 27.8 ft
Total Well Penetration Depth: 20.39 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 27.73 ft
Screen Length: 10.01 ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.59E-7 cm/sec
y0 = 9.884 ft



MW-5 RISING HEAD TEST

Data Set: Z:\...\MW-5_test_HV.aqt
Date: 08/31/17 Time: 11:08:40

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-5
Test Date: 6/19/2017

AQUIFER DATA

Saturated Thickness: 27.73 ft Anisotropy Ratio (Kz/Kr): 1.

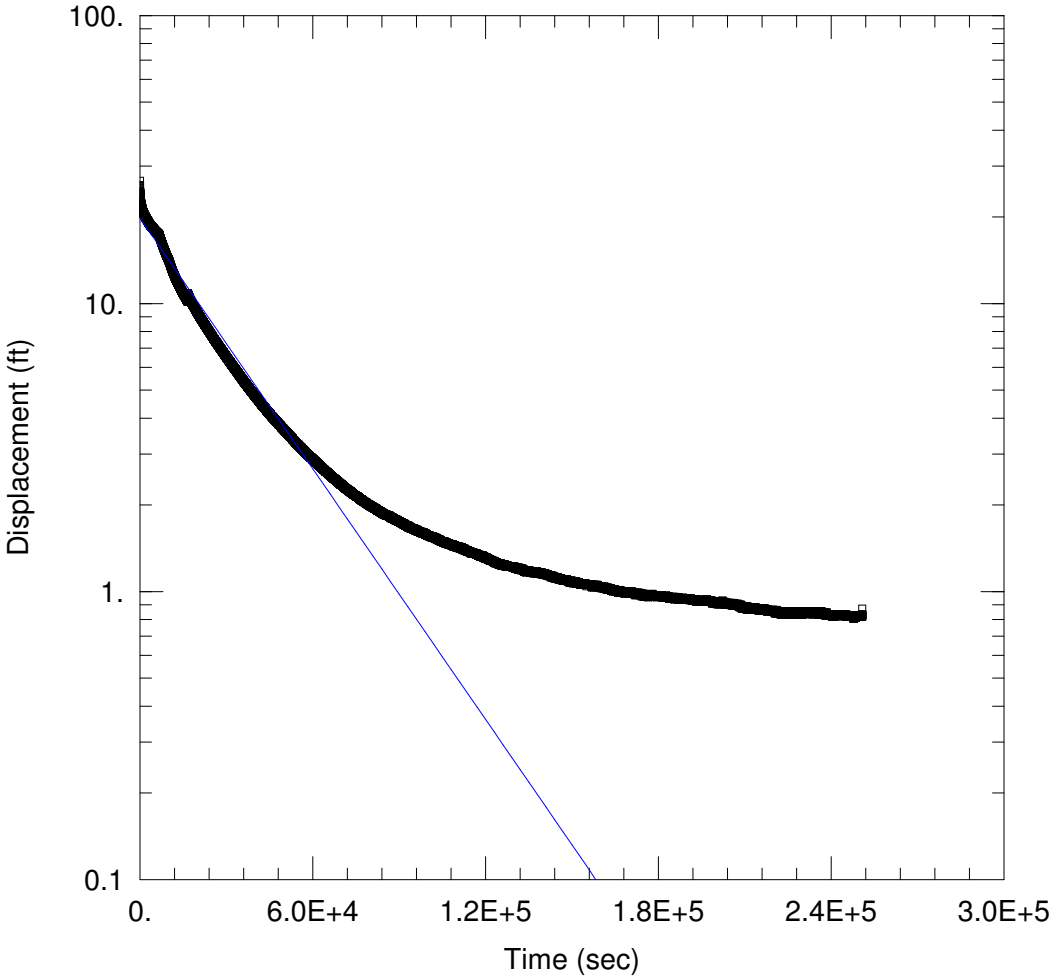
WELL DATA (MW-5)

Initial Displacement: 27.8 ft Static Water Column Height: 27.73 ft
Total Well Penetration Depth: 20.39 ft Screen Length: 10.01 ft
Casing Radius: 0.0833 ft Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 8.308E-8 cm/sec y0 = 9.852 ft



MW-6 RISING HEAD TEST

Data Set: Z:\...\MW-6_test_BR.aqt
Date: 08/31/17 Time: 11:09:48

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-6
Test Date: 6/19/2017

AQUIFER DATA

Saturated Thickness: 26.68 ft
Anisotropy Ratio (Kz/Kr): 1.

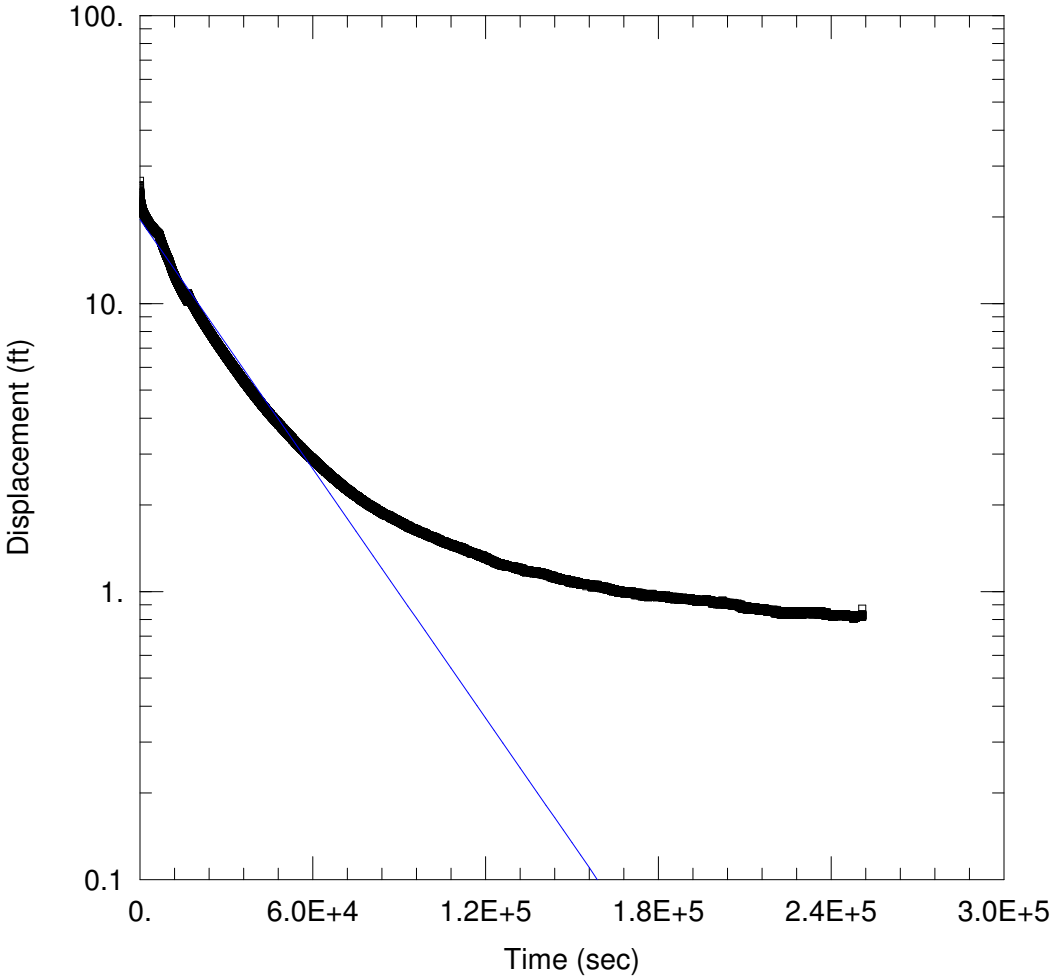
WELL DATA (MW-6)

Initial Displacement: 26.68 ft
Total Well Penetration Depth: 26.31 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 26.68 ft
Screen Length: 10.01 ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.949E-6 cm/sec
y0 = 19.77 ft



MW-6 RISING HEAD TEST

Data Set: Z:\...\MW-6_test_HV.aqt
Date: 08/31/17 Time: 11:10:55

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-6
Test Date: 6/19/2017

AQUIFER DATA

Saturated Thickness: 26.68 ft Anisotropy Ratio (Kz/Kr): 1.

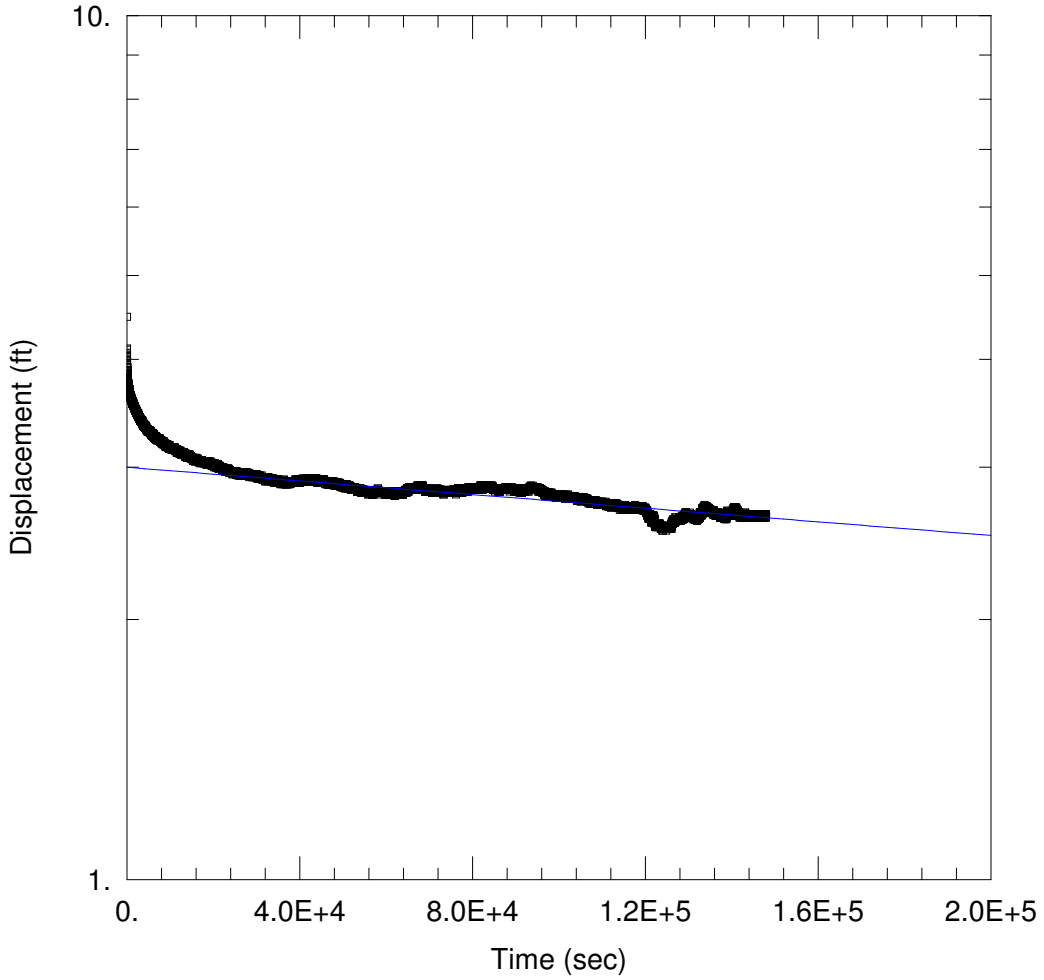
WELL DATA (MW-6)

Initial Displacement: 26.68 ft Static Water Column Height: 26.68 ft
Total Well Penetration Depth: 26.31 ft Screen Length: 10.01 ft
Casing Radius: 0.0833 ft Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.114E-6 cm/sec y0 = 19.55 ft



MW-7 RISING HEAD TEST #1

Data Set: Z:\...\MW-7_test1_BR.aqt
Date: 08/31/17 Time: 11:12:43

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-7
Test Date: 6/13/2017

AQUIFER DATA

Saturated Thickness: 4.48 ft
Anisotropy Ratio (Kz/Kr): 1.

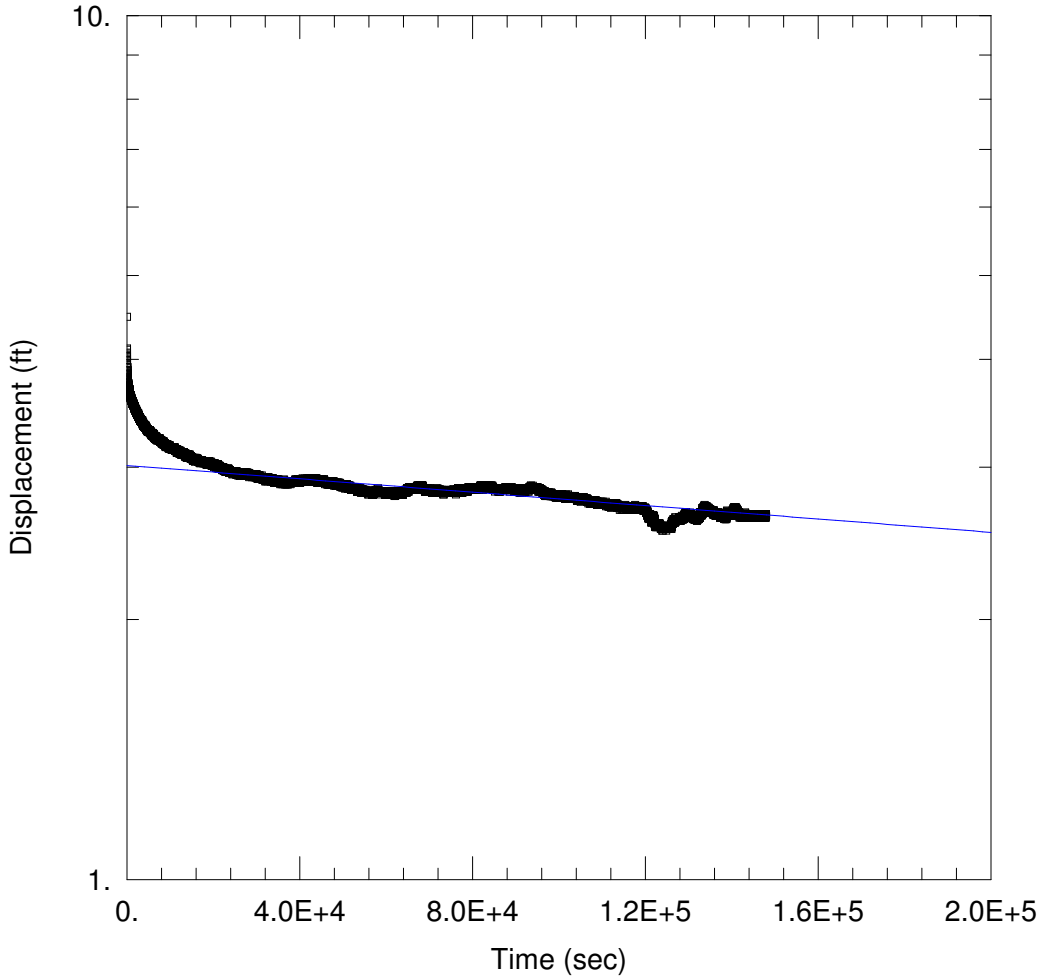
WELL DATA (MW-7)

Initial Displacement: 4.48 ft
Total Well Penetration Depth: 10.01 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 4.48 ft
Screen Length: 10.01 ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.911E-7 cm/sec
y0 = 3. ft



MW-7 RISING HEAD TEST #1

Data Set: Z:\...\MW-7_test1_HV.aqt
Date: 08/31/17 Time: 11:13:38

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-7
Test Date: 6/13/2017

AQUIFER DATA

Saturated Thickness: 4.48 ft Anisotropy Ratio (Kz/Kr): 1.

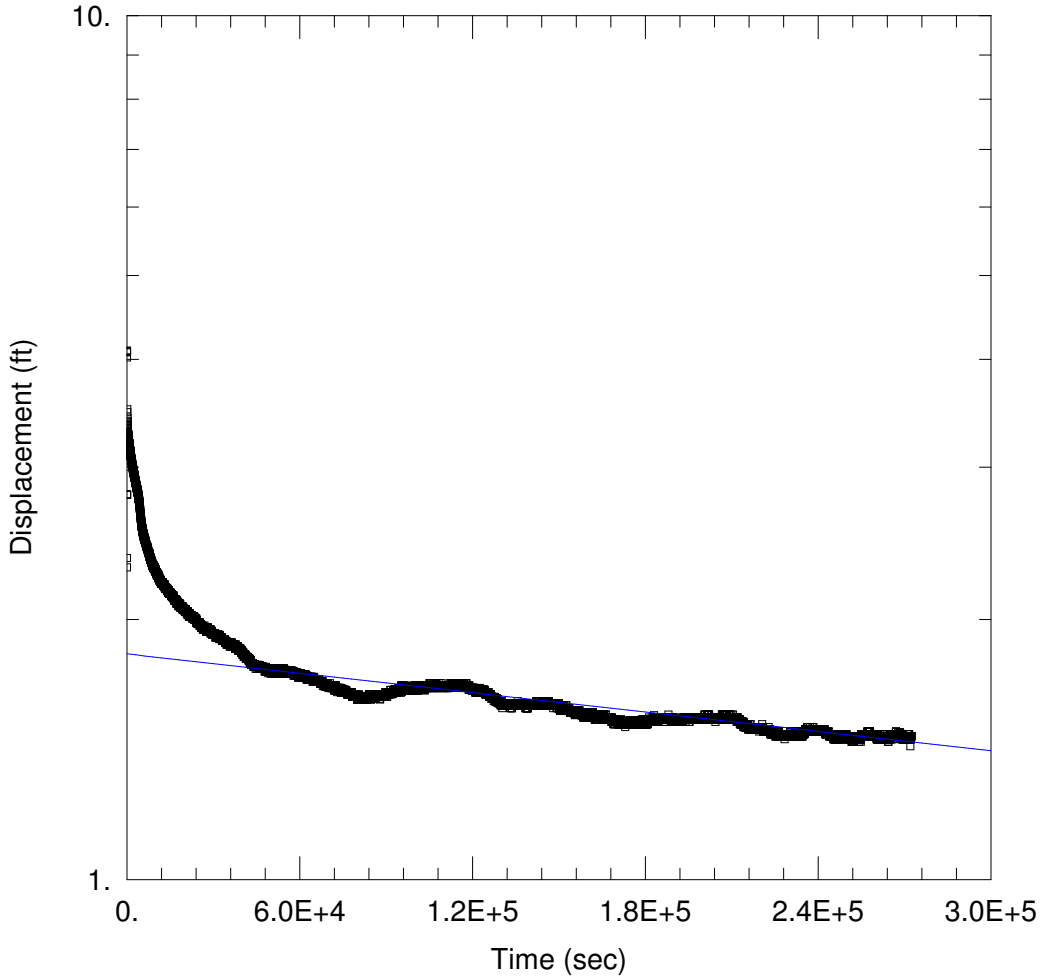
WELL DATA (MW-7)

Initial Displacement: 4.48 ft Static Water Column Height: 4.48 ft
Total Well Penetration Depth: 10.01 ft Screen Length: 10.01 ft
Casing Radius: 0.0833 ft Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 9.705E-8 cm/sec y0 = 3.015 ft



MW-7 RISING HEAD TEST #2

Data Set: Z:\...\MW-7_test2_BR.aqt
Date: 08/31/17 Time: 11:14:49

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-7
Test Date: 6/19/2017

AQUIFER DATA

Saturated Thickness: 4.02 ft
Anisotropy Ratio (Kz/Kr): 1.

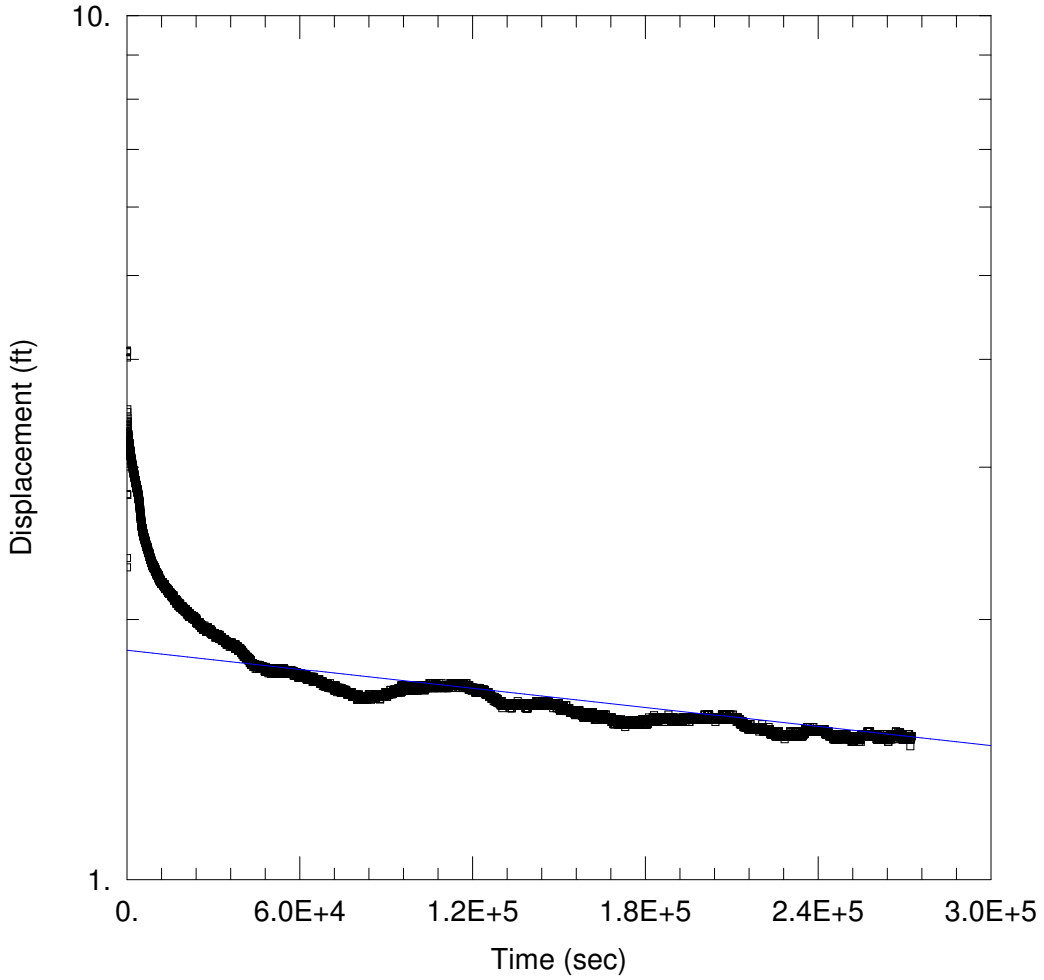
WELL DATA (MW-7)

Initial Displacement: 4.02 ft
Total Well Penetration Depth: 10.01 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 4.02 ft
Screen Length: 10.01 ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.984E-7 cm/sec
y0 = 1.824 ft



MW-7 RISING HEAD TEST #2

Data Set: Z:\...\MW-7_test2_HV.aqt
Date: 08/31/17 Time: 11:16:23

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-7
Test Date: 6/19/2017

AQUIFER DATA

Saturated Thickness: 4.02 ft Anisotropy Ratio (Kz/Kr): 1.

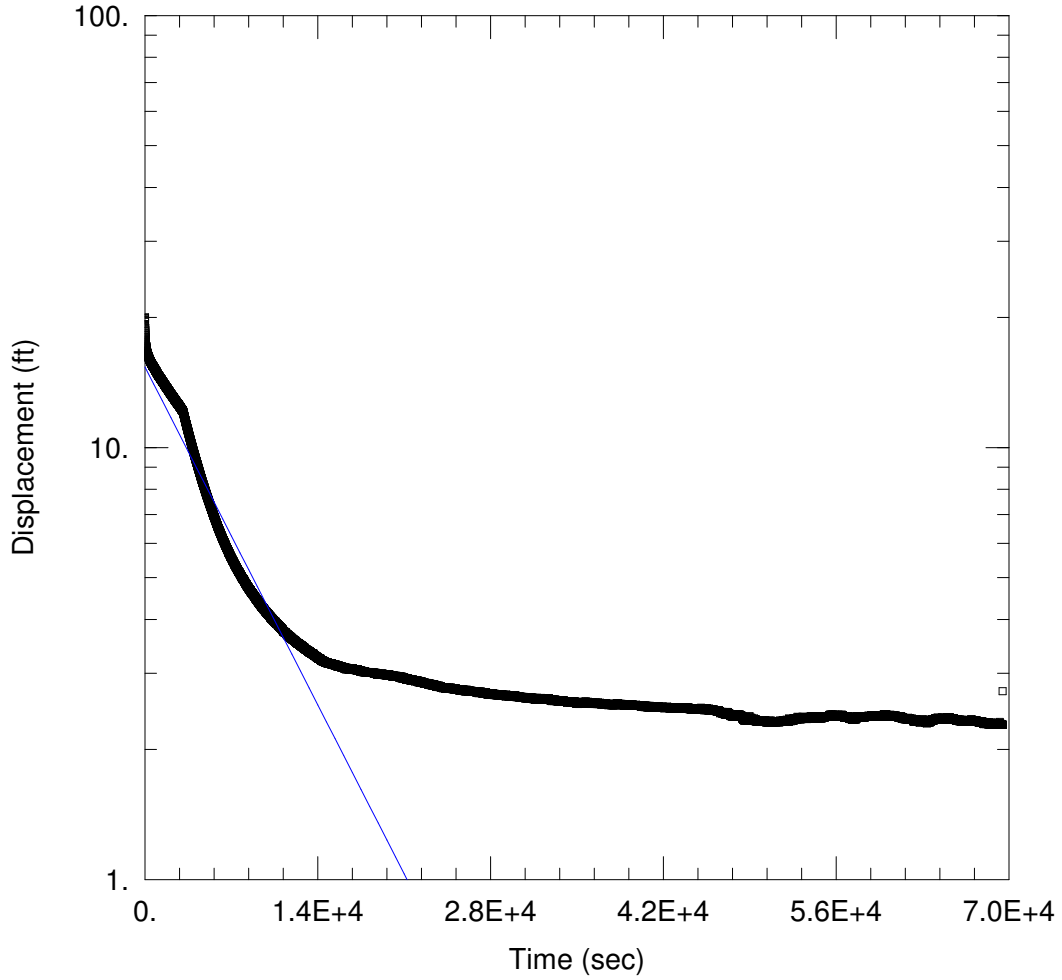
WELL DATA (MW-7)

Initial Displacement: 4.02 ft Static Water Column Height: 4.02 ft
Total Well Penetration Depth: 10.01 ft Screen Length: 10.01 ft
Casing Radius: 0.0833 ft Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.027E-7 cm/sec y0 = 1.842 ft



MW-8 RISING HEAD TEST

Data Set: Z:\...\MW-8_test_BR.aqt
Date: 08/31/17 Time: 11:17:23

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-8
Test Date: 6/14/2017

AQUIFER DATA

Saturated Thickness: 19.96 ft
Anisotropy Ratio (Kz/Kr): 1.

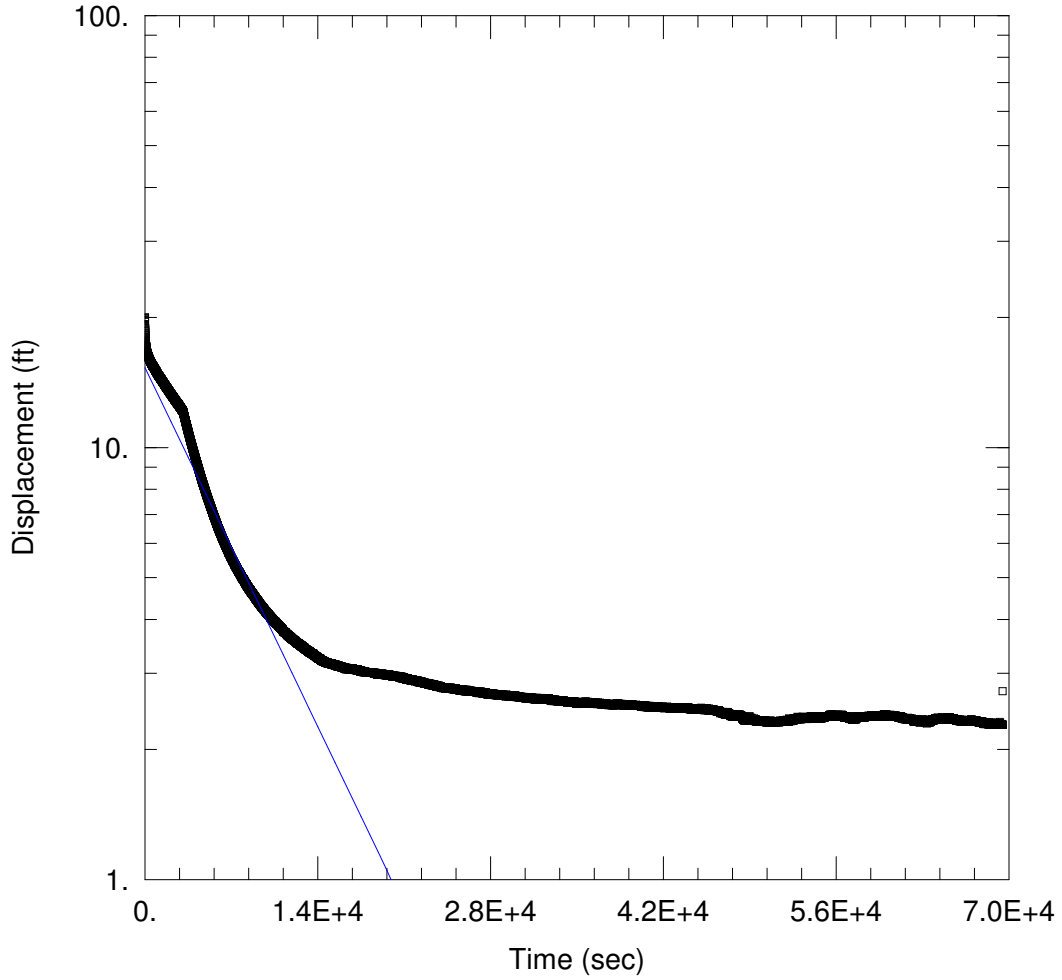
WELL DATA (MW-8)

Initial Displacement: 19.96 ft
Total Well Penetration Depth: 19.59 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 19.96 ft
Screen Length: 10.01 ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.446E-5 cm/sec
y0 = 15.36 ft



MW-8 RISING HEAD TEST

Data Set: Z:\...\MW-8_test_HV.aqt
Date: 08/31/17 Time: 11:18:18

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: MW-8
Test Date: 6/14/2017

AQUIFER DATA

Saturated Thickness: 19.96 ft Anisotropy Ratio (Kz/Kr): 1.

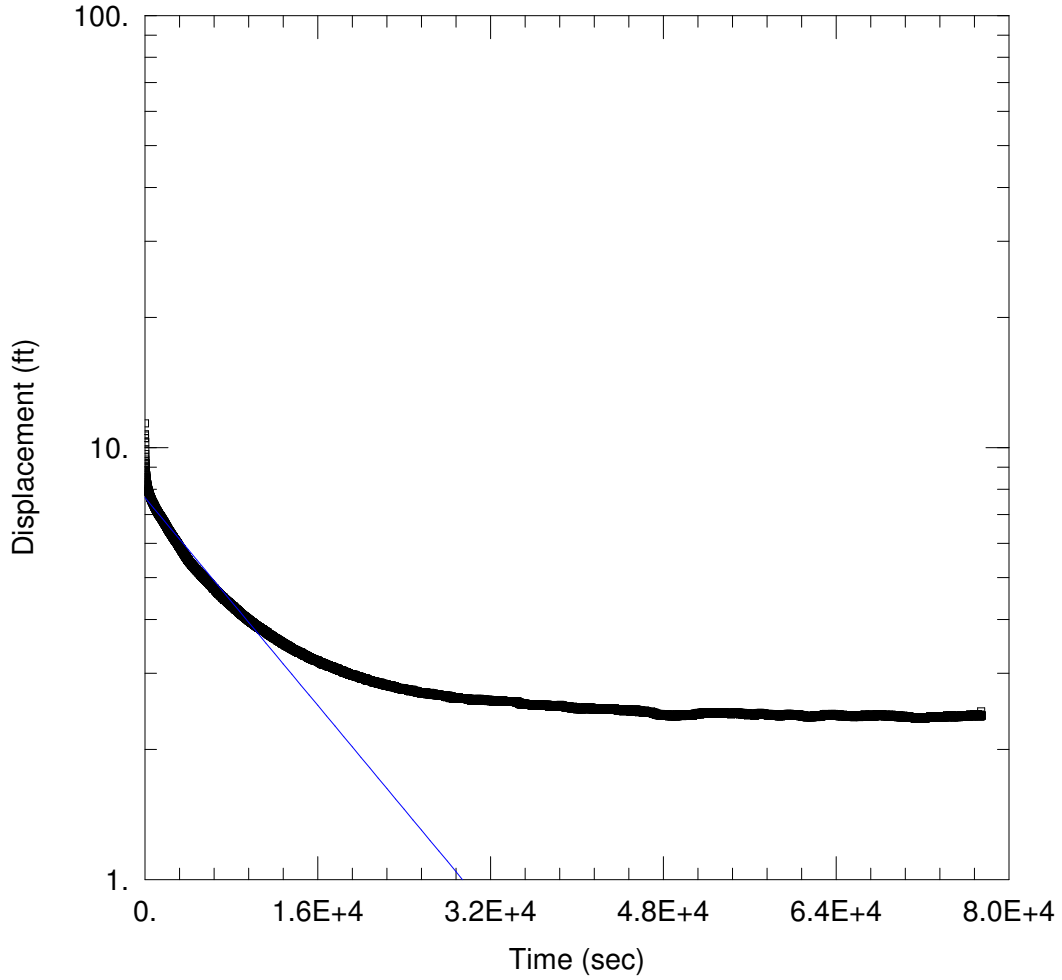
WELL DATA (MW-8)

Initial Displacement: 19.96 ft Static Water Column Height: 19.96 ft
Total Well Penetration Depth: 19.59 ft Screen Length: 10.01 ft
Casing Radius: 0.0833 ft Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 4.587E-6 cm/sec y0 = 15.32 ft



PZ-2 RISING HEAD TEST

Data Set: Z:\...\PZ-2_test_BR.aqt
Date: 08/31/17 Time: 11:19:17

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: PZ-2
Test Date: 6/15/2017

AQUIFER DATA

Saturated Thickness: 11.53 ft
Anisotropy Ratio (Kz/Kr): 1.

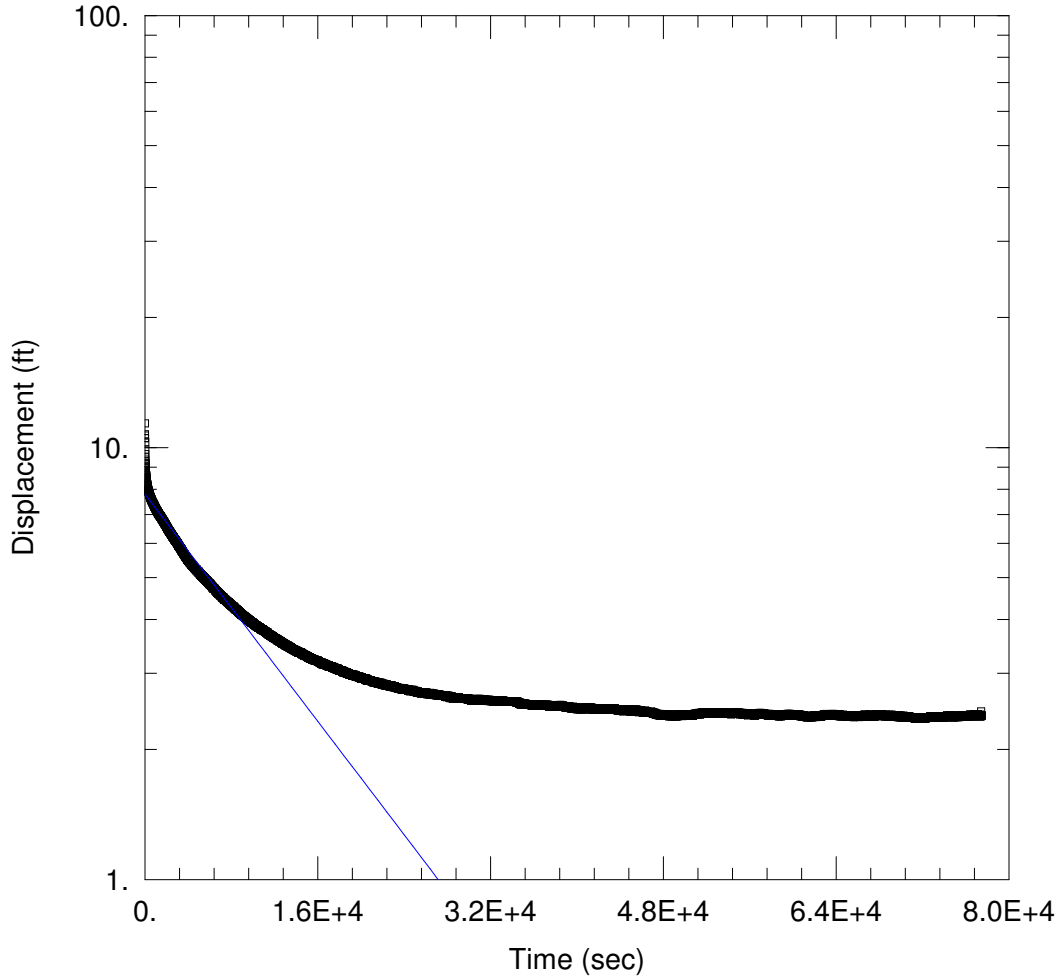
WELL DATA (PZ-2)

Initial Displacement: 11.37 ft
Total Well Penetration Depth: 20. ft
Casing Radius: 0.0833 ft
Static Water Column Height: 11.53 ft
Screen Length: 20. ft
Well Radius: 0.2604 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 7.206E-6 cm/sec
y0 = 7.655 ft



PZ-2 RISING HEAD TEST

Data Set: Z:\...\PZ-2_test_HV.aqt
Date: 08/31/17 Time: 11:20:07

PROJECT INFORMATION

Company: Burns & McDonnell
Client: CMMP
Project: 93647
Location: Columbia, MO
Test Well: PZ-2
Test Date: 6/15/2017

AQUIFER DATA

Saturated Thickness: 11.53 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-2)

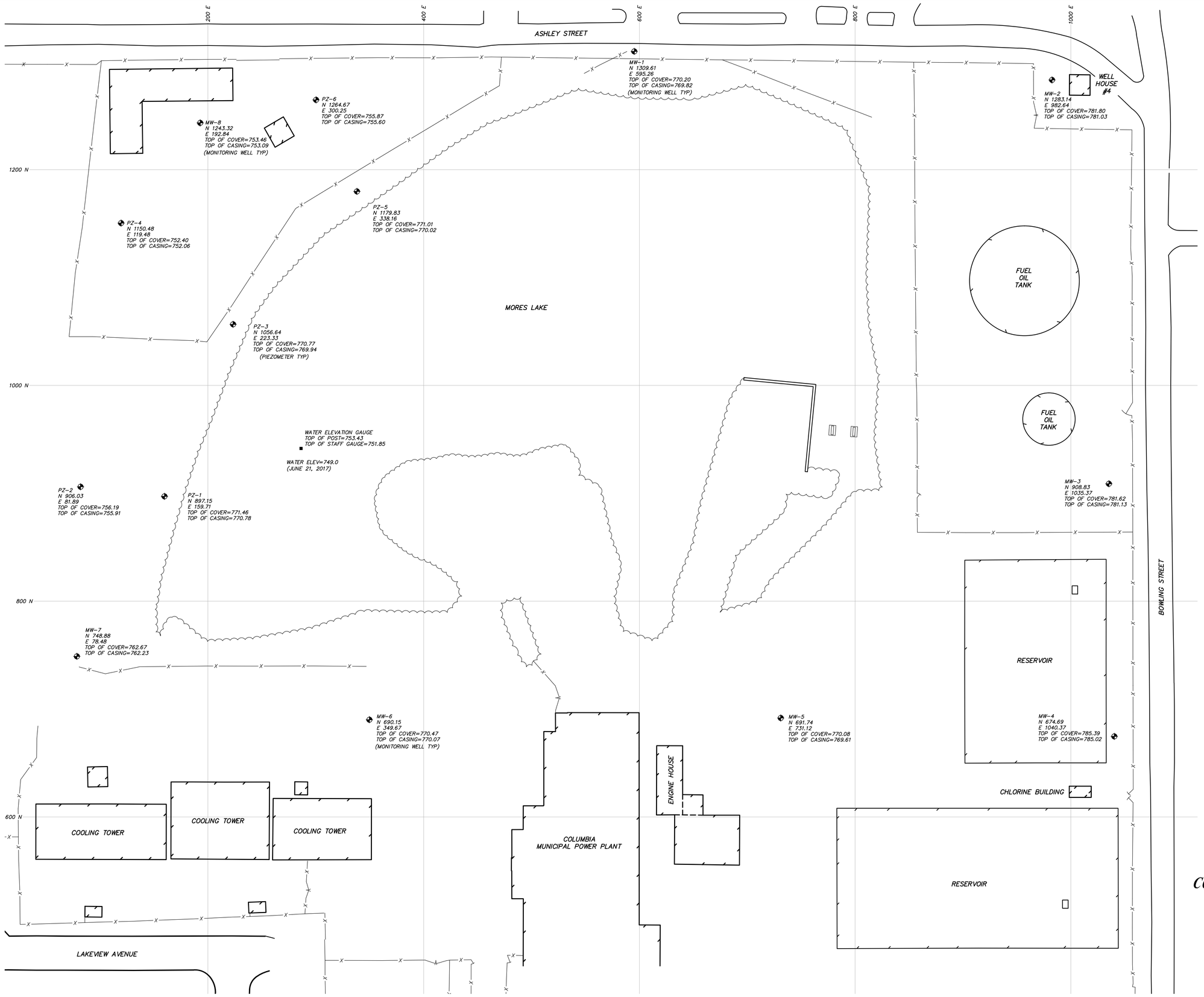
Initial Displacement: 11.37 ft Static Water Column Height: 11.53 ft
Total Well Penetration Depth: 20. ft Screen Length: 20. ft
Casing Radius: 0.0833 ft Well Radius: 0.2604 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.2E-6 cm/sec y0 = 7.798 ft

APPENDIX C – SURVEY DATA



0 40 80
SCALE: 1" = 40'

BENCH MARK

BM – CHISELED SQUARE ON SOUTHEAST CORNER OF CONCRETE BOX ON THE NORTH SIDE OF LAKEVIEW AVENUE AND 65 FEET WEST OF POPLAR STREET.
ELEVATION = 751.15

TBM – CHISELED SQUARE ON SOUTHWEST CORNER OF CONCRETE WALL LOCATED 80 FEET NORTHEAST OF THE SMOKE STACK.
ELEVATION = 775.55

TBM – CHISELED SQUARE ON WINDOW SILL LOCATED 7 FEET SOUTH OF NORTHEAST CORNER OF POWER PLANT.
ELEVATION = 770.58

TBM – CHISELED SQUARE ON NORTHEAST CORNER OF EASTERN MOST COOLING TOWER LOCATED WEST OF THE POWER PLANT.
ELEVATION = 770.59

NOTES:
1. ELEVATIONS GIVEN WERE SURVEYED ON THE NORTH RIM OF THE COVER AND THE NORTH RIM OF THE CASING.
2. INFORMATION SHOWN OTHER THAN MONITORING WELLS AND PIEZOMETERS IS BASED ON ES&S JOB #12592, DATED JANUARY 31, 2014, WAS NOT UPDATED.

6/23/2017

STATE OF MISSOURI
FREDERICK EMIL CARROZ III
NUMBER
PROFESSIONAL LAND SURVEYOR

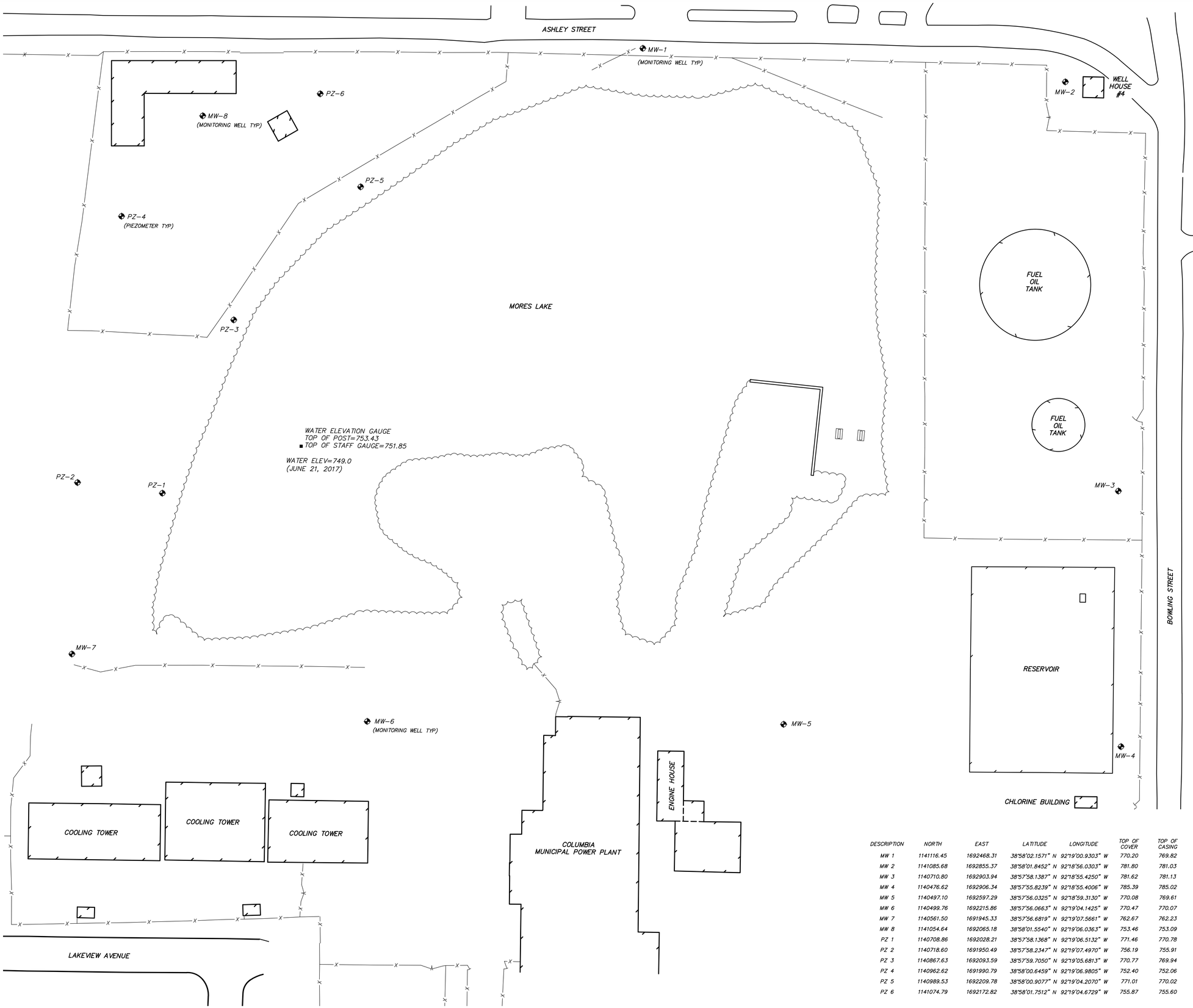
MONITORING WELL & PIEZOMETER PLAN
COLUMBIA MUNICIPAL POWER PLANT

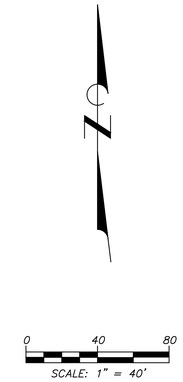
COLUMBIA, BOONE COUNTY, MISSOURI
JUNE 23, 2017

Engineering Surveys & Services
1113 Fay Street, Columbia, Missouri 65201
573 - 449 - 2646 | www.ess-inc.com
Missouri Land Surveying Corporation # 2004004672

ES&S NO. 13452

F:\CURRENTDRAWINGS\BURNSMAC\S13452\13452 EXHIBIT.DWG 10/3/2017





BENCH MARK

BM – CHISELED SQUARE ON SOUTHEAST CORNER OF CONCRETE BOX ON THE NORTH SIDE OF LAKEVIEW AVENUE AND 65 FEET WEST OF POPLAR STREET.
ELEVATION = 751.15

TBM – CHISELED SQUARE ON SOUTHWEST CORNER OF CONCRETE WALL LOCATED 80 FEET NORTHEAST OF THE SMOKE STACK.
ELEVATION = 775.55

TBM – CHISELED SQUARE ON WINDOW SILL LOCATED 7 FEET SOUTH OF NORTHEAST CORNER OF POWER PLANT.
ELEVATION = 770.58

TBM – CHISELED SQUARE ON NORTHEAST CORNER OF EASTERN MOST COOLING TOWER LOCATED WEST OF THE POWER PLANT.
ELEVATION = 770.59

NOTES:
1. ELEVATIONS GIVEN WERE SURVEYED ON THE NORTH RIM OF THE COVER AND THE NORTH RIM OF THE CASING.
2. INFORMATION SHOWN OTHER THAN MONITORING WELLS AND PIEZOMETERS IS BASED ON ES&S JOB #12592, DATED JANUARY 31, 2014, WAS NOT UPDATED.

DESCRIPTION	NORTH	EAST	LATITUDE	LONGITUDE	TOP OF COVER	TOP OF CASING
MW 1	1141116.45	1692468.31	38°58'02.1571" N	92°19'00.9303" W	770.20	769.82
MW 2	1141085.68	1692855.37	38°58'01.8452" N	92°18'56.0303" W	781.80	781.03
MW 3	1140710.80	1692903.94	38°57'58.1387" N	92°18'55.4250" W	781.62	781.13
MW 4	1140476.62	1692906.34	38°57'55.8239" N	92°18'55.4006" W	785.39	785.02
MW 5	1140497.10	1692597.29	38°57'56.0325" N	92°18'59.3130" W	770.08	769.61
MW 6	1140499.76	1692215.86	38°57'56.0663" N	92°19'04.1425" W	770.47	770.07
MW 7	1140561.50	1691945.33	38°57'56.6819" N	92°19'07.5661" W	762.67	762.23
MW 8	1141054.64	1692065.18	38°58'01.5540" N	92°19'06.0363" W	753.46	753.09
PZ 1	1140708.86	1692028.21	38°57'58.1368" N	92°19'06.5132" W	771.46	770.78
PZ 2	1140718.60	1691950.49	38°57'58.2347" N	92°19'07.4970" W	756.19	755.91
PZ 3	1140867.63	1692093.59	38°57'59.7050" N	92°19'05.6813" W	770.77	769.94
PZ 4	1140962.62	1691990.79	38°58'00.6459" N	92°19'06.9805" W	752.40	752.06
PZ 5	1140989.53	1692209.78	38°58'00.9077" N	92°19'04.2070" W	771.01	770.02
PZ 6	1141074.79	1692172.82	38°58'01.7512" N	92°19'04.6729" W	755.87	755.60

MONITORING WELL & PIEZOMETER PLAN
COLUMBIA MUNICIPAL POWER PLANT
COLUMBIA, BOONE COUNTY, MISSOURI
DECEMBER 18, 2017

Engineering Surveys & Services
1113 Fay Street, Columbia, Missouri 65201
573 - 449 - 2646 | www.ess-inc.com
Missouri Land Surveying Corporation # 2004004672

ES&S NO. 13452

F:\CURRENTDRAWINGS\BURNSMAC\13452\13452 EXHIBIT (STATE COORDS).DWG 12/18/2017

APPENDIX D – MONITORING WELL SAMPLING FORMS

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Dec 17 SITE: City Power Plant PROJECT Morel's Lake

WEATHER: 55°F Cloudy

WELL IDENTIFICATION

MW-1

DEPTH TO WATER (ft bTOC): 28.66

WELL TOTAL DEPTH (ft bTOC): 42.74

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged ml (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1454	—	100	6.70	16.01	0.869	0.0	97	3.05	28.66
1459	500	100	6.68	15.78	0.866	0.0	83	1.45	28.93
1504	1000	100	6.67	15.79	0.864	0.0	76	0.94	28.95
1509	1500	100	6.67	15.77	0.861	0.0	68	0.60	28.96
1514	2000	100	6.69	15.76	0.861	0.0	63	0.41	28.96
1519	2500	100	6.68	15.80	0.861	0.0	61	0.33	28.96
1524	3000	100	6.67	15.84	0.862	0.0	58	0.43	28.94
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1535									

FINAL DEPTH TO WATER (ft bTOC): 29.22 TIME FINAL DEPTH TAKEN: 1637

SAMPLE ID: MW-1 SAMPLE FOR QC: MS, MSD

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): _____ FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	n/A.	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	J. K	21 Dec 17
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Dec 17 SITE: ~~Mores lake~~ City Power Plant PROJECT Morel's Lake

WEATHER: 53°F Sunny

WELL IDENTIFICATION

MW-2

DEPTH TO WATER (ft bTOC): 18.57

WELL TOTAL DEPTH (ft bTOC): 52.92

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged ~~(gals)~~ ml	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1056	—	100	6.92	15.99	0.688	6.7	91	2.24	18.57
1101	500	100	6.84	16.12	0.693	10.0	79	0.41	18.81
1106	1000	100	6.85	16.26	0.691	0.0	70	0.02	18.82
1111	1500	100	6.86	16.17	0.694	0.5	66	0.00	18.85
1116	2000	100	6.86	16.27	0.693	0.0	61	0.00	18.87

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1125									

FINAL DEPTH TO WATER (ft bTOC): 19.27 TIME FINAL DEPTH TAKEN: 1213

SAMPLE ID: MW-2 SAMPLE FOR QC: Dup-1

PARAMETERS REQUESTD FOR ANALYSIS: metals / hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): _____ FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	[signature]	21 Dec 17
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21Dec17 SITE: ~~Moves lake~~ City Power Plant PROJECT Moore's Lake

WEATHER: 50°F Cloudy

WELL IDENTIFICATION

MW-3

DEPTH TO WATER (ft bTOC): 18.91

WELL TOTAL DEPTH (ft bTOC): 49.50

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged ~~(gals)~~ ml	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
0937	—	100	6.73	13.46	0.690	2.7	101	1.16	18.91
0942	500ml	100	6.71	13.68	0.697	3.8	88	0.51	19.76
0947	1000ml	100	6.77	13.87	0.701	0.0	76	0.20	19.83
0952	1500	100	6.79	13.99	0.701	0.0	71	0.10	19.82
0957	2000	100	6.79	14.01	0.702	0.0	68	0.04	19.92

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1000									

FINAL DEPTH TO WATER (ft bTOC): 20.82 TIME FINAL DEPTH TAKEN: 1033

SAMPLE ID: MW-3 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): _____ FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer, Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	[signature]	21Dec17
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Dec 17 SITE: ~~Mores Lake~~ City Power Plant PROJECT Morel's Lake

WEATHER: 45°F partly cloudy

WELL IDENTIFICATION

MW-4

DEPTH TO WATER (ft bTOC): 24.44

WELL TOTAL DEPTH (ft bTOC): 57.05

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged ~~(gals)~~ ml	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
0754	—	100	6.14 ~~14.25~~ JK	14.28	0.784	0.9	119	1.99	24.44
0759	500ml	100	6.32	14.45	0.791	0.0	83	1.08	26.04
0804	1000ml	100	6.47	14.46	0.792	5.6	59	0.79	26.66
0809	1500ml	100	6.47	14.53	0.789	11.1	49	0.66	26.93
0814	2000ml	100	6.57	14.57	0.791	3.9	35	0.55	27.32
0819	2500	100	6.58	14.65	0.784	4.7	32	0.49	27.67
0824	3000ml	100	6.62	14.66	0.776	2.4	34	0.44	28.00

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
0830									

0900 for Hex Cr

FINAL DEPTH TO WATER (ft bTOC): 29.14 TIME FINAL DEPTH TAKEN: 0824

SAMPLE ID: MW-4 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOx, radium 226/228

IDW PURGE WATER TOTAL (gal): _____ FLOW THROUGH CELL MODEL #: horiba u-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer, Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	[signature]	21 Dec 17
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 20 Dec 17 SITE: City Power Plant PROJECT Moret's Lake

WEATHER: 48°F Sunny

WELL IDENTIFICATION

MW-5

DEPTH TO WATER (ft bTOC): 12.21'

WELL TOTAL DEPTH (ft bTOC): 41.09

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1519	—	100	7.31	15.12	0.643	23.2	133	0.57	12.21'
1524	500ml	100	7.26	15.30	0.640	6.9	130	0.42	14.21
1529	500ml	100	7.26	15.37	0.639	0.0	126	0.33	14.74
1534	500ml	100	7.25	15.27	0.639	0.0	124	0.27	15.25
1539	500ml	100	7.24	15.37	0.633	0.0	120	~~1.10~~ 0.41 JK	15.6
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1545									

FINAL DEPTH TO WATER (ft bTOC): 15.81 TIME FINAL DEPTH TAKEN: 1615

SAMPLE ID: MW-5 SAMPLE FOR QC: n/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): _____ FLOW THROUGH CELL MODEL #: Hor. to a 9-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	n/A	
Protective Casing?	good	
Paint and Label?	no	
Lock?	no	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer, Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	[signature]	20 Dec 17
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 20 Dec17 SITE: City Power Plant PROJECT Marcels Lake

WEATHER: 48°F Sunny

WELL IDENTIFICATION

MW-6

DEPTH TO WATER (ft bTOC): 16.90

WELL TOTAL DEPTH (ft bTOC): 38.75 (Top of pump) 41.75

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: 16.9 ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume 4gal volume 12gal total

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
0952 ~~09:03~~	—	100	5.94	14.4	0.917	105	138	1.49	17.94
0957	500ml	100	6.37	14.9	0.891	58.8	114	0.88	18.36
10:02	500ml	100	6.42	15.0	0.890	24.4	23.4	0.77	18.60
10:07	500ml	100	6.44	15.3	0.883	4.0	119	0.76	18.83
10:12	500ml	100	6.42	15.6	0.883	0.4	111	2.30	19.43
10:19	500ml	100	6.58	15.7	0.880	0.0	108	0.56	19.71
1024	500ml	100	6.59	15.7	0.879	0.0	106	0.39	19.97
1029	500	100	6.60	15.7	0.879	0.0	104	0.24	20.21
1034	500	100	6.62	15.4	0.897	0.0	101	0.20	20.52

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1045									

FINAL DEPTH TO WATER (ft bTOC): 22.94 TIME FINAL DEPTH TAKEN: 1115

SAMPLE ID: MW-6 SAMPLE FOR QC: n/a

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): ____ FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	n/a	
Protective Casing?	good	
Paint and Label?	none	
Lock?	no lock	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer, Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	[signature]	20 Dec17
REVIEWED:			

FIELD GROUND-WATER SAMPLING DATA FORM (continued)

WELL IDENTIFICATION

MW-6

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1039	500.1	100	6.62	15.5	0.879	0.0	99	0.25	20.85

COMMENTS

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 20Dec 17 SITE: ~~Moore's Lake~~ City Power Plant PROJECT Moore's Lake

WEATHER: 45°F Sunny

WELL IDENTIFICATION

MW-7

DEPTH TO WATER (ft bTOC): 22.02'

WELL TOTAL DEPTH (ft bTOC): 33.43

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (~~gals~~)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1349	~~500ml~~	100	6.89	15.4	0.811	536	142	1.63	22.42
1354	500ml	100	6.92	15.5	0.822	131	128	1.02	23.59
1359	500ml	100	6.94	15.6	0.821	117	118	0.80	23.85
1404	500ml	100	6.95	15.65	0.818	25.9	111	0.62	24.30
1409	500	100	6.94	15.69	0.816	28.4	106	0.61	24.44
1414	500	100	6.94	15.82	0.816	39.4	103	0.57	24.54
1419	500ml	100	6.94	15.97	0.818	48.1	104	0.60	24.82
1424	500ml	100	6.93	15.93	0.821	53.2	101	0.52	25.04
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1426									

FINAL DEPTH TO WATER (ft bTOC): 26.54 TIME FINAL DEPTH TAKEN: 1506

SAMPLE ID: MW-7 SAMPLE FOR QC: n/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): _____ FLOW THROUGH CELL MODEL #: Horiba

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	n/A	
Protective Casing?	good	
Paint and Label?	no	
Lock?	no	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer, Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	[signature]	20Dec17
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Dec 17 SITE: City Power Plant PROJECT Moore's Lake

WEATHER: 58°F clear

WELL IDENTIFICATION

MW-8

DEPTH TO WATER (ft bTOC): 10.34

WELL TOTAL DEPTH (ft bTOC): 27.85

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged ~~(gals)~~ ml	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1701	—	100	6.53	14.41	2.66	0.0	72	1.88	10.34
1706	500	100	6.38	14.66	2.98	0.0	60	0.84	11.53
1711	1000	100	6.34	14.83	3.06	0.0	55	0.54	11.90
1716	1500	100	6.33	14.79	3.08	0.0	50	0.60	12.12
1721	2000	100	6.33	14.81	3.09	0.0	51	0.61	12.39
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1725									

FINAL DEPTH TO WATER (ft bTOC): 14.3 TIME FINAL DEPTH TAKEN: 1801

SAMPLE ID: MW-8 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, Radium 226/228

IDW PURGE WATER TOTAL (gal): _____ FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	n/A	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer, Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	[signature]	21 Dec 17
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Dec 17 SITE: ~~Moro's Lake~~ City Power Plant PROJECT Moro's Lake

WEATHER: 55°F cloudy

WELL IDENTIFICATION

PZ-2

DEPTH TO WATER (ft bTOC): 9.50

WELL TOTAL DEPTH (ft bTOC): 19.80

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged ~~(gals)~~ ml	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1312	—	100	5.80	16.65	2.31	13.6	130	1.32	9.75
1317	500	100	5.99	16.51	2.39	10.3	107	6.32	10.0
1322	1000	100	6.09	16.44	2.30	0.2	87	0.52	10.12
1327	1500	100	6.14	16.42	2.15	0.0	75	0.44	10.33
1332	2000	100	6.19	16.36	1.93	0.0	67	0.41	10.46
1337	2500	100	6.23	16.36	1.73	0.0	69	0.55	10.60
1342	3000	100	6.27	16.32	1.57	0.0	73	0.59	10.76
1347	3500	100	6.29	16.32	1.53	0.0	75	0.58	10.89
1352	4000	100	6.29	16.32	1.55	0.0	78	0.52	11.00
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1400									

FINAL DEPTH TO WATER (ft bTOC): 12.23 TIME FINAL DEPTH TAKEN: 1424

SAMPLE ID: PZ-2 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): _____ FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	none	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Joe Kramer Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Joe Kramer	[signature]	21 Dec 17
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 23 Feb 18 SITE: ~~Moore's Lake~~ City Power Plant PROJECT: Moore's Lake

WEATHER: 39°F overcast

DEPTH TO WATER (ft bTOC): 29.00'

WELL TOTAL DEPTH (ft bTOC): 42.74

WELL DIAMETER (inches): 2

WELL IDENTIFICATION: MW-1

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:56A	—	100 ml/min	5.78	11.55	1.13	19.3	64	4.28	28.82
9:01	0.13		6.44	13.27	1.10	30.3	120	1.05	29.00
9:06	0.26		6.59	13.52	1.09	7.6	110	0.61	29.18
9:11	0.39		6.69	13.85	1.08	0.0	99	.48	29.12
9:16	0.52		6.78	13.85	1.09	0.0	92	.47	29.11
~~9:21~~	~~0.65~~								

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:26A									

FINAL DEPTH TO WATER (ft bTOC): 29.32 TIME FINAL DEPTH TAKEN: 10:33 A

SAMPLE ID: MW-1 SAMPLE FOR QC: MS, MSD

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.52 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	N/A
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	David Kilgore	23 Feb 18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 22 Feb 18 SITE: ~~Moreis Lake~~ City Power Plant PROJECT Moreis Lake

WEATHER: 39 °F Cloudy

WELL IDENTIFICATION

MW-2

DEPTH TO WATER (ft bTOC): 18.89'

WELL TOTAL DEPTH (ft bTOC): 52.92

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:57 P		100	5.42	10.78	0.819	27.5	165	1.73	19.64
3:02			5.83	13.45	0.854	32.9	124	0.18	19.67
3:07			6.10	13.26	.863	6.8	100	0.02	19.66
3:12			6.23	13.20	.860	1.8	87	0.00	19.76
3:17			6.31	13.38	.859	1.3	77	0.00	19.77
3:22			6.36	13.14	.851	1.6	71	0.00	19.78
3:27			6.39	13.24	.853	1.3	67	0.00	19.75
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
3:40 P									

FINAL DEPTH TO WATER (ft bTOC): 20.25 TIME FINAL DEPTH TAKEN: 4:28 P

SAMPLE ID: MW-2 SAMPLE FOR QC: Dup-1

PARAMETERS REQUESTD FOR ANALYSIS: metals / hardness, Hex Cr, COD, TDS, TOC, Tox, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.37 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	good	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	David Kilgore	22 Feb 18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 22 Feb 18 SITE: City Power Plant PROJECT: More's Lake

WEATHER: 35°F cloudy

WELL IDENTIFICATION: MW-3

DEPTH TO WATER (ft bTOC): 19.65'

WELL TOTAL DEPTH (ft bTOC): 49.50

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
12:11P	–	100.	6.96	10.64	0.860	3.7	90	4.68	19.41
12:16	0.13	↓	6.92	12.25	.875	1.9	69	7.57	20.74
12:21	0.26		6.93	12.36	.869	1.0	62	7.48	20.75
12:26	0.39		6.92	12.37	.869	0.4	59	6.47	20.78
12:31	0.52		6.96	12.22	.867	0.4	57	5.56	20.61
12:36	0.65		6.93	12.48	.870	0.3	58	5.16	20.72
12:41	0.78		6.91	12.44	.868	1.1	58	4.28	20.73
12:46	0.91	↓	6.93	12.39	.867	1.0	60	4.39	20.80
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
12:50P									

FINAL DEPTH TO WATER (ft bTOC): 20.76 TIME FINAL DEPTH TAKEN: 1:14 P

SAMPLE ID: MW-3 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals / hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.64 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	N/A
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): David Kilgore Richard Bed Ford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	David Kilgore	22 Feb 18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 22Feb18 SITE: ~~Moore's Lake~~ City Power Plant PROJECT Moores Lake

WEATHER: 35°F cloudy

WELL IDENTIFICATION

MW-4

DEPTH TO WATER (ft bTOC): 24.43'

WELL TOTAL DEPTH (ft bTOC): 57.05

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
10:43A			7.12	9.88	.977	16.5	114	2.89	24.80
10:48			6.84	12.27	.959	15.8	52	.90	26.22
10:53			6.84	12.91	.962	2.0	32	.53	26.58
10:58			6.83	13.04	.962	1.3	24	.38	26.92
11:03			6.83	13.11	.959	1.0	16	.28	27.02
11:08			6.80	13.32	.953	0.4	10	2.04	27.57
11:13			6.82	13.40	.945	0.2	10	0.18	27.75
11:18			6.82	13.34	.938	0.1	12	1.37	27.92
11:23			6.82	13.30	.934	0.9	15	1.15	28.03

Continued on back (circle one) yes / no

10:35

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:25									

FINAL DEPTH TO WATER (ft bTOC): 30.53 TIME FINAL DEPTH TAKEN: 11:51A

SAMPLE ID: MW-4 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.77 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	David Kilgore	22Feb18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 22Feb18 SITE: ~~Mores Lake~~ City Power Plant PROJECT Mores Lake

WEATHER: 33°F cloudy

WELL IDENTIFICATION

MW-5

DEPTH TO WATER (ft bTOC): 10.25

WELL TOTAL DEPTH (ft bTOC): 41.09

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:57	–	~~2.61~~ 100	6.29	11.98	0.906	5.5	117	2.01	9.79
9:02	0.13		6.57	12.52	1.09	11.0	114	1.40	10.79
9:07	0.26		6.66	12.72	1.07	9.7	115	1.00	11.10
9:12	0.39		6.80	12.78	1.08	6.2	112	0.93	11.32
9:17	0.52		6.85	12.81	1.09	3.3	112	0.96	11.76
9:22	0.65		6.91	12.87	1.09	2.1	111	0.73	11.99
9:27	0.78		6.97	12.83	1.09	1.9	109	0.76	12.20

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:30A									

FINAL DEPTH TO WATER (ft bTOC): 15.41 TIME FINAL DEPTH TAKEN: 10:02A

SAMPLE ID: MW-5 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.69 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	David Kilgore	22Feb18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 2/21/18 SITE: ~~Mone's Lake~~ City Power Plant PROJECT Mone's Lake

WEATHER: 25°F Cloudy

WELL IDENTIFICATION: MW-6

DEPTH TO WATER (ft bTOC): 15.96

WELL TOTAL DEPTH (ft bTOC): 41.75

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. ~~(mg/L)~~ %	Depth to Water (ft TOC)
11:13	—	100	~~5.69~~	8.89	1.09	33.6	133	25.1	~~15.96~~ 16.72 JL
11:18	0.13	100	6.17	12.57	1.11	51.8	95	10.2	17.31
11:23	0.26	100	6.43	13.73	1.12	22.7	73	4.2	17.99
11:28	0.39	100	6.54	13.80	1.12	8.7	64	1.7	18.71
11:33	0.52	100	6.61	14.03	1.13	6.7	59	0.2	19.24
11:38	0.65	100	6.66	13.93	1.13	6.9	55	0.0	19.77
11:43	0.78	100	6.70	14.00	1.13	6.5	51	0.0	20.25
11:48	0.91	100	6.74	14.11	1.12	5.9	48	0.0	20.69
11:53	1.04	100	6.74	14.15	1.11	5.8	46	0.0	21.21

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: N/A Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: (Same as Above) Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
12:00									

FINAL DEPTH TO WATER (ft bTOC): 23.0 TIME FINAL DEPTH TAKEN: 12:29

SAMPLE ID: MW-6 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals / hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226

IDW PURGE WATER TOTAL (gal): 1.98 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	Yes good	
Bumper Posts?	~~No~~ N/A	
Protective Casing?	good	
Paint and Label?	None	
Lock?	None	
Well Casing?	good	
Reference Point?	good.	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	David Kilgore	21 Feb 18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Feb 18 SITE: ~~Moro's Lake~~ City Power Plant PROJECT: Moro's Lake

WEATHER: 25°F Cloudy

WELL IDENTIFICATION: MW7

DEPTH TO WATER (ft bTOC): 16.70

WELL TOTAL DEPTH (ft bTOC): ~~41~~ 33.43

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dodicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
3:46	–	100 ml/min	7.10	11.48	1.23	1.59	128.	1.93	
3:51	0.13		7.12	12.55	1.24	1.07	118	0.85	18.12
3:56	0.26		7.10	12.09	1.23	46.9	104	1.42	18.53
4:01	0.39		7.11	13.13	1.23	38.6	104	0.38	19.03
4:06	0.52		7.07	13.21	1.22	31.1	102	0.46	19.42
4:11	0.65		7.11	13.29	1.22	26.8	98	0.45	19.71
4:16	0.78		7.09	13.09	1.22	25.3	96	0.48	20.09
4:21	0.91		7.11	13.29	1.22	22.2	92	1.44	20.44

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
4:~~00~~ 21 PM									

FINAL DEPTH TO WATER (ft bTOC): 23.42 TIME FINAL DEPTH TAKEN: ~~4:26 PM~~ 4:47 P.M.

SAMPLE ID: MW 7 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.59 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	David Kilgore	21 Feb 18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 23Feb18 SITE: ~~Moores Creek~~ City Power Plant PROJECT Moores Creek

WEATHER: 43°F overcast

WELL IDENTIFICATION

MW-8

DEPTH TO WATER (ft bTOC): 10.41'

WELL TOTAL DEPTH (ft bTOC): 27.85

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

11:07

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
11:15A	–	1 ml/min	6.77	12.07	3.07	20.5	55	1.47	9.99
11:20	0.13	↓	6.65	12.39	3.39	3.6	41	0.47	11.27
11:25	0.26	↓	6.62	12.46	3.46	0.8	37	0.13	11.64
11:30	0.39	↓	6.59	12.86	3.49	0.0	35	0.00	12.05
11:35	0.52	↓	6.61	12.86	3.39	0.0	37	0.00	12.34

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:40A									

FINAL DEPTH TO WATER (ft bTOC): 14.29 TIME FINAL DEPTH TAKEN: 12:12 P

SAMPLE ID: MW-8 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals, hardness, Hex Cr, COD, TDS, TOC, TOX, Radium 226/228

IDW PURGE WATER TOTAL (gal): 1.48 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	David Kilgore	23Feb18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Feb 18 SITE: ~~Moore's Lake~~ City Power Plant PROJECT: Moore's Lake

WEATHER: 25°F Cloudy

WELL IDENTIFICATION: PZ-2

DEPTH TO WATER (ft bTOC): 8.99 ~~9.93~~

WELL TOTAL DEPTH (ft bTOC): 19.80

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:15	~~100~~	100 ml min	6.85	13.10	2.05	2.3	105	0.17	9.83
2:20	0.13	↓	6.90	12.63	1.62	0.8	104	0.53	10.01
2:25	0.26		6.85	11.96	1.61	1.1	103	0.50	10.24
2:30	0.39		6.90	11.90	1.63	1.0	104	0.49	10.48
2:35	0.52		6.88	12.01	1.64	1.3	101	0.20	10.58
2:40	0.65		6.87	11.85	1.61	1.2	101	0.31	10.75
2:45	0.78		6.90	11.88	1.62	1.1	100	0.23	10.94

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:45pm									

FINAL DEPTH TO WATER (ft bTOC): 12.14 TIME FINAL DEPTH TAKEN: 3:09

SAMPLE ID: PZ2 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.40 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	none	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore	[signature]	21 Feb 18
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 26 Apr 18 SITE: Mores Lake PROJECT _____

WEATHER: Partly Cloudy 60 °F

WELL IDENTIFICATION

mw - 1

DEPTH TO WATER (ft bTOC): 28.65

WELL TOTAL DEPTH (ft bTOC): 42.74

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:46A	—	100	7.62	15.40	1.14	0.0	110	3.52	28.65
8:51	0.13	↓	7.63	16.14	1.09	0.7	85	0.50	29.00
8:56	0.26	↓	7.65	16.31	1.08	0.0	80	0.05	29.01
9:01	0.39	↓	7.68	16.43	1.08	0.0	74	0.00	28.91
9:06	0.52	↓	7.66	16.52	1.09	0.0	70	0.00	28.99
9:11	0.65	↓	7.66	16.63	1.11	0.0	64	0.00	29.00

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:20A									

FINAL DEPTH TO WATER (ft bTOC): 28.90 TIME FINAL DEPTH TAKEN: 10:55 Am

SAMPLE ID: mw - 1 SAMPLE FOR QC: MS, MSD

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 2.39 FLOW THROUGH CELL MODEL #: Horiba 950

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Teilgore & Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Teilgore		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 25 Apr 18 SITE: Mores Lake PROJECT _____

WEATHER: overcast 50°F light rain

WELL IDENTIFICATION

MW-2

DEPTH TO WATER (ft bTOC): 18.97

WELL TOTAL DEPTH (ft bTOC): 52.92

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____ Dup-1

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
11:27	0.00	100	7.68	15.59	0.786	0.0	53	0.65	18.97
11:32A	0.13	↓	7.71	15.83	0.797	0.0	32	0.00	19.04
11:37A	0.26	↓	7.68	15.96	0.800	0.0	22	0.00	19.13
11:42A	0.39	↓	7.60	16.01	0.800	0.0	18	0.00	19.18
~~11:47A~~									
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:45A									

FINAL DEPTH TO WATER (ft bTOC): 19.55 TIME FINAL DEPTH TAKEN: 12:52 pm

SAMPLE ID: MW-2 SAMPLE FOR QC: Dup-1

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 2.21 FLOW THROUGH CELL MODEL #: Horiba 9-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	good	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Tilsore + Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Tilsore		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 25 Apr 18 SITE: Mores lake PROJECT _____

WEATHER: overcast 50°F

WELL IDENTIFICATION

MW-3

DEPTH TO WATER (ft bTOC): 18.00

WELL TOTAL DEPTH (ft bTOC): 49.50

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:48A	–	100	7.81	14.83	0.782	0.0	70	3.76	18.00
9:53	0.13	↓	7.64	15.01	0.811	0.0	43	0.26	19.00
9:58A	0.26	↓	7.72	15.11	0.812	0.0	29	0.00	19.03
10:03A	0.39	↓	7.74	15.17	0.812	0.0	21	0.00	19.22
10:08A	0.52	↓	7.75	15.20	0.810	0.0	18	0.00	19.33
Continued on back (circle one) yes no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:10A									

FINAL DEPTH TO WATER (ft bTOC): 19.45 TIME FINAL DEPTH TAKEN: 10:45 A

SAMPLE ID: MW-3 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.48 FLOW THROUGH CELL MODEL #: _____

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	None	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilcore + Richard Bedford.

	NAME	SIGNATURE	DATE
PREPARED:	David Kilcore.		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 25Apr18 SITE: Mores Lake PROJECT _____

WEATHER: Overcast 50°F

WELL IDENTIFICATION

MW-4

DEPTH TO WATER (ft bTOC): 23.34

WELL TOTAL DEPTH (ft bTOC): 57.05

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:25A	–	100	7.20	16.53	0.820	0.0	154	4.41	23.34
8:30A	0.13	↓	7.53	15.72	0.880	2.6	25	0.33	24.60
8:35A	0.26		7.67	15.75	0.886	1.2	-9	0.00	25.28
8:40A	0.39		7.68	15.77	0.888	0.5	-21	0.00	25.55
8:45A	0.52	↓	7.70	15.77	0.886	0.1	-29	0.00	25.98
Continued on back (circle one) yes / (no)									

Well Purged Below Top of Pump? (Y/(N)) _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
8:50A									

FINAL DEPTH TO WATER (ft bTOC): 27.50 TIME FINAL DEPTH TAKEN: 8:24 AM

SAMPLE ID: MW-4 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.53 FLOW THROUGH CELL MODEL #: horiba 9-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good.	

Field Sampler(s) Name(s): Dave Teilgore & Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	Dave Teilgore.		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 24 Apr 18 SITE: Moores Creek PROJECT _____

WEATHER: Cloudy 65°F

WELL IDENTIFICATION

MW-5

DEPTH TO WATER (ft bTOC): 11.16

WELL TOTAL DEPTH (ft bTOC): 41.09

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dodicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:44P	—	100	7.64	18.34	.951	0.0	89	1.08	11.16
2:49P	0.13	↓	7.77	18.20	.943	0.0	79	0.45	12.52
2:54Pm	0.26		7.71	18.02	.941	0.0	79	0.29	13.00
2:59Pm	0.39		7.76	18.10	.939	0.0	78	0.44	13.32

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
3:05PM									

FINAL DEPTH TO WATER (ft bTOC): 16.00 TIME FINAL DEPTH TAKEN: 3:34 PM

SAMPLE ID: MW-5 SAMPLE FOR QC: NA

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.3 FLOW THROUGH CELL MODEL #: Horiba-9-50

Well Condition

Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Dave Kilgore & Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	Dave Kilgore		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 24 Apr 18 SITE: Moore's Lake PROJECT _____

WEATHER: Cloudy 50s

WELL IDENTIFICATION: MW-6

DEPTH TO WATER (ft bTOC): 15.50

WELL TOTAL DEPTH (ft bTOC): 41.75

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump / Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
RD 9:23A ~~9:06A~~	–	100	6.79	19.29	.964	0.0	101	2.99	15.50
9:28A	0.13	↓	7.09	18.76	1.06	0.0	43	0.85	16.34
9:33A	0.26		7.37	18.54	1.06	0.0	32	0.60	16.89
9:38A	0.39		7.45	18.29	1.07	0.0	39	0.48	17.12
9:43A	0.52		7.44	18.21	1.07	0.0	47	0.41	17.53
RD 9:48A	0.65		7.47	18.25	1.08	0.0	48	0.23	17.90
9:53A ~~9:53A~~	0.78		7.48	18.19	1.08	0.0	51	0.14	18.21
9:58A	0.91		7.47	18.26	1.08	0.0	54	0.06	18.39
10:03A	1.04		7.38	18.36	1.08	0.0	56	0.00	18.70

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:05A									

FINAL DEPTH TO WATER (ft bTOC): 20.55 TIME FINAL DEPTH TAKEN: 10:38A

SAMPLE ID: MW-6 SAMPLE FOR QC: NA

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.95 FLOW THROUGH CELL MODEL #: _____

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): David Gilmore & Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Gilmore		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 24 Apr 18 SITE: Mores Lake PROJECT _____

WEATHER: Cloudy 55°F

WELL IDENTIFICATION

MW-7

DEPTH TO WATER (ft bTOC): 13.50

WELL TOTAL DEPTH (ft bTOC): 33.43'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
11:11AM	–	100	7.51	17.97	.963	25.5	-12	0.03	13.50
11:16A	0.13		7.49	17.49	.987	26.2	-24	0.00	15.00
11:21A	0.26		7.49	17.48	.981	31.1	-18	0.00	15.51
11:26A	0.39		7.66	17.40	.960	34.0	-26	0.00	15.96
11:31A	0.52		7.68	17.35	.946	31.2	-25	0.00	16.43
11:36A	0.65		7.70	17.52	.925	27.0	-22	0.00	16.85
11:41A	0.78		7.64	17.24	.906	23.1	-17	0.00	17.25
11:46A	0.91		7.56	17.82	.902	19.5	-13	0.00	17.51
11:51A	1.04		7.65	17.35	.898	16.9	-16	0.00	17.87

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:55A									

FINAL DEPTH TO WATER (ft bTOC): 20.12 TIME FINAL DEPTH TAKEN: 12:25 pm

SAMPLE ID: MW-7 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.92 FLOW THROUGH CELL MODEL #: horiba U-10

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Delsare + Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	Dave Delsare		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 25Apr18 SITE: Moses Lake PROJECT _____

WEATHER: Light rain 55F

WELL IDENTIFICATION

MW-8

DEPTH TO WATER (ft bTOC): 8.40

WELL TOTAL DEPTH (ft bTOC): 27.85

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:53P	~~0.13~~	100	7.03	15.08	2.67	1.0	25	1.14	8.40
1:58P	0.13	↓	7.03	15.06	3.15	0.0	-3	0.00	10.33
2:03P	0.26		6.98	15.02	3.30	0.0	-10	0.00	10.88
2:08	0.39		6.96	15.03	3.28	0.0	-11	0.00	11.18

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:15P									

FINAL DEPTH TO WATER (ft bTOC): 12.60 TIME FINAL DEPTH TAKEN: 2:52 PM

SAMPLE ID: MW-8 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.53 FLOW THROUGH CELL MODEL #: _____

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): David Gilsore + Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	Dave Gilsore		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 24 April 18 SITE: Moore's Lake PROJECT _____

WEATHER: Cloudy 63°F

WELL IDENTIFICATION

PZ-2

DEPTH TO WATER (ft bTOC): ~~8.71~~ DB 8.72

WELL TOTAL DEPTH (ft bTOC): 19.80

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:23P	~~0.13~~	100	6.83	17.33	2.02	0.3	37	9.62	8.71
1:28P	0.13	↓	7.00	16.27	1.69	0.0	29	1.23	8.93
1:33P	0.26		7.08	15.94	1.58	0.0	33	1.14	9.21
1:38P	0.39		7.10	15.79	1.53	0.0	37	6.33	9.42
1:43P	0.52		7.12	15.69	1.53	0.0	40	6.25	9.65

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1:45P									

FINAL DEPTH TO WATER (ft bTOC): 10.78 TIME FINAL DEPTH TAKEN: 2:15 PM

SAMPLE ID: PZ-2 SAMPLE FOR QC: N/A

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.35 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Dave Kilgore & Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	David Kilgore		
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 29 June SITE: Mores lake PROJECT _____

WEATHER: Clear 82°F

WELL IDENTIFICATION

MW-1

DEPTH TO WATER (ft bTOC): 28.78

WELL TOTAL DEPTH (ft bTOC): 42.74

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ft of water in casing X _____gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:14A	—	100	6.78	18.14	1.10	2.4	128	2.67	29.17
8:19A	0.13	↓	6.85	17.83	1.09	1.6	119	0.54	29.24
8:24A	0.26		6.86	17.80	1.09	1.1	117	0.32	29.22
8:29A	0.39		6.87	17.86	1.09	1.2	114	0.27	29.23

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
8:35A									

FINAL DEPTH TO WATER (ft bTOC): 29.21 TIME FINAL DEPTH TAKEN: 10:13 A

SAMPLE ID: MW-1 SAMPLE FOR QC: MS, MSD

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, HexCr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 3.09 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	None	
Lock?	None	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 27Jun18 SITE: Columbia Power Plant PROJECT Moses Lake

WEATHER: Partly Cloudy 85°F

WELL IDENTIFICATION

PZ-2

DEPTH TO WATER (ft bTOC): 8.36'

WELL TOTAL DEPTH (ft bTOC): 19.80'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
12:10P	–	100	5.53	21.59	1.89	3.3	62	3.44	8.71
12:15P	0.13	↓	5.63	18.63	1.69	1.4	42	3.49	9.00
12:20	0.26	↓	5.64	18.33	1.58	0.0	44	3.78	9.24
12:25	0.39	↓	5.64	18.38	1.59	0.0	50	3.50	9.38

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N) _____ Time to Recharge: _____ Depth to Water (ft bTOC): ~~10.56~~ PB

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
12:30P									

FINAL DEPTH TO WATER (ft bTOC): 10.56 TIME FINAL DEPTH TAKEN: ~~10.56~~ 12:59 PM

SAMPLE ID: PZ-2 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, ~~Hexcr~~ DK, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.27 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	None
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 28 JUNE 18 SITE: Mores Lake PROJECT _____

WEATHER: Clear 83°F

WELL IDENTIFICATION

MW-2

DEPTH TO WATER (ft bTOC): 18.99

WELL TOTAL DEPTH (ft bTOC): 52.92

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ft of water in casing X _____gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
11:09A	—	100	6.80	19.10	.722	5.5	39	0.84	19.17
11:14	0.13	↓	6.73	18.60	.725	2.7	15	0.24	19.27
11:19	0.26		6.73	18.70	.720	2.4	8	0.15	19.25
11:24	0.39		6.73	18.46	.720	1.6	2	0.10	19.31
11:29	0.52		6.73	18.17	.723	0.8	-2	0.07	19.39
11:34	0.65	↓	6.73	18.17	.725	0.6	-3	0.07	19.49
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:37A									

FINAL DEPTH TO WATER (ft bTOC): 19.73 TIME FINAL DEPTH TAKEN: 12:42P

SAMPLE ID: MW-2 SAMPLE FOR QC: Dupe - 1

PARAMETERS REQUESTD FOR ANALYSIS: metals / hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.42 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	Good	
Bumper Posts?	Good	
Protective Casing?	Good	
Paint and Label?	None	
Lock?	None	
Well Casing?	Good	
Reference Point?	Good	

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 28 Jun 18 SITE: City Power Plant PROJECT Mores Lake

WEATHER: Partly Cloudy 80°F

WELL IDENTIFICATION

MW-3

DEPTH TO WATER (ft bTOC): 18.32'

WELL TOTAL DEPTH (ft bTOC): 49.50'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:43A	–	100	6.93	18.09	0.716	7.4	86	3.01	19.12
9:48	0.13	↓	6.91	16.94	0.726	4.5	85	1.95	19.43
9:53	0.26	↓	6.83	16.55	0.728	2.6	88	1.89	19.63
9:58	0.39	↓	6.82	16.55	0.730	2.9	89	2.09	19.71

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N) _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:03A									

FINAL DEPTH TO WATER (ft bTOC): 19.84' TIME FINAL DEPTH TAKEN: 10:37A

SAMPLE ID: MW-3 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.40 FLOW THROUGH CELL MODEL #: Horiba 9-50

Well Condition		Remarks
Concrete Pad?	Good	
Bumper Posts?	None	
Protective Casing?	good	
Paint and Label?	Good	
Lock?	None	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 28Jun18 SITE: City Power Plant PROJECT Moses Lake

WEATHER: overcast 77°F

WELL IDENTIFICATION

MW-4

DEPTH TO WATER (ft bTOC): 23.67'

WELL TOTAL DEPTH (ft bTOC): 49.50'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:20A	—	100	6.42	17.32	0.803	9.8	72	2.05	24.75
8:25A	0.13	↓	6.54	16.76	0.813	10.6	25	0.66	25.34
8:30A	0.26		6.57	16.57	0.817	8.7	7	0.33	25.80
8:35A	0.39		6.59	16.54	0.818	4.9	-1	0.20	26.23

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/(N)): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
8:40A									

FINAL DEPTH TO WATER (ft bTOC): 27.69' TIME FINAL DEPTH TAKEN: 9:16 AM

SAMPLE ID: MW-4 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.46 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 27Jun18 SITE: City power plant PROJECT Mores Lake
WEATHER: Partly Cloudy 90°F

WELL IDENTIFICATION

MW-5

DEPTH TO WATER (ft bTOC): 11.98'

WELL TOTAL DEPTH (ft bTOC): 41.09'

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:40p	—	100	6.19	20.28	0.819	5.1	91	1.35	12.93
1:45p	0.13	↓	6.24	18.98	0.811	2.1	84	0.81	13.40
1:50p	0.26		6.23	18.49	0.809	0.0	83	0.62	13.83
1:55p	0.39		6.21	18.34	0.808	0.0	82	0.54	14.21

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:00p									

FINAL DEPTH TO WATER (ft bTOC): 16.73 TIME FINAL DEPTH TAKEN: 2:38 pm

SAMPLE ID: MW-5 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.5 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DK 27
DATE: ~~26~~ Jun 18 SITE: City Power Plant PROJECT Mores Lake
WEATHER: overcast 75° F

WELL IDENTIFICATION
MW-6

DEPTH TO WATER (ft bTOC): 14.0'
WELL TOTAL DEPTH (ft bTOC): 41.75'
WELL DIAMETER (inches): 2

PURGING:
CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume
Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:22A	–	100 ml	6.42	18.63	0.850	594	139	0.0	14.0'
8:27A	0.13	↓	6.58	17.90	0.736	682	139	1.75	
8:32A	0.26		6.58	17.84	0.664	445	142	2.02	
8:37A	0.39		6.60	17.68	0.625	340	145	2.21	
8:42A	0.52		6.63	17.63	0.605	280	148	2.36	
8:47A	0.65		6.69	17.72	0.593	252	148	2.34	
8:52A	0.78		6.73	17.63	0.588	227	149	2.36	
8:57A	0.91		6.80	17.69	0.589	214	147	2.40	
9:02A	1.04		6.88	17.81	0.592	182	144	2.29	

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:15A									

FINAL DEPTH TO WATER (ft bTOC): 20.30' TIME FINAL DEPTH TAKEN: 9:47 Am
SAMPLE ID: MW-6 SAMPLE FOR QC: none
PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228
IDW PURGE WATER TOTAL (gal): 2.21 FLOW THROUGH CELL MODEL #: Horiba 9-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUND-WATER SAMPLING DATA FORM (continued)

27 June 2018

WELL IDENTIFICATION

mw -6

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:07A	1.17	100	6.93	17.82	0.592	166	142	2.22	
9:12A	1.30	↓	6.97	17.76	0.587	162	141	2.07	18.95'

COMMENTS

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 28 June 18 SITE: City Power Plant Mores Lake PROJECT Mores Lake

WEATHER: Clear Sunny 90°F

WELL IDENTIFICATION: MW-6

DEPTH TO WATER (ft bTOC): 14.64

WELL TOTAL DEPTH (ft bTOC): 41.75'

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:11 pm	—	100	6.24	22.67	0.718	274	146	4.40	15.30
2:16	0.13		6.30	21.11	0.918	312	140	1.30	15.82
2:21	0.26		6.38	20.63	0.905	174	133	0.61	16.23
2:26	0.39		6.42	20.27	.872	114	130	0.39	16.60
2:31	0.52		6.45	20.19	.838	95.2	127	0.32	16.94
2:36	0.65		6.46	20.08	.822	86.2	126	0.31	17.20
2:41	0.78		6.48	20.07	.805	79.6	124	0.33	17.50
2:46	0.91		6.49	19.71	.797	70.5	125	0.37	17.81
2:51 pm	1.04		6.49	19.59	.793	64.9	123	0.45	18.10

Continued on back (circle one) (yes) / no

Well Purged Below Top of Pump? (Y/N) (N) Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
3:07 Pm									

FINAL DEPTH TO WATER (ft bTOC): 18.90 TIME FINAL DEPTH TAKEN: 3:08 pm

SAMPLE ID: MW-6 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: Hex Cr

IDW PURGE WATER TOTAL (gal): 3.04 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	None
Protective Casing?	good
Paint and Label?	none
Lock?	~~good~~ none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUND-WATER SAMPLING DATA FORM (continued)

28 June 2018

WELL IDENTIFICATION

MW-6

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:56 P	1.17	100	6.50	19.72	.787	59.7	122	0.46	18.39
3:01 P	1.30	↓	6.50	19.60	.786	53.4	122	0.46	18.65
3:06	1.43	↓	6.50	19.66	.781	49.7	121	0.44	18.84

COMMENTS

FIELD GROUNDWATER SAMPLING DATA FORM

DK 27

DATE: ~~26~~ Jun 18 SITE: City Power Plant PROJECT Mores Lake

WEATHER: Partly Cloudy 80°F

WELL IDENTIFICATION

MW-7

DEPTH TO WATER (ft bTOC): 13.83

WELL TOTAL DEPTH (ft bTOC): 33.43'

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
10:20A	—	100	7.09	23.48	.684	10.2	121	4.57	14.30
10:25A	0.13	↓	7.08	18.18	.866	20.0	-16	0.39	15.01
10:30A	0.26		7.10	18.00	.873	14.7	-19	0.23	15.47
10:35A	0.34		7.06	17.60	.858	11.8	-15	0.26	15.95
10:40A	0.52		6.95	17.67	.839	10.2	-7	0.34	16.43

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/N) ____ Time to Recharge: _____ Depth to Water (ft bTOC): 18.85 DB

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:43A									

FINAL DEPTH TO WATER (ft bTOC): 18.85 TIME FINAL DEPTH TAKEN: 11:12A

SAMPLE ID: MW-7 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.35 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 29 Jun SITE: City Power Plant Mores Lake PROJECT Mores Lake

WEATHER: Clear 86°F

WELL IDENTIFICATION

MW-8

DEPTH TO WATER (ft bTOC): 9.10'

WELL TOTAL DEPTH (ft bTOC): 27.85'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
10:37A	—	100	6.62	20.99	2.77	11.3	2	1.82	9.93
10:42	0.13	↓	6.59	19.29	3.01	8.9	-6	0.65	10.54
10:47	0.26	↓	6.55	18.71	3.08	5.0	-6	0.28	11.12
10:52	0.39	↓	6.57	18.52	2.92	3.2	-2	0.16	11.54

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:55A									

FINAL DEPTH TO WATER (ft bTOC): 13.10' TIME FINAL DEPTH TAKEN: ~~13.10~~ 13 11:30 AM

SAMPLE ID: MW-8 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.38 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	Good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	Good	

Field Sampler(s) Name(s): _____

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 23 Aug 18 SITE: City Power Plant PROJECT Mores Lake

WEATHER: _____

WELL IDENTIFICATION

MW-1

DEPTH TO WATER (ft bTOC): 28.85'

WELL TOTAL DEPTH (ft bTOC): 42.74'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:58A	—	100 m	7.83	18.50	1.08	0.0	141	3.49	29.12
9:03 A	0.13	↓	7.96	17.72	1.05	0.0	138	1.83	29.23
9:08 A	0.26		5.98	17.42	1.01	0.0	135	1.09	~~29.22~~
9:13 A	0.39		7.93	17.31	1.01	0.0	135	0.87	29.19
9:18 A	0.52		7.98	17.58	1.02	0.0	127	0.51	29.13
9:23	0.65		7.97	17.46	1.03	0.0	126	0.30	29.14

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N) _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:40A									

FINAL DEPTH TO WATER (ft bTOC): 29.04' TIME FINAL DEPTH TAKEN: 11:34 Am

SAMPLE ID: MW-1 SAMPLE FOR QC: MS, MSD

PARAMETERS REQUESTD FOR ANALYSIS: metals, hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.50 FLOW THROUGH CELL MODEL #: horiba 9-50

Well Condition		Remarks
Concrete Pad?	Good	
Bumper Posts?	N/A	
Protective Casing?	Good	
Paint and Label?	none	
Lock?	none	
Well Casing?	Good	
Reference Point?	Good	

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 22Aug18 SITE: City Power Plant PROJECT Mores Lake

WEATHER: Partly cloudy 70°F

WELL IDENTIFICATION

MW-2

DEPTH TO WATER (ft bTOC): 19.85'

WELL TOTAL DEPTH (ft bTOC): 52.92'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
11:16A	–	100	8.29	19.86	0.656	0.0	85	1.61	19.97
11:21A	0.13	↓	8.20	18.23	0.681	0.0	53	0.00	20.10
11:26	0.26		8.13	17.94	0.687	0.0	38	0.00	20.13
11:31	0.39		8.09	17.66	0.689	0.0	31	0.00	20.13
11:36	0.52		8.08	17.65	0.687	1.8	24	0.00	20.19

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:39A									

FINAL DEPTH TO WATER (ft bTOC): 20.58' TIME FINAL DEPTH TAKEN: 12:58 PM

SAMPLE ID: MW-2 SAMPLE FOR QC: Dup-1

PARAMETERS REQUESTD FOR ANALYSIS: metals, hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.65 FLOW THROUGH CELL MODEL #: Horiba 9-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	none
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 22 Aug 18 SITE: City Power Plant PROJECT Mores Lake

WEATHER: Partly cloudy 67°F

WELL IDENTIFICATION

MW-3

DEPTH TO WATER (ft bTOC): 18.90'

WELL TOTAL DEPTH (ft bTOC): 49.50'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:27A	0.00	100 m	8.11	17.51	0.705	0.7	136	2.83	19.33
9:32A	0.13		8.10	16.46	0.697	5.3	133	1.11	19.78
9:37	0.26		8.09	16.12	0.696	3.2	131	0.17	20.01
9:42	0.39		8.11	16.06	0.695	1.4	129	0.00	20.20
9:47	0.52		8.09	16.07	0.695	1.4	130	0.00	20.23

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:00A									

FINAL DEPTH TO WATER (ft bTOC): 20.35' TIME FINAL DEPTH TAKEN: 10:39A

SAMPLE ID: MW-3 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals, hardness, Hex Cr, COD, TDS, TOC, Tox, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.87 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	N/A
Protective Casing?	good
Paint and Label?	N/A
Lock?	N/A
Well Casing?	~~N/A~~ good
Reference Point?	N/A

Remarks

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 22Aug18 SITE: City Power Plant PROJECT Mores Lake

WEATHER: Overcast 65°F

WELL IDENTIFICATION

MW-4

DEPTH TO WATER (ft bTOC): 24.50

WELL TOTAL DEPTH (ft bTOC): 57.05'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:10 A	0.13	100	7.69	17.60	0.761	1.8	165	4.90	25.27
8:15 A	0.26	↓	7.61	16.78	0.772	3.1	152	2.47	25.94
8:20	0.39	↓	7.72	16.50	0.777	1.7	143	1.56	26.31
8:25	0.52	↓	7.79	16.40	0.776	0.3	137	1.11	26.82

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/(N)) _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
8:29 A									

FINAL DEPTH TO WATER (ft bTOC): 28.87' TIME FINAL DEPTH TAKEN: 9:06 AM

SAMPLE ID: MW-4 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals, hardness, Hex Cr, COD, TDS, TOC, TOR, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.46 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	N/A
Protective Casing?	good
Paint and Label?	N/A
Lock?	N/A
Well Casing?	good
Reference Point?	N/A

Remarks

Hex Cr sampled at: 10:48 AM
Final Depth to water: 25.76'
Time final Depth taken: 10:53AM

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 8-21-18 SITE: City Power Plant PROJECT Moses Lake

WEATHER: Cloudy 79 °F

WELL IDENTIFICATION

MW-5

DEPTH TO WATER (ft bTOC): 10.54

WELL TOTAL DEPTH (ft bTOC): 41.09

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:06P	—	100 M	7.88	22.60	1.12	18.5	78	2.77	11.11
2:11	0.13	↓	7.97	20.39	1.05	146	77	1.68	11.72
2:16	0.26		8.03	19.21	1.05	130	81	0.97	12.24
2:21	0.39		8.07	19.04	1.05	93.7	83	0.88	12.72
2:26	0.52		8.05	18.82	1.05	64.6	85	0.75	13.12
2:31	0.65		8.10	18.85	1.05	50.2	86	0.68	13.52
2:36	0.78		8.10	18.77	1.04	40.7	87	0.70	13.96
2:41	0.91		8.09	18.72	1.04	34.3	89	0.74	14.30
2:46	1.04	↓	8.10	18.69	1.03	27.0	90	0.63	14.84

Continued on back (circle one) yes no

Well Purged Below Top of Pump? (Y/N) ____ Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:54P									

FINAL DEPTH TO WATER (ft bTOC): 17.60 TIME FINAL DEPTH TAKEN: 3:35 PM

SAMPLE ID: MW-5 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: Metal Hardness, Hex Cr, COD, TDS, TOX Radium 2261 / 228

IDW PURGE WATER TOTAL (gal): 2.34 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

City Power Plant mores Lake

FIELD GROUND-WATER SAMPLING DATA FORM (continued)

8-21-18

WELL IDENTIFICATION

mw-5

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:51P	1.17	100	8.08	18.53	0.959	22.6	90	0.59	15.15

COMMENTS

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Aug 18 SITE: City Power Plant PROJECT Mores Lake

WEATHER: overcast 66°F

WELL IDENTIFICATION

MW-6

DEPTH TO WATER (ft bTOC): 14.43'

WELL TOTAL DEPTH (ft bTOC): 38.75' (top of pump) 41.75'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:39A	—	100/1	7.20	18.80	.768	54.6	94	2.65	15.20
8:44	0.13		7.35	18.24	.854	62.2	49	1.22	15.73
8:49	0.26		7.49	18.05	.861	40.5	37	0.94	16.24
8:54	0.39		7.56	17.94	.858	27.0	34	0.79	16.64
8:59	0.52		7.60	17.90	.859	20.5	33	0.73	16.99
9:04	0.65		7.63	17.91	.860	17.4	30	0.59	17.35

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N) ____ Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:07A		7.63	17.91	.860	17.4	30	0.59	17.35	

FINAL DEPTH TO WATER (ft bTOC): 19.51 TIME FINAL DEPTH TAKEN: 9:43A

SAMPLE ID: MW-6 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.66 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition

Concrete Pad?	Good
Bumper Posts?	N/A
Protective Casing?	Good
Paint and Label?	none
Lock?	none
Well Casing?	Good
Reference Point?	Good

Remarks

Hex Cr sampled at: 10:03 AM 21 Aug 18

Final Depth to water: 19.07'

Time final Depth taken: 10:08 AM

Field Sampler(s) Name(s): David Kilgore, Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	Richard Bedford	Richard Bedford	21 Aug 2018
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Aug 18 SITE: City Power Plant PROJECT: More's Lake

WEATHER: Overcast 69°F

WELL IDENTIFICATION: MW-7

DEPTH TO WATER (ft bTOC): 12.54'

WELL TOTAL DEPTH (ft bTOC): 33.43'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
10:26A	–	100 / 1	7.91	18.49	.806	24.6	46	0.90	13.29
10:31	0.13	↓	7.95	18.03	.840	16.7	17	0.16	14.00
10:36	0.26		7.97	17.90	.856	9.8	11	0.01	14.30
10:41	0.39		7.99	17.96	.856	6.8	10	0.00	15.00

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:45A									

FINAL DEPTH TO WATER (ft bTOC): 17.76' TIME FINAL DEPTH TAKEN: 11:23Am

SAMPLE ID: MW-7 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals / hardness, Hex Cr, COD, TDS, TOC, Tox, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.48 FLOW THROUGH CELL MODEL #: horiba-9-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	N/A
Protective Casing?	good
Paint and Label?	N/A
Lock?	N/A
Well Casing?	good
Reference Point?	N/A.

Remarks

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:	Richard Bedford	Richard Bedford	21 Aug 2018
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 22 Aug 18 SITE: City Power Plant PROJECT Mores Lake

WEATHER: Clear 77°F

WELL IDENTIFICATION

MW-8

DEPTH TO WATER (ft bTOC): 10.22'

WELL TOTAL DEPTH (ft bTOC): 27.85'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:10pm	–	100 m	5.98	22.11	2.46	3.3	56	2.39	11.23
2:15pm	0.13		6.06	19.27	2.76	2.6	27	0.53	11.76
2:20P	0.26		6.14	19.18	2.84	1.6	24	0.00	12.23
2:25P	0.39		6.19	18.96	2.74	1.1	29	0.00	12.63
2:30P	0.52		6.26	18.85	2.35	0.7	30	0.00	12.72
2:35P	0.65		6.30	18.82	1.91	0.3	25	0.00	13.19
2:40P	0.78		6.38	18.64	1.69	0.0	19	0.00	13.45

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:44pm									

FINAL DEPTH TO WATER (ft bTOC): 14.26 TIME FINAL DEPTH TAKEN: 3:25

SAMPLE ID: MW-8 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: metals, hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.95 FLOW THROUGH CELL MODEL #: Horiba 9-50

Well Condition

Concrete Pad?	Good
Bumper Posts?	N/A
Protective Casing?	Good
Paint and Label?	none
Lock?	none
Well Casing?	Good
Reference Point?	Good

Remarks

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 21 Aug 2018 SITE: City Power Plant PROJECT Mores Lake

WEATHER: Cloudy 77°F

WELL IDENTIFICATION

PZ-2

DEPTH TO WATER (ft bTOC): 8.41

WELL TOTAL DEPTH (ft bTOC): 19.80

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
12:51 P	—	100 ml	7.25	21.99	2.11	0.0	71	7.16	8.65
12:56	0.13	↓	7.31	20.02	1.92	0.0	56	5.72	8.95
1:01	0.26		7.39	19.49	1.78	0.0	55	4.92	9.23
1:06	0.39		7.44	19.51	1.76	0.0	57	4.60	9.40

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): ____ Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1:09									

FINAL DEPTH TO WATER (ft bTOC): 10.68' TIME FINAL DEPTH TAKEN: 1:44 PM

SAMPLE ID: PZ-2 SAMPLE FOR QC: ____

PARAMETERS REQUESTD FOR ANALYSIS: metals, hardness, Hex Cr, COD, TDS, TOC, TOX, Radium 226/228

IDW PURGE WATER TOTAL (gal): 1.38 FLOW THROUGH CELL MODEL #: ____

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	N/A	
Lock?	N/A	
Well Casing?	good	
Reference Point?	N/A	

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:	Richard Bedford	Richard Bedford	21 Aug 2018
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 25Oct18 SITE: Columbia Power Plant PROJECT Moses Lake

WEATHER: Overcast 48°F

WELL IDENTIFICATION

MW-1

DEPTH TO WATER (ft bTOC): 28.75

WELL TOTAL DEPTH (ft bTOC): 42.74'

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:26A	—	100	6.69	16.27	1.18	0.0	168	2.39	28.98
8:31A	0.13	↓	6.78	16.15	1.15	0.0	167	0.93	29.08
8:36A	0.26		6.92	16.15	1.14	0.0	155	0.44	29.16
8:41A	0.39		7.03	15.96	1.14	0.0	150	0.30	29.15
8:46A	0.52		7.10	16.03	1.15	0.0	142	0.25	29.13
8:51A	0.65		7.16	15.98	1.16	0.0	137	0.19	29.15

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): ____ Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:55A									

FINAL DEPTH TO WATER (ft bTOC): 29.04 TIME FINAL DEPTH TAKEN: 11:36A

SAMPLE ID: MW-1 SAMPLE FOR QC: MS, MSD

PARAMETERS REQUESTD FOR ANALYSIS: ____

IDW PURGE WATER TOTAL (gal): 3.38 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 24OCT18 SITE: Columbia Power Plant PROJECT: Moore's Lake

WEATHER: Partly Cloudy 48°F

WELL IDENTIFICATION: MW-2

DEPTH TO WATER (ft bTOC): 20.16

WELL TOTAL DEPTH (ft bTOC): 52.92'

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
11:05A	–	100	7.81	14.64	0.765	0.0	120	2.06	20.29
11:10A	0.13	↓	7.64	15.32	0.803	0.0	106	0.53	20.22
11:15A	0.26		7.60	15.58	0.808	0.0	90	0.12	20.39
11:20A	0.39	↓	7.61	15.68	0.806	0.0	78	0.01	20.42

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:25A									

FINAL DEPTH TO WATER (ft bTOC): 20.78 TIME FINAL DEPTH TAKEN: 12:33 PM

SAMPLE ID: MW-2 SAMPLE FOR QC: Dup-1

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 2.29 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Richard Bedford & David Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 24 Oct 18 SITE: Columbia Power Plant PROJECT Moses Lake

WEATHER: PC 37°F

WELL IDENTIFICATION

MW-3

DEPTH TO WATER (ft bTOC): 19.00

WELL TOTAL DEPTH (ft bTOC): 49.50

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:41A	–	100	7.77	14.25	0.791	0.0	103	2.30	19.62
9:46A	0.13	↓	7.69	14.73	0.803	0.0	101	0.76	20.00
9:51A	0.26	↓	7.64	14.69	0.807	0.0	99	0.23	20.19
9:56A	0.39	↓	7.60	14.78	0.808	0.0	99	0.05	20.32

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:58A									

FINAL DEPTH TO WATER (ft bTOC): 20.50 TIME FINAL DEPTH TAKEN: 10:35A

SAMPLE ID: MW-3 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.40 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	none

Remarks

Field Sampler(s) Name(s): Richard Bedford & David Kilgore.

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 24OCT18 SITE: Columbia Power Plant PROJECT: More's Lake

WEATHER: Partly Cloudy 36°F

WELL IDENTIFICATION: MW-4

DEPTH TO WATER (ft bTOC): 24.74

WELL TOTAL DEPTH (ft bTOC): 52.05

WELL DIAMETER (inches): 2

Hex Cr. sampled at 10:45 AM

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:26A	—	100	6.99	15.29	0.877	0.0	157	2.19	25.57
8:31A	0.13	↓	7.00	15.30	0.892	0.0	121	0.82	26.25
8:36A	0.26	↓	7.05	15.30	0.898	0.0	90	0.36	26.77
8:41A	0.39	↓	7.15	15.36	0.897	0.0	65	0.21	27.29
8:46A	0.52	↓	7.25	15.29	0.891	0.0	53	0.15	27.58

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): ____ Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
8:48A									

FINAL DEPTH TO WATER (ft bTOC): 29.00 TIME FINAL DEPTH TAKEN: 9:21 AM

SAMPLE ID: MW-4 SAMPLE FOR QC: ____

PARAMETERS REQUESTD FOR ANALYSIS: ____

IDW PURGE WATER TOTAL (gal): 1.43 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Richard Bedford & David Gilgore.

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 23OCT18 SITE: Columbia Power Plant PROJECT Mores Lake

WEATHER: Clear 62°F

WELL IDENTIFICATION

MW-5

DEPTH TO WATER (ft bTOC): 13.31

WELL TOTAL DEPTH (ft bTOC): 41.09

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:20pm	—	100 ml/min	7.32	17.76	0.960	13.9	99	1.36	14.04
1:25P	0.13	↓	7.32	17.37	0.981	11.0	77	0.49	14.71
1:30P	0.26	↓	7.31	17.29	0.919	9.5	65	0.21	15.21
1:35P	0.39	↓	7.26	17.21	0.915	1.7	62	0.14	15.63

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): ____ Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1:40P									

FINAL DEPTH TO WATER (ft bTOC): 18.12 TIME FINAL DEPTH TAKEN: 2:11 PM

SAMPLE ID: MW-5 SAMPLE FOR QC: ____

PARAMETERS REQUESTD FOR ANALYSIS: ____

IDW PURGE WATER TOTAL (gal): 1.33 FLOW THROUGH CELL MODEL #: Horriba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	~~good~~ none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	~~none~~ good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Richard Bedford & David Kilgore.

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 23OCT18 SITE: Columbia Power Plant PROJECT: Moore's Lake

WEATHER: Clear 50°F

WELL IDENTIFICATION: MW-6

DEPTH TO WATER (ft bTOC): 15.65

WELL TOTAL DEPTH (ft bTOC): 41.75

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:33A	—	100	6.62	16.68	1.05	11.3	96	7.6 %	~~15.65~~ 16.65
8:38A	0.13	↓	6.71	16.86	1.08	9.2	71	3.9 %	17.23
8:43A	0.26		6.76	16.86	1.08	7.1	58	2.5 %	17.69
8:48A	0.39		6.72	16.97	1.08	4.7	50	1.8 %	18.18
								mg/l	

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:30A									

FINAL DEPTH TO WATER (ft bTOC): 19.78 TIME FINAL DEPTH TAKEN: 11:00A

SAMPLE ID: MW-6 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 2.26 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	none	

Field Sampler(s) Name(s): Richard Redford + David Wilsore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 23Oct18 SITE: Columbia Power Plant PROJECT Mores Lake

WEATHER: Clear 45°F

WELL IDENTIFICATION

MW-7

DEPTH TO WATER (ft bTOC): 12.60

WELL TOTAL DEPTH (ft bTOC): 33.45'

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:08 A	–	100	7.17	16.40	0.963	5.3	89	22.1 %	13.44
9:13 A	0.13	↓	7.20	16.46	0.961	6.4	42	4.7 %	14.14
9:18 A	0.26		7.18	16.41	0.962	2.3	29	0.16 mg	14.71
9:23 A	0.39		7.14	16.36	0.963	0.0	23	0.10 ↓	15.29
9:28 A	0.52		7.15	16.33	0.963	0.0	20	0.06	15.69
9:33 A	0.65	↓	7.15	16.22	0.964	0.0	17	0.04	15.94
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): 15.94'

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:45 A									

FINAL DEPTH TO WATER (ft bTOC): 18.50 TIME FINAL DEPTH TAKEN: 10:17 A

SAMPLE ID: MW-7 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.79 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	none	

Field Sampler(s) Name(s): Richard Bedford & David Tailgate.

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 24 Oct 18 SITE: Columbia Power Plant PROJECT: Moe's Lake

WEATHER: _____

WELL IDENTIFICATION: MW-8

DEPTH TO WATER (ft bTOC): 9.56

WELL TOTAL DEPTH (ft bTOC): 27.85'

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:36 P	—	100	6.28	18.19	2.24	0.0	125	10.94	10.29
1:41 P	0.13	↓	6.52	17.81	2.87	0.0	54	9.92	10.93
1:46 P	0.26		6.59	17.67	2.99	0.0	33	9.23	11.48
1:51 P	0.39		6.65	17.60	2.92	0.0	32	8.75	11.86

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1:58 P									

FINAL DEPTH TO WATER (ft bTOC): 13.24 TIME FINAL DEPTH TAKEN: 2:33 PM

SAMPLE ID: MW-8 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.488 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Richard Bedford & David Kirkpatrick

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 23OCT18 SITE: Columbia Power Plant PROJECT: Moore's Lake

WEATHER: Clear 55°F

WELL IDENTIFICATION: PZ-2

DEPTH TO WATER (ft bTOC): 8.53'

WELL TOTAL DEPTH (ft bTOC): 19.80

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
12:09P	–	100	6.39	18.03	1.94	0.0	100	0.32	~~8.53~~ 9.36
12:14	0.13	↓	6.42	18.35	1.85	0.0	85	0.09	9.46
12:19	0.26		6.45	18.48	1.81	0.0	77	0.13	9.83
12:24	0.39		6.48	18.55	1.80	0.0	70	0.15	10.03

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): ____ Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
12:26P									

FINAL DEPTH TO WATER (ft bTOC): 10.10 TIME FINAL DEPTH TAKEN: ~~10.10~~ 12:58 PM

SAMPLE ID: PZ-2 SAMPLE FOR QC: ____

PARAMETERS REQUESTD FOR ANALYSIS: ____

IDW PURGE WATER TOTAL (gal): 1.27 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	none	

Field Sampler(s) Name(s): Richard Bedford + Dave Kilgore.

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 20Dec18 SITE: City Power Plant PROJECT Morris Lake

WEATHER: Overcast 42

WELL IDENTIFICATION

MW-1

DEPTH TO WATER (ft bTOC): 28.80

WELL TOTAL DEPTH (ft bTOC): 42.74

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump, Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:46A	–	100	6.72	14.30	1.03	0.2	121	1.43	29.00
8:51A	0.13	↓	6.73	14.53	1.02	0.0	117	0.00	29.16
8:56A	0.26		6.72	14.59	1.01	0.0	113	0.00	29.18
9:01A	0.39		6.69	14.69	1.01	0.0	111	0.00	29.22
9:06A	0.52		6.68	14.71	1.01	0.0	109	0.00	29.16
9:11A	0.65		6.66	14.70	1.02	0.0	106	0.00	29.20

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING

Equipment Used: Same as Above Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:19A									

FINAL DEPTH TO WATER (ft bTOC): 29.08 TIME FINAL DEPTH TAKEN: 11:08 A

SAMPLE ID: MW-1 SAMPLE FOR QC: MS, MSD

PARAMETERS REQUESTD FOR ANALYSIS: ____

IDW PURGE WATER TOTAL (gal): 2.13 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Hex. Cr. Sampled at: 11:00 Am

Final Depth To water: 29.08'

Field Sampler(s) Name(s): Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 19Dec 18 SITE: City Power Plant PROJECT Mones Lake

WEATHER: Partly Cloudy 50's

WELL IDENTIFICATION

MW-2

DEPTH TO WATER (ft bTOC): 19.36

WELL TOTAL DEPTH (ft bTOC): 52.92

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
11:25A	—	100	7.16	14.55	0.592	0.0	16	1.79	19.51
11:30A	0.13	↓	6.96	14.99	0.661	0.0	17	0.00	19.57
11:35A	0.26		6.85	15.07	0.689	0.0	32	0.00	19.64
11:40A	0.29		6.79	15.15	0.695	0.0	44	0.00	19.68
11:45A	0.58		6.76	15.20	0.700	0.0	51	0.00	19.76

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N) _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:49A									

FINAL DEPTH TO WATER (ft bTOC): 19.99 TIME FINAL DEPTH TAKEN: 12:53 PM

SAMPLE ID: MW-2 SAMPLE FOR QC: Dup-1

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 2.29 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	N/A
Protective Casing?	good
Paint and Label?	N/A
Lock?	N/A
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 19Dec 18 SITE: City Power Plant PROJECT: More's Lake

WEATHER: Partly Cloudy 43°F

WELL IDENTIFICATION: MW-3

DEPTH TO WATER (ft bTOC): 18.00

WELL TOTAL DEPTH (ft bTOC): 49.50

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:56A	—	100	6.73	11.80	0.711	0.0	52	4.99	18.47
10:01A	0.13	↓	6.69	13.17	0.717	1.7	65	6.09	18.86
10:06A	0.26		6.69	13.55	0.718	0.7	77	5.39	19.12
10:11A	0.39		6.72	13.78	0.718	0.0	84	5.09	19.24
10:16A	0.52		6.74	13.82	0.718	0.0	90	4.48	19.34
10:21A	0.65		6.76	13.89	0.717	0.0	94	3.87	19.42

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING

Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:23A									

FINAL DEPTH TO WATER (ft bTOC): 19.48 TIME FINAL DEPTH TAKEN: 11:00A

SAMPLE ID: MW-3 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.66 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	N/A
Protective Casing?	good
Paint and Label?	N/A
Lock?	N/A
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): Richard Bedford David Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 19 Dec 18 SITE: City Power Plant PROJECT: More's Lake

WEATHER: Partly Cloudy 39°F

WELL IDENTIFICATION: MW-4

DEPTH TO WATER (ft bTOC): 23.74

WELL TOTAL DEPTH (ft bTOC): 57.05

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: ____ ft of water in casing X ____ gallon/foot = ____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: ____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:00A	-	100	6.70	13.89	0.796	5.8	-2	1.11	24.74
8:15A	0.13	↓	6.74	14.00	0.800	2.3	-31	0.00	25.50
8:20A	0.26		6.64	14.00	0.798	1.1	-23	0.00	25.97
8:25A	0.39		6.67	13.95	0.792	0.4	-10	0.00	26.39
8:30A	0.52		6.68	13.97	0.787	0.0	5	0.00	26.72
8:35A	0.65		6.68	13.92	0.786	0.0	15	0.00	26.94
8:40A	0.78	↓	6.68	13.98	0.783	0.0	24	0.00	27.25
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): ____ Time to Recharge: ____ Depth to Water (ft bTOC): ____

SAMPLING Equipment Used: (Same as Above) Other: ____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
8:42A									

FINAL DEPTH TO WATER (ft bTOC): 28.18 TIME FINAL DEPTH TAKEN: 9:16 AM

SAMPLE ID: MW-4 SAMPLE FOR QC: ____

PARAMETERS REQUESTD FOR ANALYSIS: ____

IDW PURGE WATER TOTAL (gal): 1.72 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	N/A
Protective Casing?	good
Paint and Label?	N/A
Lock?	N/A
Well Casing?	good
Reference Point?	good

Remarks

Hex cr. sampled at: 9:40 AM

Final Depth to water: 26.40

Field Sampler(s) Name(s): Richard Bedford David Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 18Dec18 SITE: City Power Plant PROJECT Moe's Lake

WEATHER: Clear 56°F

WELL IDENTIFICATION

MW-5

DEPTH TO WATER (ft bTOC): 12.61

WELL TOTAL DEPTH (ft bTOC): 41.09

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:29P	–	100	7.19	15.98	0.803	6.0	-39	0.41	13.50
2:34P	0.13	↓	7.11	15.90	0.779	4.4	-39	0.00	14.00
2:39P	0.26		7.05	15.85	0.772	3.2	-20	0.00	14.50
2:44P	0.39		6.99	15.80	0.769	2.1	5	0.00	14.96
2:49P	0.52		6.95	15.75	0.768	1.7	22	0.00	15.33
2:54P	0.65		6.91	15.72	0.768	1.1	37	0.00	15.73
2:59P	0.78		6.88	15.69	0.768	1.0	47	0.00	16.03
3:04P	0.91	↓	6.86	15.72	0.767	1.0	51	0.00	16.40
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
3:06P									

FINAL DEPTH TO WATER (ft bTOC): 18.53 TIME FINAL DEPTH TAKEN: 3:37 PM

SAMPLE ID: MW-5 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.77 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	N/A	
Lock?	N/A	
Well Casing?	good	
Reference Point?	good.	

Field Sampler(s) Name(s): Richard Beaford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 18 Dec 18 SITE: City Power Plant PROJECT Moore's Lake

WEATHER: Clear 42°F

WELL IDENTIFICATION

MW-6

DEPTH TO WATER (ft bTOC): 15.04

WELL TOTAL DEPTH (ft bTOC): 41.75

WELL DIAMETER (inches): 2"

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:33A	—	100/1	6.60	14.66	0.900	186	-34	1.35	15.92
8:38A	0.13		6.50	15.01	0.889	247	-56	0.10	16.50
8:43A	0.26		6.47	15.01	0.861	237	-49	0.00	16.99
8:48A	0.39		6.45	15.06	0.855	194	-39	0.00	17.40
8:53A	0.52		6.42	15.16	0.853	162	-31	0.00	17.75
8:58A	0.65		6.38	15.34	0.855	141	-25	0.00	18.14
9:03	0.78		6.33	15.20	0.857	118	-19	0.00	18.52
9:08	0.91		6.33	15.23	0.859	94.9	-16	0.00	18.84
9:13	1.04		6.35	15.21	0.862	76.9	-14	0.00	19.17

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
9:50A									

FINAL DEPTH TO WATER (ft bTOC): 22.10 TIME FINAL DEPTH TAKEN: 10:20 Am

SAMPLE ID: MW6 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 2.78 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	N/A	
Lock?	N/A	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUND-WATER SAMPLING DATA FORM (continued)

WELL IDENTIFICATION

MW-6

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:18A	1.17	100 ml	6.37	15.16	0.863	67.1	-13	0.00	19.43
9:23A	1.30	↓	6.40	15.24	0.865	57.2	-13	0.00	19.79
9:28A	1.43		6.44	15.40	0.866	48.9	-13	0.00	20.03
9:33A	1.56		6.58	15.55	0.867	42.5	-17	0.00	20.32
9:38A	1.69		6.76	15.63	0.866	39.1	-25	0.00	20.52
9:42A	1.82		6.87	15.78	0.861	35.5	-27	0.00	20.80

COMMENTS

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 18Dec18 SITE: City Power Plant PROJECT Moore's Lake

WEATHER: Clear 44°F

WELL IDENTIFICATION

MW-7

DEPTH TO WATER (ft bTOC): 12.65

WELL TOTAL DEPTH (ft bTOC): 33.43

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
10:52A	–	100	7.02	15.67	0.835	10.8	-48	4.47	13.20
10:57A	0.13	↓	7.03	15.89	0.831	10.2	-63	4.38	13.79
11:02A	0.26		6.99	16.06	0.829	6.7	-54	4.03	14.28
11:07A	0.39		6.95	16.16	0.827	4.5	-49	3.68	14.76
11:12A	0.52		6.93	16.33	0.826	3.1	-53	3.82	15.22
11:17A	0.65		6.91	16.41	0.824	2.7	-53	3.62	15.63
11:22A	0.78		6.90	16.50	0.822	2.2	-53	3.21	16.00

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): ____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:26A									

FINAL DEPTH TO WATER (ft bTOC): 18.49 TIME FINAL DEPTH TAKEN: 11:58 A

SAMPLE ID: MW-7 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.72 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	N/A	
Lock?	N/A	
Well Casing?	good	
Reference Point?	N/A	

Field Sampler(s) Name(s): Richard Bedford Dave Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 19 Dec 18 SITE: City Power Plant PROJECT: More's Lake

WEATHER: Overcast 57°F

WELL IDENTIFICATION: MW-8

DEPTH TO WATER (ft bTOC): 8.61

WELL TOTAL DEPTH (ft bTOC): 27.85

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:01P	—	100	6.63	15.35	2.45	3.1	-28	1.20	9.45
2:06P	0.13		6.61	15.57	2.83	1.7	-29	0.00	10.20
2:11P	0.26		6.61	15.69	2.90	0.5	-15	0.00	10.66
2:16P	0.39		6.62	15.71	2.75	0.0	-3	0.00	11.01
2:21P	0.52		6.67	15.71	2.33	0.0	-2	0.00	11.35
2:26P	0.65		6.74	15.71	1.98	0.0	-7	0.00	11.61
2:31P	0.78		6.79	15.76	1.75	0.0	-10	0.00	11.82
2:36P	0.91		6.82	15.81	1.64	0.0	-5	0.00	11.99
2:41P	1.04		6.85	15.82	1.60	0.0	0	0.00	12.15

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N) _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING

Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:48P									

FINAL DEPTH TO WATER (ft bTOC): 12.84 TIME FINAL DEPTH TAKEN: 3:22 P.m

SAMPLE ID: MW-8 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 2.11 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition

Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	none

Remarks

Field Sampler(s) Name(s): Richard Bedford David Kilgore

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUND-WATER SAMPLING DATA FORM (continued)

WELL IDENTIFICATION

MW-8

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:46 PM	1.17	100	6.87	15.86	1.58	0.0	3	0.23	12.29

COMMENTS

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 18 Dec 18 SITE: City Power Plant PROJECT Moe's Lake

WEATHER: Clear 53°F

WELL IDENTIFICATION

PZ-2

DEPTH TO WATER (ft bTOC): 8.48

WELL TOTAL DEPTH (ft bTOC): 19.80

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:07 pm	—	100	6.44	15.61	2.23	1.2	-12	0.29	8.72
1:12 pm	0.13	↓	6.43	16.05	2.02	0.4	11	0.00	9.00
1:17 pm	0.26		6.43	16.08	1.82	0.0	27	0.00	9.30
1:22 p	0.39		6.46	16.14	1.69	0.0	34	0.00	9.50
1:27 p	0.52		6.48	16.08	1.62	0.0	37	0.30	9.61
1:32 p	0.65		6.51	16.05	1.64	0.1	36	0.35	9.83
1:37 p	0.78		6.54	16.03	1.64	0.3	37	0.40	10.00
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N) _____ Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1:39p	1								

FINAL DEPTH TO WATER (ft bTOC): 11.04 TIME FINAL DEPTH TAKEN: 2:09

SAMPLE ID: PZ-2 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: _____

IDW PURGE WATER TOTAL (gal): 1.61 FLOW THROUGH CELL MODEL #: Horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	N/A	
Protective Casing?	good	
Paint and Label?	None	
Lock?	none	
Well Casing?	good	
Reference Point?	none.	

Field Sampler(s) Name(s): Richard Bedford Dave Pulgone

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 14Mar19 SITE: City Power Plant PROJECT Moe's Lake

WEATHER: Overcast 54°

WELL IDENTIFICATION

MW-1

DEPTH TO WATER (ft bTOC): 27.88'

WELL TOTAL DEPTH (ft bTOC): 42.74

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION:_____ft of water in casing X _____gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other:_____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:19A	–	100	6.62	14.80	1.03	15.5	125	5.89	28.15
8:24A	0.13	↓	6.76	14.93	1.03	9.8	105	2.60	28.30
8:29A	0.26		6.80	15.01	1.03	3.6	99	1.54	28.32
8:34A	0.39		6.81	14.99	1.03	1.5	98	1.18	28.28
8:39A	0.52		6.82	14.97	1.03	0.8	96	0.86	28.31
8:44A	0.65	↓	6.83	14.96	1.05	0.3	94	0.59	28.31

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge:_____ Depth to Water (ft bTOC):_____

SAMPLING Equipment Used: Same as Above Other:_____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
8:50A									

FINAL DEPTH TO WATER (ft bTOC): 28.26 TIME FINAL DEPTH TAKEN: 11:01 AM

SAMPLE ID: MW-1 SAMPLE FOR QC: MS, MSD

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.65 FLOW THROUGH CELL MODEL #: horiba

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Hex Cr Sampled @ 10:53A

Field Sampler(s) Name(s): Richard Beaford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 13 Mar 19 SITE: City Power Plant PROJECT: More's Lake

WEATHER: Overcast 54°F

WELL IDENTIFICATION: MW-2

DEPTH TO WATER (ft bTOC): 17.50

WELL TOTAL DEPTH (ft bTOC): 52.92

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump (circled) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:58A	–	100	7.27	13.07	0.727	0.6	98	2.29	17.64
10:03A	0.13	↓	7.07	13.59	0.773	0.8	80	0.68	17.79
10:08A	0.26		7.01	13.88	0.781	0.7	76	0.16	17.61
10:13A	0.39		7.00	14.12	0.783	0.6	73	0.05	17.83
10:18A	0.52		7.00	14.16	0.782	0.5	71	0.00	17.86
10:23A	0.65		7.00	14.32	0.782	0.5	70	0.08	17.93

Continued on back (circle one) yes / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:25A									

FINAL DEPTH TO WATER (ft bTOC): 18.30 TIME FINAL DEPTH TAKEN: 11:37A

SAMPLE ID: MW-2 SAMPLE FOR QC: Dup-1

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.57 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 13 Mar 19 SITE: City Power Plant PROJECT: Moore's Lake

WEATHER: Overcast 54

WELL IDENTIFICATION: MW-3

DEPTH TO WATER (ft bTOC): 15.93

WELL TOTAL DEPTH (ft bTOC): 49.50

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:22A	~~0.13~~	100	6.79	13.17	0.765	6.3	163	2.82	16.57
8:27A	0.13	↓	6.94	13.46	0.785	8.3	137	1.36	16.99
8:32A	0.26		6.97	13.61	0.788	4.8	117	0.88	17.15
8:37A	0.39		6.99	13.59	0.787	1.4	101	0.69	17.25
8:42A	0.52		7.01	13.59	0.788	0.0	87	0.57	17.25
8:47A	0.65		7.02	13.57	0.788	0.2	76	0.48	17.32
8:52A	0.78	↓	7.02	13.59	0.787	0.2	70	0.42	17.25
Continued on back (circle one) yes / (no)									

Well Purged Below Top of Pump? (Y/(N)): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
8:55A									

FINAL DEPTH TO WATER (ft bTOC): 17.41 TIME FINAL DEPTH TAKEN: 9:32 Am

SAMPLE ID: MW-3 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals / hardness, Hex Cr, COD, TDS, TOC, Tox, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.82 FLOW THROUGH CELL MODEL #: horiba 9-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Hex Cr sampled @ 9:35 Am

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 14 Mar 19 SITE: City Power Plant PROJECT Mores lake

WEATHER: Overcast 46°F

WELL IDENTIFICATION

MW-4

DEPTH TO WATER (ft bTOC): 16.39

WELL TOTAL DEPTH (ft bTOC): 57.05

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:37 Pm	0.00	100	6.44	11.96	0.601	52.0	61	1.52	17.38
1:42 Pm	0.13	↓	6.61	12.64	0.291	131	-10	0.04	18.38
1:47 Pm	0.26	↓	6.64	12.70	0.189	78.6	-7	0.00	19.17
1:52 Pm	0.39	↓	6.58	12.83	0.163	45.3	0	0.00	19.89
1:57 Pm	0.52	↓	6.62	12.99	0.163	38.6	4	0.00	20.20
2:02 Pm	0.65	↓	6.63	12.98	0.168	28.7	5	0.00	20.67
2:07 Pm	0.78	↓	6.65	12.97	0.170	25.1	4	0.00	20.85
2:12 Pm	0.91	↓	6.67	12.99	0.175	21.9	3	0.00	21.09
2:17 Pm	1.04	↓	6.68	12.85	0.180	20.4	1	0.00	21.30
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:20 Pm									

FINAL DEPTH TO WATER (ft bTOC): 21.85 TIME FINAL DEPTH TAKEN: 2:56 Pm

SAMPLE ID: MW-4 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, HexCr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.05 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 12Mar19 SITE: City Power Plant PROJECT: More's Lake

WEATHER: Overcast 51°F

WELL IDENTIFICATION: MW-5

DEPTH TO WATER (ft bTOC): 11.18

WELL TOTAL DEPTH (ft bTOC): 41.09

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
2:12pm	–	100	7.14	13.13	0.898	3.8	99	2.93	11.93
2:17pm	0.13	↓	7.10	12.87	0.895	4.9	97	2.14	12.52
2:22pm	0.26	↓	7.10	14.16	0.892	3.1	95	2.04	13.04
2:27pm	0.39	↓	7.11	14.25	0.892	1.6	95	2.08	13.53
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:30pm									

FINAL DEPTH TO WATER (ft bTOC): 16.04 TIME FINAL DEPTH TAKEN: 3:02pm

SAMPLE ID: MW-5 SAMPLE FOR QC: _____

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.30 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 12 Mar 19 SITE: City Power Plant PROJECT Mores Lake

WEATHER: overcast 41 °F

WELL IDENTIFICATION

MW - 6

DEPTH TO WATER (ft bTOC): 13.19

WELL TOTAL DEPTH (ft bTOC): 41.75

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
8:44A	–	100	6.79	13.92	0.898	146	51	1.67	13.96
8:49A	0.13	↓	6.78	14.20	0.874	352	26	0.98	14.34
8:54A	0.26		6.85	14.39	0.785	460	22	0.65	14.88
8:59A	0.39		6.86	14.30	0.744	548	30	0.62	15.31
9:04A	0.52		6.84	14.38	0.736	579	31	0.59	15.80
9:09A	0.65		7.01	14.42	0.734	566	35	0.57	15.93
9:14A	0.78		7.04	14.42	0.743	510	37	0.53	16.54
9:19A	0.91		7.04	14.45	0.755	405	38	0.50	16.86
9:24A	1.04		7.04	14.52	0.764	298	37	0.44	17.00

Continued on back (circle one) (yes) / no

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
10:02A									

FINAL DEPTH TO WATER (ft bTOC): 20.40 TIME FINAL DEPTH TAKEN: 10:36 A

SAMPLE ID: MW-6 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.91 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUND-WATER SAMPLING DATA FORM (continued)

WELL IDENTIFICATION

MW-6

12 Mar 19

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
9:29A	1.17	100	7.07	14.51	0.774	256	36	0.40	17.53
9:34A	1.30	↓	7.08	14.34	0.784	203	37	0.39	17.70
9:39A	1.43	↓	7.08	14.41	0.790	177	36	0.33	17.99
9:44A	1.56	↓	7.08	14.49	0.792	156	37	0.31	18.30
9:49A	1.69	↓	7.09	14.50	0.788	144	39	0.37	18.60
9:54A	1.82	↓	7.09	14.56	0.771	141	43	0.45	18.85
9:59A	1.95	↓	7.10	14.45	0.753	130	48	0.78	18.99

COMMENTS

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 12Mar19 SITE: City Power Plant PROJECT Moe's Lake

WEATHER: Overcast

WELL IDENTIFICATION

MW-7

DEPTH TO WATER (ft bTOC): 8.41

WELL TOTAL DEPTH (ft bTOC): 33.43

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
10:58A	—	100	7.31	13.19	0.890	34.5	5	0.95	9.36
11:03A	0.13	↓	7.30	13.42	0.888	16.3	-11	0.10	10.13
11:08A	0.26	↓	7.29	13.41	0.888	16.0	-14	0.00	10.52
11:13A	0.39	↓	7.30	13.50	0.887	15.7	-17	0.00	11.05
11:18A	0.52	↓	7.30	13.66	0.887	15.9	-22	0.00	11.62
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
11:20A									

FINAL DEPTH TO WATER (ft bTOC): 14.26' TIME FINAL DEPTH TAKEN: 11:53AM

SAMPLE ID: MW-7 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, ~~TDS~~ Oil, TOC, ~~TOC~~, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.43 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition	
Concrete Pad?	good
Bumper Posts?	none
Protective Casing?	good
Paint and Label?	none
Lock?	none
Well Casing?	good
Reference Point?	good

Remarks

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 13 Mar 19 SITE: Coty Power Plant PROJECT Moe's Lake

WEATHER: overcast 56°F

WELL IDENTIFICATION

MW-8

DEPTH TO WATER (ft bTOC): 6.48

WELL TOTAL DEPTH (ft bTOC): _____

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
12:55pm	–	100	6.27	13.32	2.32	31.3	80	11.03	7.23
1:00pm	0.13	↓	6.32	13.54	2.85	138	31	9.74	7.91
1:05pm	0.26	↓	6.32	13.70	2.96	79.4	21	8.88	8.48
1:10pm	0.39	↓	6.34	13.78	2.81	69.8	14	8.23	8.92
1:15pm	0.52	↓	6.45	13.85	2.18	89.2	18	7.80	9.32
1:20pm	0.65	↓	6.52	13.92	1.79	89.4	26	7.58	9.51
1:25pm	0.78	↓	6.57	13.92	1.62	81.0	32	7.19	9.82
1:30pm	0.91	↓	6.58	13.96	1.58	71.4	30	6.86	10.02
1:35pm	1.04	↓	6.59	14.04	1.55	66.7	29	6.51	10.24
Continued on back (circle one) yes / no									

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
2:02p									

FINAL DEPTH TO WATER (ft bTOC): 11.04' TIME FINAL DEPTH TAKEN: 2:38 PM

SAMPLE ID: MW-8 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals/hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 2.68 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

FIELD GROUND-WATER SAMPLING DATA FORM (continued)

WELL IDENTIFICATION

MW-8

13 Mar 19

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:40pm	1.17	100	6.60	14.04	1.46	125	32	6.25	10.41
1:45pm	1.30	↓	6.61	14.05	1.20	240	40	6.13	10.51
1:50pm	1.43		6.61	14.03	1.06	290	43	6.09	10.60
1:55pm	1.58		6.60	14.09	1.02	289	41	6.09	10.60
2:00pm	1.69		6.62	14.01	1.02	279	42	6.04	10.78

COMMENTS

FIELD GROUNDWATER SAMPLING DATA FORM

DATE: 12 Mar 19 SITE: City Power Plant PROJECT: Moe's Lake

WEATHER: overcast 51°F

WELL IDENTIFICATION: PZ-2

DEPTH TO WATER (ft bTOC): 8.20

WELL TOTAL DEPTH (ft bTOC): 19.80

WELL DIAMETER (inches): 2

PURGING:

CASING VOLUME CALCULATION: _____ ft of water in casing X _____ gallon/foot = _____ total gallons/casing volume

Equipment Used: (Dedicated Bladder Pump) Nondedicated Bladder Pump Baller Other: _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
1:03 pm	–	100	6.30	12.54	2.15	0.0	44	2.26	8.61
1:08 pm	0.13	↓	6.43	12.65	1.83	0.0	29	1.68	8.85
1:13 pm	0.26	↓	6.51	12.55	1.69	0.0	31	1.55	9.00
1:18 pm	0.39	↓	6.54	12.45	1.67	0.0	33	1.60	9.23

Continued on back (circle one) yes / (no)

Well Purged Below Top of Pump? (Y/N): N Time to Recharge: _____ Depth to Water (ft bTOC): _____

SAMPLING Equipment Used: Same as Above Other: _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1:20 pm									

FINAL DEPTH TO WATER (ft bTOC): 10.37 TIME FINAL DEPTH TAKEN: 1:52 pm

SAMPLE ID: PZ-2 SAMPLE FOR QC: none

PARAMETERS REQUESTD FOR ANALYSIS: metals & hardness, Hex Cr, COD, TDS, TOC, TOX, radium 226/228

IDW PURGE WATER TOTAL (gal): 1.27 FLOW THROUGH CELL MODEL #: horiba U-50

Well Condition		Remarks
Concrete Pad?	good	
Bumper Posts?	none	
Protective Casing?	good	
Paint and Label?	none	
Lock?	none	
Well Casing?	good	
Reference Point?	good	

Field Sampler(s) Name(s): David Kilgore Richard Bedford

	NAME	SIGNATURE	DATE
PREPARED:			
REVIEWED:			

APPENDIX E – LABORATORY ANALYTICAL PACKAGES

Pace Analytical Services, LLC
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(913)599-5665

February 07, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on December 21, 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

Revised Report Rev_2

Pace Pittsburgh Revision 1. This report replaces the 1/15/18 report. Report revised 1/30/18 to include results for combined Radium 226 +228.

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

Sincerely,

Colleen Clyne
colleen.clyne@pacelabs.com
1(913)563-1406
Project Manager

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Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

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

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60260827001	**MW-6**	Water	12/20/17 10:45	12/21/17 07:05
60260827002	**MW-7**	Water	12/20/17 14:26	12/21/17 07:05
60260827003	**MW-5**	Water	12/20/17 15:50	12/21/17 07:05

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60260827001	**MW-6**	EPA 6010	SMW	24	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60260827002	**MW-7**	EPA 6010	SMW, TDS	24	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60260827003	**MW-5**	EPA 6010	SMW, TDS	24	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- MW-5 (Lab ID: 60260827003)
- MW-6 (Lab ID: 60260827001)
- MW-7 (Lab ID: 60260827002)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 509324

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60260718001,60260758001

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

- MS (Lab ID: 2086094)
  - Chloride

Additional Comments:

Analyte Comments:

QC Batch: 509324

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2086094)
  - Chloride

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 509388

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60260936001

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

- MS (Lab ID: 2086225)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
3 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-6 **Lab ID: 60260827001** Collected: 12/20/17 10:45 Received: 12/21/17 07:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	12/28/17 13:20	01/04/18 17:37	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/28/17 13:20	01/04/18 17:37	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/28/17 13:20	01/04/18 17:37	7440-38-2	
Barium	**86.7**	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:37	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/28/17 13:20	01/04/18 17:37	7440-41-7	
Boron	ND	ug/L	100	1	12/28/17 13:20	01/04/18 17:37	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:37	7440-43-9	
Calcium	**180000**	ug/L	100	1	12/28/17 13:20	01/04/18 17:37	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:37	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:37	7440-48-4	
Copper	ND	ug/L	10.0	1	12/28/17 13:20	01/04/18 17:37	7440-50-8	
Iron	**240**	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:37	7439-89-6	
Lead	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:37	7439-92-1	
Lithium	**56.0**	ug/L	10.0	1	12/28/17 13:20	01/04/18 17:37	7439-93-2	
Magnesium	**37000**	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:37	7439-95-4	
Manganese	**983**	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:37	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/28/17 13:20	01/04/18 17:37	7439-98-7	
Nickel	**10.8**	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:37	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/28/17 13:20	01/04/18 17:37	7782-49-2	
Silver	ND	ug/L	7.0	1	12/28/17 13:20	01/04/18 17:37	7440-22-4	
Sodium	**44200**	ug/L	500	1	12/28/17 13:20	01/04/18 17:37	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/28/17 13:20	01/04/18 17:37	7440-28-0	
Total Hardness by 2340B	**602000**	ug/L	500	1	12/28/17 13:20	01/04/18 17:37		
Zinc	ND	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:37	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/04/18 11:12	01/04/18 14:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**854**	mg/L	5.0	1		12/27/17 17:02		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.7**	Std. Units	0.10	1		01/26/18 09:08		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**22.8**	mg/L	2.0	2		01/03/18 17:41	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	1		01/03/18 17:27	16984-48-8	
Sulfate	**207**	mg/L	20.0	20		01/03/18 17:55	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	**11.9**	mg/L	10.0	1		01/03/18 10:55		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-6 **Lab ID: 60260827001** Collected: 12/20/17 10:45 Received: 12/21/17 07:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**2.0**	mg/L	1.0	1		12/28/17 16:04	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/21/17 08:37	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-7 **Lab ID: 60260827002** Collected: 12/20/17 14:26 Received: 12/21/17 07:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	12/28/17 13:20	01/05/18 10:47	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/28/17 13:20	01/05/18 10:47	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/28/17 13:20	01/05/18 10:47	7440-38-2	
Barium	ND	ug/L	5.0	1	12/28/17 13:20	01/05/18 10:47	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/28/17 13:20	01/05/18 10:47	7440-41-7	
Boron	ND	ug/L	100	1	12/28/17 13:20	01/05/18 10:47	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/28/17 13:20	01/05/18 10:47	7440-43-9	
Calcium	**153000**	ug/L	100	1	12/28/17 13:20	01/04/18 17:48	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:48	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:48	7440-48-4	
Copper	ND	ug/L	10.0	1	12/28/17 13:20	01/05/18 10:47	7440-50-8	
Iron	**1330**	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:48	7439-89-6	
Lead	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:48	7439-92-1	
Lithium	**48.3**	ug/L	10.0	1	12/28/17 13:20	01/05/18 14:18	7439-93-2	
Magnesium	**38200**	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:48	7439-95-4	
Manganese	**876**	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:48	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/28/17 13:20	01/05/18 10:47	7439-98-7	
Nickel	**13.4**	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:48	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/28/17 13:20	01/05/18 10:47	7782-49-2	
Silver	ND	ug/L	7.0	1	12/28/17 13:20	01/05/18 10:47	7440-22-4	
Sodium	ND	ug/L	500	1	12/28/17 13:20	01/05/18 10:47	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/28/17 13:20	01/04/18 17:48	7440-28-0	
Total Hardness by 2340B	**539000**	ug/L	500	1	12/28/17 13:20	01/04/18 17:48		
Zinc	ND	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:48	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/04/18 11:12	01/04/18 14:48	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**810**	mg/L	5.0	1		12/27/17 17:03		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.8**	Std. Units	0.10	1		01/26/18 09:10		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**42.2**	mg/L	5.0	5		01/03/18 18:23	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	1		01/03/18 18:09	16984-48-8	
Sulfate	**285**	mg/L	20.0	20		01/03/18 18:37	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	**10.5**	mg/L	10.0	1		01/03/18 10:55		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-7 **Lab ID: 60260827002** Collected: 12/20/17 14:26 Received: 12/21/17 07:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.4**	mg/L	1.0	1		12/28/17 16:18	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/21/17 08:37	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-5 **Lab ID: 60260827003** Collected: 12/20/17 15:50 Received: 12/21/17 07:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	12/28/17 13:20	01/05/18 10:51	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/28/17 13:20	01/05/18 10:51	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/28/17 13:20	01/05/18 10:51	7440-38-2	
Barium	**657**	ug/L	5.0	1	12/28/17 13:20	01/05/18 10:51	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/28/17 13:20	01/05/18 10:51	7440-41-7	
Boron	**292**	ug/L	100	1	12/28/17 13:20	01/05/18 10:51	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/28/17 13:20	01/05/18 10:51	7440-43-9	
Calcium	**85600**	ug/L	100	1	12/28/17 13:20	01/04/18 17:52	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:52	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:52	7440-48-4	
Copper	ND	ug/L	10.0	1	12/28/17 13:20	01/05/18 10:51	7440-50-8	
Iron	**299**	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:52	7439-89-6	
Lead	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:52	7439-92-1	
Lithium	**44.3**	ug/L	10.0	1	12/28/17 13:20	01/05/18 14:21	7439-93-2	
Magnesium	**23800**	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:52	7439-95-4	
Manganese	**112**	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:52	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/28/17 13:20	01/05/18 10:51	7439-98-7	
Nickel	ND	ug/L	5.0	1	12/28/17 13:20	01/04/18 17:52	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/28/17 13:20	01/05/18 10:51	7782-49-2	
Silver	ND	ug/L	7.0	1	12/28/17 13:20	01/05/18 10:51	7440-22-4	
Sodium	**31500**	ug/L	500	1	12/28/17 13:20	01/05/18 10:51	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/28/17 13:20	01/04/18 17:52	7440-28-0	
Total Hardness by 2340B	**312000**	ug/L	500	1	12/28/17 13:20	01/04/18 17:52		
Zinc	ND	ug/L	50.0	1	12/28/17 13:20	01/04/18 17:52	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/04/18 11:12	01/04/18 14:50	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**542**	mg/L	5.0	1		12/27/17 17:04		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**8.0**	Std. Units	0.10	1		01/26/18 09:11		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**19.5**	mg/L	1.0	1		01/03/18 19:18	16887-00-6	
Fluoride	**0.51**	mg/L	0.20	1		01/03/18 19:18	16984-48-8	
Sulfate	**95.8**	mg/L	10.0	10		01/03/18 19:32	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		01/03/18 10:56		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-5 **Lab ID: 60260827003** Collected: 12/20/17 15:50 Received: 12/21/17 07:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.8**	mg/L	1.0	1		12/28/17 16:31	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/21/17 08:38	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 509581 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 2086893 Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	01/04/18 14:37	

LABORATORY CONTROL SAMPLE: 2086894

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.5	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2086895 2086896

Parameter	Units	60260827001 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	5.2	103	104	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.

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 509043 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 2085123 | Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	01/04/18 16:49	
Antimony	ug/L	ND	10.0	01/04/18 16:49	
Arsenic	ug/L	ND	10.0	01/04/18 16:49	
Barium	ug/L	ND	5.0	01/04/18 16:49	
Beryllium	ug/L	ND	1.0	01/04/18 16:49	
Boron	ug/L	ND	100	01/04/18 16:49	
Cadmium	ug/L	ND	5.0	01/04/18 16:49	
Calcium	ug/L	ND	100	01/04/18 16:49	
Chromium	ug/L	ND	5.0	01/04/18 16:49	
Cobalt	ug/L	ND	5.0	01/04/18 16:49	
Copper	ug/L	ND	10.0	01/04/18 16:49	
Iron	ug/L	ND	50.0	01/04/18 16:49	
Lead	ug/L	ND	5.0	01/04/18 16:49	
Lithium	ug/L	ND	10.0	01/04/18 16:49	
Magnesium	ug/L	ND	50.0	01/04/18 16:49	
Manganese	ug/L	ND	5.0	01/04/18 16:49	
Molybdenum	ug/L	ND	20.0	01/04/18 16:49	
Nickel	ug/L	ND	5.0	01/04/18 16:49	
Selenium	ug/L	ND	15.0	01/04/18 16:49	
Silver	ug/L	ND	7.0	01/04/18 16:49	
Sodium	ug/L	ND	500	01/04/18 16:49	
Thallium	ug/L	ND	20.0	01/04/18 16:49	
Total Hardness by 2340B	ug/L	ND	500	01/04/18 16:49	
Zinc	ug/L	ND	50.0	01/04/18 16:49	

LABORATORY CONTROL SAMPLE: 2085124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9470	95	80-120	
Antimony	ug/L	1000	967	97	80-120	
Arsenic	ug/L	1000	936	94	80-120	
Barium	ug/L	1000	970	97	80-120	
Beryllium	ug/L	1000	984	98	80-120	
Boron	ug/L	1000	937	94	80-120	
Cadmium	ug/L	1000	967	97	80-120	
Calcium	ug/L	10000	9740	97	80-120	
Chromium	ug/L	1000	962	96	80-120	
Cobalt	ug/L	1000	988	99	80-120	
Copper	ug/L	1000	974	97	80-120	
Iron	ug/L	10000	9740	97	80-120	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

LABORATORY CONTROL SAMPLE: 2085124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1000	976	98	80-120	
Lithium	ug/L	1000	934	93	80-120	
Magnesium	ug/L	10000	9390	94	80-120	
Manganese	ug/L	1000	970	97	80-120	
Molybdenum	ug/L	1000	970	97	80-120	
Nickel	ug/L	1000	966	97	80-120	
Selenium	ug/L	1000	987	99	80-120	
Silver	ug/L	500	489	98	80-120	
Sodium	ug/L	10000	9490	95	80-120	
Thallium	ug/L	1000	1000	100	80-120	
Total Hardness by 2340B	ug/L		63000			
Zinc	ug/L	1000	980	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2085125 2085126

Parameter	Units	60260828001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	121	20000	20000	19700	19600	98	98	75-125	0	20	
Antimony	ug/L	ND	2000	2000	2030	1990	101	99	75-125	2	20	
Arsenic	ug/L	ND	2000	2000	1980	1940	99	97	75-125	2	20	
Barium	ug/L	66.0	2000	2000	2030	2040	98	98	75-125	0	20	
Beryllium	ug/L	ND	2000	2000	1990	1980	99	99	75-125	0	20	
Boron	ug/L	174	2000	2000	2120	2140	97	98	75-125	1	20	
Cadmium	ug/L	ND	2000	2000	1980	1950	99	97	75-125	2	20	
Calcium	ug/L	209000	20000	20000	225000	226000	80	84	75-125	0	20	
Chromium	ug/L	ND	2000	2000	1920	1940	96	97	75-125	1	20	
Cobalt	ug/L	6.5	2000	2000	1960	1920	98	96	75-125	2	20	
Copper	ug/L	ND	2000	2000	1990	2020	99	101	75-125	2	20	
Iron	ug/L	1670	20000	20000	21000	21000	97	97	75-125	0	20	
Lead	ug/L	ND	2000	2000	1910	1880	95	94	75-125	2	20	
Lithium	ug/L	34.8	2000	2000	1980	1990	97	98	75-125	0	20	
Magnesium	ug/L	15900	20000	20000	33800	34100	90	91	75-125	1	20	
Manganese	ug/L	219	2000	2000	2150	2160	96	97	75-125	0	20	
Molybdenum	ug/L	ND	2000	2000	1990	1960	99	98	75-125	1	20	
Nickel	ug/L	20.6	2000	2000	1910	1880	95	93	75-125	2	20	
Selenium	ug/L	ND	2000	2000	2040	2000	102	100	75-125	2	27	
Silver	ug/L	ND	1000	1000	1140	1130	114	113	75-125	1	20	
Sodium	ug/L	23900	20000	20000	42800	43100	95	96	75-125	1	20	
Thallium	ug/L	ND	2000	2000	1920	1890	96	94	75-125	2	20	
Total Hardness by 2340B	ug/L	588000			702000	705000				0		
Zinc	ug/L	242	2000	2000	2170	2140	96	95	75-125	1	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 508876 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 2084739 Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	12/27/17 17:01	

LABORATORY CONTROL SAMPLE: 2084740

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1130	113	80-120	

SAMPLE DUPLICATE: 2084741

Parameter	Units	60260827001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	854	852	0	10	

SAMPLE DUPLICATE: 2084742

Parameter	Units	60260936001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	783	797	2	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 511811 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60260827001, 60260827002, 60260827003

SAMPLE DUPLICATE: 2095618

Parameter	Units	60260936001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.7	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 509324 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 2086090 Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	01/03/18 10:58	
Fluoride	mg/L	ND	0.20	01/03/18 10:58	
Sulfate	mg/L	ND	1.0	01/03/18 10:58	

LABORATORY CONTROL SAMPLE: 2086091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	5	5.4	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2086092 2086093

Parameter	Units	60260718001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	132	50	50	190	192	116	120	80-120	1	15	
Fluoride	mg/L	2.1	25	25	28.4	29.0	105	108	80-120	2	15	
Sulfate	mg/L	6.5J	50	50	60.3	61.2	108	110	80-120	2	15	

MATRIX SPIKE SAMPLE: 2086094

Parameter	Units	60260758001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	18.2	5	24.5	126	80-120	E,M1
Fluoride	mg/L	0.37	2.5	3.1	110	80-120	
Sulfate	mg/L	83.8	50	136	104	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 509388 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 2086221 Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	01/03/18 10:49	

LABORATORY CONTROL SAMPLE: 2086222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	54.2	108	90-110	

MATRIX SPIKE SAMPLE: 2086225

Parameter	Units	60260936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	68.6	131	90-110	M1

SAMPLE DUPLICATE: 2086224

Parameter	Units	60260817004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	98.6	94.0	5	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 508888 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 2084767 Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	12/28/17 10:30	

LABORATORY CONTROL SAMPLE: 2084768

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.1	102	80-120	

MATRIX SPIKE SAMPLE: 2084769

Parameter	Units	60260720001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	0.74J	5	6.7	118	80-120	

SAMPLE DUPLICATE: 2084770

Parameter	Units	60260720002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	0.72J	.64J		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 508198 Analysis Method: EPA 7196
QC Batch Method: EPA 7196 Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 2082381 Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	12/21/17 08:36	

LABORATORY CONTROL SAMPLE: 2082382

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.11	106	90-110	

MATRIX SPIKE SAMPLE: 2082383

Parameter	Units	60260827001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.11	105	85-115	

SAMPLE DUPLICATE: 2082384

Parameter	Units	60260827002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-6 **Lab ID: 60260827001** Collected: 12/20/17 10:45 Received: 12/21/17 07:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.753 ± 0.634 (0.943) C:NA T:93%**	pCi/L	01/10/18 19:11	13982-63-3	
Radium-228	EPA 904.0	**1.07 ± 0.468 (0.766) C:77% T:81%**	pCi/L	01/10/18 11:22	15262-20-1	
Total Radium	Total Radium Calculation	**1.82 ± 1.10 (1.71)**	pCi/L	01/30/18 11:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-7 **Lab ID: 60260827002** Collected: 12/20/17 14:26 Received: 12/21/17 07:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.490 ± 0.513 (0.803)** **C:NA T:99%**	pCi/L	01/10/18 19:11	13982-63-3	
Radium-228	EPA 904.0	**0.666 ± 0.517 (1.04)** **C:78% T:77%**	pCi/L	01/10/18 11:23	15262-20-1	
Total Radium	Total Radium Calculation	**1.16 ± 1.03 (1.84)**	pCi/L	01/30/18 11:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Sample: MW-5 **Lab ID: 60260827003** Collected: 12/20/17 15:50 Received: 12/21/17 07:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.745 ± 0.603 (0.876) C:NA T:95%**	pCi/L	01/10/18 19:11	13982-63-3	
Radium-228	EPA 904.0	**0.611 ± 0.484 (0.954) C:69% T:74%**	pCi/L	01/10/18 11:23	15262-20-1	
Total Radium	Total Radium Calculation	**1.36 ± 1.09 (1.83)**	pCi/L	01/30/18 11:40	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 283648 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 1392423 Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.717 ± 0.402 (0.731) C:79% T:80%	pCi/L	01/10/18 11:22	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

QC Batch: 283639 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60260827001, 60260827002, 60260827003

METHOD BLANK: 1392411 Matrix: Water
Associated Lab Samples: 60260827001, 60260827002, 60260827003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.302 (0.653) C:NA T:99%	pCi/L	01/10/18 18:29	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO 93647
Pace Project No.: 60260827

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60260827001	**MW-6**	EPA 3010	509043	EPA 6010	509177
60260827002	**MW-7**	EPA 3010	509043	EPA 6010	509177
60260827003	**MW-5**	EPA 3010	509043	EPA 6010	509177
60260827001	**MW-6**	EPA 7470	509581	EPA 7470	509628
60260827002	**MW-7**	EPA 7470	509581	EPA 7470	509628
60260827003	**MW-5**	EPA 7470	509581	EPA 7470	509628
60260827001	**MW-6**	EPA 903.1	283639		
60260827002	**MW-7**	EPA 903.1	283639		
60260827003	**MW-5**	EPA 903.1	283639		
60260827001	**MW-6**	EPA 904.0	283648		
60260827002	**MW-7**	EPA 904.0	283648		
60260827003	**MW-5**	EPA 904.0	283648		
60260827001	**MW-6**	Total Radium Calculation	286451		
60260827002	**MW-7**	Total Radium Calculation	286451		
60260827003	**MW-5**	Total Radium Calculation	286451		
60260827001	**MW-6**	SM 2540C	508876		
60260827002	**MW-7**	SM 2540C	508876		
60260827003	**MW-5**	SM 2540C	508876		
60260827001	**MW-6**	SM 4500-H+B	511811		
60260827002	**MW-7**	SM 4500-H+B	511811		
60260827003	**MW-5**	SM 4500-H+B	511811		
60260827001	**MW-6**	Trivalent Chromium Calculation	509779		
60260827002	**MW-7**	Trivalent Chromium Calculation	509779		
60260827003	**MW-5**	Trivalent Chromium Calculation	509779		
60260827001	**MW-6**	EPA 300.0	509324		
60260827002	**MW-7**	EPA 300.0	509324		
60260827003	**MW-5**	EPA 300.0	509324		
60260827001	**MW-6**	EPA 410.4	509388		
60260827002	**MW-7**	EPA 410.4	509388		
60260827003	**MW-5**	EPA 410.4	509388		
60260827001	**MW-6**	SM 5310C	508888		
60260827002	**MW-7**	SM 5310C	508888		
60260827003	**MW-5**	SM 5310C	508888		
60260827001	**MW-6**	EPA 7196	508198		
60260827002	**MW-7**	EPA 7196	508198		
60260827003	**MW-5**	EPA 7196	508198		

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Sample Condition Upon Receipt

WO# : 60260827

60260827

Client Name: Bim

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 +0.2 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 2-9 **Corr. Factor** CF 0.0 CF +0.2 **Corrected** 2-9

Date and initials of person examining contents: PW 12/21/17

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	Cr6+
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)	☐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: CMC Date: 12/21/17

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax:
Requested Due Date:	

Section B — Required Project Information:

Report To:	Brian Weis
Copy To:	
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	93647

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	colleen.clyne@pacelabs.com
Pace Profile #:	10268

Regulatory Agency	
State / Location	MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION °C	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228	Residual Chlorine (Y/N)	60260827 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	MW-6 AG3S 20 BP3S 20 BP3N 20 AG2S 20	WT		—	—	20Dec17	1045	15.5	8	2	3	3	2BP24						X	X	X	X	X	X	X	X	X	X		2BP/N	G1
2	MW-7	WT		—	—	20Dec17	1424	15.5	8	2	3	3							X	X	X	X	X	X	X	X	X	X			G2
3	MW-5	WT		—	—	20Dec17	1550	15.5	8	2	3	3							X	X	X	X	X	X	X	X	X	X			G3
4																															
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

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

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)
	[signature] ESTS	20Dec17	4:19AM	[signature]	20Dec17	4:19				
				[signature] PACE	12/21/17	0705	2.9	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed:

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60260827 **Workorder Name:** MORE'S LAKE COLUMBIA, MO 93647 **Owner Received Date:** 12/21/2017 **Results Requested By:** 1/8/2018

Report To

Colleen Clyne
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1406

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Requested Analysis

WO#: 30239517

30239517

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Radium 226/228	LAB USE ONLY
1	MW-6	PS	12/20/2017 10:45	60260827001	Water	1	X	001
2	MW-7	PS	12/20/2017 14:26	60260827002	Water	1	X	002
3	MW-5	PS	12/20/2017 15:50	60260827003	Water	1	X	003
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	PASI		C. Carney	12/20/17 1150
2				
3				

Comments

Cooler Temperature on Receipt 3.3 °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.*

Pittsburgh Lab Sample Condition Upon Receipt

30239517

Pace Analytical

Client Name: Pace KS Project #

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

Label CDC
LIMS Login CDC

Tracking #: 4122 4941 4307

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

Thermometer Used 6 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 33 °C Correction Factor: 00 °C Final Temp: 33 °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 12/22/17 CDC

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: -Pace Containers Used:	✓ ✓			10.
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. All containers needing preservation are found to be in compliance with EPA recommendation.	✓ ✓			16. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed CDC; Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present: Trip Blank Custody Seals Present			✓ ✓	18.
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: CDC Date: 12/22/17

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.

ANALYTICAL REPORT

January 05, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L960765
Samples Received:	01/03/2018
Project Number:	60260827
Description:	Mores's Lake Columbia, Mo 93647
Report To:	Colleen Clyne 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-6 L960765-01 GW

Collected by	Collected date/time	Received date/time
	12/20/17 10:45	01/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1058867	1	01/03/18 14:18	01/03/18 14:18	EG

MW-7 L960765-02 GW

Collected by	Collected date/time	Received date/time
	12/20/17 14:26	01/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1058867	1	01/03/18 12:25	01/03/18 12:25	EG

MW-5 L960765-03 GW

Collected by	Collected date/time	Received date/time
	12/20/17 15:50	01/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1058867	1	01/03/18 15:21	01/03/18 15:21	EG

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

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

Nancy F. McLain

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	27.7	J	12.0	100	1	01/03/2018 14:18	WG1058867

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	237	P1	12.0	100	1	01/03/2018 12:25	WG1058867

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	19.6	J	12.0	100	1	01/03/2018 15:21	WG1058867

Method Blank (MB)

(MB) R3277336-1 01/02/18 13:51

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L960765-02 Original Sample (OS) • Duplicate (DUP)

(OS) L960765-02 01/03/18 12:25 • (DUP) R3277336-4 01/03/18 16:00

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	237	185	1	24.4	P1	20

L959838-02 Original Sample (OS) • Duplicate (DUP)

(OS) L959838-02 01/04/18 13:07 • (DUP) R3277336-10 01/04/18 13:28

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	261	668	1	87.6	J3	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3277336-2 01/02/18 14:00 • (LCSD) R3277336-3 01/02/18 14:09

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	171	181	85.7	90.7	85-115			5.68	20

L960263-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L960263-01 01/03/18 13:14 • (MS) R3277336-6 01/03/18 16:22 • (MSD) R3277336-8 01/03/18 16:44

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	20.1	368	348	116	109	1	80-120			5.84	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**

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

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

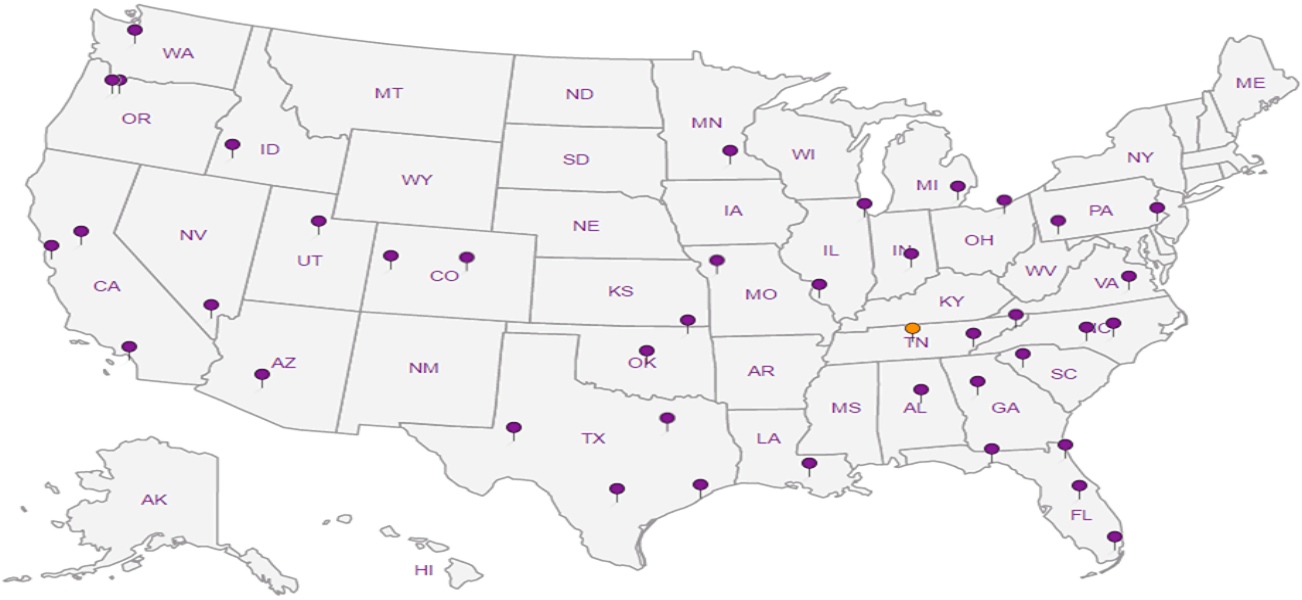
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Chain of Custody

Pace Analytical®
www.pacelabs.com

L960765

Workorder: 60260827 **Workorder Name:** MORE'S LAKE COLUMBIA, MO 93647 **Results Requested By:** 1/8/2018

Report / Invoice To	Subcontract To
Colleen Clyne Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1406 Email: colleen.clyne@pacelabs.com	P.O. SUB-8824

State of Sample Origin:

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4						Requested Analysis: TOX												LAB USE ONLY
1	MW-6	12/20/2017 10:45	60260827001	Water	1						X												-01
2	MW-7	12/20/2017 14:26	60260827002	Water	1						X												-02
3	MW-5	12/20/2017 15:50	60260827003	Water	1						X												-03
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible] PAS 1	1/2/2018 1800	[illegible] 841	1/3/18 0845
2				
3				

Comments

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

Tracking #: 412249417464

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACELKS	SDG#	960765	
Cooler Received/Opened On: 01/5 /18	Temperature:	1.2	°C
Received by : Kelly Mercer			
Signature: Kelly Mercer			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

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

February 07, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on December 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

Pace Pittsburgh Revision 1. This report replaces the 1/15/18 report. Report revised 1/30/18 to include results for combined Radium 226 +228.

Revised Report Rev_2

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

Sincerely,

Jeffrey Shopper for
Colleen Clyne
colleen.clyne@pacelabs.com
1(913)563-1406
Project Manager

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

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

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

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60260933001	**MW-4**	Water	12/21/17 08:30	12/22/17 07:15
60260933002	**MW-4**	Water	12/21/17 09:00	12/22/17 07:15
60260933003	**MW-3**	Water	12/21/17 10:00	12/22/17 07:15
60260933004	**MW-2**	Water	12/21/17 11:25	12/22/17 07:15
60260933005	**DUP-1**	Water	12/21/17 08:00	12/22/17 07:15
60260933006	**PZ-2**	Water	12/21/17 14:00	12/22/17 07:15

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

SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60260933001	**MW-4**	EPA 6010	TDS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60260933002	**MW-4**	EPA 300.0	OL	3	PASI-K
		EPA 7196	LDB	1	PASI-K
60260933003	**MW-3**	EPA 6010	TDS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60260933004	**MW-2**	EPA 6010	TDS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60260933005	**DUP-1**	EPA 6010	TDS	24	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60260933006	**PZ-2**	EPA 6010	TDS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 509142

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60260936001

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

- MS (Lab ID: 2085371)
  - Calcium
- MSD (Lab ID: 2085372)
  - Calcium
  - Sodium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-1 (Lab ID: 60260933005)
- MW-2 (Lab ID: 60260933004)
- MW-3 (Lab ID: 60260933003)
- MW-4 (Lab ID: 60260933001)
- PZ-2 (Lab ID: 60260933006)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 509388

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60260936001

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

- MS (Lab ID: 2086225)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
5 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H1: Analysis conducted outside the EPA method holding time.
- DUP-1 (Lab ID: 60260933005)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-4 **Lab ID: 60260933001** Collected: 12/21/17 08:30 Received: 12/22/17 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							
Aluminum	**82.1**	ug/L	75.0	1	12/29/17 15:26	01/05/18 13:03	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:03	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:03	7440-38-2	
Barium	**106**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:03	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/29/17 15:26	01/05/18 13:03	7440-41-7	
Boron	ND	ug/L	100	1	12/29/17 15:26	01/05/18 13:03	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:03	7440-43-9	
Calcium	**124000**	ug/L	100	1	12/29/17 15:26	01/05/18 13:03	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:03	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:03	7440-48-4	
Copper	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:03	7440-50-8	
Iron	**426**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:03	7439-89-6	
Lead	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:03	7439-92-1	
Lithium	**38.6**	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:03	7439-93-2	
Magnesium	**39900**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:03	7439-95-4	
Manganese	**266**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:03	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:03	7439-98-7	
Nickel	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:03	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/29/17 15:26	01/05/18 13:03	7782-49-2	
Silver	ND	ug/L	7.0	1	12/29/17 15:26	01/05/18 13:03	7440-22-4	
Sodium	**44800**	ug/L	500	1	12/29/17 15:26	01/05/18 13:03	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:03	7440-28-0	
Total Hardness by 2340B	**473000**	ug/L	500	1	12/29/17 15:26	01/05/18 13:03		
Zinc	ND	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:03	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/05/18 11:45	01/08/18 14:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**593**	mg/L	5.0	1		12/27/17 17:11		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		01/26/18 09:14		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/08/18 14:20	16065-83-1	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		01/04/18 13:52		
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		01/05/18 13:13	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-4 **Lab ID: 60260933002** Collected: 12/21/17 09:00 Received: 12/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**24.0**	mg/L	2.0	2		01/06/18 12:37	16887-00-6	
Fluoride	**0.58**	mg/L	0.20	1		01/05/18 16:17	16984-48-8	
Sulfate	**92.3**	mg/L	10.0	10		01/06/18 12:51	14808-79-8	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/22/17 08:39	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-3 **Lab ID: 60260933003** Collected: 12/21/17 10:00 Received: 12/22/17 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							
Aluminum	ND	ug/L	75.0	1	12/29/17 15:26	01/05/18 13:05	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:05	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:05	7440-38-2	
Barium	**215**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:05	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/29/17 15:26	01/05/18 13:05	7440-41-7	
Boron	ND	ug/L	100	1	12/29/17 15:26	01/05/18 13:05	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:05	7440-43-9	
Calcium	**114000**	ug/L	100	1	12/29/17 15:26	01/05/18 13:05	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:05	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:05	7440-48-4	
Copper	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:05	7440-50-8	
Iron	**150**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:05	7439-89-6	
Lead	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:05	7439-92-1	
Lithium	**36.1**	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:05	7439-93-2	
Magnesium	**39600**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:05	7439-95-4	
Manganese	**371**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:05	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:05	7439-98-7	
Nickel	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:05	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/29/17 15:26	01/05/18 13:05	7782-49-2	
Silver	ND	ug/L	7.0	1	12/29/17 15:26	01/05/18 13:05	7440-22-4	
Sodium	**32800**	ug/L	500	1	12/29/17 15:26	01/05/18 13:05	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:05	7440-28-0	
Total Hardness by 2340B	**448000**	ug/L	500	1	12/29/17 15:26	01/05/18 13:05		
Zinc	ND	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:05	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/05/18 11:45	01/08/18 14:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**516**	mg/L	5.0	1		12/27/17 17:12		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.7**	Std. Units	0.10	1		01/26/18 09:15		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**9.0**	mg/L	1.0	1		01/05/18 16:58	16887-00-6	
Fluoride	**0.62**	mg/L	0.20	1		01/05/18 16:58	16984-48-8	
Sulfate	**48.1**	mg/L	5.0	5		01/06/18 13:05	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		01/04/18 13:53		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-3 **Lab ID: 60260933003** Collected: 12/21/17 10:00 Received: 12/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.1**	mg/L	1.0	1		01/05/18 13:26	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/22/17 08:40	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-2 **Lab ID: 60260933004** Collected: 12/21/17 11:25 Received: 12/22/17 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							
Aluminum	ND	ug/L	75.0	1	12/29/17 15:26	01/05/18 13:07	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:07	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:07	7440-38-2	
Barium	**157**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:07	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/29/17 15:26	01/05/18 13:07	7440-41-7	
Boron	ND	ug/L	100	1	12/29/17 15:26	01/05/18 13:07	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:07	7440-43-9	
Calcium	**115000**	ug/L	100	1	12/29/17 15:26	01/05/18 13:07	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:07	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:07	7440-48-4	
Copper	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:07	7440-50-8	
Iron	**122**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:07	7439-89-6	
Lead	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:07	7439-92-1	
Lithium	**37.9**	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:07	7439-93-2	
Magnesium	**41400**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:07	7439-95-4	
Manganese	**492**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:07	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:07	7439-98-7	
Nickel	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:07	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/29/17 15:26	01/05/18 13:07	7782-49-2	
Silver	ND	ug/L	7.0	1	12/29/17 15:26	01/05/18 13:07	7440-22-4	
Sodium	**30000**	ug/L	500	1	12/29/17 15:26	01/05/18 13:07	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:07	7440-28-0	
Total Hardness by 2340B	**458000**	ug/L	500	1	12/29/17 15:26	01/05/18 13:07		
Zinc	ND	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:07	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/05/18 11:45	01/08/18 14:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**498**	mg/L	5.0	1		12/27/17 17:12		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		01/26/18 09:17		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**4.0**	mg/L	1.0	1		01/05/18 17:12	16887-00-6	
Fluoride	**0.63**	mg/L	0.20	1		01/05/18 17:12	16984-48-8	
Sulfate	**57.7**	mg/L	5.0	5		01/06/18 13:19	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		01/04/18 13:53		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-2 **Lab ID: 60260933004** Collected: 12/21/17 11:25 Received: 12/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.0**	mg/L	1.0	1		01/05/18 13:39	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/22/17 08:40	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: DUP-1 **Lab ID: 60260933005** Collected: 12/21/17 08:00 Received: 12/22/17 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							
Aluminum	ND	ug/L	75.0	1	12/29/17 15:26	01/05/18 13:09	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:09	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:09	7440-38-2	
Barium	**154**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:09	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/29/17 15:26	01/05/18 13:09	7440-41-7	
Boron	ND	ug/L	100	1	12/29/17 15:26	01/05/18 13:09	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:09	7440-43-9	
Calcium	**113000**	ug/L	100	1	12/29/17 15:26	01/05/18 13:09	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:09	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:09	7440-48-4	
Copper	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:09	7440-50-8	
Iron	**124**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:09	7439-89-6	
Lead	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:09	7439-92-1	
Lithium	**38.4**	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:09	7439-93-2	
Magnesium	**41000**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:09	7439-95-4	
Manganese	**487**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:09	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:09	7439-98-7	
Nickel	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:09	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/29/17 15:26	01/05/18 13:09	7782-49-2	
Silver	ND	ug/L	7.0	1	12/29/17 15:26	01/05/18 13:09	7440-22-4	
Sodium	**29500**	ug/L	500	1	12/29/17 15:26	01/05/18 13:09	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:09	7440-28-0	
Total Hardness by 2340B	**451000**	ug/L	500	1	12/29/17 15:26	01/05/18 13:09		
Zinc	ND	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:09	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/05/18 11:45	01/08/18 14:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**508**	mg/L	5.0	1		12/27/17 17:13		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.9**	Std. Units	0.10	1		01/26/18 09:13		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**4.2**	mg/L	1.0	1		01/05/18 17:26	16887-00-6	
Fluoride	**0.59**	mg/L	0.20	1		01/05/18 17:26	16984-48-8	
Sulfate	**57.6**	mg/L	5.0	5		01/06/18 13:33	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		01/04/18 13:53		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: DUP-1 **Lab ID: 60260933005** Collected: 12/21/17 08:00 Received: 12/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		01/05/18 13:51	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/22/17 08:39	18540-29-9	H1

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: PZ-2 **Lab ID: 60260933006** Collected: 12/21/17 14:00 Received: 12/22/17 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							
Aluminum	ND	ug/L	75.0	1	12/29/17 15:26	01/05/18 13:12	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:12	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:12	7440-38-2	
Barium	**52.5**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:12	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/29/17 15:26	01/05/18 13:12	7440-41-7	
Boron	**811**	ug/L	100	1	12/29/17 15:26	01/05/18 13:12	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:12	7440-43-9	
Calcium	**196000**	ug/L	100	1	12/29/17 15:26	01/05/18 13:12	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:12	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:12	7440-48-4	
Copper	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:12	7440-50-8	
Iron	**158**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:12	7439-89-6	
Lead	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:12	7439-92-1	
Lithium	**11.6**	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:12	7439-93-2	
Magnesium	**42700**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:12	7439-95-4	
Manganese	**1110**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:12	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:12	7439-98-7	
Nickel	**7.4**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:12	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/29/17 15:26	01/05/18 13:12	7782-49-2	
Silver	ND	ug/L	7.0	1	12/29/17 15:26	01/05/18 13:12	7440-22-4	
Sodium	**99700**	ug/L	500	1	12/29/17 15:26	01/05/18 13:12	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:12	7440-28-0	
Total Hardness by 2340B	**665000**	ug/L	500	1	12/29/17 15:26	01/05/18 13:12		
Zinc	ND	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:12	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/05/18 11:45	01/08/18 14:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**987**	mg/L	5.0	1		12/27/17 17:13		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.9**	Std. Units	0.10	1		01/26/18 09:18		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**129**	mg/L	10.0	10		01/06/18 13:47	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	1		01/05/18 17:40	16984-48-8	
Sulfate	**318**	mg/L	50.0	50		01/06/18 14:00	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	**12.8**	mg/L	10.0	1		01/03/18 11:07		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: PZ-2 **Lab ID: 60260933006** Collected: 12/21/17 14:00 Received: 12/22/17 07:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**2.6**	mg/L	1.0	1		01/05/18 14:04	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/22/17 08:40	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 509712 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 2087408 | Matrix: Water
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	01/08/18 13:58	

LABORATORY CONTROL SAMPLE: 2087409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2087410 2087411

Parameter	Units	60260936001 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	4.8	4.7	96	94	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

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 509142 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 2085369 | Matrix: Water
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	01/05/18 12:58	
Antimony	ug/L	ND	10.0	01/05/18 12:58	
Arsenic	ug/L	ND	10.0	01/05/18 12:58	
Barium	ug/L	ND	5.0	01/05/18 12:58	
Beryllium	ug/L	ND	1.0	01/05/18 12:58	
Boron	ug/L	ND	100	01/05/18 12:58	
Cadmium	ug/L	ND	5.0	01/05/18 12:58	
Calcium	ug/L	ND	100	01/05/18 12:58	
Chromium	ug/L	ND	5.0	01/05/18 12:58	
Cobalt	ug/L	ND	5.0	01/05/18 12:58	
Copper	ug/L	ND	10.0	01/05/18 12:58	
Iron	ug/L	ND	50.0	01/05/18 12:58	
Lead	ug/L	ND	5.0	01/05/18 12:58	
Lithium	ug/L	ND	10.0	01/05/18 12:58	
Magnesium	ug/L	ND	50.0	01/05/18 12:58	
Manganese	ug/L	ND	5.0	01/05/18 12:58	
Molybdenum	ug/L	ND	20.0	01/05/18 12:58	
Nickel	ug/L	ND	5.0	01/05/18 12:58	
Selenium	ug/L	ND	15.0	01/05/18 12:58	
Silver	ug/L	ND	7.0	01/05/18 12:58	
Sodium	ug/L	ND	500	01/05/18 12:58	
Thallium	ug/L	ND	20.0	01/05/18 12:58	
Total Hardness by 2340B	ug/L	ND	500	01/05/18 12:58	
Zinc	ug/L	ND	50.0	01/05/18 12:58	

LABORATORY CONTROL SAMPLE: 2085370

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9980	100	80-120	
Antimony	ug/L	1000	1010	101	80-120	
Arsenic	ug/L	1000	988	99	80-120	
Barium	ug/L	1000	1020	102	80-120	
Beryllium	ug/L	1000	1030	103	80-120	
Boron	ug/L	1000	1000	100	80-120	
Cadmium	ug/L	1000	1020	102	80-120	
Calcium	ug/L	10000	10100	101	80-120	
Chromium	ug/L	1000	1020	102	80-120	
Cobalt	ug/L	1000	1050	105	80-120	
Copper	ug/L	1000	1030	103	80-120	
Iron	ug/L	10000	10200	102	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

LABORATORY CONTROL SAMPLE: 2085370

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1000	1030	103	80-120	
Lithium	ug/L	1000	999	100	80-120	
Magnesium	ug/L	10000	10000	100	80-120	
Manganese	ug/L	1000	1030	103	80-120	
Molybdenum	ug/L	1000	1020	102	80-120	
Nickel	ug/L	1000	1020	102	80-120	
Selenium	ug/L	1000	1040	104	80-120	
Silver	ug/L	500	517	103	80-120	
Sodium	ug/L	10000	9700	97	80-120	
Thallium	ug/L	1000	1070	107	80-120	
Total Hardness by 2340B	ug/L		66600			
Zinc	ug/L	1000	1040	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2085371 2085372

Parameter	Units	60260936001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	10000	10000	9990	10100	99	101	75-125	1	20	
Antimony	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	20	
Arsenic	ug/L	ND	1000	1000	1010	1020	101	102	75-125	1	20	
Barium	ug/L	60.3	1000	1000	1070	1080	101	102	75-125	1	20	
Beryllium	ug/L	ND	1000	1000	1020	1030	102	103	75-125	1	20	
Boron	ug/L	2010	1000	1000	3080	3110	107	110	75-125	1	20	
Cadmium	ug/L	ND	1000	1000	1020	1030	102	103	75-125	1	20	
Calcium	ug/L	146000	10000	10000	160000	166000	148	199	75-125	3	20	M1
Chromium	ug/L	ND	1000	1000	1000	1020	100	102	75-125	1	20	
Cobalt	ug/L	ND	1000	1000	1000	1010	100	101	75-125	1	20	
Copper	ug/L	ND	1000	1000	1020	1030	102	103	75-125	1	20	
Iron	ug/L	130	10000	10000	10100	10200	100	101	75-125	1	20	
Lead	ug/L	ND	1000	1000	982	986	98	99	75-125	1	20	
Lithium	ug/L	48.7	1000	1000	1070	1080	103	103	75-125	1	20	
Magnesium	ug/L	38500	10000	10000	50200	51000	118	125	75-125	1	20	
Manganese	ug/L	242	1000	1000	1260	1280	102	104	75-125	1	20	
Molybdenum	ug/L	ND	1000	1000	1020	1040	102	103	75-125	1	20	
Nickel	ug/L	6.0	1000	1000	979	989	97	98	75-125	1	20	
Selenium	ug/L	ND	1000	1000	1040	1040	104	104	75-125	0	27	
Silver	ug/L	ND	500	500	518	522	104	104	75-125	1	20	
Sodium	ug/L	69100	10000	10000	81200	82900	122	138	75-125	2	20	M1
Thallium	ug/L	ND	1000	1000	983	994	98	99	75-125	1	20	
Total Hardness by 2340B	ug/L	522000			607000	623000				3		
Zinc	ug/L	ND	1000	1000	1000	1020	100	102	75-125	2	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 508876 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 2084739 | Matrix: Water
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	12/27/17 17:01	

LABORATORY CONTROL SAMPLE: 2084740

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1130	113	80-120	

SAMPLE DUPLICATE: 2084741

Parameter	Units	60260827001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	854	852	0	10	

SAMPLE DUPLICATE: 2084742

Parameter	Units	60260936001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	783	797	2	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 511811 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

SAMPLE DUPLICATE: 2095618

Parameter	Units	60260936001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.7	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 509676 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60260933002, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 2087311 | Matrix: Water
Associated Lab Samples: 60260933002, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	01/05/18 09:13	
Fluoride	mg/L	ND	0.20	01/05/18 09:13	

LABORATORY CONTROL SAMPLE: 2087312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	103	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2087313 2087314

Parameter	Units	60261197001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1310	5000	5000	6250	6240	99	99	80-120	0	15	
Fluoride	mg/L	ND	2500	2500	2720	2740	109	110	80-120	1	15	

MATRIX SPIKE SAMPLE: 2087316

Parameter	Units	60260936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.53	2.5	3.4	113	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 509781 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60260933002, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 2087796 Matrix: Water
Associated Lab Samples: 60260933002, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	01/06/18 09:50	
Sulfate	mg/L	ND	1.0	01/06/18 09:50	

LABORATORY CONTROL SAMPLE: 2087797

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Sulfate	mg/L	5	5.5	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2087798 2087799

Parameter	Units	60261197002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2150	10000	10000	12400	12400	102	102	80-120	0	15	
Sulfate	mg/L	22400	10000	10000	33800	34100	114	117	80-120	1	15	

MATRIX SPIKE SAMPLE: 2087800

Parameter	Units	60260936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	81.7	50	140	117	80-120	
Sulfate	mg/L	239	100	357	118	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 509388 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60260933006

METHOD BLANK: 2086221 | Matrix: Water
Associated Lab Samples: 60260933006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	01/03/18 10:49	

LABORATORY CONTROL SAMPLE: 2086222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	54.2	108	90-110	

MATRIX SPIKE SAMPLE: 2086225

Parameter	Units	60260936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	68.6	131	90-110	M1

SAMPLE DUPLICATE: 2086224

Parameter	Units	60260817004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	98.6	94.0	5	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 509553 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005

METHOD BLANK: 2086680 | Matrix: Water
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	01/04/18 14:09	

LABORATORY CONTROL SAMPLE: 2086681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	46.0	92	90-110	

MATRIX SPIKE SAMPLE: 2086684

Parameter	Units	60260933005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	52.1	103	90-110	

SAMPLE DUPLICATE: 2086683

Parameter	Units	60260857001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	35.2	28.9	20	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 509706 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 2087381 Matrix: Water
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	01/05/18 12:22	

LABORATORY CONTROL SAMPLE: 2087382

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	4.2	85	80-120	

MATRIX SPIKE SAMPLE: 2087383

Parameter	Units	60261213001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5.9	5	10.8	98	80-120	

SAMPLE DUPLICATE: 2087384

Parameter	Units	60260936001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	ND	.62J		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 508391 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60260933002, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 2083189 | Matrix: Water
Associated Lab Samples: 60260933002, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	12/22/17 08:38	

LABORATORY CONTROL SAMPLE: 2083190

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.10	101	90-110	

MATRIX SPIKE SAMPLE: 2083192

Parameter	Units	60260933003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.10	102	85-115	

SAMPLE DUPLICATE: 2083191

Parameter	Units	60260933002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	H1

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-4 **Lab ID: 60260933001** Collected: 12/21/17 08:30 Received: 12/22/17 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	**0.206 ± 0.487 (0.902)** **C:NA T:81%**	pCi/L	01/11/18 18:50	13982-63-3	
Radium-228	EPA 904.0	**0.549 ± 0.436 (0.881)** **C:77% T:89%**	pCi/L	01/11/18 16:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.755 ± 0.923 (1.78)**	pCi/L	01/30/18 11:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-3 **Lab ID: 60260933003** Collected: 12/21/17 10:00 Received: 12/22/17 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	**0.904 ± 0.689 (0.980) C:NA T:83%**	pCi/L	01/11/18 18:50	13982-63-3	
Radium-228	EPA 904.0	**0.609 ± 0.383 (0.731) C:81% T:91%**	pCi/L	01/11/18 16:05	15262-20-1	
Total Radium	Total Radium Calculation	**1.51 ± 1.07 (1.71)**	pCi/L	01/30/18 11:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: MW-2 **Lab ID: 60260933004** Collected: 12/21/17 11:25 Received: 12/22/17 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	**0.553 ± 0.529 (0.805)** **C:NA T:86%**	pCi/L	01/11/18 18:50	13982-63-3	
Radium-228	EPA 904.0	**0.591 ± 0.356 (0.660)** **C:77% T:87%**	pCi/L	01/11/18 16:05	15262-20-1	
Total Radium	Total Radium Calculation	**1.14 ± 0.885 (1.47)**	pCi/L	01/30/18 11:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: DUP-1 **Lab ID: 60260933005** Collected: 12/21/17 08:00 Received: 12/22/17 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	**0.447 ± 0.487 (0.767)** **C:NA T:89%**	pCi/L	01/11/18 18:50	13982-63-3	
Radium-228	EPA 904.0	**0.359 ± 0.317 (0.639)** **C:75% T:92%**	pCi/L	01/11/18 16:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.806 ± 0.804 (1.41)**	pCi/L	01/30/18 11:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Sample: PZ-2 **Lab ID: 60260933006** Collected: 12/21/17 14:00 Received: 12/22/17 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	**0.452 ± 0.629 (1.06)** **C:NA T:77%**	pCi/L	01/11/18 18:50	13982-63-3	
Radium-228	EPA 904.0	**0.214 ± 0.264 (0.558)** **C:82% T:94%**	pCi/L	01/11/18 16:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.666 ± 0.893 (1.62)**	pCi/L	01/30/18 11:40	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 283649 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 1392424 Matrix: Water
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.351 ± 0.320 (0.652) C:78% T:90%	pCi/L	01/11/18 16:03	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

QC Batch: 283642 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

METHOD BLANK: 1392417 Matrix: Water
Associated Lab Samples: 60260933001, 60260933003, 60260933004, 60260933005, 60260933006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.314 ± 0.372 (0.584) C:NA T:87%	pCi/L	01/11/18 18:19	

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.

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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

H1	Analysis conducted outside the EPA method holding time.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60260933001	**MW-4**	EPA 3010	509142	EPA 6010	509343
60260933003	**MW-3**	EPA 3010	509142	EPA 6010	509343
60260933004	**MW-2**	EPA 3010	509142	EPA 6010	509343
60260933005	**DUP-1**	EPA 3010	509142	EPA 6010	509343
60260933006	**PZ-2**	EPA 3010	509142	EPA 6010	509343
60260933001	**MW-4**	EPA 7470	509712	EPA 7470	509772
60260933003	**MW-3**	EPA 7470	509712	EPA 7470	509772
60260933004	**MW-2**	EPA 7470	509712	EPA 7470	509772
60260933005	**DUP-1**	EPA 7470	509712	EPA 7470	509772
60260933006	**PZ-2**	EPA 7470	509712	EPA 7470	509772
60260933001	**MW-4**	EPA 903.1	283642		
60260933003	**MW-3**	EPA 903.1	283642		
60260933004	**MW-2**	EPA 903.1	283642		
60260933005	**DUP-1**	EPA 903.1	283642		
60260933006	**PZ-2**	EPA 903.1	283642		
60260933001	**MW-4**	EPA 904.0	283649		
60260933003	**MW-3**	EPA 904.0	283649		
60260933004	**MW-2**	EPA 904.0	283649		
60260933005	**DUP-1**	EPA 904.0	283649		
60260933006	**PZ-2**	EPA 904.0	283649		
60260933001	**MW-4**	Total Radium Calculation	286451		
60260933003	**MW-3**	Total Radium Calculation	286451		
60260933004	**MW-2**	Total Radium Calculation	286451		
60260933005	**DUP-1**	Total Radium Calculation	286451		
60260933006	**PZ-2**	Total Radium Calculation	286451		
60260933001	**MW-4**	SM 2540C	508876		
60260933003	**MW-3**	SM 2540C	508876		
60260933004	**MW-2**	SM 2540C	508876		
60260933005	**DUP-1**	SM 2540C	508876		
60260933006	**PZ-2**	SM 2540C	508876		
60260933001	**MW-4**	SM 4500-H+B	511811		
60260933003	**MW-3**	SM 4500-H+B	511811		
60260933004	**MW-2**	SM 4500-H+B	511811		
60260933005	**DUP-1**	SM 4500-H+B	511811		
60260933006	**PZ-2**	SM 4500-H+B	511811		
60260933001	**MW-4**	Trivalent Chromium Calculation	509878		
60260933003	**MW-3**	Trivalent Chromium Calculation	509779		
60260933004	**MW-2**	Trivalent Chromium Calculation	509779		
60260933005	**DUP-1**	Trivalent Chromium Calculation	509779		
60260933006	**PZ-2**	Trivalent Chromium Calculation	509779		
60260933002	**MW-4**	EPA 300.0	509676		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260933

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60260933002	**MW-4**	EPA 300.0	509781		
60260933003	**MW-3**	EPA 300.0	509676		
60260933003	**MW-3**	EPA 300.0	509781		
60260933004	**MW-2**	EPA 300.0	509676		
60260933004	**MW-2**	EPA 300.0	509781		
60260933005	**DUP-1**	EPA 300.0	509676		
60260933005	**DUP-1**	EPA 300.0	509781		
60260933006	**PZ-2**	EPA 300.0	509676		
60260933006	**PZ-2**	EPA 300.0	509781		
60260933001	**MW-4**	EPA 410.4	509553		
60260933003	**MW-3**	EPA 410.4	509553		
60260933004	**MW-2**	EPA 410.4	509553		
60260933005	**DUP-1**	EPA 410.4	509553		
60260933006	**PZ-2**	EPA 410.4	509388		
60260933001	**MW-4**	SM 5310C	509706		
60260933003	**MW-3**	SM 5310C	509706		
60260933004	**MW-2**	SM 5310C	509706		
60260933005	**DUP-1**	SM 5310C	509706		
60260933006	**PZ-2**	SM 5310C	509706		
60260933002	**MW-4**	EPA 7196	508391		
60260933003	**MW-3**	EPA 7196	508391		
60260933004	**MW-2**	EPA 7196	508391		
60260933005	**DUP-1**	EPA 7196	508391		
60260933006	**PZ-2**	EPA 7196	508391		

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www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60260933

60260933

Client Name: B;M

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 +0.2 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.9/2.8/2.1 **Corr. Factor** CF 0.0 CF +0.2 **Corrected** 1.9/2.8/2.1

Date and initials of person examining contents: DN 12/22/17

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	Crot
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)	☐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	CBK

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: CBC Date: 12/22/17

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax:
Requested Due Date:	

Section B — Required Project Information:

Report To:	Brian Weis
Copy To:	
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	colleen.clyne@pacelabs.com
Pace Profile #:	10268

Regulatory Agency:

State / Location: MO

Requested Analysis Filtered (Y/N)

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 (One Character per box. (A-Z 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N): 300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228	Residual Chlorine (Y/N)	60260933 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	MW-4 AG3S BP3S BP3N BP2U AG2S	WT	G	—	—	21Dec17	830	14.2	7	1	3	3	2	BP1N					X	X	X	X	X	X		X	X	X		001
2	MW-4	WT	G	—	—	21Dec17	900	14.2	1									X							X					002
3	MW-3 2BP2U	WT	G	—	—	21Dec17	1000	13.3	8	2	3	3						X	X	X	X	X	X	X	X	X	X	X		003
4	MW-2	WT	G	—	—	21Dec17	1125	15.9	8	2	3	3						X	X	X	X	X	X	X	X	X	X	X		004
5	Dup-1	WT	G	—	—	21Dec17	—	—	8	2	3	3						X	X	X	X	X	X	X	X	X	X	X		005
6	PZ-2	WT	G	—	—	21Dec17	1400	16.8	8	2	3	3						X	X	X	X	X	X	X	X	X	X	X		006
7																														
8																														
9																														
10																														
11																														
12																														

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	David Kilgore	21Dec17	3:20PM	[illegible]	21Dec17	3:20PM
				[illegible]	12/22/17	0715

SAMPLE CONDITIONS

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1.9	Y	Y	Y
2.8			
2.1			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore

DATE Signed: 21Dec17

ANALYTICAL REPORT

January 03, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L959934
Samples Received:	12/27/2017
Project Number:	60260933
Description:	More's Lake Columbia, MO
Report To:	Colleen Clyne 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-4 L959934-01 GW

Collected by	Collected date/time	Received date/time
	12/21/17 08:30	12/27/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1057280	1	12/30/17 08:06	12/30/17 08:06	EG

MW-3 L959934-02 GW

Collected by	Collected date/time	Received date/time
	12/21/17 10:00	12/27/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1057280	1	12/30/17 08:16	12/30/17 08:16	EG

MW-2 L959934-03 GW

Collected by	Collected date/time	Received date/time
	12/21/17 11:25	12/27/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1057280	1	12/30/17 08:26	12/30/17 08:26	EG

DUP-1 L959934-04 GW

Collected by	Collected date/time	Received date/time
	12/21/17 08:00	12/27/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1057280	1	12/30/17 08:35	12/30/17 08:35	EG

PZ-2 L959934-05 GW

Collected by	Collected date/time	Received date/time
	12/21/17 14:00	12/27/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1057280	1	12/30/17 08:44	12/30/17 08:44	EG

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

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

Nancy F. McLain

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	16.2	J P1	12.0	100	1	12/30/2017 08:06	WG1057280

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	12/30/2017 08:16	WG1057280

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	12/30/2017 08:26	WG1057280

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	18.9	J	12.0	100	1	12/30/2017 08:35	WG1057280

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	59.3	J	12.0	100	1	12/30/2017 08:44	WG1057280

Method Blank (MB)

(MB) R3275752-2 12/26/17 12:48

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L959934-01 Original Sample (OS) • Duplicate (DUP)

(OS) L959934-01 12/30/17 08:06 • (DUP) R3275752-10 12/30/17 09:21

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	16.2	63.8	1	119	J P1	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3275752-3 12/26/17 13:57 • (LCSD) R3275752-4 12/26/17 14:08

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	186	197	93.2	98.4	85-115			5.41	20

L959938-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L959938-01 12/29/17 11:12 • (MS) R3275752-6 12/29/17 11:31 • (MSD) R3275752-8 12/29/17 12:02

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	22.3	373	358	117	112	1	80-120			4.07	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**

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

State Accreditations

Alabama	40660
Alaska	UST-080
Arizona	AZ0612
Arkansas	88-0469
California	01157CA
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1]	90010
Kentucky [2]	16
Louisiana	AI30792
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico	TN00003
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [2]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	221
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T 104704245-07-TX
Texas [5]	LAB0152
Utah	6157585858
Vermont	VT2006
Virginia	109
Washington	C1915
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

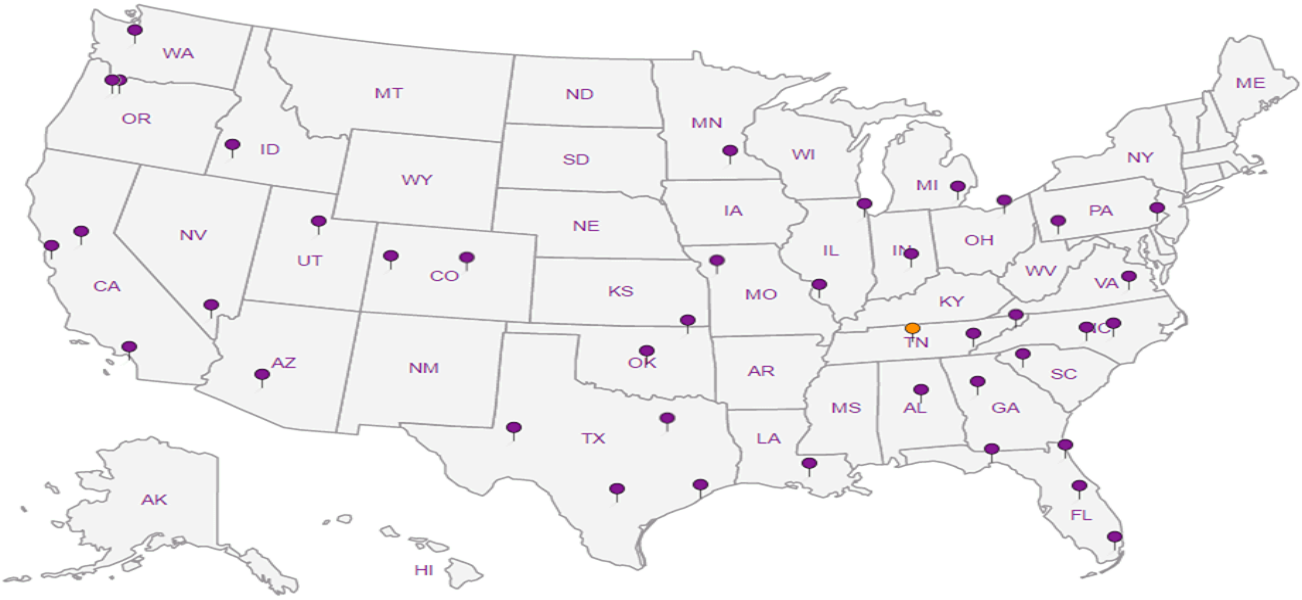
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA-LAP,LLC	100789
DOD	1461.01
USDA	S-67674

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

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Chain of Custody

Pace Analytical
www.pacelabs.com

G124

Workorder: 60260933 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 1/9/2018

Report / Invoice To	Subcontract To	Requested Analysis
Colleen Clyne Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1406 Email: colleen.clyne@pacelabs.com	P.O. SUB-8828	1959934

State of Sample Origin:

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers H2SO4	TOX	LAB USE ONLY
1	MW-4	12/21/2017 08:30	60260933001	Water	1	X	-01
2	MW-3	12/21/2017 10:00	60260933003	Water	1	X	-02
3	MW-2	12/21/2017 11:25	60260933004	Water	1	X	-03
4	DUP-1	12/21/2017 08:00	60260933005	Water	1	X	-04
5	PZ-2	12/21/2017 14:00	60260933006	Water	1	X	-05

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	12/26 1700	Marina [signature]	12-27-17 1845
2				
3				

Comments

OK

Cooler Temperature on Receipt 1.1 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

Samples received: 5
Fedex: 412249415082

1.1 [illegible]

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACE	SDG#	L959934	
Cooler Received/Opened On: 12/27/17	Temperature:	1.1	
Received by: Marina Fahmy			
Signature: Marina Fahmy			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

February 07, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on December 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

Pace Pittsburgh Revision 1. This report replaces the 1/15/18 report. Report revised 1/30/18 to include results for combined Radium 226 +228.

Revised Report Rev_2

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

Sincerely,

Jeffrey Shopper for
Colleen Clyne
colleen.clyne@pacelabs.com
1(913)563-1406
Project Manager

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Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

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

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60260936001	**MW-1**	Water	12/21/17 15:35	12/22/17 07:58
60260936002	**MW-8**	Water	12/21/17 17:25	12/22/17 07:58
60260936003	**MW-1 MS**	Water	12/21/17 15:35	12/22/17 07:58
60260936004	**MW-1 MSD**	Water	12/21/17 15:35	12/22/17 07:58

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60260936001	**MW-1**	EPA 6010	TDS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60260936002	**MW-8**	EPA 6010	TDS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60260936003	**MW-1 MS**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60260936004	**MW-1 MSD**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 509142

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60260936001

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

- MS (Lab ID: 2085371)
  - Calcium
- MSD (Lab ID: 2085372)
  - Calcium
  - Sodium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- MW-1 (Lab ID: 60260936001)
- MW-8 (Lab ID: 60260936002)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 509388

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60260936001

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

- MS (Lab ID: 2086225)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: February 07, 2018

General Information:
2 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Sample: MW-1 **Lab ID: 60260936001** Collected: 12/21/17 15:35 Received: 12/22/17 07:58 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	12/29/17 15:26	01/05/18 13:14	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:14	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:14	7440-38-2	
Barium	**60.3**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:14	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/29/17 15:26	01/05/18 13:14	7440-41-7	
Boron	**2010**	ug/L	100	1	12/29/17 15:26	01/05/18 13:14	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:14	7440-43-9	
Calcium	**146000**	ug/L	100	1	12/29/17 15:26	01/05/18 13:14	7440-70-2	M1
Chromium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:14	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:14	7440-48-4	
Copper	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:14	7440-50-8	
Iron	**130**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:14	7439-89-6	
Lead	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:14	7439-92-1	
Lithium	**48.7**	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:14	7439-93-2	
Magnesium	**38500**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:14	7439-95-4	
Manganese	**242**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:14	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:14	7439-98-7	
Nickel	**6.0**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:14	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/29/17 15:26	01/05/18 13:14	7782-49-2	
Silver	ND	ug/L	7.0	1	12/29/17 15:26	01/05/18 13:14	7440-22-4	
Sodium	**69100**	ug/L	500	1	12/29/17 15:26	01/05/18 13:14	7440-23-5	M1
Thallium	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:14	7440-28-0	
Total Hardness by 2340B	**522000**	ug/L	500	1	12/29/17 15:26	01/05/18 13:14		
Zinc	ND	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:14	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/05/18 11:45	01/08/18 14:12	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**783**	mg/L	5.0	1		12/27/17 17:14		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.7**	Std. Units	0.10	1		01/26/18 09:19		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**81.7**	mg/L	10.0	10		01/06/18 14:42	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	1		01/05/18 17:54	16984-48-8	
Sulfate	**239**	mg/L	20.0	20		01/06/18 15:10	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		01/03/18 11:08		M1

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Sample: MW-1 **Lab ID: 60260936001** Collected: 12/21/17 15:35 Received: 12/22/17 07:58 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		01/05/18 14:56	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/22/17 10:48	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Sample: MW-8 **Lab ID: 60260936002** Collected: 12/21/17 17:25 Received: 12/22/17 07:58 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	12/29/17 15:26	01/05/18 13:25	7429-90-5	
Antimony	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:25	7440-36-0	
Arsenic	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:25	7440-38-2	
Barium	**25.0**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:25	7440-39-3	
Beryllium	ND	ug/L	1.0	1	12/29/17 15:26	01/05/18 13:25	7440-41-7	
Boron	**455**	ug/L	100	1	12/29/17 15:26	01/05/18 13:25	7440-42-8	
Cadmium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:25	7440-43-9	
Calcium	**255000**	ug/L	100	1	12/29/17 15:26	01/05/18 13:25	7440-70-2	
Chromium	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:25	7440-47-3	
Cobalt	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:25	7440-48-4	
Copper	ND	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:25	7440-50-8	
Iron	**549**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:25	7439-89-6	
Lead	ND	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:25	7439-92-1	
Lithium	**31.3**	ug/L	10.0	1	12/29/17 15:26	01/05/18 13:25	7439-93-2	
Magnesium	**37000**	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:25	7439-95-4	
Manganese	**1050**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:25	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:25	7439-98-7	
Nickel	**7.3**	ug/L	5.0	1	12/29/17 15:26	01/05/18 13:25	7440-02-0	
Selenium	ND	ug/L	15.0	1	12/29/17 15:26	01/05/18 13:25	7782-49-2	
Silver	ND	ug/L	7.0	1	12/29/17 15:26	01/05/18 13:25	7440-22-4	
Sodium	**77500**	ug/L	500	1	12/29/17 15:26	01/05/18 13:25	7440-23-5	
Thallium	ND	ug/L	20.0	1	12/29/17 15:26	01/05/18 13:25	7440-28-0	
Total Hardness by 2340B	**790000**	ug/L	500	1	12/29/17 15:26	01/05/18 13:25		
Zinc	ND	ug/L	50.0	1	12/29/17 15:26	01/05/18 13:25	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	01/05/18 11:45	01/08/18 14:16	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1180**	mg/L	5.0	1		12/27/17 17:15		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		01/26/18 09:24		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		01/06/18 07:46	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**74.9**	mg/L	10.0	10		01/06/18 15:38	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	1		01/05/18 18:22	16984-48-8	
Sulfate	**495**	mg/L	50.0	50		01/06/18 15:52	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		01/03/18 11:09		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Sample: MW-8 **Lab ID: 60260936002** Collected: 12/21/17 17:25 Received: 12/22/17 07:58 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.2**	mg/L	1.0	1		01/05/18 15:22	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196							
Chromium, Hexavalent	ND	mg/L	0.010	1		12/22/17 10:48	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 509712 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60260936001, 60260936002

METHOD BLANK: 2087408 | Matrix: Water
Associated Lab Samples: 60260936001, 60260936002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	01/08/18 13:58	

LABORATORY CONTROL SAMPLE: 2087409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2087410 2087411

Parameter	Units	60260936001 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	4.8	4.7	96	94	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 509142 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60260936001, 60260936002

METHOD BLANK: 2085369 | Matrix: Water
Associated Lab Samples: 60260936001, 60260936002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	01/05/18 12:58	
Antimony	ug/L	ND	10.0	01/05/18 12:58	
Arsenic	ug/L	ND	10.0	01/05/18 12:58	
Barium	ug/L	ND	5.0	01/05/18 12:58	
Beryllium	ug/L	ND	1.0	01/05/18 12:58	
Boron	ug/L	ND	100	01/05/18 12:58	
Cadmium	ug/L	ND	5.0	01/05/18 12:58	
Calcium	ug/L	ND	100	01/05/18 12:58	
Chromium	ug/L	ND	5.0	01/05/18 12:58	
Cobalt	ug/L	ND	5.0	01/05/18 12:58	
Copper	ug/L	ND	10.0	01/05/18 12:58	
Iron	ug/L	ND	50.0	01/05/18 12:58	
Lead	ug/L	ND	5.0	01/05/18 12:58	
Lithium	ug/L	ND	10.0	01/05/18 12:58	
Magnesium	ug/L	ND	50.0	01/05/18 12:58	
Manganese	ug/L	ND	5.0	01/05/18 12:58	
Molybdenum	ug/L	ND	20.0	01/05/18 12:58	
Nickel	ug/L	ND	5.0	01/05/18 12:58	
Selenium	ug/L	ND	15.0	01/05/18 12:58	
Silver	ug/L	ND	7.0	01/05/18 12:58	
Sodium	ug/L	ND	500	01/05/18 12:58	
Thallium	ug/L	ND	20.0	01/05/18 12:58	
Total Hardness by 2340B	ug/L	ND	500	01/05/18 12:58	
Zinc	ug/L	ND	50.0	01/05/18 12:58	

LABORATORY CONTROL SAMPLE: 2085370

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9980	100	80-120	
Antimony	ug/L	1000	1010	101	80-120	
Arsenic	ug/L	1000	988	99	80-120	
Barium	ug/L	1000	1020	102	80-120	
Beryllium	ug/L	1000	1030	103	80-120	
Boron	ug/L	1000	1000	100	80-120	
Cadmium	ug/L	1000	1020	102	80-120	
Calcium	ug/L	10000	10100	101	80-120	
Chromium	ug/L	1000	1020	102	80-120	
Cobalt	ug/L	1000	1050	105	80-120	
Copper	ug/L	1000	1030	103	80-120	
Iron	ug/L	10000	10200	102	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

LABORATORY CONTROL SAMPLE: 2085370

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1000	1030	103	80-120	
Lithium	ug/L	1000	999	100	80-120	
Magnesium	ug/L	10000	10000	100	80-120	
Manganese	ug/L	1000	1030	103	80-120	
Molybdenum	ug/L	1000	1020	102	80-120	
Nickel	ug/L	1000	1020	102	80-120	
Selenium	ug/L	1000	1040	104	80-120	
Silver	ug/L	500	517	103	80-120	
Sodium	ug/L	10000	9700	97	80-120	
Thallium	ug/L	1000	1070	107	80-120	
Total Hardness by 2340B	ug/L		66600			
Zinc	ug/L	1000	1040	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2085371 2085372

Parameter	Units	60260936001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	10000	10000	9990	10100	99	101	75-125	1	20	
Antimony	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	20	
Arsenic	ug/L	ND	1000	1000	1010	1020	101	102	75-125	1	20	
Barium	ug/L	60.3	1000	1000	1070	1080	101	102	75-125	1	20	
Beryllium	ug/L	ND	1000	1000	1020	1030	102	103	75-125	1	20	
Boron	ug/L	2010	1000	1000	3080	3110	107	110	75-125	1	20	
Cadmium	ug/L	ND	1000	1000	1020	1030	102	103	75-125	1	20	
Calcium	ug/L	146000	10000	10000	160000	166000	148	199	75-125	3	20	M1
Chromium	ug/L	ND	1000	1000	1000	1020	100	102	75-125	1	20	
Cobalt	ug/L	ND	1000	1000	1000	1010	100	101	75-125	1	20	
Copper	ug/L	ND	1000	1000	1020	1030	102	103	75-125	1	20	
Iron	ug/L	130	10000	10000	10100	10200	100	101	75-125	1	20	
Lead	ug/L	ND	1000	1000	982	986	98	99	75-125	1	20	
Lithium	ug/L	48.7	1000	1000	1070	1080	103	103	75-125	1	20	
Magnesium	ug/L	38500	10000	10000	50200	51000	118	125	75-125	1	20	
Manganese	ug/L	242	1000	1000	1260	1280	102	104	75-125	1	20	
Molybdenum	ug/L	ND	1000	1000	1020	1040	102	103	75-125	1	20	
Nickel	ug/L	6.0	1000	1000	979	989	97	98	75-125	1	20	
Selenium	ug/L	ND	1000	1000	1040	1040	104	104	75-125	0	27	
Silver	ug/L	ND	500	500	518	522	104	104	75-125	1	20	
Sodium	ug/L	69100	10000	10000	81200	82900	122	138	75-125	2	20	M1
Thallium	ug/L	ND	1000	1000	983	994	98	99	75-125	1	20	
Total Hardness by 2340B	ug/L	522000			607000	623000				3		
Zinc	ug/L	ND	1000	1000	1000	1020	100	102	75-125	2	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 508876 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60260936001, 60260936002

METHOD BLANK: 2084739 | Matrix: Water
Associated Lab Samples: 60260936001, 60260936002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	12/27/17 17:01	

LABORATORY CONTROL SAMPLE: 2084740

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1130	113	80-120	

SAMPLE DUPLICATE: 2084741

Parameter	Units	60260827001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	854	852	0	10	

SAMPLE DUPLICATE: 2084742

Parameter	Units	60260936001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	783	797	2	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 511811 | Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B | Analysis Description: 4500H+B pH
Associated Lab Samples: 60260936001, 60260936002

SAMPLE DUPLICATE: 2095618

Parameter	Units	60260936001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.7	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 509676 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60260936001, 60260936002

METHOD BLANK: 2087311 | Matrix: Water
Associated Lab Samples: 60260936001, 60260936002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.20	01/05/18 09:13	

LABORATORY CONTROL SAMPLE: 2087312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2087313 2087314

Parameter	Units	60261197001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2500	2500	2720	2740	109	110	80-120	1	15	

MATRIX SPIKE SAMPLE: 2087316

Parameter	Units	60260936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.53	2.5	3.4	113	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 509781 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60260936001, 60260936002

METHOD BLANK: 2087796 | Matrix: Water
Associated Lab Samples: 60260936001, 60260936002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	01/06/18 09:50	
Sulfate	mg/L	ND	1.0	01/06/18 09:50	

LABORATORY CONTROL SAMPLE: 2087797

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Sulfate	mg/L	5	5.5	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2087798 2087799

Parameter	Units	60261197002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2150	10000	10000	12400	12400	102	102	80-120	0	15	
Sulfate	mg/L	22400	10000	10000	33800	34100	114	117	80-120	1	15	

MATRIX SPIKE SAMPLE: 2087800

Parameter	Units	60260936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	81.7	50	140	117	80-120	
Sulfate	mg/L	239	100	357	118	80-120	

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 509388 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60260936001, 60260936002

METHOD BLANK: 2086221 | Matrix: Water
Associated Lab Samples: 60260936001, 60260936002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	01/03/18 10:49	

LABORATORY CONTROL SAMPLE: 2086222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	54.2	108	90-110	

MATRIX SPIKE SAMPLE: 2086225

Parameter	Units	60260936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	68.6	131	90-110	M1

SAMPLE DUPLICATE: 2086224

Parameter	Units	60260817004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	98.6	94.0	5	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 509706 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60260936001, 60260936002

METHOD BLANK: 2087381 | Matrix: Water
Associated Lab Samples: 60260936001, 60260936002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	01/05/18 12:22	

LABORATORY CONTROL SAMPLE: 2087382

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	4.2	85	80-120	

MATRIX SPIKE SAMPLE: 2087383

Parameter	Units	60261213001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5.9	5	10.8	98	80-120	

SAMPLE DUPLICATE: 2087384

Parameter	Units	60260936001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	ND	.62J		25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 508432 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60260936001, 60260936002

METHOD BLANK: 2083311 | Matrix: Water
Associated Lab Samples: 60260936001, 60260936002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	12/22/17 10:47	

LABORATORY CONTROL SAMPLE: 2083312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.10	100	90-110	

MATRIX SPIKE SAMPLE: 2083313

Parameter	Units	60260936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.095	94	85-115	

SAMPLE DUPLICATE: 2083314

Parameter	Units	60260936002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Sample: MW-1 **Lab ID: 60260936001** Collected: 12/21/17 15:35 Received: 12/22/17 07:58 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.563 ± 0.510 (0.752)** **C:NA T:91%**	pCi/L	01/12/18 16:56	13982-63-3	
Radium-228	EPA 904.0	**0.777 ± 0.479 (0.910)** **C:71% T:87%**	pCi/L	01/11/18 12:53	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 0.989 (1.66)**	pCi/L	01/30/18 11:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Sample: MW-8 **Lab ID: 60260936002** Collected: 12/21/17 17:25 Received: 12/22/17 07:58 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.316 ± 0.541 (0.948)** **C:NA T:91%**	pCi/L	01/12/18 17:11	13982-63-3	
Radium-228	EPA 904.0	**0.291 ± 0.363 (0.769)** **C:80% T:74%**	pCi/L	01/11/18 12:50	15262-20-1	
Total Radium	Total Radium Calculation	**0.607 ± 0.904 (1.72)**	pCi/L	01/30/18 11:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Sample: MW-1 MS **Lab ID: 60260936003** Collected: 12/21/17 15:35 Received: 12/22/17 07:58 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**101.64 %REC ± NA (NA) C:NA T:NA**	pCi/L	01/12/18 17:11	13982-63-3	
Radium-228	EPA 904.0	**92.99 %REC ± NA (NA) C:NA T:NA**	pCi/L	01/11/18 12:51	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Sample: MW-1 MSD **Lab ID: 60260936004** Collected: 12/21/17 15:35 Received: 12/22/17 07:58 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**92.87 %REC 9.01 RPD ± NA (NA) C:NA T:NA**	pCi/L	01/12/18 17:11	13982-63-3	
Radium-228	EPA 904.0	**105.72 %REC 12.82 RPD ± NA (NA) C:NA T:NA**	pCi/L	01/11/18 12:51	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 283771 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60260936001, 60260936002, 60260936003, 60260936004

METHOD BLANK: 1392875 Matrix: Water
Associated Lab Samples: 60260936001, 60260936002, 60260936003, 60260936004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.128 ± 0.293 (0.174) C:NA T:90%	pCi/L	01/12/18 16:56	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

QC Batch: 283773 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60260936001, 60260936002, 60260936003, 60260936004

METHOD BLANK: 1392877 Matrix: Water
Associated Lab Samples: 60260936001, 60260936002, 60260936003, 60260936004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.202 ± 0.329 (0.715) C:79% T:82%	pCi/L	01/11/18 12:47	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60260936

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60260936001	**MW-1**	EPA 3010	509142	EPA 6010	509343
60260936002	**MW-8**	EPA 3010	509142	EPA 6010	509343
60260936001	**MW-1**	EPA 7470	509712	EPA 7470	509772
60260936002	**MW-8**	EPA 7470	509712	EPA 7470	509772
60260936001	**MW-1**	EPA 903.1	283771		
60260936002	**MW-8**	EPA 903.1	283771		
60260936003	**MW-1 MS**	EPA 903.1	283771		
60260936004	**MW-1 MSD**	EPA 903.1	283771		
60260936001	**MW-1**	EPA 904.0	283773		
60260936002	**MW-8**	EPA 904.0	283773		
60260936003	**MW-1 MS**	EPA 904.0	283773		
60260936004	**MW-1 MSD**	EPA 904.0	283773		
60260936001	**MW-1**	Total Radium Calculation	286451		
60260936002	**MW-8**	Total Radium Calculation	286451		
60260936001	**MW-1**	SM 2540C	508876		
60260936002	**MW-8**	SM 2540C	508876		
60260936001	**MW-1**	SM 4500-H+B	511811		
60260936002	**MW-8**	SM 4500-H+B	511811		
60260936001	**MW-1**	Trivalent Chromium Calculation	509779		
60260936002	**MW-8**	Trivalent Chromium Calculation	509779		
60260936001	**MW-1**	EPA 300.0	509676		
60260936001	**MW-1**	EPA 300.0	509781		
60260936002	**MW-8**	EPA 300.0	509676		
60260936002	**MW-8**	EPA 300.0	509781		
60260936001	**MW-1**	EPA 410.4	509388		
60260936002	**MW-8**	EPA 410.4	509388		
60260936001	**MW-1**	SM 5310C	509706		
60260936002	**MW-8**	SM 5310C	509706		
60260936001	**MW-1**	EPA 7196	508432		
60260936002	**MW-8**	EPA 7196	508432		

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Sample Condition Upon Receipt

WO# : 60260936

60260936

Client Name: B.M

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 +0.2 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.0/1.8 **Corr. Factor** CF 0.0 CF +0.2 **Corrected** 1.0/1.8

Date and initials of person examining contents: PW 12/22/17

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	Cr6+
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)	☐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: CMC Date: 12/22/17

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: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bweis@burnsmcd.com
Phone: 816-333-9400 Fax:
Requested Due Date:

Section B — Required Project Information:

Report To: Brian Weis
Copy To:
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C — Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: colleen.clyne@pacelabs.com
Pace Profile #: 10268

Regulatory Agency:
State / Location: MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N): 300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228	Residual Chlorine (Y/N)	60260936 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	MW-1 3AG3S 3BP3S 3BP3N 6BP2U	WT	G	–	–	21Dec17	1535	15.8	8	2	3	3	3AG2S					X	X	X	X	X	X	X	X	X	X	X	6BP1N a1
2	MW-1MS	WT	G	–	–	21Dec17	1535	15.8	8	2	3	3						X	X	X	X	X	X	X	X	X	X	X	
3	MW-1MSD	WT	G	–	–	21Dec17	1535	15.8	8	2	3	3						X	X	X	X	X	X	X	X	X	X	X	
4	MW-8 AG3S BP3S BP3N 2BP2U	WT	G	–	–	21Dec17	1625	14.8	8	2	3	3	AG2S					X	X	X	X	X	X	X	X	X	X	X	2BP1N a2
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

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

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)
	David Kilgore ES+S	21Dec17	6:00PM	Kalli Fowler	12/21/17	1800				
	Kalli Fowler	22Dec17	0758	[illegible]	12/22	0758	1.0	X	X	X
							1.8	X	X	X

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore DATE Signed: 21Dec17

ANALYTICAL REPORT

January 04, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L959938
Samples Received:	12/27/2017
Project Number:	60260936
Description:	More's Lake Columbia, MO
Report To:	Colleen Clyne 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By:

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-1 L959938-01 GW

Collected by	Collected date/time	Received date/time
	12/21/17 15:35	12/27/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1057280	1	12/29/17 11:12	12/29/17 11:12	EG

MW-8 L959938-02 GW

Collected by	Collected date/time	Received date/time
	12/21/17 17:25	12/27/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1057280	1	12/29/17 12:20	12/29/17 12:20	EG

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

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

Nancy F. McLain

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	22.3	J	12.0	100	1	12/29/2017 11:12	WG1057280

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	47.1	J	12.0	100	1	12/29/2017 12:20	WG1057280

Method Blank (MB)

(MB) R3275752-2 12/26/17 12:48

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L959934-01 Original Sample (OS) • Duplicate (DUP)

(OS) L959934-01 12/30/17 08:06 • (DUP) R3275752-10 12/30/17 09:21

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	16.2	63.8	1	119	J P1	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3275752-3 12/26/17 13:57 • (LCSD) R3275752-4 12/26/17 14:08

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	186	197	93.2	98.4	85-115			5.41	20

L959938-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L959938-01 12/29/17 11:12 • (MS) R3275752-6 12/29/17 11:31 • (MSD) R3275752-8 12/29/17 12:02

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	22.3	373	358	117	112	1	80-120			4.07	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**

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

State Accreditations

Alabama	40660
Alaska	UST-080
Arizona	AZ0612
Arkansas	88-0469
California	01157CA
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1]	90010
Kentucky [2]	16
Louisiana	AI30792
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico	TN00003
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [2]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	221
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T 104704245-07-TX
Texas [5]	LAB0152
Utah	6157585858
Vermont	VT2006
Virginia	109
Washington	C1915
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

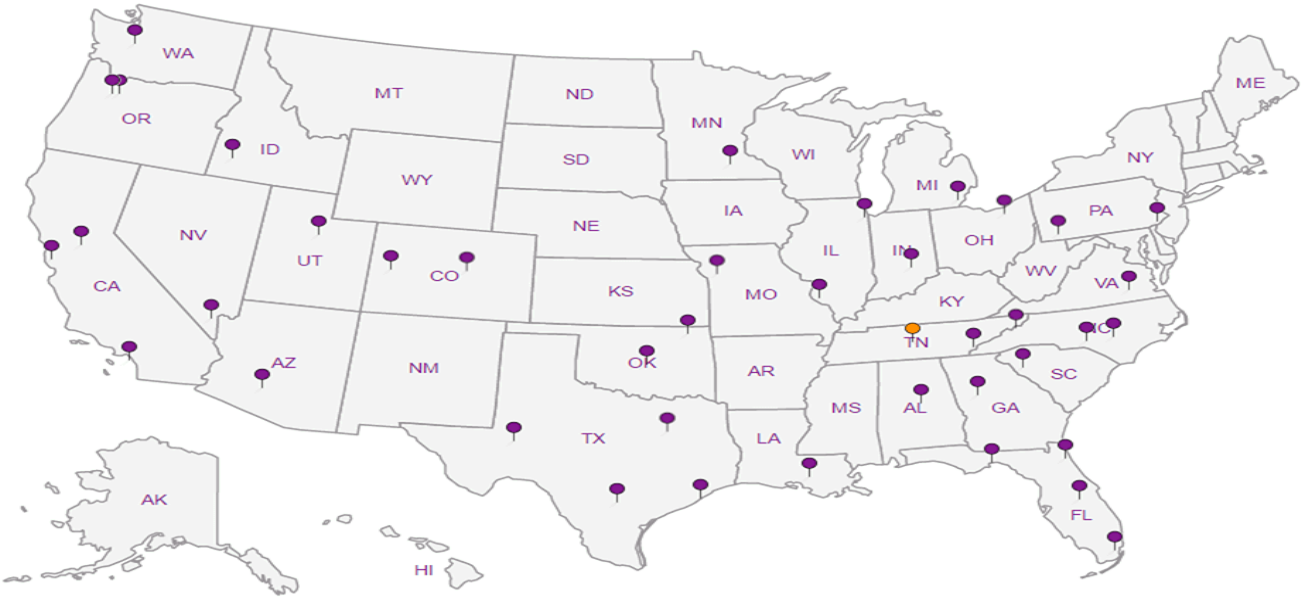
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA-LAP,LLC	100789
DOD	1461.01
USDA	S-67674

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

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Chain of Custody

G123

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www.pacelabs.com

Workorder: 60260936 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 1/9/2018

L959938

Report / Invoice To

Colleen Clyne
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1406
Email: colleen.clyne@pacelabs.com

Subcontract To

P.O. SUB-8827

State of Sample Origin:

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4	TOX	LAB USE ONLY
1	MW-1	12/21/2017 15:35	60260936001	Water	3	X	-01
2	MW-8	12/21/2017 17:25	60260936002	Water	1	X	-02
3							
4							
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	12/26 1700	Marina [signature] 889	12-27-17 0845
2				
3				

Comments

Sample 60260936001 is a ms/msp sample.

Cooler Temperature on Receipt 1.1 °C | Custody Seal Y or (N) | Received on Ice (Y) or N | Samples Intact (Y) or N

Samples received: 4
Fedex: 412249415082

1.1 [illegible]

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACE LKS

SDG# L959938

Cooler Received/Opened On: 12/27/17

Temperature: 1.1

Received by: Marina Fahmy

Signature: Marina Fahmy

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

April 20, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on February 21, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

Revised Report Rev_2. Removed Bromide and added Hardness to the report.

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

Sincerely,

Colleen Clyne
colleen.clyne@pacelabs.com
1(913)563-1406
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60264375001	**POND SURFACE WATER**	Water	02/20/18 07:50	02/21/18 15:20

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60264375001	**POND SURFACE WATER**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- POND SURFACE WATER (Lab ID: 60264375001)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 516161

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60264493011,60264853001

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

- MS (Lab ID: 2112383)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
1 sample was analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 515370

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 7582543001

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

- MS (Lab ID: 2109437)
  - Total Organic Carbon

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Sample: POND SURFACE WATER **Lab ID: 60264375001** Collected: 02/20/18 07:50 Received: 02/21/18 15:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	**1010**	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:10	7429-90-5	
Antimony	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:10	7440-36-0	
Arsenic	**20.8**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:10	7440-38-2	
Barium	**87.8**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:10	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:10	7440-41-7	
Boron	**1430**	ug/L	100	1	02/28/18 11:25	03/05/18 17:10	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:10	7440-43-9	
Calcium	**169000**	ug/L	200	1	02/28/18 11:25	03/05/18 17:10	7440-70-2	
Chromium	**17.4**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:10	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:10	7440-48-4	
Copper	**137**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:10	7440-50-8	
Iron	**1170**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:10	7439-89-6	
Lead	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:10	7439-92-1	
Lithium	**124**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:10	7439-93-2	
Magnesium	**70100**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:10	7439-95-4	
Manganese	**75.3**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:10	7439-96-5	
Molybdenum	**487**	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:10	7439-98-7	
Nickel	**10.3**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:10	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:10	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:10	7440-22-4	
Sodium	**215000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:10	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:10	7440-28-0	
Total Hardness by 2340B	**712000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:10		
Zinc	**261**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:10	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/01/18 15:45	03/02/18 14:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1520**	mg/L	5.0	1		02/26/18 13:39		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**8.4**	Std. Units	0.10	1		02/26/18 09:53		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	**0.017**	mg/L	0.010	1		03/13/18 10:00	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**195**	mg/L	20.0	20		03/06/18 08:21	16887-00-6	
Fluoride	**2.2**	mg/L	0.20	1		03/04/18 11:51	16984-48-8	
Sulfate	**765**	mg/L	100	100		03/06/18 09:02	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	**36.0**	mg/L	10.0	1		03/05/18 14:16		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Sample: POND SURFACE WATER **Lab ID: 60264375001** Collected: 02/20/18 07:50 Received: 02/21/18 15:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**6.7**	mg/L	1.0	1		02/26/18 17:55	7440-44-0	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 516012 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60264375001

METHOD BLANK: 2111769 | Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	03/02/18 14:20	

LABORATORY CONTROL SAMPLE: 2111770

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: 2111771 2111772

Parameter	Units	60264453001 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	5.4	5.8	108	116	75-125	7	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 515795
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Associated Lab Samples: 60264375001

METHOD BLANK: 2110807
Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	03/05/18 17:06	
Antimony	ug/L	ND	15.0	03/05/18 17:06	
Arsenic	ug/L	ND	10.0	03/05/18 17:06	
Barium	ug/L	ND	5.0	03/05/18 17:06	
Beryllium	ug/L	ND	1.0	03/05/18 17:06	
Boron	ug/L	ND	100	03/05/18 17:06	
Cadmium	ug/L	ND	5.0	03/05/18 17:06	
Calcium	ug/L	ND	200	03/05/18 17:06	
Chromium	ug/L	ND	5.0	03/05/18 17:06	
Cobalt	ug/L	ND	5.0	03/05/18 17:06	
Copper	ug/L	ND	10.0	03/05/18 17:06	
Iron	ug/L	ND	50.0	03/05/18 17:06	
Lead	ug/L	ND	10.0	03/05/18 17:06	
Lithium	ug/L	ND	10.0	03/05/18 17:06	
Magnesium	ug/L	ND	50.0	03/05/18 17:06	
Manganese	ug/L	ND	5.0	03/05/18 17:06	
Molybdenum	ug/L	ND	20.0	03/05/18 17:06	
Nickel	ug/L	ND	5.0	03/05/18 17:06	
Selenium	ug/L	ND	15.0	03/05/18 17:06	
Silver	ug/L	ND	7.0	03/05/18 17:06	
Sodium	ug/L	ND	500	03/05/18 17:06	
Thallium	ug/L	ND	20.0	03/05/18 17:06	
Total Hardness by 2340B	ug/L	ND	500	03/05/18 17:06	
Zinc	ug/L	ND	50.0	03/05/18 17:06	

LABORATORY CONTROL SAMPLE: 2110808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10100	101	80-120	
Antimony	ug/L	1000	992	99	80-120	
Arsenic	ug/L	1000	979	98	80-120	
Barium	ug/L	1000	1020	102	80-120	
Beryllium	ug/L	1000	1040	104	80-120	
Boron	ug/L	1000	1020	102	80-120	
Cadmium	ug/L	1000	1010	101	80-120	
Calcium	ug/L	10000	10300	103	80-120	
Chromium	ug/L	1000	1040	104	80-120	
Cobalt	ug/L	1000	1050	105	80-120	
Copper	ug/L	1000	1040	104	80-120	
Iron	ug/L	10000	10400	104	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

LABORATORY CONTROL SAMPLE: 2110808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1000	1030	103	80-120	
Lithium	ug/L	1000	996	100	80-120	
Magnesium	ug/L	10000	10500	105	80-120	
Manganese	ug/L	1000	1050	105	80-120	
Molybdenum	ug/L	1000	1040	104	80-120	
Nickel	ug/L	1000	1020	102	80-120	
Selenium	ug/L	1000	1040	104	80-120	
Silver	ug/L	500	527	105	80-120	
Sodium	ug/L	10000	10100	101	80-120	
Thallium	ug/L	1000	1060	106	80-120	
Total Hardness by 2340B	ug/L		69200			
Zinc	ug/L	1000	1080	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110809 2110810

Parameter	Units	60264569001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	10000	10000	10100	10000	100	100	75-125	0	20	
Antimony	ug/L	ND	1000	1000	988	994	99	99	75-125	1	20	
Arsenic	ug/L	ND	1000	1000	994	999	99	100	75-125	1	20	
Barium	ug/L	62.8	1000	1000	1060	1060	100	100	75-125	0	20	
Beryllium	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	20	
Boron	ug/L	2090	1000	1000	3060	3070	97	98	75-125	0	20	
Cadmium	ug/L	ND	1000	1000	1000	1000	100	100	75-125	0	20	
Calcium	ug/L	158000	10000	10000	168000	168000	108	106	75-125	0	20	
Chromium	ug/L	ND	1000	1000	1020	1020	101	102	75-125	0	20	
Cobalt	ug/L	ND	1000	1000	991	990	99	99	75-125	0	20	
Copper	ug/L	ND	1000	1000	1010	1000	100	100	75-125	0	20	
Iron	ug/L	200	10000	10000	10300	10300	101	101	75-125	0	20	
Lead	ug/L	ND	1000	1000	976	982	98	98	75-125	1	20	
Lithium	ug/L	42.4	1000	1000	1060	1060	102	101	75-125	0	20	
Magnesium	ug/L	41700	10000	10000	51800	51800	101	101	75-125	0	20	
Manganese	ug/L	253	1000	1000	1250	1250	100	100	75-125	0	20	
Molybdenum	ug/L	ND	1000	1000	1020	1020	101	101	75-125	0	20	
Nickel	ug/L	5.3	1000	1000	967	967	96	96	75-125	0	20	
Selenium	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	27	
Silver	ug/L	ND	500	500	516	513	103	103	75-125	0	20	
Sodium	ug/L	70400	10000	10000	81200	81000	108	106	75-125	0	20	
Thallium	ug/L	ND	1000	1000	969	971	97	97	75-125	0	20	
Total Hardness by 2340B	ug/L	566000			634000	634000				0		
Zinc	ug/L	ND	1000	1000	1040	1040	103	104	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 515380 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60264375001

METHOD BLANK: 2109460 | Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	02/26/18 13:38	

LABORATORY CONTROL SAMPLE: 2109461

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	983	98	80-120	

SAMPLE DUPLICATE: 2109462

Parameter	Units	60264375001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1520	1540	2	10	

SAMPLE DUPLICATE: 2109463

Parameter	Units	60264493002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1500	1580	5	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 515373
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60264375001

SAMPLE DUPLICATE: 2109443

Parameter	Units	60264323001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 516217 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60264375001

METHOD BLANK: 2112834 | Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.20	03/04/18 09:55	

LABORATORY CONTROL SAMPLE: 2112835

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2112836 2112837

Parameter	Units	60264375001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	2.2	2.5	2.5	4.5	4.5	90	92	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 516392 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60264375001

METHOD BLANK: 2113631 | Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/06/18 07:54	
Sulfate	mg/L	ND	1.0	03/06/18 07:54	

LABORATORY CONTROL SAMPLE: 2113632

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113633 2113634

Parameter	Units	60264375001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	195	100	100	309	295	113	100	80-120	4	15	
Sulfate	mg/L	765	500	500	1230	1180	93	82	80-120	4	15	

MATRIX SPIKE SAMPLE: 2113635

Parameter	Units	60264543028 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	4.3	5	9.3	100	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 516161 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60264375001

METHOD BLANK: 2112381 | Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	03/05/18 13:51	

LABORATORY CONTROL SAMPLE: 2112382

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	49.8	100	90-110	

MATRIX SPIKE SAMPLE: 2112383

Parameter	Units	60264493011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	1640	750	2300	88	90-110	M1

MATRIX SPIKE SAMPLE: 2112385

Parameter	Units	60264853001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	160	100	251	91	90-110	

SAMPLE DUPLICATE: 2112384

Parameter	Units	60264493013 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	950	958	1	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 515370 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60264375001

METHOD BLANK: 2109435 | Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	02/26/18 16:26	

LABORATORY CONTROL SAMPLE: 2109436

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.7	114	80-120	

MATRIX SPIKE SAMPLE: 2109437

Parameter	Units	7582543001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	4.6	5	10.7	122	80-120	M1

SAMPLE DUPLICATE: 2109438

Parameter	Units	7582544001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	4.5	4.5	0	25	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Sample: POND SURFACE WATER **Lab ID: 60264375001** Collected: 02/20/18 07:50 Received: 02/21/18 15:20 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 ± 0.565 (0.652)** **C:NA T:91%**	pCi/L	03/21/18 13:08	13982-63-3	
Radium-228	EPA 904.0	**0.124 ± 0.321 (0.718)** **C:75% T:87%**	pCi/L	03/14/18 11:55	15262-20-1	
Total Radium	Total Radium Calculation	**1.15 ± 0.886 (1.37)**	pCi/L	03/21/18 14:23	7440-14-4	

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(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 290190 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60264375001

METHOD BLANK: 1421054 | Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.185 ± 0.363 (0.799) C:81% T:77%	pCi/L	03/14/18 11:53	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

QC Batch: 290189 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60264375001

METHOD BLANK: 1421053 | Matrix: Water
Associated Lab Samples: 60264375001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.184 ± 0.281 (0.167) C:NA T:76%	pCi/L	03/21/18 12:23	

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.

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264375

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264375001	**POND SURFACE WATER**	EPA 3010	515795	EPA 6010	515833
60264375001	**POND SURFACE WATER**	EPA 7470	516012	EPA 7470	516030
60264375001	**POND SURFACE WATER**	EPA 903.1	290189		
60264375001	**POND SURFACE WATER**	EPA 904.0	290190		
60264375001	**POND SURFACE WATER**	Total Radium Calculation	292029		
60264375001	**POND SURFACE WATER**	SM 2540C	515380		
60264375001	**POND SURFACE WATER**	SM 4500-H+B	515373		
60264375001	**POND SURFACE WATER**	Trivalent Chromium Calculation	517382		
60264375001	**POND SURFACE WATER**	EPA 300.0	516217		
60264375001	**POND SURFACE WATER**	EPA 300.0	516392		
60264375001	**POND SURFACE WATER**	EPA 410.4	516161		
60264375001	**POND SURFACE WATER**	SM 5310C	515370		

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Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60264375

60264375

Client Name: Burns & Mcdonnel

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+0.2 T-266 / CF -0.1 T-239 **Type of Ice:** Wet Blue None

CK

Cooler Temperature (°C): **As-read** 0.0 **Corr. Factor** CF +0.2 CF -0.1 **Corrected** 0.2

Date and initials of person examining contents: AE 2/21/18

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)	☐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: Jenelle Comese Date: 2/23/18

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:	BURNS & MCDONNELL	Report To:	Brian Weis	Attention:	
Address:	Burns & McDonnell	Copy To:		Company Name:	
Kansas City, MO 64114				Address:	
Email:	bweis@burnsmcd.com	Purchase Order #:		Pace Quote:	
Phone:	816-333-9400 Fax	Project Name:	More's Lake Columbia, MO	Pace Project Manager:	colleen.clyne@pacelabs.com
Requested Due Date:		Project #:		Pace Profile #:	10268

Regulatory Agency
State / Location
MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60264375 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	Pond surface water	WT	G	20Feb18	7:50A			42.7C	8	3	2	3	2	BP	1	N			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	N	BP3N 3BP3U AG3S AG2S 001
2																																
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	[signature] ES+S	20 Feb 18	9:23 A	[signature] / BMcD	2/20/18	0925				
	[signature] BMcD	21 Feb 18	15:20	[signature]	2/21/18	15:20	0.2	Y	Y	Y
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: [signature] DATE Signed: 20 Feb 18

ANALYTICAL REPORT

March 07, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L974301
Samples Received:	03/02/2018
Project Number:	60264375
Description:	More's Lake Columbia, MO
Report To:	Colleen Clyne 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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60264375001 L974301-01 GW			Collected by	Collected date/time 03/01/18 00:00	Received date/time 03/02/18 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/06/18 15:10	03/06/18 15:10	EG

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

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

Nancy F. McLain

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	802		12.0	100	1	03/06/2018 15:10	WG1079799

Method Blank (MB)

(MB) R3290622-1 03/05/18 09:49

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L973536-01 Original Sample (OS) • Duplicate (DUP)

(OS) L973536-01 03/05/18 13:18 • (DUP) R3290622-5 03/05/18 15:38

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	23.9	42.4	1	55.7	J P1	20

L974355-04 Original Sample (OS) • Duplicate (DUP)

(OS) L974355-04 03/06/18 17:50 • (DUP) R3290622-6 03/06/18 20:47

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	128	217	1	51.4	P1	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3290622-2 03/05/18 10:18 • (LCSD) R3290622-3 03/05/18 10:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	199	194	99.6	97.2	85.0-115			2.47	20

L974355-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L974355-03 03/06/18 17:30 • (MS) R3290622-8 03/06/18 21:18 • (MSD) R3290622-10 03/06/18 21:36

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	261	390	568	42.8	102	1	80.0-120	J6	J3	37.2	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

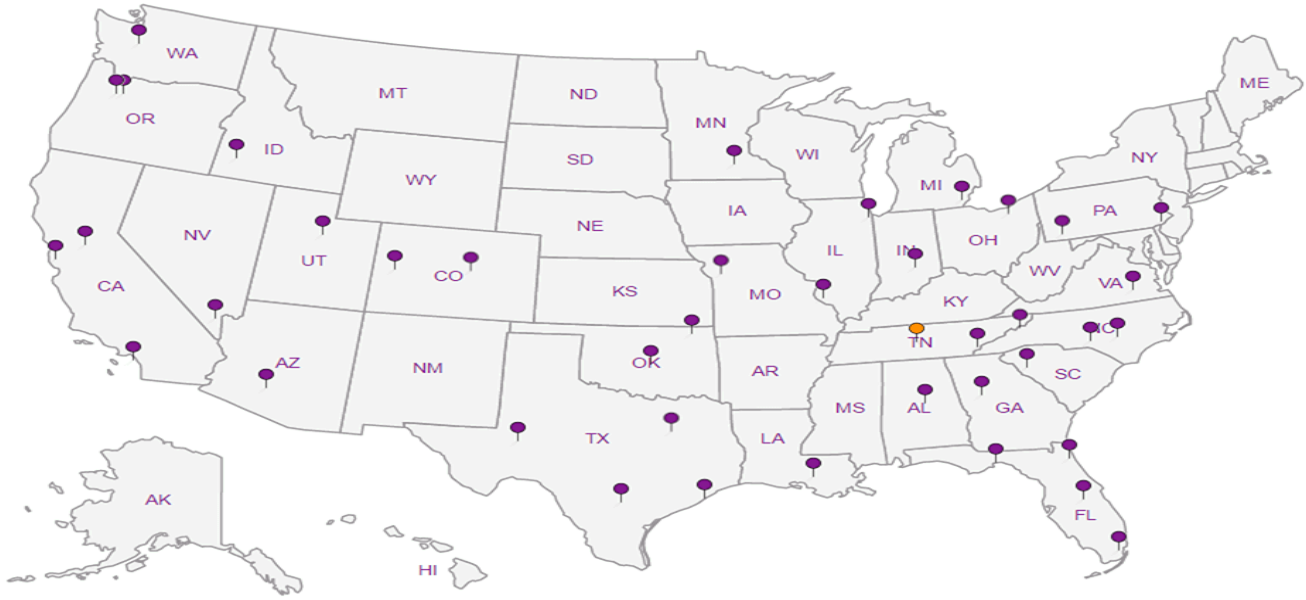
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



Chain of Custody

1035

Pace Analytical®
www.pacelabs.com

Workorder: 60264375 **Workorder Name:** MORE'S LAKE COLUMBIA, MO

Report / Invoice To	Subcontract To	Requested Analysis
	P.O. SUB-8922	L974301

State of Sample Origin:

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers																	LAB USE ONLY
1																						
2																						
3																						
4																						
5																						

Transfers	Released By	Date/Time	Received By	Date/Time
1		3/1/18 1800		3/1/18 8pm
2				
3				

Comments

Cooler Temperature on Receipt 2.2 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

4122 4544 1610

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACE	SDG#	L974301	
Cooler Received/Opened On: 3/2/18	Temperature:	1.2	
Received By: Matt Shacklock			
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

April 20, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on February 23, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

Revised Report Rev_2. Added hardness to report.

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

Sincerely,

Colleen Clyne
colleen.clyne@pacelabs.com
1(913)563-1406
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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Lenexa, KS 66219
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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60264511001	**MORE'S LAKE**	Water	02/20/18 12:00	02/23/18 06:35
60264511002	**MW-6**	Water	02/21/18 12:00	02/23/18 06:35
60264511003	**PZ2**	Water	02/21/18 14:45	02/23/18 06:35
60264511004	**MW-7**	Water	02/21/18 16:00	02/23/18 06:35
60264511005	**MW-5**	Water	02/22/18 09:30	02/23/18 06:35
60264511006	**MW-4**	Water	02/22/18 11:25	02/23/18 06:35
60264511007	**MW-3**	Water	02/22/18 12:50	02/23/18 06:35

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60264511001	**MORE'S LAKE**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60264511002	**MW-6**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264511003	**PZ2**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264511004	**MW-7**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264511005	**MW-5**	EPA 6010	JRS	24	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264511006	**MW-4**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264511007	**MW-3**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
6 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
6 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
7 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
7 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
7 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
6 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
6 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- MW-3 (Lab ID: 60264511007)
- MW-4 (Lab ID: 60264511006)
- MW-5 (Lab ID: 60264511005)
- MW-6 (Lab ID: 60264511002)
- MW-7 (Lab ID: 60264511004)
- PZ2 (Lab ID: 60264511003)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
6 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
6 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 516597

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60264511002,60264701012

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

- MS (Lab ID: 2114386)
  - Sulfate

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
6 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 516494

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60264772001,60264848002

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

- MS (Lab ID: 2113932)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 516494

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2113932)
  - Chemical Oxygen Demand

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: April 20, 2018

General Information:
6 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 515370

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 7582543001

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

- MS (Lab ID: 2109437)
  - Total Organic Carbon

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-6 **Lab ID: 60264511002** Collected: 02/21/18 12:00 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:12	7429-90-5	
Antimony	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:12	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:12	7440-38-2	
Barium	**85.0**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:12	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:12	7440-41-7	
Boron	**110**	ug/L	100	1	02/28/18 11:25	03/05/18 17:12	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:12	7440-43-9	
Calcium	**196000**	ug/L	200	1	02/28/18 11:25	03/05/18 17:12	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:12	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:12	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:12	7440-50-8	
Iron	**447**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:12	7439-89-6	
Lead	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:12	7439-92-1	
Lithium	**55.1**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:12	7439-93-2	
Magnesium	**41500**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:12	7439-95-4	
Manganese	**1030**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:12	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:12	7439-98-7	
Nickel	**7.3**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:12	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:12	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:12	7440-22-4	
Sodium	**47500**	ug/L	500	1	02/28/18 11:25	03/05/18 17:12	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:12	7440-28-0	
Total Hardness by 2340B	**659000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:12		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:12	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 08:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**852**	mg/L	5.0	1		02/26/18 13:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		02/26/18 14:17		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/13/18 10:00	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**23.3**	mg/L	2.0	2		03/08/18 11:49	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		03/06/18 20:21	16984-48-8	
Sulfate	**201**	mg/L	20.0	20		03/06/18 20:35	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:16		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-6 **Lab ID: 60264511002** Collected: 02/21/18 12:00 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.8**	mg/L	1.0	1		02/26/18 18:58	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: PZ2 **Lab ID: 60264511003** Collected: 02/21/18 14:45 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:15	7429-90-5	
Antimony	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:15	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:15	7440-38-2	
Barium	**45.4**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:15	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:15	7440-41-7	
Boron	**732**	ug/L	100	1	02/28/18 11:25	03/05/18 17:15	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:15	7440-43-9	
Calcium	**195000**	ug/L	200	1	02/28/18 11:25	03/05/18 17:15	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:15	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:15	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:15	7440-50-8	
Iron	**218**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:15	7439-89-6	
Lead	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:15	7439-92-1	
Lithium	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:15	7439-93-2	
Magnesium	**41200**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:15	7439-95-4	
Manganese	**412**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:15	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:15	7439-98-7	
Nickel	**5.6**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:15	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:15	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:15	7440-22-4	
Sodium	**91100**	ug/L	500	1	02/28/18 11:25	03/05/18 17:15	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:15	7440-28-0	
Total Hardness by 2340B	**658000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:15		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:15	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 08:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**975**	mg/L	5.0	1		02/26/18 13:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		02/26/18 14:19		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/13/18 10:00	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**101**	mg/L	20.0	20		03/06/18 21:31	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	1		03/06/18 21:17	16984-48-8	
Sulfate	**294**	mg/L	20.0	20		03/06/18 21:31	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:16		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: PZ2 **Lab ID: 60264511003** Collected: 02/21/18 14:45 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**2.2**	mg/L	1.0	1		02/26/18 19:11	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-7 **Lab ID: 60264511004** Collected: 02/21/18 16:00 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	**319**	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:17	7429-90-5	
Antimony	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:17	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:17	7440-38-2	
Barium	**80.5**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:17	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:17	7440-41-7	
Boron	**145**	ug/L	100	1	02/28/18 11:25	03/05/18 17:17	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:17	7440-43-9	
Calcium	**97900**	ug/L	200	1	02/28/18 11:25	03/05/18 17:17	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:17	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:17	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:17	7440-50-8	
Iron	**946**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:17	7439-89-6	
Lead	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:17	7439-92-1	
Lithium	**39.2**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:17	7439-93-2	
Magnesium	**23400**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:17	7439-95-4	
Manganese	**450**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:17	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:17	7439-98-7	
Nickel	**5.2**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:17	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:17	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:17	7440-22-4	
Sodium	**35300**	ug/L	500	1	02/28/18 11:25	03/05/18 17:17	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:17	7440-28-0	
Total Hardness by 2340B	**341000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:17		
Zinc	**82.3**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:17	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 08:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**478**	mg/L	5.0	1		02/26/18 13:44		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		02/26/18 14:20		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/13/18 10:00	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**22.2**	mg/L	5.0	5		03/06/18 21:59	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	1		03/06/18 21:45	16984-48-8	
Sulfate	**144**	mg/L	20.0	20		03/06/18 22:13	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:17		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-7 **Lab ID: 60264511004** Collected: 02/21/18 16:00 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.6**	mg/L	1.0	1		02/26/18 19:24	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-5 **Lab ID: 60264511005** Collected: 02/22/18 09:30 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	**84.0**	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:19	7429-90-5	
Antimony	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:19	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:19	7440-38-2	
Barium	**198**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:19	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:19	7440-41-7	
Boron	**284**	ug/L	100	1	02/28/18 11:25	03/05/18 17:19	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:19	7440-43-9	
Calcium	**113000**	ug/L	200	1	02/28/18 11:25	03/05/18 17:19	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:19	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:19	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:19	7440-50-8	
Iron	**131**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:19	7439-89-6	
Lead	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:19	7439-92-1	
Lithium	**46.8**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:19	7439-93-2	
Magnesium	**27600**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:19	7439-95-4	
Manganese	**29.2**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:19	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:19	7439-98-7	
Nickel	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:19	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:19	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:19	7440-22-4	
Sodium	**107000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:19	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:19	7440-28-0	
Total Hardness by 2340B	**397000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:19		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:19	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 08:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**541**	mg/L	5.0	1		02/27/18 10:47		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/01/18 08:56		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/13/18 10:00	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**73.2**	mg/L	10.0	10		03/06/18 22:41	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	1		03/06/18 22:27	16984-48-8	
Sulfate	**185**	mg/L	10.0	10		03/06/18 22:41	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:17		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-5 **Lab ID: 60264511005** Collected: 02/22/18 09:30 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.6**	mg/L	1.0	1		02/26/18 19:36	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-4 **Lab ID: 60264511006** Collected: 02/22/18 11:25 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:21	7429-90-5	
Antimony	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:21	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:21	7440-38-2	
Barium	**93.6**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:21	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:21	7440-41-7	
Boron	ND	ug/L	100	1	02/28/18 11:25	03/05/18 17:21	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:21	7440-43-9	
Calcium	**123000**	ug/L	200	1	02/28/18 11:25	03/05/18 17:21	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:21	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:21	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:21	7440-50-8	
Iron	**449**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:21	7439-89-6	
Lead	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:21	7439-92-1	
Lithium	**33.6**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:21	7439-93-2	
Magnesium	**39600**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:21	7439-95-4	
Manganese	**215**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:21	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:21	7439-98-7	
Nickel	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:21	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:21	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:21	7440-22-4	
Sodium	**45500**	ug/L	500	1	02/28/18 11:25	03/05/18 17:21	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:21	7440-28-0	
Total Hardness by 2340B	**469000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:21		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:21	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 08:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**419**	mg/L	5.0	1		02/27/18 10:48		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		03/01/18 08:59		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/13/18 10:00	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**24.9**	mg/L	2.0	2		03/08/18 12:31	16887-00-6	
Fluoride	**0.51**	mg/L	0.20	1		03/06/18 22:54	16984-48-8	
Sulfate	**85.5**	mg/L	10.0	10		03/06/18 23:08	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:17		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-4 **Lab ID: 60264511006** Collected: 02/22/18 11:25 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		02/26/18 19:49	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-3 **Lab ID: 60264511007** Collected: 02/22/18 12:50 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:24	7429-90-5	
Antimony	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:24	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:24	7440-38-2	
Barium	**202**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:24	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:24	7440-41-7	
Boron	ND	ug/L	100	1	02/28/18 11:25	03/05/18 17:24	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:24	7440-43-9	
Calcium	**117000**	ug/L	200	1	02/28/18 11:25	03/05/18 17:24	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:24	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:24	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:24	7440-50-8	
Iron	**144**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:24	7439-89-6	
Lead	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:24	7439-92-1	
Lithium	**34.2**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:24	7439-93-2	
Magnesium	**40800**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:24	7439-95-4	
Manganese	**341**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:24	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:24	7439-98-7	
Nickel	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:24	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:24	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:24	7440-22-4	
Sodium	**33300**	ug/L	500	1	02/28/18 11:25	03/05/18 17:24	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:24	7440-28-0	
Total Hardness by 2340B	**461000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:24		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:24	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 09:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**398**	mg/L	5.0	1		02/27/18 10:48		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		03/01/18 09:00		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/13/18 10:00	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**8.0**	mg/L	1.0	1		03/06/18 23:22	16887-00-6	
Fluoride	**0.54**	mg/L	0.20	1		03/06/18 23:22	16984-48-8	
Sulfate	**46.1**	mg/L	5.0	5		03/08/18 12:45	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:18		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-3 **Lab ID: 60264511007** Collected: 02/22/18 12:50 Received: 02/23/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		02/26/18 20:02	7440-44-0	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 516760 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

METHOD BLANK: 2115067 Matrix: Water
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	03/09/18 08:46	

LABORATORY CONTROL SAMPLE: 2115068

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: 2115069 2115070

Parameter	Units	60264569001 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	5.2	103	103	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 515795 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

METHOD BLANK: 2110807 Matrix: Water
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	03/05/18 17:06	
Antimony	ug/L	ND	15.0	03/05/18 17:06	
Arsenic	ug/L	ND	10.0	03/05/18 17:06	
Barium	ug/L	ND	5.0	03/05/18 17:06	
Beryllium	ug/L	ND	1.0	03/05/18 17:06	
Boron	ug/L	ND	100	03/05/18 17:06	
Cadmium	ug/L	ND	5.0	03/05/18 17:06	
Calcium	ug/L	ND	200	03/05/18 17:06	
Chromium	ug/L	ND	5.0	03/05/18 17:06	
Cobalt	ug/L	ND	5.0	03/05/18 17:06	
Copper	ug/L	ND	10.0	03/05/18 17:06	
Iron	ug/L	ND	50.0	03/05/18 17:06	
Lead	ug/L	ND	10.0	03/05/18 17:06	
Lithium	ug/L	ND	10.0	03/05/18 17:06	
Magnesium	ug/L	ND	50.0	03/05/18 17:06	
Manganese	ug/L	ND	5.0	03/05/18 17:06	
Molybdenum	ug/L	ND	20.0	03/05/18 17:06	
Nickel	ug/L	ND	5.0	03/05/18 17:06	
Selenium	ug/L	ND	15.0	03/05/18 17:06	
Silver	ug/L	ND	7.0	03/05/18 17:06	
Sodium	ug/L	ND	500	03/05/18 17:06	
Thallium	ug/L	ND	20.0	03/05/18 17:06	
Total Hardness by 2340B	ug/L	ND	500	03/05/18 17:06	
Zinc	ug/L	ND	50.0	03/05/18 17:06	

LABORATORY CONTROL SAMPLE: 2110808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10100	101	80-120	
Antimony	ug/L	1000	992	99	80-120	
Arsenic	ug/L	1000	979	98	80-120	
Barium	ug/L	1000	1020	102	80-120	
Beryllium	ug/L	1000	1040	104	80-120	
Boron	ug/L	1000	1020	102	80-120	
Cadmium	ug/L	1000	1010	101	80-120	
Calcium	ug/L	10000	10300	103	80-120	
Chromium	ug/L	1000	1040	104	80-120	
Cobalt	ug/L	1000	1050	105	80-120	
Copper	ug/L	1000	1040	104	80-120	
Iron	ug/L	10000	10400	104	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

LABORATORY CONTROL SAMPLE: 2110808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1000	1030	103	80-120	
Lithium	ug/L	1000	996	100	80-120	
Magnesium	ug/L	10000	10500	105	80-120	
Manganese	ug/L	1000	1050	105	80-120	
Molybdenum	ug/L	1000	1040	104	80-120	
Nickel	ug/L	1000	1020	102	80-120	
Selenium	ug/L	1000	1040	104	80-120	
Silver	ug/L	500	527	105	80-120	
Sodium	ug/L	10000	10100	101	80-120	
Thallium	ug/L	1000	1060	106	80-120	
Total Hardness by 2340B	ug/L		69200			
Zinc	ug/L	1000	1080	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110809 2110810

Parameter	Units	60264569001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	10000	10000	10100	10000	100	100	75-125	0	20	
Antimony	ug/L	ND	1000	1000	988	994	99	99	75-125	1	20	
Arsenic	ug/L	ND	1000	1000	994	999	99	100	75-125	1	20	
Barium	ug/L	62.8	1000	1000	1060	1060	100	100	75-125	0	20	
Beryllium	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	20	
Boron	ug/L	2090	1000	1000	3060	3070	97	98	75-125	0	20	
Cadmium	ug/L	ND	1000	1000	1000	1000	100	100	75-125	0	20	
Calcium	ug/L	158000	10000	10000	168000	168000	108	106	75-125	0	20	
Chromium	ug/L	ND	1000	1000	1020	1020	101	102	75-125	0	20	
Cobalt	ug/L	ND	1000	1000	991	990	99	99	75-125	0	20	
Copper	ug/L	ND	1000	1000	1010	1000	100	100	75-125	0	20	
Iron	ug/L	200	10000	10000	10300	10300	101	101	75-125	0	20	
Lead	ug/L	ND	1000	1000	976	982	98	98	75-125	1	20	
Lithium	ug/L	42.4	1000	1000	1060	1060	102	101	75-125	0	20	
Magnesium	ug/L	41700	10000	10000	51800	51800	101	101	75-125	0	20	
Manganese	ug/L	253	1000	1000	1250	1250	100	100	75-125	0	20	
Molybdenum	ug/L	ND	1000	1000	1020	1020	101	101	75-125	0	20	
Nickel	ug/L	5.3	1000	1000	967	967	96	96	75-125	0	20	
Selenium	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	27	
Silver	ug/L	ND	500	500	516	513	103	103	75-125	0	20	
Sodium	ug/L	70400	10000	10000	81200	81000	108	106	75-125	0	20	
Thallium	ug/L	ND	1000	1000	969	971	97	97	75-125	0	20	
Total Hardness by 2340B	ug/L	566000			634000	634000				0		
Zinc	ug/L	ND	1000	1000	1040	1040	103	104	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 515380 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60264511002, 60264511003, 60264511004

METHOD BLANK: 2109460 | Matrix: Water
Associated Lab Samples: 60264511002, 60264511003, 60264511004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	02/26/18 13:38	

LABORATORY CONTROL SAMPLE: 2109461

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	983	98	80-120	

SAMPLE DUPLICATE: 2109462

Parameter	Units	60264375001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1520	1540	2	10	

SAMPLE DUPLICATE: 2109463

Parameter	Units	60264493002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1500	1580	5	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 515540 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60264511005, 60264511006, 60264511007

METHOD BLANK: 2109831 | Matrix: Water
Associated Lab Samples: 60264511005, 60264511006, 60264511007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	02/27/18 10:42	

LABORATORY CONTROL SAMPLE: 2109832

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	969	97	80-120	

SAMPLE DUPLICATE: 2109833

Parameter	Units	60264486001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	218	201	8	10	

SAMPLE DUPLICATE: 2109834

Parameter	Units	60264543028 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	448	445	1	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 515429 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60264511002, 60264511003, 60264511004

SAMPLE DUPLICATE: 2109546

Parameter	Units	60264334001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.8	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 515882 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60264511005, 60264511006, 60264511007

SAMPLE DUPLICATE: 2111106

Parameter	Units	60264569001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 516424 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

METHOD BLANK: 2113737 | Matrix: Water
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/06/18 18:44	
Fluoride	mg/L	ND	0.20	03/06/18 18:44	
Sulfate	mg/L	ND	1.0	03/06/18 18:44	

LABORATORY CONTROL SAMPLE: 2113738

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113739 2113740

Parameter	Units	60264866002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.3	5	5	13.1	13.2	95	98	80-120	1	15	
Fluoride	mg/L	0.59	2.5	2.5	2.7	2.8	85	87	80-120	2	15	
Sulfate	mg/L	9.2	5	5	14.1	14.3	99	102	80-120	1	15	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 516597 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60264511002, 60264511006, 60264511007

METHOD BLANK: 2114382 | Matrix: Water
Associated Lab Samples: 60264511002, 60264511006, 60264511007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/08/18 11:21	
Sulfate	mg/L	ND	1.0	03/08/18 11:21	

LABORATORY CONTROL SAMPLE: 2114383

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2114384 2114385

Parameter	Units	60264511002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	23.3	10	10	34.7	35.3	114	120	80-120	2	15	

MATRIX SPIKE SAMPLE: 2114386

Parameter	Units	60264701012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	35.2	25	65.7	122	80-120	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 516494 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

METHOD BLANK: 2113929 Matrix: Water
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	03/08/18 10:15	

LABORATORY CONTROL SAMPLE: 2113930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	52.6	105	90-110	

MATRIX SPIKE SAMPLE: 2113932

Parameter	Units	60264772001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L			157			E,M1

MATRIX SPIKE SAMPLE: 2114566

Parameter	Units	60264848002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	27.7	50	76.5	98	90-110	

SAMPLE DUPLICATE: 2113933

Parameter	Units	60264569001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 515370 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

METHOD BLANK: 2109435 | Matrix: Water
Associated Lab Samples: 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	02/26/18 16:26	

LABORATORY CONTROL SAMPLE: 2109436

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.7	114	80-120	

MATRIX SPIKE SAMPLE: 2109437

Parameter	Units	7582543001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	4.6	5	10.7	122	80-120	M1

SAMPLE DUPLICATE: 2109438

Parameter	Units	7582544001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	4.5	4.5	0	25	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MORE'S LAKE **Lab ID: 60264511001** Collected: 02/20/18 12:00 Received: 02/23/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.07 ± 0.697 (0.714)** **C:NA T:89%**	pCi/L	03/16/18 15:43	13982-63-3	
Radium-228	EPA 904.0	**0.819 ± 0.452 (0.810)** **C:74% T:89%**	pCi/L	03/14/18 14:51	15262-20-1	
Total Radium	Total Radium Calculation	**1.89 ± 1.15 (1.52)**	pCi/L	03/20/18 10:47	7440-14-4	

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Lenexa, KS 66219
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-6 **Lab ID: 60264511002** Collected: 02/21/18 12:00 Received: 02/23/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.94 ± 0.824 (0.229) C:NA T:89%**	pCi/L	03/16/18 15:43	13982-63-3	
Radium-228	EPA 904.0	**0.721 ± 0.452 (0.842) C:77% T:81%**	pCi/L	03/14/18 14:51	15262-20-1	
Total Radium	Total Radium Calculation	**2.66 ± 1.28 (1.07)**	pCi/L	03/20/18 10:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: PZ2 **Lab ID: 60264511003** Collected: 02/21/18 14:45 Received: 02/23/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.431 (0.894)** **C:NA T:78%**	pCi/L	03/16/18 15:43	13982-63-3	
Radium-228	EPA 904.0	**0.201 ± 0.316 (0.685)** **C:79% T:85%**	pCi/L	03/14/18 14:51	15262-20-1	
Total Radium	Total Radium Calculation	**0.201 ± 0.747 (1.58)**	pCi/L	03/20/18 10:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-7 **Lab ID: 60264511004** Collected: 02/21/18 16:00 Received: 02/23/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.601 ± 0.518 (0.770)** **C:NA T:92%**	pCi/L	03/16/18 15:43	13982-63-3	
Radium-228	EPA 904.0	**0.317 ± 0.312 (0.637)** **C:78% T:80%**	pCi/L	03/14/18 14:51	15262-20-1	
Total Radium	Total Radium Calculation	**0.918 ± 0.830 (1.41)**	pCi/L	03/20/18 10:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-5 **Lab ID: 60264511005** Collected: 02/22/18 09:30 Received: 02/23/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.392 ± 0.428 (0.673)** **C:NA T:93%**	pCi/L	03/16/18 15:43	13982-63-3	
Radium-228	EPA 904.0	**0.809 ± 0.361 (0.563)** **C:78% T:82%**	pCi/L	03/14/18 14:51	15262-20-1	
Total Radium	Total Radium Calculation	**1.20 ± 0.789 (1.24)**	pCi/L	03/20/18 10:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-4 **Lab ID: 60264511006** Collected: 02/22/18 11:25 Received: 02/23/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.579 ± 0.478 (0.690)** **C:NA T:91%**	pCi/L	03/16/18 15:57	13982-63-3	
Radium-228	EPA 904.0	**0.460 ± 0.306 (0.570)** **C:79% T:84%**	pCi/L	03/14/18 14:51	15262-20-1	
Total Radium	Total Radium Calculation	**1.04 ± 0.784 (1.26)**	pCi/L	03/20/18 10:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Sample: MW-3 **Lab ID: 60264511007** Collected: 02/22/18 12:50 Received: 02/23/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.805 ± 0.537 (0.691)** **C:NA T:79%**	pCi/L	03/16/18 15:57	13982-63-3	
Radium-228	EPA 904.0	**0.955 ± 0.385 (0.591)** **C:81% T:88%**	pCi/L	03/14/18 14:51	15262-20-1	
Total Radium	Total Radium Calculation	**1.76 ± 0.922 (1.28)**	pCi/L	03/20/18 10:47	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 289925 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60264511001, 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

METHOD BLANK: 1420066 Matrix: Water
Associated Lab Samples: 60264511001, 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.448 ± 0.318 (0.603) C:84% T:75%	pCi/L	03/14/18 11:32	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

QC Batch: 289937 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60264511001, 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

METHOD BLANK: 1420116 Matrix: Water
Associated Lab Samples: 60264511001, 60264511002, 60264511003, 60264511004, 60264511005, 60264511006, 60264511007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.248 ± 0.258 (0.365) C:NA T:94%	pCi/L	03/16/18 15:43	

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.

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264511002	**MW-6**	EPA 3010	515795	EPA 6010	515833
60264511003	**PZ2**	EPA 3010	515795	EPA 6010	515833
60264511004	**MW-7**	EPA 3010	515795	EPA 6010	515833
60264511005	**MW-5**	EPA 3010	515795	EPA 6010	515833
60264511006	**MW-4**	EPA 3010	515795	EPA 6010	515833
60264511007	**MW-3**	EPA 3010	515795	EPA 6010	515833
60264511002	**MW-6**	EPA 7470	516760	EPA 7470	516850
60264511003	**PZ2**	EPA 7470	516760	EPA 7470	516850
60264511004	**MW-7**	EPA 7470	516760	EPA 7470	516850
60264511005	**MW-5**	EPA 7470	516760	EPA 7470	516850
60264511006	**MW-4**	EPA 7470	516760	EPA 7470	516850
60264511007	**MW-3**	EPA 7470	516760	EPA 7470	516850
60264511001	**MORE'S LAKE**	EPA 903.1	289937		
60264511002	**MW-6**	EPA 903.1	289937		
60264511003	**PZ2**	EPA 903.1	289937		
60264511004	**MW-7**	EPA 903.1	289937		
60264511005	**MW-5**	EPA 903.1	289937		
60264511006	**MW-4**	EPA 903.1	289937		
60264511007	**MW-3**	EPA 903.1	289937		
60264511001	**MORE'S LAKE**	EPA 904.0	289925		
60264511002	**MW-6**	EPA 904.0	289925		
60264511003	**PZ2**	EPA 904.0	289925		
60264511004	**MW-7**	EPA 904.0	289925		
60264511005	**MW-5**	EPA 904.0	289925		
60264511006	**MW-4**	EPA 904.0	289925		
60264511007	**MW-3**	EPA 904.0	289925		
60264511001	**MORE'S LAKE**	Total Radium Calculation	291839		
60264511002	**MW-6**	Total Radium Calculation	291839		
60264511003	**PZ2**	Total Radium Calculation	291839		
60264511004	**MW-7**	Total Radium Calculation	291839		
60264511005	**MW-5**	Total Radium Calculation	291839		
60264511006	**MW-4**	Total Radium Calculation	291839		
60264511007	**MW-3**	Total Radium Calculation	291839		
60264511002	**MW-6**	SM 2540C	515380		
60264511003	**PZ2**	SM 2540C	515380		
60264511004	**MW-7**	SM 2540C	515380		
60264511005	**MW-5**	SM 2540C	515540		
60264511006	**MW-4**	SM 2540C	515540		
60264511007	**MW-3**	SM 2540C	515540		
60264511002	**MW-6**	SM 4500-H+B	515429		
60264511003	**PZ2**	SM 4500-H+B	515429		
60264511004	**MW-7**	SM 4500-H+B	515429		
60264511005	**MW-5**	SM 4500-H+B	515882		
60264511006	**MW-4**	SM 4500-H+B	515882		
60264511007	**MW-3**	SM 4500-H+B	515882		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264511

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264511002	**MW-6**	Trivalent Chromium Calculation	517382		
60264511003	**PZ2**	Trivalent Chromium Calculation	517382		
60264511004	**MW-7**	Trivalent Chromium Calculation	517382		
60264511005	**MW-5**	Trivalent Chromium Calculation	517382		
60264511006	**MW-4**	Trivalent Chromium Calculation	517382		
60264511007	**MW-3**	Trivalent Chromium Calculation	517382		
60264511002	**MW-6**	EPA 300.0	516424		
60264511002	**MW-6**	EPA 300.0	516597		
60264511003	**PZ2**	EPA 300.0	516424		
60264511004	**MW-7**	EPA 300.0	516424		
60264511005	**MW-5**	EPA 300.0	516424		
60264511006	**MW-4**	EPA 300.0	516424		
60264511006	**MW-4**	EPA 300.0	516597		
60264511007	**MW-3**	EPA 300.0	516424		
60264511007	**MW-3**	EPA 300.0	516597		
60264511002	**MW-6**	EPA 410.4	516494		
60264511003	**PZ2**	EPA 410.4	516494		
60264511004	**MW-7**	EPA 410.4	516494		
60264511005	**MW-5**	EPA 410.4	516494		
60264511006	**MW-4**	EPA 410.4	516494		
60264511007	**MW-3**	EPA 410.4	516494		
60264511002	**MW-6**	SM 5310C	515370		
60264511003	**PZ2**	SM 5310C	515370		
60264511004	**MW-7**	SM 5310C	515370		
60264511005	**MW-5**	SM 5310C	515370		
60264511006	**MW-4**	SM 5310C	515370		
60264511007	**MW-3**	SM 5310C	515370		

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Sample Condition Upon Receipt

WO# : 60264511

60264511

Client Name: Burns & McD

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 +0.2) / T-239 (CF -0.1) **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 2.2/2.5 **Corr. Factor** CF +0.2 CF -0.1 **Corrected** 2.4/2.7

Temperature should be above freezing to 6°C

Date and initials of person examining contents: CK 2/23/18

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	one MW7 container has
Pace containers used:	☑Yes ☐No ☐N/A	MW-6 ID. Time and date
Containers intact:	☑Yes ☐No ☐N/A	match MW7.
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)	☐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: _____

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B — Required Project Information:

Report To:	Brian Weis
Copy To:	
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	colleen.clyne@pacelabs.com
Pace Profile #:	10268

Regulatory Agency	State / Location
	MO

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 (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 Sulfate, Cl, F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include corribined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn	60264511
1	More's Lake BP1N	WT	G			20Feb18	1200		8	X	X	X							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			001
2	MW-6 3BP3U AG3S 2o BP3N 2o AG2S 2o BP1N	WT	G			21Feb18	1200		8	X	X	X							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			002
3	PZ2 2BP1N	WT	G			21Feb18	1445		8	X	X	X							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			003
4	MW-7	WT	G			21Feb18	1600		8	X	X	X							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			004
5	MW-5	WT	G			22Feb18	0930		8	X	X	X							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			005
6	MW-4	WT	G			22Feb18	1125		8	X	X	X							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			006
7	MW-3	WT	G			22Feb18	1250		8	X	X	X							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			007
8																																	
9																																	
10																																	
11																																	
12																																	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore BS	22Feb18	2:00pm	[illegible]	22Feb18	2:00pm				
	[illegible]	22Feb18	3:20pm	[illegible]						
				[illegible]	2/23/18	0635	2.4	X	X	X
							2.7	X	X	X

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: David Kilgore					
SIGNATURE of SAMPLER: [illegible]	DATE Signed: 22Feb18				

ANALYTICAL REPORT

March 07, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L973540
Samples Received:	02/28/2018
Project Number:	60264511
Description:	More's Lake Columbia, MO
Report To:	Colleen Clyne 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-6 L973540-01 GW

Collected by	Collected date/time	Received date/time
	02/21/18 12:00	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 14:26	03/05/18 14:26	SJM

PZ2 L973540-02 GW

Collected by	Collected date/time	Received date/time
	02/21/18 14:45	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 14:39	03/05/18 14:39	SJM

MW-7 L973540-03 GW

Collected by	Collected date/time	Received date/time
	02/21/18 16:00	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 14:50	03/05/18 14:50	SJM

MW-5 L973540-04 GW

Collected by	Collected date/time	Received date/time
	02/22/18 09:30	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 15:03	03/05/18 15:03	SJM

MW-4 L973540-05 GW

Collected by	Collected date/time	Received date/time
	02/22/18 11:25	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 15:16	03/05/18 15:16	SJM

MW-3 L973540-06 GW

Collected by	Collected date/time	Received date/time
	02/22/18 12:50	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 15:28	03/05/18 15:28	SJM

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

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

Nancy F. McLain

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	16.1	J	12.0	100	1	03/05/2018 14:26	WG1079799

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	45.1	J	12.0	100	1	03/05/2018 14:39	WG1079799

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	19.4	J	12.0	100	1	03/05/2018 14:50	WG1079799

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/05/2018 15:03	WG1079799

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	17.4	J	12.0	100	1	03/05/2018 15:16	WG1079799

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	16.0	J	12.0	100	1	03/05/2018 15:28	WG1079799

Method Blank (MB)

(MB) R3290622-1 03/05/18 09:49

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L973536-01 Original Sample (OS) • Duplicate (DUP)

(OS) L973536-01 03/05/18 13:18 • (DUP) R3290622-5 03/05/18 15:38

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	23.9	42.4	1	55.7	J P1	20

L974355-04 Original Sample (OS) • Duplicate (DUP)

(OS) L974355-04 03/06/18 17:50 • (DUP) R3290622-6 03/06/18 20:47

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	128	217	1	51.4	P1	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3290622-2 03/05/18 10:18 • (LCSD) R3290622-3 03/05/18 10:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	199	194	99.6	97.2	85.0-115			2.47	20

L974355-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L974355-03 03/06/18 17:30 • (MS) R3290622-8 03/06/18 21:18 • (MSD) R3290622-10 03/06/18 21:36

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	261	390	568	42.8	102	1	80.0-120	J6	J3	37.2	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

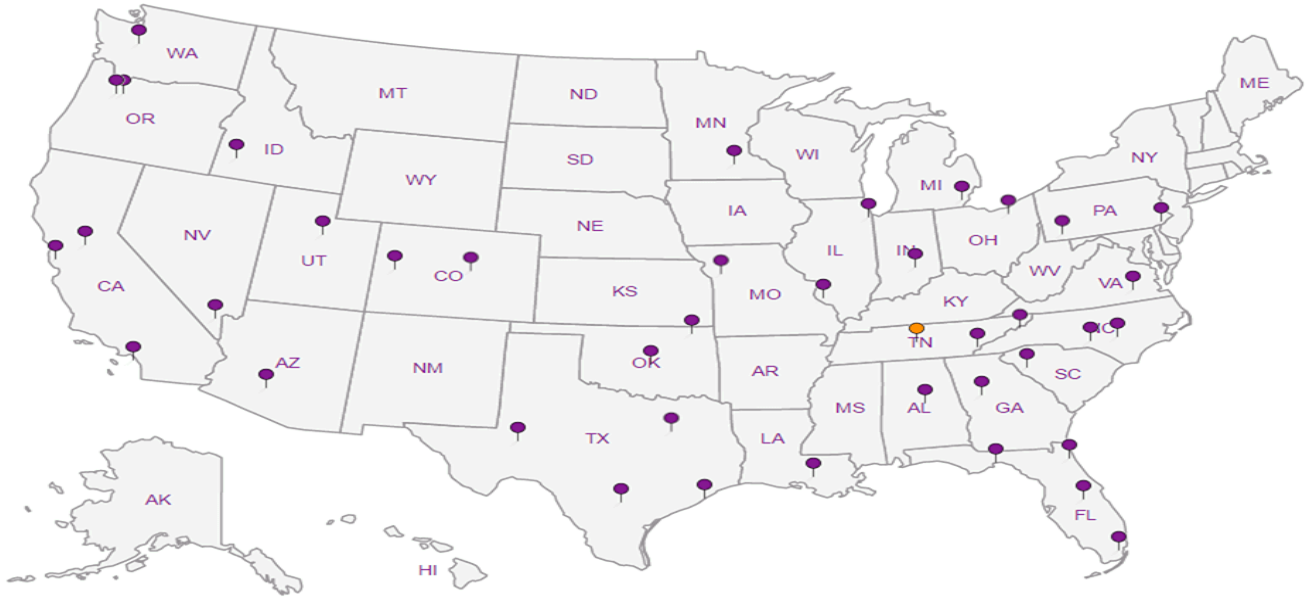
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 60264511 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 3/9/2018

Report / Invoice To

Colleen Clyne
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1406
Email: colleen.clyne@pacelabs.com

Subcontract To

P.O. SUB-8872

State of Sample Origin:

Requested Analysis

L973540

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers H2SO4	TOX	LAB USE ONLY
1	MW-6	2/21/2018 12:00	60264511002	Water		X	-01
2	PZ2	2/21/2018 14:45	60264511003	Water		X	-02
3	MW-7	2/21/2018 16:00	60264511004	Water		X	-03
4	MW-5	2/22/2018 09:30	60264511005	Water		X	-04
5	MW-4	2/22/2018 11:25	60264511006	Water		X	-05
6	MW-3	2/22/2018 12:50	60264511007	Water		X	-06

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PASI	2/27/18 1800	[signature] 838 0845	2/28/18
2				
3				

Comments

Cooler Temperature on Receipt 2.3 KS °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

OK

41224944 0094

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACELXS	SDG#	L973540	
Cooler Received/Opened On 02/28 /18	Temperature:	2,3	°C
Received by : Ian White			
Signature: Ian White			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

March 21, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on February 24, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Colleen Clyne
colleen.clyne@pacelabs.com
1(913)563-1406
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

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

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60264569001	**MW-1**	Water	02/23/18 09:26	02/24/18 09:15
60264569002	**MW-8**	Water	02/23/18 11:40	02/24/18 09:15
60264569003	**MW-2**	Water	02/22/18 15:40	02/24/18 09:15
60264569004	**DUP-1**	Water	02/22/18 15:40	02/24/18 09:15
60264569005	**MW-1 MS**	Water	02/23/18 09:26	02/24/18 09:15
60264569006	**MW-1 MSD**	Water	02/23/18 09:26	02/24/18 09:15

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60264569001	**MW-1**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264569002	**MW-8**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264569003	**MW-2**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264569004	**DUP-1**	EPA 6010	JRS	24	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	AGO	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60264569005	**MW-1 MS**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60264569006	**MW-1 MSD**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
6 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
6 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-1 (Lab ID: 60264569004)
- MW-1 (Lab ID: 60264569001)
- MW-2 (Lab ID: 60264569003)
- MW-8 (Lab ID: 60264569002)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 516426

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2113750)
  - Chloride

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 516494

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60264772001,60264848002

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

- MS (Lab ID: 2113932)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 516494

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2113932)
  - Chemical Oxygen Demand

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: March 21, 2018

General Information:
4 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-1 **Lab ID: 60264569001** Collected: 02/23/18 09:26 Received: 02/24/18 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:26	7429-90-5	
Antimony	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:26	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:26	7440-38-2	
Barium	**62.8**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:26	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:26	7440-41-7	
Boron	**2090**	ug/L	100	1	02/28/18 11:25	03/05/18 17:26	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:26	7440-43-9	
Calcium	**158000**	ug/L	100	1	02/28/18 11:25	03/05/18 17:26	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:26	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:26	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:26	7440-50-8	
Iron	**200**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:26	7439-89-6	
Lead	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:26	7439-92-1	
Lithium	**42.4**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:26	7439-93-2	
Magnesium	**41700**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:26	7439-95-4	
Manganese	**253**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:26	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:26	7439-98-7	
Nickel	**5.3**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:26	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:26	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:26	7440-22-4	
Sodium	**70400**	ug/L	500	1	02/28/18 11:25	03/05/18 17:26	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:26	7440-28-0	
Total Hardness by 2340B	**566000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:26		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:26	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 09:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**832**	mg/L	5.0	1		03/01/18 15:39		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		03/01/18 09:05		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/12/18 17:09	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**81.1**	mg/L	10.0	10		03/06/18 11:21	16887-00-6	
Fluoride	**0.47**	mg/L	0.20	1		03/06/18 10:39	16984-48-8	
Sulfate	**247**	mg/L	20.0	20		03/06/18 12:30	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:23		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-1 **Lab ID: 60264569001** Collected: 02/23/18 09:26 Received: 02/24/18 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		02/28/18 09:53	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-8 **Lab ID: 60264569002** Collected: 02/23/18 11:40 Received: 02/24/18 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:36	7429-90-5	
Antimony	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:36	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:36	7440-38-2	
Barium	**22.4**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:36	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:36	7440-41-7	
Boron	**390**	ug/L	100	1	02/28/18 11:25	03/05/18 17:36	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:36	7440-43-9	
Calcium	**268000**	ug/L	100	1	02/28/18 11:25	03/05/18 17:36	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:36	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:36	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:36	7440-50-8	
Iron	**686**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:36	7439-89-6	
Lead	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:36	7439-92-1	
Lithium	**25.0**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:36	7439-93-2	
Magnesium	**39400**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:36	7439-95-4	
Manganese	**950**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:36	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:36	7439-98-7	
Nickel	**5.7**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:36	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:36	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:36	7440-22-4	
Sodium	**76300**	ug/L	500	1	02/28/18 11:25	03/05/18 17:36	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:36	7440-28-0	
Total Hardness by 2340B	**833000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:36		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:36	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 09:16	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1160**	mg/L	5.0	1		03/01/18 15:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		03/01/18 09:15		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/12/18 17:09	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**70.6**	mg/L	10.0	10		03/06/18 13:26	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	1		03/06/18 13:12	16984-48-8	
Sulfate	**453**	mg/L	50.0	50		03/06/18 13:40	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:23		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-8 **Lab ID: 60264569002** Collected: 02/23/18 11:40 Received: 02/24/18 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.3**	mg/L	1.0	1		02/28/18 12:51	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-2 **Lab ID: 60264569003** Collected: 02/22/18 15:40 Received: 02/24/18 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:39	7429-90-5	
Antimony	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:39	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:39	7440-38-2	
Barium	**158**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:39	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:39	7440-41-7	
Boron	ND	ug/L	100	1	02/28/18 11:25	03/05/18 17:39	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:39	7440-43-9	
Calcium	**117000**	ug/L	100	1	02/28/18 11:25	03/05/18 17:39	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:39	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:39	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:39	7440-50-8	
Iron	**105**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:39	7439-89-6	
Lead	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:39	7439-92-1	
Lithium	**34.2**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:39	7439-93-2	
Magnesium	**42100**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:39	7439-95-4	
Manganese	**471**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:39	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:39	7439-98-7	
Nickel	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:39	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:39	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:39	7440-22-4	
Sodium	**29600**	ug/L	500	1	02/28/18 11:25	03/05/18 17:39	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:39	7440-28-0	
Total Hardness by 2340B	**467000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:39		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:39	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 09:18	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**520**	mg/L	5.0	1		03/01/18 15:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		03/01/18 09:01		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/12/18 17:09	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**3.7**	mg/L	1.0	1		03/06/18 13:54	16887-00-6	
Fluoride	**0.60**	mg/L	0.20	1		03/06/18 13:54	16984-48-8	
Sulfate	**56.4**	mg/L	5.0	5		03/06/18 14:08	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:25		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-2 **Lab ID: 60264569003** Collected: 02/22/18 15:40 Received: 02/24/18 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.1**	mg/L	1.0	1		02/28/18 13:04	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: DUP-1 **Lab ID: 60264569004** Collected: 02/22/18 15:40 Received: 02/24/18 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Aluminum	ND	ug/L	75.0	1	02/28/18 11:25	03/05/18 17:41	7429-90-5	
Antimony	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:41	7440-36-0	
Arsenic	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:41	7440-38-2	
Barium	**158**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:41	7440-39-3	
Beryllium	ND	ug/L	1.0	1	02/28/18 11:25	03/05/18 17:41	7440-41-7	
Boron	ND	ug/L	100	1	02/28/18 11:25	03/05/18 17:41	7440-42-8	
Cadmium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:41	7440-43-9	
Calcium	**118000**	ug/L	100	1	02/28/18 11:25	03/05/18 17:41	7440-70-2	
Chromium	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:41	7440-47-3	
Cobalt	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:41	7440-48-4	
Copper	ND	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:41	7440-50-8	
Iron	**96.8**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:41	7439-89-6	
Lead	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:41	7439-92-1	
Lithium	**33.4**	ug/L	10.0	1	02/28/18 11:25	03/05/18 17:41	7439-93-2	
Magnesium	**42300**	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:41	7439-95-4	
Manganese	**473**	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:41	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:41	7439-98-7	
Nickel	ND	ug/L	5.0	1	02/28/18 11:25	03/05/18 17:41	7440-02-0	
Selenium	ND	ug/L	15.0	1	02/28/18 11:25	03/05/18 17:41	7782-49-2	
Silver	ND	ug/L	7.0	1	02/28/18 11:25	03/05/18 17:41	7440-22-4	
Sodium	**29800**	ug/L	500	1	02/28/18 11:25	03/05/18 17:41	7440-23-5	
Thallium	ND	ug/L	20.0	1	02/28/18 11:25	03/05/18 17:41	7440-28-0	
Total Hardness by 2340B	**468000**	ug/L	500	1	02/28/18 11:25	03/05/18 17:41		
Zinc	ND	ug/L	50.0	1	02/28/18 11:25	03/05/18 17:41	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/08/18 11:22	03/09/18 09:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**524**	mg/L	5.0	1		03/01/18 15:37		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		03/01/18 09:03		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	mg/L	0.010	1		03/12/18 17:09	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**3.7**	mg/L	1.0	1		03/06/18 14:22	16887-00-6	
Fluoride	**0.57**	mg/L	0.20	1		03/06/18 14:22	16984-48-8	
Sulfate	**56.4**	mg/L	5.0	5		03/06/18 15:03	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4							
Chemical Oxygen Demand	ND	mg/L	10.0	1		03/08/18 10:26		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: DUP-1 **Lab ID: 60264569004** Collected: 02/22/18 15:40 Received: 02/24/18 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**1.0**	mg/L	1.0	1		02/28/18 13:17	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 516760 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

METHOD BLANK: 2115067 Matrix: Water
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	03/09/18 08:46	

LABORATORY CONTROL SAMPLE: 2115068

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: 2115069 2115070

Parameter	Units	60264569001 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	5.2	103	103	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 515795 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

METHOD BLANK: 2110807 | Matrix: Water
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	03/05/18 17:06	
Antimony	ug/L	ND	15.0	03/05/18 17:06	
Arsenic	ug/L	ND	10.0	03/05/18 17:06	
Barium	ug/L	ND	5.0	03/05/18 17:06	
Beryllium	ug/L	ND	1.0	03/05/18 17:06	
Boron	ug/L	ND	100	03/05/18 17:06	
Cadmium	ug/L	ND	5.0	03/05/18 17:06	
Calcium	ug/L	ND	200	03/05/18 17:06	
Chromium	ug/L	ND	5.0	03/05/18 17:06	
Cobalt	ug/L	ND	5.0	03/05/18 17:06	
Copper	ug/L	ND	10.0	03/05/18 17:06	
Iron	ug/L	ND	50.0	03/05/18 17:06	
Lead	ug/L	ND	10.0	03/05/18 17:06	
Lithium	ug/L	ND	10.0	03/05/18 17:06	
Magnesium	ug/L	ND	50.0	03/05/18 17:06	
Manganese	ug/L	ND	5.0	03/05/18 17:06	
Molybdenum	ug/L	ND	20.0	03/05/18 17:06	
Nickel	ug/L	ND	5.0	03/05/18 17:06	
Selenium	ug/L	ND	15.0	03/05/18 17:06	
Silver	ug/L	ND	7.0	03/05/18 17:06	
Sodium	ug/L	ND	500	03/05/18 17:06	
Thallium	ug/L	ND	20.0	03/05/18 17:06	
Total Hardness by 2340B	ug/L	ND	500	03/05/18 17:06	
Zinc	ug/L	ND	50.0	03/05/18 17:06	

LABORATORY CONTROL SAMPLE: 2110808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10100	101	80-120	
Antimony	ug/L	1000	992	99	80-120	
Arsenic	ug/L	1000	979	98	80-120	
Barium	ug/L	1000	1020	102	80-120	
Beryllium	ug/L	1000	1040	104	80-120	
Boron	ug/L	1000	1020	102	80-120	
Cadmium	ug/L	1000	1010	101	80-120	
Calcium	ug/L	10000	10300	103	80-120	
Chromium	ug/L	1000	1040	104	80-120	
Cobalt	ug/L	1000	1050	105	80-120	
Copper	ug/L	1000	1040	104	80-120	
Iron	ug/L	10000	10400	104	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

LABORATORY CONTROL SAMPLE: 2110808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1000	1030	103	80-120	
Lithium	ug/L	1000	996	100	80-120	
Magnesium	ug/L	10000	10500	105	80-120	
Manganese	ug/L	1000	1050	105	80-120	
Molybdenum	ug/L	1000	1040	104	80-120	
Nickel	ug/L	1000	1020	102	80-120	
Selenium	ug/L	1000	1040	104	80-120	
Silver	ug/L	500	527	105	80-120	
Sodium	ug/L	10000	10100	101	80-120	
Thallium	ug/L	1000	1060	106	80-120	
Total Hardness by 2340B	ug/L		69200			
Zinc	ug/L	1000	1080	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110809 2110810

Parameter	Units	60264569001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	10000	10000	10100	10000	100	100	75-125	0	20	
Antimony	ug/L	ND	1000	1000	988	994	99	99	75-125	1	20	
Arsenic	ug/L	ND	1000	1000	994	999	99	100	75-125	1	20	
Barium	ug/L	62.8	1000	1000	1060	1060	100	100	75-125	0	20	
Beryllium	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	20	
Boron	ug/L	2090	1000	1000	3060	3070	97	98	75-125	0	20	
Cadmium	ug/L	ND	1000	1000	1000	1000	100	100	75-125	0	20	
Calcium	ug/L	158000	10000	10000	168000	168000	108	106	75-125	0	20	
Chromium	ug/L	ND	1000	1000	1020	1020	101	102	75-125	0	20	
Cobalt	ug/L	ND	1000	1000	991	990	99	99	75-125	0	20	
Copper	ug/L	ND	1000	1000	1010	1000	100	100	75-125	0	20	
Iron	ug/L	200	10000	10000	10300	10300	101	101	75-125	0	20	
Lead	ug/L	ND	1000	1000	976	982	98	98	75-125	1	20	
Lithium	ug/L	42.4	1000	1000	1060	1060	102	101	75-125	0	20	
Magnesium	ug/L	41700	10000	10000	51800	51800	101	101	75-125	0	20	
Manganese	ug/L	253	1000	1000	1250	1250	100	100	75-125	0	20	
Molybdenum	ug/L	ND	1000	1000	1020	1020	101	101	75-125	0	20	
Nickel	ug/L	5.3	1000	1000	967	967	96	96	75-125	0	20	
Selenium	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	27	
Silver	ug/L	ND	500	500	516	513	103	103	75-125	0	20	
Sodium	ug/L	70400	10000	10000	81200	81000	108	106	75-125	0	20	
Thallium	ug/L	ND	1000	1000	969	971	97	97	75-125	0	20	
Total Hardness by 2340B	ug/L	566000			634000	634000				0		
Zinc	ug/L	ND	1000	1000	1040	1040	103	104	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 515940 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

METHOD BLANK: 2111384 | Matrix: Water
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	03/01/18 15:34	

LABORATORY CONTROL SAMPLE: 2111385

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2111386

Parameter	Units	40165027001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	692	674	3	10	

SAMPLE DUPLICATE: 2111387

Parameter	Units	60264569001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	832	809	3	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 515882 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

SAMPLE DUPLICATE: 2111106

Parameter	Units	60264569001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	1	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 516426 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

METHOD BLANK: 2113746 Matrix: Water
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/06/18 10:11	
Fluoride	mg/L	ND	0.20	03/06/18 10:11	
Sulfate	mg/L	ND	1.0	03/06/18 10:11	

LABORATORY CONTROL SAMPLE: 2113747

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	98	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113748 2113749

Parameter	Units	60264569001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	81.1	50	50	133	134	103	105	80-120	1	15	
Fluoride	mg/L	0.47	2.5	2.5	2.9	2.9	95	97	80-120	2	15	
Sulfate	mg/L	247	100	100	339	344	92	97	80-120	1	15	

MATRIX SPIKE SAMPLE: 2113750

Parameter	Units	60265051003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	19.0	5	24.4	110	80-120	E
Fluoride	mg/L	0.088J	2.5	2.5	95	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 516494 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

METHOD BLANK: 2113929 Matrix: Water
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	03/08/18 10:15	

LABORATORY CONTROL SAMPLE: 2113930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	52.6	105	90-110	

MATRIX SPIKE SAMPLE: 2113932

Parameter	Units	60264772001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	144	50	157	27	90-110	E,M1

MATRIX SPIKE SAMPLE: 2114566

Parameter	Units	60264848002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	27.7	50	76.5	98	90-110	

SAMPLE DUPLICATE: 2113933

Parameter	Units	60264569001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 515545 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

METHOD BLANK: 2109839 | Matrix: Water
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	02/28/18 09:15	

LABORATORY CONTROL SAMPLE: 2109840

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.0	101	80-120	

MATRIX SPIKE SAMPLE: 2109841

Parameter	Units	60264569001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	ND	5	5.5	96	80-120	

SAMPLE DUPLICATE: 2109842

Parameter	Units	7582208002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	6.6	6.7	3	25	

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

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-1 **Lab ID: 60264569001** Collected: 02/23/18 09:26 Received: 02/24/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.343 ± 0.413 (0.631)** **C:NA T:84%**	pCi/L	03/19/18 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.622 ± 0.417 (0.802)** **C:75% T:87%**	pCi/L	03/19/18 15:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.965 ± 0.830 (1.43)**	pCi/L	03/21/18 13:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-8 **Lab ID: 60264569002** Collected: 02/23/18 11:40 Received: 02/24/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.656 ± 0.461 (0.222) C:NA T:76%**	pCi/L	03/19/18 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.499 ± 0.442 (0.894) C:77% T:79%**	pCi/L	03/19/18 15:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.16 ± 0.903 (1.12)**	pCi/L	03/21/18 13:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-2 **Lab ID: 60264569003** Collected: 02/22/18 15:40 Received: 02/24/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.59 ± 0.703 (0.205) C:NA T:87%**	pCi/L	03/19/18 20:20	13982-63-3	
Radium-228	EPA 904.0	**0.579 ± 0.389 (0.745) C:79% T:87%**	pCi/L	03/19/18 15:46	15262-20-1	
Total Radium	Total Radium Calculation	**2.17 ± 1.09 (0.950)**	pCi/L	03/21/18 13:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: DUP-1 **Lab ID: 60264569004** Collected: 02/22/18 15:40 Received: 02/24/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.786 ± 0.584 (0.730)** **C:NA T:83%**	pCi/L	03/19/18 20:20	13982-63-3	
Radium-228	EPA 904.0	**0.286 ± 0.469 (1.02)** **C:77% T:86%**	pCi/L	03/19/18 15:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.07 ± 1.05 (1.75)**	pCi/L	03/21/18 13:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-1 MS **Lab ID: 60264569005** Collected: 02/23/18 09:26 Received: 02/24/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**73.61 %REC ± NA (NA) C:NA T:NA**	pCi/L	03/19/18 20:20	13982-63-3	
Radium-228	EPA 904.0	**107.57 %REC ± NA (NA) C:NA T:NA**	pCi/L	03/19/18 15:46	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Sample: MW-1 MSD **Lab ID: 60264569006** Collected: 02/23/18 09:26 Received: 02/24/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**71.48 %REC 2.94 RPD ± NA (NA) C:NA T:NA**	pCi/L	03/19/18 21:00	13982-63-3	
Radium-228	EPA 904.0	**97.76 %REC 9.56 RPD ± NA (NA) C:NA T:NA**	pCi/L	03/19/18 15:46	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 290883 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004, 60264569005, 60264569006

METHOD BLANK: 1424445 Matrix: Water
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004, 60264569005, 60264569006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.205 ± 0.312 (0.502) C:NA T:91%	pCi/L	03/19/18 20:05	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

QC Batch: 290900 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004, 60264569005, 60264569006

METHOD BLANK: 1424479 Matrix: Water
Associated Lab Samples: 60264569001, 60264569002, 60264569003, 60264569004, 60264569005, 60264569006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0460 ± 0.365 (0.837) C:81% T:76%	pCi/L	03/19/18 15:45	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264569001	**MW-1**	EPA 3010	515795	EPA 6010	515833
60264569002	**MW-8**	EPA 3010	515795	EPA 6010	515833
60264569003	**MW-2**	EPA 3010	515795	EPA 6010	515833
60264569004	**DUP-1**	EPA 3010	515795	EPA 6010	515833
60264569001	**MW-1**	EPA 7470	516760	EPA 7470	516850
60264569002	**MW-8**	EPA 7470	516760	EPA 7470	516850
60264569003	**MW-2**	EPA 7470	516760	EPA 7470	516850
60264569004	**DUP-1**	EPA 7470	516760	EPA 7470	516850
60264569001	**MW-1**	EPA 903.1	290883		
60264569002	**MW-8**	EPA 903.1	290883		
60264569003	**MW-2**	EPA 903.1	290883		
60264569004	**DUP-1**	EPA 903.1	290883		
60264569005	**MW-1 MS**	EPA 903.1	290883		
60264569006	**MW-1 MSD**	EPA 903.1	290883		
60264569001	**MW-1**	EPA 904.0	290900		
60264569002	**MW-8**	EPA 904.0	290900		
60264569003	**MW-2**	EPA 904.0	290900		
60264569004	**DUP-1**	EPA 904.0	290900		
60264569005	**MW-1 MS**	EPA 904.0	290900		
60264569006	**MW-1 MSD**	EPA 904.0	290900		
60264569001	**MW-1**	Total Radium Calculation	292016		
60264569002	**MW-8**	Total Radium Calculation	292016		
60264569003	**MW-2**	Total Radium Calculation	292016		
60264569004	**DUP-1**	Total Radium Calculation	292016		
60264569001	**MW-1**	SM 2540C	515940		
60264569002	**MW-8**	SM 2540C	515940		
60264569003	**MW-2**	SM 2540C	515940		
60264569004	**DUP-1**	SM 2540C	515940		
60264569001	**MW-1**	SM 4500-H+B	515882		
60264569002	**MW-8**	SM 4500-H+B	515882		
60264569003	**MW-2**	SM 4500-H+B	515882		
60264569004	**DUP-1**	SM 4500-H+B	515882		
60264569001	**MW-1**	Trivalent Chromium Calculation	517327		
60264569002	**MW-8**	Trivalent Chromium Calculation	517327		
60264569003	**MW-2**	Trivalent Chromium Calculation	517327		
60264569004	**DUP-1**	Trivalent Chromium Calculation	517327		
60264569001	**MW-1**	EPA 300.0	516426		
60264569002	**MW-8**	EPA 300.0	516426		
60264569003	**MW-2**	EPA 300.0	516426		
60264569004	**DUP-1**	EPA 300.0	516426		
60264569001	**MW-1**	EPA 410.4	516494		
60264569002	**MW-8**	EPA 410.4	516494		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60264569

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60264569003	**MW-2**	EPA 410.4	516494		
60264569004	**DUP-1**	EPA 410.4	516494		
60264569001	**MW-1**	SM 5310C	515545		
60264569002	**MW-8**	SM 5310C	515545		
60264569003	**MW-2**	SM 5310C	515545		
60264569004	**DUP-1**	SM 5310C	515545		

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www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60264569

60264569

Client Name: Burns; MCD

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 +0.2) / T-239 (CF -0.1) **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 2.9/2.2 **Corr. Factor** CF +0.2 CF -0.1 **Corrected** 3.1/2.4

Date and initials of person examining contents: pr 2/24/18

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: JMS for CBK Date: 2/26/18

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax:
Requested Due Date:	

Section B
Required Project Information:

Report To:	Brian Weis
Copy To:	
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	colleen.clyne@pacelabs.com
Pace Profile #:	10263

Regulatory Agency	
State / Location	
	MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60264569 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	MW-1 4BP3U 3AG3S 3BP3N 3AG2S	W	G	23Feb18	9:26A			13.8°	8	3	2	3		6BP1N					✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		ar
2	MS	W	G	23Feb18	9:26A			13.8°	8	3	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		–
3	MSD	W	G	23Feb18	9:26A			13.8°	8	3	2	3							✓	✓	✓	✓	✓	–	✓		✓	✓	✓	✓		–
4	MW-8 3BP3U AG3S 6BP3N AG2S	W	G	23Feb18	11:40A			12.8°	8	3	2	3		2BP1N					✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		as
5	MW-2	W	G	22Feb18	3:40P			13.2°	8	3	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		ws
6	Dup-1	W	G	22Feb18	3:40P			13.2°	8	3	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		wy
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ESTS	23Feb18	1:00pm	[illegible]	23Feb18	1300				
	[illegible]	23Feb18	1520	[illegible]						
				[illegible]	2/24/18	0915	3.1	Y	Y	Y
							2.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	David Kilgore
SIGNATURE of SAMPLER:	David Kilgore
DATE Signed:	23Feb18

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ANALYTICAL REPORT

March 07, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L973536
Samples Received:	02/28/2018
Project Number:	60264569
Description:	More's Lake Columbia, MO
Report To:	Colleen Clyne 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-1 L973536-01 GW

Collected by	Collected date/time	Received date/time
	02/23/18 09:26	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 13:18	03/05/18 13:18	SJM

MW-8 L973536-02 GW

Collected by	Collected date/time	Received date/time
	02/23/18 11:40	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 13:30	03/05/18 13:30	SJM

MW-2 L973536-03 GW

Collected by	Collected date/time	Received date/time
	02/22/18 15:40	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 14:05	03/05/18 14:05	SJM

DUP-1 L973536-04 GW

Collected by	Collected date/time	Received date/time
	02/22/18 15:40	02/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1079799	1	03/05/18 14:14	03/05/18 14:14	SJM

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

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

Nancy F. McLain

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	23.9	J P1	12.0	100	1	03/05/2018 13:18	WG1079799

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	30.3	J	12.0	100	1	03/05/2018 13:30	WG1079799

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/05/2018 14:05	WG1079799

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/05/2018 14:14	WG1079799

Method Blank (MB)

(MB) R3290622-1 03/05/18 09:49

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L973536-01 Original Sample (OS) • Duplicate (DUP)

(OS) L973536-01 03/05/18 13:18 • (DUP) R3290622-5 03/05/18 15:38

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	23.9	42.4	1	55.7	J P1	20

L974355-04 Original Sample (OS) • Duplicate (DUP)

(OS) L974355-04 03/06/18 17:50 • (DUP) R3290622-6 03/06/18 20:47

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	128	217	1	51.4	P1	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3290622-2 03/05/18 10:18 • (LCSD) R3290622-3 03/05/18 10:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	199	194	99.6	97.2	85.0-115			2.47	20

L974355-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L974355-03 03/06/18 17:30 • (MS) R3290622-8 03/06/18 21:18 • (MSD) R3290622-10 03/06/18 21:36

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	261	390	568	42.8	102	1	80.0-120	J6	J3	37.2	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

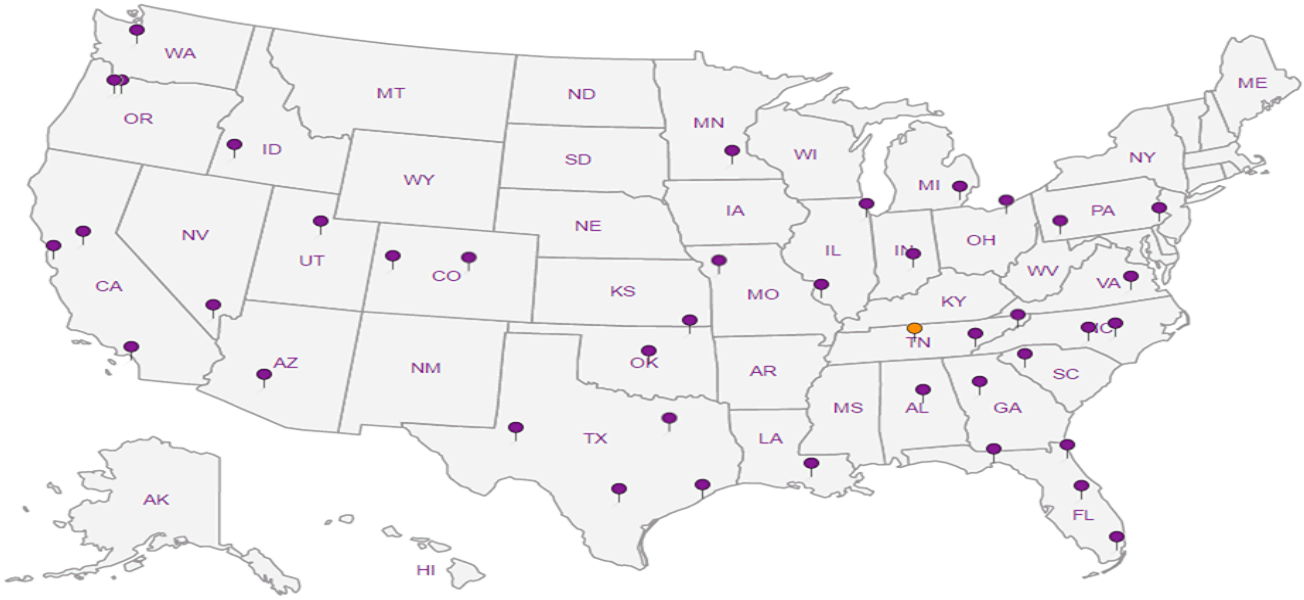
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 60264569 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 3/12/2018

Report / Invoice To

Colleen Clyne
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1406
Email: colleen.clyne@pacelabs.com

Subcontract To

ESC Lab Sciences
12065 Lebanon Rd
Mt Juliet, TN 37122

P.O. SUB-8914

State of Sample Origin: MO

L973536

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4						Requested Analysis: TOX												LAB USE ONLY
1	MW-1	2/23/2018 09:26	60264569001	Water	1						X												.01
2	MW-8	2/23/2018 11:40	60264569002	Water	1						X												-02
3	MW-2	2/22/2018 15:40	60264569003	Water	1						X												.03
4	DUP-1	2/22/2018 15:40	60264569004	Water	1						X												.04
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible] PASI	2/27/18 1300	[illegible] 835 0848	2/28/18
2				
3				

Comments

* Need Equis EDD

OK

Cooler Temperature on Receipt 23.6 °C **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

4122494440094

B200

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACELKS	SDG#	L973536	
Cooler Received/Opened On 02/28/18	Temperature:	2.3	°C
Received by : Ian White			
Signature: Ian			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 01 March 2018
Lab Number: L3880

Project: More's Lake

Location: Columbia, Missouri

Date Received: 20 February 2018

Sample No. / Description : 4621 / Surface Water Sample, 2/20/18, 7:50am

TEST RESULTS:

Parameter:	4621	**Units**	Detection	Method
Chromium, Hexavalent	**<0.005**	mg/l		3500-Cr B

Sample Collected by ES&S

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Brian Weis

email: Weis

38041

Engineering Surveys & Services

BY:

Derek J. Brester

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 05 March 2018
Lab Number: L3880

Project: More's Lake

Location: Columbia, Missouri

Date Received: 21 February 2018

Sample No. / Description :
4675 / Monitoring Well-PZ2, 2/21/18, 2:45pm
4676 / Monitoring Well-MW6, 2/21/18, 12:00pm
4677 / Monitoring Well-MW7, 2/21/18, 4:00pm

TEST RESULTS:

Parameter:	4675	4676	4677	Units	Detection	Method
Chromium, Hexavalent	**<0.005**	**<0.005**	**<0.005**	mg/l		3500-Cr B

Samples collected by ES&S

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Brian Weis

email: Weis

Engineering Surveys & Services

BY:

Derek J. Brester

38104

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 01 March 2018
Lab Number: L3880

Project: More's Lake

Location: Columbia, Missouri

Date Received: 22 February 2018

Sample No. / Description :
4697 / Monitoring Well, MW-5, 2/22/18, 9:30am
4698 / Monitoring Well, MW-4, 2/22/18, 11:25am
4699 / Monitoring Well, MW-3, 2/22/18, 12:50pm

TEST RESULTS:

Parameter:	4697	4698	4699	Units	Detection	Method
Chromium, Hexavalent	**<0.005**	**<0.005**	**<0.005**	mg/l		3500-Cr B

Samples collected by ES&S

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Brian Weis

email: Weis

38043

Engineering Surveys & Services

BY:

Derek J. Brester

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 05 March 2018
Lab Number: L3880

Project: More's Lake

Location: Columbia, Missouri

Date Received: 22 February 2018

Sample No. / Description :
4703 / Monitoring Well, MW-2, 2/22/18, 3:40pm
4704 / Monitoring Well, Dup-1,2/22/18, 3:40pm

TEST RESULTS:

Parameter:	4703	4704	**Units**	Detection	Method
Chromium, Hexavalent	**<0.005**	**<0.005**	mg/l		3500-Cr B

Samples collected by ES&S

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Brian Weis

email: Weis

38105

Engineering Surveys & Services

BY:

Derek J. Brester

ENGINEERING SURVEYS AND SERVICES
TESTING LABORATORIES
1113 Fay Street * Columbia, Missouri 65201 * (573) 449-2646
802 El Dorado Drive * Jefferson City, Missouri 65101 * (573) 636-3303
1775 West Main Street * Sedalia, Missouri 65301 * (660) 826-8618

Date: 05 March 2018
Lab Number: L3880

Project: More's Lake

Location: Columbia, Missouri

Date Received: 23 February 2018

Sample No. / Description :
4712 / Monitoring Well, MW-1, 2/23/18, 9:26am
4713 / Monitoring Well, MW-8, 2/23/18, 11:40am

TEST RESULTS:

Parameter:	4712	4713	Units	Detection	Method
Chromium, Hexavalent	**<0.005**	**<0.005**	mg/l		3500-Cr B

Samples Collected by ES&S

Method number from "Standard Methods for the Examination of Water & Wastewater", current edition, unless noted otherwise.

cc: Brian Weis

email: Weis

Engineering Surveys & Services

BY:

Derek J. Brester

38106

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

May 30, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory between April 25, 2018 and May 04, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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

CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New Jersey Certification #: FL022
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Wyoming Certification: FL NELAC Reciprocity
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

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Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60269085001	**MW-6**	Water	04/24/18 10:05	04/27/18 06:35
60269085002	**MW-7**	Water	04/24/18 11:55	04/27/18 06:35
60269085003	**PZ-2**	Water	04/24/18 13:45	04/27/18 06:35
60269085004	**MW-5**	Water	04/24/18 15:34	04/27/18 06:35
60269085005	**MW-4**	Water	04/25/18 08:50	04/27/18 06:35
60269085006	**MW-3**	Water	04/25/18 10:10	04/27/18 06:35
60269085007	**MW-2**	Water	04/25/18 11:45	04/27/18 06:35
60269085008	**DUP-1**	Water	04/25/18 11:45	04/27/18 06:35
60269085009	**MW-8**	Water	04/25/18 14:15	04/27/18 06:35
60269085010	**MW-1**	Water	04/26/18 09:20	04/27/18 06:35
60269085011	**SURFACE POND WATER**	Water	04/26/18 08:05	04/27/18 06:35
60269085012	**MW-1 (MS)**	Water	04/26/18 09:20	05/04/18 09:51
60269085013	**MW-1 (MSD)**	Water	04/26/18 09:20	05/04/18 09:51
60268889001	**MW-6**	Water	04/24/18 10:05	04/25/18 09:00
60268889002	**MW-7**	Water	04/24/18 11:55	04/25/18 09:00
60268889003	**PZ-2**	Water	04/24/18 13:45	04/25/18 09:00
60268889004	**MW-5**	Water	04/24/18 15:05	04/25/18 09:00
60269014001	**MW-4**	Water	04/25/18 08:50	04/26/18 09:05
60269014002	**MW-3**	Water	04/25/18 10:10	04/26/18 09:05
60269014003	**MW-2**	Water	04/25/18 11:45	04/26/18 09:05
60269014004	**DUP-1**	Water	04/25/18 11:45	04/26/18 09:05
60269014005	**MW-8**	Water	04/25/18 14:15	04/26/18 09:05

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Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60269085001	**MW-6**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085002	**MW-7**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085003	**PZ-2**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085004	**MW-5**	EPA 6010	TDS	23	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085005	**MW-4**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085006	**MW-3**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085007	**MW-2**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085008	**DUP-1**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085009	**MW-8**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
60269085010	**MW-1**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	OL	1	PASI-K
60269085011	**SURFACE POND WATER**	EPA 6010	TDS	23	PASI-K
		EPA 6020	KPP	1	PASI-O
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	MJK	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	OL	1	PASI-K
60269085012	**MW-1 (MS)**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60269085013	**MW-1 (MSD)**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60268889001	**MW-6**	EPA 7196	MJK	1	PASI-K
60268889002	**MW-7**	EPA 7196	MJK	1	PASI-K
60268889003	**PZ-2**	EPA 7196	MJK	1	PASI-K
60268889004	**MW-5**	EPA 7196	MJK	1	PASI-K
60269014001	**MW-4**	EPA 7196	MJK	1	PASI-K
60269014002	**MW-3**	EPA 7196	MJK	1	PASI-K
60269014003	**MW-2**	EPA 7196	MJK	1	PASI-K
60269014004	**DUP-1**	EPA 7196	MJK	1	PASI-K
60269014005	**MW-8**	EPA 7196	MJK	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 524481

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60269085010

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

- MS (Lab ID: 2147259)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
13 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
13 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-1 (Lab ID: 60269085008)
- MW-1 (Lab ID: 60269085010)
- MW-2 (Lab ID: 60269085007)
- MW-3 (Lab ID: 60269085006)
- MW-4 (Lab ID: 60269085005)
- MW-5 (Lab ID: 60269085004)
- MW-6 (Lab ID: 60269085001)
- MW-7 (Lab ID: 60269085002)
- MW-8 (Lab ID: 60269085009)
- PZ-2 (Lab ID: 60269085003)
- SURFACE POND WATER (Lab ID: 60269085011)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 525025

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60269080001,60269085010

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

- MS (Lab ID: 2149677)
  - Fluoride

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: May 30, 2018

General Information:
11 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H3: Sample was received or analysis requested beyond the recognized method holding time.
- MW-4 (Lab ID: 60269014001)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 523137

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60268889001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- MS (Lab ID: 2141623)
  - Chromium, Hexavalent

QC Batch: 523428

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60269085010

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- MS (Lab ID: 2143008)
  - Chromium, Hexavalent

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-6 **Lab ID: 60269085001** Collected: 04/24/18 10:05 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:19	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:19	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:19	7440-38-2	
Barium	**84.1**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:19	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:19	7440-41-7	
Boron	**94.1J**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:19	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:19	7440-43-9	
Calcium	**195000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:19	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:19	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:19	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:19	7440-50-8	
Iron	**112**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:19	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:19	7439-92-1	
Lithium	**91.3**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:19	7439-93-2	
Magnesium	**41200**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:19	7439-95-4	
Manganese	**673**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:19	7439-96-5	
Molybdenum	**3.0J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:19	7439-98-7	
Nickel	**8.7**	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:19	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:19	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:19	7440-22-4	
Sodium	**49200**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:19	7440-23-5	
Total Hardness by 2340B	**656000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:19		
Zinc	**4.3J**	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:19	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 03:19	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**841**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		04/30/18 09:56		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**23.8**	mg/L	2.0	0.92	2		05/11/18 08:44	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	0.063	1		05/09/18 15:02	16984-48-8	
Sulfate	**203**	mg/L	20.0	4.7	20		05/11/18 08:59	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-6 **Lab ID: 60269085001** Collected: 04/24/18 10:05 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		05/09/18 10:55		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.0**	mg/L	1.0	0.13	1		05/01/18 15:57	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-7 **Lab ID: 60269085002** Collected: 04/24/18 11:55 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**55.6J**	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:22	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:22	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:22	7440-38-2	
Barium	**82.3**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:22	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:22	7440-41-7	
Boron	**184**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:22	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:22	7440-43-9	
Calcium	**123000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:22	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:22	7440-47-3	
Cobalt	**1.7J**	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:22	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:22	7440-50-8	
Iron	**836**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:22	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:22	7439-92-1	
Lithium	**70.3**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:22	7439-93-2	
Magnesium	**29300**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:22	7439-95-4	
Manganese	**430**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:22	7439-96-5	
Molybdenum	**7.0J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:22	7439-98-7	
Nickel	**4.4J**	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:22	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:22	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:22	7440-22-4	
Sodium	**44400**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:22	7440-23-5	
Total Hardness by 2340B	**428000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:22		
Zinc	**603**	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:22	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 03:22	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**731**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		04/30/18 09:58		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**33.1**	mg/L	2.0	0.92	2		05/11/18 09:14	16887-00-6	
Fluoride	**0.52**	mg/L	0.20	0.063	1		05/09/18 15:17	16984-48-8	
Sulfate	**211**	mg/L	20.0	4.7	20		05/11/18 09:29	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-7 **Lab ID: 60269085002** Collected: 04/24/18 11:55 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**3.2J**	mg/L	10.0	3.1	1		05/09/18 10:56		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.4**	mg/L	1.0	0.13	1		05/01/18 16:10	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: PZ-2 **Lab ID: 60269085003** Collected: 04/24/18 13:45 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:31	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:31	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:31	7440-38-2	
Barium	**47.6**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:31	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:31	7440-41-7	
Boron	**622**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:31	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:31	7440-43-9	
Calcium	**219000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:31	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:31	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:31	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:31	7440-50-8	
Iron	**342**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:31	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:31	7439-92-1	
Lithium	**50.0**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:31	7439-93-2	
Magnesium	**43100**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:31	7439-95-4	
Manganese	**419**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:31	7439-96-5	
Molybdenum	**1.2J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:31	7439-98-7	
Nickel	**4.6J**	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:31	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:31	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:31	7440-22-4	
Sodium	**97900**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:31	7440-23-5	
Total Hardness by 2340B	**725000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:31		
Zinc	**6.4J**	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:31	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 03:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1120**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.10	1		04/30/18 10:01		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**118**	mg/L	10.0	4.6	10		05/11/18 09:44	16887-00-6	
Fluoride	**0.44**	mg/L	0.20	0.063	1		05/09/18 16:03	16984-48-8	
Sulfate	**317**	mg/L	50.0	11.8	50		05/11/18 10:28	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: PZ-2 **Lab ID: 60269085003** Collected: 04/24/18 13:45 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**7.7J**	mg/L	10.0	3.1	1		05/09/18 10:56		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.8**	mg/L	1.0	0.13	1		05/01/18 17:01	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-5 **Lab ID: 60269085004** Collected: 04/24/18 15:34 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:34	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:34	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:34	7440-38-2	
Barium	**215**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:34	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:34	7440-41-7	
Boron	**240**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:34	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:34	7440-43-9	
Calcium	**108000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:34	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:34	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:34	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:34	7440-50-8	
Iron	**69.8**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:34	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:34	7439-92-1	
Lithium	**64.2**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:34	7439-93-2	
Magnesium	**28100**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:34	7439-95-4	
Manganese	**56.3**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:34	7439-96-5	
Molybdenum	**7.2J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:34	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:34	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:34	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:34	7440-22-4	
Sodium	**87600**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:34	7440-23-5	
Total Hardness by 2340B	**385000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:34		
Zinc	ND	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:34	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 03:27	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**657**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.10	1		04/30/18 10:04		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**67.9**	mg/L	5.0	2.3	5		05/11/18 10:43	16887-00-6	
Fluoride	**0.54**	mg/L	0.20	0.063	1		05/09/18 16:18	16984-48-8	
Sulfate	**152**	mg/L	20.0	4.7	20		05/11/18 10:58	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-5 **Lab ID: 60269085004** Collected: 04/24/18 15:34 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		05/09/18 10:57		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.2**	mg/L	1.0	0.13	1		05/01/18 17:14	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-4 **Lab ID: 60269085005** Collected: 04/25/18 08:50 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:37	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:37	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:37	7440-38-2	
Barium	**90.0**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:37	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:37	7440-41-7	
Boron	**50.8J**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:37	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:37	7440-43-9	
Calcium	**122000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:37	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:37	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:37	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:37	7440-50-8	
Iron	**402**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:37	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:37	7439-92-1	
Lithium	**59.2**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:37	7439-93-2	
Magnesium	**39200**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:37	7439-95-4	
Manganese	**178**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:37	7439-96-5	
Molybdenum	**3.6J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:37	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:37	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:37	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:37	7440-22-4	
Sodium	**49000**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:37	7440-23-5	
Total Hardness by 2340B	**467000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:37		
Zinc	ND	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:37	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 03:30	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:35	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**600**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		04/30/18 10:08		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**26.4**	mg/L	2.0	0.92	2		05/11/18 11:13	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	0.063	1		05/09/18 16:33	16984-48-8	
Sulfate	**83.1**	mg/L	10.0	2.4	10		05/11/18 11:28	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-4 **Lab ID: 60269085005** Collected: 04/25/18 08:50 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		05/09/18 10:57		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.70J**	mg/L	1.0	0.13	1		05/01/18 17:26	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-3 **Lab ID: 60269085006** Collected: 04/25/18 10:10 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**28.2J**	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:40	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:40	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:40	7440-38-2	
Barium	**220**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:40	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:40	7440-41-7	
Boron	**64.8J**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:40	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:40	7440-43-9	
Calcium	**117000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:40	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:40	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:40	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:40	7440-50-8	
Iron	**149**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:40	7439-89-6	
Lead	**4.0J**	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:40	7439-92-1	
Lithium	**66.4**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:40	7439-93-2	
Magnesium	**40600**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:40	7439-95-4	
Manganese	**302**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:40	7439-96-5	
Molybdenum	**7.2J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:40	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:40	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:40	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:40	7440-22-4	
Sodium	**38100**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:40	7440-23-5	
Total Hardness by 2340B	**459000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:40		
Zinc	**4.1J**	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:40	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 03:33	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**533**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		04/30/18 10:12		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**8.1**	mg/L	1.0	0.46	1		05/09/18 16:48	16887-00-6	
Fluoride	**0.58**	mg/L	0.20	0.063	1		05/09/18 16:48	16984-48-8	
Sulfate	**43.9**	mg/L	5.0	1.2	5		05/11/18 11:43	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-3 **Lab ID: 60269085006** Collected: 04/25/18 10:10 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		05/10/18 09:47		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.93J**	mg/L	1.0	0.13	1		05/01/18 17:39	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-2 **Lab ID: 60269085007** Collected: 04/25/18 11:45 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:43	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:43	7440-36-0	
Arsenic	**5.8J**	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:43	7440-38-2	
Barium	**162**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:43	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:43	7440-41-7	
Boron	**89.1J**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:43	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:43	7440-43-9	
Calcium	**118000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:43	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:43	7440-47-3	
Cobalt	**1.0J**	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:43	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:43	7440-50-8	
Iron	**101**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:43	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:43	7439-92-1	
Lithium	**60.7**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:43	7439-93-2	
Magnesium	**42400**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:43	7439-95-4	
Manganese	**467**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:43	7439-96-5	
Molybdenum	**6.9J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:43	7439-98-7	
Nickel	**1.5J**	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:43	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:43	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:43	7440-22-4	
Sodium	**30500**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:43	7440-23-5	
Total Hardness by 2340B	**471000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:43		
Zinc	ND	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:43	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 03:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**521**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		05/01/18 10:22		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.5**	mg/L	1.0	0.46	1		05/09/18 17:04	16887-00-6	
Fluoride	**0.57**	mg/L	0.20	0.063	1		05/09/18 17:04	16984-48-8	
Sulfate	**56.6**	mg/L	5.0	1.2	5		05/11/18 12:28	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-2 **Lab ID: 60269085007** Collected: 04/25/18 11:45 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		05/10/18 09:47		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.83J**	mg/L	1.0	0.13	1		05/01/18 17:52	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: DUP-1 **Lab ID: 60269085008** Collected: 04/25/18 11:45 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:46	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:46	7440-36-0	
Arsenic	**5.5J**	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:46	7440-38-2	
Barium	**160**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:46	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:46	7440-41-7	
Boron	**89.2J**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:46	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:46	7440-43-9	
Calcium	**117000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:46	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:46	7440-47-3	
Cobalt	**1.1J**	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:46	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:46	7440-50-8	
Iron	**162**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:46	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:46	7439-92-1	
Lithium	**58.1**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:46	7439-93-2	
Magnesium	**42000**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:46	7439-95-4	
Manganese	**461**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:46	7439-96-5	
Molybdenum	**7.1J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:46	7439-98-7	
Nickel	**1.7J**	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:46	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:46	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:46	7440-22-4	
Sodium	**30200**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:46	7440-23-5	
Total Hardness by 2340B	**466000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:46		
Zinc	ND	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:46	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 03:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**541**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		05/01/18 10:23		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.5**	mg/L	1.0	0.46	1		05/09/18 17:19	16887-00-6	
Fluoride	**0.58**	mg/L	0.20	0.063	1		05/09/18 17:19	16984-48-8	
Sulfate	**56.6**	mg/L	5.0	1.2	5		05/11/18 12:43	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: DUP-1 **Lab ID: 60269085008** Collected: 04/25/18 11:45 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		05/10/18 09:47		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.81J**	mg/L	1.0	0.13	1		05/01/18 18:05	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-8 **Lab ID: 60269085009** Collected: 04/25/18 14:15 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:48	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:48	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:48	7440-38-2	
Barium	**21.4**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:48	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:48	7440-41-7	
Boron	**308**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:48	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:48	7440-43-9	
Calcium	**288000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:48	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:48	7440-47-3	
Cobalt	**1.1J**	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:48	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:48	7440-50-8	
Iron	**925**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:48	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:48	7439-92-1	
Lithium	**80.7**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:48	7439-93-2	
Magnesium	**42700**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:48	7439-95-4	
Manganese	**1220**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:48	7439-96-5	
Molybdenum	**1.2J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:48	7439-98-7	
Nickel	**5.4**	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:48	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:48	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:48	7440-22-4	
Sodium	**76300**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:48	7440-23-5	
Total Hardness by 2340B	**894000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:48		
Zinc	ND	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:48	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 12:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1570**	mg/L	5.0	5.0	1		05/01/18 17:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		05/01/18 10:27		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.9**	mg/L	1.0	0.46	1		05/09/18 17:34	16887-00-6	
Fluoride	**0.21**	mg/L	0.20	0.063	1		05/09/18 17:34	16984-48-8	
Sulfate	**174**	mg/L	20.0	4.7	20		05/11/18 08:38	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-8 **Lab ID: 60269085009** Collected: 04/25/18 14:15 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		05/10/18 09:48		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.86J**	mg/L	1.0	0.13	1		05/01/18 18:18	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-1 **Lab ID: 60269085010** Collected: 04/26/18 09:20 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 15:52	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 15:52	7440-36-0	
Arsenic	**5.0J**	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 15:52	7440-38-2	
Barium	**67.3**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 15:52	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 15:52	7440-41-7	
Boron	**2150**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 15:52	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 15:52	7440-43-9	
Calcium	**164000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 15:52	7440-70-2	M1
Chromium	ND	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 15:52	7440-47-3	
Cobalt	**1.2J**	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 15:52	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 15:52	7440-50-8	
Iron	**163**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 15:52	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 15:52	7439-92-1	
Lithium	**74.9**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 15:52	7439-93-2	
Magnesium	**42800**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 15:52	7439-95-4	
Manganese	**266**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 15:52	7439-96-5	
Molybdenum	**4.6J**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 15:52	7439-98-7	
Nickel	**5.4**	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 15:52	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 15:52	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 15:52	7440-22-4	
Sodium	**73000**	ug/L	500	157	1	05/04/18 13:15	05/09/18 15:52	7440-23-5	
Total Hardness by 2340B	**585000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 15:52		
Zinc	ND	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 15:52	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 12:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**811**	mg/L	5.0	5.0	1		05/03/18 07:16		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.10	1		05/01/18 10:28		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**47.3**	mg/L	5.0	2.3	5		05/11/18 08:51	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	0.063	1		05/09/18 17:49	16984-48-8	
Sulfate	**662**	mg/L	50.0	11.8	50		05/11/18 09:33	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-1 **Lab ID: 60269085010** Collected: 04/26/18 09:20 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		05/10/18 09:48		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.47J**	mg/L	1.0	0.13	1		05/01/18 18:30	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/27/18 07:33	18540-29-9	M1

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: SURFACE POND WATER **Lab ID: 60269085011** Collected: 04/26/18 08:05 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**6260**	ug/L	75.0	21.1	1	05/04/18 13:15	05/09/18 16:06	7429-90-5	
Antimony	**7.1J**	ug/L	15.0	6.5	1	05/04/18 13:15	05/09/18 16:06	7440-36-0	
Arsenic	**33.6**	ug/L	10.0	4.9	1	05/04/18 13:15	05/09/18 16:06	7440-38-2	
Barium	**256**	ug/L	5.0	1.5	1	05/04/18 13:15	05/09/18 16:06	7440-39-3	
Beryllium	**0.76J**	ug/L	1.0	0.16	1	05/04/18 13:15	05/09/18 16:06	7440-41-7	
Boron	**5000**	ug/L	100	12.5	1	05/04/18 13:15	05/09/18 16:06	7440-42-8	
Cadmium	**2.0J**	ug/L	5.0	0.45	1	05/04/18 13:15	05/09/18 16:06	7440-43-9	
Calcium	**247000**	ug/L	200	53.5	1	05/04/18 13:15	05/09/18 16:06	7440-70-2	
Chromium	**61.3**	ug/L	5.0	1.1	1	05/04/18 13:15	05/09/18 16:06	7440-47-3	
Cobalt	**10.7**	ug/L	5.0	0.87	1	05/04/18 13:15	05/09/18 16:06	7440-48-4	
Copper	**36.8**	ug/L	10.0	4.5	1	05/04/18 13:15	05/09/18 16:06	7440-50-8	
Iron	**6800**	ug/L	50.0	6.1	1	05/04/18 13:15	05/09/18 16:06	7439-89-6	
Lead	**48.0**	ug/L	10.0	3.0	1	05/04/18 13:15	05/09/18 16:06	7439-92-1	
Lithium	**204**	ug/L	10.0	4.6	1	05/04/18 13:15	05/09/18 16:06	7439-93-2	
Magnesium	**71100**	ug/L	50.0	14.0	1	05/04/18 13:15	05/09/18 16:06	7439-95-4	
Manganese	**2030**	ug/L	5.0	0.73	1	05/04/18 13:15	05/09/18 16:06	7439-96-5	
Molybdenum	**316**	ug/L	20.0	0.90	1	05/04/18 13:15	05/09/18 16:06	7439-98-7	
Nickel	**20.5**	ug/L	5.0	1.4	1	05/04/18 13:15	05/09/18 16:06	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	05/04/18 13:15	05/09/18 16:06	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	05/04/18 13:15	05/09/18 16:06	7440-22-4	
Sodium	**287000**	ug/L	500	157	1	05/04/18 13:15	05/09/18 16:06	7440-23-5	
Total Hardness by 2340B	**910000**	ug/L	500	500	1	05/04/18 13:15	05/09/18 16:06		
Zinc	**199**	ug/L	50.0	3.5	1	05/04/18 13:15	05/09/18 16:06	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	mg/L	0.0010	0.00050	1	05/21/18 13:39	05/23/18 12:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	05/10/18 16:44	05/10/18 10:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**2540**	mg/L	5.0	5.0	1		05/03/18 07:16		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.7**	Std. Units	0.10	0.10	1		05/01/18 10:31		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	**0.061**	mg/L	0.010	0.010	1		05/11/18 11:59	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**439**	mg/L	50.0	23.1	50		05/11/18 10:41	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	0.063	1		05/09/18 18:20	16984-48-8	
Sulfate	**707**	mg/L	50.0	11.8	50		05/11/18 10:41	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: SURFACE POND WATER **Lab ID: 60269085011** Collected: 04/26/18 08:05 Received: 04/27/18 06:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**88.2**	mg/L	10.0	3.1	1		05/10/18 09:49		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.9**	mg/L	1.0	0.13	1		05/01/18 18:56	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/27/18 07:32	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-6 **Lab ID: 60268889001** Collected: 04/24/18 10:05 Received: 04/25/18 09:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/25/18 09:47	18540-29-9	M1

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-7 **Lab ID: 60268889002** Collected: 04/24/18 11:55 Received: 04/25/18 09:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/25/18 09:51	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: PZ-2 **Lab ID: 60268889003** Collected: 04/24/18 13:45 Received: 04/25/18 09:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/25/18 09:52	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-5 **Lab ID: 60268889004** Collected: 04/24/18 15:05 Received: 04/25/18 09:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/25/18 09:53	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-4 **Lab ID: 60269014001** Collected: 04/25/18 08:50 Received: 04/26/18 09:05 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/26/18 09:55	18540-29-9	H3

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-3 **Lab ID: 60269014002** Collected: 04/25/18 10:10 Received: 04/26/18 09:05 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0030J**	mg/L	0.010	0.0022	1		04/26/18 09:55	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-2 **Lab ID: 60269014003** Collected: 04/25/18 11:45 Received: 04/26/18 09:05 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/26/18 09:56	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: DUP-1 **Lab ID: 60269014004** Collected: 04/25/18 11:45 Received: 04/26/18 09:05 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		04/26/18 09:56	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-8 **Lab ID: 60269014005** Collected: 04/25/18 14:15 Received: 04/26/18 09:05 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0040J**	mg/L	0.010	0.0022	1		04/26/18 09:56	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 525090 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

METHOD BLANK: 2149848 | Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.090	05/10/18 10:07	

LABORATORY CONTROL SAMPLE: 2149849

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2149850 2149851

Parameter	Units	60269085010 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	5.4	5.1	108	102	75-125	6	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 524481 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

METHOD BLANK: 2147257 | Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	21.1	05/09/18 15:16	
Antimony	ug/L	ND	15.0	6.5	05/09/18 15:16	
Arsenic	ug/L	ND	10.0	4.9	05/09/18 15:16	
Barium	ug/L	ND	5.0	1.5	05/09/18 15:16	
Beryllium	ug/L	ND	1.0	0.16	05/09/18 15:16	
Boron	ug/L	ND	100	12.5	05/09/18 15:16	
Cadmium	ug/L	ND	5.0	0.45	05/09/18 15:16	
Calcium	ug/L	ND	200	53.5	05/09/18 15:16	
Chromium	ug/L	ND	5.0	1.1	05/09/18 15:16	
Cobalt	ug/L	ND	5.0	0.87	05/09/18 15:16	
Copper	ug/L	ND	10.0	4.5	05/09/18 15:16	
Iron	ug/L	ND	50.0	6.1	05/09/18 15:16	
Lead	ug/L	ND	10.0	3.0	05/09/18 15:16	
Lithium	ug/L	ND	10.0	4.6	05/09/18 15:16	
Magnesium	ug/L	ND	50.0	14.0	05/09/18 15:16	
Manganese	ug/L	ND	5.0	0.73	05/09/18 15:16	
Molybdenum	ug/L	ND	20.0	0.90	05/09/18 15:16	
Nickel	ug/L	ND	5.0	1.4	05/09/18 15:16	
Selenium	ug/L	ND	15.0	6.1	05/09/18 15:16	
Silver	ug/L	ND	7.0	2.0	05/09/18 15:16	
Sodium	ug/L	245J	500	157	05/09/18 15:16	
Total Hardness by 2340B	ug/L	ND	500	500	05/09/18 15:16	
Zinc	ug/L	ND	50.0	3.5	05/09/18 15:16	

LABORATORY CONTROL SAMPLE: 2147258

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10400	104	80-120	
Antimony	ug/L	1000	1030	103	80-120	
Arsenic	ug/L	1000	1010	101	80-120	
Barium	ug/L	1000	1050	105	80-120	
Beryllium	ug/L	1000	1060	106	80-120	
Boron	ug/L	1000	1020	102	80-120	
Cadmium	ug/L	1000	1040	104	80-120	
Calcium	ug/L	10000	10500	105	80-120	
Chromium	ug/L	1000	1040	104	80-120	
Cobalt	ug/L	1000	1070	107	80-120	
Copper	ug/L	1000	1040	104	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

LABORATORY CONTROL SAMPLE: 2147258

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	10500	105	80-120	
Lead	ug/L	1000	1060	106	80-120	
Lithium	ug/L	1000	1030	103	80-120	
Magnesium	ug/L	10000	10500	105	80-120	
Manganese	ug/L	1000	1060	106	80-120	
Molybdenum	ug/L	1000	1040	104	80-120	
Nickel	ug/L	1000	1040	104	80-120	
Selenium	ug/L	1000	1070	107	80-120	
Silver	ug/L	500	533	107	80-120	
Sodium	ug/L	10000	10500	105	80-120	
Total Hardness by 2340B	ug/L		69700			
Zinc	ug/L	1000	1060	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2147259 2147260

Parameter	Units	60269085010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	10000	10000	10300	10400	103	104	75-125	0	20	
Antimony	ug/L	ND	1000	1000	1040	1040	104	104	75-125	0	20	
Arsenic	ug/L	5.0J	1000	1000	1040	1030	104	103	75-125	1	20	
Barium	ug/L	67.3	1000	1000	1100	1100	103	103	75-125	0	20	
Beryllium	ug/L	ND	1000	1000	1040	1040	104	104	75-125	0	20	
Boron	ug/L	2150	1000	1000	3140	3220	99	106	75-125	2	20	
Cadmium	ug/L	ND	1000	1000	1040	1040	104	104	75-125	0	20	
Calcium	ug/L	164000	10000	10000	171000	176000	71	118	75-125	3	20	M1
Chromium	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	20	
Cobalt	ug/L	1.2J	1000	1000	1020	1020	102	102	75-125	0	20	
Copper	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	20	
Iron	ug/L	163	10000	10000	10400	10400	102	102	75-125	0	20	
Lead	ug/L	ND	1000	1000	1020	1010	101	101	75-125	0	20	
Lithium	ug/L	74.9	1000	1000	1090	1100	102	103	75-125	1	20	
Magnesium	ug/L	42800	10000	10000	52600	53800	97	109	75-125	2	20	
Manganese	ug/L	266	1000	1000	1290	1300	103	103	75-125	1	20	
Molybdenum	ug/L	4.6J	1000	1000	1040	1040	104	104	75-125	0	20	
Nickel	ug/L	5.4	1000	1000	1000	1000	100	100	75-125	0	20	
Selenium	ug/L	ND	1000	1000	1070	1060	107	106	75-125	0	20	
Silver	ug/L	ND	500	500	530	531	106	106	75-125	0	20	
Sodium	ug/L	73000	10000	10000	81600	83900	86	109	75-125	3	20	
Total Hardness by 2340B	ug/L	585000			643000	660000				3		
Zinc	ug/L	ND	1000	1000	1040	1040	104	103	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 448922 | Analysis Method: EPA 6020
QC Batch Method: EPA 3010 | Analysis Description: 6020 MET
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

METHOD BLANK: 2433290 | Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Thallium	mg/L	ND	0.0010	0.00050	05/23/18 03:13	

LABORATORY CONTROL SAMPLE: 2433291

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Thallium	mg/L	.05	0.055	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2433292 2433293

Parameter	Units	60269085001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Thallium	mg/L	ND	.05	.05	0.052	0.050	103	100	75-125	3	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 524055 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009

METHOD BLANK: 2145315 | Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	05/01/18 17:25	

LABORATORY CONTROL SAMPLE: 2145316

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2145317

Parameter	Units	60269085001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	841	813	3	10	

SAMPLE DUPLICATE: 2145318

Parameter	Units	60269156001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	131	138	5	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 524125 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60269085010, 60269085011

METHOD BLANK: 2145622 | Matrix: Water
Associated Lab Samples: 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	05/03/18 07:16	

LABORATORY CONTROL SAMPLE: 2145623

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1100	110	80-120	

SAMPLE DUPLICATE: 2145624

Parameter	Units	60269085010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	811	811	0	10	

SAMPLE DUPLICATE: 2145625

Parameter	Units	60269109008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	178	176	1	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 523671 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006

SAMPLE DUPLICATE: 2144202

Parameter	Units	60269174001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.0	8.0	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 523766 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

SAMPLE DUPLICATE: 2144510

Parameter	Units	60269085010 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	1	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 525025 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

METHOD BLANK: 2149675 | Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	05/09/18 12:20	
Fluoride	mg/L	ND	0.20	0.063	05/09/18 12:20	

LABORATORY CONTROL SAMPLE: 2149676

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2149677 2149678

Parameter	Units	60269080001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.2	5	5	7.9	7.4	114	104	80-120	6	15	
Fluoride	mg/L	0.27	2.5	2.5	3.4	3.2	126	116	80-120	8	15	M1

MATRIX SPIKE SAMPLE: 2149679

Parameter	Units	60269085010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.46	2.5	3.2	109	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 525209 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008

METHOD BLANK: 2150284 | Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	05/11/18 08:14	
Sulfate	mg/L	ND	1.0	0.24	05/11/18 08:14	

LABORATORY CONTROL SAMPLE: 2150285

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2150286 2150287

Parameter	Units	60269085006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	43.9	25	25	68.5	67.4	98	94	80-120	2	15	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 525210 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60269085009, 60269085010, 60269085011

METHOD BLANK: 2150289 | Matrix: Water
Associated Lab Samples: 60269085009, 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	05/11/18 08:10	
Sulfate	mg/L	ND	1.0	0.24	05/11/18 08:10	

LABORATORY CONTROL SAMPLE: 2150290

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2150291 2150292

Parameter	Units	60269085010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	47.3	25	25	72.9	72.9	102	103	80-120	0	15	
Sulfate	mg/L	662	250	250	918	908	102	98	80-120	1	15	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 524946 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005

METHOD BLANK: 2149394 Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.1	05/09/18 10:54	

LABORATORY CONTROL SAMPLE: 2149395

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	49.2	98	90-110	

MATRIX SPIKE SAMPLE: 2149396

Parameter	Units	60269601001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	52.2	104	90-110	

SAMPLE DUPLICATE: 2149397

Parameter	Units	60269085002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	3.2J	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 525024 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

METHOD BLANK: 2149670 | Matrix: Water
Associated Lab Samples: 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.1	05/10/18 09:46	

LABORATORY CONTROL SAMPLE: 2149671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	50.3	101	90-110	

MATRIX SPIKE SAMPLE: 2149672

Parameter	Units	60269085006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	55.1	105	90-110	

MATRIX SPIKE SAMPLE: 2149674

Parameter	Units	60269335002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	42.2	50	94.9	105	90-110	

SAMPLE DUPLICATE: 2149673

Parameter	Units	60269085010 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 524004 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

METHOD BLANK: 2145112 | Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.13	05/01/18 14:28	

LABORATORY CONTROL SAMPLE: 2145113

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.2	105	80-120	

MATRIX SPIKE SAMPLE: 2145114

Parameter	Units	60269085010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	0.47J	5	4.8	87	80-120	

SAMPLE DUPLICATE: 2145115

Parameter	Units	60269085011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	1.9	1.9	1	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 523137 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60268889001, 60268889002, 60268889003, 60268889004

METHOD BLANK: 2141621 | Matrix: Water
Associated Lab Samples: 60268889001, 60268889002, 60268889003, 60268889004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0022	04/25/18 09:46	

LABORATORY CONTROL SAMPLE: 2141622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.095	95	90-110	

MATRIX SPIKE SAMPLE: 2141623

Parameter	Units	60268889001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.083	81	85-115	M1

SAMPLE DUPLICATE: 2141624

Parameter	Units	60268889002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 523308 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60269014001, 60269014002, 60269014003, 60269014004, 60269014005

METHOD BLANK: 2142392 | Matrix: Water
Associated Lab Samples: 60269014001, 60269014002, 60269014003, 60269014004, 60269014005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0022	04/26/18 09:53	

LABORATORY CONTROL SAMPLE: 2142393

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.098	98	90-110	

MATRIX SPIKE SAMPLE: 2142394

Parameter	Units	60269014001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.092	92	85-115	H3

SAMPLE DUPLICATE: 2142395

Parameter	Units	60269014002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	0.0030J	ND		20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 523428 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60269085010, 60269085011

METHOD BLANK: 2143005 | Matrix: Water
Associated Lab Samples: 60269085010, 60269085011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0022	04/27/18 07:27	

LABORATORY CONTROL SAMPLE: 2143006

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.090	90	90-110	

MATRIX SPIKE SAMPLE: 2143008

Parameter	Units	60269085010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.052	52	85-115	M1

SAMPLE DUPLICATE: 2143007

Parameter	Units	60269085011 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-6 **Lab ID: 60269085001** Collected: 04/24/18 10:05 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.917 ± 0.546 (0.519)** **C:NA T:80%**	pCi/L	05/22/18 21:03	13982-63-3	
Radium-228	EPA 904.0	**0.801 ± 0.502 (0.968)** **C:81% T:84%**	pCi/L	05/21/18 15:51	15262-20-1	
Total Radium	Total Radium Calculation	**1.72 ± 1.05 (1.49)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-7 **Lab ID: 60269085002** Collected: 04/24/18 11:55 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.286 ± 0.398 (0.664)** **C:NA T:88%**	pCi/L	05/22/18 20:47	13982-63-3	
Radium-228	EPA 904.0	**0.839 ± 0.450 (0.819)** **C:80% T:88%**	pCi/L	05/21/18 15:51	15262-20-1	
Total Radium	Total Radium Calculation	**1.13 ± 0.848 (1.48)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: PZ-2 **Lab ID: 60269085003** Collected: 04/24/18 13:45 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.073 ± 0.331 (0.781) C:NA T:81%**	pCi/L	05/22/18 20:47	13982-63-3	
Radium-228	EPA 904.0	**-0.330 ± 0.412 (0.990) C:83% T:88%**	pCi/L	05/21/18 15:51	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.743 (1.77)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-5 **Lab ID: 60269085004** Collected: 04/24/18 15:34 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.483 ± 0.362 (0.187) C:NA T:83%**	pCi/L	05/22/18 20:47	13982-63-3	
Radium-228	EPA 904.0	**0.698 ± 0.463 (0.906) C:83% T:90%**	pCi/L	05/21/18 15:51	15262-20-1	
Total Radium	Total Radium Calculation	**1.18 ± 0.825 (1.09)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-4 **Lab ID: 60269085005** Collected: 04/25/18 08:50 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.593 ± 0.416 (0.201) C:NA T:82%**	pCi/L	05/22/18 21:03	13982-63-3	
Radium-228	EPA 904.0	**-0.415 ± 0.435 (1.05) C:85% T:83%**	pCi/L	05/21/18 15:51	15262-20-1	
Total Radium	Total Radium Calculation	**0.593 ± 0.851 (1.25)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-3 **Lab ID: 60269085006** Collected: 04/25/18 10:10 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.267 ± 0.415 (0.719)** **C:NA T:88%**	pCi/L	05/22/18 21:03	13982-63-3	
Radium-228	EPA 904.0	**0.441 ± 0.581 (1.24)** **C:80% T:85%**	pCi/L	05/21/18 18:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.708 ± 0.996 (1.96)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-2 **Lab ID: 60269085007** Collected: 04/25/18 11:45 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.437 ± 0.409 (0.580)** **C:NA T:90%**	pCi/L	05/22/18 21:03	13982-63-3	
Radium-228	EPA 904.0	**0.0917 ± 0.446 (1.01)** **C:87% T:84%**	pCi/L	05/21/18 18:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.529 ± 0.855 (1.59)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: DUP-1 **Lab ID: 60269085008** Collected: 04/25/18 11:45 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.851 ± 0.542 (0.654)** **C:NA T:91%**	pCi/L	05/22/18 21:13	13982-63-3	
Radium-228	EPA 904.0	**0.212 ± 0.519 (1.16)** **C:82% T:85%**	pCi/L	05/21/18 19:14	15262-20-1	
Total Radium	Total Radium Calculation	**1.06 ± 1.06 (1.81)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-8 **Lab ID: 60269085009** Collected: 04/25/18 14:15 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.289 ± 0.348 (0.532)** **C:NA T:78%**	pCi/L	05/22/18 21:03	13982-63-3	
Radium-228	EPA 904.0	**0.453 ± 0.523 (1.10)** **C:78% T:87%**	pCi/L	05/21/18 19:14	15262-20-1	
Total Radium	Total Radium Calculation	**0.742 ± 0.871 (1.63)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-1 **Lab ID: 60269085010** Collected: 04/26/18 09:20 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.204 ± 0.311 (0.500)** **C:NA T:87%**	pCi/L	05/22/18 21:15	13982-63-3	
Radium-228	EPA 904.0	**0.812 ± 0.419 (0.742)** **C:79% T:87%**	pCi/L	05/21/18 15:44	15262-20-1	
Total Radium	Total Radium Calculation	**1.02 ± 0.730 (1.24)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: SURFACE POND WATER **Lab ID: 60269085011** Collected: 04/26/18 08:05 Received: 04/27/18 06:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.717 ± 0.568 (0.772)** **C:NA T:80%**	pCi/L	05/22/18 21:09	13982-63-3	
Radium-228	EPA 904.0	**1.28 ± 0.613 (1.06)** **C:74% T:70%**	pCi/L	05/21/18 15:44	15262-20-1	
Total Radium	Total Radium Calculation	**2.00 ± 1.18 (1.83)**	pCi/L	05/24/18 17:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-1 (MS) **Lab ID: 60269085012** Collected: 04/26/18 09:20 Received: 05/04/18 09:51 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**100.50 %REC ± NA (NA) C:NA T:NA**	pCi/L	05/22/18 21:15	13982-63-3	
Radium-228	EPA 904.0	**90.43 %REC ± NA (NA) C:NA T:NA**	pCi/L	05/21/18 15:45	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Sample: MW-1 (MSD) **Lab ID: 60269085013** Collected: 04/26/18 09:20 Received: 05/04/18 09:51 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**117.84 %REC 15.89 RPD ± NA (NA) C:NA T:NA**	pCi/L	05/22/18 21:16	13982-63-3	
Radium-228	EPA 904.0	**96.80 %REC 6.81 RPD ± NA (NA) C:NA T:NA**	pCi/L	05/21/18 15:45	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 297316 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011, 60269085012, 60269085013

METHOD BLANK: 1455495 Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011, 60269085012, 60269085013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.512 ± 0.376 (0.735) C:82% T:84%	pCi/L	05/21/18 15:44	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

QC Batch: 297295 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011, 60269085012, 60269085013

METHOD BLANK: 1455469 Matrix: Water
Associated Lab Samples: 60269085001, 60269085002, 60269085003, 60269085004, 60269085005, 60269085006, 60269085007, 60269085008, 60269085009, 60269085010, 60269085011, 60269085012, 60269085013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.134 ± 0.322 (0.623) C:NA T:83%	pCi/L	05/22/18 20:47	

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.

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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

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-K	Pace Analytical Services - Kansas City
PASI-O	Pace Analytical Services - Ormond Beach
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

H3	Sample was received or analysis requested beyond the recognized method holding time.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60269085001	**MW-6**	EPA 3010	524481	EPA 6010	524538
60269085002	**MW-7**	EPA 3010	524481	EPA 6010	524538
60269085003	**PZ-2**	EPA 3010	524481	EPA 6010	524538
60269085004	**MW-5**	EPA 3010	524481	EPA 6010	524538
60269085005	**MW-4**	EPA 3010	524481	EPA 6010	524538
60269085006	**MW-3**	EPA 3010	524481	EPA 6010	524538
60269085007	**MW-2**	EPA 3010	524481	EPA 6010	524538
60269085008	**DUP-1**	EPA 3010	524481	EPA 6010	524538
60269085009	**MW-8**	EPA 3010	524481	EPA 6010	524538
60269085010	**MW-1**	EPA 3010	524481	EPA 6010	524538
60269085011	**SURFACE POND WATER**	EPA 3010	524481	EPA 6010	524538
60269085001	**MW-6**	EPA 3010	448922	EPA 6020	449000
60269085002	**MW-7**	EPA 3010	448922	EPA 6020	449000
60269085003	**PZ-2**	EPA 3010	448922	EPA 6020	449000
60269085004	**MW-5**	EPA 3010	448922	EPA 6020	449000
60269085005	**MW-4**	EPA 3010	448922	EPA 6020	449000
60269085006	**MW-3**	EPA 3010	448922	EPA 6020	449000
60269085007	**MW-2**	EPA 3010	448922	EPA 6020	449000
60269085008	**DUP-1**	EPA 3010	448922	EPA 6020	449000
60269085009	**MW-8**	EPA 3010	448922	EPA 6020	449000
60269085010	**MW-1**	EPA 3010	448922	EPA 6020	449000
60269085011	**SURFACE POND WATER**	EPA 3010	448922	EPA 6020	449000
60269085001	**MW-6**	EPA 7470	525090	EPA 7470	525229
60269085002	**MW-7**	EPA 7470	525090	EPA 7470	525229
60269085003	**PZ-2**	EPA 7470	525090	EPA 7470	525229
60269085004	**MW-5**	EPA 7470	525090	EPA 7470	525229
60269085005	**MW-4**	EPA 7470	525090	EPA 7470	525229
60269085006	**MW-3**	EPA 7470	525090	EPA 7470	525229
60269085007	**MW-2**	EPA 7470	525090	EPA 7470	525229
60269085008	**DUP-1**	EPA 7470	525090	EPA 7470	525229
60269085009	**MW-8**	EPA 7470	525090	EPA 7470	525229
60269085010	**MW-1**	EPA 7470	525090	EPA 7470	525229
60269085011	**SURFACE POND WATER**	EPA 7470	525090	EPA 7470	525229
60269085001	**MW-6**	EPA 903.1	297295		
60269085002	**MW-7**	EPA 903.1	297295		
60269085003	**PZ-2**	EPA 903.1	297295		
60269085004	**MW-5**	EPA 903.1	297295		
60269085005	**MW-4**	EPA 903.1	297295		
60269085006	**MW-3**	EPA 903.1	297295		
60269085007	**MW-2**	EPA 903.1	297295		
60269085008	**DUP-1**	EPA 903.1	297295		
60269085009	**MW-8**	EPA 903.1	297295		
60269085010	**MW-1**	EPA 903.1	297295		
60269085011	**SURFACE POND WATER**	EPA 903.1	297295		
60269085012	**MW-1 (MS)**	EPA 903.1	297295		
60269085013	**MW-1 (MSD)**	EPA 903.1	297295		
60269085001	**MW-6**	EPA 904.0	297316		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60269085002	**MW-7**	EPA 904.0	297316		
60269085003	**PZ-2**	EPA 904.0	297316		
60269085004	**MW-5**	EPA 904.0	297316		
60269085005	**MW-4**	EPA 904.0	297316		
60269085006	**MW-3**	EPA 904.0	297316		
60269085007	**MW-2**	EPA 904.0	297316		
60269085008	**DUP-1**	EPA 904.0	297316		
60269085009	**MW-8**	EPA 904.0	297316		
60269085010	**MW-1**	EPA 904.0	297316		
60269085011	**SURFACE POND WATER**	EPA 904.0	297316		
60269085012	**MW-1 (MS)**	EPA 904.0	297316		
60269085013	**MW-1 (MSD)**	EPA 904.0	297316		
60269085001	**MW-6**	Total Radium Calculation	299753		
60269085002	**MW-7**	Total Radium Calculation	299753		
60269085003	**PZ-2**	Total Radium Calculation	299753		
60269085004	**MW-5**	Total Radium Calculation	299753		
60269085005	**MW-4**	Total Radium Calculation	299753		
60269085006	**MW-3**	Total Radium Calculation	299753		
60269085007	**MW-2**	Total Radium Calculation	299753		
60269085008	**DUP-1**	Total Radium Calculation	299753		
60269085009	**MW-8**	Total Radium Calculation	299753		
60269085010	**MW-1**	Total Radium Calculation	299753		
60269085011	**SURFACE POND WATER**	Total Radium Calculation	299753		
60269085001	**MW-6**	SM 2540C	524055		
60269085002	**MW-7**	SM 2540C	524055		
60269085003	**PZ-2**	SM 2540C	524055		
60269085004	**MW-5**	SM 2540C	524055		
60269085005	**MW-4**	SM 2540C	524055		
60269085006	**MW-3**	SM 2540C	524055		
60269085007	**MW-2**	SM 2540C	524055		
60269085008	**DUP-1**	SM 2540C	524055		
60269085009	**MW-8**	SM 2540C	524055		
60269085010	**MW-1**	SM 2540C	524125		
60269085011	**SURFACE POND WATER**	SM 2540C	524125		
60269085001	**MW-6**	SM 4500-H+B	523671		
60269085002	**MW-7**	SM 4500-H+B	523671		
60269085003	**PZ-2**	SM 4500-H+B	523671		
60269085004	**MW-5**	SM 4500-H+B	523671		
60269085005	**MW-4**	SM 4500-H+B	523671		
60269085006	**MW-3**	SM 4500-H+B	523671		
60269085007	**MW-2**	SM 4500-H+B	523766		
60269085008	**DUP-1**	SM 4500-H+B	523766		
60269085009	**MW-8**	SM 4500-H+B	523766		
60269085010	**MW-1**	SM 4500-H+B	523766		
60269085011	**SURFACE POND WATER**	SM 4500-H+B	523766		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60269085001	**MW-6**	Trivalent Chromium Calculation	525393		
60269085002	**MW-7**	Trivalent Chromium Calculation	525393		
60269085003	**PZ-2**	Trivalent Chromium Calculation	525393		
60269085004	**MW-5**	Trivalent Chromium Calculation	525393		
60269085005	**MW-4**	Trivalent Chromium Calculation	525393		
60269085006	**MW-3**	Trivalent Chromium Calculation	525393		
60269085007	**MW-2**	Trivalent Chromium Calculation	525393		
60269085008	**DUP-1**	Trivalent Chromium Calculation	525393		
60269085009	**MW-8**	Trivalent Chromium Calculation	525393		
60269085010	**MW-1**	Trivalent Chromium Calculation	525393		
60269085011	**SURFACE POND WATER**	Trivalent Chromium Calculation	525393		
60269085001	**MW-6**	EPA 300.0	525025		
60269085001	**MW-6**	EPA 300.0	525209		
60269085002	**MW-7**	EPA 300.0	525025		
60269085002	**MW-7**	EPA 300.0	525209		
60269085003	**PZ-2**	EPA 300.0	525025		
60269085003	**PZ-2**	EPA 300.0	525209		
60269085004	**MW-5**	EPA 300.0	525025		
60269085004	**MW-5**	EPA 300.0	525209		
60269085005	**MW-4**	EPA 300.0	525025		
60269085005	**MW-4**	EPA 300.0	525209		
60269085006	**MW-3**	EPA 300.0	525025		
60269085006	**MW-3**	EPA 300.0	525209		
60269085007	**MW-2**	EPA 300.0	525025		
60269085007	**MW-2**	EPA 300.0	525209		
60269085008	**DUP-1**	EPA 300.0	525025		
60269085008	**DUP-1**	EPA 300.0	525209		
60269085009	**MW-8**	EPA 300.0	525025		
60269085009	**MW-8**	EPA 300.0	525210		
60269085010	**MW-1**	EPA 300.0	525025		
60269085010	**MW-1**	EPA 300.0	525210		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269085

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60269085011	**SURFACE POND WATER**	EPA 300.0	525025		
60269085011	**SURFACE POND WATER**	EPA 300.0	525210		
60269085001	**MW-6**	EPA 410.4	524946		
60269085002	**MW-7**	EPA 410.4	524946		
60269085003	**PZ-2**	EPA 410.4	524946		
60269085004	**MW-5**	EPA 410.4	524946		
60269085005	**MW-4**	EPA 410.4	524946		
60269085006	**MW-3**	EPA 410.4	525024		
60269085007	**MW-2**	EPA 410.4	525024		
60269085008	**DUP-1**	EPA 410.4	525024		
60269085009	**MW-8**	EPA 410.4	525024		
60269085010	**MW-1**	EPA 410.4	525024		
60269085011	**SURFACE POND WATER**	EPA 410.4	525024		
60269085001	**MW-6**	SM 5310C	524004		
60269085002	**MW-7**	SM 5310C	524004		
60269085003	**PZ-2**	SM 5310C	524004		
60269085004	**MW-5**	SM 5310C	524004		
60269085005	**MW-4**	SM 5310C	524004		
60269085006	**MW-3**	SM 5310C	524004		
60269085007	**MW-2**	SM 5310C	524004		
60269085008	**DUP-1**	SM 5310C	524004		
60269085009	**MW-8**	SM 5310C	524004		
60269085010	**MW-1**	SM 5310C	524004		
60269085011	**SURFACE POND WATER**	SM 5310C	524004		
60268889001	**MW-6**	EPA 7196	523137		
60268889002	**MW-7**	EPA 7196	523137		
60268889003	**PZ-2**	EPA 7196	523137		
60268889004	**MW-5**	EPA 7196	523137		
60269014001	**MW-4**	EPA 7196	523308		
60269014002	**MW-3**	EPA 7196	523308		
60269014003	**MW-2**	EPA 7196	523308		
60269014004	**DUP-1**	EPA 7196	523308		
60269014005	**MW-8**	EPA 7196	523308		
60269085010	**MW-1**	EPA 7196	523428		
60269085011	**SURFACE POND WATER**	EPA 7196	523428		

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Sample Condition Upon Receipt

WO# : 60269085

60269085

Client Name: Burns & McD

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: 296 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.7 2.3 **Corr. Factor** 4.3 **Corrected** 5.0 3.0 4.3 3.6 2.0 3.0 3.7 1.8

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 4/27/18

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	Cr 6
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: _____

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 2

Section A — Required Client Information:

Company: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bweis@burnsmcd.com
Phone: 816-333-9400 Fax:
Requested Due Date:

Section B — Required Project Information:

Report To: Brian Weis
Copy To:
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C — Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: colleen.clyne@pacelabs.com
Pace Profile #: 10268

Regulatory Agency:

State / Location: MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION C°	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60269085 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	MW-6 2(BAN) AG2S AG3S BO3N 2(BO3U)	W	G	24Apr18	10:05A			18.4	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	X		01
2	MW-7	W	G	24Apr18	11:55A			17.4	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		02
3	PZ-2	W	G	24Apr18	1:45P			15.7	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		03
4	MW-5	W	G	24Apr18	3:34P			8.1	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		04
5	MW-4	W	G	25Apr18	8:50A			15.8	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		05
6	MW-3	W	G	25Apr18	10:10A			15.7	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		06
7	MW-2	W	G	25Apr18	11:45A			16.0	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		07
8	Dup-1	W	G	25Apr18	11:45A			16.0	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		08
9	MW-8	W	G	25Apr18	2:15P			16.0	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		09
10	MW-1 6(BAN) 3(AG2S) 3(AG3S) 3(BO3N) 4(BO3U)	W	G	26Apr18	9:20A			16.6	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		010
11	MS —	W	G	26Apr18	9:20A			16.6	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		—
12	MSD —	W	G	26Apr18	9:20A			16.6	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		—

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
TOX EDD needed	ESTS	26Apr18	2:00 PM	PACE	4/27/18	0635

SAMPLE CONDITIONS	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	5.0	Y	Y	Y
	3.1	Y	Y	Y
	4.3	Y	Y	Y
	3.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed:

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 2 Of 2

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: BURNS & MCDONNELL	Report To: Brian Weis	Attention:
Address: Burns & McDonnell	Copy To:	Company Name:
Kansas City, MO 64114		Address:
Email: bweis@burnsmcd.com	Purchase Order #:	Pace Quote:
Phone: 816-333-9400 Fax:	Project Name: More's Lake Columbia, MO	Pace Project Manager: colleen.clyne@pacelabs.com
Requested Due Date:	Project #:	Pace Profile #: 10268

Regulatory Agency
State / Location
MO

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 (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60269085 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	Surface Pond Water	W	G	26Apr18	8:05A			3.4	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		2(RP1N) RP3N 3(RP3N) AG2S AG3S OK
2																																
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
TOX EDD needed	[signature] ESTS	26Apr18	2:00PM	[signature] PACE	4/27/18	0635	2.0	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed:

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60269014

60269014

Client Name: Burns & McD

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

Tracking #: 4368 7273 8040 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: 296 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 2.1 **Corr. Factor** +1.3 **Corrected** 3.4

Date and initials of person examining contents: 4/26/18

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	MW-4 received outside of 24 hrs.
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	cr+6
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: _____

REVIEWED
By hwilson at 10:02 am, 5/1/18

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

Section A
Required Client Information:

Company: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bweis@burnsmcd.com
Phone: 816-333-9400 Fax
Requested Due Date:

Section B
Required Project Information:

Report To: Brian Weis
Copy To:
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C
Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: colleen.clyne@pacelabs.com
Pace Profile #: 10268, 2

Regulatory Agency:
State / Location: MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-4	W	G	25Apr18	8:50A			15.8	1	1																✓						BP3U
2	MW-3	W	G	25Apr18	10:10A			15.2	1	1																✓						↓
3	MW-2	W	G	25Apr18	11:45A			16.0	1	1																✓						
4	Dup-1	W	G	25Apr18	11:45A			16.0	1	1																✓						
5	MW-8	W	G	25Apr18	2:15P			15.3	1	1																✓						
6																																
7																																
8																																
9																																
10																																
11																																
12																																

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ES+S	25Apr18	4:00PM	[signature] / PACE	4/26/18	0905	3.4	Y	Y	Y
J-flags on - include MDLs on report.										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore

DATE Signed: 25 Apr 18

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60268889

60268889

Client Name: Burns & Mc

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

Tracking #: 4368 7273 8061 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-297 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.5 **Corr. Factor** +0.9 **Corrected** 1.4

Date and initials of person examining contents: AH 4/25/18

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	$Cr6^+$
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: REVIEWED *By hwilson at 9:56 am, 5/1/18* Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

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Page : 1 Of 1

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Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: colleen.clyne@pacelabs.com
Pace Profile #: 10268, 2

Regulatory Agency:
State / Location: MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60268889 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-6	W	G	24Apr18	10:05A			16.4	1	1											BP3U					✓					01
2	MW-7	W	G	24Apr18	11:55A			17.4	1	1																✓					02
3	PZ-2	W	G	24Apr18	1:45P			5.1	1	1																✓					03
4	MW-5	W	G	24Apr18	3:05P			18.4	1	1																✓					04
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ES+S	24Apr18	4:30P	Nida Cortez pasl	4/25/18	0900	1.4	4	4	4
J-flags on - include MDLs on report.										

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: David Kilgore						
SIGNATURE of SAMPLER: David Kilgore	DATE Signed: 24Apr18					

ANALYTICAL REPORT

May 07, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L990493
Samples Received:	05/02/2018
Project Number:	60269085
Description:	
Report To:	Colleen Clyne 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-6 L990493-01 GW

Collected by	Collected date/time	Received date/time
	04/24/18 10:05	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/03/18 18:57	05/03/18 18:57	EG

MW-7 L990493-02 GW

Collected by	Collected date/time	Received date/time
	04/24/18 11:55	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/03/18 19:11	05/03/18 19:11	EG

PZ-2 L990493-03 GW

Collected by	Collected date/time	Received date/time
	04/24/18 13:45	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/03/18 19:20	05/03/18 19:20	EG

MW-5 L990493-04 GW

Collected by	Collected date/time	Received date/time
	04/24/18 15:34	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/03/18 19:29	05/03/18 19:29	EG

MW-4 L990493-05 GW

Collected by	Collected date/time	Received date/time
	04/25/18 08:50	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/04/18 12:48	05/04/18 12:48	EG

MW-3 L990493-06 GW

Collected by	Collected date/time	Received date/time
	04/25/18 10:10	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/04/18 12:59	05/04/18 12:59	EG

MW-2 L990493-07 GW

Collected by	Collected date/time	Received date/time
	04/25/18 11:45	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/04/18 13:55	05/04/18 13:55	EG

DUP-1 L990493-08 GW

Collected by	Collected date/time	Received date/time
	04/25/18 11:45	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/04/18 14:06	05/04/18 14:06	EG

MW-8 L990493-09 GW

Collected by	Collected date/time	Received date/time
	04/25/18 14:15	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/04/18 14:43	05/04/18 14:43	EG

MW-1 L990493-10 GW

Collected by	Collected date/time	Received date/time
	04/26/18 09:20	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/04/18 15:07	05/04/18 15:07	EG

SURFACE POND WATER L990493-11 GW

Collected by	Collected date/time	Received date/time
	04/26/18 08:05	05/02/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1106228	1	05/05/18 10:18	05/05/18 10:18	EG

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

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

Nancy F. McLain

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	05/03/2018 18:57	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	23.9	J	12.0	100	1	05/03/2018 19:11	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	75.0	J	12.0	100	1	05/03/2018 19:20	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	45.0	J	12.0	100	1	05/03/2018 19:29	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	28.9	J	12.0	100	1	05/04/2018 12:48	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	23.5	J	12.0	100	1	05/04/2018 12:59	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	26.0	J	12.0	100	1	05/04/2018 13:55	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	12.4	J	12.0	100	1	05/04/2018 14:06	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	48.9	J	12.0	100	1	05/04/2018 14:43	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	41.3	J J3 J5	12.0	100	1	05/04/2018 15:07	WG1106228

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	527		12.0	100	1	05/05/2018 10:18	WG1106228

Method Blank (MB)

(MB) R3307296-1 05/03/18 15:15

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L990081-04 Original Sample (OS) • Duplicate (DUP)

(OS) L990081-04 05/03/18 17:02 • (DUP) R3307296-7 05/03/18 19:58

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	956	996	1	4.08		20

L990493-11 Original Sample (OS) • Duplicate (DUP)

(OS) L990493-11 05/05/18 10:18 • (DUP) R3307296-14 05/05/18 10:40

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	527	562	1	6.53		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3307296-2 05/03/18 15:34 • (LCSD) R3307296-3 05/03/18 16:04

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	186	180	92.9	90.1	85.0-115			3.02	20

L990493-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L990493-10 05/04/18 15:07 • (MS) R3307296-9 05/04/18 15:19 • (MSD) R3307296-11 05/04/18 15:49

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	41.3	1290	4660	416	1540	1	80.0-120	J5	J3 J5	113	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

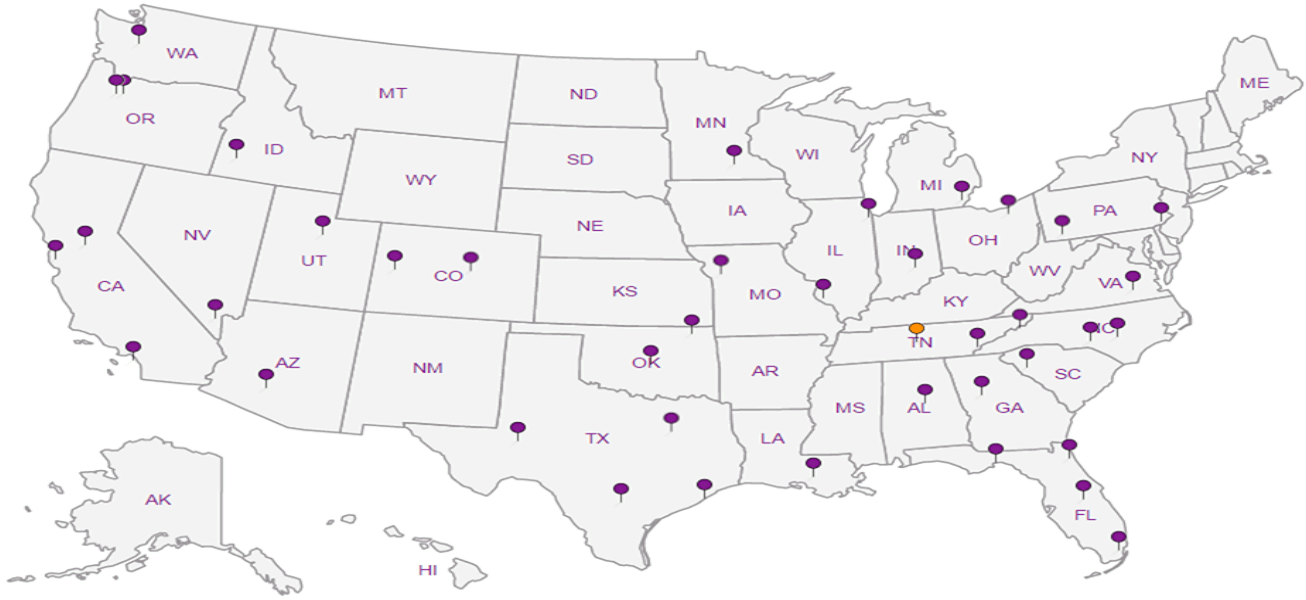
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



C116

Chain of Custody

Pace Analytical
www.pacelabs.com

L990493

Workorder: 60269085 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 5/11/2018

Report / Invoice To

Colleen Clyne
Pace Analytical Kansas
9608 Loiret Blvd
Lenexa, KS 66219
Phone 1(913)563-1406
Email: colleen.clyne@pacelabs.com

Subcontract To

P.O. SUB-9009

State of Sample Origin:

Requested Analysis

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers H2SO4	KM	TOX	LAB USE ONLY
1	MW-6	4/24/2018 10:05	60269085001	Water	~~2~~	1	X	-01
2	MW-7	4/24/2018 11:55	60269085002	Water	~~2~~	1	X	-02
3	PZ-2	4/24/2018 13:45	60269085003	Water	~~2~~	1	X	-03
4	MW-5	4/24/2018 15:34	60269085004	Water	~~2~~	1	X	-04
5	MW-4	4/25/2018 08:50	60269085005	Water	~~2~~	1	X	-05
6	MW-3	4/25/2018 10:10	60269085006	Water	~~2~~	1	X	-06
7	MW-2	4/25/2018 11:45	60269085007	Water	~~2~~	1	X	-07
8	DUP-1	4/25/2018 11:45	60269085008	Water	~~2~~	1	X	-08
9	MW-8	4/25/2018 14:15	60269085009	Water	~~2~~	1	X	-09
10	MW-1	4/26/2018 09:20	60269085010	Water	~~2~~	3 KM	X	-10
11	SURFACE POND WATER	4/26/2018 08:05	60269085011	Water	~~2~~	1	X	-11
12								
13								
14								
15								

[signature] 841 5/2/18 0845

Tracking#: 4368 7274 3851

13 total

L990493

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[illegible]	5/1 1700	[illegible]	5/2/18 0845	
2					
3					

Cooler Temperature on Receipt °C	Custody Seal Y or N	Received on Ice Y or N	Samples Intact Y or N
2.12			

Tracking #: 436872743851

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACELKS	SDG#	L990493
Cooler Received/Opened On: 5/ 2/18	Temperature:	2.1
Received By: Kely Mercer		
Signature: Kelly Mercer		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?			
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			

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

May 31, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on May 08, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60269871001	**POND**	Water	05/08/18 10:00	05/08/18 15:39

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60269871001	**POND**	EPA 6010	AGO	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	SMW	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	LDB	1	PASI-K
		SM 5310C	LDF	1	PASI-K
		EPA 7196	MJK	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- POND (Lab ID: 60269871001)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 527488

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60270478001,60270478002

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

- MS (Lab ID: 2160715)
  - Chloride
- MS (Lab ID: 2160717)
  - Chloride
- MSD (Lab ID: 2160716)
  - Chloride

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 526482

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60270573001,60270732001

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

- MS (Lab ID: 2156543)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: May 31, 2018

General Information:
1 sample was analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 524995

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60269859001

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

- MS (Lab ID: 2149474)
  - Chromium, Hexavalent

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Sample: POND **Lab ID: 60269871001** Collected: 05/08/18 10:00 Received: 05/08/18 15:39 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**2450**	ug/L	75.0	21.1	1	05/21/18 14:00	05/22/18 11:44	7429-90-5	
Antimony	**<6.5**	ug/L	15.0	6.5	1	05/21/18 14:00	05/22/18 11:44	7440-36-0	
Arsenic	**29.3**	ug/L	10.0	4.9	1	05/21/18 14:00	05/22/18 11:44	7440-38-2	
Barium	**157**	ug/L	5.0	1.5	1	05/21/18 14:00	05/22/18 11:44	7440-39-3	
Beryllium	**0.30J**	ug/L	1.0	0.16	1	05/21/18 14:00	05/22/18 11:44	7440-41-7	
Boron	**4200**	ug/L	100	12.5	1	05/21/18 14:00	05/22/18 11:44	7440-42-8	
Cadmium	**1.5J**	ug/L	5.0	0.45	1	05/21/18 14:00	05/22/18 11:44	7440-43-9	
Calcium	**133000**	ug/L	200	53.5	1	05/21/18 14:00	05/22/18 11:44	7440-70-2	
Chromium	**24.3**	ug/L	5.0	1.1	1	05/21/18 14:00	05/22/18 11:44	7440-47-3	
Cobalt	**4.8J**	ug/L	5.0	0.87	1	05/21/18 14:00	05/22/18 11:44	7440-48-4	
Copper	**18.2**	ug/L	10.0	4.5	1	05/21/18 14:00	05/22/18 11:44	7440-50-8	
Iron	**2510**	ug/L	50.0	6.1	1	05/21/18 14:00	05/22/18 11:44	7439-89-6	
Lead	**28.2**	ug/L	10.0	3.0	1	05/21/18 14:00	05/22/18 11:44	7439-92-1	
Lithium	**122**	ug/L	10.0	4.6	1	05/21/18 14:00	05/22/18 11:44	7439-93-2	
Magnesium	**46200**	ug/L	50.0	14.0	1	05/21/18 14:00	05/22/18 11:44	7439-95-4	
Manganese	**537**	ug/L	5.0	0.73	1	05/21/18 14:00	05/22/18 11:44	7439-96-5	
Molybdenum	**281**	ug/L	20.0	0.90	1	05/21/18 14:00	05/22/18 11:44	7439-98-7	
Nickel	**13.3**	ug/L	5.0	1.4	1	05/21/18 14:00	05/22/18 11:44	7440-02-0	
Selenium	**<6.1**	ug/L	15.0	6.1	1	05/21/18 14:00	05/22/18 11:44	7782-49-2	
Silver	**<2.0**	ug/L	7.0	2.0	1	05/21/18 14:00	05/22/18 11:44	7440-22-4	
Sodium	**278000**	ug/L	500	157	1	05/21/18 14:00	05/22/18 11:44	7440-23-5	
Total Hardness by 2340B	**523000**	ug/L	500	500	1	05/21/18 14:00	05/22/18 11:44		
Zinc	**78.4**	ug/L	50.0	3.5	1	05/21/18 14:00	05/22/18 11:44	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	**0.27J**	ug/L	1.0	0.036	1	05/22/18 15:25	05/23/18 15:18	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	05/16/18 15:30	05/17/18 11:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1580**	mg/L	5.0	5.0	1		05/15/18 18:18		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.3**	Std. Units	0.10	0.10	1		05/11/18 11:52		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	**0.024**	mg/L	0.010	0.010	1		05/31/18 13:08	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**448**	mg/L	50.0	23.1	50		05/27/18 01:43	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	0.063	1		05/26/18 13:38	16984-48-8	
Sulfate	**528**	mg/L	50.0	11.8	50		05/27/18 01:43	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Sample: POND **Lab ID: 60269871001** Collected: 05/08/18 10:00 Received: 05/08/18 15:39 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**122**	mg/L	10.0	3.1	1		05/21/18 15:56		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**3.9**	mg/L	1.0	0.13	1		05/10/18 12:50	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**<0.0022**	mg/L	0.010	0.0022	1		05/08/18 18:37	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 526104 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60269871001

METHOD BLANK: 2154261 | Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	05/17/18 10:46	

LABORATORY CONTROL SAMPLE: 2154262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2154263 2154264

Parameter	Units	60269953001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	4.7	4.8	94	95	75-125	1	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 526575
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Associated Lab Samples: 60269871001

METHOD BLANK: 2156942
Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	<21.1	75.0	21.1	05/22/18 11:39	
Antimony	ug/L	<6.5	15.0	6.5	05/22/18 11:39	
Arsenic	ug/L	<4.9	10.0	4.9	05/22/18 11:39	
Barium	ug/L	<1.5	5.0	1.5	05/22/18 11:39	
Beryllium	ug/L	<0.16	1.0	0.16	05/22/18 11:39	
Boron	ug/L	<12.5	100	12.5	05/22/18 11:39	
Cadmium	ug/L	<0.45	5.0	0.45	05/22/18 11:39	
Calcium	ug/L	<53.5	200	53.5	05/22/18 11:39	
Chromium	ug/L	<1.1	5.0	1.1	05/22/18 11:39	
Cobalt	ug/L	<0.87	5.0	0.87	05/22/18 11:39	
Copper	ug/L	<4.5	10.0	4.5	05/22/18 11:39	
Iron	ug/L	<6.1	50.0	6.1	05/22/18 11:39	
Lead	ug/L	<3.0	10.0	3.0	05/22/18 11:39	
Lithium	ug/L	<4.6	10.0	4.6	05/22/18 11:39	
Magnesium	ug/L	<14.0	50.0	14.0	05/22/18 11:39	
Manganese	ug/L	<0.73	5.0	0.73	05/22/18 11:39	
Molybdenum	ug/L	<0.90	20.0	0.90	05/22/18 11:39	
Nickel	ug/L	<1.4	5.0	1.4	05/22/18 11:39	
Selenium	ug/L	<6.1	15.0	6.1	05/22/18 11:39	
Silver	ug/L	<2.0	7.0	2.0	05/22/18 11:39	
Sodium	ug/L	<157	500	157	05/22/18 11:39	
Total Hardness by 2340B	ug/L	<500	500	500	05/22/18 11:39	
Zinc	ug/L	<3.5	50.0	3.5	05/22/18 11:39	

LABORATORY CONTROL SAMPLE: 2156943

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10300	103	80-120	
Antimony	ug/L	1000	1050	105	80-120	
Arsenic	ug/L	1000	990	99	80-120	
Barium	ug/L	1000	1050	105	80-120	
Beryllium	ug/L	1000	1040	104	80-120	
Boron	ug/L	1000	991	99	80-120	
Cadmium	ug/L	1000	1040	104	80-120	
Calcium	ug/L	10000	9800	98	80-120	
Chromium	ug/L	1000	989	99	80-120	
Cobalt	ug/L	1000	1060	106	80-120	
Copper	ug/L	1000	1060	106	80-120	
Iron	ug/L	10000	10200	102	80-120	
Lead	ug/L	1000	1030	103	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

LABORATORY CONTROL SAMPLE: 2156943

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium	ug/L	1000	1080	108	80-120	
Magnesium	ug/L	10000	9950	100	80-120	
Manganese	ug/L	1000	996	100	80-120	
Molybdenum	ug/L	1000	1050	105	80-120	
Nickel	ug/L	1000	1030	103	80-120	
Selenium	ug/L	1000	1060	106	80-120	
Silver	ug/L	500	519	104	80-120	
Sodium	ug/L	10000	10400	104	80-120	
Total Hardness by 2340B	ug/L		65500			
Zinc	ug/L	1000	1000	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2156944 2156945

Parameter	Units	60270735001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	10000	10000	10200	10200	102	102	75-125	0	20	
Antimony	ug/L	ND	1000	1000	1050	1050	105	105	75-125	0	20	
Arsenic	ug/L	ND	1000	1000	1000	1000	99	100	75-125	0	20	
Barium	ug/L	964	1000	1000	2010	2020	105	106	75-125	1	20	
Beryllium	ug/L	ND	1000	1000	1020	1020	102	102	75-125	0	20	
Boron	ug/L	ND	1000	1000	999	1000	97	98	75-125	0	20	
Cadmium	ug/L	ND	1000	1000	1040	1030	103	103	75-125	0	20	
Calcium	ug/L	66000	10000	10000	74800	75900	87	99	75-125	2	20	
Chromium	ug/L	925	1000	1000	1860	1890	94	96	75-125	2	20	
Cobalt	ug/L	ND	1000	1000	1020	1010	101	101	75-125	0	20	
Copper	ug/L	27.7	1000	1000	1070	1070	105	104	75-125	0	20	
Iron	ug/L	4860	10000	10000	14600	14600	97	98	75-125	1	20	
Lead	ug/L	ND	1000	1000	991	990	99	99	75-125	0	20	
Lithium	ug/L	ND	1000	1000	1080	1080	108	108	75-125	0	20	
Magnesium	ug/L	36800	10000	10000	46500	46900	96	101	75-125	1	20	
Manganese	ug/L	40.9	1000	1000	997	998	96	96	75-125	0	20	
Molybdenum	ug/L	ND	1000	1000	1050	1050	103	103	75-125	0	20	
Nickel	ug/L	102	1000	1000	1080	1080	98	98	75-125	0	20	
Selenium	ug/L	ND	1000	1000	1050	1040	105	104	75-125	0	20	
Silver	ug/L	ND	500	500	511	508	102	102	75-125	1	20	
Sodium	ug/L	40500	10000	10000	51600	52000	111	116	75-125	1	20	
Total Hardness by 2340B	ug/L	316000			378000	383000				1		
Zinc	ug/L	178	1000	1000	1130	1130	95	95	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 526835 | Analysis Method: EPA 6020
QC Batch Method: EPA 3010 | Analysis Description: 6020 MET
Associated Lab Samples: 60269871001

METHOD BLANK: 2157965 | Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Thallium	ug/L	<0.036	1.0	0.036	05/23/18 13:32	

LABORATORY CONTROL SAMPLE: 2157966

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Thallium	ug/L	40	38.2	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2157967 2157968

Parameter	Units	60269358001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Thallium	ug/L	ND	40	40	35.3	35.2	88	88	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 525897 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60269871001

METHOD BLANK: 2153395 | Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/15/18 18:18	

LABORATORY CONTROL SAMPLE: 2153396

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	996	100	80-120	

SAMPLE DUPLICATE: 2153397

Parameter	Units	60269871001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1580	1580	0	10	

SAMPLE DUPLICATE: 2153398

Parameter	Units	60270161004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3300	3360	2	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 525424
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60269871001

SAMPLE DUPLICATE: 2151504

Parameter	Units	60269785001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.5	8.5	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 527488 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60269871001

METHOD BLANK: 2160713 | Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	05/26/18 06:49	
Fluoride	mg/L	<0.063	0.20	0.063	05/26/18 06:49	
Sulfate	mg/L	<0.24	1.0	0.24	05/26/18 06:49	

LABORATORY CONTROL SAMPLE: 2160714

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2160715 2160716

Parameter	Units	60270478001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	361	250	250	642	641	112	112	90-110	0	15	M1
Fluoride	mg/L	ND	125	125	131	133	105	107	90-110	2	15	
Sulfate	mg/L	60.7	250	250	318	321	103	104	90-110	1	15	

MATRIX SPIKE SAMPLE: 2160717

Parameter	Units	60270478002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	379	250	665	114	90-110	M1
Fluoride	mg/L	ND	125	134	104	90-110	
Sulfate	mg/L	ND	250	306	104	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 526482 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60269871001

METHOD BLANK: 2156541 | Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<3.1	10.0	3.1	05/21/18 15:47	

LABORATORY CONTROL SAMPLE: 2156542

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	51.2	102	90-110	

MATRIX SPIKE SAMPLE: 2156543

Parameter	Units	60270732001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	61.7	111	90-110	M1

MATRIX SPIKE SAMPLE: 2156545

Parameter	Units	60270573001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	80.1	50	131	101	90-110	

SAMPLE DUPLICATE: 2156544

Parameter	Units	60270353017 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	26.3	32.8	22	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 525148 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60269871001

METHOD BLANK: 2150105 | Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.13	1.0	0.13	05/10/18 09:13	

LABORATORY CONTROL SAMPLE: 2150106

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.9	119	80-120	

MATRIX SPIKE SAMPLE: 2150107

Parameter	Units	7586937008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	0.52J	5	6.5	120	80-120	

SAMPLE DUPLICATE: 2150108

Parameter	Units	7586937007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	0.45J	0.47J		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 524995 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60269871001

METHOD BLANK: 2149472 | Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	<0.0022	0.010	0.0022	05/08/18 18:33	

LABORATORY CONTROL SAMPLE: 2149473

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.094	94	90-110	

MATRIX SPIKE SAMPLE: 2149474

Parameter	Units	60269859001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.063	63	85-115	M1

SAMPLE DUPLICATE: 2149475

Parameter	Units	60269859002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	<0.0022		20	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Sample: POND **Lab ID: 60269871001** Collected: 05/08/18 10:00 Received: 05/08/18 15:39 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0843 ± 0.360 (0.695)** **C:NA T:92%**	pCi/L	05/29/18 11:40	13982-63-3	
Radium-228	EPA 904.0	**0.688 ± 0.373 (0.661)** **C:84% T:81%**	pCi/L	05/29/18 15:36	15262-20-1	
Total Radium	Total Radium Calculation	**0.772 ± 0.733 (1.36)**	pCi/L	05/30/18 15:27	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 299614 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60269871001

METHOD BLANK: 1466624 | Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.138 ± 0.316 (0.703) C:83% T:77%	pCi/L	05/29/18 15:36	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

QC Batch: 299613 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60269871001

METHOD BLANK: 1466623 Matrix: Water
Associated Lab Samples: 60269871001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.104 ± 0.320 (0.748) C:NA T:84%	pCi/L	05/29/18 11:19	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60269871

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60269871001	**POND**	EPA 3010	526575	EPA 6010	526695
60269871001	**POND**	EPA 3010	526835	EPA 6020	526899
60269871001	**POND**	EPA 7470	526104	EPA 7470	526112
60269871001	**POND**	EPA 903.1	299613		
60269871001	**POND**	EPA 904.0	299614		
60269871001	**POND**	Total Radium Calculation	300303		
60269871001	**POND**	SM 2540C	525897		
60269871001	**POND**	SM 4500-H+B	525424		
60269871001	**POND**	Trivalent Chromium Calculation	528115		
60269871001	**POND**	EPA 300.0	527488		
60269871001	**POND**	EPA 410.4	526482		
60269871001	**POND**	SM 5310C	525148		
60269871001	**POND**	EPA 7196	524995		

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Sample Condition Upon Receipt

WO# : 60269871

60269871

Client Name: Burns & McDonnell

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-2666 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.4 **Corr. Factor** +0.2 **Corrected** 0.6

Date and initials of person examining contents: AE 5/8 JS

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	Cr6+
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JWS Date: 5/9/18

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	STANDARD

Section B
Required Project Information:

Report To:	Brian Weis
Copy To:	CHRIS HOGLUND
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C
Invoice Information:

Attention:	Brian Weis
Company Name:	BMcD
Address:	
Pace Quote:	
Pace Project Manager:	colleen.clyne@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency	State / Location
MDNR	MO

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 (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60269871 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	POND 2BPIN BP3N 5ABB	WT	G	AG3S		5/8/18	1000		8	3	2	3	BP2U	2BP3U				X	X	X	X	X	X	X	X	X	X	X	X		001
2																																
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
TOX EDD needed	Chris Hoglund / BMcD	5/8/18	1538	[illegible]	5/8/18	1539	0.6	Y	n	Y
J-flags on - include MDLs on report.										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: CHRIS HOGLUND / BMcD

SIGNATURE of SAMPLER: Chris Hoglund

DATE Signed: 5/8/18

ANALYTICAL REPORT

May 14, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L992751
Samples Received:	05/10/2018
Project Number:	60269871
Description:	More's Lake Columbia, MO
Report To:	Jeff Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By:

Nancy McLain
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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POND L992751-01 GW

Collected by	Collected date/time	Received date/time
	05/08/18 10:00	05/10/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1108680	1	05/11/18 11:41	05/11/18 11:41	SJM

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

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

Nancy F. McLain

Nancy McLain
Technical Service Representative

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	888	J3	12.0	100	1	05/11/2018 11:41	WG1108680

Method Blank (MB)

(MB) R3309383-2 05/10/18 16:45

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L992751-01 Original Sample (OS) • Duplicate (DUP)

(OS) L992751-01 05/11/18 11:41 • (DUP) R3309383-6 05/11/18 12:32

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	888	683	1	26.1	J3	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3309383-3 05/10/18 17:34 • (LCSD) R3309383-4 05/10/18 18:40

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	170	196	85.2	98.0	85.0-115			13.9	20

L991902-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L991902-01 05/10/18 18:54 • (MS) R3309383-8 05/11/18 12:53 • (MSD) R3309383-10 05/11/18 13:13

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	79.1	1290	1400	402	440	1	80.0-120	J5	J5	8.46	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

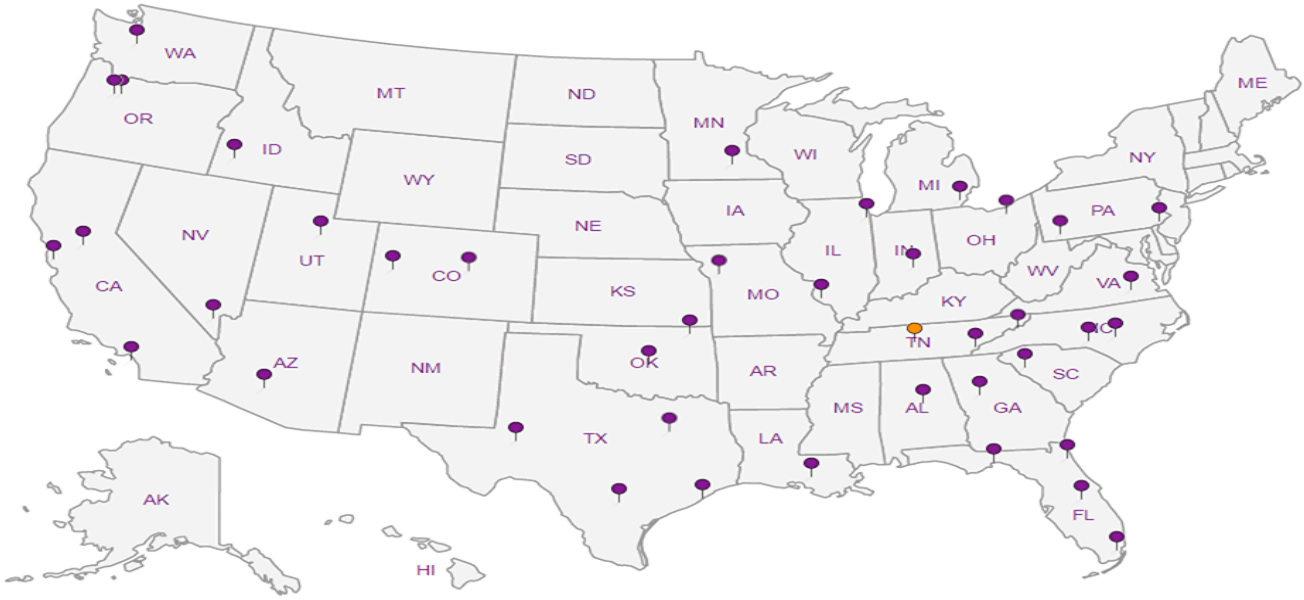
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



Chain of Custody

C138

Pace Analytical
www.pacelabs.com

L992751

Workorder: 60269871 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 5/30/2018

Report / Invoice To

Jeffrey Shopper
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1408
Email: jeff.shopper@pacelabs.com

Subcontract To

P.O. SUB-9018

State of Sample Origin:

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Requested Analysis: TOX	LAB USE ONLY
1	POND	5/8/2018 10:00	60269871001	Water	1	X	
2							
3							
4							
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/9 1700	[signature]	5/10/18 0845
2				
3				

Comments

Please provide EDD with results

Cooler Temperature on Receipt 0.7 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

Tracking#: 4368 7274 8349

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACELKS	SDG#	L992751	
Cooler Received/Opened On: 5/10 /18	Temperature:	0.7	
Received By: Kelly Mercer			
Signature: Kelly Mercer			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

June 29, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on June 28, 2018. 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,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60273640002	**MW-7**	Water	06/27/18 10:43	06/28/18 08:35
60273640003	**PZ-2**	Water	06/27/18 12:30	06/28/18 08:35
60273640004	**MW-5**	Water	06/27/18 14:00	06/28/18 08:35

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60273640002	**MW-7**	EPA 7196	ZMH	1	PASI-K
60273640003	**PZ-2**	EPA 7196	ZMH	1	PASI-K
60273640004	**MW-5**	EPA 7196	ZMH	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: June 29, 2018

General Information:
3 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Sample: MW-7 **Lab ID: 60273640002** Collected: 06/27/18 10:43 Received: 06/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/28/18 10:15	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Sample: PZ-2 **Lab ID: 60273640003** Collected: 06/27/18 12:30 Received: 06/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/28/18 10:18	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Sample: MW-5 **Lab ID: 60273640004** Collected: 06/27/18 14:00 Received: 06/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/28/18 10:29	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

QC Batch: 532102 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60273640002, 60273640003, 60273640004

METHOD BLANK: 2179107 | Matrix: Water
Associated Lab Samples: 60273640002, 60273640003, 60273640004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0022	06/28/18 10:12	

LABORATORY CONTROL SAMPLE: 2179108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.095	95	90-110	

MATRIX SPIKE SAMPLE: 2179111

Parameter	Units	60273640003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.095	95	85-115	

SAMPLE DUPLICATE: 2179112

Parameter	Units	60273640004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		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

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA,MO
Pace Project No.: 60273640

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273640002	**MW-7**	EPA 7196	532102		
60273640003	**PZ-2**	EPA 7196	532102		
60273640004	**MW-5**	EPA 7196	532102		

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Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60273640
60273640

Client Name: Burns & McD

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

Tracking #: 4368 7276 8903 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-298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 2.6 **Corr. Factor** +1.1 **Corrected** 3.7

Date and initials of person examining contents: SDC 6-28-18 SDC 6-28-18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	~~MW 6 OUT OF HOLD~~ SDC 6-28-18
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☐Yes ☑No ☐N/A	MW 6 OUT OF HOLD
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	Cr^{+6}
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: Logged in all samples

Project Manager Review: JNS Date: 6/28/18

Pace Analytical

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	sas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B
Required Project Information:

Report To:	Brian Weis
Copy To:	
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	colleen.clyne@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency
State / Location
MO

Requested Analysis Filtered (Y/N)

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

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 (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE	SAMPLE TYPE	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION C°	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60273640 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-6	WT	G	27Jun18	9:15A			17.8	1	1																✓					BP3U 001
2	MW-7	WT	G	27Jun18	10:43A			17.7	1	1																✓					002
3	PZ-2	WT	G	27Jun18	12:30P			18.4	1	1																✓					003
4	MW-5	WT	G	27Jun18	2:00P			19.3	1	1																✓					004
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
X EDD needed	David Kilgore ES+S	27Jun18	3:30PM	PACE	6-28-18	0835	3.7	Y	Y	Y
ags on - include MDLs on report.										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore

DATE Signed: 27 Jun 18

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

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

June 29, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on June 29, 2018. 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,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60273743001	**MW-3**	Water	06/28/18 10:03	06/29/18 07:27
60273743002	**MW-4**	Water	06/28/18 08:40	06/29/18 07:27
60273743003	**MW-2**	Water	06/28/18 11:37	06/29/18 07:27
60273743004	**DUP-1**	Water	06/28/18 11:37	06/29/18 07:27
60273743005	**MW-6**	Water	06/28/18 15:07	06/29/18 07:27

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60273743001	**MW-3**	EPA 7196	ZMH	1	PASI-K
60273743002	**MW-4**	EPA 7196	ZMH	1	PASI-K
60273743003	**MW-2**	EPA 7196	ZMH	1	PASI-K
60273743004	**DUP-1**	EPA 7196	ZMH	1	PASI-K
60273743005	**MW-6**	EPA 7196	ZMH	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: June 29, 2018

General Information:
5 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Sample: MW-3 **Lab ID: 60273743001** Collected: 06/28/18 10:03 Received: 06/29/18 07:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/29/18 08:35	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Sample: MW-4 **Lab ID: 60273743002** Collected: 06/28/18 08:40 Received: 06/29/18 07:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/29/18 08:31	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Sample: MW-2 **Lab ID: 60273743003** Collected: 06/28/18 11:37 Received: 06/29/18 07:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0030J**	mg/L	0.010	0.0022	1		06/29/18 08:36	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Sample: DUP-1 **Lab ID: 60273743004** Collected: 06/28/18 11:37 Received: 06/29/18 07:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0030J**	mg/L	0.010	0.0022	1		06/29/18 08:36	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Sample: MW-6 **Lab ID: 60273743005** Collected: 06/28/18 15:07 Received: 06/29/18 07:27 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/29/18 08:38	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

QC Batch: 532253 Analysis Method: EPA 7196
QC Batch Method: EPA 7196 Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60273743001, 60273743002, 60273743003, 60273743004, 60273743005

METHOD BLANK: 2179910 Matrix: Water
Associated Lab Samples: 60273743001, 60273743002, 60273743003, 60273743004, 60273743005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0022	06/29/18 08:30	

LABORATORY CONTROL SAMPLE: 2179911

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.092	92	90-110	

MATRIX SPIKE SAMPLE: 2179912

Parameter	Units	60273743002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.097	97	85-115	

SAMPLE DUPLICATE: 2179913

Parameter	Units	60273743001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		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

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273743

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273743001	**MW-3**	EPA 7196	532253		
60273743002	**MW-4**	EPA 7196	532253		
60273743003	**MW-2**	EPA 7196	532253		
60273743004	**DUP-1**	EPA 7196	532253		
60273743005	**MW-6**	EPA 7196	532253		

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Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60273743

60273743

Client Name: Burns + Mc

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: T298 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.6 **Corr. Factor** +1.1 **Corrected** 4.7

Date and initials of person examining contents: 6-29-18

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	Cr^{+6}
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JWD Date: 6/29/18

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax:
Requested Due Date:	

Section B — Required Project Information:

Report To:	Brian Weis
Copy To:	Chris Hoglund
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency	
State / Location	
	MO

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 (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION C°	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60273743 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-3	WT	G	28Jun18	10:03A			16.5	1	1																✓			BP3U			001
2	MW-4	WT	G	28Jun18	8:40A			16.5	1	1																✓						002
3	MW-2	WT	G	28Jun18	11:37A			16.2	1	1																✓						003
4	Dup-1	WT	G	28Jun18	11:37A			18.2	1	1																✓						004
5	MW-6	WT	G	28Jun18	3:07P			19.6	1	1																✓						005
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ES+S	28Jun18	3:45P	[illegible]	6/28	3:53				
J-flags on - include MDLs on report.				[illegible] PACE	6/29	0627	4.7	Y	Y	Y

SAMPLER NAME AND SIGNATURE		
PRINT Name of SAMPLER:	David Kilgore	
SIGNATURE of SAMPLER:	David Kilgore	DATE Signed: 28Jun18

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical Services, LLC
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(913)599-5665

July 25, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on June 30, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60273890001	**MW-6**	Water	06/27/18 09:15	06/30/18 09:10
60273890002	**MW-7**	Water	06/27/18 10:43	06/30/18 09:10
60273890003	**PZ-2**	Water	06/27/18 12:30	06/30/18 09:10
60273890004	**MW-5**	Water	06/27/18 14:00	06/30/18 09:10
60273890005	**MW-4**	Water	06/28/18 20:40	06/30/18 09:10
60273890006	**MW-3**	Water	06/28/18 10:03	06/30/18 09:10
60273890007	**MW-2**	Water	06/28/18 11:37	06/30/18 09:10
60273890008	**DUP-1**	Water	06/28/18 11:37	06/30/18 09:10
60273890009	**MW-1**	Water	06/29/18 08:35	06/30/18 09:10
60273890010	**MW-8**	Water	06/29/18 10:55	06/30/18 09:10
60273890011	**POND SURFACE WATER**	Water	06/29/18 11:45	06/30/18 09:10

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60273890001	**MW-6**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60273890002	**MW-7**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60273890003	**PZ-2**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60273890004	**MW-5**	EPA 6010	JGP	23	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60273890005	**MW-4**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60273890006	**MW-3**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60273890007	**MW-2**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60273890008	**DUP-1**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60273890009	**MW-1**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60273890010	**MW-8**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL, WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
		EPA 7196	LDB	1	PASI-K
60273890011	**POND SURFACE WATER**	EPA 6010	JGP	23	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 7470	LMB	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
		EPA 7196	LDB	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 532736

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60273890009

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

- MSD (Lab ID: 2182060)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-1 (Lab ID: 60273890008)
- MW-1 (Lab ID: 60273890009)
- MW-2 (Lab ID: 60273890007)
- MW-3 (Lab ID: 60273890006)
- MW-4 (Lab ID: 60273890005)
- MW-5 (Lab ID: 60273890004)
- MW-6 (Lab ID: 60273890001)
- MW-7 (Lab ID: 60273890002)
- MW-8 (Lab ID: 60273890010)
- POND SURFACE WATER (Lab ID: 60273890011)
- PZ-2 (Lab ID: 60273890003)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 534363

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60273879001,60273879002

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

- MSD (Lab ID: 2188566)
  - Chloride

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 532782

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60273717001,60274012001

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

- MS (Lab ID: 2182221)
  - Chemical Oxygen Demand
- MS (Lab ID: 2182223)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
11 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 534019

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60273831006

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

- MS (Lab ID: 2187199)
  - Total Organic Carbon

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: July 25, 2018

General Information:
3 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H3: Sample was received or analysis requested beyond the recognized method holding time.
- MW-1 (Lab ID: 60273890009)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-6 **Lab ID: 60273890001** Collected: 06/27/18 09:15 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**1700**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:05	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:05	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:05	7440-38-2	
Barium	**82.5**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:05	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:05	7440-41-7	
Boron	**46.6J**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:05	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:05	7440-43-9	
Calcium	**104000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:05	7440-70-2	
Chromium	**4.6J**	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:05	7440-47-3	
Cobalt	**3.0J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:05	7440-48-4	
Copper	**5.2J**	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:05	7440-50-8	
Iron	**2250**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:05	7439-89-6	
Lead	**4.7J**	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:05	7439-92-1	
Lithium	**22.7**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:05	7439-93-2	
Magnesium	**18200**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:05	7439-95-4	
Manganese	**398**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:05	7439-96-5	
Molybdenum	**2.5J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:05	7439-98-7	
Nickel	**7.1**	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:05	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:05	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:05	7440-22-4	
Sodium	**18500**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:05	7440-23-5	
Total Hardness by 2340B	**336000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:05		
Zinc	**85.5**	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:05	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:14	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 12:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**465**	mg/L	5.0	5.0	1		07/03/18 11:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		07/02/18 13:29		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**10.8**	mg/L	1.0	0.46	1		07/13/18 20:28	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	0.063	1		07/13/18 20:28	16984-48-8	
Sulfate	**96.2**	mg/L	20.0	4.7	20		07/13/18 21:25	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-6 **Lab ID: 60273890001** Collected: 06/27/18 09:15 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**8.5J**	mg/L	10.0	3.1	1		07/06/18 10:54		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.7**	mg/L	1.0	0.13	1		07/16/18 20:44	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-7 **Lab ID: 60273890002** Collected: 06/27/18 10:43 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**101**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:07	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:07	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:07	7440-38-2	
Barium	**79.0**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:07	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:07	7440-41-7	
Boron	**206**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:07	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:07	7440-43-9	
Calcium	**129000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:07	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:07	7440-47-3	
Cobalt	**1.5J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:07	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:07	7440-50-8	
Iron	**922**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:07	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:07	7439-92-1	
Lithium	**46.6**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:07	7439-93-2	
Magnesium	**33700**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:07	7439-95-4	
Manganese	**356**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:07	7439-96-5	
Molybdenum	**7.9J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:07	7439-98-7	
Nickel	**4.2J**	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:07	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:07	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:07	7440-22-4	
Sodium	**50800**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:07	7440-23-5	
Total Hardness by 2340B	**461000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:07		
Zinc	**131**	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:07	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:16	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 12:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**714**	mg/L	5.0	5.0	1		07/03/18 11:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.10	1		07/02/18 13:33		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**30.6**	mg/L	5.0	2.3	5		07/13/18 21:54	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	0.063	1		07/13/18 21:40	16984-48-8	
Sulfate	**246**	mg/L	20.0	4.7	20		07/13/18 22:08	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-7 **Lab ID: 60273890002** Collected: 06/27/18 10:43 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		07/06/18 10:55		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.2**	mg/L	1.0	0.13	1		07/16/18 20:57	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: PZ-2 **Lab ID: 60273890003** Collected: 06/27/18 12:30 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**74.0J**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:09	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:09	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:09	7440-38-2	
Barium	**58.2**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:09	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:09	7440-41-7	
Boron	**627**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:09	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:09	7440-43-9	
Calcium	**202000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:09	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:09	7440-47-3	
Cobalt	**1.4J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:09	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:09	7440-50-8	
Iron	**380**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:09	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:09	7439-92-1	
Lithium	**7.6J**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:09	7439-93-2	
Magnesium	**42100**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:09	7439-95-4	
Manganese	**403**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:09	7439-96-5	
Molybdenum	**1.5J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:09	7439-98-7	
Nickel	**3.9J**	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:09	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:09	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:09	7440-22-4	
Sodium	**127000**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:09	7440-23-5	
Total Hardness by 2340B	**678000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:09		
Zinc	ND	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:09	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:19	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1240**	mg/L	5.0	5.0	1		07/03/18 11:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		07/02/18 13:40		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**207**	mg/L	50.0	23.1	50		07/13/18 22:51	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	0.063	1		07/13/18 22:22	16984-48-8	
Sulfate	**351**	mg/L	50.0	11.8	50		07/13/18 22:51	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: PZ-2 **Lab ID: 60273890003** Collected: 06/27/18 12:30 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**17.4**	mg/L	10.0	3.1	1		07/06/18 10:55		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.8**	mg/L	1.0	0.13	1		07/16/18 21:10	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-5 **Lab ID: 60273890004** Collected: 06/27/18 14:00 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**106**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:11	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:11	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:11	7440-38-2	
Barium	**227**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:11	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:11	7440-41-7	
Boron	**226**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:11	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:11	7440-43-9	
Calcium	**99000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:11	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:11	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:11	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:11	7440-50-8	
Iron	**53.8**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:11	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:11	7439-92-1	
Lithium	**42.6**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:11	7439-93-2	
Magnesium	**28900**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:11	7439-95-4	
Manganese	**31.3**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:11	7439-96-5	
Molybdenum	**5.3J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:11	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:11	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:11	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:11	7440-22-4	
Sodium	**72200**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:11	7440-23-5	
Total Hardness by 2340B	**366000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:11		
Zinc	ND	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:11	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:26	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**625**	mg/L	5.0	5.0	1		07/03/18 11:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.7**	Std. Units	0.10	0.10	1		07/02/18 13:42		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**52.2**	mg/L	5.0	2.3	5		07/13/18 23:19	16887-00-6	
Fluoride	**0.57**	mg/L	0.20	0.063	1		07/13/18 23:05	16984-48-8	
Sulfate	**141**	mg/L	10.0	2.4	10		07/14/18 00:02	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-5 **Lab ID: 60273890004** Collected: 06/27/18 14:00 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		07/06/18 10:55		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.2**	mg/L	1.0	0.13	1		07/16/18 21:23	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-4 **Lab ID: 60273890005** Collected: 06/28/18 20:40 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**99.0**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:13	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:13	7440-36-0	
Arsenic	**6.0J**	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:13	7440-38-2	
Barium	**111**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:13	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:13	7440-41-7	
Boron	**55.3J**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:13	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:13	7440-43-9	
Calcium	**112000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:13	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:13	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:13	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:13	7440-50-8	
Iron	**492**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:13	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:13	7439-92-1	
Lithium	**34.0**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:13	7439-93-2	
Magnesium	**38300**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:13	7439-95-4	
Manganese	**213**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:13	7439-96-5	
Molybdenum	**3.3J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:13	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:13	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:13	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:13	7440-22-4	
Sodium	**47300**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:13	7440-23-5	
Total Hardness by 2340B	**439000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:13		
Zinc	ND	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:13	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**618**	mg/L	5.0	5.0	1		07/05/18 11:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		07/02/18 16:09		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**26.3**	mg/L	2.0	0.92	2		07/14/18 00:31	16887-00-6	
Fluoride	**0.58**	mg/L	0.20	0.063	1		07/14/18 00:16	16984-48-8	
Sulfate	**89.1**	mg/L	10.0	2.4	10		07/14/18 00:45	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-4 **Lab ID: 60273890005** Collected: 06/28/18 20:40 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		07/06/18 10:56		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.80J**	mg/L	1.0	0.13	1		07/16/18 22:01	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-3 **Lab ID: 60273890006** Collected: 06/28/18 10:03 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**99.5**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:16	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:16	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:16	7440-38-2	
Barium	**208**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:16	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:16	7440-41-7	
Boron	**66.5J**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:16	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:16	7440-43-9	
Calcium	**105000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:16	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:16	7440-47-3	
Cobalt	**0.92J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:16	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:16	7440-50-8	
Iron	**70.6**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:16	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:16	7439-92-1	
Lithium	**46.0**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:16	7439-93-2	
Magnesium	**38600**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:16	7439-95-4	
Manganese	**93.3**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:16	7439-96-5	
Molybdenum	**6.7J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:16	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:16	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:16	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:16	7440-22-4	
Sodium	**34700**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:16	7440-23-5	
Total Hardness by 2340B	**422000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:16		
Zinc	**3.5J**	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:16	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:07	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**542**	mg/L	5.0	5.0	1		07/05/18 11:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.10	1		07/02/18 13:53		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**8.1**	mg/L	1.0	0.46	1		07/14/18 00:59	16887-00-6	
Fluoride	**0.57**	mg/L	0.20	0.063	1		07/14/18 00:59	16984-48-8	
Sulfate	**55.8**	mg/L	5.0	1.2	5		07/14/18 01:13	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-3 **Lab ID: 60273890006** Collected: 06/28/18 10:03 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		07/06/18 10:56		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.89J**	mg/L	1.0	0.13	1		07/16/18 22:14	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-2 **Lab ID: 60273890007** Collected: 06/28/18 11:37 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**103**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:18	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:18	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:18	7440-38-2	
Barium	**152**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:18	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:18	7440-41-7	
Boron	**88.9J**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:18	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:18	7440-43-9	
Calcium	**106000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:18	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:18	7440-47-3	
Cobalt	**1.6J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:18	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:18	7440-50-8	
Iron	**105**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:18	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:18	7439-92-1	
Lithium	**40.1**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:18	7439-93-2	
Magnesium	**40100**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:18	7439-95-4	
Manganese	**407**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:18	7439-96-5	
Molybdenum	**6.8J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:18	7439-98-7	
Nickel	**1.8J**	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:18	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:18	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:18	7440-22-4	
Sodium	**29400**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:18	7440-23-5	
Total Hardness by 2340B	**431000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:18		
Zinc	**22.7J**	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:18	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:33	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**551**	mg/L	5.0	5.0	1		07/05/18 11:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		07/02/18 13:54		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.5**	mg/L	1.0	0.46	1		07/14/18 01:28	16887-00-6	
Fluoride	**0.59**	mg/L	0.20	0.063	1		07/14/18 01:28	16984-48-8	
Sulfate	**58.3**	mg/L	5.0	1.2	5		07/14/18 01:42	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-2 **Lab ID: 60273890007** Collected: 06/28/18 11:37 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		07/06/18 11:00		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.85J**	mg/L	1.0	0.13	1		07/16/18 22:27	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: DUP-1 **Lab ID: 60273890008** Collected: 06/28/18 11:37 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**93.4**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:20	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:20	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:20	7440-38-2	
Barium	**152**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:20	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:20	7440-41-7	
Boron	**89.1J**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:20	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:20	7440-43-9	
Calcium	**105000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:20	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:20	7440-47-3	
Cobalt	**1.9J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:20	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:20	7440-50-8	
Iron	**100**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:20	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:20	7439-92-1	
Lithium	**42.1**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:20	7439-93-2	
Magnesium	**40000**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:20	7439-95-4	
Manganese	**407**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:20	7439-96-5	
Molybdenum	**6.4J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:20	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:20	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:20	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:20	7440-22-4	
Sodium	**29200**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:20	7440-23-5	
Total Hardness by 2340B	**428000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:20		
Zinc	**21.1J**	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:20	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:12	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**470**	mg/L	5.0	5.0	1		07/05/18 11:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		07/02/18 13:57		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.5**	mg/L	1.0	0.46	1		07/14/18 01:56	16887-00-6	
Fluoride	**0.58**	mg/L	0.20	0.063	1		07/14/18 01:56	16984-48-8	
Sulfate	**57.6**	mg/L	5.0	1.2	5		07/14/18 02:10	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: DUP-1 **Lab ID: 60273890008** Collected: 06/28/18 11:37 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		07/06/18 11:00		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.85J**	mg/L	1.0	0.13	1		07/16/18 22:40	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-1 **Lab ID: 60273890009** Collected: 06/29/18 08:35 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**21.2J**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:22	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:22	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:22	7440-38-2	
Barium	**66.7**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:22	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:22	7440-41-7	
Boron	**2250**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:22	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:22	7440-43-9	
Calcium	**152000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:22	7440-70-2	M1
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:22	7440-47-3	
Cobalt	**1.7J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:22	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:22	7440-50-8	
Iron	**107**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:22	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:22	7439-92-1	
Lithium	**45.2**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:22	7439-93-2	
Magnesium	**42200**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:22	7439-95-4	
Manganese	**254**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:22	7439-96-5	
Molybdenum	**3.7J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:22	7439-98-7	
Nickel	**5.4**	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:22	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:22	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:22	7440-22-4	
Sodium	**72000**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:22	7440-23-5	
Total Hardness by 2340B	**553000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:22		
Zinc	ND	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:22	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/05/18 15:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:18	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**824**	mg/L	5.0	5.0	1		07/05/18 11:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		07/02/18 16:12		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**63.5**	mg/L	10.0	4.6	10		07/14/18 03:07	16887-00-6	
Fluoride	**0.55**	mg/L	0.20	0.063	1		07/14/18 02:53	16984-48-8	
Sulfate	**205**	mg/L	20.0	4.7	20		07/14/18 03:22	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-1 **Lab ID: 60273890009** Collected: 06/29/18 08:35 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.1	1		07/06/18 11:01		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.49J**	mg/L	1.0	0.13	1		07/16/18 22:52	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/30/18 10:47	18540-29-9	H3

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-8 **Lab ID: 60273890010** Collected: 06/29/18 10:55 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**72.6J**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:32	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:32	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:32	7440-38-2	
Barium	**22.0**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:32	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:32	7440-41-7	
Boron	**384**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:32	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:32	7440-43-9	
Calcium	**248000**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:32	7440-70-2	
Chromium	ND	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:32	7440-47-3	
Cobalt	**1.0J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:32	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:32	7440-50-8	
Iron	**718**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:32	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:32	7439-92-1	
Lithium	**27.2**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:32	7439-93-2	
Magnesium	**38800**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:32	7439-95-4	
Manganese	**987**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:32	7439-96-5	
Molybdenum	**1.6J**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:32	7439-98-7	
Nickel	**5.4**	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:32	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:32	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:32	7440-22-4	
Sodium	**77400**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:32	7440-23-5	
Total Hardness by 2340B	**778000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:32		
Zinc	ND	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:32	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	ND	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:25	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1870**	mg/L	5.0	5.0	1		07/05/18 11:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.8**	Std. Units	0.10	0.10	1		07/02/18 16:18		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**68.6**	mg/L	5.0	2.3	5		07/14/18 14:51	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	0.063	1		07/14/18 03:36	16984-48-8	
Sulfate	**807**	mg/L	50.0	11.8	50		07/14/18 04:04	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-8 **Lab ID: 60273890010** Collected: 06/29/18 10:55 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**3.8J**	mg/L	10.0	3.1	1		07/06/18 11:01		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.80J**	mg/L	1.0	0.13	1		07/16/18 23:18	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/30/18 10:47	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: POND SURFACE WATER **Lab ID: 60273890011** Collected: 06/29/18 11:45 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum	**666**	ug/L	75.0	21.1	1	07/03/18 12:15	07/14/18 18:35	7429-90-5	
Antimony	ND	ug/L	15.0	6.5	1	07/03/18 12:15	07/14/18 18:35	7440-36-0	
Arsenic	ND	ug/L	10.0	4.9	1	07/03/18 12:15	07/14/18 18:35	7440-38-2	
Barium	**53.9**	ug/L	5.0	1.5	1	07/03/18 12:15	07/14/18 18:35	7440-39-3	
Beryllium	ND	ug/L	1.0	0.16	1	07/03/18 12:15	07/14/18 18:35	7440-41-7	
Boron	**1340**	ug/L	100	12.5	1	07/03/18 12:15	07/14/18 18:35	7440-42-8	
Cadmium	ND	ug/L	5.0	0.45	1	07/03/18 12:15	07/14/18 18:35	7440-43-9	
Calcium	**78100**	ug/L	200	53.5	1	07/03/18 12:15	07/14/18 18:35	7440-70-2	
Chromium	**2.0J**	ug/L	5.0	1.1	1	07/03/18 12:15	07/14/18 18:35	7440-47-3	
Cobalt	**1.3J**	ug/L	5.0	0.87	1	07/03/18 12:15	07/14/18 18:35	7440-48-4	
Copper	**10.7**	ug/L	10.0	4.5	1	07/03/18 12:15	07/14/18 18:35	7440-50-8	
Iron	**746**	ug/L	50.0	6.1	1	07/03/18 12:15	07/14/18 18:35	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	07/03/18 12:15	07/14/18 18:35	7439-92-1	
Lithium	**29.9**	ug/L	10.0	4.6	1	07/03/18 12:15	07/14/18 18:35	7439-93-2	
Magnesium	**18400**	ug/L	50.0	14.0	1	07/03/18 12:15	07/14/18 18:35	7439-95-4	
Manganese	**24.8**	ug/L	5.0	0.73	1	07/03/18 12:15	07/14/18 18:35	7439-96-5	
Molybdenum	**129**	ug/L	20.0	0.90	1	07/03/18 12:15	07/14/18 18:35	7439-98-7	
Nickel	**3.7J**	ug/L	5.0	1.4	1	07/03/18 12:15	07/14/18 18:35	7440-02-0	
Selenium	**16.1**	ug/L	15.0	6.1	1	07/03/18 12:15	07/14/18 18:35	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	07/03/18 12:15	07/14/18 18:35	7440-22-4	
Sodium	**76300**	ug/L	500	157	1	07/03/18 12:15	07/14/18 18:35	7440-23-5	
Total Hardness by 2340B	**271000**	ug/L	500	500	1	07/03/18 12:15	07/14/18 18:35		
Zinc	**31.8J**	ug/L	50.0	3.5	1	07/03/18 12:15	07/14/18 18:35	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Thallium	**0.16J**	ug/L	1.0	0.14	1	07/02/18 15:00	07/10/18 16:41	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	07/13/18 16:00	07/16/18 13:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**592**	mg/L	5.0	5.0	1		07/05/18 11:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.6**	Std. Units	0.10	0.10	1		07/02/18 16:20		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		07/16/18 16:41	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**87.1**	mg/L	10.0	4.6	10		07/14/18 11:40	16887-00-6	
Fluoride	**0.71**	mg/L	0.20	0.063	1		07/14/18 11:27	16984-48-8	
Sulfate	**255**	mg/L	20.0	4.7	20		07/15/18 18:36	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: POND SURFACE WATER **Lab ID: 60273890011** Collected: 06/29/18 11:45 Received: 06/30/18 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**8.3J**	mg/L	10.0	3.1	1		07/06/18 11:02		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.4**	mg/L	1.0	0.13	1		07/16/18 23:31	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0022	1		06/30/18 10:48	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 534210 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

METHOD BLANK: 2188071 | Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.090	07/16/18 12:52	

LABORATORY CONTROL SAMPLE: 2188072

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2188073 2188074

Parameter	Units	60273890009 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	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532736 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

METHOD BLANK: 2182057 | Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	21.1	07/14/18 17:48	
Antimony	ug/L	ND	15.0	6.5	07/14/18 17:48	
Arsenic	ug/L	ND	10.0	4.9	07/14/18 17:48	
Barium	ug/L	ND	5.0	1.5	07/14/18 17:48	
Beryllium	ug/L	ND	1.0	0.16	07/14/18 17:48	
Boron	ug/L	ND	100	12.5	07/14/18 17:48	
Cadmium	ug/L	ND	5.0	0.45	07/14/18 17:48	
Calcium	ug/L	ND	200	53.5	07/14/18 17:48	
Chromium	ug/L	ND	5.0	1.1	07/14/18 17:48	
Cobalt	ug/L	ND	5.0	0.87	07/14/18 17:48	
Copper	ug/L	ND	10.0	4.5	07/14/18 17:48	
Iron	ug/L	ND	50.0	6.1	07/14/18 17:48	
Lead	ug/L	ND	10.0	3.0	07/14/18 17:48	
Lithium	ug/L	ND	10.0	4.6	07/14/18 17:48	
Magnesium	ug/L	ND	50.0	14.0	07/14/18 17:48	
Manganese	ug/L	ND	5.0	0.73	07/14/18 17:48	
Molybdenum	ug/L	ND	20.0	0.90	07/14/18 17:48	
Nickel	ug/L	ND	5.0	1.4	07/14/18 17:48	
Selenium	ug/L	ND	15.0	6.1	07/14/18 17:48	
Silver	ug/L	ND	7.0	2.0	07/14/18 17:48	
Sodium	ug/L	ND	500	157	07/14/18 17:48	
Total Hardness by 2340B	ug/L	ND	500	500	07/14/18 17:48	
Zinc	ug/L	ND	50.0	3.5	07/14/18 17:48	

LABORATORY CONTROL SAMPLE: 2182058

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9590	96	80-120	
Antimony	ug/L	1000	988	99	80-120	
Arsenic	ug/L	1000	958	96	80-120	
Barium	ug/L	1000	988	99	80-120	
Beryllium	ug/L	1000	984	98	80-120	
Boron	ug/L	1000	964	96	80-120	
Cadmium	ug/L	1000	994	99	80-120	
Calcium	ug/L	10000	9510	95	80-120	
Chromium	ug/L	1000	995	100	80-120	
Cobalt	ug/L	1000	1000	100	80-120	
Copper	ug/L	1000	1000	100	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

LABORATORY CONTROL SAMPLE: 2182058

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9630	96	80-120	
Lead	ug/L	1000	1010	101	80-120	
Lithium	ug/L	1000	989	99	80-120	
Magnesium	ug/L	10000	9870	99	80-120	
Manganese	ug/L	1000	988	99	80-120	
Molybdenum	ug/L	1000	1000	100	80-120	
Nickel	ug/L	1000	999	100	80-120	
Selenium	ug/L	1000	1010	101	80-120	
Silver	ug/L	500	493	99	80-120	
Sodium	ug/L	10000	9510	95	80-120	
Total Hardness by 2340B	ug/L		64400			
Zinc	ug/L	1000	991	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2182059 2182060

Parameter	Units	60273890009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	21.2J	10000	10000	10100	9880	101	99	75-125	3	20	
Antimony	ug/L	ND	1000	1000	1030	1020	103	102	75-125	1	20	
Arsenic	ug/L	ND	1000	1000	1040	1030	103	103	75-125	1	20	
Barium	ug/L	66.7	1000	1000	1100	1080	104	101	75-125	2	20	
Beryllium	ug/L	ND	1000	1000	1000	979	100	98	75-125	3	20	
Boron	ug/L	2250	1000	1000	3250	3150	100	90	75-125	3	20	
Cadmium	ug/L	ND	1000	1000	1040	1030	104	103	75-125	1	20	
Calcium	ug/L	152000	10000	10000	163000	155000	114	35	75-125	5	20	M1
Chromium	ug/L	ND	1000	1000	1020	1000	102	100	75-125	1	20	
Cobalt	ug/L	1.7J	1000	1000	1010	993	100	99	75-125	1	20	
Copper	ug/L	ND	1000	1000	1050	1030	105	103	75-125	2	20	
Iron	ug/L	107	10000	10000	9650	9320	95	92	75-125	3	20	
Lead	ug/L	ND	1000	1000	984	976	98	97	75-125	1	20	
Lithium	ug/L	45.2	1000	1000	1130	1100	109	106	75-125	3	20	
Magnesium	ug/L	42200	10000	10000	52400	50800	102	86	75-125	3	20	
Manganese	ug/L	254	1000	1000	1260	1240	101	99	75-125	1	20	
Molybdenum	ug/L	3.7J	1000	1000	1050	1040	105	103	75-125	1	20	
Nickel	ug/L	5.4	1000	1000	989	977	98	97	75-125	1	20	
Selenium	ug/L	ND	1000	1000	1050	1040	105	104	75-125	1	20	
Silver	ug/L	ND	500	500	517	506	103	101	75-125	2	20	
Sodium	ug/L	72000	10000	10000	83900	79900	119	80	75-125	5	20	
Total Hardness by 2340B	ug/L	553000			624000	597000				4		
Zinc	ug/L	ND	1000	1000	991	987	99	99	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532608 | Analysis Method: EPA 6020
QC Batch Method: EPA 3010 | Analysis Description: 6020 MET
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

METHOD BLANK: 2181579 | Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Thallium	ug/L	ND	1.0	0.14	07/05/18 15:47	

LABORATORY CONTROL SAMPLE: 2181580

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Thallium	ug/L	40	38.3	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2181581 2181582

Parameter	Units	60273890009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Thallium	ug/L	ND	40	40	41.0	40.2	102	100	75-125	2	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532739 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004

METHOD BLANK: 2182069 | Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	07/03/18 11:43	

LABORATORY CONTROL SAMPLE: 2182070

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	991	99	80-120	

SAMPLE DUPLICATE: 2182071

Parameter	Units	60273664009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	610	604	1	10	

SAMPLE DUPLICATE: 2182072

Parameter	Units	60273831003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	931	929	0	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532949 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60273890005, 60273890006, 60273890007

METHOD BLANK: 2182829 | Matrix: Water
Associated Lab Samples: 60273890005, 60273890006, 60273890007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	07/05/18 11:17	

LABORATORY CONTROL SAMPLE: 2182830

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 2182831

Parameter	Units	60273774001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	21900	22400	2	10	

SAMPLE DUPLICATE: 2182832

Parameter	Units	60273831006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1900	1860	2	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532950 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60273890008, 60273890009, 60273890010, 60273890011

METHOD BLANK: 2182833 | Matrix: Water
Associated Lab Samples: 60273890008, 60273890009, 60273890010, 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	07/05/18 11:17	

LABORATORY CONTROL SAMPLE: 2182834

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2182835

Parameter	Units	60273890009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	824	805	2	10	

SAMPLE DUPLICATE: 2182836

Parameter	Units	7590403001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2290	2410	5	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532482 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890006, 60273890007, 60273890008

SAMPLE DUPLICATE: 2181250

Parameter	Units	60273890001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.2	7	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532485 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60273890005, 60273890009, 60273890010, 60273890011

SAMPLE DUPLICATE: 2181264

Parameter	Units	60273890009 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.5	1	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 534363 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010

METHOD BLANK: 2188563 | Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	07/13/18 09:28	
Fluoride	mg/L	ND	0.20	0.063	07/13/18 09:28	
Sulfate	mg/L	ND	1.0	0.24	07/13/18 09:28	

LABORATORY CONTROL SAMPLE: 2188564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2188565 2188566

Parameter	Units	60273879001 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	18.8	19.0	109	113	90-110	1	15	M1
Fluoride	mg/L	0.24	2.5	2.5	2.7	2.8	99	104	90-110	5	15	

MATRIX SPIKE SAMPLE: 2188567

Parameter	Units	60273879002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.28	2.5	2.8	102	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 534408 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60273890010, 60273890011

METHOD BLANK: 2188713 | Matrix: Water
Associated Lab Samples: 60273890010, 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	07/14/18 10:36	
Fluoride	mg/L	ND	0.20	0.063	07/14/18 10:36	

LABORATORY CONTROL SAMPLE: 2188714

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 534436 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60273890011

METHOD BLANK: 2189075 | Matrix: Water
Associated Lab Samples: 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	0.24	07/15/18 14:50	

LABORATORY CONTROL SAMPLE: 2189076

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2189077 2189078

Parameter	Units	60274189001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	693	500	500	1170	1190	94	99	90-110	2	15	

MATRIX SPIKE SAMPLE: 2189079

Parameter	Units	60274190001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	1920	1000	2890	97	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532782 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006

METHOD BLANK: 2182219 Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.1	07/06/18 10:42	

LABORATORY CONTROL SAMPLE: 2182220

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	51.5	103	90-110	

MATRIX SPIKE SAMPLE: 2182221

Parameter	Units	60273717001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	56.0	112	90-110	M1

MATRIX SPIKE SAMPLE: 2182223

Parameter	Units	60274012001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	772	500	1210	87	90-110	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532829 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

METHOD BLANK: 2182389 Matrix: Water
Associated Lab Samples: 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.1	07/06/18 10:57	

LABORATORY CONTROL SAMPLE: 2182390

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	51.4	103	90-110	

MATRIX SPIKE SAMPLE: 2182391

Parameter	Units	60273435001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	27.9	50	78.8	102	90-110	

SAMPLE DUPLICATE: 2182392

Parameter	Units	60273890009 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 534019 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

METHOD BLANK: 2187197 | Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.13	07/16/18 18:37	

LABORATORY CONTROL SAMPLE: 2187198

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.5	110	80-120	

MATRIX SPIKE SAMPLE: 2187199

Parameter	Units	60273831006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	0.47J	5	2.8	46	80-120	M1

SAMPLE DUPLICATE: 2187200

Parameter	Units	60273890009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	0.49J	0.48J		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 532458 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60273890009, 60273890010, 60273890011

METHOD BLANK: 2181055 | Matrix: Water
Associated Lab Samples: 60273890009, 60273890010, 60273890011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0022	06/30/18 10:47	

LABORATORY CONTROL SAMPLE: 2181056

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.097	97	90-110	

MATRIX SPIKE SAMPLE: 2181057

Parameter	Units	60273890009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.10	100	85-115	H3

SAMPLE DUPLICATE: 2181058

Parameter	Units	60273890010 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-6 **Lab ID: 60273890001** Collected: 06/27/18 09:15 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.09 ± 0.690 (0.890) C:NA T:83%**	pCi/L	07/19/18 12:23	13982-63-3	
Radium-228	EPA 904.0	**1.05 ± 0.654 (1.21) C:73% T:51%**	pCi/L	07/24/18 11:42	15262-20-1	
Total Radium	Total Radium Calculation	**2.14 ± 1.34 (2.10)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-7 **Lab ID: 60273890002** Collected: 06/27/18 10:43 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.604 ± 0.514 (0.722)** **C:NA T:90%**	pCi/L	07/19/18 12:42	13982-63-3	
Radium-228	EPA 904.0	**0.318 ± 0.356 (0.744)** **C:73% T:82%**	pCi/L	07/24/18 15:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.922 ± 0.870 (1.47)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: PZ-2 **Lab ID: 60273890003** Collected: 06/27/18 12:30 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.261 ± 0.444 (0.783)** **C:NA T:90%**	pCi/L	07/19/18 12:42	13982-63-3	
Radium-228	EPA 904.0	**0.130 ± 0.296 (0.659)** **C:74% T:87%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.391 ± 0.740 (1.44)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-5 **Lab ID: 60273890004** Collected: 06/27/18 14:00 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.538 ± 0.394 (0.440)** **C:NA T:91%**	pCi/L	07/19/18 12:42	13982-63-3	
Radium-228	EPA 904.0	**0.274 ± 0.394 (0.847)** **C:76% T:78%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.812 ± 0.788 (1.29)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-4 **Lab ID: 60273890005** Collected: 06/28/18 20:40 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.669 ± 0.497 (0.654) C:NA T:96%**	pCi/L	07/19/18 12:42	13982-63-3	
Radium-228	EPA 904.0	**0.0546 ± 0.339 (0.777) C:75% T:82%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.724 ± 0.836 (1.43)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-3 **Lab ID: 60273890006** Collected: 06/28/18 10:03 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.690 ± 0.513 (0.676)** **C:NA T:98%**	pCi/L	07/19/18 12:42	13982-63-3	
Radium-228	EPA 904.0	**0.379 ± 0.358 (0.731)** **C:74% T:83%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**1.07 ± 0.871 (1.41)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-2 **Lab ID: 60273890007** Collected: 06/28/18 11:37 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.633 ± 0.443 (0.535)** **C:NA T:97%**	pCi/L	07/19/18 12:42	13982-63-3	
Radium-228	EPA 904.0	**0.482 ± 0.405 (0.814)** **C:74% T:79%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.848 (1.35)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: DUP-1 **Lab ID: 60273890008** Collected: 06/28/18 11:37 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.418 ± 0.456 (0.717)** **C:NA T:97%**	pCi/L	07/19/18 13:01	13982-63-3	
Radium-228	EPA 904.0	**0.0882 ± 0.330 (0.747)** **C:76% T:81%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.506 ± 0.786 (1.46)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-1 **Lab ID: 60273890009** Collected: 06/29/18 08:35 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.461 ± 0.468 (0.708)** **C:NA T:84%**	pCi/L	07/19/18 13:01	13982-63-3	
Radium-228	EPA 904.0	**0.159 ± 0.332 (0.734)** **C:76% T:75%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.620 ± 0.800 (1.44)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: MW-8 **Lab ID: 60273890010** Collected: 06/29/18 10:55 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.291 ± 0.380 (0.626) C:NA T:95%**	pCi/L	07/19/18 13:01	13982-63-3	
Radium-228	EPA 904.0	**-0.0934 ± 0.322 (0.775) C:74% T:82%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.291 ± 0.702 (1.40)**	pCi/L	07/25/18 12:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Sample: POND SURFACE WATER **Lab ID: 60273890011** Collected: 06/29/18 11:45 Received: 06/30/18 09:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.304 ± 0.359 (0.564)** **C:NA T:96%**	pCi/L	07/19/18 13:01	13982-63-3	
Radium-228	EPA 904.0	**-0.0615 ± 0.365 (0.863)** **C:74% T:75%**	pCi/L	07/24/18 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.304 ± 0.724 (1.43)**	pCi/L	07/25/18 12:58	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 305294 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

METHOD BLANK: 1493193 Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.200 ± 0.392 (0.717) C:NA T:89%	pCi/L	07/19/18 12:23	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

QC Batch: 305298 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

METHOD BLANK: 1493197 Matrix: Water
Associated Lab Samples: 60273890001, 60273890002, 60273890003, 60273890004, 60273890005, 60273890006, 60273890007, 60273890008, 60273890009, 60273890010, 60273890011

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.175 ± 0.381 (0.844) C:75% T:73%	pCi/L	07/24/18 11:42	

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.

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

H3	Sample was received or analysis requested beyond the recognized method holding time.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273890001	**MW-6**	EPA 3010	532736	EPA 6010	532789
60273890002	**MW-7**	EPA 3010	532736	EPA 6010	532789
60273890003	**PZ-2**	EPA 3010	532736	EPA 6010	532789
60273890004	**MW-5**	EPA 3010	532736	EPA 6010	532789
60273890005	**MW-4**	EPA 3010	532736	EPA 6010	532789
60273890006	**MW-3**	EPA 3010	532736	EPA 6010	532789
60273890007	**MW-2**	EPA 3010	532736	EPA 6010	532789
60273890008	**DUP-1**	EPA 3010	532736	EPA 6010	532789
60273890009	**MW-1**	EPA 3010	532736	EPA 6010	532789
60273890010	**MW-8**	EPA 3010	532736	EPA 6010	532789
60273890011	**POND SURFACE WATER**	EPA 3010	532736	EPA 6010	532789
60273890001	**MW-6**	EPA 3010	532608	EPA 6020	532664
60273890002	**MW-7**	EPA 3010	532608	EPA 6020	532664
60273890003	**PZ-2**	EPA 3010	532608	EPA 6020	532664
60273890004	**MW-5**	EPA 3010	532608	EPA 6020	532664
60273890005	**MW-4**	EPA 3010	532608	EPA 6020	532664
60273890006	**MW-3**	EPA 3010	532608	EPA 6020	532664
60273890007	**MW-2**	EPA 3010	532608	EPA 6020	532664
60273890008	**DUP-1**	EPA 3010	532608	EPA 6020	532664
60273890009	**MW-1**	EPA 3010	532608	EPA 6020	532664
60273890010	**MW-8**	EPA 3010	532608	EPA 6020	532664
60273890011	**POND SURFACE WATER**	EPA 3010	532608	EPA 6020	532664
60273890001	**MW-6**	EPA 7470	534210	EPA 7470	534394
60273890002	**MW-7**	EPA 7470	534210	EPA 7470	534394
60273890003	**PZ-2**	EPA 7470	534210	EPA 7470	534394
60273890004	**MW-5**	EPA 7470	534210	EPA 7470	534394
60273890005	**MW-4**	EPA 7470	534210	EPA 7470	534394
60273890006	**MW-3**	EPA 7470	534210	EPA 7470	534394
60273890007	**MW-2**	EPA 7470	534210	EPA 7470	534394
60273890008	**DUP-1**	EPA 7470	534210	EPA 7470	534394
60273890009	**MW-1**	EPA 7470	534210	EPA 7470	534394
60273890010	**MW-8**	EPA 7470	534210	EPA 7470	534394
60273890011	**POND SURFACE WATER**	EPA 7470	534210	EPA 7470	534394
60273890001	**MW-6**	EPA 903.1	305294		
60273890002	**MW-7**	EPA 903.1	305294		
60273890003	**PZ-2**	EPA 903.1	305294		
60273890004	**MW-5**	EPA 903.1	305294		
60273890005	**MW-4**	EPA 903.1	305294		
60273890006	**MW-3**	EPA 903.1	305294		
60273890007	**MW-2**	EPA 903.1	305294		
60273890008	**DUP-1**	EPA 903.1	305294		
60273890009	**MW-1**	EPA 903.1	305294		
60273890010	**MW-8**	EPA 903.1	305294		
60273890011	**POND SURFACE WATER**	EPA 903.1	305294		
60273890001	**MW-6**	EPA 904.0	305298		
60273890002	**MW-7**	EPA 904.0	305298		
60273890003	**PZ-2**	EPA 904.0	305298		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273890004	**MW-5**	EPA 904.0	305298		
60273890005	**MW-4**	EPA 904.0	305298		
60273890006	**MW-3**	EPA 904.0	305298		
60273890007	**MW-2**	EPA 904.0	305298		
60273890008	**DUP-1**	EPA 904.0	305298		
60273890009	**MW-1**	EPA 904.0	305298		
60273890010	**MW-8**	EPA 904.0	305298		
60273890011	**POND SURFACE WATER**	EPA 904.0	305298		
60273890001	**MW-6**	Total Radium Calculation	306982		
60273890002	**MW-7**	Total Radium Calculation	306982		
60273890003	**PZ-2**	Total Radium Calculation	306982		
60273890004	**MW-5**	Total Radium Calculation	306982		
60273890005	**MW-4**	Total Radium Calculation	306982		
60273890006	**MW-3**	Total Radium Calculation	306982		
60273890007	**MW-2**	Total Radium Calculation	306982		
60273890008	**DUP-1**	Total Radium Calculation	306982		
60273890009	**MW-1**	Total Radium Calculation	306982		
60273890010	**MW-8**	Total Radium Calculation	306982		
60273890011	**POND SURFACE WATER**	Total Radium Calculation	306982		
60273890001	**MW-6**	SM 2540C	532739		
60273890002	**MW-7**	SM 2540C	532739		
60273890003	**PZ-2**	SM 2540C	532739		
60273890004	**MW-5**	SM 2540C	532739		
60273890005	**MW-4**	SM 2540C	532949		
60273890006	**MW-3**	SM 2540C	532949		
60273890007	**MW-2**	SM 2540C	532949		
60273890008	**DUP-1**	SM 2540C	532950		
60273890009	**MW-1**	SM 2540C	532950		
60273890010	**MW-8**	SM 2540C	532950		
60273890011	**POND SURFACE WATER**	SM 2540C	532950		
60273890001	**MW-6**	SM 4500-H+B	532482		
60273890002	**MW-7**	SM 4500-H+B	532482		
60273890003	**PZ-2**	SM 4500-H+B	532482		
60273890004	**MW-5**	SM 4500-H+B	532482		
60273890005	**MW-4**	SM 4500-H+B	532485		
60273890006	**MW-3**	SM 4500-H+B	532482		
60273890007	**MW-2**	SM 4500-H+B	532482		
60273890008	**DUP-1**	SM 4500-H+B	532482		
60273890009	**MW-1**	SM 4500-H+B	532485		
60273890010	**MW-8**	SM 4500-H+B	532485		
60273890011	**POND SURFACE WATER**	SM 4500-H+B	532485		
60273890001	**MW-6**	Trivalent Chromium Calculation	534619		
60273890002	**MW-7**	Trivalent Chromium Calculation	534619		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273890003	**PZ-2**	Trivalent Chromium Calculation	534619		
60273890004	**MW-5**	Trivalent Chromium Calculation	534619		
60273890005	**MW-4**	Trivalent Chromium Calculation	534619		
60273890006	**MW-3**	Trivalent Chromium Calculation	534619		
60273890007	**MW-2**	Trivalent Chromium Calculation	534619		
60273890008	**DUP-1**	Trivalent Chromium Calculation	534619		
60273890009	**MW-1**	Trivalent Chromium Calculation	534619		
60273890010	**MW-8**	Trivalent Chromium Calculation	534619		
60273890011	**POND SURFACE WATER**	Trivalent Chromium Calculation	534619		
60273890001	**MW-6**	EPA 300.0	534363		
60273890002	**MW-7**	EPA 300.0	534363		
60273890003	**PZ-2**	EPA 300.0	534363		
60273890004	**MW-5**	EPA 300.0	534363		
60273890005	**MW-4**	EPA 300.0	534363		
60273890006	**MW-3**	EPA 300.0	534363		
60273890007	**MW-2**	EPA 300.0	534363		
60273890008	**DUP-1**	EPA 300.0	534363		
60273890009	**MW-1**	EPA 300.0	534363		
60273890010	**MW-8**	EPA 300.0	534363		
60273890010	**MW-8**	EPA 300.0	534408		
60273890011	**POND SURFACE WATER**	EPA 300.0	534408		
60273890011	**POND SURFACE WATER**	EPA 300.0	534436		
60273890001	**MW-6**	EPA 410.4	532782		
60273890002	**MW-7**	EPA 410.4	532782		
60273890003	**PZ-2**	EPA 410.4	532782		
60273890004	**MW-5**	EPA 410.4	532782		
60273890005	**MW-4**	EPA 410.4	532782		
60273890006	**MW-3**	EPA 410.4	532782		
60273890007	**MW-2**	EPA 410.4	532829		
60273890008	**DUP-1**	EPA 410.4	532829		
60273890009	**MW-1**	EPA 410.4	532829		
60273890010	**MW-8**	EPA 410.4	532829		
60273890011	**POND SURFACE WATER**	EPA 410.4	532829		
60273890001	**MW-6**	SM 5310C	534019		
60273890002	**MW-7**	SM 5310C	534019		
60273890003	**PZ-2**	SM 5310C	534019		
60273890004	**MW-5**	SM 5310C	534019		
60273890005	**MW-4**	SM 5310C	534019		
60273890006	**MW-3**	SM 5310C	534019		
60273890007	**MW-2**	SM 5310C	534019		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60273890

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273890008	**DUP-1**	SM 5310C	534019		
60273890009	**MW-1**	SM 5310C	534019		
60273890010	**MW-8**	SM 5310C	534019		
60273890011	**POND SURFACE WATER**	SM 5310C	534019		
60273890009	**MW-1**	EPA 7196	532458		
60273890010	**MW-8**	EPA 7196	532458		
60273890011	**POND SURFACE WATER**	EPA 7196	532458		

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Sample Condition Upon Receipt

WO# : 60273890

60273890

Client Name: Burns + McD

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 298 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.5, 1.7 / 2.9, 1.9 **Corr. Factor** +1.1 **Corrected** 2.6, 2.7 / 4.0, 3.0

Date and initials of person examining contents: JG 6-30-18

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	MW-1 Cr6 out of hold
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	Cr+6
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JMB Date: 7/2/18

F-KS-C-003-Rev.11, February 28, 2018

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 12

Section A — Required Client Information:

Company: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bweis@burnsmcd.com
Phone: 816-333-9400 Fax:
Requested Due Date:

Section B — Required Project Information:

Report To: Brian Weis
Copy To:
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C — Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: colleen.clyne@pacelabs.com
Pace Profile #: 10268

Regulatory Agency:
State / Location: MO

Requested Analysis Filtered (Y/N)

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 (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION (C°)	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	MW-6 BP1U(2) BP2U BP3U AG3S AG2S	WT	G	27Jun18	9:15A			17.8	7	2	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
2	MW-7 BP3U	WT	G	27Jun18	10:43A			17.7	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
3	PZ-2	WT	G	27Jun18	12:30P			18.4	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
4	MW-5	WT	G	27Jun18	2:00P			18.3	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
5	MW-4	WT	G	28Jun18	8:40P			16.5	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
6	MW-3	WT	G	28Jun18	10:03A			16.5	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
7	MW-2	WT	G	28Jun18	11:37A			18.2	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
8	Dup-1	WT	G	28Jun18	11:37A			18.2	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
9	MW-1 BP3U(2)	WT	G	29Jun18	8:35A			17.8	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
10	MS	WT	G	29Jun18	8:35A			17.8	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
11	MSD	WT	G	29Jun18	8:35A			17.8	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
12	MW-8	WT	G	29Jun18	10:55A			18.5	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ES+S	29Jun18	2:00PM	[illegible]	6/29	3:50				
				[illegible] PACE	6-30	0910	2.6/2.7	Y/Y	Y/Y	Y/Y
							4.0	Y	Y	Y
							3.0	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore

DATE Signed: 29 Jun 18

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 2 Of 2

Section A
Required Client Information:

Company:	BURNS & MCDONNELL
Address:	Burns & McDonnell
Kansas City, MO 64114	
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B
Required Project Information:

Report To:	Brian Weis
Copy To:	
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	colleen.clyne@pacelabs.com
Pace Profile #:	10268

Regulatory Agency
State / Location
MO

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
One Character per box.
(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 START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 Sulfate, Cl, F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	Pond Surface Water	WT	G	29Jun18	11:45A			[illegible]	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		BP3U AG2S AG3S BP3N BP2U(2) BP1N(2)
2																																
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
TOX EDD needed	[signature] ESTS	29Jun18	2:00PM	[signature]	6/29	3:50				
				[signature] PACE	6-30	0910	3.0	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: [signature]

DATE Signed: 29 Jun 18

ANALYTICAL REPORT

July 16, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L1006618
Samples Received:	07/03/2018
Project Number:	60273890
Description:	More's Lake Columbia, MO
Report To:	Jeff Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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

MW-6 L1006618-01 GW

Collected by	Collected date/time	Received date/time
	06/27/18 09:15	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 12:12	07/13/18 12:12	EG

MW-7 L1006618-02 GW

Collected by	Collected date/time	Received date/time
	06/27/18 10:43	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 12:20	07/13/18 12:20	EG

PZ-2 L1006618-03 GW

Collected by	Collected date/time	Received date/time
	06/27/18 12:30	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 12:30	07/13/18 12:30	EG

MW-5 L1006618-04 GW

Collected by	Collected date/time	Received date/time
	06/27/18 14:00	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 12:39	07/13/18 12:39	EG

MW-4 L1006618-05 GW

Collected by	Collected date/time	Received date/time
	06/28/18 20:40	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 14:05	07/13/18 14:05	EG

MW-3 L1006618-06 GW

Collected by	Collected date/time	Received date/time
	06/28/18 10:03	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 14:20	07/13/18 14:20	EG

MW-2 L1006618-07 GW

Collected by	Collected date/time	Received date/time
	06/28/18 11:37	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 14:35	07/13/18 14:35	EG

DUP-1 L1006618-08 GW

Collected by	Collected date/time	Received date/time
	06/28/18 11:37	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 14:44	07/13/18 14:44	EG

MW-1 L1006618-09 GW

Collected by	Collected date/time	Received date/time
	06/29/18 08:35	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 14:55	07/13/18 14:55	EG

MW-8 L1006618-10 GW

Collected by	Collected date/time	Received date/time
	06/29/18 10:55	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 15:40	07/13/18 15:40	EG

POND SURFACE WATER L1006618-11 GW

Collected by	Collected date/time	Received date/time
	06/29/18 11:45	07/03/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1135998	1	07/13/18 16:07	07/13/18 16:07	EG

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

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

Nancy F. McLain

Nancy McLain
Project Manager

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	19.2	J	12.0	100	1	07/13/2018 12:12	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	28.0	J	12.0	100	1	07/13/2018 12:20	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	96.5	J	12.0	100	1	07/13/2018 12:30	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	32.7	J	12.0	100	1	07/13/2018 12:39	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	45.3	J	12.0	100	1	07/13/2018 14:05	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	33.2	J	12.0	100	1	07/13/2018 14:20	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	23.5	J	12.0	100	1	07/13/2018 14:35	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	07/13/2018 14:44	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	49.0	J J5	12.0	100	1	07/13/2018 14:55	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	65.9	J	12.0	100	1	07/13/2018 15:40	WG1135998

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	42.7	J	12.0	100	1	07/13/2018 16:07	WG1135998

Method Blank (MB)

(MB) R3325177-1 07/12/18 15:40

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L1007136-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1007136-02 07/13/18 11:35 • (DUP) R3325177-4 07/13/18 11:54

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	620	752	1	19.2		20

L1006618-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1006618-01 07/13/18 12:12 • (DUP) R3325177-10 07/13/18 16:16

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	19.2	20.7	1	7.61	J	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3325177-2 07/12/18 15:58 • (LCSD) R3325177-3 07/12/18 16:14

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	205	190	102	94.9	85.0-115			7.53	20

L1006618-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1006618-09 07/13/18 14:55 • (MS) R3325177-6 07/13/18 15:05 • (MSD) R3325177-8 07/13/18 15:22

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	49.0	512	510	154	154	1	80.0-120	J5	J5	0.490	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

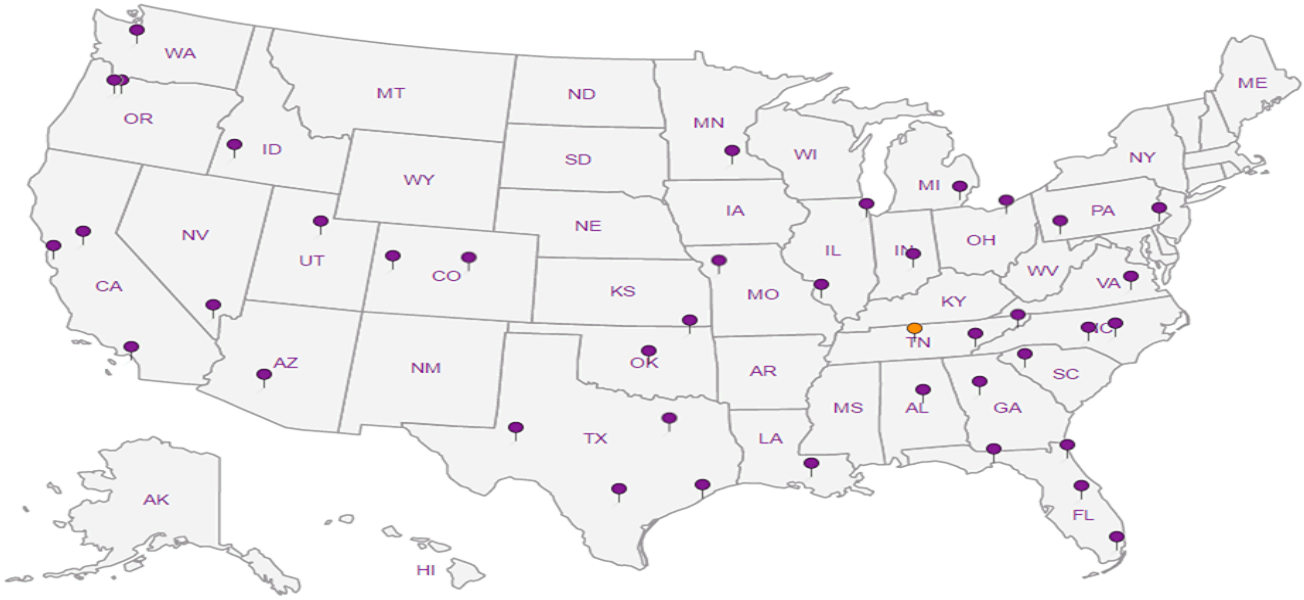
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60273890 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 7/17/2018

Report / Invoice To

Jeffrey Shopper
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1408
Email: jeff.shopper@pacelabs.com

Subcontract To

ESC Labs

P.O. SUB-9117

State of Sample Origin: MO

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4	TOX 9020B	TOX 9020B MS/MSD	LAB USE ONLY
1	MW-6	6/27/2018 09:15	60273890001	Water	1	X		100618-01
2	MW-7	6/27/2018 10:43	60273890002	Water	1	X		02
3	PZ-2	6/27/2018 12:30	60273890003	Water	1	X		03
4	MW-5	6/27/2018 14:00	60273890004	Water	1	X		04
5	MW-4	6/28/2018 20:40	60273890005	Water	1	X		05
6	MW-3	6/28/2018 10:03	60273890006	Water	1	X		06
7	MW-2	6/28/2018 11:37	60273890007	Water	1	X		07
8	DUP-1	6/28/2018 11:37	60273890008	Water	1	X		08
9	MW-1	6/29/2018 08:35	60273890009	Water	3	X	X	Required QC 09
10	MW-8	6/29/2018 10:55	60273890010	Water	1	X		10
11	POND SURFACE WATER	6/29/2018 11:45	60273890011	Water	1	X		11
12								
13								

Requested Analysis: 22

Transfers	Released By	Date/Time	Received By	Date/Time
1	E Bradett / Pcsi	7/2/18 1510	[illegible]	7/3/18 0895
2				
3				

Comments

Note: EDD Needed.

Cooler Temperature on Receipt 2.0 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

$3587277 8216

SUBOUT SAMPLES

Completed by Project Manager:

Sub out within Pace Office:

Containers to be sent:

X Sub out outside of Pace

Laboratory: ESC Lab Sciences

Shipping Address: 12065 Lebanon Rd
Mt Juliet, TN 37122

Containers to be sent: AG2S

Pace Purchase Order Number: SUB-9117

Project Number 60273890

Project Due Date: 7/17/2018

PM Initials: JNS

Sample #	Quant	Matrix	Test (Description)	Unit Price	Containers to send
60273890001-008, 010, 011	10	WATER	TOX 9020B	$75.00	10-AG2S
60273890009	1	WATER	TOX 9020B MS/MSD	$75.00	3-AG2S
			Total	$825.00	

Initials of Person Placing Work: NJW

Initials of Person Sending Samples:

Contact in other Lab: Nancy McClain

Phone Number: 615-758-5858 ext 9710

Date Sent: 7/2/2018

Courier Used:

Tracking Number:

2.0 K 11

ESC LAB SCIENCES
Cooler Receipt Form

Client: PACE LKS	SDG#	100618	
Cooler Received/Opened On: 7/3 /18	Temperature:	2.8	
Received By: Eric Struck			
Signature: [illegible]			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

August 23, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on August 22, 2018. 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,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60278290001	**MW-6**	Water	08/21/18 10:03	08/22/18 06:10
60278290002	**MW-7**	Water	08/21/18 10:45	08/22/18 06:10
60278290003	**PZ-2**	Water	08/21/18 13:09	08/22/18 06:10
60278290004	**MW-5**	Water	08/21/18 14:54	08/22/18 06:10

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60278290001	**MW-6**	EPA 7196	ZMH	1	PASI-K
60278290002	**MW-7**	EPA 7196	ZMH	1	PASI-K
60278290003	**PZ-2**	EPA 7196	ZMH	1	PASI-K
60278290004	**MW-5**	EPA 7196	ZMH	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: August 23, 2018

General Information:
4 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 540755

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60278290001

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

- MS (Lab ID: 2215506)
  - Chromium, Hexavalent

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Sample: MW-6 **Lab ID: 60278290001** Collected: 08/21/18 10:03 Received: 08/22/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/22/18 09:01	18540-29-9	M1

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Sample: MW-7 **Lab ID: 60278290002** Collected: 08/21/18 10:45 Received: 08/22/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/22/18 09:08	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Sample: PZ-2 **Lab ID: 60278290003** Collected: 08/21/18 13:09 Received: 08/22/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/22/18 09:09	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Sample: MW-5 **Lab ID: 60278290004** Collected: 08/21/18 14:54 Received: 08/22/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/22/18 09:10	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

QC Batch: 540755 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60278290001, 60278290002, 60278290003, 60278290004

METHOD BLANK: 2215504 | Matrix: Water
Associated Lab Samples: 60278290001, 60278290002, 60278290003, 60278290004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	08/22/18 09:00	

LABORATORY CONTROL SAMPLE: 2215505

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.10	103	90-110	

MATRIX SPIKE SAMPLE: 2215506

Parameter	Units	60278290001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.082	81	85-115	M1

SAMPLE DUPLICATE: 2215507

Parameter	Units	60278290001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		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.

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278290

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60278290001	**MW-6**	EPA 7196	540755		
60278290002	**MW-7**	EPA 7196	540755		
60278290003	**PZ-2**	EPA 7196	540755		
60278290004	**MW-5**	EPA 7196	540755		

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Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60278290

60278290

Client Name: Burns + McDonnell

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: 301 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 3.8 **Corr. Factor** +0.0 **Corrected** 3.8

Date and initials of person examining contents: JB 8/22

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	Crlt
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JWS Date: 8/22/18

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B — Required Project Information:

Report To:	Brian Weis
Copy To:	Chris Hoglund
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency	
State / Location	
	MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION C°	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	602 78240 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-6	WT	G	21Aug18	10:03A			12.2	1	1																✓					BPLu 001
2	MW-7	WT	G	21Aug18	10:45A			17.9	1	1																✓					002
3	PZ-2	WT	G	21Aug18	1:09P			18.5	1	1																✓					003
4	MW-5	WT	G	21Aug18	2:54P			18.5	1	1																✓					004
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ES&S	21Aug18	354 Pm	[illegible]	8-21	5:54				
J-flags on - include MDLs on report.				[illegible]	8/22	0610	3.8	Y	Y	Y

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	David Kilgore		
SIGNATURE of SAMPLER:	David Kilgore	DATE Signed:	21 Aug 18

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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

September 13, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on August 23, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Arkansas Drinking Water
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60278444001	**MW-6**	Water	08/21/18 09:07	08/23/18 06:30
60278444002	**MW-7**	Water	08/21/18 10:45	08/23/18 06:30
60278444003	**PZ-2**	Water	08/21/18 13:08	08/23/18 06:30
60278444004	**MW-5**	Water	08/21/18 14:54	08/23/18 06:30
60278444005	**MW-3**	Water	08/22/18 10:00	08/23/18 06:30
60278444006	**MW-4**	Water	08/22/18 10:48	08/23/18 06:30
60278444007	**MW-2**	Water	08/22/18 11:39	08/23/18 06:30
60278444008	**DUP-1**	Water	08/22/18 11:39	08/23/18 06:30
60278444009	**MW-8**	Water	08/22/18 14:44	08/23/18 06:30

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60278444001	**MW-6**	EPA 200.7	OL, SMW	2	PASI-K
		EPA 6010	TDS	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278444002	**MW-7**	EPA 200.7	OL, SMW	2	PASI-K
		EPA 6010	TDS	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278444003	**PZ-2**	EPA 200.7	OL, SMW	2	PASI-K
		EPA 6010	TDS	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278444004	**MW-5**	EPA 200.7	OL, SMW	2	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6010	TDS	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278444005	**MW-3**	EPA 7196	ZMH	1	PASI-K
60278444006	**MW-4**	EPA 7196	ZMH	1	PASI-K
60278444007	**MW-2**	EPA 7196	ZMH	1	PASI-K
60278444008	**DUP-1**	EPA 7196	ZMH	1	PASI-K
60278444009	**MW-8**	EPA 7196	ZMH	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 541139

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60278444001,60278481002

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

- MSD (Lab ID: 2217097)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 541141

B: Analyte was detected in the associated method blank.

- BLANK for HBN 541141 [MPRP/466 (Lab ID: 2217103)
  - Beryllium
  - Molybdenum

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- MW-5 (Lab ID: 60278444004)
- MW-6 (Lab ID: 60278444001)
- MW-7 (Lab ID: 60278444002)
- PZ-2 (Lab ID: 60278444003)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 543200

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 2082836001

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

- MS (Lab ID: 2225834)
  - Sulfate
- MSD (Lab ID: 2225835)
  - Sulfate

QC Batch: 543028

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60278936032

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

- MS (Lab ID: 2225006)
  - Chloride
- MSD (Lab ID: 2225007)
  - Chloride

Additional Comments:

Analyte Comments:

QC Batch: 543028

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2225006)
  - Chloride
- MSD (Lab ID: 2225007)
  - Chloride

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 542264

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60278427001,60278591001,60278591006

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

- MS (Lab ID: 2222033)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
4 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 542438

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2222640)
  - Total Organic Carbon

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
5 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-6 **Lab ID: 60278444001** Collected: 08/21/18 09:07 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**81.3J**	ug/L	100	12.5	1	08/23/18 15:30	08/28/18 18:43	7440-42-8	
Calcium	**182000**	ug/L	200	53.5	1	08/23/18 15:30	08/29/18 18:31	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/23/18 15:30	08/31/18 12:40	7440-38-2	
Beryllium	**0.42J**	ug/L	1.0	0.16	1	08/23/18 15:30	08/31/18 12:40	7440-41-7	B
Cadmium	**0.72J**	ug/L	5.0	0.45	1	08/23/18 15:30	08/31/18 12:40	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	08/23/18 15:30	08/31/18 12:40	7440-47-3	
Cobalt	**4.3J**	ug/L	5.0	0.87	1	08/23/18 15:30	08/31/18 12:40	7440-48-4	
Copper	**4.5J**	ug/L	10.0	4.5	1	08/23/18 15:30	08/31/18 12:40	7440-50-8	
Iron	**565**	ug/L	50.0	6.1	1	08/23/18 15:30	08/31/18 12:40	7439-89-6	
Lead	**3.2J**	ug/L	10.0	3.0	1	08/23/18 15:30	08/31/18 12:40	7439-92-1	
Lithium	**54.1**	ug/L	10.0	4.6	1	08/23/18 15:30	08/31/18 12:40	7439-93-2	
Magnesium	**36000**	ug/L	50.0	14.0	1	08/23/18 15:30	08/31/18 12:40	7439-95-4	
Manganese	**921**	ug/L	5.0	0.73	1	08/23/18 15:30	08/31/18 12:40	7439-96-5	
Molybdenum	**3.2J**	ug/L	20.0	0.90	1	08/23/18 15:30	08/31/18 12:40	7439-98-7	B
Nickel	**6.7**	ug/L	5.0	1.4	1	08/23/18 15:30	08/31/18 12:40	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/23/18 15:30	08/31/18 12:40	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/23/18 15:30	08/31/18 12:40	7440-22-4	
Sodium	**49100**	ug/L	500	157	1	08/23/18 15:30	08/31/18 12:40	7440-23-5	
Total Hardness by 2340B	**585000**	ug/L	705	500	1	08/23/18 15:30	08/31/18 12:40		
Zinc	**15.5J**	ug/L	50.0	3.5	1	08/23/18 15:30	08/31/18 12:40	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**112**	ug/L	50.0	8.9	1	08/23/18 15:30	09/06/18 17:51	7429-90-5	
Antimony	ND	ug/L	1.0	0.15	1	08/23/18 15:30	09/06/18 17:51	7440-36-0	
Barium	**81.0**	ug/L	1.0	0.34	1	08/23/18 15:30	09/06/18 17:51	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/23/18 15:30	09/06/18 17:51	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**813**	mg/L	5.0	5.0	1		08/24/18 13:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.10	1		08/24/18 15:14		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**24.5**	mg/L	2.0	0.92	2		09/06/18 15:50	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	0.063	1		09/06/18 00:03	16984-48-8	
Sulfate	**197**	mg/L	20.0	4.7	20		09/06/18 00:17	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**5.4J**	mg/L	10.0	3.5	1		08/31/18 14:22		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-6 **Lab ID: 60278444001** Collected: 08/21/18 09:07 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.8**	mg/L	1.0	0.65	1		08/31/18 14:45	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-7 **Lab ID: 60278444002** Collected: 08/21/18 10:45 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**248**	ug/L	100	12.5	1	08/23/18 15:30	08/28/18 18:47	7440-42-8	
Calcium	**145000**	ug/L	200	53.5	1	08/23/18 15:30	08/29/18 18:33	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/23/18 15:30	08/31/18 12:51	7440-38-2	
Beryllium	**0.61J**	ug/L	1.0	0.16	1	08/23/18 15:30	08/31/18 12:51	7440-41-7	B
Cadmium	**0.62J**	ug/L	5.0	0.45	1	08/23/18 15:30	08/31/18 12:51	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	08/23/18 15:30	08/31/18 12:51	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	08/23/18 15:30	08/31/18 12:51	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	08/23/18 15:30	08/31/18 12:51	7440-50-8	
Iron	**885**	ug/L	50.0	6.1	1	08/23/18 15:30	08/31/18 12:51	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	08/23/18 15:30	08/31/18 12:51	7439-92-1	
Lithium	**60.1**	ug/L	10.0	4.6	1	08/23/18 15:30	08/31/18 12:51	7439-93-2	
Magnesium	**32700**	ug/L	50.0	14.0	1	08/23/18 15:30	08/31/18 12:51	7439-95-4	
Manganese	**289**	ug/L	5.0	0.73	1	08/23/18 15:30	08/31/18 12:51	7439-96-5	
Molybdenum	**9.4J**	ug/L	20.0	0.90	1	08/23/18 15:30	08/31/18 12:51	7439-98-7	B
Nickel	**4.5J**	ug/L	5.0	1.4	1	08/23/18 15:30	08/31/18 12:51	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/23/18 15:30	08/31/18 12:51	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/23/18 15:30	08/31/18 12:51	7440-22-4	
Sodium	**75100**	ug/L	500	157	1	08/23/18 15:30	08/31/18 12:51	7440-23-5	
Total Hardness by 2340B	**475000**	ug/L	705	500	1	08/23/18 15:30	08/31/18 12:51		
Zinc	**166**	ug/L	50.0	3.5	1	08/23/18 15:30	08/31/18 12:51	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**24.4J**	ug/L	50.0	8.9	1	08/23/18 15:30	09/06/18 17:53	7429-90-5	
Antimony	**0.21J**	ug/L	1.0	0.15	1	08/23/18 15:30	09/06/18 17:53	7440-36-0	
Barium	**87.8**	ug/L	1.0	0.34	1	08/23/18 15:30	09/06/18 17:53	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/23/18 15:30	09/06/18 17:53	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**779**	mg/L	5.0	5.0	1		08/24/18 13:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		08/24/18 15:21		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**71.0**	mg/L	5.0	2.3	5		09/06/18 01:13	16887-00-6	
Fluoride	**0.082J**	mg/L	0.20	0.063	1		09/07/18 09:19	16984-48-8	
Sulfate	**217**	mg/L	20.0	4.7	20		09/06/18 01:27	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.5	1		08/31/18 14:23		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-7 **Lab ID: 60278444002** Collected: 08/21/18 10:45 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.2**	mg/L	1.0	0.65	1		08/31/18 14:58	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: PZ-2 **Lab ID: 60278444003** Collected: 08/21/18 13:08 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**737**	ug/L	100	12.5	1	08/23/18 15:30	08/28/18 18:49	7440-42-8	
Calcium	**227000**	ug/L	200	53.5	1	08/23/18 15:30	08/29/18 18:35	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/23/18 15:30	08/31/18 12:53	7440-38-2	
Beryllium	**0.59J**	ug/L	1.0	0.16	1	08/23/18 15:30	08/31/18 12:53	7440-41-7	B
Cadmium	ND	ug/L	5.0	0.45	1	08/23/18 15:30	08/31/18 12:53	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	08/23/18 15:30	08/31/18 12:53	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	08/23/18 15:30	08/31/18 12:53	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	08/23/18 15:30	08/31/18 12:53	7440-50-8	
Iron	**401**	ug/L	50.0	6.1	1	08/23/18 15:30	08/31/18 12:53	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	08/23/18 15:30	08/31/18 12:53	7439-92-1	
Lithium	**12.5**	ug/L	10.0	4.6	1	08/23/18 15:30	08/31/18 12:53	7439-93-2	
Magnesium	**43000**	ug/L	50.0	14.0	1	08/23/18 15:30	08/31/18 12:53	7439-95-4	
Manganese	**480**	ug/L	5.0	0.73	1	08/23/18 15:30	08/31/18 12:53	7439-96-5	
Molybdenum	**2.8J**	ug/L	20.0	0.90	1	08/23/18 15:30	08/31/18 12:53	7439-98-7	B
Nickel	**4.6J**	ug/L	5.0	1.4	1	08/23/18 15:30	08/31/18 12:53	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/23/18 15:30	08/31/18 12:53	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/23/18 15:30	08/31/18 12:53	7440-22-4	
Sodium	**136000**	ug/L	500	157	1	08/23/18 15:30	08/31/18 12:53	7440-23-5	
Total Hardness by 2340B	**725000**	ug/L	705	500	1	08/23/18 15:30	08/31/18 12:53		
Zinc	**5.9J**	ug/L	50.0	3.5	1	08/23/18 15:30	08/31/18 12:53	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**22.7J**	ug/L	50.0	8.9	1	08/23/18 15:30	09/06/18 17:58	7429-90-5	
Antimony	**0.23J**	ug/L	1.0	0.15	1	08/23/18 15:30	09/06/18 17:58	7440-36-0	
Barium	**61.5**	ug/L	1.0	0.34	1	08/23/18 15:30	09/06/18 17:58	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/23/18 15:30	09/06/18 17:58	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1810**	mg/L	5.0	5.0	1		08/24/18 13:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.10	1		08/24/18 16:16		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**460**	mg/L	50.0	23.1	50		09/06/18 02:09	16887-00-6	
Fluoride	**0.13J**	mg/L	0.20	0.063	1		09/07/18 10:00	16984-48-8	
Sulfate	**828**	mg/L	50.0	11.8	50		09/06/18 02:09	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**22.1**	mg/L	10.0	3.5	1		08/31/18 14:24		

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: PZ-2 **Lab ID: 60278444003** Collected: 08/21/18 13:08 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**4.7**	mg/L	1.0	0.65	1		08/31/18 15:37	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-5 **Lab ID: 60278444004** Collected: 08/21/18 14:54 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**415**	ug/L	100	12.5	1	08/23/18 15:30	08/28/18 18:52	7440-42-8	
Calcium	**136000**	ug/L	200	53.5	1	08/23/18 15:30	08/29/18 18:37	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/23/18 15:30	08/31/18 12:56	7440-38-2	
Beryllium	**0.30J**	ug/L	1.0	0.16	1	08/23/18 15:30	08/31/18 12:56	7440-41-7	B
Cadmium	**0.68J**	ug/L	5.0	0.45	1	08/23/18 15:30	08/31/18 12:56	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	08/23/18 15:30	08/31/18 12:56	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	08/23/18 15:30	08/31/18 12:56	7440-48-4	
Copper	**5.1J**	ug/L	10.0	4.5	1	08/23/18 15:30	08/31/18 12:56	7440-50-8	
Iron	**375**	ug/L	50.0	6.1	1	08/23/18 15:30	08/31/18 12:56	7439-89-6	
Lead	**5.2J**	ug/L	10.0	3.0	1	08/23/18 15:30	08/31/18 12:56	7439-92-1	
Lithium	**83.9**	ug/L	10.0	4.6	1	08/23/18 15:30	08/31/18 12:56	7439-93-2	
Magnesium	**29600**	ug/L	50.0	14.0	1	08/23/18 15:30	08/31/18 12:56	7439-95-4	
Manganese	**72.8**	ug/L	5.0	0.73	1	08/23/18 15:30	08/31/18 12:56	7439-96-5	
Molybdenum	**19.3J**	ug/L	20.0	0.90	1	08/23/18 15:30	08/31/18 12:56	7439-98-7	
Nickel	**2.9J**	ug/L	5.0	1.4	1	08/23/18 15:30	08/31/18 12:56	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/23/18 15:30	08/31/18 12:56	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/23/18 15:30	08/31/18 12:56	7440-22-4	
Sodium	**74400**	ug/L	500	157	1	08/23/18 15:30	08/31/18 12:56	7440-23-5	
Total Hardness by 2340B	**445000**	ug/L	705	500	1	08/23/18 15:30	08/31/18 12:56		
Zinc	**141**	ug/L	50.0	3.5	1	08/23/18 15:30	08/31/18 12:56	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**207**	ug/L	50.0	8.9	1	08/23/18 15:30	09/06/18 18:00	7429-90-5	
Antimony	**0.27J**	ug/L	1.0	0.15	1	08/23/18 15:30	09/06/18 18:00	7440-36-0	
Barium	**209**	ug/L	1.0	0.34	1	08/23/18 15:30	09/06/18 18:00	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/23/18 15:30	09/06/18 18:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**806**	mg/L	5.0	5.0	1		08/24/18 13:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		08/24/18 16:18		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**69.4**	mg/L	5.0	2.3	5		09/06/18 02:37	16887-00-6	
Fluoride	**0.12J**	mg/L	0.20	0.063	1		09/07/18 10:13	16984-48-8	
Sulfate	**277**	mg/L	20.0	4.7	20		09/06/18 19:43	14808-79-8	
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**4.2J**	mg/L	10.0	3.5	1		08/31/18 14:24		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-5 **Lab ID: 60278444004** Collected: 08/21/18 14:54 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.9**	mg/L	1.0	0.65	1		08/31/18 15:49	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-3 **Lab ID: 60278444005** Collected: 08/22/18 10:00 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/23/18 09:35	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-4 **Lab ID: 60278444006** Collected: 08/22/18 10:48 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/23/18 09:36	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-2 **Lab ID: 60278444007** Collected: 08/22/18 11:39 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/23/18 09:37	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: DUP-1 **Lab ID: 60278444008** Collected: 08/22/18 11:39 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/23/18 09:39	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-8 **Lab ID: 60278444009** Collected: 08/22/18 14:44 Received: 08/23/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0040J**	mg/L	0.010	0.0040	1		08/23/18 09:40	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 541629 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 2219612 | Matrix: Water
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.037	08/28/18 13:16	

LABORATORY CONTROL SAMPLE: 2219613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2219614 2219615

Parameter	Units	60278591001 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	4.6	4.8	93	96	75-125	4	20	

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

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 541139 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 2217094 | Matrix: Water
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	12.5	08/28/18 18:00	
Calcium	ug/L	ND	200	53.5	08/29/18 18:27	

LABORATORY CONTROL SAMPLE: 2217095

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1030	103	85-115	
Calcium	ug/L	10000	9970	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2217096 2217097

Parameter	Units	60278481002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	1.1 mg/L	1000	1000	2090	2170	99	107	70-130	4	20	
Calcium	ug/L	179 mg/L	10000	10000	186000	194000	77	152	70-130	4	20	M1

MATRIX SPIKE SAMPLE: 2217098

Parameter	Units	60278444001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	81.3J	1000	1110	103	70-130	
Calcium	ug/L	182000	10000	189000	73	70-130	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 541141 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 2217103 Matrix: Water
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	ND	10.0	4.9	08/31/18 12:38	
Beryllium	ug/L	0.52J	1.0	0.16	08/31/18 12:38	
Cadmium	ug/L	ND	5.0	0.45	08/31/18 12:38	
Chromium	ug/L	ND	5.0	1.1	08/31/18 12:38	
Cobalt	ug/L	ND	5.0	0.87	08/31/18 12:38	
Copper	ug/L	ND	10.0	4.5	08/31/18 12:38	
Iron	ug/L	ND	50.0	6.1	08/31/18 12:38	
Lead	ug/L	ND	10.0	3.0	08/31/18 12:38	
Lithium	ug/L	ND	10.0	4.6	08/31/18 12:38	
Magnesium	ug/L	28.7J	50.0	14.0	08/31/18 12:38	
Manganese	ug/L	ND	5.0	0.73	08/31/18 12:38	
Molybdenum	ug/L	1.0J	20.0	0.90	08/31/18 12:38	
Nickel	ug/L	ND	5.0	1.4	08/31/18 12:38	
Selenium	ug/L	ND	15.0	6.1	08/31/18 12:38	
Silver	ug/L	ND	7.0	2.0	08/31/18 12:38	
Sodium	ug/L	252J	500	157	08/31/18 12:38	
Total Hardness by 2340B	ug/L	ND	705	500	08/31/18 12:38	
Zinc	ug/L	ND	50.0	3.5	08/31/18 12:38	

LABORATORY CONTROL SAMPLE: 2217104

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	983	98	80-120	
Beryllium	ug/L	1000	1010	101	80-120	
Cadmium	ug/L	1000	1010	101	80-120	
Chromium	ug/L	1000	992	99	80-120	
Cobalt	ug/L	1000	1010	101	80-120	
Copper	ug/L	1000	998	100	80-120	
Iron	ug/L	10000	10200	102	80-120	
Lead	ug/L	1000	989	99	80-120	
Lithium	ug/L	1000	1000	100	80-120	
Magnesium	ug/L	10000	10000	100	80-120	
Manganese	ug/L	1000	990	99	80-120	
Molybdenum	ug/L	1000	1030	103	80-120	
Nickel	ug/L	1000	1010	101	80-120	
Selenium	ug/L	1000	1020	102	80-120	
Silver	ug/L	500	506	101	80-120	
Sodium	ug/L	10000	10600	106	80-120	
Total Hardness by 2340B	ug/L		66500			
Zinc	ug/L	1000	1000	100	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2217105 2217106

Parameter	Units	60278444001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	1000	1000	1020	1000	102	100	75-125	2	20	
Beryllium	ug/L	0.42J	1000	1000	1000	996	100	100	75-125	1	20	
Cadmium	ug/L	0.72J	1000	1000	1020	1010	102	101	75-125	1	20	
Chromium	ug/L	ND	1000	1000	969	966	97	97	75-125	0	20	
Cobalt	ug/L	4.3J	1000	1000	991	982	99	98	75-125	1	20	
Copper	ug/L	4.5J	1000	1000	1000	994	100	99	75-125	1	20	
Iron	ug/L	565	10000	10000	10600	10600	100	101	75-125	0	20	
Lead	ug/L	3.2J	1000	1000	979	967	98	96	75-125	1	20	
Lithium	ug/L	54.1	1000	1000	1050	1040	99	99	75-125	0	20	
Magnesium	ug/L	36000	10000	10000	46400	45500	104	95	75-125	2	20	
Manganese	ug/L	921	1000	1000	1900	1870	98	95	75-125	2	20	
Molybdenum	ug/L	3.2J	1000	1000	1040	1030	104	103	75-125	1	20	
Nickel	ug/L	6.7	1000	1000	989	978	98	97	75-125	1	20	
Selenium	ug/L	ND	1000	1000	1040	1020	104	102	75-125	2	20	
Silver	ug/L	ND	500	500	514	508	103	102	75-125	1	20	
Sodium	ug/L	49100	10000	10000	60000	58800	109	97	75-125	2	20	
Total Hardness by 2340B	ug/L	585000			653000	643000				2		
Zinc	ug/L	15.5J	1000	1000	996	981	98	97	75-125	1	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 541142 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 2217107 Matrix: Water
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	ND	50.0	8.9	09/06/18 17:47	
Antimony	ug/L	ND	1.0	0.15	09/06/18 17:47	
Barium	ug/L	ND	1.0	0.34	09/06/18 17:47	
Thallium	ug/L	ND	1.0	0.14	09/06/18 17:47	

LABORATORY CONTROL SAMPLE: 2217108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	1000	1000	100	80-120	
Antimony	ug/L	40	40.4	101	80-120	
Barium	ug/L	40	39.4	98	80-120	
Thallium	ug/L	40	38.3	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2217109 2217110

Parameter	Units	60278444002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	24.4J	1000	1000	1180	1190	115	116	75-125	1	20	
Antimony	ug/L	0.21J	40	40	40.3	40.0	100	99	75-125	1	20	
Barium	ug/L	87.8	40	40	128	128	101	101	75-125	0	20	
Thallium	ug/L	ND	40	40	35.0	35.0	87	87	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 541232 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 2217701 | Matrix: Water
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	08/24/18 13:36	

LABORATORY CONTROL SAMPLE: 2217702

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2217703

Parameter	Units	60278381001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	277	287	4	10	

SAMPLE DUPLICATE: 2217704

Parameter	Units	60278475001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1300	1260	3	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 541348 | Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B | Analysis Description: 4500H+B pH
Associated Lab Samples: 60278444001, 60278444002

SAMPLE DUPLICATE: 2218325

Parameter	Units	60278315001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.9	6.9	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 541352 | Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B | Analysis Description: 4500H+B pH
Associated Lab Samples: 60278444003, 60278444004

SAMPLE DUPLICATE: 2218326

Parameter	Units	60278572002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.8	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 543028 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 2225004 | Matrix: Water
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	09/05/18 17:57	
Fluoride	mg/L	ND	0.20	0.063	09/05/18 17:57	
Sulfate	mg/L	ND	1.0	0.24	09/05/18 17:57	

LABORATORY CONTROL SAMPLE: 2225005

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2225006 2225007

Parameter	Units	60278936032 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	341	100	100	429	429	88	87	90-110	0	15	E,M1
Sulfate	mg/L	35.4	100	100	137	137	101	102	90-110	0	15	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 543200 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60278444001, 60278444004

METHOD BLANK: 2225832 | Matrix: Water
Associated Lab Samples: 60278444001, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	09/06/18 09:20	
Sulfate	mg/L	ND	1.0	0.24	09/06/18 09:20	

LABORATORY CONTROL SAMPLE: 2225833

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2225834 2225835

Parameter	Units	2082836001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	7750	5000	5000	13100	13100	106	107	90-110	0	15	
Sulfate	mg/L	1870	1000	1000	3280	3310	141	144	90-110	1	15	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 543370 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60278444002, 60278444003, 60278444004

METHOD BLANK: 2226591 Matrix: Water
Associated Lab Samples: 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.20	0.063	09/07/18 08:51	

LABORATORY CONTROL SAMPLE: 2226592

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2226593 2226594

Parameter	Units	60278444002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.082J	2.5	2.5	2.6	2.7	103	104	90-110	1	15	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 542264 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 2222029 Matrix: Water
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.5	08/31/18 14:19	

LABORATORY CONTROL SAMPLE: 2222030

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	46.8	94	90-110	

MATRIX SPIKE SAMPLE: 2222031

Parameter	Units	60278427001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	815	500	1290	95	90-110	

MATRIX SPIKE SAMPLE: 2222033

Parameter	Units	60278591001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	ND	2	90-110	M1

MATRIX SPIKE SAMPLE: 2222034

Parameter	Units	60278591006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	53.2	106	90-110	

SAMPLE DUPLICATE: 2222032

Parameter	Units	60278444002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 542438 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 2222637 | Matrix: Water
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	08/31/18 10:27	

LABORATORY CONTROL SAMPLE: 2222638

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.4	108	80-120	

MATRIX SPIKE SAMPLE: 2222640

Parameter	Units	60278691002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	11.1	5	16.1	100	80-120	E

SAMPLE DUPLICATE: 2222639

Parameter	Units	60278582009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	7.9	7.9	0	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 541032 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60278444005, 60278444006, 60278444007, 60278444008, 60278444009

METHOD BLANK: 2216607 | Matrix: Water
Associated Lab Samples: 60278444005, 60278444006, 60278444007, 60278444008, 60278444009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	08/23/18 09:34	

LABORATORY CONTROL SAMPLE: 2216608

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.098	98	90-110	

MATRIX SPIKE SAMPLE: 2216609

Parameter	Units	60278444005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.091	89	85-115	

SAMPLE DUPLICATE: 2216610

Parameter	Units	60278444006 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-6 **Lab ID: 60278444001** Collected: 08/21/18 09:07 Received: 08/23/18 06:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.30 ± 0.690 (0.831) C:NA T:80%**	pCi/L	09/06/18 19:34	13982-63-3	
Radium-228	EPA 904.0	**1.09 ± 0.622 (1.15) C:67% T:72%**	pCi/L	09/05/18 16:57	15262-20-1	
Total Radium	Total Radium Calculation	**2.39 ± 1.31 (1.98)**	pCi/L	09/12/18 14:51	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-7 **Lab ID: 60278444002** Collected: 08/21/18 10:45 Received: 08/23/18 06:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.930 ± 0.591 (0.762)** **C:NA T:82%**	pCi/L	09/06/18 19:34	13982-63-3	
Radium-228	EPA 904.0	**0.622 ± 0.450 (0.878)** **C:73% T:80%**	pCi/L	09/05/18 16:57	15262-20-1	
Total Radium	Total Radium Calculation	**1.55 ± 1.04 (1.64)**	pCi/L	09/12/18 14:51	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: PZ-2 **Lab ID: 60278444003** Collected: 08/21/18 13:08 Received: 08/23/18 06:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.599 ± 0.470 (0.654)** **C:NA T:87%**	pCi/L	09/06/18 19:49	13982-63-3	
Radium-228	EPA 904.0	**0.519 ± 0.453 (0.916)** **C:72% T:80%**	pCi/L	09/05/18 16:57	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.923 (1.57)**	pCi/L	09/12/18 14:51	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Sample: MW-5 **Lab ID: 60278444004** Collected: 08/21/18 14:54 Received: 08/23/18 06:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.159 ± 0.345 (0.637) C:NA T:92%**	pCi/L	09/06/18 19:49	13982-63-3	
Radium-228	EPA 904.0	**1.07 ± 0.555 (0.984) C:71% T:74%**	pCi/L	09/05/18 16:57	15262-20-1	
Total Radium	Total Radium Calculation	**1.23 ± 0.900 (1.62)**	pCi/L	09/12/18 14:51	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 311000 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 1519249 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.233 ± 0.281 (0.428) C:NA T:87%	pCi/L	09/06/18 19:20	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

QC Batch: 311003 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60278444001, 60278444002, 60278444003, 60278444004

METHOD BLANK: 1519252 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.381 ± 0.355 (0.712) C:73% T:75%	pCi/L	09/05/18 16:58	

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.

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60278444001	**MW-6**	EPA 200.7	541139	EPA 200.7	541175
60278444002	**MW-7**	EPA 200.7	541139	EPA 200.7	541175
60278444003	**PZ-2**	EPA 200.7	541139	EPA 200.7	541175
60278444004	**MW-5**	EPA 200.7	541139	EPA 200.7	541175
60278444001	**MW-6**	EPA 3010	541141	EPA 6010	541177
60278444002	**MW-7**	EPA 3010	541141	EPA 6010	541177
60278444003	**PZ-2**	EPA 3010	541141	EPA 6010	541177
60278444004	**MW-5**	EPA 3010	541141	EPA 6010	541177
60278444001	**MW-6**	EPA 3010	541142	EPA 6020	541180
60278444002	**MW-7**	EPA 3010	541142	EPA 6020	541180
60278444003	**PZ-2**	EPA 3010	541142	EPA 6020	541180
60278444004	**MW-5**	EPA 3010	541142	EPA 6020	541180
60278444001	**MW-6**	EPA 7470	541629	EPA 7470	541687
60278444002	**MW-7**	EPA 7470	541629	EPA 7470	541687
60278444003	**PZ-2**	EPA 7470	541629	EPA 7470	541687
60278444004	**MW-5**	EPA 7470	541629	EPA 7470	541687
60278444001	**MW-6**	EPA 903.1	311000		
60278444002	**MW-7**	EPA 903.1	311000		
60278444003	**PZ-2**	EPA 903.1	311000		
60278444004	**MW-5**	EPA 903.1	311000		
60278444001	**MW-6**	EPA 904.0	311003		
60278444002	**MW-7**	EPA 904.0	311003		
60278444003	**PZ-2**	EPA 904.0	311003		
60278444004	**MW-5**	EPA 904.0	311003		
60278444001	**MW-6**	Total Radium Calculation	312765		
60278444002	**MW-7**	Total Radium Calculation	312765		
60278444003	**PZ-2**	Total Radium Calculation	312765		
60278444004	**MW-5**	Total Radium Calculation	312765		
60278444001	**MW-6**	SM 2540C	541232		
60278444002	**MW-7**	SM 2540C	541232		
60278444003	**PZ-2**	SM 2540C	541232		
60278444004	**MW-5**	SM 2540C	541232		
60278444001	**MW-6**	SM 4500-H+B	541348		
60278444002	**MW-7**	SM 4500-H+B	541348		
60278444003	**PZ-2**	SM 4500-H+B	541352		
60278444004	**MW-5**	SM 4500-H+B	541352		
60278444001	**MW-6**	EPA 300.0	543028		
60278444001	**MW-6**	EPA 300.0	543200		
60278444002	**MW-7**	EPA 300.0	543028		
60278444002	**MW-7**	EPA 300.0	543370		
60278444003	**PZ-2**	EPA 300.0	543028		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA. MO
Pace Project No.: 60278444

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60278444003	**PZ-2**	EPA 300.0	543370		
60278444004	**MW-5**	EPA 300.0	543028		
60278444004	**MW-5**	EPA 300.0	543200		
60278444004	**MW-5**	EPA 300.0	543370		
60278444001	**MW-6**	EPA 410.4	542264		
60278444002	**MW-7**	EPA 410.4	542264		
60278444003	**PZ-2**	EPA 410.4	542264		
60278444004	**MW-5**	EPA 410.4	542264		
60278444001	**MW-6**	SM 5310C	542438		
60278444002	**MW-7**	SM 5310C	542438		
60278444003	**PZ-2**	SM 5310C	542438		
60278444004	**MW-5**	SM 5310C	542438		
60278444005	**MW-3**	EPA 7196	541032		
60278444006	**MW-4**	EPA 7196	541032		
60278444007	**MW-2**	EPA 7196	541032		
60278444008	**DUP-1**	EPA 7196	541032		
60278444009	**MW-8**	EPA 7196	541032		

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Sample Condition Upon Receipt

WO# : 60278444

60278444

Client Name: Burns + McDonnell

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 ☒ Zpl C

Thermometer Used: TJ00 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 3.4 **Corr. Factor** +0.2 **Corrected** 3.6 / 3.7

Temperature should be above freezing to 6°C 3.5

Date and initials of person examining contents: 8/23/18 KE

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	CR+6, 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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JVS Date: 8/23/18

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: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bwels@burnsmcd.com
Phone: 816-333-9400 Fax:
Requested Due Date:

Section B
Required Project Information:
Report To: Brian Wels
Copy To:
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C
Invoice Information:
Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: colleen.clyne@pacelabs.com
Pace Profile #: 10268

Regulatory Agency:
State / Location: MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N): 300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60278444 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn
1	MW-6 2GPIN, 2BP2U, AG2S	WT	G	21Aug18	9:07A			17.0	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		AG3S, BP3N 001
2	MW-7	WT	G	21Aug18	10:05A			17.1	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		002
3	PZ-2	WT	G	21Aug18	1:09P			17.2	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		003
4	MW-5	WT	G	21Aug18	2:54P			17.3	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		004
5	MW-3 BP2U	WT	G	22Aug18	10:00A			16.1	1	1															✓						005
6	MW-4	WT	G	22Aug18	10:48A			16.4	1	1															✓						006
7	MW-2	WT	G	22Aug18	11:31A			17.6	1	1															✓						007
8	Dup-1	WT	G	22Aug18	11:59A			17.7	1	1															✓						008
9	MW-8	WT	G	22Aug18	2:44P			13.6	1	1															✓						009
10																															
11																															
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
TOX EDD needed	David Kilgore	22Aug18	3:50	[illegible]	8/22	3:50
Temp. blanks included				[illegible]	8/23/18	0630

SAMPLE CONDITIONS	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	3.6	Y	Y	Y
	3.7	Y	Y	Y

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Kilgore
SIGNATURE of SAMPLER: David Kilgore
DATE Signed: 22Aug18

ANALYTICAL REPORT

August 30, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L1020581
Samples Received:	08/24/2018
Project Number:	60278444
Description:	More's Lake Columbia, MO
Report To:	Jeffrey Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-6 L1020581-01 GW

Collected by	Collected date/time	Received date/time
	08/21/18 09:07	08/24/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1155601	1	08/27/18 14:33	08/27/18 14:33	EEM

MW-7 L1020581-02 GW

Collected by	Collected date/time	Received date/time
	08/21/18 10:45	08/24/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1155601	1	08/28/18 09:45	08/28/18 09:45	EEM

PZ-2 L1020581-03 GW

Collected by	Collected date/time	Received date/time
	08/21/18 13:08	08/24/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1155601	1	08/28/18 11:45	08/28/18 11:45	EEM

MW-5 L1020581-04 GW

Collected by	Collected date/time	Received date/time
	08/21/18 14:54	08/24/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1155601	1	08/28/18 14:37	08/28/18 14:37	EEM

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

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

Nancy F. McLain

Nancy McLain
Project Manager

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	300		12.0	100	1	08/27/2018 14:33	WG1155601

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	399		12.0	100	1	08/28/2018 09:45	WG1155601

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	645		12.0	100	1	08/28/2018 11:45	WG1155601

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	310		12.0	100	1	08/28/2018 14:37	WG1155601

Method Blank (MB)

(MB) R3336249-1 08/23/18 15:13

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L1020233-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1020233-01 08/24/18 13:43 • (DUP) R3336249-4 08/24/18 14:49

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	2410	1770	1	30.7	J3	20

L1020410-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1020410-03 08/27/18 10:29 • (DUP) R3336249-11 08/27/18 11:18

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	1650	1330	1	21.2	J3	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3336249-2 08/23/18 15:23 • (LCSD) R3336249-3 08/23/18 15:32

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	205	201	103	100	85.0-115			2.45	20

L1019820-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1019820-02 08/24/18 09:47 • (MS) R3336249-6 08/24/18 16:29 • (MSD) R3336249-8 08/24/18 16:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	268	1010	850	246	194	1	80.0-120	J5	J5	16.8	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

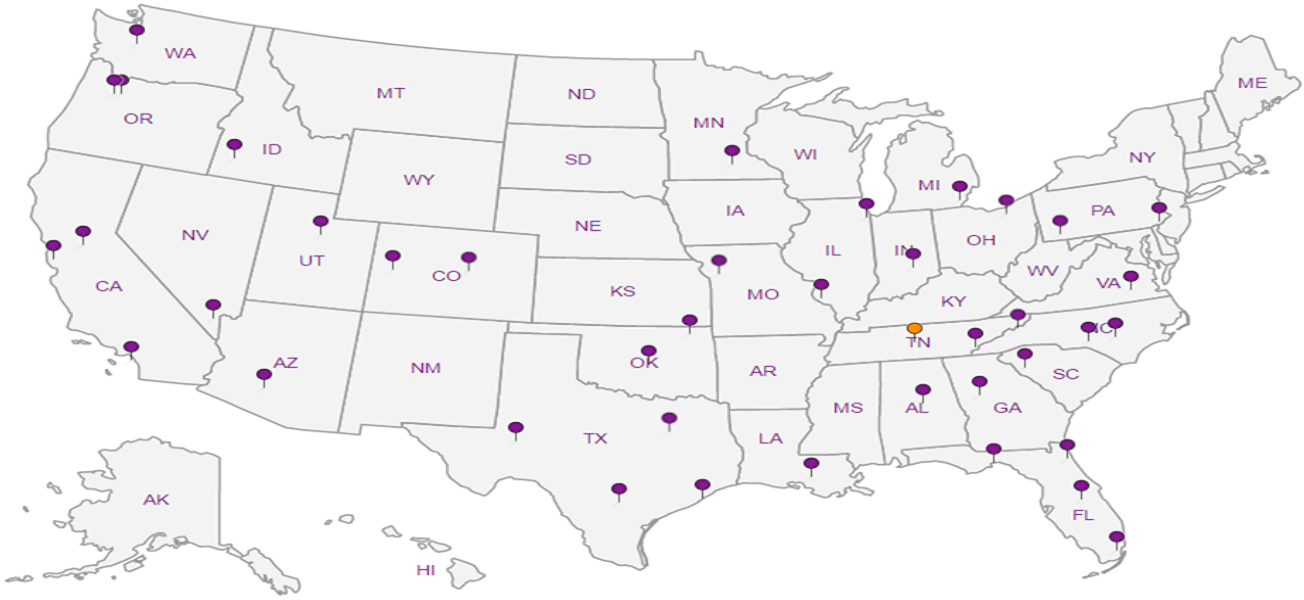
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



D217

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60278444 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 9/7/2018

Report / Invoice To	Subcontract To
Jeffrey Shopper Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1408 Email: jeff.shopper@pacelabs.com	P.O. SUB-9031

State of Sample Origin:

Requested Analysis: TOX

L1020581

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	TOX	LAB USE ONLY
1	MW-6	8/21/2018 09:07	60278444001	Water	1	X	-01
2	MW-7	8/21/2018 10:45	60278444002	Water	1	X	-02
3	PZ-2	8/21/2018 13:08	60278444003	Water	1	X	-03
4	MW-5	8/21/2018 14:54	60278444004	Water	1	X	-04
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	8/23/18 1700	[illegible]	8/24/18 845
2				
3				

Comments: J-flags on. EDD needed.

OK OK

Cooler Temperature on Receipt 4.5° °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

4.5 [illegible]
[illegible]

SUBOUT SAMPLES

L1020581

Completed by Project Manager:

Sub out within Pace Office:

Containers to be sent:

X Sub out outside of Pace

Laboratory: Pace Analytical National

Shipping Address: 12065 Lebanon Rd
Mt Juliet, TN 37122

Containers to be sent: AG3S-4

Pace Purchase Order Number: SUB-9031

Project Number 60278444

Project Due Date: 9/7/2018

PM Initials: JNS

Sample #	Quanti	Matrix	Test (Description)	Unit Price	Containers to send
60278444001-004	4	WATER	TOX		4-AG3S
			Total	$95.00	80%= 76.00 20%= 19.00

Initials of Person Placing Work: NJW

Initials of Person Sending Samples:

Contact in other Lab: Nancy McClain

Phone Number: 615-758-5858 ext 9710

Date Sent: 8/23/2018

Courier Used:

Tracking Number:

4.5 m
7
2025 MR/HR

F-KS-C-101-rev.0
June 26, 2009

Page 1

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: PACELKS	SDG#	L020581	
Cooler Received/Opened On: 8/27/18	Temperature:	4.5	
Received By: Sydni Nixon			
Signature: Syd N			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

September 13, 2018

Brian Weis

Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on August 24, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Arkansas Drinking Water
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60278591001	**MW-4**	Water	08/22/18 08:29	08/24/18 06:15
60278591002	**MW-3**	Water	08/22/18 10:00	08/24/18 06:15
60278591003	**MW-2**	Water	08/22/18 11:39	08/24/18 06:15
60278591004	**DUP-1**	Water	08/22/18 11:39	08/24/18 06:15
60278591005	**MW-8**	Water	08/22/18 14:44	08/24/18 06:15
60278591006	**MW-1**	Water	08/23/18 09:40	08/24/18 06:15
60278591007	**POND SURFACE WATER**	Water	08/23/18 08:15	08/24/18 06:15

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60278591001	**MW-4**	EPA 200.7	OL	2	PASI-K
		EPA 6010	OL, SMW	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278591002	**MW-3**	EPA 200.7	OL	2	PASI-K
		EPA 6010	OL	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278591003	**MW-2**	EPA 200.7	OL, SMW	2	PASI-K
		EPA 6010	OL, SMW	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278591004	**DUP-1**	EPA 200.7	SMW	2	PASI-K
		EPA 6010	OL, SMW	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278591005	**MW-8**	EPA 200.7	OL, SMW	2	PASI-K
		EPA 6010	OL	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60278591006	**MW-1**	EPA 200.7	OL, SMW	2	PASI-K
		EPA 6010	OL	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
		EPA 7196	ZMH	1	PASI-K
60278591007	**POND SURFACE WATER**	EPA 200.7	OL, SMW	2	PASI-K
		EPA 6010	OL	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
		EPA 7196	ZMH	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 541312

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60278560001,60278591006

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

- MS (Lab ID: 2218224)
  - Calcium
- MSD (Lab ID: 2218225)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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(913)599-5665

PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-1 (Lab ID: 60278591004)
- MW-1 (Lab ID: 60278591006)
- MW-2 (Lab ID: 60278591003)
- MW-3 (Lab ID: 60278591002)
- MW-4 (Lab ID: 60278591001)
- MW-8 (Lab ID: 60278591005)
- POND SURFACE WATER (Lab ID: 60278591007)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 543180

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60279439007

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

- MS (Lab ID: 2225782)
  - Chloride

QC Batch: 543667

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60278591002,60278591006

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

- MS (Lab ID: 2228048)
  - Chloride
  - Fluoride
- MS (Lab ID: 2228050)
  - Fluoride
- MSD (Lab ID: 2228049)
  - Chloride
  - Fluoride

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 542264

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60278427001,60278591001,60278591006

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

- MS (Lab ID: 2222033)
  - Chemical Oxygen Demand

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
7 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: September 13, 2018

General Information:
2 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-4 **Lab ID: 60278591001** Collected: 08/22/18 08:29 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**68.7J**	ug/L	100	12.5	1	08/24/18 13:40	08/28/18 17:13	7440-42-8	
Calcium	**129000**	ug/L	200	53.5	1	08/24/18 13:40	08/28/18 17:13	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/24/18 11:10	08/28/18 19:11	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	08/24/18 11:10	08/28/18 19:11	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	08/24/18 11:10	08/28/18 19:11	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	08/24/18 11:10	08/28/18 19:11	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	08/24/18 11:10	08/28/18 19:11	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	08/24/18 11:10	08/28/18 19:11	7440-50-8	
Iron	**101**	ug/L	50.0	6.1	1	08/24/18 11:10	08/28/18 19:11	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	08/24/18 11:10	08/28/18 19:11	7439-92-1	
Lithium	**59.4**	ug/L	10.0	4.6	1	08/24/18 11:10	08/28/18 19:11	7439-93-2	
Magnesium	**40300**	ug/L	50.0	14.0	1	08/24/18 11:10	08/28/18 19:11	7439-95-4	
Manganese	**76.4**	ug/L	5.0	0.73	1	08/24/18 11:10	08/28/18 19:11	7439-96-5	
Molybdenum	**3.3J**	ug/L	20.0	0.90	1	08/24/18 11:10	08/28/18 19:11	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	08/24/18 11:10	08/28/18 19:11	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/24/18 11:10	08/28/18 19:11	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/24/18 11:10	08/28/18 19:11	7440-22-4	
Sodium	**48000**	ug/L	500	157	1	08/24/18 11:10	08/28/18 19:11	7440-23-5	
Total Hardness by 2340B	**469000**	ug/L	705	500	1	08/24/18 11:10	08/29/18 17:46		
Zinc	**4.6J**	ug/L	50.0	3.5	1	08/24/18 11:10	08/28/18 19:11	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**13.9J**	ug/L	50.0	8.9	1	08/24/18 11:10	09/06/18 18:22	7429-90-5	
Antimony	ND	ug/L	1.0	0.15	1	08/24/18 11:10	09/06/18 18:22	7440-36-0	
Barium	**80.0**	ug/L	1.0	0.34	1	08/24/18 11:10	09/06/18 18:22	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/24/18 11:10	09/06/18 18:22	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**610**	mg/L	5.0	5.0	1		08/27/18 11:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		08/24/18 16:24		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		09/10/18 16:50	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**26.3**	mg/L	2.0	0.92	2		09/06/18 17:43	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	0.063	1		09/06/18 17:29	16984-48-8	
Sulfate	**92.7**	mg/L	10.0	2.4	10		09/06/18 17:57	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-4 **Lab ID: 60278591001** Collected: 08/22/18 08:29 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.5	1		08/31/18 14:26		M1
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.82J**	mg/L	1.0	0.65	1		08/31/18 21:51	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-3 **Lab ID: 60278591002** Collected: 08/22/18 10:00 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**74.2J**	ug/L	100	12.5	1	08/24/18 13:40	08/28/18 17:15	7440-42-8	
Calcium	**118000**	ug/L	200	53.5	1	08/24/18 13:40	08/28/18 17:15	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/24/18 11:10	08/28/18 19:13	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	08/24/18 11:10	08/28/18 19:13	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	08/24/18 11:10	08/28/18 19:13	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	08/24/18 11:10	08/28/18 19:13	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	08/24/18 11:10	08/28/18 19:13	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	08/24/18 11:10	08/28/18 19:13	7440-50-8	
Iron	**51.4**	ug/L	50.0	6.1	1	08/24/18 11:10	08/28/18 19:13	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	08/24/18 11:10	08/28/18 19:13	7439-92-1	
Lithium	**36.9**	ug/L	10.0	4.6	1	08/24/18 11:10	08/28/18 19:13	7439-93-2	
Magnesium	**40900**	ug/L	50.0	14.0	1	08/24/18 11:10	08/28/18 19:13	7439-95-4	
Manganese	**103**	ug/L	5.0	0.73	1	08/24/18 11:10	08/28/18 19:13	7439-96-5	
Molybdenum	**6.3J**	ug/L	20.0	0.90	1	08/24/18 11:10	08/28/18 19:13	7439-98-7	
Nickel	**2.0J**	ug/L	5.0	1.4	1	08/24/18 11:10	08/28/18 19:13	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/24/18 11:10	08/28/18 19:13	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/24/18 11:10	08/28/18 19:13	7440-22-4	
Sodium	**36300**	ug/L	500	157	1	08/24/18 11:10	08/28/18 19:13	7440-23-5	
Total Hardness by 2340B	**453000**	ug/L	705	500	1	08/24/18 11:10	08/28/18 19:13		
Zinc	**3.7J**	ug/L	50.0	3.5	1	08/24/18 11:10	08/28/18 19:13	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**28.6J**	ug/L	50.0	8.9	1	08/24/18 11:10	09/06/18 18:32	7429-90-5	
Antimony	**0.16J**	ug/L	1.0	0.15	1	08/24/18 11:10	09/06/18 18:32	7440-36-0	
Barium	**190**	ug/L	1.0	0.34	1	08/24/18 11:10	09/06/18 18:32	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/24/18 11:10	09/06/18 18:32	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**531**	mg/L	5.0	5.0	1		08/27/18 11:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		08/24/18 16:33		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		09/10/18 16:50	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**8.0**	mg/L	1.0	0.46	1		09/10/18 10:14	16887-00-6	M1
Fluoride	**0.67**	mg/L	0.20	0.063	1		09/10/18 10:14	16984-48-8	M1
Sulfate	**44.8**	mg/L	5.0	1.2	5		09/07/18 19:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-3 **Lab ID: 60278591002** Collected: 08/22/18 10:00 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.5	1		08/31/18 14:29		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.82J**	mg/L	1.0	0.65	1		08/31/18 22:03	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-2 **Lab ID: 60278591003** Collected: 08/22/18 11:39 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**97.2J**	ug/L	100	12.5	1	08/24/18 13:40	08/28/18 17:22	7440-42-8	
Calcium	**112000**	ug/L	200	53.5	1	08/24/18 13:40	08/29/18 18:09	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/24/18 11:10	08/28/18 19:15	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	08/24/18 11:10	08/28/18 19:15	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	08/24/18 11:10	08/28/18 19:15	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	08/24/18 11:10	08/28/18 19:15	7440-47-3	
Cobalt	**0.91J**	ug/L	5.0	0.87	1	08/24/18 11:10	08/28/18 19:15	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	08/24/18 11:10	08/28/18 19:15	7440-50-8	
Iron	**106**	ug/L	50.0	6.1	1	08/24/18 11:10	08/28/18 19:15	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	08/24/18 11:10	08/28/18 19:15	7439-92-1	
Lithium	**39.4**	ug/L	10.0	4.6	1	08/24/18 11:10	08/28/18 19:15	7439-93-2	
Magnesium	**43000**	ug/L	50.0	14.0	1	08/24/18 11:10	08/28/18 19:15	7439-95-4	
Manganese	**394**	ug/L	5.0	0.73	1	08/24/18 11:10	08/28/18 19:15	7439-96-5	
Molybdenum	**6.1J**	ug/L	20.0	0.90	1	08/24/18 11:10	08/28/18 19:15	7439-98-7	
Nickel	**2.0J**	ug/L	5.0	1.4	1	08/24/18 11:10	08/28/18 19:15	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/24/18 11:10	08/28/18 19:15	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/24/18 11:10	08/28/18 19:15	7440-22-4	
Sodium	**28800**	ug/L	500	157	1	08/24/18 11:10	08/28/18 19:15	7440-23-5	
Total Hardness by 2340B	**468000**	ug/L	705	500	1	08/24/18 11:10	08/29/18 17:50		
Zinc	**39.0J**	ug/L	50.0	3.5	1	08/24/18 11:10	08/28/18 19:15	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**10.1J**	ug/L	50.0	8.9	1	08/24/18 11:10	09/06/18 18:34	7429-90-5	
Antimony	ND	ug/L	1.0	0.15	1	08/24/18 11:10	09/06/18 18:34	7440-36-0	
Barium	**142**	ug/L	1.0	0.34	1	08/24/18 11:10	09/06/18 18:34	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/24/18 11:10	09/06/18 18:34	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 12:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**536**	mg/L	5.0	5.0	1		08/27/18 11:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		08/24/18 16:34		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		09/10/18 16:50	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.4**	mg/L	1.0	0.46	1		09/10/18 10:56	16887-00-6	
Fluoride	**0.74**	mg/L	0.20	0.063	1		09/10/18 10:56	16984-48-8	
Sulfate	**58.5**	mg/L	5.0	1.2	5		09/07/18 20:03	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-2 **Lab ID: 60278591003** Collected: 08/22/18 11:39 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.5	1		08/31/18 14:29		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.70J**	mg/L	1.0	0.65	1		08/31/18 22:16	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: DUP-1 **Lab ID: 60278591004** Collected: 08/22/18 11:39 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**88.9J**	ug/L	100	12.5	1	08/24/18 13:40	08/29/18 18:12	7440-42-8	
Calcium	**111000**	ug/L	200	53.5	1	08/24/18 13:40	08/29/18 18:12	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/24/18 11:10	08/28/18 19:17	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	08/24/18 11:10	08/28/18 19:17	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	08/24/18 11:10	08/28/18 19:17	7440-43-9	
Chromium	**1.1J**	ug/L	5.0	1.1	1	08/24/18 11:10	08/28/18 19:17	7440-47-3	
Cobalt	**1.1J**	ug/L	5.0	0.87	1	08/24/18 11:10	08/28/18 19:17	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	08/24/18 11:10	08/28/18 19:17	7440-50-8	
Iron	**111**	ug/L	50.0	6.1	1	08/24/18 11:10	08/28/18 19:17	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	08/24/18 11:10	08/28/18 19:17	7439-92-1	
Lithium	**41.6**	ug/L	10.0	4.6	1	08/24/18 11:10	08/28/18 19:17	7439-93-2	
Magnesium	**43800**	ug/L	50.0	14.0	1	08/24/18 11:10	08/28/18 19:17	7439-95-4	
Manganese	**409**	ug/L	5.0	0.73	1	08/24/18 11:10	08/28/18 19:17	7439-96-5	
Molybdenum	**6.1J**	ug/L	20.0	0.90	1	08/24/18 11:10	08/28/18 19:17	7439-98-7	
Nickel	**1.9J**	ug/L	5.0	1.4	1	08/24/18 11:10	08/28/18 19:17	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/24/18 11:10	08/28/18 19:17	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/24/18 11:10	08/28/18 19:17	7440-22-4	
Sodium	**29500**	ug/L	500	157	1	08/24/18 11:10	08/28/18 19:17	7440-23-5	
Total Hardness by 2340B	**473000**	ug/L	705	500	1	08/24/18 11:10	08/29/18 17:52		
Zinc	**40.2J**	ug/L	50.0	3.5	1	08/24/18 11:10	08/28/18 19:17	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**11.2J**	ug/L	50.0	8.9	1	08/24/18 11:10	09/06/18 18:36	7429-90-5	
Antimony	ND	ug/L	1.0	0.15	1	08/24/18 11:10	09/06/18 18:36	7440-36-0	
Barium	**146**	ug/L	1.0	0.34	1	08/24/18 11:10	09/06/18 18:36	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/24/18 11:10	09/06/18 18:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**534**	mg/L	5.0	5.0	1		08/27/18 11:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		08/24/18 16:35		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		09/10/18 16:50	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.3**	mg/L	1.0	0.46	1		09/10/18 11:54	16887-00-6	
Fluoride	**0.62**	mg/L	0.20	0.063	1		09/10/18 11:54	16984-48-8	
Sulfate	**58.8**	mg/L	5.0	1.2	5		09/07/18 20:31	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: DUP-1 **Lab ID: 60278591004** Collected: 08/22/18 11:39 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.5	1		08/31/18 14:29		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.73J**	mg/L	1.0	0.65	1		08/31/18 22:29	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-8 **Lab ID: 60278591005** Collected: 08/22/18 14:44 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**418**	ug/L	100	12.5	1	08/24/18 13:40	08/28/18 17:26	7440-42-8	
Calcium	**270000**	ug/L	200	53.5	1	08/24/18 13:40	08/29/18 18:14	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	**6.3J**	ug/L	10.0	4.9	1	08/24/18 11:10	08/28/18 19:20	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	08/24/18 11:10	08/28/18 19:20	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	08/24/18 11:10	08/28/18 19:20	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	08/24/18 11:10	08/28/18 19:20	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	08/24/18 11:10	08/28/18 19:20	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	08/24/18 11:10	08/28/18 19:20	7440-50-8	
Iron	**959**	ug/L	50.0	6.1	1	08/24/18 11:10	08/28/18 19:20	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	08/24/18 11:10	08/28/18 19:20	7439-92-1	
Lithium	**28.3**	ug/L	10.0	4.6	1	08/24/18 11:10	08/28/18 19:20	7439-93-2	
Magnesium	**41000**	ug/L	50.0	14.0	1	08/24/18 11:10	08/28/18 19:20	7439-95-4	
Manganese	**996**	ug/L	5.0	0.73	1	08/24/18 11:10	08/28/18 19:20	7439-96-5	
Molybdenum	ND	ug/L	20.0	0.90	1	08/24/18 11:10	08/28/18 19:20	7439-98-7	
Nickel	**5.5**	ug/L	5.0	1.4	1	08/24/18 11:10	08/28/18 19:20	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/24/18 11:10	08/28/18 19:20	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/24/18 11:10	08/28/18 19:20	7440-22-4	
Sodium	**76300**	ug/L	500	157	1	08/24/18 11:10	08/28/18 19:20	7440-23-5	
Total Hardness by 2340B	**829000**	ug/L	705	500	1	08/24/18 11:10	08/28/18 19:20		
Zinc	ND	ug/L	50.0	3.5	1	08/24/18 11:10	08/28/18 19:20	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	50.0	8.9	1	08/24/18 11:10	09/06/18 18:37	7429-90-5	
Antimony	ND	ug/L	1.0	0.15	1	08/24/18 11:10	09/06/18 18:37	7440-36-0	
Barium	**21.1**	ug/L	1.0	0.34	1	08/24/18 11:10	09/06/18 18:37	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/24/18 11:10	09/06/18 18:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1300**	mg/L	5.0	5.0	1		08/27/18 11:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.10	1		08/28/18 09:49		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		09/10/18 16:50	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**71.2**	mg/L	5.0	2.3	5		09/07/18 21:28	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	0.063	1		09/10/18 12:36	16984-48-8	
Sulfate	**529**	mg/L	50.0	11.8	50		09/07/18 21:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-8 **Lab ID: 60278591005** Collected: 08/22/18 14:44 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.5	1		08/31/18 14:30		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.4**	mg/L	1.0	0.65	1		09/04/18 13:11	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-1 **Lab ID: 60278591006** Collected: 08/23/18 09:40 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**2420**	ug/L	100	12.5	1	08/24/18 13:40	08/28/18 17:28	7440-42-8	
Calcium	**164000**	ug/L	200	53.5	1	08/24/18 13:40	08/29/18 18:18	7440-70-2	M1
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	08/24/18 11:10	08/28/18 19:22	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	08/24/18 11:10	08/28/18 19:22	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	08/24/18 11:10	08/28/18 19:22	7440-43-9	
Chromium	**1.3J**	ug/L	5.0	1.1	1	08/24/18 11:10	08/28/18 19:22	7440-47-3	
Cobalt	**1.7J**	ug/L	5.0	0.87	1	08/24/18 11:10	08/28/18 19:22	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	08/24/18 11:10	08/28/18 19:22	7440-50-8	
Iron	**86.6**	ug/L	50.0	6.1	1	08/24/18 11:10	08/28/18 19:22	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	08/24/18 11:10	08/28/18 19:22	7439-92-1	
Lithium	**43.2**	ug/L	10.0	4.6	1	08/24/18 11:10	08/28/18 19:22	7439-93-2	
Magnesium	**45000**	ug/L	50.0	14.0	1	08/24/18 11:10	08/28/18 19:22	7439-95-4	
Manganese	**249**	ug/L	5.0	0.73	1	08/24/18 11:10	08/28/18 19:22	7439-96-5	
Molybdenum	**3.5J**	ug/L	20.0	0.90	1	08/24/18 11:10	08/28/18 19:22	7439-98-7	
Nickel	**5.6**	ug/L	5.0	1.4	1	08/24/18 11:10	08/28/18 19:22	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/24/18 11:10	08/28/18 19:22	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/24/18 11:10	08/28/18 19:22	7440-22-4	
Sodium	**71100**	ug/L	500	157	1	08/24/18 11:10	08/28/18 19:22	7440-23-5	
Total Hardness by 2340B	**593000**	ug/L	705	500	1	08/24/18 11:10	08/28/18 19:22		
Zinc	ND	ug/L	50.0	3.5	1	08/24/18 11:10	08/28/18 19:22	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	50.0	8.9	1	08/24/18 11:10	09/06/18 18:39	7429-90-5	
Antimony	ND	ug/L	1.0	0.15	1	08/24/18 11:10	09/06/18 18:39	7440-36-0	
Barium	**57.6**	ug/L	1.0	0.34	1	08/24/18 11:10	09/06/18 18:39	7440-39-3	
Thallium	ND	ug/L	1.0	0.14	1	08/24/18 11:10	09/06/18 18:39	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**828**	mg/L	5.0	5.0	1		08/27/18 11:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		08/28/18 10:08		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		09/10/18 16:50	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**67.6**	mg/L	10.0	4.6	10		09/07/18 22:24	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	0.063	1		09/10/18 12:50	16984-48-8	M1
Sulfate	**230**	mg/L	20.0	4.7	20		09/07/18 22:52	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-1 **Lab ID: 60278591006** Collected: 08/23/18 09:40 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.5	1		08/31/18 14:30		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.75J**	mg/L	1.0	0.65	1		09/04/18 13:24	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/24/18 08:06	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: POND SURFACE WATER **Lab ID: 60278591007** Collected: 08/23/18 08:15 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**2240**	ug/L	100	12.5	1	08/24/18 13:40	08/28/18 17:34	7440-42-8	
Calcium	**111000**	ug/L	200	53.5	1	08/24/18 13:40	08/29/18 18:16	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	**7.8J**	ug/L	10.0	4.9	1	08/24/18 11:10	08/28/18 19:32	7440-38-2	
Beryllium	**0.21J**	ug/L	1.0	0.16	1	08/24/18 11:10	08/28/18 19:32	7440-41-7	
Cadmium	**1.7J**	ug/L	5.0	0.45	1	08/24/18 11:10	08/28/18 19:32	7440-43-9	
Chromium	**27.0**	ug/L	5.0	1.1	1	08/24/18 11:10	08/28/18 19:32	7440-47-3	
Cobalt	**4.3J**	ug/L	5.0	0.87	1	08/24/18 11:10	08/28/18 19:32	7440-48-4	
Copper	**11.1**	ug/L	10.0	4.5	1	08/24/18 11:10	08/28/18 19:32	7440-50-8	
Iron	**2200**	ug/L	50.0	6.1	1	08/24/18 11:10	08/28/18 19:32	7439-89-6	
Lead	**10.3**	ug/L	10.0	3.0	1	08/24/18 11:10	08/28/18 19:32	7439-92-1	
Lithium	**45.2**	ug/L	10.0	4.6	1	08/24/18 11:10	08/28/18 19:32	7439-93-2	
Magnesium	**33400**	ug/L	50.0	14.0	1	08/24/18 11:10	08/28/18 19:32	7439-95-4	
Manganese	**122**	ug/L	5.0	0.73	1	08/24/18 11:10	08/28/18 19:32	7439-96-5	
Molybdenum	**163**	ug/L	20.0	0.90	1	08/24/18 11:10	08/28/18 19:32	7439-98-7	
Nickel	**10.2**	ug/L	5.0	1.4	1	08/24/18 11:10	08/28/18 19:32	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	08/24/18 11:10	08/28/18 19:32	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	08/24/18 11:10	08/28/18 19:32	7440-22-4	
Sodium	**102000**	ug/L	500	157	1	08/24/18 11:10	08/28/18 19:32	7440-23-5	
Total Hardness by 2340B	**422000**	ug/L	705	500	1	08/24/18 11:10	08/28/18 19:32		
Zinc	**97.5**	ug/L	50.0	3.5	1	08/24/18 11:10	08/28/18 19:32	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**2280**	ug/L	50.0	8.9	1	08/24/18 11:10	09/06/18 18:45	7429-90-5	
Antimony	**1.0**	ug/L	1.0	0.15	1	08/24/18 11:10	09/06/18 18:45	7440-36-0	
Barium	**95.6**	ug/L	1.0	0.34	1	08/24/18 11:10	09/06/18 18:45	7440-39-3	
Thallium	**0.28J**	ug/L	1.0	0.14	1	08/24/18 11:10	09/06/18 18:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	08/27/18 16:30	08/28/18 13:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**837**	mg/L	5.0	5.0	1		08/27/18 11:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.0**	Std. Units	0.10	0.10	1		08/28/18 10:03		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	**0.027**	mg/L	0.010	0.010	1		09/10/18 16:50	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**123**	mg/L	10.0	4.6	10		09/07/18 23:34	16887-00-6	
Fluoride	**1.2**	mg/L	0.20	0.063	1		09/10/18 13:18	16984-48-8	
Sulfate	**333**	mg/L	50.0	11.8	50		09/08/18 00:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: POND SURFACE WATER **Lab ID: 60278591007** Collected: 08/23/18 08:15 Received: 08/24/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**9.6J**	mg/L	10.0	3.5	1		08/31/18 14:31		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.9**	mg/L	1.0	0.65	1		09/04/18 13:49	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		08/24/18 08:05	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541629 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60278591001, 60278591002

METHOD BLANK: 2219612 | Matrix: Water
Associated Lab Samples: 60278591001, 60278591002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.037	08/28/18 13:16	

LABORATORY CONTROL SAMPLE: 2219613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2219614 2219615

Parameter	Units	60278591001 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	4.6	4.8	93	96	75-125	4	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541630 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 2219616 Matrix: Water
Associated Lab Samples: 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.037	08/28/18 12:51	

LABORATORY CONTROL SAMPLE: 2219617

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2219618 2219619

Parameter	Units	60278591006 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	4.9	97	98	75-125	1	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541312 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 2218221 Matrix: Water
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	12.5	08/28/18 16:58	
Calcium	ug/L	ND	200	53.5	08/28/18 16:58	

LABORATORY CONTROL SAMPLE: 2218222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1020	102	85-115	
Calcium	ug/L	10000	10600	106	85-115	

MATRIX SPIKE SAMPLE: 2218223

Parameter	Units	60278560001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L			1320			
Calcium	ug/L			84300			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2218224 2218225

Parameter	Units	60278591006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	2420	1000	1000	3490	3490	108	107	70-130	0	20	
Calcium	ug/L	164000	10000	10000	178000	179000	137	149	70-130	1	20	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541257 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 2217974 Matrix: Water
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	ND	10.0	4.9	08/29/18 17:35	
Beryllium	ug/L	ND	1.0	0.16	08/28/18 18:54	
Cadmium	ug/L	ND	5.0	0.45	08/28/18 18:54	
Chromium	ug/L	ND	5.0	1.1	08/28/18 18:54	
Cobalt	ug/L	ND	5.0	0.87	08/28/18 18:54	
Copper	ug/L	ND	10.0	4.5	08/28/18 18:54	
Iron	ug/L	ND	50.0	6.1	08/28/18 18:54	
Lead	ug/L	ND	10.0	3.0	08/28/18 18:54	
Lithium	ug/L	ND	10.0	4.6	08/28/18 18:54	
Magnesium	ug/L	20.0J	50.0	14.0	08/28/18 18:54	
Manganese	ug/L	ND	5.0	0.73	08/28/18 18:54	
Molybdenum	ug/L	ND	20.0	0.90	08/28/18 18:54	
Nickel	ug/L	ND	5.0	1.4	08/28/18 18:54	
Selenium	ug/L	ND	15.0	6.1	08/28/18 18:54	
Silver	ug/L	ND	7.0	2.0	08/28/18 18:54	
Sodium	ug/L	ND	500	157	08/28/18 18:54	
Total Hardness by 2340B	ug/L	ND	705	500	08/28/18 18:54	
Zinc	ug/L	ND	50.0	3.5	08/28/18 18:54	

LABORATORY CONTROL SAMPLE: 2217975

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	923	92	80-120	
Beryllium	ug/L	1000	1000	100	80-120	
Cadmium	ug/L	1000	928	93	80-120	
Chromium	ug/L	1000	999	100	80-120	
Cobalt	ug/L	1000	938	94	80-120	
Copper	ug/L	1000	988	99	80-120	
Iron	ug/L	10000	10300	103	80-120	
Lead	ug/L	1000	928	93	80-120	
Lithium	ug/L	1000	960	96	80-120	
Magnesium	ug/L	10000	10600	106	80-120	
Manganese	ug/L	1000	1020	102	80-120	
Molybdenum	ug/L	1000	948	95	80-120	
Nickel	ug/L	1000	940	94	80-120	
Selenium	ug/L	1000	938	94	80-120	
Silver	ug/L	500	498	100	80-120	
Sodium	ug/L	10000	9830	98	80-120	
Total Hardness by 2340B	ug/L		68900			
Zinc	ug/L	1000	986	99	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2217976 2217977

Parameter	Units	60278591006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	1000	1000	980	968	98	97	75-125	1	20	
Beryllium	ug/L	ND	1000	1000	1030	1010	103	101	75-125	2	20	
Cadmium	ug/L	ND	1000	1000	959	954	96	95	75-125	1	20	
Chromium	ug/L	1.3J	1000	1000	1010	996	101	100	75-125	2	20	
Cobalt	ug/L	1.7J	1000	1000	927	922	93	92	75-125	1	20	
Copper	ug/L	ND	1000	1000	1020	1010	102	101	75-125	0	20	
Iron	ug/L	86.6	10000	10000	10400	10300	103	102	75-125	1	20	
Lead	ug/L	ND	1000	1000	916	910	92	91	75-125	1	20	
Lithium	ug/L	43.2	1000	1000	1030	1030	99	99	75-125	0	20	
Magnesium	ug/L	45000	10000	10000	56200	54800	112	99	75-125	2	20	
Manganese	ug/L	249	1000	1000	1260	1240	101	99	75-125	2	20	
Molybdenum	ug/L	3.5J	1000	1000	980	974	98	97	75-125	1	20	
Nickel	ug/L	5.6	1000	1000	928	923	92	92	75-125	1	20	
Selenium	ug/L	ND	1000	1000	975	962	98	96	75-125	1	20	
Silver	ug/L	ND	500	500	512	506	102	101	75-125	1	20	
Sodium	ug/L	71100	10000	10000	82800	82100	118	111	75-125	1	20	
Total Hardness by 2340B	ug/L	593000			698000	681000				2		
Zinc	ug/L	ND	1000	1000	975	965	97	96	75-125	1	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541256 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 2217967 Matrix: Water
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	ND	50.0	8.9	09/06/18 18:09	
Antimony	ug/L	ND	1.0	0.15	09/06/18 18:09	
Barium	ug/L	ND	1.0	0.34	09/06/18 18:09	
Thallium	ug/L	ND	1.0	0.14	09/06/18 18:09	

LABORATORY CONTROL SAMPLE: 2217968

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	1000	969	97	80-120	
Antimony	ug/L	40	39.8	100	80-120	
Barium	ug/L	40	39.7	99	80-120	
Thallium	ug/L	40	38.3	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2217969 2217970

Parameter	Units	60278591006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	1000	1000	1190	1150	118	114	75-125	3	20	
Antimony	ug/L	ND	40	40	40.1	39.3	100	98	75-125	2	20	
Barium	ug/L	57.6	40	40	99.5	95.9	105	96	75-125	4	20	
Thallium	ug/L	ND	40	40	34.2	33.6	85	84	75-125	2	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541516 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 2219300 | Matrix: Water
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	08/27/18 11:46	

LABORATORY CONTROL SAMPLE: 2219301

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	985	98	80-120	

SAMPLE DUPLICATE: 2219302

Parameter	Units	60278613001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	75.5	73.5	3	10	

SAMPLE DUPLICATE: 2219303

Parameter	Units	60278591006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	828	827	0	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541352 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004

SAMPLE DUPLICATE: 2218326

Parameter	Units	60278572002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.8	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541706 | Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B | Analysis Description: 4500H+B pH
Associated Lab Samples: 60278591005, 60278591006, 60278591007

SAMPLE DUPLICATE: 2219926

Parameter	Units	60278591006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.1	7.1	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 543180 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60278591001

METHOD BLANK: 2225778 | Matrix: Water
Associated Lab Samples: 60278591001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	09/06/18 09:51	
Fluoride	mg/L	ND	0.20	0.063	09/06/18 09:51	
Sulfate	mg/L	ND	1.0	0.24	09/06/18 09:51	

LABORATORY CONTROL SAMPLE: 2225779

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.4	98	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE SAMPLE: 2225782

Parameter	Units	60279439007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	651	250	860	84	90-110	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 543424 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 2226715 | Matrix: Water
Associated Lab Samples: 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	09/07/18 17:29	
Sulfate	mg/L	ND	1.0	0.24	09/07/18 17:29	

LABORATORY CONTROL SAMPLE: 2226716

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	5.2	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2226717 2226718

Parameter	Units	60278591002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.0			13.1	13.3				2	15	
Sulfate	mg/L	44.8	25	25	69.5	71.3	99	106	90-110	3	15	

MATRIX SPIKE SAMPLE: 2226719

Parameter	Units	60278591006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	67.6	50	121	107	90-110	
Sulfate	mg/L	230	100	336	106	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 543667 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 2228046 | Matrix: Water
Associated Lab Samples: 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	09/10/18 08:52	
Fluoride	mg/L	ND	0.20	0.063	09/10/18 08:52	

LABORATORY CONTROL SAMPLE: 2228047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2228048 2228049

Parameter	Units	60278591002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.0	5	5	14.0	14.2	119	124	90-110	2	15	M1
Fluoride	mg/L	0.67	2.5	2.5	3.5	3.6	115	118	90-110	2	15	M1

MATRIX SPIKE SAMPLE: 2228050

Parameter	Units	60278591006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.56	2.5	3.5	118	90-110	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 542264 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 2222029 Matrix: Water
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.5	08/31/18 14:19	

LABORATORY CONTROL SAMPLE: 2222030

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	46.8	94	90-110	

MATRIX SPIKE SAMPLE: 2222031

Parameter	Units	60278427001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	815	500	1290	95	90-110	

MATRIX SPIKE SAMPLE: 2222033

Parameter	Units	60278591001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	ND	2	90-110	M1

MATRIX SPIKE SAMPLE: 2222034

Parameter	Units	60278591006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	53.2	106	90-110	

SAMPLE DUPLICATE: 2222032

Parameter	Units	60278444002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 542441 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004

METHOD BLANK: 2222646 | Matrix: Water
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	08/31/18 16:41	

LABORATORY CONTROL SAMPLE: 2222647

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.5	110	80-120	

MATRIX SPIKE SAMPLE: 2222648

Parameter	Units	60278488003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	2.0	5	7.5	110	80-120	

SAMPLE DUPLICATE: 2222649

Parameter	Units	7593139001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	4.2	4.2	1	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 542751 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60278591005, 60278591006, 60278591007

METHOD BLANK: 2224134 | Matrix: Water
Associated Lab Samples: 60278591005, 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	09/04/18 09:58	

LABORATORY CONTROL SAMPLE: 2224135

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.2	105	80-120	

MATRIX SPIKE SAMPLE: 2224137

Parameter	Units	60278591006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	0.75J	5	6.0	104	80-120	

SAMPLE DUPLICATE: 2224136

Parameter	Units	7592937002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	9.1	8.9	3	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 541197 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60278591006, 60278591007

METHOD BLANK: 2217613 | Matrix: Water
Associated Lab Samples: 60278591006, 60278591007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	08/24/18 07:57	

LABORATORY CONTROL SAMPLE: 2217614

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.095	95	90-110	

MATRIX SPIKE SAMPLE: 2217615

Parameter	Units	60278591007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.10	100	85-115	

SAMPLE DUPLICATE: 2217616

Parameter	Units	60278591006 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-4 **Lab ID: 60278591001** Collected: 08/22/18 08:29 Received: 08/24/18 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.825 ± 0.499 (0.547)** **C:NA T:77%**	pCi/L	09/12/18 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.0621 ± 0.380 (0.870)** **C:76% T:78%**	pCi/L	09/12/18 16:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.887 ± 0.879 (1.42)**	pCi/L	09/13/18 12:44	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-3 **Lab ID: 60278591002** Collected: 08/22/18 10:00 Received: 08/24/18 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.785 ± 0.467 (0.445)** **C:NA T:80%**	pCi/L	09/12/18 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.622 ± 0.367 (0.667)** **C:77% T:85%**	pCi/L	09/12/18 16:08	15262-20-1	
Total Radium	Total Radium Calculation	**1.41 ± 0.834 (1.11)**	pCi/L	09/13/18 12:44	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-2 **Lab ID: 60278591003** Collected: 08/22/18 11:39 Received: 08/24/18 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.909 ± 0.509 (0.528)** **C:NA T:87%**	pCi/L	09/12/18 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.783 ± 0.404 (0.699)** **C:76% T:82%**	pCi/L	09/12/18 16:09	15262-20-1	
Total Radium	Total Radium Calculation	**1.69 ± 0.913 (1.23)**	pCi/L	09/13/18 12:44	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: DUP-1 **Lab ID: 60278591004** Collected: 08/22/18 11:39 Received: 08/24/18 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.291 ± 0.379 (0.626)** **C:NA T:87%**	pCi/L	09/12/18 21:39	13982-63-3	
Radium-228	EPA 904.0	**0.750 ± 0.423 (0.772)** **C:79% T:83%**	pCi/L	09/12/18 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.04 ± 0.802 (1.40)**	pCi/L	09/13/18 12:44	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-8 **Lab ID: 60278591005** Collected: 08/22/18 14:44 Received: 08/24/18 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.699 ± 0.489 (0.590)** **C:NA T:76%**	pCi/L	09/12/18 21:39	13982-63-3	
Radium-228	EPA 904.0	**1.13 ± 0.530 (0.920)** **C:74% T:82%**	pCi/L	09/12/18 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.83 ± 1.02 (1.51)**	pCi/L	09/13/18 12:44	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: MW-1 **Lab ID: 60278591006** Collected: 08/23/18 09:40 Received: 08/24/18 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.616 ± 0.422 (0.530)** **C:NA T:87%**	pCi/L	09/12/18 13:02	13982-63-3	
Radium-228	EPA 904.0	**0.890 ± 0.458 (0.813)** **C:78% T:82%**	pCi/L	09/12/18 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.51 ± 0.880 (1.34)**	pCi/L	09/13/18 12:44	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Sample: POND SURFACE WATER **Lab ID: 60278591007** Collected: 08/23/18 08:15 Received: 08/24/18 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.518 ± 0.589 (0.929) C:NA T:65%**	pCi/L	09/12/18 21:39	13982-63-3	
Radium-228	EPA 904.0	**0.212 ± 0.446 (0.985) C:76% T:70%**	pCi/L	09/12/18 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.730 ± 1.04 (1.91)**	pCi/L	09/13/18 12:44	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 311447 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 1520968 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.274 ± 0.319 (0.494) C:NA T:93%	pCi/L	09/12/18 12:20	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

QC Batch: 311451 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60278591001, 60278591002, 60278591003, 60278591004, 60278591005, 60278591006, 60278591007

METHOD BLANK: 1520972 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.207 ± 0.303 (0.651) C:78% T:75%	pCi/L	09/12/18 16:09	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60278591001	**MW-4**	EPA 200.7	541312	EPA 200.7	541357
60278591002	**MW-3**	EPA 200.7	541312	EPA 200.7	541357
60278591003	**MW-2**	EPA 200.7	541312	EPA 200.7	541357
60278591004	**DUP-1**	EPA 200.7	541312	EPA 200.7	541357
60278591005	**MW-8**	EPA 200.7	541312	EPA 200.7	541357
60278591006	**MW-1**	EPA 200.7	541312	EPA 200.7	541357
60278591007	**POND SURFACE WATER**	EPA 200.7	541312	EPA 200.7	541357
60278591001	**MW-4**	EPA 3010	541257	EPA 6010	541289
60278591002	**MW-3**	EPA 3010	541257	EPA 6010	541289
60278591003	**MW-2**	EPA 3010	541257	EPA 6010	541289
60278591004	**DUP-1**	EPA 3010	541257	EPA 6010	541289
60278591005	**MW-8**	EPA 3010	541257	EPA 6010	541289
60278591006	**MW-1**	EPA 3010	541257	EPA 6010	541289
60278591007	**POND SURFACE WATER**	EPA 3010	541257	EPA 6010	541289
60278591001	**MW-4**	EPA 3010	541256	EPA 6020	541291
60278591002	**MW-3**	EPA 3010	541256	EPA 6020	541291
60278591003	**MW-2**	EPA 3010	541256	EPA 6020	541291
60278591004	**DUP-1**	EPA 3010	541256	EPA 6020	541291
60278591005	**MW-8**	EPA 3010	541256	EPA 6020	541291
60278591006	**MW-1**	EPA 3010	541256	EPA 6020	541291
60278591007	**POND SURFACE WATER**	EPA 3010	541256	EPA 6020	541291
60278591001	**MW-4**	EPA 7470	541629	EPA 7470	541687
60278591002	**MW-3**	EPA 7470	541629	EPA 7470	541687
60278591003	**MW-2**	EPA 7470	541630	EPA 7470	541688
60278591004	**DUP-1**	EPA 7470	541630	EPA 7470	541688
60278591005	**MW-8**	EPA 7470	541630	EPA 7470	541688
60278591006	**MW-1**	EPA 7470	541630	EPA 7470	541688
60278591007	**POND SURFACE WATER**	EPA 7470	541630	EPA 7470	541688
60278591001	**MW-4**	EPA 903.1	311447		
60278591002	**MW-3**	EPA 903.1	311447		
60278591003	**MW-2**	EPA 903.1	311447		
60278591004	**DUP-1**	EPA 903.1	311447		
60278591005	**MW-8**	EPA 903.1	311447		
60278591006	**MW-1**	EPA 903.1	311447		
60278591007	**POND SURFACE WATER**	EPA 903.1	311447		
60278591001	**MW-4**	EPA 904.0	311451		
60278591002	**MW-3**	EPA 904.0	311451		
60278591003	**MW-2**	EPA 904.0	311451		
60278591004	**DUP-1**	EPA 904.0	311451		
60278591005	**MW-8**	EPA 904.0	311451		
60278591006	**MW-1**	EPA 904.0	311451		
60278591007	**POND SURFACE WATER**	EPA 904.0	311451		
60278591001	**MW-4**	Total Radium Calculation	312883		
60278591002	**MW-3**	Total Radium Calculation	312883		
60278591003	**MW-2**	Total Radium Calculation	312883		

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60278591004	**DUP-1**	Total Radium Calculation	312883		
60278591005	**MW-8**	Total Radium Calculation	312883		
60278591006	**MW-1**	Total Radium Calculation	312883		
60278591007	**POND SURFACE WATER**	Total Radium Calculation	312883		
60278591001	**MW-4**	SM 2540C	541516		
60278591002	**MW-3**	SM 2540C	541516		
60278591003	**MW-2**	SM 2540C	541516		
60278591004	**DUP-1**	SM 2540C	541516		
60278591005	**MW-8**	SM 2540C	541516		
60278591006	**MW-1**	SM 2540C	541516		
60278591007	**POND SURFACE WATER**	SM 2540C	541516		
60278591001	**MW-4**	SM 4500-H+B	541352		
60278591002	**MW-3**	SM 4500-H+B	541352		
60278591003	**MW-2**	SM 4500-H+B	541352		
60278591004	**DUP-1**	SM 4500-H+B	541352		
60278591005	**MW-8**	SM 4500-H+B	541706		
60278591006	**MW-1**	SM 4500-H+B	541706		
60278591007	**POND SURFACE WATER**	SM 4500-H+B	541706		
60278591001	**MW-4**	Trivalent Chromium Calculation	543600		
60278591002	**MW-3**	Trivalent Chromium Calculation	543600		
60278591003	**MW-2**	Trivalent Chromium Calculation	543600		
60278591004	**DUP-1**	Trivalent Chromium Calculation	543600		
60278591005	**MW-8**	Trivalent Chromium Calculation	543600		
60278591006	**MW-1**	Trivalent Chromium Calculation	543600		
60278591007	**POND SURFACE WATER**	Trivalent Chromium Calculation	543600		
60278591001	**MW-4**	EPA 300.0	543180		
60278591002	**MW-3**	EPA 300.0	543424		
60278591002	**MW-3**	EPA 300.0	543667		
60278591003	**MW-2**	EPA 300.0	543424		
60278591003	**MW-2**	EPA 300.0	543667		
60278591004	**DUP-1**	EPA 300.0	543424		
60278591004	**DUP-1**	EPA 300.0	543667		
60278591005	**MW-8**	EPA 300.0	543424		
60278591005	**MW-8**	EPA 300.0	543667		
60278591006	**MW-1**	EPA 300.0	543424		
60278591006	**MW-1**	EPA 300.0	543667		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60278591

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60278591007	**POND SURFACE WATER**	EPA 300.0	543424		
60278591007	**POND SURFACE WATER**	EPA 300.0	543667		
60278591001	**MW-4**	EPA 410.4	542264		
60278591002	**MW-3**	EPA 410.4	542264		
60278591003	**MW-2**	EPA 410.4	542264		
60278591004	**DUP-1**	EPA 410.4	542264		
60278591005	**MW-8**	EPA 410.4	542264		
60278591006	**MW-1**	EPA 410.4	542264		
60278591007	**POND SURFACE WATER**	EPA 410.4	542264		
60278591001	**MW-4**	SM 5310C	542441		
60278591002	**MW-3**	SM 5310C	542441		
60278591003	**MW-2**	SM 5310C	542441		
60278591004	**DUP-1**	SM 5310C	542441		
60278591005	**MW-8**	SM 5310C	542751		
60278591006	**MW-1**	SM 5310C	542751		
60278591007	**POND SURFACE WATER**	SM 5310C	542751		
60278591006	**MW-1**	EPA 7196	541197		
60278591007	**POND SURFACE WATER**	EPA 7196	541197		

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www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60278591
60278591

Client Name: Burns + McD

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-298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 5.2/4.5/3.7 **Corr. Factor** 0.0 **Corrected** 5.2/4.5/3.7

Date and initials of person examining contents: SDC 8-24-18

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	Cr^{6+}, 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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JWS Date: 8/24/18

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: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bweis@burnsmcd.com
Phone: 816-333-9400 Fax:
Requested Due Date:

Section B — Required Project Information:

Report To: Brian Weis
Copy To:
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C — Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: colleen.clyne@pacelabs.com
Pace Profile #: 10268

Regulatory Agency:
State / Location: MO

Requested Analysis Filtered (Y/N)

602 78591

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION C°	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N: 300.0 Sulfate,Cl,F	TOC	COD	TDS by 2540C	Metals**	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Tl,Zn	
1	mw-4 BP1N(2), AG2S, BP2U(2)	WT	G	22Aug18	8:29A			6.4	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		AG5S, BP3N	001
2	mw-3	WT	G	22Aug18	10:00A			6.1	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			002
3	mw-2	WT	G	22Aug18	11:39A			17.4	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			003
4	Dup-1	WT	G	22Aug18	11:39A			17.4	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			004
5	mw-8	WT	G	22Aug18	2:44P			17.4	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			005
6	mw-1 BP2U(3)	WT	G	23Aug18	9:40A			17.5	8	3	2	3						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			006
7	MS	WT	G	23Aug18	9:40A			17.5	8	3	2	3						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			~~007~~
8	MSD	WT	G	23Aug18	9:40A			17.5	8	3	2	3						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			~~008~~
9	Pond surface water	WT	G	23Aug18	8:15A	BP1N(2)		6.2	8	3	2	3		AG2S				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			~~009~~ 012
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
TOX EDD needed	David Kilgore ES+S	23Aug18	1:30PM	Brian Weis	23Aug18	3:55PM
				PACE	8-24-18	0615

SAMPLE CONDITIONS			
~~3.7~~	EDC	8-24-18	
5.2	Y	Y	Y
4.5	↓	↓	↓
3.7	↓	↓	↓
TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore

DATE Signed: 23Aug18

ANALYTICAL REPORT

September 03, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L1021207
Samples Received:	08/28/2018
Project Number:	60278591
Description:	More's Lake Columbia, MO
Report To:	Jeff Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-4 L1021207-01 GW

Collected by	Collected date/time	Received date/time
	08/22/18 08:29	08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1158582	1	08/29/18 14:41	08/29/18 14:41	EEM

MW-3 L1021207-02 GW

Collected by	Collected date/time	Received date/time
	08/22/18 10:00	08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1158582	1	08/29/18 15:24	08/29/18 15:24	EEM

MW-2 L1021207-03 GW

Collected by	Collected date/time	Received date/time
	08/22/18 11:39	08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1158582	1	08/30/18 10:47	08/30/18 10:47	EEM

DUP-1 L1021207-04 GW

Collected by	Collected date/time	Received date/time
	08/22/18 11:39	08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1158582	1	08/30/18 11:11	08/30/18 11:11	EEM

MW-8 L1021207-05 GW

Collected by	Collected date/time	Received date/time
	08/22/18 14:44	08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1158582	1	08/30/18 11:29	08/30/18 11:29	EEM

MW-1 L1021207-06 GW

Collected by	Collected date/time	Received date/time
	08/22/18 09:40	08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1158582	1	08/30/18 12:12	08/30/18 12:12	EEM

POND SURFACE WATER L1021207-07 GW

Collected by	Collected date/time	Received date/time
	08/22/18 08:15	08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1158582	1	08/30/18 12:30	08/30/18 12:30	EEM

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

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

Nancy F. McLain

Nancy McLain
Project Manager

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	161	P1	12.0	100	1	08/29/2018 14:41	WG1158582

Sample Narrative:

L1021207-01 WG1158582: @ 10 mL due to matrix; centrifuged.

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	64.2	B J	12.0	100	1	08/29/2018 15:24	WG1158582

Sample Narrative:

L1021207-02 WG1158582: @ 10 mL due to matrix; centrifuged.

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	23.7	B J	12.0	100	1	08/30/2018 10:47	WG1158582

Sample Narrative:

L1021207-03 WG1158582: @ 10 mL due to matrix; centrifuged.

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	45.8	B J	12.0	100	1	08/30/2018 11:11	WG1158582

Sample Narrative:

L1021207-04 WG1158582: @ 10 mL due to matrix; centrifuged.

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	147		12.0	100	1	08/30/2018 11:29	WG1158582

Sample Narrative:

L1021207-05 WG1158582: @ 10 mL due to matrix; centrifuged.

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	129		12.0	100	1	08/30/2018 12:12	WG1158582

Sample Narrative:

L1021207-06 WG1158582: @ 10 mL due to matrix; centrifuged.

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	206		12.0	100	1	08/30/2018 12:30	WG1158582

Sample Narrative:

L1021207-07 WG1158582: @ 10 mL due to matrix; centrifuged.

Method Blank (MB)

(MB) R3337729-2 08/29/18 13:39

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	12.1	J	12.0	100

L1021207-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1021207-01 08/29/18 14:41 • (DUP) R3337729-6 08/29/18 14:58

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	161	79.7	1	67.4	J P1	20

Sample Narrative:

OS: @ 10 mL due to matrix; centrifuged.

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3337729-3 08/29/18 13:55 • (LCSD) R3337729-5 08/29/18 14:32

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TOX	200	202	202	101	101	85.0-115			0.258	20

L1021273-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1021273-01 08/30/18 13:06 • (MS) R3337729-8 08/30/18 13:24 • (MSD) R3337729-10 08/30/18 13:41

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	21.7	305	294	94.5	90.6	1	80.0-120			3.88	20

Sample Narrative:

OS: @ 10 mL due to matrix; centrifuged.

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

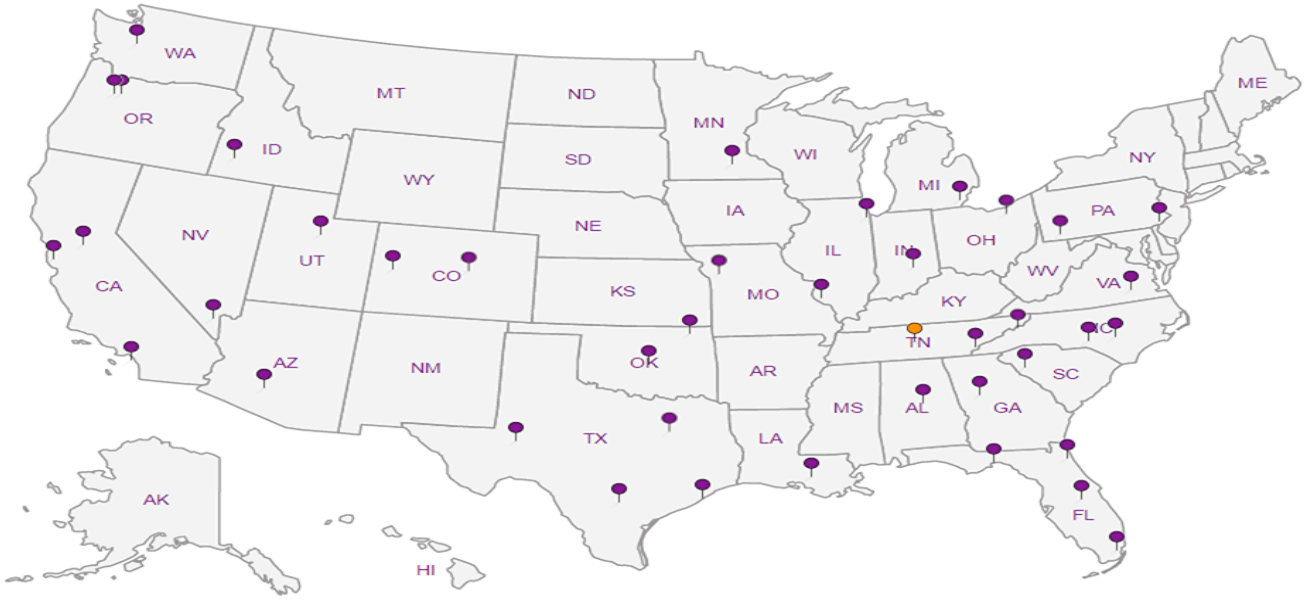
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Chain of Custody

G002

Pace Analytical®
www.pacelabs.com

Workorder: 60278591 Workorder Name: MORE'S LAKE COLUMBIA, MO Results Requested By: 9/10/2018

4021207

Report / Invoice To	Subcontract To
Jeffrey Shopper Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1408 Email: jeff.shopper@pacelabs.com	P.O. SUB-9237

State of Sample Origin:

Requested Analysis

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers H2SO4	TOX	LAB USE ONLY
1	MW-4	8/22/2018 08:29	60278591001	Water	1	X	-01
2	MW-3	8/22/2018 10:00	60278591002	Water	1	X	-02
3	MW-2	8/22/2018 11:39	60278591003	Water	1	X	-03
4	DUP-1	8/22/2018 11:39	60278591004	Water	1	X	-04
5	MW-8	8/22/2018 14:44	60278591005	Water	1	X	-05
6	MW-1	8/23/2018 09:40	60278591006	Water	1	X	-06
7	POND SURFACE WATER	8/23/2018 08:15	60278591007	Water	1	X	-07

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PDSI	8/27/18 1700	[signature]	8/28/18 0845
2				
3				

Comments: J-flag results. EDD needed

<2 OK

Cooler Temperature on Receipt 0.6 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

4542 2780 7076

Cont = 7 = Cy

RAD SCREEN: <0.5 mR/hr

SUBOUT SAMPLES

L/02/207

Completed by Project Manager:

Sub out within Pace Office:

Containers to be sent:

X Sub out outside of Pace

Laboratory: Pace Analytical National

Shipping Address: 12065 Lebanon Rd
Mt Juliet, TN 37122

Containers to be sent: AG3S-7

Pace Purchase Order Number: SUB-9037

Project Number 60278444

Project Due Date: 9/10/2018

PM Initials: JNS

Sample #	Quanti	Matrix	Test (Description)	Unit Price	Containers to send
60278591001-007	7	WATER	TOX	$95.00	7-AG3S
			Total	$665.00	80%= 532.00 20%= 133.00

Initials of Person Placing Work: NJW

Contact in other Lab: Nancy McClain

Phone Number: 615-758-5858 ext 9710

Initials of Person Sending Samples:

Date Sent: 8/24/2018

Courier Used:

Tracking Number:

RAD SCREEN: <0.5 mR/hr

0.6 15

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: PACE LKS	SDG#	L1021207	
Cooler Received/Opened On:	Temperature:	0.6	
~~Received By: Matthew Shacklock~~			
Signature: Matt Shacklock			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

November 16, 2018

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on October 24, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

New Orleans Certification IDs

California Env. Lab Accreditation Program Branch: 11277CA
Florida Department of Health (NELAC): E87595
Illinois Environmental Protection Agency: 0025721
Kansas Department of Health and Environment (NELAC): E-10266
Louisiana Dept. of Environmental Quality (NELAC/LELAP): 02006
Pennsylviania Dept. of Env Protection (NELAC): 68-04202
Texas Commission on Env. Quality (NELAC): T104704405-09-TX
U.S. Dept. of Agriculture Foreign Soil Import: P330-10-00119
Commonwealth of Virginia (TNI): 480246

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60284534001	**MW-6**	Water	10/23/18 11:00	10/24/18 05:55
60284534002	**MW-7**	Water	10/23/18 10:17	10/24/18 05:55
60284534003	**PZ-2**	Water	10/23/18 12:58	10/24/18 05:55
60284534004	**MW-5**	Water	10/23/18 14:11	10/24/18 05:55

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60284534001	**MW-6**	EPA 200.7	TDS	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	LDB, WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	RMT	1	PASI-K
60284534002	**MW-7**	EPA 200.7	TDS	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	LDB, WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	RMT	1	PASI-K
60284534003	**PZ-2**	EPA 200.7	TDS	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	RMT	1	PASI-K
60284534004	**MW-5**	EPA 200.7	TDS	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	RMT	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 551313

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60284510001,60284534001

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

- MS (Lab ID: 2261052)
  - Calcium
- MSD (Lab ID: 2261051)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 551708

B: Analyte was detected in the associated method blank.

- BLANK for HBN 551708 [MPRP/476 (Lab ID: 2262481)
  - Beryllium
  - Cadmium

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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

PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- MW-5 (Lab ID: 60284534004)
- MW-6 (Lab ID: 60284534001)
- MW-7 (Lab ID: 60284534002)
- PZ-2 (Lab ID: 60284534003)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 554918

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60285452003

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

- MS (Lab ID: 2276476)
  - Chloride
  - Sulfate

QC Batch: 555119

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60285588003,60285588004

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

- MS (Lab ID: 2277299)
  - Chloride
  - Sulfate

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 554801

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 2275919)
  - Chemical Oxygen Demand

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: November 16, 2018

General Information:
4 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-6 **Lab ID: 60284534001** Collected: 10/23/18 11:00 Received: 10/24/18 05:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**87.0J**	ug/L	100	12.5	1	10/24/18 11:32	10/25/18 15:40	7440-42-8	
Calcium	**191000**	ug/L	200	53.5	1	10/24/18 11:32	10/25/18 15:40	7440-70-2	M1
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	**7.0J**	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:18	7440-38-2	
Beryllium	**0.62J**	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:18	7440-41-7	B
Cadmium	**0.64J**	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:18	7440-43-9	B
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:18	7440-47-3	
Cobalt	**2.5J**	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:18	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:18	7440-50-8	
Iron	**1060**	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:18	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:18	7439-92-1	
Lithium	**54.4**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:18	7439-93-2	
Magnesium	**37800**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:18	7439-95-4	
Manganese	**796**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:18	7439-96-5	
Molybdenum	**2.0J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:18	7439-98-7	
Nickel	**5.0**	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:18	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:18	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:18	7440-22-4	
Sodium	**51500**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:18	7440-23-5	
Total Hardness by 2340B	**621000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:18		
Zinc	**12.4J**	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:18	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**42.7J**	ug/L	100	21.6	1	10/29/18 07:01	10/30/18 14:33	7429-90-5	
Antimony	ND	ug/L	1.0	0.080	1	10/29/18 07:01	10/30/18 14:33	7440-36-0	
Barium	**76.0**	ug/L	1.0	0.19	1	10/29/18 07:01	10/30/18 14:33	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/29/18 07:01	10/30/18 14:33	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/06/18 15:50	11/07/18 16:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**884**	mg/L	5.0	5.0	1		10/24/18 13:55		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		10/30/18 13:23		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/13/18 13:29	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**31.0**	mg/L	20.0	5.8	20		11/13/18 21:05	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	0.19	1		11/11/18 06:29	16984-48-8	
Sulfate	**219**	mg/L	20.0	4.8	20		11/13/18 21:05	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-6 **Lab ID: 60284534001** Collected: 10/23/18 11:00 Received: 10/24/18 05:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**6.2J**	mg/L	10.0	4.8	1		11/14/18 11:59		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.7**	mg/L	1.0	0.65	1		11/06/18 04:03	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		10/24/18 08:50	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-7 **Lab ID: 60284534002** Collected: 10/23/18 10:17 Received: 10/24/18 05:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**221**	ug/L	100	12.5	1	10/24/18 11:32	10/25/18 15:45	7440-42-8	
Calcium	**141000**	ug/L	200	53.5	1	10/24/18 11:32	10/25/18 15:45	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:25	7440-38-2	
Beryllium	**0.54J**	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:25	7440-41-7	B
Cadmium	**0.73J**	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:25	7440-43-9	B
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:25	7440-47-3	
Cobalt	**0.95J**	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:25	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:25	7440-50-8	
Iron	**1080**	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:25	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:25	7439-92-1	
Lithium	**46.2**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:25	7439-93-2	
Magnesium	**35000**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:25	7439-95-4	
Manganese	**568**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:25	7439-96-5	
Molybdenum	**9.3J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:25	7439-98-7	
Nickel	**7.2**	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:25	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:25	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:25	7440-22-4	
Sodium	**61200**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:25	7440-23-5	
Total Hardness by 2340B	**504000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:25		
Zinc	**87.4**	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:25	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	100	21.6	1	10/29/18 07:01	10/30/18 14:30	7429-90-5	
Antimony	**0.082J**	ug/L	1.0	0.080	1	10/29/18 07:01	10/30/18 14:30	7440-36-0	
Barium	**87.6**	ug/L	1.0	0.19	1	10/29/18 07:01	10/30/18 14:30	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/29/18 07:01	10/30/18 14:30	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/05/18 17:10	11/06/18 15:16	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**746**	mg/L	5.0	5.0	1		10/24/18 13:55		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		10/30/18 13:25		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/13/18 13:29	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**47.1**	mg/L	20.0	5.8	20		11/13/18 21:21	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	0.19	1		11/11/18 07:02	16984-48-8	
Sulfate	**182**	mg/L	20.0	4.8	20		11/13/18 21:21	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-7 **Lab ID: 60284534002** Collected: 10/23/18 10:17 Received: 10/24/18 05:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		11/14/18 11:59		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.90J**	mg/L	1.0	0.65	1		11/06/18 04:16	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		10/24/18 08:40	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: PZ-2 **Lab ID: 60284534003** Collected: 10/23/18 12:58 Received: 10/24/18 05:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**809**	ug/L	100	12.5	1	10/24/18 11:32	10/25/18 15:47	7440-42-8	
Calcium	**221000**	ug/L	200	53.5	1	10/24/18 11:32	10/25/18 15:47	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:27	7440-38-2	
Beryllium	**0.44J**	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:27	7440-41-7	B
Cadmium	**0.84J**	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:27	7440-43-9	B
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:27	7440-47-3	
Cobalt	**1.1J**	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:27	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:27	7440-50-8	
Iron	**431**	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:27	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:27	7439-92-1	
Lithium	**13.0**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:27	7439-93-2	
Magnesium	**41600**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:27	7439-95-4	
Manganese	**511**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:27	7439-96-5	
Molybdenum	**1.7J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:27	7439-98-7	
Nickel	**5.2**	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:27	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:27	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:27	7440-22-4	
Sodium	**127000**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:27	7440-23-5	
Total Hardness by 2340B	**719000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:27		
Zinc	**7.7J**	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:27	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	100	21.6	1	10/29/18 07:01	10/30/18 14:45	7429-90-5	
Antimony	**0.11J**	ug/L	1.0	0.080	1	10/29/18 07:01	10/30/18 14:45	7440-36-0	
Barium	**56.6**	ug/L	1.0	0.19	1	10/29/18 07:01	10/30/18 14:45	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/29/18 07:01	10/30/18 14:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/05/18 17:10	11/06/18 15:18	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1180**	mg/L	5.0	5.0	1		10/24/18 13:55		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.10	1		10/30/18 13:26		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/13/18 13:29	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**187**	mg/L	20.0	5.8	20		11/13/18 21:37	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	0.19	1		11/14/18 15:22	16984-48-8	
Sulfate	**335**	mg/L	20.0	4.8	20		11/13/18 21:37	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: PZ-2 **Lab ID: 60284534003** Collected: 10/23/18 12:58 Received: 10/24/18 05:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**17.0**	mg/L	10.0	4.8	1		11/14/18 12:00		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.5**	mg/L	1.0	0.65	1		11/06/18 04:28	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0060J**	mg/L	0.010	0.0040	1		10/24/18 08:51	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-5 **Lab ID: 60284534004** Collected: 10/23/18 14:11 Received: 10/24/18 05:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**280**	ug/L	100	12.5	1	10/24/18 11:32	10/25/18 15:49	7440-42-8	
Calcium	**116000**	ug/L	200	53.5	1	10/24/18 11:32	10/25/18 15:49	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:34	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:34	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:34	7440-43-9	B
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:34	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:34	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:34	7440-50-8	
Iron	**280**	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:34	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:34	7439-92-1	
Lithium	**45.6**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:34	7439-93-2	
Magnesium	**30300**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:34	7439-95-4	
Manganese	**58.0**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:34	7439-96-5	
Molybdenum	**7.3J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:34	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:34	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:34	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:34	7440-22-4	
Sodium	**64400**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:34	7440-23-5	
Total Hardness by 2340B	**414000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:34		
Zinc	**19.6J**	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:34	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	100	21.6	1	10/29/18 07:01	10/30/18 14:48	7429-90-5	
Antimony	**0.15J**	ug/L	1.0	0.080	1	10/29/18 07:01	10/30/18 14:48	7440-36-0	
Barium	**254**	ug/L	1.0	0.19	1	10/29/18 07:01	10/30/18 14:48	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/29/18 07:01	10/30/18 14:48	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/05/18 17:10	11/06/18 15:21	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1340**	mg/L	5.0	5.0	1		10/24/18 13:56		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		10/30/18 13:29		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/13/18 13:29	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**42.1**	mg/L	5.0	1.4	5		11/14/18 15:51	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	0.19	1		11/14/18 15:37	16984-48-8	
Sulfate	**157**	mg/L	20.0	4.8	20		11/14/18 16:47	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-5 **Lab ID: 60284534004** Collected: 10/23/18 14:11 Received: 10/24/18 05:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		11/14/18 12:01		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.2**	mg/L	1.0	0.65	1		11/06/18 04:41	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0070J**	mg/L	0.010	0.0040	1		10/24/18 08:51	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 553528 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60284534002, 60284534003, 60284534004

METHOD BLANK: 2269892 Matrix: Water
Associated Lab Samples: 60284534002, 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.090	11/06/18 15:07	

LABORATORY CONTROL SAMPLE: 2269893

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: 2269894 2269895

Parameter	Units	60285045013 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	4.1	98	82	75-125	19	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 553779 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60284534001

METHOD BLANK: 2270730 | Matrix: Water
Associated Lab Samples: 60284534001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.090	11/07/18 16:03	

LABORATORY CONTROL SAMPLE: 2270731

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2270732 2270733

Parameter	Units	60285081007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	5.0	4.9	100	97	75-125	3	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 551313 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 2261048 | Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	12.5	10/25/18 15:12	
Calcium	ug/L	ND	200	53.5	10/25/18 15:12	

LABORATORY CONTROL SAMPLE: 2261049

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	992	99	85-115	
Calcium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2261050 2261051

Parameter	Units	60284510001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	287	1000	1000	1300	1270	101	98	70-130	2	20	
Calcium	ug/L	142000	10000	10000	149000	144000	71	23	70-130	3	20	M1

MATRIX SPIKE SAMPLE: 2261052

Parameter	Units	60284534001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	87.0J	1000	1130	104	70-130	
Calcium	ug/L	191000	10000	197000	57	70-130	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 551708 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 2262481 Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	ND	10.0	4.9	11/03/18 13:16	
Beryllium	ug/L	0.34J	1.0	0.16	11/03/18 13:16	
Cadmium	ug/L	0.66J	5.0	0.45	11/03/18 13:16	
Chromium	ug/L	ND	5.0	1.1	11/03/18 13:16	
Cobalt	ug/L	ND	5.0	0.87	11/03/18 13:16	
Copper	ug/L	ND	10.0	4.5	11/03/18 13:16	
Iron	ug/L	ND	50.0	6.1	11/03/18 13:16	
Lead	ug/L	ND	10.0	3.0	11/03/18 13:16	
Lithium	ug/L	ND	10.0	4.6	11/03/18 13:16	
Magnesium	ug/L	ND	50.0	14.0	11/03/18 13:16	
Manganese	ug/L	ND	5.0	0.73	11/03/18 13:16	
Molybdenum	ug/L	ND	20.0	0.90	11/03/18 13:16	
Nickel	ug/L	ND	5.0	1.4	11/03/18 13:16	
Selenium	ug/L	ND	15.0	6.1	11/03/18 13:16	
Silver	ug/L	ND	7.0	2.0	11/03/18 13:16	
Sodium	ug/L	231J	500	157	11/03/18 13:16	
Total Hardness by 2340B	ug/L	ND	705	500	11/03/18 13:16	
Zinc	ug/L	ND	50.0	3.5	11/03/18 13:16	

LABORATORY CONTROL SAMPLE: 2262482

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	956	96	80-120	
Beryllium	ug/L	1000	992	99	80-120	
Cadmium	ug/L	1000	998	100	80-120	
Chromium	ug/L	1000	966	97	80-120	
Cobalt	ug/L	1000	1010	101	80-120	
Copper	ug/L	1000	1000	100	80-120	
Iron	ug/L	10000	10200	102	80-120	
Lead	ug/L	1000	993	99	80-120	
Lithium	ug/L	1000	1000	100	80-120	
Magnesium	ug/L	10000	9770	98	80-120	
Manganese	ug/L	1000	960	96	80-120	
Molybdenum	ug/L	1000	1020	102	80-120	
Nickel	ug/L	1000	1010	101	80-120	
Selenium	ug/L	1000	1040	104	80-120	
Silver	ug/L	500	508	102	80-120	
Sodium	ug/L	10000	10300	103	80-120	
Total Hardness by 2340B	ug/L		65600			
Zinc	ug/L	1000	981	98	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2262483 2262484

Parameter	Units	60284534001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	7.0J	1000	1000	1000	982	100	98	75-125	2	20	
Beryllium	ug/L	0.62J	1000	1000	991	960	99	96	75-125	3	20	
Cadmium	ug/L	0.64J	1000	1000	1000	985	100	98	75-125	2	20	
Chromium	ug/L	ND	1000	1000	964	930	96	93	75-125	4	20	
Cobalt	ug/L	2.5J	1000	1000	971	951	97	95	75-125	2	20	
Copper	ug/L	ND	1000	1000	1010	981	101	98	75-125	3	20	
Iron	ug/L	1060	10000	10000	11000	10700	99	97	75-125	3	20	
Lead	ug/L	ND	1000	1000	952	931	95	93	75-125	2	20	
Lithium	ug/L	54.4	1000	1000	1060	1030	101	98	75-125	3	20	
Magnesium	ug/L	37800	10000	10000	47700	47800	99	100	75-125	0	20	
Manganese	ug/L	796	1000	1000	1750	1730	96	93	75-125	1	20	
Molybdenum	ug/L	2.0J	1000	1000	1030	1000	102	100	75-125	2	20	
Nickel	ug/L	5.0	1000	1000	968	948	96	94	75-125	2	20	
Selenium	ug/L	ND	1000	1000	1040	1020	104	102	75-125	2	20	
Silver	ug/L	ND	500	500	515	500	103	100	75-125	3	20	
Sodium	ug/L	51500	10000	10000	61100	61800	96	103	75-125	1	20	
Total Hardness by 2340B	ug/L	621000			684000	691000				1		
Zinc	ug/L	12.4J	1000	1000	962	938	95	93	75-125	2	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 124244 | Analysis Method: EPA 6020
QC Batch Method: EPA 3010 | Analysis Description: 6020 MET
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 537209 | Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	ND	100	21.6	10/30/18 08:14	
Antimony	ug/L	ND	1.0	0.080	10/30/18 08:14	
Barium	ug/L	ND	1.0	0.19	10/30/18 08:14	
Thallium	ug/L	ND	0.50	0.080	10/30/18 08:14	

LABORATORY CONTROL SAMPLE: 537210

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	4000	4140	104	85-115	
Antimony	ug/L	40	39.4	99	85-115	
Barium	ug/L	40	39.3	98	85-115	
Thallium	ug/L	40	38.8	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 537211 537212

Parameter	Units	50208638006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	4000	4000	3840	3920	95	97	80-120	2	20	
Antimony	ug/L	ND	40	40	44.7	43.9	110	108	80-120	2	20	
Barium	ug/L	42.0	40	40	86.9	85.2	112	108	80-120	2	20	
Thallium	ug/L	ND	40	40	43.0	41.7	107	104	80-120	3	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 551360 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 2261200 | Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	10/24/18 13:54	

LABORATORY CONTROL SAMPLE: 2261201

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2261202

Parameter	Units	60284345003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1540	1570	2	10	

SAMPLE DUPLICATE: 2261203

Parameter	Units	60284414003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2540	2520	1	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 552117 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

SAMPLE DUPLICATE: 2264465

Parameter	Units	60284408001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 554524 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60284534001, 60284534002

METHOD BLANK: 2274417 | Matrix: Water
Associated Lab Samples: 60284534001, 60284534002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.20	0.19	11/10/18 23:39	

LABORATORY CONTROL SAMPLE: 2274418

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	105	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 554918 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60284534001, 60284534002, 60284534003

METHOD BLANK: 2276472 Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.29	11/13/18 10:01	
Sulfate	mg/L	ND	1.0	0.24	11/13/18 10:01	

LABORATORY CONTROL SAMPLE: 2276473

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE SAMPLE: 2276476

Parameter	Units	60285452003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	7110	5000	12700	111	90-110	M1
Sulfate	mg/L	4930	5000	13800	178	90-110	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 555119 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60284534003, 60284534004

METHOD BLANK: 2277295 | Matrix: Water
Associated Lab Samples: 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.74J	1.0	0.29	11/14/18 13:40	
Fluoride	mg/L	ND	0.20	0.19	11/14/18 13:40	
Sulfate	mg/L	ND	1.0	0.24	11/14/18 13:40	

LABORATORY CONTROL SAMPLE: 2277296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2277297 2277298

Parameter	Units	60285588003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	1.7	2.5	2.5	4.3	4.3	102	103	90-110	0	15	

MATRIX SPIKE SAMPLE: 2277299

Parameter	Units	60285588004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	25.0	50	76.1	102	90-110	M1
Fluoride	mg/L	0.82	2.5	3.4	104	90-110	
Sulfate	mg/L	134	50	189	111	90-110	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 554801 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 2275916 Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	4.8	11/14/18 11:42	

LABORATORY CONTROL SAMPLE: 2275917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	54.2	108	90-110	

MATRIX SPIKE SAMPLE: 2275918

Parameter	Units	60285713009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	32.5	50	83.3	102	90-110	

MATRIX SPIKE SAMPLE: 2275920

Parameter	Units	60285713010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	24.0	50	70.9	94	90-110	

SAMPLE DUPLICATE: 2275919

Parameter	Units	60285713011 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	44.1	43.5	1	25	D6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 552684 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 2266562 | Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	11/06/18 01:41	

LABORATORY CONTROL SAMPLE: 2266563

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.4	107	80-120	

MATRIX SPIKE SAMPLE: 2270221

Parameter	Units	60284830001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	ND	5	5.3	98	80-120	

SAMPLE DUPLICATE: 2270220

Parameter	Units	60284918012 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 551234 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 2260764 | Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	10/24/18 08:36	

LABORATORY CONTROL SAMPLE: 2260765

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.095	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2260766 2260767

Parameter	Units	60284534002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	.1	.1	0.093	0.094	91	92	85-115	1	20	

SAMPLE DUPLICATE: 2260768

Parameter	Units	60284534002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-6 **Lab ID: 60284534001** Collected: 10/23/18 11:00 Received: 10/24/18 05:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.838 ± 0.620 (0.839)** **C:NA T:90%**	pCi/L	11/12/18 20:08	13982-63-3	
Radium-228	EPA 904.0	**1.22 ± 0.577 (1.04)** **C:78% T:84%**	pCi/L	11/07/18 13:07	15262-20-1	
Total Radium	Total Radium Calculation	**2.06 ± 1.20 (1.88)**	pCi/L	11/13/18 16:15	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-7 **Lab ID: 60284534002** Collected: 10/23/18 10:17 Received: 10/24/18 05:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.221 ± 0.479 (0.884)** **C:NA T:80%**	pCi/L	11/12/18 20:08	13982-63-3	
Radium-228	EPA 904.0	**0.844 ± 0.485 (0.911)** **C:79% T:81%**	pCi/L	11/07/18 13:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.07 ± 0.964 (1.80)**	pCi/L	11/13/18 16:15	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: PZ-2 **Lab ID: 60284534003** Collected: 10/23/18 12:58 Received: 10/24/18 05:55 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 ± 0.540 (0.847) C:NA T:90%**	pCi/L	11/12/18 20:08	13982-63-3	
Radium-228	EPA 904.0	**1.35 ± 0.560 (0.929) C:74% T:82%**	pCi/L	11/07/18 13:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.87 ± 1.10 (1.78)**	pCi/L	11/13/18 16:15	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Sample: MW-5 **Lab ID: 60284534004** Collected: 10/23/18 14:11 Received: 10/24/18 05:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.482 ± 0.476 (0.724)** **C:NA T:93%**	pCi/L	11/12/18 20:08	13982-63-3	
Radium-228	EPA 904.0	**0.598 ± 0.504 (1.03)** **C:76% T:82%**	pCi/L	11/07/18 13:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.08 ± 0.980 (1.75)**	pCi/L	11/13/18 16:15	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 318801 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 1554916 Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.308 ± 0.282 (0.570) C:82% T:93%	pCi/L	11/07/18 13:12	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

QC Batch: 318792 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

METHOD BLANK: 1554902 Matrix: Water
Associated Lab Samples: 60284534001, 60284534002, 60284534003, 60284534004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.365 ± 0.379 (0.565) C:NA T:94%	pCi/L	11/12/18 20:08	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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 (%)

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TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-N	Pace Analytical Services - New Orleans
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60284534001	**MW-6**	EPA 200.7	551313	EPA 200.7	551357
60284534002	**MW-7**	EPA 200.7	551313	EPA 200.7	551357
60284534003	**PZ-2**	EPA 200.7	551313	EPA 200.7	551357
60284534004	**MW-5**	EPA 200.7	551313	EPA 200.7	551357
60284534001	**MW-6**	EPA 3010	551708	EPA 6010	551734
60284534002	**MW-7**	EPA 3010	551708	EPA 6010	551734
60284534003	**PZ-2**	EPA 3010	551708	EPA 6010	551734
60284534004	**MW-5**	EPA 3010	551708	EPA 6010	551734
60284534001	**MW-6**	EPA 3010	124244	EPA 6020	124338
60284534002	**MW-7**	EPA 3010	124244	EPA 6020	124338
60284534003	**PZ-2**	EPA 3010	124244	EPA 6020	124338
60284534004	**MW-5**	EPA 3010	124244	EPA 6020	124338
60284534001	**MW-6**	EPA 7470	553779	EPA 7470	553822
60284534002	**MW-7**	EPA 7470	553528	EPA 7470	553564
60284534003	**PZ-2**	EPA 7470	553528	EPA 7470	553564
60284534004	**MW-5**	EPA 7470	553528	EPA 7470	553564
60284534001	**MW-6**	EPA 903.1	318792		
60284534002	**MW-7**	EPA 903.1	318792		
60284534003	**PZ-2**	EPA 903.1	318792		
60284534004	**MW-5**	EPA 903.1	318792		
60284534001	**MW-6**	EPA 904.0	318801		
60284534002	**MW-7**	EPA 904.0	318801		
60284534003	**PZ-2**	EPA 904.0	318801		
60284534004	**MW-5**	EPA 904.0	318801		
60284534001	**MW-6**	Total Radium Calculation	320409		
60284534002	**MW-7**	Total Radium Calculation	320409		
60284534003	**PZ-2**	Total Radium Calculation	320409		
60284534004	**MW-5**	Total Radium Calculation	320409		
60284534001	**MW-6**	SM 2540C	551360		
60284534002	**MW-7**	SM 2540C	551360		
60284534003	**PZ-2**	SM 2540C	551360		
60284534004	**MW-5**	SM 2540C	551360		
60284534001	**MW-6**	SM 4500-H+B	552117		
60284534002	**MW-7**	SM 4500-H+B	552117		
60284534003	**PZ-2**	SM 4500-H+B	552117		
60284534004	**MW-5**	SM 4500-H+B	552117		
60284534001	**MW-6**	Trivalent Chromium Calculation	554942		
60284534002	**MW-7**	Trivalent Chromium Calculation	554942		
60284534003	**PZ-2**	Trivalent Chromium Calculation	554942		
60284534004	**MW-5**	Trivalent Chromium Calculation	554942		
60284534001	**MW-6**	EPA 300.0	554524		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284534

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60284534001	**MW-6**	EPA 300.0	554918		
60284534002	**MW-7**	EPA 300.0	554524		
60284534002	**MW-7**	EPA 300.0	554918		
60284534003	**PZ-2**	EPA 300.0	554918		
60284534003	**PZ-2**	EPA 300.0	555119		
60284534004	**MW-5**	EPA 300.0	555119		
60284534001	**MW-6**	EPA 410.4	554801		
60284534002	**MW-7**	EPA 410.4	554801		
60284534003	**PZ-2**	EPA 410.4	554801		
60284534004	**MW-5**	EPA 410.4	554801		
60284534001	**MW-6**	SM 5310C	552684		
60284534002	**MW-7**	SM 5310C	552684		
60284534003	**PZ-2**	SM 5310C	552684		
60284534004	**MW-5**	SM 5310C	552684		
60284534001	**MW-6**	EPA 7196	551234		
60284534002	**MW-7**	EPA 7196	551234		
60284534003	**PZ-2**	EPA 7196	551234		
60284534004	**MW-5**	EPA 7196	551234		

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Sample Condition Upon Receipt

WO# : 60284534

60284534

Client Name: Burns McDonnell

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: 201 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 4.4 3.7 **Corr. Factor** +0.0 **Corrected** 4.4 3.7

Date and initials of person examining contents: JB 10/24 JS

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	Cr6+
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JWS Date: 10/24/18

Pace Analytical

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
Kansas City, MO 64114	
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B
Required Project Information:

Report To:	Brian Weis
Copy To:	Chris Hoglund
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency
State / Location
MO

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

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 START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION (C°)	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn	60284534
1	MW-6 (2)BP1N BP2U (2)BP3U AG2S AG3S	WT	G	23OCT18	10:30A	23OCT18	11:00A	17.0	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		BP3N 250	001
2	MW-7	WT	G	23OCT18	9:45A	23OCT18	10:17A	16.2	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			002
3	PZ-2	WT	G	23OCT18	12:26P	23OCT18	12:58P	18.5	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			003
4	MW-5	WT	G	23OCT18	1:40P	23OCT18	2:11P	17.2	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			004
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ESFS	23OCT18	4:17pm	[signature]	10-23	4:17				
J-flags on - include MDLs on report				[signature]	10/24/18	0555	4.4	Y	Y	Y
							3.7	Y	Y	Y
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: [signature] DATE Signed: 23OCT18

ANALYTICAL REPORT

October 30, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L1037950
Samples Received:	10/25/2018
Project Number:	60284534
Description:	MORE'S LAKE COLUMBIA, MO
Report To:	Jeffrey Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-6 L1037950-01 GW

Collected by	Collected date/time	Received date/time
	10/23/18 11:00	10/25/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1186034	1	10/29/18 10:16	10/29/18 10:16	EEM

MW-7 L1037950-02 GW

Collected by	Collected date/time	Received date/time
	10/23/18 10:17	10/25/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1186034	1	10/29/18 10:43	10/29/18 10:43	EEM

PZ-2 L1037950-03 GW

Collected by	Collected date/time	Received date/time
	10/23/18 12:58	10/25/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1186034	1	10/29/18 11:04	10/29/18 11:04	EEM

MW-5 L1037950-04 GW

Collected by	Collected date/time	Received date/time
	10/23/18 14:11	10/25/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1186034	1	10/29/18 11:39	10/29/18 11:39	EEM

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

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

Nancy F. McLain

Nancy McLain
Project Manager

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	66.0	J	12.0	100	1	10/29/2018 10:16	WG1186034

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	189		12.0	100	1	10/29/2018 10:43	WG1186034

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	452		12.0	100	1	10/29/2018 11:04	WG1186034

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	255		12.0	100	1	10/29/2018 11:39	WG1186034

Method Blank (MB)

(MB) R3353820-1 10/25/18 11:10

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L1037238-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1037238-02 10/25/18 13:58 • (DUP) R3353820-7 10/25/18 14:19

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	148	71.7	1	69.3	J P1	20

L1037471-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1037471-03 10/26/18 15:24 • (DUP) R3353820-10 10/26/18 15:42

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	793	903	1	13.0		20

Laboratory Control Sample (LCS)

(LCS) R3353820-2 10/25/18 11:22

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOX	200	195	97.4	85.0-115	

L1037238-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1037238-01 10/25/18 12:01 • (MS) R3353820-3 10/25/18 12:23 • (MSD) R3353820-5 10/25/18 12:40

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	54.0	348	367	98.2	104	1	80.0-120			5.10	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

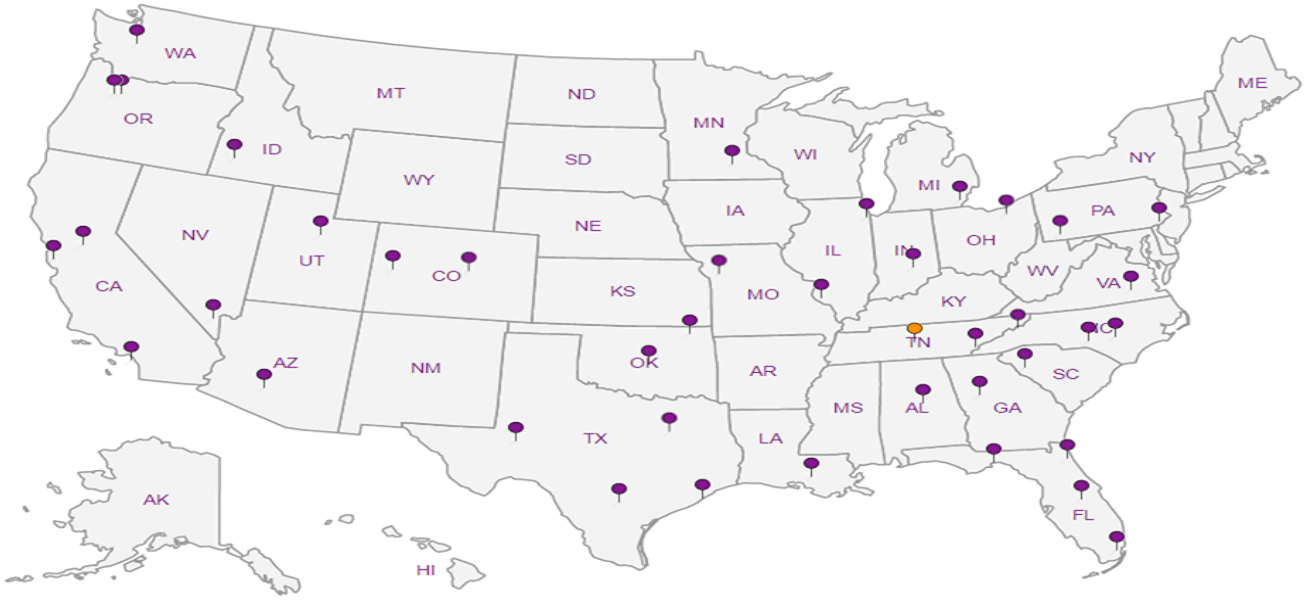
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Chain of Custody

Pace Analytical®
www.pacelabs.com

4037950

Workorder: 60284534 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 11/16/2018

Report / Invoice To

Jeffrey Shopper
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1408
Email: jeff.shopper@pacelabs.com

Subcontract To

Pace National P.O. SUB-9487

State of Sample Origin: MO

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4						Requested Analysis: TOX												LAB USE ONLY
1	MW-6	10/23/2018 11:00	60284534001	Water	1						X												-01
2	MW-7	10/23/2018 10:17	60284534002	Water	1						X												-02
3	PZ-2	10/23/2018 12:58	60284534003	Water	1						X												-03
4	MW-5	10/23/2018 14:11	60284534004	Water	1						X												-04
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	E Brockett / Pace	10/24/18 1800		
2				
3				10/25/18 8:45

Comments

Cooler Temperature on Receipt 0.2 °C CC AJ **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

RAD SCREEN: <0.5 mR/hr

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: PACELKS	SDG#	L1037950
Cooler Received/Opened On: 10/ 25 /18	Temperature:	0.2
Received By: Patrick Nshizirungu		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

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

November 21, 2018

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on October 25, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jamie Church for
Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

New Orleans Certification IDs

California Env. Lab Accreditation Program Branch: 11277CA
Florida Department of Health (NELAC): E87595
Illinois Environmental Protection Agency: 0025721
Kansas Department of Health and Environment (NELAC): E-10266
Louisiana Dept. of Environmental Quality (NELAC/LELAP): 02006
Pennsylviania Dept. of Env Protection (NELAC): 68-04202
Texas Commission on Env. Quality (NELAC): T104704405-09-TX
U.S. Dept. of Agriculture Foreign Soil Import: P330-10-00119
Commonwealth of Virginia (TNI): 480246

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60284690001	**MW-4**	Water	10/24/18 09:21	10/25/18 00:45
60284690002	**MW-4**	Water	10/24/18 10:48	10/25/18 00:45
60284690003	**MW-3**	Water	10/24/18 10:35	10/25/18 00:45
60284690004	**MW-2**	Water	10/24/18 12:33	10/25/18 00:45
60284690005	**DUP-1**	Water	10/24/18 12:33	10/25/18 00:45
60284690006	**MW-8**	Water	10/24/18 14:33	10/25/18 00:45

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

SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60284690001	**MW-4**	EPA 200.7	EMR	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	RLG	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60284690002	**MW-4**	EPA 7196	ZMH	1	PASI-K
60284690003	**MW-3**	EPA 200.7	EMR	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	RLG	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	ZMH	1	PASI-K
60284690004	**MW-2**	EPA 200.7	EMR	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	RLG	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	ZMH	1	PASI-K
60284690005	**DUP-1**	EPA 200.7	EMR	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	RLG	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	ZMH	1	PASI-K
60284690006	**MW-8**	EPA 200.7	EMR	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	KJR	4	PASI-N
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	RLG	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	ZMH	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 551708

B: Analyte was detected in the associated method blank.

- BLANK for HBN 551708 [MPRP/476 (Lab ID: 2262481)
  - Beryllium
  - Cadmium

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 124517

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 2087157001

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

- MS (Lab ID: 538395)
  - Barium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 552297

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 2265031)
  - Total Dissolved Solids

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-1 (Lab ID: 60284690005)
- MW-2 (Lab ID: 60284690004)
- MW-3 (Lab ID: 60284690003)
- MW-4 (Lab ID: 60284690001)
- MW-8 (Lab ID: 60284690006)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 555119

B: Analyte was detected in the associated method blank.

- BLANK for HBN 555119 [WETA/543 (Lab ID: 2277295)
  - Chloride

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 555119

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60285588003,60285588004

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

- MS (Lab ID: 2277299)
  - Chloride
  - Sulfate

QC Batch: 555691

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60284690006,60284830001

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

- MS (Lab ID: 2279846)
  - Sulfate
- MSD (Lab ID: 2279847)
  - Sulfate

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
5 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 551491

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60284666001

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

- MS (Lab ID: 2261769)
  - Chromium, Hexavalent

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-4 **Lab ID: 60284690001** Collected: 10/24/18 09:21 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**51.2J**	ug/L	100	12.5	1	10/26/18 15:00	10/31/18 19:30	7440-42-8	
Calcium	**118000**	ug/L	200	53.5	1	10/26/18 15:00	10/31/18 19:30	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:36	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:36	7440-41-7	
Cadmium	**0.51J**	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:36	7440-43-9	B
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:36	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:36	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:36	7440-50-8	
Iron	**244**	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:36	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:36	7439-92-1	
Lithium	**47.8**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:36	7439-93-2	
Magnesium	**37400**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:36	7439-95-4	
Manganese	**100**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:36	7439-96-5	
Molybdenum	**3.7J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:36	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:36	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:36	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:36	7440-22-4	
Sodium	**49900**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:36	7440-23-5	
Total Hardness by 2340B	**451000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:36		
Zinc	**3.6J**	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:36	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	100	21.6	1	10/31/18 09:15	11/01/18 15:45	7429-90-5	
Antimony	ND	ug/L	1.0	0.080	1	10/31/18 09:15	11/01/18 15:45	7440-36-0	
Barium	**82.4**	ug/L	1.0	0.19	1	10/31/18 09:15	11/01/18 15:45	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/31/18 09:15	11/01/18 15:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/19/18 12:14	11/20/18 12:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**576**	mg/L	5.0	5.0	1		10/30/18 13:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		10/30/18 16:53		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/19/18 15:58	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**29.4**	mg/L	2.0	0.58	2		11/14/18 18:14	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	0.19	1		11/14/18 17:59	16984-48-8	
Sulfate	**84.1**	mg/L	10.0	2.4	10		11/14/18 18:56	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-4 **Lab ID: 60284690001** Collected: 10/24/18 09:21 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		11/15/18 18:45		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	ND	mg/L	1.0	0.65	1		11/06/18 04:54	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-4 **Lab ID: 60284690002** Collected: 10/24/18 10:48 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0040J**	mg/L	0.010	0.0040	1		10/25/18 08:40	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-3 **Lab ID: 60284690003** Collected: 10/24/18 10:35 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**60.6J**	ug/L	100	12.5	1	10/26/18 15:00	10/31/18 19:33	7440-42-8	
Calcium	**112000**	ug/L	200	53.5	1	10/26/18 15:00	10/31/18 19:33	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:38	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:38	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:38	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:38	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:38	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:38	7440-50-8	
Iron	ND	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:38	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:38	7439-92-1	
Lithium	**33.8**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:38	7439-93-2	
Magnesium	**38700**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:38	7439-95-4	
Manganese	**229**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:38	7439-96-5	
Molybdenum	**7.3J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:38	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:38	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:38	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:38	7440-22-4	
Sodium	**39400**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:38	7440-23-5	
Total Hardness by 2340B	**449000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:38		
Zinc	ND	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:38	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	100	21.6	1	10/31/18 09:15	11/01/18 15:49	7429-90-5	
Antimony	**0.10J**	ug/L	1.0	0.080	1	10/31/18 09:15	11/01/18 15:49	7440-36-0	
Barium	**207**	ug/L	1.0	0.19	1	10/31/18 09:15	11/01/18 15:49	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/31/18 09:15	11/01/18 15:49	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/19/18 12:14	11/20/18 12:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**509**	mg/L	5.0	5.0	1		10/30/18 13:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		10/30/18 16:54		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/19/18 15:58	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**8.1**	mg/L	1.0	0.29	1		11/14/18 19:10	16887-00-6	
Fluoride	**0.61**	mg/L	0.20	0.19	1		11/14/18 19:10	16984-48-8	
Sulfate	**40.2**	mg/L	5.0	1.2	5		11/14/18 19:25	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-3 **Lab ID: 60284690003** Collected: 10/24/18 10:35 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**7.7J**	mg/L	10.0	4.8	1		11/15/18 18:47		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.66J**	mg/L	1.0	0.65	1		11/06/18 05:33	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0040J**	mg/L	0.010	0.0040	1		10/25/18 08:39	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-2 **Lab ID: 60284690004** Collected: 10/24/18 12:33 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**84.7J**	ug/L	100	12.5	1	10/26/18 15:00	10/31/18 19:35	7440-42-8	
Calcium	**111000**	ug/L	200	53.5	1	10/26/18 15:00	10/31/18 19:35	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:40	7440-38-2	
Beryllium	**0.17J**	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:40	7440-41-7	B
Cadmium	ND	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:40	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:40	7440-47-3	
Cobalt	**1.1J**	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:40	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:40	7440-50-8	
Iron	**510**	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:40	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:40	7439-92-1	
Lithium	**37.2**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:40	7439-93-2	
Magnesium	**40200**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:40	7439-95-4	
Manganese	**362**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:40	7439-96-5	
Molybdenum	**6.2J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:40	7439-98-7	
Nickel	**31.7**	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:40	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:40	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:40	7440-22-4	
Sodium	**30300**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:40	7440-23-5	
Total Hardness by 2340B	**456000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:40		
Zinc	ND	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:40	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	100	21.6	1	10/31/18 09:15	11/01/18 16:00	7429-90-5	
Antimony	ND	ug/L	1.0	0.080	1	10/31/18 09:15	11/01/18 16:00	7440-36-0	
Barium	**156**	ug/L	1.0	0.19	1	10/31/18 09:15	11/01/18 16:00	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/31/18 09:15	11/01/18 16:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/19/18 12:14	11/20/18 12:48	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**328**	mg/L	5.0	5.0	1		10/30/18 13:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		10/30/18 16:55		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/19/18 15:58	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.3**	mg/L	1.0	0.29	1		11/14/18 19:39	16887-00-6	B
Fluoride	**0.57**	mg/L	0.20	0.19	1		11/14/18 19:39	16984-48-8	
Sulfate	**58.6**	mg/L	5.0	1.2	5		11/14/18 19:53	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-2 **Lab ID: 60284690004** Collected: 10/24/18 12:33 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		11/16/18 15:52		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.68J**	mg/L	1.0	0.65	1		11/06/18 05:46	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0050J**	mg/L	0.010	0.0040	1		10/25/18 08:40	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: DUP-1 **Lab ID: 60284690005** Collected: 10/24/18 12:33 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**91.6J**	ug/L	100	12.5	1	10/26/18 15:00	10/31/18 19:37	7440-42-8	
Calcium	**112000**	ug/L	200	53.5	1	10/26/18 15:00	10/31/18 19:37	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:43	7440-38-2	
Beryllium	**0.38J**	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:43	7440-41-7	B
Cadmium	ND	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:43	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:43	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:43	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:43	7440-50-8	
Iron	**146**	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:43	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:43	7439-92-1	
Lithium	**35.9**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:43	7439-93-2	
Magnesium	**40000**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:43	7439-95-4	
Manganese	**358**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:43	7439-96-5	
Molybdenum	**6.3J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:43	7439-98-7	
Nickel	**1.5J**	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:43	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:43	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:43	7440-22-4	
Sodium	**30100**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:43	7440-23-5	
Total Hardness by 2340B	**454000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:43		
Zinc	**4.4J**	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:43	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	100	21.6	1	10/31/18 09:15	11/01/18 16:04	7429-90-5	
Antimony	ND	ug/L	1.0	0.080	1	10/31/18 09:15	11/01/18 16:04	7440-36-0	
Barium	**160**	ug/L	1.0	0.19	1	10/31/18 09:15	11/01/18 16:04	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/31/18 09:15	11/01/18 16:04	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/19/18 12:14	11/20/18 12:50	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**530**	mg/L	5.0	5.0	1		10/30/18 13:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		10/30/18 16:57		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/19/18 15:58	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.3**	mg/L	1.0	0.29	1		11/14/18 20:07	16887-00-6	B
Fluoride	**0.57**	mg/L	0.20	0.19	1		11/14/18 20:07	16984-48-8	
Sulfate	**58.2**	mg/L	5.0	1.2	5		11/14/18 20:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: DUP-1 **Lab ID: 60284690005** Collected: 10/24/18 12:33 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		11/16/18 15:54		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.66J**	mg/L	1.0	0.65	1		11/06/18 05:58	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0050J**	mg/L	0.010	0.0040	1		10/25/18 08:41	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-8 **Lab ID: 60284690006** Collected: 10/24/18 14:33 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**386**	ug/L	100	12.5	1	10/26/18 15:00	10/31/18 19:39	7440-42-8	
Calcium	**272000**	ug/L	200	53.5	1	10/26/18 15:00	10/31/18 19:39	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/25/18 16:40	11/03/18 13:45	7440-38-2	
Beryllium	**0.33J**	ug/L	1.0	0.16	1	10/25/18 16:40	11/03/18 13:45	7440-41-7	B
Cadmium	ND	ug/L	5.0	0.45	1	10/25/18 16:40	11/03/18 13:45	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	10/25/18 16:40	11/03/18 13:45	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	10/25/18 16:40	11/03/18 13:45	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/25/18 16:40	11/03/18 13:45	7440-50-8	
Iron	**959**	ug/L	50.0	6.1	1	10/25/18 16:40	11/03/18 13:45	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/25/18 16:40	11/03/18 13:45	7439-92-1	
Lithium	**28.2**	ug/L	10.0	4.6	1	10/25/18 16:40	11/03/18 13:45	7439-93-2	
Magnesium	**39300**	ug/L	50.0	14.0	1	10/25/18 16:40	11/03/18 13:45	7439-95-4	
Manganese	**1080**	ug/L	5.0	0.73	1	10/25/18 16:40	11/03/18 13:45	7439-96-5	
Molybdenum	**1.3J**	ug/L	20.0	0.90	1	10/25/18 16:40	11/03/18 13:45	7439-98-7	
Nickel	**5.0**	ug/L	5.0	1.4	1	10/25/18 16:40	11/03/18 13:45	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/25/18 16:40	11/03/18 13:45	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/25/18 16:40	11/03/18 13:45	7440-22-4	
Sodium	**78400**	ug/L	500	157	1	10/25/18 16:40	11/03/18 13:45	7440-23-5	
Total Hardness by 2340B	**853000**	ug/L	705	500	1	10/25/18 16:40	11/03/18 13:45		
Zinc	ND	ug/L	50.0	3.5	1	10/25/18 16:40	11/03/18 13:45	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	100	21.6	1	10/31/18 09:15	11/01/18 16:07	7429-90-5	
Antimony	ND	ug/L	1.0	0.080	1	10/31/18 09:15	11/01/18 16:07	7440-36-0	
Barium	**22.3**	ug/L	1.0	0.19	1	10/31/18 09:15	11/01/18 16:07	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/31/18 09:15	11/01/18 16:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/19/18 12:14	11/20/18 12:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1420**	mg/L	5.0	5.0	1		10/30/18 13:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.10	1		10/30/18 16:58		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/19/18 15:58	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**68.3**	mg/L	5.0	1.4	5		11/14/18 20:50	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	0.19	1		11/14/18 20:36	16984-48-8	
Sulfate	**1100**	mg/L	100	24.0	100		11/16/18 18:51	14808-79-8	M1

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-8 **Lab ID: 60284690006** Collected: 10/24/18 14:33 Received: 10/25/18 00:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		11/16/18 15:55		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.78J**	mg/L	1.0	0.65	1		11/06/18 06:11	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	**0.0080J**	mg/L	0.010	0.0040	1		10/25/18 08:42	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 555583 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 2279199 Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.090	11/20/18 12:39	

LABORATORY CONTROL SAMPLE: 2279200

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2279201 2279202

Parameter	Units	60285911006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.00020 mg/L	5	5	5.1	5.1	102	103	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 551847 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 2263080 | Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	12.5	10/31/18 18:55	
Calcium	ug/L	ND	200	53.5	10/31/18 18:55	

LABORATORY CONTROL SAMPLE: 2263081

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	993	99	85-115	
Calcium	ug/L	10000	9800	98	85-115	

MATRIX SPIKE SAMPLE: 2263082

Parameter	Units	60284782003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	0.63 mg/L	1000	1690	106	70-130	
Calcium	ug/L	62900	10000	74200	113	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2263083 2263084

Parameter	Units	60284830001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	2110	1000	1000	3140	3140	103	103	70-130	0	20	
Calcium	ug/L	163000	10000	10000	171000	172000	81	85	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 551708 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 2262481 Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	ND	10.0	4.9	11/03/18 13:16	
Beryllium	ug/L	0.34J	1.0	0.16	11/03/18 13:16	
Cadmium	ug/L	0.66J	5.0	0.45	11/03/18 13:16	
Chromium	ug/L	ND	5.0	1.1	11/03/18 13:16	
Cobalt	ug/L	ND	5.0	0.87	11/03/18 13:16	
Copper	ug/L	ND	10.0	4.5	11/03/18 13:16	
Iron	ug/L	ND	50.0	6.1	11/03/18 13:16	
Lead	ug/L	ND	10.0	3.0	11/03/18 13:16	
Lithium	ug/L	ND	10.0	4.6	11/03/18 13:16	
Magnesium	ug/L	ND	50.0	14.0	11/03/18 13:16	
Manganese	ug/L	ND	5.0	0.73	11/03/18 13:16	
Molybdenum	ug/L	ND	20.0	0.90	11/03/18 13:16	
Nickel	ug/L	ND	5.0	1.4	11/03/18 13:16	
Selenium	ug/L	ND	15.0	6.1	11/03/18 13:16	
Silver	ug/L	ND	7.0	2.0	11/03/18 13:16	
Sodium	ug/L	231J	500	157	11/03/18 13:16	
Total Hardness by 2340B	ug/L	ND	705	500	11/03/18 13:16	
Zinc	ug/L	ND	50.0	3.5	11/03/18 13:16	

LABORATORY CONTROL SAMPLE: 2262482

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	956	96	80-120	
Beryllium	ug/L	1000	992	99	80-120	
Cadmium	ug/L	1000	998	100	80-120	
Chromium	ug/L	1000	966	97	80-120	
Cobalt	ug/L	1000	1010	101	80-120	
Copper	ug/L	1000	1000	100	80-120	
Iron	ug/L	10000	10200	102	80-120	
Lead	ug/L	1000	993	99	80-120	
Lithium	ug/L	1000	1000	100	80-120	
Magnesium	ug/L	10000	9770	98	80-120	
Manganese	ug/L	1000	960	96	80-120	
Molybdenum	ug/L	1000	1020	102	80-120	
Nickel	ug/L	1000	1010	101	80-120	
Selenium	ug/L	1000	1040	104	80-120	
Silver	ug/L	500	508	102	80-120	
Sodium	ug/L	10000	10300	103	80-120	
Total Hardness by 2340B	ug/L		65600			
Zinc	ug/L	1000	981	98	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2262483 2262484

Parameter	Units	60284534001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	7.0J	1000	1000	1000	982	100	98	75-125	2	20	
Beryllium	ug/L	0.62J	1000	1000	991	960	99	96	75-125	3	20	
Cadmium	ug/L	0.64J	1000	1000	1000	985	100	98	75-125	2	20	
Chromium	ug/L	ND	1000	1000	964	930	96	93	75-125	4	20	
Cobalt	ug/L	2.5J	1000	1000	971	951	97	95	75-125	2	20	
Copper	ug/L	ND	1000	1000	1010	981	101	98	75-125	3	20	
Iron	ug/L	1060	10000	10000	11000	10700	99	97	75-125	3	20	
Lead	ug/L	ND	1000	1000	952	931	95	93	75-125	2	20	
Lithium	ug/L	54.4	1000	1000	1060	1030	101	98	75-125	3	20	
Magnesium	ug/L	37800	10000	10000	47700	47800	99	100	75-125	0	20	
Manganese	ug/L	796	1000	1000	1750	1730	96	93	75-125	1	20	
Molybdenum	ug/L	2.0J	1000	1000	1030	1000	102	100	75-125	2	20	
Nickel	ug/L	5.0	1000	1000	968	948	96	94	75-125	2	20	
Selenium	ug/L	ND	1000	1000	1040	1020	104	102	75-125	2	20	
Silver	ug/L	ND	500	500	515	500	103	100	75-125	3	20	
Sodium	ug/L	51500	10000	10000	61100	61800	96	103	75-125	1	20	
Total Hardness by 2340B	ug/L	621000			684000	691000				1		
Zinc	ug/L	12.4J	1000	1000	962	938	95	93	75-125	2	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 124517 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 538393 Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	ND	100	21.6	11/01/18 10:15	
Antimony	ug/L	ND	1.0	0.080	11/01/18 10:15	
Barium	ug/L	ND	1.0	0.19	11/01/18 10:15	
Thallium	ug/L	ND	0.50	0.080	11/01/18 10:15	

LABORATORY CONTROL SAMPLE: 538394

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	4000	4290	107	85-115	
Antimony	ug/L	40	41.0	102	85-115	
Barium	ug/L	40	41.4	104	85-115	
Thallium	ug/L	40	40.6	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 538395 538396

Parameter	Units	2087157001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	4000	4000	3920	3840	98	96	80-120	2	20	
Antimony	ug/L	ND	40	40	42.2	41.2	105	103	80-120	2	20	
Barium	ug/L	0.73	40	40	794	781	153	120	80-120	2	20	M1
Thallium	ug/L	ND	40	40	41.4	40.3	103	101	80-120	3	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 552297 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 2265028 | Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	10/30/18 13:00	

LABORATORY CONTROL SAMPLE: 2265029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	914	91	80-120	

SAMPLE DUPLICATE: 2265030

Parameter	Units	60284764001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	848	826	3	10	

SAMPLE DUPLICATE: 2265031

Parameter	Units	60284679009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	170	152	11	10	D6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 552119 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

SAMPLE DUPLICATE: 2264468

Parameter	Units	60284679004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.1	7.2	2	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 555119 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 2277295 Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.74J	1.0	0.29	11/14/18 13:40	
Fluoride	mg/L	ND	0.20	0.19	11/14/18 13:40	
Sulfate	mg/L	ND	1.0	0.24	11/14/18 13:40	

LABORATORY CONTROL SAMPLE: 2277296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2277297 2277298

Parameter	Units	60285588003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	1.7	2.5	2.5	4.3	4.3	102	103	90-110	0	15	

MATRIX SPIKE SAMPLE: 2277299

Parameter	Units	60285588004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	25.0	50	76.1	102	90-110	M1
Fluoride	mg/L	0.82	2.5	3.4	104	90-110	
Sulfate	mg/L	134	50	189	111	90-110	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 555691 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60284690006

METHOD BLANK: 2279844 | Matrix: Water
Associated Lab Samples: 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	0.24	11/16/18 18:23	

LABORATORY CONTROL SAMPLE: 2279845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2279846 2279847

Parameter	Units	60284690006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	1100	500	500	1440	1400	69	62	90-110	3	15	M1

MATRIX SPIKE SAMPLE: 2279848

Parameter	Units	60284830001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	226	250	485	103	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 555053 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60284690001, 60284690003

METHOD BLANK: 2276998 | Matrix: Water
Associated Lab Samples: 60284690001, 60284690003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	4.8	11/15/18 18:37	

LABORATORY CONTROL SAMPLE: 2276999

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	45.7	91	90-110	

MATRIX SPIKE SAMPLE: 2277000

Parameter	Units	60285853002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	132	100	233	101	90-110	

SAMPLE DUPLICATE: 2277001

Parameter	Units	60285853002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	132	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 555636 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60284690004, 60284690005, 60284690006

METHOD BLANK: 2279499 Matrix: Water
Associated Lab Samples: 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	4.8	11/16/18 15:51	

LABORATORY CONTROL SAMPLE: 2279500

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	53.3	107	90-110	

MATRIX SPIKE SAMPLE: 2279503

Parameter	Units	60284830001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	55.1	103	90-110	

SAMPLE DUPLICATE: 2279502

Parameter	Units	60284690004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

SAMPLE DUPLICATE: 2279504

Parameter	Units	60284830001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 552684 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 2266562 | Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	11/06/18 01:41	

LABORATORY CONTROL SAMPLE: 2266563

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.4	107	80-120	

MATRIX SPIKE SAMPLE: 2270221

Parameter	Units	60284830001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	ND	5	5.3	98	80-120	

SAMPLE DUPLICATE: 2270220

Parameter	Units	60284918012 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 551491 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60284690002, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 2261767 | Matrix: Water
Associated Lab Samples: 60284690002, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	10/25/18 08:36	

LABORATORY CONTROL SAMPLE: 2261768

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.092	92	90-110	

MATRIX SPIKE SAMPLE: 2261769

Parameter	Units	60284666001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	ND	.1	0.063	61	85-115	H1,M1

SAMPLE DUPLICATE: 2261771

Parameter	Units	60284666001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	H1

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-4 **Lab ID: 60284690001** Collected: 10/24/18 09:21 Received: 10/25/18 00:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.839 ± 0.742 (1.10) C:NA T:80%**	pCi/L	11/09/18 22:07	13982-63-3	
Radium-228	EPA 904.0	**0.887 ± 0.375 (0.596) C:82% T:91%**	pCi/L	11/07/18 13:12	15262-20-1	
Total Radium	Total Radium Calculation	**1.73 ± 1.12 (1.70)**	pCi/L	11/13/18 12:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-3 **Lab ID: 60284690003** Collected: 10/24/18 10:35 Received: 10/25/18 00:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.779 ± 0.643 (0.929) C:NA T:95%**	pCi/L	11/09/18 22:07	13982-63-3	
Radium-228	EPA 904.0	**0.826 ± 0.409 (0.714) C:82% T:85%**	pCi/L	11/07/18 13:12	15262-20-1	
Total Radium	Total Radium Calculation	**1.61 ± 1.05 (1.64)**	pCi/L	11/13/18 12:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-2 **Lab ID: 60284690004** Collected: 10/24/18 12:33 Received: 10/25/18 00:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.678 ± 0.786 (1.27)** **C:NA T:79%**	pCi/L	11/09/18 22:07	13982-63-3	
Radium-228	EPA 904.0	**0.618 ± 0.376 (0.696)** **C:75% T:84%**	pCi/L	11/07/18 13:12	15262-20-1	
Total Radium	Total Radium Calculation	**1.30 ± 1.16 (1.97)**	pCi/L	11/13/18 12:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: DUP-1 **Lab ID: 60284690005** Collected: 10/24/18 12:33 Received: 10/25/18 00:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.781 ± 0.538 (0.575)** **C:NA T:90%**	pCi/L	11/09/18 22:07	13982-63-3	
Radium-228	EPA 904.0	**0.352 ± 0.339 (0.696)** **C:80% T:86%**	pCi/L	11/07/18 13:12	15262-20-1	
Total Radium	Total Radium Calculation	**1.13 ± 0.877 (1.27)**	pCi/L	11/13/18 12:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Sample: MW-8 **Lab ID: 60284690006** Collected: 10/24/18 14:33 Received: 10/25/18 00:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.190 ± 0.434 (0.699)** **C:NA T:76%**	pCi/L	11/09/18 22:24	13982-63-3	
Radium-228	EPA 904.0	**1.05 ± 0.491 (0.838)** **C:72% T:82%**	pCi/L	11/07/18 13:11	15262-20-1	
Total Radium	Total Radium Calculation	**1.24 ± 0.925 (1.54)**	pCi/L	11/13/18 12:07	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 318790 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 1554899 Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.280 ± 0.427 (0.687) C:NA T:76%	pCi/L	11/09/18 21:37	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

QC Batch: 318801 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

METHOD BLANK: 1554916 Matrix: Water
Associated Lab Samples: 60284690001, 60284690003, 60284690004, 60284690005, 60284690006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.308 ± 0.282 (0.570) C:82% T:93%	pCi/L	11/07/18 13:12	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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-K	Pace Analytical Services - Kansas City
PASI-N	Pace Analytical Services - New Orleans
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H1	Analysis conducted outside the EPA method holding time.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60284690001	**MW-4**	EPA 200.7	551847	EPA 200.7	551972
60284690003	**MW-3**	EPA 200.7	551847	EPA 200.7	551972
60284690004	**MW-2**	EPA 200.7	551847	EPA 200.7	551972
60284690005	**DUP-1**	EPA 200.7	551847	EPA 200.7	551972
60284690006	**MW-8**	EPA 200.7	551847	EPA 200.7	551972
60284690001	**MW-4**	EPA 3010	551708	EPA 6010	551734
60284690003	**MW-3**	EPA 3010	551708	EPA 6010	551734
60284690004	**MW-2**	EPA 3010	551708	EPA 6010	551734
60284690005	**DUP-1**	EPA 3010	551708	EPA 6010	551734
60284690006	**MW-8**	EPA 3010	551708	EPA 6010	551734
60284690001	**MW-4**	EPA 3010	124517	EPA 6020	124590
60284690003	**MW-3**	EPA 3010	124517	EPA 6020	124590
60284690004	**MW-2**	EPA 3010	124517	EPA 6020	124590
60284690005	**DUP-1**	EPA 3010	124517	EPA 6020	124590
60284690006	**MW-8**	EPA 3010	124517	EPA 6020	124590
60284690001	**MW-4**	EPA 7470	555583	EPA 7470	556030
60284690003	**MW-3**	EPA 7470	555583	EPA 7470	556030
60284690004	**MW-2**	EPA 7470	555583	EPA 7470	556030
60284690005	**DUP-1**	EPA 7470	555583	EPA 7470	556030
60284690006	**MW-8**	EPA 7470	555583	EPA 7470	556030
60284690001	**MW-4**	EPA 903.1	318790		
60284690003	**MW-3**	EPA 903.1	318790		
60284690004	**MW-2**	EPA 903.1	318790		
60284690005	**DUP-1**	EPA 903.1	318790		
60284690006	**MW-8**	EPA 903.1	318790		
60284690001	**MW-4**	EPA 904.0	318801		
60284690003	**MW-3**	EPA 904.0	318801		
60284690004	**MW-2**	EPA 904.0	318801		
60284690005	**DUP-1**	EPA 904.0	318801		
60284690006	**MW-8**	EPA 904.0	318801		
60284690001	**MW-4**	Total Radium Calculation	320355		
60284690003	**MW-3**	Total Radium Calculation	320355		
60284690004	**MW-2**	Total Radium Calculation	320355		
60284690005	**DUP-1**	Total Radium Calculation	320355		
60284690006	**MW-8**	Total Radium Calculation	320355		
60284690001	**MW-4**	SM 2540C	552297		
60284690003	**MW-3**	SM 2540C	552297		
60284690004	**MW-2**	SM 2540C	552297		
60284690005	**DUP-1**	SM 2540C	552297		
60284690006	**MW-8**	SM 2540C	552297		
60284690001	**MW-4**	SM 4500-H+B	552119		
60284690003	**MW-3**	SM 4500-H+B	552119		
60284690004	**MW-2**	SM 4500-H+B	552119		
60284690005	**DUP-1**	SM 4500-H+B	552119		
60284690006	**MW-8**	SM 4500-H+B	552119		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284690

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60284690001	**MW-4**	Trivalent Chromium Calculation	556157		
60284690003	**MW-3**	Trivalent Chromium Calculation	556157		
60284690004	**MW-2**	Trivalent Chromium Calculation	556157		
60284690005	**DUP-1**	Trivalent Chromium Calculation	556157		
60284690006	**MW-8**	Trivalent Chromium Calculation	556157		
60284690001	**MW-4**	EPA 300.0	555119		
60284690003	**MW-3**	EPA 300.0	555119		
60284690004	**MW-2**	EPA 300.0	555119		
60284690005	**DUP-1**	EPA 300.0	555119		
60284690006	**MW-8**	EPA 300.0	555119		
60284690006	**MW-8**	EPA 300.0	555691		
60284690001	**MW-4**	EPA 410.4	555053		
60284690003	**MW-3**	EPA 410.4	555053		
60284690004	**MW-2**	EPA 410.4	555636		
60284690005	**DUP-1**	EPA 410.4	555636		
60284690006	**MW-8**	EPA 410.4	555636		
60284690001	**MW-4**	SM 5310C	552684		
60284690003	**MW-3**	SM 5310C	552684		
60284690004	**MW-2**	SM 5310C	552684		
60284690005	**DUP-1**	SM 5310C	552684		
60284690006	**MW-8**	SM 5310C	552684		
60284690002	**MW-4**	EPA 7196	551491		
60284690003	**MW-3**	EPA 7196	551491		
60284690004	**MW-2**	EPA 7196	551491		
60284690005	**DUP-1**	EPA 7196	551491		
60284690006	**MW-8**	EPA 7196	551491		

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Sample Condition Upon Receipt

WO# : 60284690

60284690

Client Name: Burns + McDonnell

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 ☒ Ziplc

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.4 **Corr. Factor** +0.2 **Corrected** 0.6

Date and initials of person examining contents: 10/25/18 JS WE

Temperature should be above freezing to 6°C 1.3 1.5

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	CR+6, 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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JW Date: 10/25/18

Pace Analytical

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

ion A	Section B	Section C
uired Client Information:	Required Project Information:	Invoice Information:
pany: BURNS & MCDONNELL	Report To: Brian Weis	Attention:
ess: Burns & McDonnell	Copy To: Chris Hoglund	Company Name:
as City, MO 64114		Address:
il: bweis@burnsmcd.com	Purchase Order #:	Pace Quote:
ne: 816-333-9400 Fax	Project Name: More's Lake Columbia, MO	Pace Project Manager: jeff.shopper@pacelabs.com
uested Due Date:	Project #:	Pace Profile #: 10268, 2

Regulatory Agency

State / Location: MO

SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION C°	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn	
MW-4 2BP1N, BP3N, 2BP3U	WT	G	24OCT18	8:48A	24OCT18	9:21A	15.3	1	2	2	3	A62S, BP2U						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		A63S	001
MW-4 BP3U	WT	G	24OCT18	10:45A	24OCT18	10:48A	15.3	1																	✓							002
MW-3 2BP1N, BP3N, 2BP3U	WT	G	24OCT18	9:58A	24OCT18	10:35A	14.8	8	3	2	3	A62S, BP2U						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		A63S	003
MW-2	WT	G	24OCT18	11:25A	24OCT18	12:33P	15.7	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			004
DUP-1	WT	G	24OCT18	11:25A	24OCT18	12:33P	15.7	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			005
MW-8	WT	G	24OCT18	1:58P	24OCT18	2:33P	17.6	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			006

Requested Analysis Filtered (Y/N)

G0284690

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)
EDD needed	David Kilgore ES+S	24OCT18		UCipt / Pasi	~~10/25/18~~ 10/25/18	0045	0.6	Y	Y	Y
on - include MDLs on report.					10/25/18		1.5	↓	↓	↓

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore

DATE Signed: 24OCT18

ANALYTICAL REPORT

November 01, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L1038610
Samples Received:	10/26/2018
Project Number:	60284690
Description:	More's Lake Columbia, MO
Report To:	Jeff Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW4 L1038610-01 GW

Collected by	Collected date/time	Received date/time
	10/24/18 09:21	10/26/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1187750	1	10/31/18 10:34	10/31/18 10:34	EEM

MW-3 L1038610-02 GW

Collected by	Collected date/time	Received date/time
	10/24/18 10:35	10/26/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1187750	1	10/31/18 11:27	10/31/18 11:27	EEM

MW-2 L1038610-03 GW

Collected by	Collected date/time	Received date/time
	10/24/18 12:33	10/26/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1187750	1	10/31/18 12:18	10/31/18 12:18	EEM

DUP-1 L1038610-04 GW

Collected by	Collected date/time	Received date/time
	10/24/18 12:33	10/26/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1187750	1	10/31/18 12:35	10/31/18 12:35	EEM

MW-8 L1038610-05 GW

Collected by	Collected date/time	Received date/time
	10/24/18 14:33	10/26/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1187750	1	10/31/18 13:04	10/31/18 13:04	EEM

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

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

Nancy F. McLain

Nancy McLain
Project Manager

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	80.7	J	12.0	100	1	10/31/2018 10:34	WG1187750

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	40.4	J P1	12.0	100	1	10/31/2018 11:27	WG1187750

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	35.6	J	12.0	100	1	10/31/2018 12:18	WG1187750

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	10/31/2018 12:35	WG1187750

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	52.7	J	12.0	100	1	10/31/2018 13:04	WG1187750

Method Blank (MB)

(MB) R3355267-1 10/30/18 12:06

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L1038137-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1038137-01 10/30/18 16:17 • (DUP) R3355267-8 10/30/18 16:42

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	297	242	1	20.5	P1	20

L1038610-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1038610-02 10/31/18 11:27 • (DUP) R3355267-11 10/31/18 11:59

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	40.4	0.000	1	200	P1	20

Laboratory Control Sample (LCS)

(LCS) R3355267-2 10/30/18 12:18

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOX	200	204	102	85.0-115	

L1038129-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1038129-05 10/30/18 13:47 • (MS) R3355267-3 10/30/18 14:05 • (MSD) R3355267-5 10/30/18 14:40

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	39.2	671	503	211	155	1	80.0-120	J5	J3 J5	28.6	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

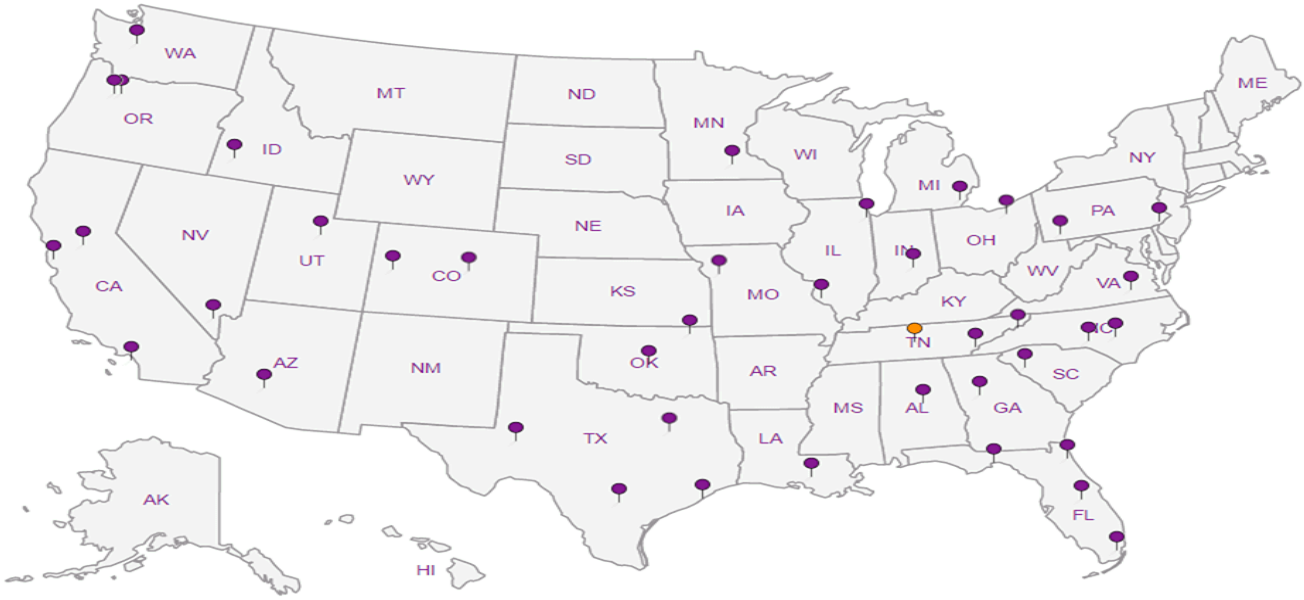
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60284690 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 11/8/2018

Report / Invoice To	Subcontract To	Requested Analysis
Jeffrey Shopper Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1408 Email: jeff.shopper@pacelabs.com	Pace National P.O. SUB-9496	L1038610

State of Sample Origin: MO

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers H2SO4	TOX *	LAB USE ONLY
1	MW-4	10/24/2018 09:21	60284690001	Water	2 1	X	-01
2	MW-3	10/24/2018 10:35	60284690003	Water	2 1	X	-02
3	MW-2	10/24/2018 12:33	60284690004	Water	2 1	X	-03
4	DUP-1	10/24/2018 12:33	60284690005	Water	2 1	X	-04
5	MW-8	10/24/2018 14:33	60284690006	Water	2 1	X	-05

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] pesl	10/25/18 1700		
2				
3			[signature]	10-26-18 0845

Comments

*Report to MDL

OK

Cooler Temperature on Receipt 1.6 °C -2 1.4 | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

Count=5CY
<2

4542 2784 8547

RAD SCREEN: <0.5 mR/hr

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: KAEFLKS		SDG#	L1038610
Cooler Received/Opened On: 10/ 26 /18		Temperature:	16.0°C 1.9
Received By: Troy Dunlap			
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

November 21, 2018

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on October 26, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jamie Church for
Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

New Orleans Certification IDs

California Env. Lab Accreditation Program Branch: 11277CA
Florida Department of Health (NELAC): E87595
Illinois Environmental Protection Agency: 0025721
Kansas Department of Health and Environment (NELAC): E-10266
Louisiana Dept. of Environmental Quality (NELAC/LELAP): 02006
Pennsylviania Dept. of Env Protection (NELAC): 68-04202
Texas Commission on Env. Quality (NELAC): T104704405-09-TX
U.S. Dept. of Agriculture Foreign Soil Import: P330-10-00119
Commonwealth of Virginia (TNI): 480246

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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Lenexa, KS 66219
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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60284830001	**MW-1**	Water	10/25/18 11:36	10/26/18 06:00
60284830002	**POND SURFACE WATER**	Water	10/25/18 12:30	10/26/18 06:00

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60284830001	**MW-1**	EPA 200.7	EMR	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 200.8	KJR	4	PASI-N
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	RMT	1	PASI-K
60284830002	**POND SURFACE WATER**	EPA 200.7	EMR	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 200.8	KJR	4	PASI-N
		EPA 7470	EMR	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	RLG	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	RMT	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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(913)599-5665

PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 200.8**
Description: 200.8 Metals, Total
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 124243

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60284679001,60284830001

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

- MS (Lab ID: 537208)
  - Aluminum
  - Antimony
  - Barium
  - Thallium

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 552319

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 2265124)
  - Total Dissolved Solids
- DUP (Lab ID: 2265125)
  - Total Dissolved Solids

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- MW-1 (Lab ID: 60284830001)
- POND SURFACE WATER (Lab ID: 60284830002)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 555691

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60284690006,60284830001

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

- MS (Lab ID: 2279846)
  - Sulfate
- MSD (Lab ID: 2279847)
  - Sulfate

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: November 21, 2018

General Information:
2 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Sample: MW-1 **Lab ID: 60284830001** Collected: 10/25/18 11:36 Received: 10/26/18 06:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**2110**	ug/L	100	12.5	1	10/26/18 15:00	10/31/18 19:41	7440-42-8	
Calcium	**163000**	ug/L	200	53.5	1	10/26/18 15:00	10/31/18 19:41	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/26/18 14:18	10/29/18 20:07	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	10/26/18 14:18	10/29/18 20:07	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	10/26/18 14:18	10/29/18 20:07	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	10/26/18 14:18	10/29/18 20:07	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	10/26/18 14:18	10/29/18 20:07	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/26/18 14:18	10/29/18 20:07	7440-50-8	
Iron	**47.8J**	ug/L	50.0	6.1	1	10/26/18 14:18	10/29/18 20:07	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/26/18 14:18	10/29/18 20:07	7439-92-1	
Lithium	**36.8**	ug/L	10.0	4.6	1	10/26/18 14:18	10/29/18 20:07	7439-93-2	
Magnesium	**42100**	ug/L	50.0	14.0	1	10/26/18 14:18	10/29/18 20:07	7439-95-4	
Manganese	**241**	ug/L	5.0	0.73	1	10/26/18 14:18	10/29/18 20:07	7439-96-5	
Molybdenum	**4.4J**	ug/L	20.0	0.90	1	10/26/18 14:18	10/29/18 20:07	7439-98-7	
Nickel	**5.5**	ug/L	5.0	1.4	1	10/26/18 14:18	10/29/18 20:07	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/26/18 14:18	10/29/18 20:07	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/26/18 14:18	10/29/18 20:07	7440-22-4	
Sodium	**63700**	ug/L	500	157	1	10/26/18 14:18	10/29/18 20:07	7440-23-5	
Total Hardness by 2340B	**559000**	ug/L	705	500	1	10/26/18 14:18	10/29/18 20:07		
Zinc	ND	ug/L	50.0	3.5	1	10/26/18 14:18	10/30/18 11:54	7440-66-6	
200.8 Metals, Total	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Aluminum	**5.5J**	ug/L	100	0.54	1	10/29/18 07:50	10/30/18 10:19	7429-90-5	M1
Antimony	ND	ug/L	1.0	0.080	1	10/29/18 07:50	10/30/18 10:19	7440-36-0	M1
Barium	**75.4**	ug/L	1.0	0.19	1	10/29/18 07:50	10/30/18 10:19	7440-39-3	M1
Thallium	ND	ug/L	0.50	0.080	1	10/29/18 07:50	10/30/18 10:19	7440-28-0	M1
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/15/18 17:05	11/20/18 10:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**871**	mg/L	5.0	5.0	1		11/01/18 16:55		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		10/31/18 10:09		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/19/18 15:58	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**70.6**	mg/L	10.0	2.9	10		11/16/18 20:30	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	0.19	1		11/16/18 19:34	16984-48-8	
Sulfate	**226**	mg/L	50.0	12.0	50		11/16/18 20:59	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Sample: MW-1 **Lab ID: 60284830001** Collected: 10/25/18 11:36 Received: 10/26/18 06:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		11/16/18 16:12		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	ND	mg/L	1.0	0.65	1		11/06/18 06:24	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		10/26/18 08:52	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Sample: POND SURFACE WATER **Lab ID: 60284830002** Collected: 10/25/18 12:30 Received: 10/26/18 06:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**2710**	ug/L	100	12.5	1	10/26/18 15:00	10/31/18 19:48	7440-42-8	
Calcium	**139000**	ug/L	200	53.5	1	10/26/18 15:00	10/31/18 19:48	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	10/26/18 14:18	10/29/18 20:13	7440-38-2	
Beryllium	**0.35J**	ug/L	1.0	0.16	1	10/26/18 14:18	10/29/18 20:13	7440-41-7	
Cadmium	**0.76J**	ug/L	5.0	0.45	1	10/26/18 14:18	10/29/18 20:13	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	10/26/18 14:18	10/29/18 20:13	7440-47-3	
Cobalt	**3.2J**	ug/L	5.0	0.87	1	10/26/18 14:18	10/29/18 20:13	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	10/26/18 14:18	10/29/18 20:13	7440-50-8	
Iron	**439**	ug/L	50.0	6.1	1	10/26/18 14:18	10/29/18 20:13	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	10/26/18 14:18	10/29/18 20:13	7439-92-1	
Lithium	**29.7**	ug/L	10.0	4.6	1	10/26/18 14:18	10/29/18 20:13	7439-93-2	
Magnesium	**41600**	ug/L	50.0	14.0	1	10/26/18 14:18	10/29/18 20:13	7439-95-4	
Manganese	**598**	ug/L	5.0	0.73	1	10/26/18 14:18	10/29/18 20:13	7439-96-5	
Molybdenum	**18.4J**	ug/L	20.0	0.90	1	10/26/18 14:18	10/29/18 20:13	7439-98-7	
Nickel	**8.8**	ug/L	5.0	1.4	1	10/26/18 14:18	10/29/18 20:13	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	10/26/18 14:18	10/29/18 20:13	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	10/26/18 14:18	10/29/18 20:13	7440-22-4	
Sodium	**99200**	ug/L	500	157	1	10/26/18 14:18	10/29/18 20:13	7440-23-5	
Total Hardness by 2340B	**495000**	ug/L	705	500	1	10/26/18 14:18	10/29/18 20:13		
Zinc	**14.6J**	ug/L	50.0	3.5	1	10/26/18 14:18	10/30/18 12:00	7440-66-6	
200.8 Metals, Total	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Aluminum	**73.6J**	ug/L	100	0.54	1	10/29/18 07:50	10/30/18 11:51	7429-90-5	
Antimony	**0.27J**	ug/L	1.0	0.080	1	10/29/18 07:50	10/30/18 11:51	7440-36-0	
Barium	**54.9**	ug/L	1.0	0.19	1	10/29/18 07:50	10/30/18 11:51	7440-39-3	
Thallium	ND	ug/L	0.50	0.080	1	10/29/18 07:50	10/30/18 11:51	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	11/15/18 17:05	11/20/18 10:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1170**	mg/L	5.0	5.0	1		10/30/18 13:00		D6
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.9**	Std. Units	0.10	0.10	1		10/31/18 10:12		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		11/19/18 15:58	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**184**	mg/L	10.0	2.9	10		11/16/18 21:42	16887-00-6	
Fluoride	**0.86**	mg/L	0.20	0.19	1		11/16/18 21:27	16984-48-8	
Sulfate	**335**	mg/L	50.0	12.0	50		11/16/18 21:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Sample: POND SURFACE WATER **Lab ID: 60284830002** Collected: 10/25/18 12:30 Received: 10/26/18 06:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**17.7**	mg/L	10.0	4.8	1		11/16/18 16:17		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.78J**	mg/L	1.0	0.65	1		11/06/18 06:50	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		10/26/18 09:15	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 555449 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 2278650 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.090	11/20/18 10:15	

LABORATORY CONTROL SAMPLE: 2278651

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2278652 2278653

Parameter	Units	60284830001 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	101	101	75-125	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2278654 2278655

Parameter	Units	60285588003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	5.0	4.9	100	99	75-125	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2278656 2278657

Parameter	Units	60285588004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	5.0	5.0	100	101	75-125	1	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 551847 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 2263080 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	12.5	10/31/18 18:55	
Calcium	ug/L	ND	200	53.5	10/31/18 18:55	

LABORATORY CONTROL SAMPLE: 2263081

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	993	99	85-115	
Calcium	ug/L	10000	9800	98	85-115	

MATRIX SPIKE SAMPLE: 2263082

Parameter	Units	60284782003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	0.63 mg/L	1000	1690	106	70-130	
Calcium	ug/L	62900	10000	74200	113	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2263083 2263084

Parameter	Units	60284830001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	2110	1000	1000	3140	3140	103	103	70-130	0	20	
Calcium	ug/L	163000	10000	10000	171000	172000	81	85	70-130	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 124243 | Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 | Analysis Description: 200.8 MET
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 537204 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	ND	100	0.54	10/30/18 08:07	
Antimony	ug/L	ND	1.0	0.080	10/30/18 08:07	
Barium	ug/L	ND	1.0	0.19	10/30/18 08:07	
Thallium	ug/L	ND	0.50	0.080	10/30/18 08:07	

LABORATORY CONTROL SAMPLE: 537205

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	4000	3800	95	85-115	
Antimony	ug/L	40	39.4	99	85-115	
Barium	ug/L	40	39.0	98	85-115	
Thallium	ug/L	40	38.7	97	85-115	

MATRIX SPIKE SAMPLE: 537206

Parameter	Units	60284679001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	170	4000	4500	108	70-130	
Antimony	ug/L	ND	40	42.3	106	70-130	
Barium	ug/L	153	40	194	104	70-130	
Thallium	ug/L	ND	40	40.3	101	70-130	

MATRIX SPIKE SAMPLE: 537208

Parameter	Units	60284830001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	5.5J	2000	4240	212	70-130	M1
Antimony	ug/L	ND	20	42.2	211	70-130	M1
Barium	ug/L	75.4	20	118	214	70-130	M1
Thallium	ug/L	ND	20	41.0	205	70-130	M1

SAMPLE DUPLICATE: 537207

Parameter	Units	60284830001 Result	Dup Result	RPD	Max RPD	Qualifiers
Aluminum	ug/L	5.5J	6.4J		20	
Antimony	ug/L	ND	ND		20	
Barium	ug/L	75.4	78.5	4	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

SAMPLE DUPLICATE: 537207

Parameter	Units	60284830001 Result	Dup Result	RPD	Max RPD	Qualifiers
Thallium	ug/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 551843 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 2263055 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	ND	10.0	4.9	10/29/18 19:13	
Beryllium	ug/L	ND	1.0	0.16	10/29/18 19:13	
Cadmium	ug/L	ND	5.0	0.45	10/29/18 19:13	
Chromium	ug/L	ND	5.0	1.1	10/29/18 19:13	
Cobalt	ug/L	ND	5.0	0.87	10/29/18 19:13	
Copper	ug/L	ND	10.0	4.5	10/29/18 19:13	
Iron	ug/L	ND	50.0	6.1	10/29/18 19:13	
Lead	ug/L	ND	10.0	3.0	10/29/18 19:13	
Lithium	ug/L	ND	10.0	4.6	10/29/18 19:13	
Magnesium	ug/L	ND	50.0	14.0	10/29/18 19:13	
Manganese	ug/L	ND	5.0	0.73	10/29/18 19:13	
Molybdenum	ug/L	ND	20.0	0.90	10/29/18 19:13	
Nickel	ug/L	ND	5.0	1.4	10/29/18 19:13	
Selenium	ug/L	ND	15.0	6.1	10/29/18 19:13	
Silver	ug/L	ND	7.0	2.0	10/29/18 19:13	
Sodium	ug/L	ND	500	157	10/29/18 19:13	
Total Hardness by 2340B	ug/L	ND	705	500	10/29/18 19:13	
Zinc	ug/L	ND	50.0	3.5	10/29/18 19:13	

LABORATORY CONTROL SAMPLE: 2263056

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	942	94	80-120	
Beryllium	ug/L	1000	992	99	80-120	
Cadmium	ug/L	1000	966	97	80-120	
Chromium	ug/L	1000	982	98	80-120	
Cobalt	ug/L	1000	937	94	80-120	
Copper	ug/L	1000	964	96	80-120	
Iron	ug/L	10000	9750	97	80-120	
Lead	ug/L	1000	975	98	80-120	
Lithium	ug/L	1000	955	96	80-120	
Magnesium	ug/L	10000	9800	98	80-120	
Manganese	ug/L	1000	956	96	80-120	
Molybdenum	ug/L	1000	982	98	80-120	
Nickel	ug/L	1000	951	95	80-120	
Selenium	ug/L	1000	964	96	80-120	
Silver	ug/L	500	485	97	80-120	
Sodium	ug/L	10000	9670	97	80-120	
Total Hardness by 2340B	ug/L		64300			
Zinc	ug/L	1000	931	93	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2263057 2263058

Parameter	Units	60284115001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	1000	1000	947	1020	95	102	75-125	8	20	
Beryllium	ug/L	ND	1000	1000	996	1080	100	108	75-125	8	20	
Cadmium	ug/L	ND	1000	1000	966	1050	97	105	75-125	8	20	
Chromium	ug/L	ND	1000	1000	984	1070	98	107	75-125	8	20	
Cobalt	ug/L	ND	1000	1000	937	1010	94	101	75-125	8	20	
Copper	ug/L	ND	1000	1000	969	1050	97	105	75-125	8	20	
Iron	ug/L	ND	10000	10000	9800	10700	98	107	75-125	8	20	
Lead	ug/L	ND	1000	1000	973	1050	97	105	75-125	8	20	
Lithium	ug/L	ND	1000	1000	960	1040	96	104	75-125	8	20	
Magnesium	ug/L	142	10000	10000	9830	10700	97	105	75-125	8	20	
Manganese	ug/L	ND	1000	1000	960	1040	96	104	75-125	8	20	
Molybdenum	ug/L	ND	1000	1000	983	1060	98	106	75-125	8	20	
Nickel	ug/L	ND	1000	1000	953	1030	95	103	75-125	8	20	
Selenium	ug/L	ND	1000	1000	958	1040	96	104	75-125	8	20	
Silver	ug/L	ND	500	500	486	527	97	105	75-125	8	20	
Sodium	ug/L	ND	10000	10000	9810	10600	95	103	75-125	7	20	
Total Hardness by 2340B	ug/L	861			64600	70200				8		
Zinc	ug/L	ND	1000	1000	929	1000	93	100	75-125	8	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2263059 2263060

Parameter	Units	60284830001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	1000	1000	1000	1140	100	114	75-125	13	20	
Beryllium	ug/L	ND	1000	1000	1010	1160	101	116	75-125	13	20	
Cadmium	ug/L	ND	1000	1000	995	1140	99	114	75-125	14	20	
Chromium	ug/L	ND	1000	1000	995	1140	100	114	75-125	13	20	
Cobalt	ug/L	ND	1000	1000	924	1060	92	106	75-125	14	20	
Copper	ug/L	ND	1000	1000	992	1140	99	114	75-125	14	20	
Iron	ug/L	47.8J	10000	10000	9870	11300	98	113	75-125	14	20	
Lead	ug/L	ND	1000	1000	953	1100	95	109	75-125	14	20	
Lithium	ug/L	36.8	1000	1000	1030	1180	99	114	75-125	13	20	
Magnesium	ug/L	42100	10000	10000	51600	52200	95	102	75-125	1	20	
Manganese	ug/L	241	1000	1000	1200	1340	96	110	75-125	11	20	
Molybdenum	ug/L	4.4J	1000	1000	1010	1160	101	116	75-125	14	20	
Nickel	ug/L	5.5	1000	1000	940	1080	93	107	75-125	13	20	
Selenium	ug/L	ND	1000	1000	990	1140	98	113	75-125	14	20	
Silver	ug/L	ND	500	500	503	577	101	115	75-125	14	20	
Sodium	ug/L	63700	10000	10000	73300	73300	96	96	75-125	0	20	
Total Hardness by 2340B	ug/L	559000			618000	616000				0		
Zinc	ug/L	ND	1000	1000	1020	1180	102	117	75-125	14	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 552319 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60284830002

METHOD BLANK: 2265122 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	10/30/18 13:00	

LABORATORY CONTROL SAMPLE: 2265123

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

SAMPLE DUPLICATE: 2265124

Parameter	Units	60284892001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1950	1670	15	10	D6

SAMPLE DUPLICATE: 2265125

Parameter	Units	60284830002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1170	967	19	10	D6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 552837 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60284830001

METHOD BLANK: 2266988 | Matrix: Water
Associated Lab Samples: 60284830001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	11/02/18 00:20	

LABORATORY CONTROL SAMPLE: 2266989

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	996	100	80-120	

SAMPLE DUPLICATE: 2266990

Parameter	Units	60285081007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	346	338	3	10	

SAMPLE DUPLICATE: 2267568

Parameter	Units	60284830001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	871	859	1	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 552544 | Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B | Analysis Description: 4500H+B pH
Associated Lab Samples: 60284830001, 60284830002

SAMPLE DUPLICATE: 2265939

Parameter	Units	60284830001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	0	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 555691 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 2279844 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.29	11/16/18 18:23	
Fluoride	mg/L	ND	0.20	0.19	11/16/18 18:23	
Sulfate	mg/L	ND	1.0	0.24	11/16/18 18:23	

LABORATORY CONTROL SAMPLE: 2279845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2279846 2279847

Parameter	Units	60284690006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	1100	500	500	1440	1400	69	62	90-110	3	15	M1

MATRIX SPIKE SAMPLE: 2279848

Parameter	Units	60284830001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	70.6	50	119	98	90-110	
Fluoride	mg/L	0.53	2.5	3.0	98	90-110	
Sulfate	mg/L	226	250	485	103	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 555636 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 2279499 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	4.8	11/16/18 15:51	

LABORATORY CONTROL SAMPLE: 2279500

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	53.3	107	90-110	

MATRIX SPIKE SAMPLE: 2279503

Parameter	Units	60284830001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	55.1	103	90-110	

SAMPLE DUPLICATE: 2279502

Parameter	Units	60284690004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

SAMPLE DUPLICATE: 2279504

Parameter	Units	60284830001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 552684 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 2266562 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	11/06/18 01:41	

LABORATORY CONTROL SAMPLE: 2266563

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.4	107	80-120	

MATRIX SPIKE SAMPLE: 2270221

Parameter	Units	60284830001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	ND	5	5.3	98	80-120	

SAMPLE DUPLICATE: 2270220

Parameter	Units	60284918012 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	ND	ND		25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 551787 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 2262802 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	10/26/18 08:51	

LABORATORY CONTROL SAMPLE: 2262803

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.1	0.098	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2262804 2262805

Parameter	Units	60284830001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	.1	.1	0.092	0.092	92	92	85-115	0	20	

SAMPLE DUPLICATE: 2262806

Parameter	Units	60284830001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Sample: MW-1 **Lab ID: 60284830001** Collected: 10/25/18 11:36 Received: 10/26/18 06:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.579 ± 0.588 (0.890) C:NA T:76%**	pCi/L	11/07/18 22:10	13982-63-3	
Radium-228	EPA 904.0	**-0.237 ± 0.360 (0.893) C:67% T:81%**	pCi/L	11/07/18 11:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.579 ± 0.948 (1.78)**	pCi/L	11/09/18 13:09	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Sample: POND SURFACE WATER **Lab ID: 60284830002** Collected: 10/25/18 12:30 Received: 10/26/18 06:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.380 ± 0.432 (0.682)** **C:NA T:91%**	pCi/L	11/07/18 22:11	13982-63-3	
Radium-228	EPA 904.0	**0.236 ± 0.326 (0.698)** **C:79% T:82%**	pCi/L	11/07/18 11:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.616 ± 0.758 (1.38)**	pCi/L	11/09/18 13:24	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 318444 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 1553539 | Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.398 ± 0.453 (0.715) C:NA T:94%	pCi/L	11/07/18 21:39	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

QC Batch: 318796 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60284830001, 60284830002

METHOD BLANK: 1554908 Matrix: Water
Associated Lab Samples: 60284830001, 60284830002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.274 ± 0.316 (0.664) C:83% T:89%	pCi/L	11/07/18 11:55	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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-K	Pace Analytical Services - Kansas City
PASI-N	Pace Analytical Services - New Orleans
PASI-PA	Pace Analytical Services - Greensburg

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60284830

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60284830001	**MW-1**	EPA 200.7	551847	EPA 200.7	551972
60284830002	**POND SURFACE WATER**	EPA 200.7	551847	EPA 200.7	551972
60284830001	**MW-1**	EPA 3010	551843	EPA 6010	551962
60284830002	**POND SURFACE WATER**	EPA 3010	551843	EPA 6010	551962
60284830001	**MW-1**	EPA 200.8	124243	EPA 200.8	124337
60284830002	**POND SURFACE WATER**	EPA 200.8	124243	EPA 200.8	124337
60284830001	**MW-1**	EPA 7470	555449	EPA 7470	555490
60284830002	**POND SURFACE WATER**	EPA 7470	555449	EPA 7470	555490
60284830001	**MW-1**	EPA 903.1	318444		
60284830002	**POND SURFACE WATER**	EPA 903.1	318444		
60284830001	**MW-1**	EPA 904.0	318796		
60284830002	**POND SURFACE WATER**	EPA 904.0	318796		
60284830001	**MW-1**	Total Radium Calculation	319936		
60284830002	**POND SURFACE WATER**	Total Radium Calculation	319938		
60284830001	**MW-1**	SM 2540C	552837		
60284830002	**POND SURFACE WATER**	SM 2540C	552319		
60284830001	**MW-1**	SM 4500-H+B	552544		
60284830002	**POND SURFACE WATER**	SM 4500-H+B	552544		
60284830001	**MW-1**	Trivalent Chromium Calculation	556157		
60284830002	**POND SURFACE WATER**	Trivalent Chromium Calculation	556157		
60284830001	**MW-1**	EPA 300.0	555691		
60284830002	**POND SURFACE WATER**	EPA 300.0	555691		
60284830001	**MW-1**	EPA 410.4	555636		
60284830002	**POND SURFACE WATER**	EPA 410.4	555636		
60284830001	**MW-1**	SM 5310C	552684		
60284830002	**POND SURFACE WATER**	SM 5310C	552684		
60284830001	**MW-1**	EPA 7196	551787		
60284830002	**POND SURFACE WATER**	EPA 7196	551787		

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Sample Condition Upon Receipt

WO# : 60284830

60284830

Client Name: Burns + McDonnell

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 ☒ ziplc

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 1.4 **Corr. Factor** +0.2 **Corrected** 1.6 0.6

Date and initials of person examining contents: 10/26/18 JS KZ

Temperature should be above freezing to 6°C 0.4

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	CR+6, 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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JMS Date: 10/26/18

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

Page : 1 Of 1

Section A — Required Client Information:

Company: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bweis@burnsmcd.com
Phone: 816-333-9400 Fax
Requested Due Date:

Section B — Required Project Information:

Report To: Brian Weis
Copy To: Chris Hoglund
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C — Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: jeff.shopper@pacelabs.com
Pace Profile #: 10268, 2

Regulatory Agency

State / Location: MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION (C°)	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-1 2BPIN, 1BP3N	WT	G	25OCT18	9:55A	25OCT18	11:36A	16.0	8	3	2	3	AG2S,						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		2BPIU, 6P2U	001
2	MS	WT	G	25OCT18	9:55A	25OCT18	11:36A	16.0	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
3	MSD	WT	G	25OCT18	9:55A	25OCT18	11:36A	16.0	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
4	Pond Surface Water	WT	G	25OCT18	12:30P			13.9	8	3	2	3							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			002
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

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

6028 4830

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
TOX EDD needed	Richard Beal	25OCT18	1:40Pm	[illegible]	25OCT18	1:40pm
J-flags on - include MDLs on report.	[illegible]	25OCT18		Uzipt 1 Pas:	10/26/18	0600

SAMPLE CONDITIONS

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1.6	Y	Y	Y
0.6	↓	↓	↓

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Richard Beaford
SIGNATURE of SAMPLER: Richard Beal
DATE Signed: 25 Oct 2018

ANALYTICAL REPORT

November 02, 2018

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L1038702
Samples Received:	10/27/2018
Project Number:	60284830
Description:	MORE'S LAKE COLUMBIA, MO
Report To:	Jeff Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-1 L1038702-01 GW

Collected by	Collected date/time	Received date/time
	10/25/18 11:36	10/27/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1188565	1	11/01/18 09:21	11/01/18 09:21	EEM

POND SURFACE WATER L1038702-02 GW

Collected by	Collected date/time	Received date/time
	10/25/18 12:30	10/27/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1188565	1	11/01/18 09:48	11/01/18 09:48	EEM

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

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

Nancy F. McLain

Nancy McLain
Project Manager

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	14.4	J	12.0	100	1	11/01/2018 09:21	WG1188565

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	57.5	J	12.0	100	1	11/01/2018 09:48	WG1188565

Method Blank (MB)

(MB) R3355718-1 10/31/18 10:13

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L1038643-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1038643-06 10/31/18 11:01 • (DUP) R3355718-3 10/31/18 11:30

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	107	25.2	1	124	J P1	20

L1038855-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1038855-02 11/01/18 14:29 • (DUP) R3355718-9 11/01/18 15:11

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	631	453	1	32.7	J3	20

Laboratory Control Sample (LCS)

(LCS) R3355718-2 10/31/18 10:26

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOX	200	204	102	85.0-115	

L1037903-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1037903-01 10/31/18 14:10 • (MS) R3355718-5 10/31/18 14:29 • (MSD) R3355718-7 10/31/18 14:46

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	75.3	391	406	105	110	1	80.0-120			3.73	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

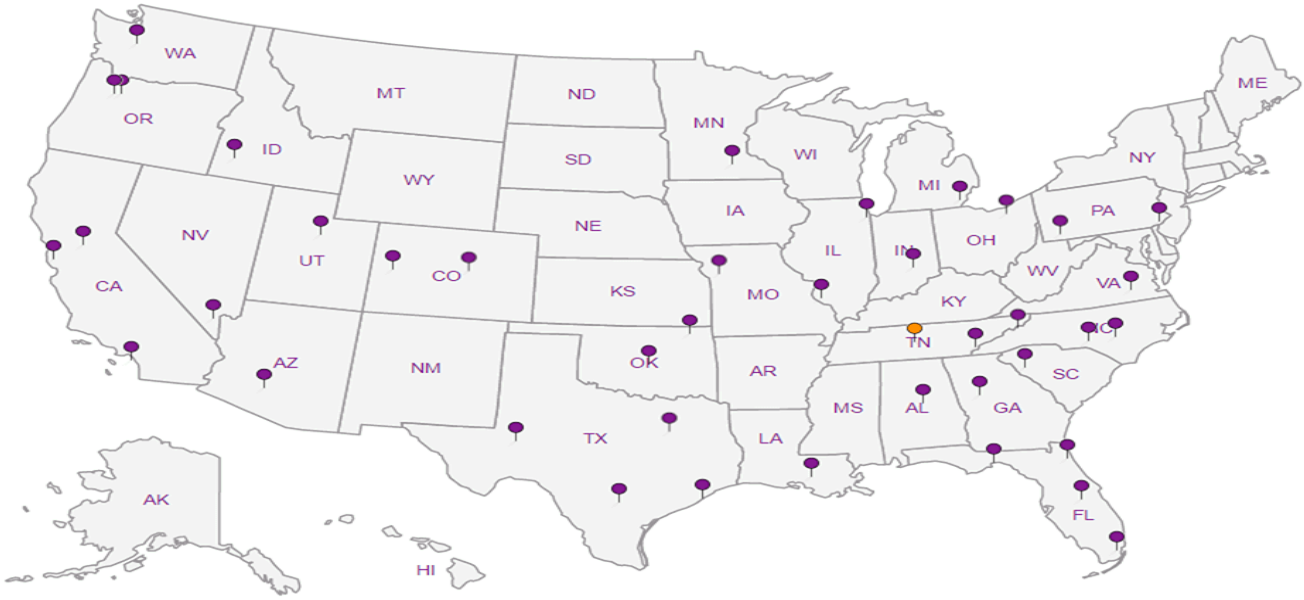
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60284830 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 11/14/2018 L1038702

Report / Invoice To

Jeffrey Shopper
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1408
Email: jeff.shopper@pacelabs.com

Subcontract To

Pace National P.O. SUB-9503

State of Sample Origin: MO

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4						Requested Analysis: TOX											LAB USE ONLY
1	MW-1	10/25/2018 11:36	60284830001	Water	1						X											-01
2	POND SURFACE WATER	10/25/2018 12:30	60284830002	Water	1						X											-02
3																						
4																						
5																						

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	10/26/18 1600		
2				
3	0.6+0		[illegible]	10/27/18 8:45

Comments

Report to MDL

Cooler Temperature on Receipt 0.6 °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

RAD SCREEN: <0.5 mR/hr

SUBOUT SAMPLES

L1038702

Completed by Project Manager:

Sub out within Pace Office:

Containers to be sent:

X Sub out outside of Pace

Laboratory: Pace Analytical National

Shipping Address: 12065 Lebanon Rd
Mt Juliet, TN 37122

Containers to be sent: 2-AGS2

Pace Purchase Order Number: SUB-9503

Project Number 60284830

Project Due Date: 11/14/2018

PM Initials: JNS

Sample #	Quanti	Matrix	Test (Description)	Unit Price	Containers to send
60284830001-002	2	Water	TOX	$95.00	2-AG2S
				$190.00	

TOTALS		
Receiving lab (80%)	Sending Lab (20%)	Total
$152.00	$38.00	

Initials of Person Placing Work: NJW

Initials of Person Sending Samples:

Contact in other Lab: Nancy McClain

Phone Number: 615-758-5858 ext 9710

Date Sent: 10/25/2018

Courier Used:

Tracking Number:

RAD SCREEN: <0.5 mR/hr

0.6+0-0.6 W/13
COCSI

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: PALELKS	SDG#	L1038702
Cooler Received/Opened On: 10/27/18	Temperature: .6	
Received By: Jordan Harris		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

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

December 20, 2018

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on December 19, 2018. 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,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116 / E10426
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60289935001	**MW-6**	Water	12/18/18 10:20	12/19/18 06:15
60289935002	**MW-7**	Water	12/18/18 11:58	12/19/18 06:15
60289935003	**PZ-2**	Water	12/18/18 14:09	12/19/18 06:15
60289935004	**MW-5**	Water	12/18/18 15:37	12/19/18 06:15

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SAMPLE ANALYTE COUNT

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60289935001	**MW-6**	EPA 7196	RMT	1	PASI-K
60289935002	**MW-7**	EPA 7196	RMT	1	PASI-K
60289935003	**PZ-2**	EPA 7196	RMT	1	PASI-K
60289935004	**MW-5**	EPA 7196	RMT	1	PASI-K

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: December 20, 2018

General Information:
4 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Sample: MW-6 **Lab ID: 60289935001** Collected: 12/18/18 10:20 Received: 12/19/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/19/18 08:09	18540-29-9	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Sample: MW-7 **Lab ID: 60289935002** Collected: 12/18/18 11:58 Received: 12/19/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/19/18 08:10	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Sample: PZ-2 **Lab ID: 60289935003** Collected: 12/18/18 14:09 Received: 12/19/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/19/18 08:11	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Sample: MW-5 **Lab ID: 60289935004** Collected: 12/18/18 15:37 Received: 12/19/18 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/19/18 08:11	18540-29-9	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

QC Batch: 560955 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60289935001, 60289935002, 60289935003, 60289935004

METHOD BLANK: 2302410 | Matrix: Water
Associated Lab Samples: 60289935001, 60289935002, 60289935003, 60289935004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	12/19/18 08:07	

LABORATORY CONTROL SAMPLE: 2302411

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.1	0.095	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2302412 2302413

Parameter	Units	60289936001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.1	0.1	0.099	0.099	99	99	85-115	0	20	

SAMPLE DUPLICATE: 2302414

Parameter	Units	60289936001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		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

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QUALIFIERS

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: More's Lake Columbia, MO
Pace Project No.: 60289935

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60289935001	**MW-6**	EPA 7196	560955		
60289935002	**MW-7**	EPA 7196	560955		
60289935003	**PZ-2**	EPA 7196	560955		
60289935004	**MW-5**	EPA 7196	560955		

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Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60289935

60289935

Client Name: Burns + McDonnell

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 ☒ ziplc

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 2.4 **Corr. Factor** +0.2 **Corrected** 2.6

Date and initials of person examining contents: 12/19/18 [illegible]

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	CR +6
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JAS Date: 12/19/18

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax:
Requested Due Date:	

Section B
Required Project Information:

Report To:	Brian Weis
Copy To:	Chris Hoglund
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency	State / Location
	MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60239935 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-6	WT	G	18Dec18	9:50A	18Dec18	10:20A	15.8	1	1																✓		BPJV				
2	MW-7	WT	G	18Dec18	11:26A	18Dec18	11:58A	16.5	1	1																✓						
3	PZ-2	WT	G	18Dec18	1:37P	18Dec18	2:09P	16.8	1	1																✓						
4	MW-5	WT	G	18Dec18	3:06P	18Dec18	3:37P	16.7	1	1																✓		✓				
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ES+S	18Dec18		Weipf / Pasi	12-19-18	0615	2.6	Y	Y	Y
J-flags on - include MDLs on report.										

SAMPLER NAME AND SIGNATURE		
PRINT Name of SAMPLER:	David Kilgore	
SIGNATURE of SAMPLER:	David Kilgore	DATE Signed: 18 Dec 18

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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

December 20, 2018

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on December 20, 2018. 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,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116 / E10426
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60290072001	**MW-4**	Water	12/19/18 09:43	12/20/18 06:10
60290072002	**MW-3**	Water	12/19/18 11:00	12/20/18 06:10
60290072003	**MW-2**	Water	12/19/18 12:53	12/20/18 06:10
60290072004	**MW-8**	Water	12/19/18 15:22	12/20/18 06:10
60290072005	**DUP-1**	Water	12/19/18 12:53	12/20/18 06:10

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SAMPLE ANALYTE COUNT

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60290072001	**MW-4**	EPA 7196	RMT	1	PASI-K
60290072002	**MW-3**	EPA 7196	RMT	1	PASI-K
60290072003	**MW-2**	EPA 7196	RMT	1	PASI-K
60290072004	**MW-8**	EPA 7196	RMT	1	PASI-K
60290072005	**DUP-1**	EPA 7196	RMT	1	PASI-K

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: December 20, 2018

General Information:
5 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Sample: MW-4 **Lab ID: 60290072001** Collected: 12/19/18 09:43 Received: 12/20/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/20/18 08:28	18540-29-9	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Sample: MW-3 **Lab ID: 60290072002** Collected: 12/19/18 11:00 Received: 12/20/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/20/18 08:30	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Sample: MW-2 **Lab ID: 60290072003** Collected: 12/19/18 12:53 Received: 12/20/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/20/18 08:31	18540-29-9	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Sample: MW-8 **Lab ID: 60290072004** Collected: 12/19/18 15:22 Received: 12/20/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/20/18 08:32	18540-29-9	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Sample: DUP-1 **Lab ID: 60290072005** Collected: 12/19/18 12:53 Received: 12/20/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/20/18 08:25	18540-29-9	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

QC Batch: 561191 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60290072001, 60290072002, 60290072003, 60290072004

METHOD BLANK: 2303327 | Matrix: Water
Associated Lab Samples: 60290072001, 60290072002, 60290072003, 60290072004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	12/20/18 08:28	

LABORATORY CONTROL SAMPLE: 2303328

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.1	0.092	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2303329 2303330

Parameter	Units	60290072001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.1	0.1	0.10	0.099	100	99	85-115	1	20	

SAMPLE DUPLICATE: 2303331

Parameter	Units	60290072001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		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

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

QC Batch: 561192 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60290072005

METHOD BLANK: 2303334 | Matrix: Water
Associated Lab Samples: 60290072005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	12/20/18 08:23	

LABORATORY CONTROL SAMPLE: 2303335

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.1	0.090	90	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2303336 2303337

Parameter	Units	60290073001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.1	0.1	0.096	0.091	94	89	85-115	5	20	

SAMPLE DUPLICATE: 2303338

Parameter	Units	60290073001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		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

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QUALIFIERS

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: More's Lake Columbia, MO
Pace Project No.: 60290072

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60290072001	**MW-4**	EPA 7196	561191		
60290072002	**MW-3**	EPA 7196	561191		
60290072003	**MW-2**	EPA 7196	561191		
60290072004	**MW-8**	EPA 7196	561191		
60290072005	**DUP-1**	EPA 7196	561192		

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Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60290072

60290072

Client Name: Burns + McDonnell

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 ☒ zplc

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.2 **Corr. Factor** +0.2 **Corrected** 0.4

Date and initials of person examining contents: 12.20.18 KZ

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	CR+6
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: TDG for JNS Date: 12.20-18

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: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bweis@burnsmcd.com
Phone: 816-333-9400 Fax:
Requested Due Date:

Section B
Required Project Information:

Report To: Brian Weis
Copy To: Chris Hoglund
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C
Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: jeff.shopper@pacelabs.com
Pace Profile #: 10268, 2

Regulatory Agency:
State / Location: MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60290072 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-4	WT	G	19Dec18	9:40A	19Dec18	9:49A	MP	1	1																✓	BP3U					001
2	MW-3	WT	G	19Dec18	10:23A	19Dec18	11:00A	MP	1	1																✓						002
3	MW-2	WT	G	19Dec18	11:49A	19Dec18	12:53P	15.2	1	1																✓						003
4	MW-8	WT	G	19Dec18	2:48P	19Dec18	3:22P	15.3	1	1																✓						004
5	Dup-1	WT	G	19Dec18	11:47A	19Dec18	12:53P	15.2	1	1																✓						005
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
DX EDD needed	David Kilgore ESTS	19Dec18	3:55P	Ucipt 1Psi	12.20.18	0610	0.4	Y	Y	Y
flags on - include MDLs on report.										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore

DATE Signed: 19Dec18

TEMP in C | Received on ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical Services, LLC
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January 14, 2019

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on December 21, 2018. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116 / E10426
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60290219001	**MW-6**	Water	12/18/18 10:20	12/21/18 06:10
60290219002	**MW-7**	Water	12/18/18 11:58	12/21/18 06:10
60290219003	**PZ-2**	Water	12/18/18 14:09	12/21/18 06:10
60290219004	**MW-5**	Water	12/18/18 15:37	12/21/18 06:10
60290219005	**MW-4**	Water	12/19/18 09:16	12/21/18 06:10
60290219006	**MW-3**	Water	12/19/18 11:00	12/21/18 06:10
60290219007	**MW-2**	Water	12/19/18 12:53	12/21/18 06:10
60290219008	**DUP-1**	Water	12/19/18 12:53	12/21/18 06:10
60290219009	**MW-8**	Water	12/19/18 15:22	12/21/18 06:10
60290219010	**MW-1**	Water	12/20/18 11:08	12/21/18 06:10
60290219011	**MW-1 [HEX CR]**	Water	12/20/18 11:08	12/21/18 06:10
60290219012	**POND SURFACE WATER**	Water	12/20/18 11:50	12/21/18 06:10
60290219013	**MW-1 MS**	Water	12/20/18 11:08	12/21/18 06:10
60290219014	**MW-1 MSD**	Water	12/20/18 11:08	12/21/18 06:10

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SAMPLE ANALYTE COUNT

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60290219001	**MW-6**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219002	**MW-7**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219003	**PZ-2**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219004	**MW-5**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219005	**MW-4**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219006	**MW-3**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	RMT	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219007	**MW-2**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	RMT	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219008	**DUP-1**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	RMT	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219009	**MW-8**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	RMT	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219010	**MW-1**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	RMT	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
60290219011	**MW-1 [HEX CR]**	EPA 7196	RMT	1	PASI-K
60290219012	**POND SURFACE WATER**	EPA 200.7	CTR	2	PASI-K
		EPA 6010	CTR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	JDE	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	RMT	1	PASI-K
		Trivalent Chromium Calculation	LDB	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	RMT	1	PASI-K
		SM 5310C	JDA	1	PASI-K
		EPA 7196	RMT	1	PASI-K
60290219013	**MW-1 MS**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
60290219014	**MW-1 MSD**	EPA 903.1	MK1	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	VAL	1	PASI-PA

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 563139

B: Analyte was detected in the associated method blank.

- BLANK for HBN 563139 [MPRP/488 (Lab ID: 2310455)
  - Zinc

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 562369

B: Analyte was detected in the associated method blank.

- BLANK for HBN 562369 [MPRP/487 (Lab ID: 2308067)
  - Aluminum

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
13 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
13 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 561654

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 2305389)
  - Total Dissolved Solids

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-1 (Lab ID: 60290219008)
- MW-1 (Lab ID: 60290219010)
- MW-2 (Lab ID: 60290219007)
- MW-3 (Lab ID: 60290219006)
- MW-4 (Lab ID: 60290219005)
- MW-5 (Lab ID: 60290219004)
- MW-6 (Lab ID: 60290219001)
- MW-7 (Lab ID: 60290219002)
- MW-8 (Lab ID: 60290219009)
- POND SURFACE WATER (Lab ID: 60290219012)
- PZ-2 (Lab ID: 60290219003)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 563112

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60290306001

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

- MSD (Lab ID: 2310326)
  - Chloride

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
11 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: January 14, 2019

General Information:
2 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-6 **Lab ID: 60290219001** Collected: 12/18/18 10:20 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**72.7J**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 18:42	7440-42-8	
Calcium	**162000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 18:42	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:04	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:04	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:04	7440-43-9	
Chromium	**1.1J**	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:04	7440-47-3	
Cobalt	**1.8J**	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:04	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:04	7440-50-8	
Iron	**684**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:04	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:04	7439-92-1	
Lithium	**45.7**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:04	7439-93-2	
Magnesium	**32100**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:04	7439-95-4	
Manganese	**672**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:04	7439-96-5	
Molybdenum	**2.7J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:04	7439-98-7	
Nickel	**4.8J**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:04	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:04	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:04	7440-22-4	
Sodium	**43700**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:04	7440-23-5	
Total Hardness by 2340B	**542000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:04		
Zinc	**26.9J**	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:04	7440-66-6	B
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**568**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:17	7429-90-5	
Antimony	**0.17J**	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:17	7440-36-0	
Barium	**69.8**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:17	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1500**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.10	1		12/24/18 10:15		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**34.1**	mg/L	5.0	1.4	5		01/04/19 01:44	16887-00-6	
Fluoride	**0.37**	mg/L	0.20	0.19	1		01/04/19 01:28	16984-48-8	
Sulfate	**196**	mg/L	20.0	4.8	20		01/04/19 02:00	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-6 **Lab ID: 60290219001** Collected: 12/18/18 10:20 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:10		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.8**	mg/L	1.0	0.65	1		12/26/18 17:32	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-7 **Lab ID: 60290219002** Collected: 12/18/18 11:58 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**221**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 18:44	7440-42-8	
Calcium	**145000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 18:44	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:06	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:06	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:06	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:06	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:06	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:06	7440-50-8	
Iron	**1180**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:06	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:06	7439-92-1	
Lithium	**45.0**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:06	7439-93-2	
Magnesium	**35800**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:06	7439-95-4	
Manganese	**470**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:06	7439-96-5	
Molybdenum	**8.1J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:06	7439-98-7	
Nickel	**5.4**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:06	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:06	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:06	7440-22-4	
Sodium	**58500**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:06	7440-23-5	
Total Hardness by 2340B	**505000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:06		
Zinc	**55.8**	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:06	7440-66-6	B
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**30.5J**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:18	7429-90-5	B
Antimony	**0.096J**	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:18	7440-36-0	
Barium	**81.9**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:18	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:18	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:25	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**449**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		12/24/18 10:19		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**43.9**	mg/L	5.0	1.4	5		01/04/19 02:32	16887-00-6	
Fluoride	**0.54**	mg/L	0.20	0.19	1		01/04/19 02:16	16984-48-8	
Sulfate	**193**	mg/L	20.0	4.8	20		01/04/19 02:48	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-7 **Lab ID: 60290219002** Collected: 12/18/18 11:58 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:11		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.0**	mg/L	1.0	0.65	1		12/27/18 17:35	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: PZ-2 **Lab ID: 60290219003** Collected: 12/18/18 14:09 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**702**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 18:46	7440-42-8	
Calcium	**216000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 18:46	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:09	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:09	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:09	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:09	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:09	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:09	7440-50-8	
Iron	**318**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:09	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:09	7439-92-1	
Lithium	**9.7J**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:09	7439-93-2	
Magnesium	**43000**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:09	7439-95-4	
Manganese	**384**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:09	7439-96-5	
Molybdenum	**1.5J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:09	7439-98-7	
Nickel	**5.1**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:09	7440-02-0	
Selenium	**7.1J**	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:09	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:09	7440-22-4	
Sodium	**122000**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:09	7440-23-5	
Total Hardness by 2340B	**716000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:09		
Zinc	**5.6J**	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:09	7440-66-6	B
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**30.0J**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:19	7429-90-5	B
Antimony	**0.079J**	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:19	7440-36-0	
Barium	**52.8**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:19	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:19	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1220**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.10	1		12/24/18 10:23		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**178**	mg/L	20.0	5.8	20		01/10/19 18:03	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	0.19	1		01/10/19 16:52	16984-48-8	
Sulfate	**326**	mg/L	20.0	4.8	20		01/10/19 18:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: PZ-2 **Lab ID: 60290219003** Collected: 12/18/18 14:09 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**13.8**	mg/L	10.0	4.8	1		01/03/19 10:11		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.3**	mg/L	1.0	0.65	1		12/27/18 18:01	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-5 **Lab ID: 60290219004** Collected: 12/18/18 15:37 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**236**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 18:49	7440-42-8	
Calcium	**114000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 18:49	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:11	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:11	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:11	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:11	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:11	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:11	7440-50-8	
Iron	**64.3**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:11	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:11	7439-92-1	
Lithium	**42.9**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:11	7439-93-2	
Magnesium	**30700**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:11	7439-95-4	
Manganese	**46.7**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:11	7439-96-5	
Molybdenum	**5.7J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:11	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:11	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:11	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:11	7440-22-4	
Sodium	**60500**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:11	7440-23-5	
Total Hardness by 2340B	**410000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:11		
Zinc	**10.2J**	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:11	7440-66-6	B
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**19.1J**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:20	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:20	7440-36-0	
Barium	**197**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:20	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**586**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		12/24/18 10:26		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**35.4**	mg/L	5.0	1.4	5		01/10/19 19:43	16887-00-6	
Fluoride	**0.47**	mg/L	0.20	0.19	1		01/10/19 19:29	16984-48-8	
Sulfate	**114**	mg/L	20.0	4.8	20		01/10/19 19:57	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-5 **Lab ID: 60290219004** Collected: 12/18/18 15:37 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:11		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.2**	mg/L	1.0	0.65	1		12/27/18 18:26	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-4 **Lab ID: 60290219005** Collected: 12/19/18 09:16 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**44.5J**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 18:51	7440-42-8	
Calcium	**120000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 18:51	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:13	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:13	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:13	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:13	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:13	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:13	7440-50-8	
Iron	**175**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:13	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:13	7439-92-1	
Lithium	**41.5**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:13	7439-93-2	
Magnesium	**38200**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:13	7439-95-4	
Manganese	**106**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:13	7439-96-5	
Molybdenum	**3.2J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:13	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:13	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:13	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:13	7440-22-4	
Sodium	**50000**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:13	7440-23-5	
Total Hardness by 2340B	**458000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:13		
Zinc	ND	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:13	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**15.2J**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:22	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:22	7440-36-0	
Barium	**75.4**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:22	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:22	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**565**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.10	1		12/24/18 10:32		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**29.7**	mg/L	5.0	1.4	5		01/10/19 20:54	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	0.19	1		01/10/19 20:11	16984-48-8	
Sulfate	**83.9**	mg/L	5.0	1.2	5		01/10/19 20:54	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-4 **Lab ID: 60290219005** Collected: 12/19/18 09:16 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:12		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.83J**	mg/L	1.0	0.65	1		12/26/18 18:23	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-3 **Lab ID: 60290219006** Collected: 12/19/18 11:00 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**49.0J**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 19:00	7440-42-8	
Calcium	**112000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 19:00	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:15	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:15	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:15	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:15	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:15	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:15	7440-50-8	
Iron	**17.0J**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:15	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:15	7439-92-1	
Lithium	**32.0**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:15	7439-93-2	
Magnesium	**38000**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:15	7439-95-4	
Manganese	**302**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:15	7439-96-5	
Molybdenum	**5.9J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:15	7439-98-7	
Nickel	**2.4J**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:15	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:15	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:15	7440-22-4	
Sodium	**42600**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:15	7440-23-5	
Total Hardness by 2340B	**434000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:15		
Zinc	ND	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:15	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:23	7429-90-5	B
Antimony	**0.090J**	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:23	7440-36-0	
Barium	**205**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:23	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:34	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**493**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		12/26/18 11:27		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**7.8**	mg/L	1.0	0.29	1		01/08/19 18:08	16887-00-6	
Fluoride	**0.51**	mg/L	0.20	0.19	1		01/08/19 18:08	16984-48-8	
Sulfate	**35.8**	mg/L	5.0	1.2	5		01/08/19 18:22	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-3 **Lab ID: 60290219006** Collected: 12/19/18 11:00 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:12		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.84J**	mg/L	1.0	0.65	1		12/26/18 18:36	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-2 **Lab ID: 60290219007** Collected: 12/19/18 12:53 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**80.4J**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 19:02	7440-42-8	
Calcium	**118000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 19:02	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:18	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:18	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:18	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:18	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:18	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:18	7440-50-8	
Iron	**40.5J**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:18	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:18	7439-92-1	
Lithium	**39.4**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:18	7439-93-2	
Magnesium	**41200**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:18	7439-95-4	
Manganese	**351**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:18	7439-96-5	
Molybdenum	**6.3J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:18	7439-98-7	
Nickel	**2.0J**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:18	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:18	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:18	7440-22-4	
Sodium	**29200**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:18	7440-23-5	
Total Hardness by 2340B	**458000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:18		
Zinc	**28.4J**	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:18	7440-66-6	B
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**12.0J**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:24	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:24	7440-36-0	
Barium	**139**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:24	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:24	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**521**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		12/26/18 11:35		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.0**	mg/L	1.0	0.29	1		01/08/19 18:37	16887-00-6	
Fluoride	**0.55**	mg/L	0.20	0.19	1		01/08/19 18:37	16984-48-8	
Sulfate	**61.5**	mg/L	5.0	1.2	5		01/08/19 18:51	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-2 **Lab ID: 60290219007** Collected: 12/19/18 12:53 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:12		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.76J**	mg/L	1.0	0.65	1		12/26/18 19:15	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: DUP-1 **Lab ID: 60290219008** Collected: 12/19/18 12:53 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**78.9J**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 19:04	7440-42-8	
Calcium	**117000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 19:04	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:20	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:20	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:20	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:20	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:20	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:20	7440-50-8	
Iron	**49.2J**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:20	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:20	7439-92-1	
Lithium	**41.5**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:20	7439-93-2	
Magnesium	**41600**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:20	7439-95-4	
Manganese	**353**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:20	7439-96-5	
Molybdenum	**6.1J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:20	7439-98-7	
Nickel	**1.6J**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:20	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:20	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:20	7440-22-4	
Sodium	**29500**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:20	7440-23-5	
Total Hardness by 2340B	**462000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:20		
Zinc	**28.8J**	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:20	7440-66-6	B
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**10.3J**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:26	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:26	7440-36-0	
Barium	**141**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:26	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:26	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**520**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		12/26/18 11:36		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.1**	mg/L	1.0	0.29	1		01/08/19 19:05	16887-00-6	
Fluoride	**0.54**	mg/L	0.20	0.19	1		01/08/19 19:05	16984-48-8	
Sulfate	**58.5**	mg/L	5.0	1.2	5		01/08/19 19:19	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: DUP-1 **Lab ID: 60290219008** Collected: 12/19/18 12:53 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:13		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.77J**	mg/L	1.0	0.65	1		12/26/18 19:28	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-8 **Lab ID: 60290219009** Collected: 12/19/18 15:22 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**422**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 19:06	7440-42-8	
Calcium	**261000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 19:06	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:22	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:22	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:22	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:22	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:22	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:22	7440-50-8	
Iron	**850**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:22	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:22	7439-92-1	
Lithium	**24.3**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:22	7439-93-2	
Magnesium	**38000**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:22	7439-95-4	
Manganese	**888**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:22	7439-96-5	
Molybdenum	ND	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:22	7439-98-7	
Nickel	**5.2**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:22	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:22	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:22	7440-22-4	
Sodium	**76000**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:22	7440-23-5	
Total Hardness by 2340B	**807000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:22		
Zinc	ND	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:22	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**10.8J**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:30	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:30	7440-36-0	
Barium	**21.9**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:30	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:30	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1240**	mg/L	5.0	5.0	1		12/24/18 07:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.10	1		12/26/18 11:39		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**75.4**	mg/L	5.0	1.4	5		01/08/19 19:48	16887-00-6	
Fluoride	ND	mg/L	0.20	0.19	1		01/08/19 19:33	16984-48-8	
Sulfate	**532**	mg/L	50.0	12.0	50		01/08/19 20:02	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-8 **Lab ID: 60290219009** Collected: 12/19/18 15:22 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:14		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.90J**	mg/L	1.0	0.65	1		12/26/18 20:07	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-1 **Lab ID: 60290219010** Collected: 12/20/18 11:08 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**2310**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 19:09	7440-42-8	
Calcium	**172000**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 19:09	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:24	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:24	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:24	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:24	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:24	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:24	7440-50-8	
Iron	**60.8**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:24	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:24	7439-92-1	
Lithium	**40.3**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:24	7439-93-2	
Magnesium	**43600**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:24	7439-95-4	
Manganese	**207**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:24	7439-96-5	
Molybdenum	**3.7J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:24	7439-98-7	
Nickel	**5.5**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:24	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:24	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:24	7440-22-4	
Sodium	**71400**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:24	7440-23-5	
Total Hardness by 2340B	**599000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:24		
Zinc	ND	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:24	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**12.1J**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:31	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:31	7440-36-0	
Barium	**58.1**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:31	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**816**	mg/L	5.0	5.0	1		12/27/18 17:07		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.10	1		12/26/18 11:51		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**66.3**	mg/L	10.0	2.9	10		01/08/19 21:27	16887-00-6	
Fluoride	**0.45**	mg/L	0.20	0.19	1		01/08/19 20:44	16984-48-8	
Sulfate	**234**	mg/L	50.0	12.0	50		01/08/19 22:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-1 **Lab ID: 60290219010** Collected: 12/20/18 11:08 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	4.8	1		01/03/19 10:14		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	ND	mg/L	1.0	0.65	1		12/26/18 20:20	7440-44-0	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-1 [HEX CR] **Lab ID: 60290219011** Collected: 12/20/18 11:08 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/21/18 10:04	18540-29-9	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: POND SURFACE WATER **Lab ID: 60290219012** Collected: 12/20/18 11:50 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**764**	ug/L	100	12.5	1	01/04/19 09:04	01/08/19 19:15	7440-42-8	
Calcium	**87500**	ug/L	200	53.5	1	01/04/19 09:04	01/08/19 19:15	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	01/04/19 09:04	01/08/19 18:35	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	01/04/19 09:04	01/08/19 18:35	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	01/04/19 09:04	01/08/19 18:35	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	01/04/19 09:04	01/08/19 18:35	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	01/04/19 09:04	01/08/19 18:35	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	01/04/19 09:04	01/08/19 18:35	7440-50-8	
Iron	**386**	ug/L	50.0	6.1	1	01/04/19 09:04	01/08/19 18:35	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	01/04/19 09:04	01/08/19 18:35	7439-92-1	
Lithium	**14.8**	ug/L	10.0	4.6	1	01/04/19 09:04	01/08/19 18:35	7439-93-2	
Magnesium	**18900**	ug/L	50.0	14.0	1	01/04/19 09:04	01/08/19 18:35	7439-95-4	
Manganese	**161**	ug/L	5.0	0.73	1	01/04/19 09:04	01/08/19 18:35	7439-96-5	
Molybdenum	**12.8J**	ug/L	20.0	0.90	1	01/04/19 09:04	01/08/19 18:35	7439-98-7	
Nickel	**2.6J**	ug/L	5.0	1.4	1	01/04/19 09:04	01/08/19 18:35	7440-02-0	
Selenium	**9.9J**	ug/L	15.0	6.1	1	01/04/19 09:04	01/08/19 18:35	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	01/04/19 09:04	01/08/19 18:35	7440-22-4	
Sodium	**33800**	ug/L	500	157	1	01/04/19 09:04	01/08/19 18:35	7440-23-5	
Total Hardness by 2340B	**297000**	ug/L	705	500	1	01/04/19 09:04	01/08/19 18:35		
Zinc	**8.1J**	ug/L	50.0	3.5	1	01/04/19 09:04	01/08/19 18:35	7440-66-6	B
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**1160**	ug/L	50.0	9.5	1	12/28/18 15:04	12/31/18 15:35	7429-90-5	
Antimony	**0.31J**	ug/L	1.0	0.078	1	12/28/18 15:04	12/31/18 15:35	7440-36-0	
Barium	**58.3**	ug/L	1.0	0.28	1	12/28/18 15:04	12/31/18 15:35	7440-39-3	
Thallium	**0.11J**	ug/L	1.0	0.099	1	12/28/18 15:04	12/31/18 15:35	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	12/21/18 13:15	12/24/18 10:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**475**	mg/L	5.0	5.0	1		12/26/18 12:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.2**	Std. Units	0.10	0.10	1		12/26/18 11:57		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		01/09/19 16:34	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**31.8**	mg/L	10.0	2.9	10		01/08/19 23:35	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	0.19	1		01/08/19 22:52	16984-48-8	
Sulfate	**231**	mg/L	50.0	12.0	50		01/08/19 23:49	14808-79-8	

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ANALYTICAL RESULTS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: POND SURFACE WATER **Lab ID: 60290219012** Collected: 12/20/18 11:50 Received: 12/21/18 06:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**11.7**	mg/L	10.0	4.8	1		01/03/19 10:17		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.4**	mg/L	1.0	0.65	1		12/26/18 20:46	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0040	1		12/21/18 10:06	18540-29-9	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 561521 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

METHOD BLANK: 2304731 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.090	12/24/18 10:13	

LABORATORY CONTROL SAMPLE: 2304732

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304733 2304734

Parameter	Units	60290219010 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	4.7	4.6	93	92	75-125	1	20	

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

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 563137 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

METHOD BLANK: 2310445 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	12.5	01/08/19 18:40	
Calcium	ug/L	ND	200	53.5	01/08/19 18:40	

LABORATORY CONTROL SAMPLE: 2310446

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	977	98	85-115	
Calcium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE SAMPLE: 2310447

Parameter	Units	60290219005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	44.5J	1000	1040	100	70-130	
Calcium	ug/L	120000	10000	131000	105	70-130	

MATRIX SPIKE SAMPLE: 2310448

Parameter	Units	60290219010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	2310	1000	3300	100	70-130	
Calcium	ug/L	172000	10000	180000	84	70-130	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 563139 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

METHOD BLANK: 2310455 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	ND	10.0	4.9	01/08/19 17:57	
Beryllium	ug/L	ND	1.0	0.16	01/08/19 17:57	
Cadmium	ug/L	ND	5.0	0.45	01/08/19 17:57	
Chromium	ug/L	ND	5.0	1.1	01/08/19 17:57	
Cobalt	ug/L	ND	5.0	0.87	01/08/19 17:57	
Copper	ug/L	ND	10.0	4.5	01/08/19 17:57	
Iron	ug/L	ND	50.0	6.1	01/08/19 17:57	
Lead	ug/L	ND	10.0	3.0	01/08/19 17:57	
Lithium	ug/L	ND	10.0	4.6	01/08/19 17:57	
Magnesium	ug/L	ND	50.0	14.0	01/08/19 17:57	
Manganese	ug/L	ND	5.0	0.73	01/08/19 17:57	
Molybdenum	ug/L	ND	20.0	0.90	01/08/19 17:57	
Nickel	ug/L	ND	5.0	1.4	01/08/19 17:57	
Selenium	ug/L	ND	15.0	6.1	01/08/19 17:57	
Silver	ug/L	ND	7.0	2.0	01/08/19 17:57	
Sodium	ug/L	203J	500	157	01/08/19 17:57	
Total Hardness by 2340B	ug/L	ND	705	500	01/08/19 17:57	
Zinc	ug/L	10.6J	50.0	3.5	01/08/19 17:57	

LABORATORY CONTROL SAMPLE: 2310456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	912	91	80-120	
Beryllium	ug/L	1000	994	99	80-120	
Cadmium	ug/L	1000	949	95	80-120	
Chromium	ug/L	1000	981	98	80-120	
Cobalt	ug/L	1000	980	98	80-120	
Copper	ug/L	1000	953	95	80-120	
Iron	ug/L	10000	9930	99	80-120	
Lead	ug/L	1000	954	95	80-120	
Lithium	ug/L	1000	972	97	80-120	
Magnesium	ug/L	10000	9900	99	80-120	
Manganese	ug/L	1000	968	97	80-120	
Molybdenum	ug/L	1000	990	99	80-120	
Nickel	ug/L	1000	975	97	80-120	
Selenium	ug/L	1000	957	96	80-120	
Silver	ug/L	500	490	98	80-120	
Sodium	ug/L	10000	10000	100	80-120	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

LABORATORY CONTROL SAMPLE: 2310456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Hardness by 2340B	ug/L		65900			
Zinc	ug/L	1000	978	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2310457 2310458

Parameter	Units	60290219010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	1000	1000	964	958	96	96	75-125	1	20	
Beryllium	ug/L	ND	1000	1000	1000	998	100	100	75-125	1	20	
Cadmium	ug/L	ND	1000	1000	967	958	97	96	75-125	1	20	
Chromium	ug/L	ND	1000	1000	986	986	99	99	75-125	0	20	
Cobalt	ug/L	ND	1000	1000	971	964	97	96	75-125	1	20	
Copper	ug/L	ND	1000	1000	985	982	98	98	75-125	0	20	
Iron	ug/L	60.8	10000	10000	10100	10000	100	100	75-125	0	20	
Lead	ug/L	ND	1000	1000	949	941	95	94	75-125	1	20	
Lithium	ug/L	40.3	1000	1000	1040	1030	100	99	75-125	1	20	
Magnesium	ug/L	43600	10000	10000	54000	53200	104	96	75-125	1	20	
Manganese	ug/L	207	1000	1000	1170	1160	96	95	75-125	1	20	
Molybdenum	ug/L	3.7J	1000	1000	1020	1000	101	100	75-125	1	20	
Nickel	ug/L	5.5	1000	1000	961	954	96	95	75-125	1	20	
Selenium	ug/L	ND	1000	1000	990	983	99	98	75-125	1	20	
Silver	ug/L	ND	500	500	504	502	101	100	75-125	1	20	
Sodium	ug/L	71400	10000	10000	82300	81300	110	100	75-125	1	20	
Total Hardness by 2340B	ug/L	599000			672000	664000				1		
Zinc	ug/L	ND	1000	1000	964	958	96	96	75-125	1	20	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 562369 | Analysis Method: EPA 6020
QC Batch Method: EPA 3010 | Analysis Description: 6020 MET
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

METHOD BLANK: 2308067 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	17.1J	50.0	9.5	12/31/18 15:14	
Antimony	ug/L	ND	1.0	0.078	12/31/18 15:14	
Barium	ug/L	0.29J	1.0	0.28	12/31/18 15:14	
Thallium	ug/L	ND	1.0	0.099	12/31/18 15:14	

LABORATORY CONTROL SAMPLE: 2308068

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	1000	954	95	80-120	
Antimony	ug/L	40	39.1	98	80-120	
Barium	ug/L	40	38.9	97	80-120	
Thallium	ug/L	40	38.0	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2308069 2308070

Parameter	Units	60290219010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	12.1J	1000	1000	964	968	95	96	75-125	0	20	
Antimony	ug/L	ND	40	40	38.5	38.8	96	97	75-125	1	20	
Barium	ug/L	58.1	40	40	97.7	98.2	99	100	75-125	1	20	
Thallium	ug/L	ND	40	40	34.3	34.7	86	87	75-125	1	20	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 561654 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009

METHOD BLANK: 2305387 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	12/24/18 07:46	

LABORATORY CONTROL SAMPLE: 2305388

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 2305389

Parameter	Units	60289846001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3740	3200	16	10	D6

SAMPLE DUPLICATE: 2305390

Parameter	Units	60290219005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	565	569	1	10	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 562013 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60290219012

METHOD BLANK: 2306920 | Matrix: Water
Associated Lab Samples: 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	12/26/18 12:40	

LABORATORY CONTROL SAMPLE: 2306921

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 2306922

Parameter	Units	60290381001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1780	1820	2	10	

SAMPLE DUPLICATE: 2306923

Parameter	Units	60290268001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	416	410	1	10	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 562230 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60290219010

METHOD BLANK: 2307618 | Matrix: Water
Associated Lab Samples: 60290219010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	12/27/18 17:07	

LABORATORY CONTROL SAMPLE: 2307619

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1110	111	80-120	

SAMPLE DUPLICATE: 2307621

Parameter	Units	60290219010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	816	828	1	10	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 561704 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005

SAMPLE DUPLICATE: 2305833

Parameter	Units	60289916002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.6	0	5	H6

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 561884 | Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B | Analysis Description: 4500H+B pH
Associated Lab Samples: 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

SAMPLE DUPLICATE: 2306631

Parameter	Units	60290219006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.1	7.2	0	5	H6

SAMPLE DUPLICATE: 2306632

Parameter	Units	60290219010 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.0	0	5	H6

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 563112 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60290219001, 60290219002

METHOD BLANK: 2310323 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.29	01/03/19 10:45	
Fluoride	mg/L	ND	0.20	0.19	01/03/19 10:45	
Sulfate	mg/L	ND	1.0	0.24	01/03/19 10:45	

LABORATORY CONTROL SAMPLE: 2310324

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	103	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2310325 2310326

Parameter	Units	60290306001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1120	500	500	1630	1690	104	114	90-110	3	15	M1
Fluoride	mg/L	ND	250	250	252	261	101	104	90-110	3	15	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 563113 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

METHOD BLANK: 2313822 | Matrix: Water
Associated Lab Samples: 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.29	01/08/19 11:41	
Fluoride	mg/L	ND	0.20	0.19	01/08/19 11:41	
Sulfate	mg/L	ND	1.0	0.24	01/08/19 11:41	

LABORATORY CONTROL SAMPLE: 2313823

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	9.6	96	90-110	
Fluoride	mg/L	5	5.1	102	90-110	
Sulfate	mg/L	10	10	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2310330 2310331

Parameter	Units	60290219010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	66.3	50	50	116	114	100	96	90-110	2	15	
Fluoride	mg/L	0.45	2.5	2.5	3.0	3.0	102	104	90-110	1	15	
Sulfate	mg/L	234	250	250	477	477	97	97	90-110	0	15	

MATRIX SPIKE SAMPLE: 2310332

Parameter	Units	60290846001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	123	50	174	103	90-110	
Fluoride	mg/L	1.1	2.5	3.7	103	90-110	
Sulfate	mg/L	610	250	871	104	90-110	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 564123 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60290219003, 60290219004, 60290219005

METHOD BLANK: 2314466 | Matrix: Water
Associated Lab Samples: 60290219003, 60290219004, 60290219005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.29	01/10/19 15:10	
Fluoride	mg/L	ND	0.20	0.19	01/10/19 15:10	
Sulfate	mg/L	ND	1.0	0.24	01/10/19 15:10	

LABORATORY CONTROL SAMPLE: 2314467

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.3	92	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2314468 2314469

Parameter	Units	60290219003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	178	100	100	283	277	106	99	90-110	2	15	
Fluoride	mg/L	0.36	2.5	2.5	2.9	3.0	103	104	90-110	1	15	
Sulfate	mg/L	326	250	250	573	571	99	98	90-110	0	15	

MATRIX SPIKE SAMPLE: 2314470

Parameter	Units	60291201005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	24100	25000	49400	101	90-110	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 562769 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

METHOD BLANK: 2309442 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	4.8	01/03/19 10:04	

LABORATORY CONTROL SAMPLE: 2309443

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	47.5	95	90-110	

MATRIX SPIKE SAMPLE: 2309444

Parameter	Units	60290614002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	47.7	50	98.8	102	90-110	

MATRIX SPIKE SAMPLE: 2309446

Parameter	Units	60290219010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	52.4	105	90-110	

SAMPLE DUPLICATE: 2309445

Parameter	Units	60290695002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	18.5	19.0	3	25	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 561911 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60290219001, 60290219005, 60290219006, 60290219007, 60290219008

METHOD BLANK: 2306685 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219005, 60290219006, 60290219007, 60290219008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	12/26/18 11:32	

LABORATORY CONTROL SAMPLE: 2306686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	4.9	98	80-120	

MATRIX SPIKE SAMPLE: 2306687

Parameter	Units	60290302004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5.2	10	14.2	91	80-120	

SAMPLE DUPLICATE: 2306688

Parameter	Units	60290240002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	141	142	0	25	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 561913 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60290219009, 60290219010, 60290219012

METHOD BLANK: 2306689 | Matrix: Water
Associated Lab Samples: 60290219009, 60290219010, 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	12/26/18 19:41	

LABORATORY CONTROL SAMPLE: 2306690

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

MATRIX SPIKE SAMPLE: 2306691

Parameter	Units	60290219010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	ND	5	5.4	97	80-120	

SAMPLE DUPLICATE: 2306692

Parameter	Units	60290219012 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	2.4	2.3	2	25	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 562234 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60290219002, 60290219003, 60290219004

METHOD BLANK: 2307635 | Matrix: Water
Associated Lab Samples: 60290219002, 60290219003, 60290219004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.65	12/27/18 17:08	

LABORATORY CONTROL SAMPLE: 2307636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.0	99	80-120	

MATRIX SPIKE SAMPLE: 2307637

Parameter	Units	60290219002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	1.0	5	5.6	91	80-120	

SAMPLE DUPLICATE: 2307638

Parameter	Units	60290219003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	2.3	2.2	1	25	

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QUALITY CONTROL DATA

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 561451 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60290219011, 60290219012

METHOD BLANK: 2304388 | Matrix: Water
Associated Lab Samples: 60290219011, 60290219012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0040	12/21/18 10:04	

LABORATORY CONTROL SAMPLE: 2304389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.1	0.10	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304390 2304391

Parameter	Units	60290219011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.1	0.1	0.093	0.093	93	93	85-115	0	20	

SAMPLE DUPLICATE: 2304392

Parameter	Units	60290219011 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-6 **Lab ID: 60290219001** Collected: 12/18/18 10:20 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.21 ± 0.686 (0.777)** **C:NA T:83%**	pCi/L	01/07/19 10:33	13982-63-3	
Radium-228	EPA 904.0	**0.613 ± 0.470 (0.934)** **C:78% T:77%**	pCi/L	01/09/19 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.82 ± 1.16 (1.71)**	pCi/L	01/10/19 13:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-7 **Lab ID: 60290219002** Collected: 12/18/18 11:58 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.975 ± 0.596 (0.701)** **C:NA T:91%**	pCi/L	01/07/19 10:33	13982-63-3	
Radium-228	EPA 904.0	**0.324 ± 0.356 (0.745)** **C:83% T:84%**	pCi/L	01/09/19 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.30 ± 0.952 (1.45)**	pCi/L	01/10/19 13:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: PZ-2 **Lab ID: 60290219003** Collected: 12/18/18 14:09 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.827 ± 0.600 (0.778)** **C:NA T:88%**	pCi/L	01/07/19 10:33	13982-63-3	
Radium-228	EPA 904.0	**0.291 ± 0.368 (0.781)** **C:79% T:83%**	pCi/L	01/09/19 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.968 (1.56)**	pCi/L	01/10/19 13:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-5 **Lab ID: 60290219004** Collected: 12/18/18 15:37 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.651 ± 0.572 (0.780)** **C:NA T:86%**	pCi/L	01/07/19 10:54	13982-63-3	
Radium-228	EPA 904.0	**0.692 ± 0.419 (0.782)** **C:77% T:83%**	pCi/L	01/09/19 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 0.991 (1.56)**	pCi/L	01/10/19 13:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-4 **Lab ID: 60290219005** Collected: 12/19/18 09:16 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.838 ± 0.613 (0.781)** **C:NA T:81%**	pCi/L	01/07/19 10:54	13982-63-3	
Radium-228	EPA 904.0	**0.323 ± 0.435 (0.933)** **C:78% T:80%**	pCi/L	01/09/19 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.16 ± 1.05 (1.71)**	pCi/L	01/10/19 13:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-3 **Lab ID: 60290219006** Collected: 12/19/18 11:00 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.747 ± 0.577 (0.751)** **C:NA T:88%**	pCi/L	01/07/19 10:54	13982-63-3	
Radium-228	EPA 904.0	**0.590 ± 0.412 (0.800)** **C:80% T:82%**	pCi/L	01/09/19 16:08	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 0.989 (1.55)**	pCi/L	01/10/19 13:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-2 **Lab ID: 60290219007** Collected: 12/19/18 12:53 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.906 ± 0.691 (0.912)** **C:NA T:80%**	pCi/L	01/07/19 10:54	13982-63-3	
Radium-228	EPA 904.0	**0.405 ± 0.374 (0.763)** **C:79% T:81%**	pCi/L	01/09/19 16:08	15262-20-1	
Total Radium	Total Radium Calculation	**1.31 ± 1.07 (1.68)**	pCi/L	01/10/19 13:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: DUP-1 **Lab ID: 60290219008** Collected: 12/19/18 12:53 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.757 ± 0.554 (0.705)** **C:NA T:90%**	pCi/L	01/07/19 10:54	13982-63-3	
Radium-228	EPA 904.0	**0.327 ± 0.330 (0.679)** **C:76% T:83%**	pCi/L	01/09/19 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.08 ± 0.884 (1.38)**	pCi/L	01/10/19 13:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-8 **Lab ID: 60290219009** Collected: 12/19/18 15:22 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.904 ± 0.570 (0.649)** **C:NA T:86%**	pCi/L	01/07/19 10:54	13982-63-3	
Radium-228	EPA 904.0	**0.602 ± 0.399 (0.762)** **C:78% T:84%**	pCi/L	01/09/19 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.51 ± 0.969 (1.41)**	pCi/L	01/10/19 13:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-1 **Lab ID: 60290219010** Collected: 12/20/18 11:08 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.831 ± 0.578 (0.720)** **C:NA T:88%**	pCi/L	01/07/19 10:54	13982-63-3	
Radium-228	EPA 904.0	**0.729 ± 0.434 (0.790)** **C:73% T:76%**	pCi/L	01/09/19 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.56 ± 1.01 (1.51)**	pCi/L	01/10/19 13:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: POND SURFACE WATER **Lab ID: 60290219012** Collected: 12/20/18 11:50 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.438 ± 0.665 (1.04) C:NA T:78%**	pCi/L	01/07/19 10:54	13982-63-3	
Radium-228	EPA 904.0	**-0.0411 ± 0.413 (0.977) C:75% T:64%**	pCi/L	01/09/19 16:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.438 ± 1.08 (2.02)**	pCi/L	01/10/19 13:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-1 MS **Lab ID: 60290219013** Collected: 12/20/18 11:08 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**100.01 %REC ± NA (NA) C:NA T:NA**	pCi/L	01/07/19 11:15	13982-63-3	
Radium-228	EPA 904.0	**87.34 %REC ± NA (NA) C:NA T:NA**	pCi/L	01/09/19 16:08	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Sample: MW-1 MSD **Lab ID: 60290219014** Collected: 12/20/18 11:08 Received: 12/21/18 06:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**99.16 %REC 0.85 RPD ± NA (NA) C:NA T:NA**	pCi/L	01/07/19 11:15	13982-63-3	
Radium-228	EPA 904.0	**84.51 %REC 3.29 RPD ± NA (NA) C:NA T:NA**	pCi/L	01/09/19 16:08	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 325734 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012, 60290219013, 60290219014

METHOD BLANK: 1586950 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012, 60290219013, 60290219014

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.371 ± 0.360 (0.479) C:NA T:87%	pCi/L	01/07/19 10:09	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

QC Batch: 325742 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012, 60290219013, 60290219014

METHOD BLANK: 1586960 | Matrix: Water
Associated Lab Samples: 60290219001, 60290219002, 60290219003, 60290219004, 60290219005, 60290219006, 60290219007, 60290219008, 60290219009, 60290219010, 60290219012, 60290219013, 60290219014

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0617 ± 0.360 (0.827) C:79% T:72%	pCi/L	01/09/19 16:08	

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QUALIFIERS

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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 (%)

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TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60290219001	**MW-6**	EPA 200.7	563137	EPA 200.7	563273
60290219002	**MW-7**	EPA 200.7	563137	EPA 200.7	563273
60290219003	**PZ-2**	EPA 200.7	563137	EPA 200.7	563273
60290219004	**MW-5**	EPA 200.7	563137	EPA 200.7	563273
60290219005	**MW-4**	EPA 200.7	563137	EPA 200.7	563273
60290219006	**MW-3**	EPA 200.7	563137	EPA 200.7	563273
60290219007	**MW-2**	EPA 200.7	563137	EPA 200.7	563273
60290219008	**DUP-1**	EPA 200.7	563137	EPA 200.7	563273
60290219009	**MW-8**	EPA 200.7	563137	EPA 200.7	563273
60290219010	**MW-1**	EPA 200.7	563137	EPA 200.7	563273
60290219012	**POND SURFACE WATER**	EPA 200.7	563137	EPA 200.7	563273
60290219001	**MW-6**	EPA 3010	563139	EPA 6010	563274
60290219002	**MW-7**	EPA 3010	563139	EPA 6010	563274
60290219003	**PZ-2**	EPA 3010	563139	EPA 6010	563274
60290219004	**MW-5**	EPA 3010	563139	EPA 6010	563274
60290219005	**MW-4**	EPA 3010	563139	EPA 6010	563274
60290219006	**MW-3**	EPA 3010	563139	EPA 6010	563274
60290219007	**MW-2**	EPA 3010	563139	EPA 6010	563274
60290219008	**DUP-1**	EPA 3010	563139	EPA 6010	563274
60290219009	**MW-8**	EPA 3010	563139	EPA 6010	563274
60290219010	**MW-1**	EPA 3010	563139	EPA 6010	563274
60290219012	**POND SURFACE WATER**	EPA 3010	563139	EPA 6010	563274
60290219001	**MW-6**	EPA 3010	562369	EPA 6020	562521
60290219002	**MW-7**	EPA 3010	562369	EPA 6020	562521
60290219003	**PZ-2**	EPA 3010	562369	EPA 6020	562521
60290219004	**MW-5**	EPA 3010	562369	EPA 6020	562521
60290219005	**MW-4**	EPA 3010	562369	EPA 6020	562521
60290219006	**MW-3**	EPA 3010	562369	EPA 6020	562521
60290219007	**MW-2**	EPA 3010	562369	EPA 6020	562521
60290219008	**DUP-1**	EPA 3010	562369	EPA 6020	562521
60290219009	**MW-8**	EPA 3010	562369	EPA 6020	562521
60290219010	**MW-1**	EPA 3010	562369	EPA 6020	562521
60290219012	**POND SURFACE WATER**	EPA 3010	562369	EPA 6020	562521
60290219001	**MW-6**	EPA 7470	561521	EPA 7470	561593
60290219002	**MW-7**	EPA 7470	561521	EPA 7470	561593
60290219003	**PZ-2**	EPA 7470	561521	EPA 7470	561593
60290219004	**MW-5**	EPA 7470	561521	EPA 7470	561593
60290219005	**MW-4**	EPA 7470	561521	EPA 7470	561593
60290219006	**MW-3**	EPA 7470	561521	EPA 7470	561593
60290219007	**MW-2**	EPA 7470	561521	EPA 7470	561593
60290219008	**DUP-1**	EPA 7470	561521	EPA 7470	561593
60290219009	**MW-8**	EPA 7470	561521	EPA 7470	561593
60290219010	**MW-1**	EPA 7470	561521	EPA 7470	561593
60290219012	**POND SURFACE WATER**	EPA 7470	561521	EPA 7470	561593
60290219001	**MW-6**	EPA 903.1	325734		
60290219002	**MW-7**	EPA 903.1	325734		
60290219003	**PZ-2**	EPA 903.1	325734		

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60290219004	**MW-5**	EPA 903.1	325734		
60290219005	**MW-4**	EPA 903.1	325734		
60290219006	**MW-3**	EPA 903.1	325734		
60290219007	**MW-2**	EPA 903.1	325734		
60290219008	**DUP-1**	EPA 903.1	325734		
60290219009	**MW-8**	EPA 903.1	325734		
60290219010	**MW-1**	EPA 903.1	325734		
60290219012	**POND SURFACE WATER**	EPA 903.1	325734		
60290219013	**MW-1 MS**	EPA 903.1	325734		
60290219014	**MW-1 MSD**	EPA 903.1	325734		
60290219001	**MW-6**	EPA 904.0	325742		
60290219002	**MW-7**	EPA 904.0	325742		
60290219003	**PZ-2**	EPA 904.0	325742		
60290219004	**MW-5**	EPA 904.0	325742		
60290219005	**MW-4**	EPA 904.0	325742		
60290219006	**MW-3**	EPA 904.0	325742		
60290219007	**MW-2**	EPA 904.0	325742		
60290219008	**DUP-1**	EPA 904.0	325742		
60290219009	**MW-8**	EPA 904.0	325742		
60290219010	**MW-1**	EPA 904.0	325742		
60290219012	**POND SURFACE WATER**	EPA 904.0	325742		
60290219013	**MW-1 MS**	EPA 904.0	325742		
60290219014	**MW-1 MSD**	EPA 904.0	325742		
60290219001	**MW-6**	Total Radium Calculation	326480		
60290219002	**MW-7**	Total Radium Calculation	326480		
60290219003	**PZ-2**	Total Radium Calculation	326480		
60290219004	**MW-5**	Total Radium Calculation	326480		
60290219005	**MW-4**	Total Radium Calculation	326480		
60290219006	**MW-3**	Total Radium Calculation	326480		
60290219007	**MW-2**	Total Radium Calculation	326480		
60290219008	**DUP-1**	Total Radium Calculation	326480		
60290219009	**MW-8**	Total Radium Calculation	326481		
60290219010	**MW-1**	Total Radium Calculation	326481		
60290219012	**POND SURFACE WATER**	Total Radium Calculation	326481		
60290219001	**MW-6**	SM 2540C	561654		
60290219002	**MW-7**	SM 2540C	561654		
60290219003	**PZ-2**	SM 2540C	561654		
60290219004	**MW-5**	SM 2540C	561654		
60290219005	**MW-4**	SM 2540C	561654		
60290219006	**MW-3**	SM 2540C	561654		
60290219007	**MW-2**	SM 2540C	561654		
60290219008	**DUP-1**	SM 2540C	561654		
60290219009	**MW-8**	SM 2540C	561654		
60290219010	**MW-1**	SM 2540C	562230		
60290219012	**POND SURFACE WATER**	SM 2540C	562013		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60290219001	**MW-6**	SM 4500-H+B	561704		
60290219002	**MW-7**	SM 4500-H+B	561704		
60290219003	**PZ-2**	SM 4500-H+B	561704		
60290219004	**MW-5**	SM 4500-H+B	561704		
60290219005	**MW-4**	SM 4500-H+B	561704		
60290219006	**MW-3**	SM 4500-H+B	561884		
60290219007	**MW-2**	SM 4500-H+B	561884		
60290219008	**DUP-1**	SM 4500-H+B	561884		
60290219009	**MW-8**	SM 4500-H+B	561884		
60290219010	**MW-1**	SM 4500-H+B	561884		
60290219012	**POND SURFACE WATER**	SM 4500-H+B	561884		
60290219001	**MW-6**	Trivalent Chromium Calculation	563984		
60290219002	**MW-7**	Trivalent Chromium Calculation	563984		
60290219003	**PZ-2**	Trivalent Chromium Calculation	563984		
60290219004	**MW-5**	Trivalent Chromium Calculation	563984		
60290219005	**MW-4**	Trivalent Chromium Calculation	563984		
60290219006	**MW-3**	Trivalent Chromium Calculation	563984		
60290219007	**MW-2**	Trivalent Chromium Calculation	563984		
60290219008	**DUP-1**	Trivalent Chromium Calculation	563984		
60290219009	**MW-8**	Trivalent Chromium Calculation	563984		
60290219010	**MW-1**	Trivalent Chromium Calculation	563984		
60290219012	**POND SURFACE WATER**	Trivalent Chromium Calculation	563984		
60290219001	**MW-6**	EPA 300.0	563112		
60290219002	**MW-7**	EPA 300.0	563112		
60290219003	**PZ-2**	EPA 300.0	564123		
60290219004	**MW-5**	EPA 300.0	564123		
60290219005	**MW-4**	EPA 300.0	564123		
60290219006	**MW-3**	EPA 300.0	563113		
60290219007	**MW-2**	EPA 300.0	563113		
60290219008	**DUP-1**	EPA 300.0	563113		
60290219009	**MW-8**	EPA 300.0	563113		
60290219010	**MW-1**	EPA 300.0	563113		
60290219012	**POND SURFACE WATER**	EPA 300.0	563113		
60290219001	**MW-6**	EPA 410.4	562769		
60290219002	**MW-7**	EPA 410.4	562769		
60290219003	**PZ-2**	EPA 410.4	562769		
60290219004	**MW-5**	EPA 410.4	562769		
60290219005	**MW-4**	EPA 410.4	562769		

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: More's Lake Columbia, MO
Pace Project No.: 60290219

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60290219006	**MW-3**	EPA 410.4	562769		
60290219007	**MW-2**	EPA 410.4	562769		
60290219008	**DUP-1**	EPA 410.4	562769		
60290219009	**MW-8**	EPA 410.4	562769		
60290219010	**MW-1**	EPA 410.4	562769		
60290219012	**POND SURFACE WATER**	EPA 410.4	562769		
60290219001	**MW-6**	SM 5310C	561911		
60290219002	**MW-7**	SM 5310C	562234		
60290219003	**PZ-2**	SM 5310C	562234		
60290219004	**MW-5**	SM 5310C	562234		
60290219005	**MW-4**	SM 5310C	561911		
60290219006	**MW-3**	SM 5310C	561911		
60290219007	**MW-2**	SM 5310C	561911		
60290219008	**DUP-1**	SM 5310C	561911		
60290219009	**MW-8**	SM 5310C	561913		
60290219010	**MW-1**	SM 5310C	561913		
60290219012	**POND SURFACE WATER**	SM 5310C	561913		
60290219011	**MW-1 [HEX CR]**	EPA 7196	561451		
60290219012	**POND SURFACE WATER**	EPA 7196	561451		

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Sample Condition Upon Receipt

WO# : 60290219

60290219

Client Name: Burns & McDonnell

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 ☒ Zip lc

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.6 **Corr. Factor** +0.2 **Corrected** 1.8

Date and initials of person examining contents: 12-21-18 [illegible]

Temperature should be above freezing to 6°C 1.8, 2.2, 0.2, 3.3 2.0, 2.4, 0.4, 3.5

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	CR+6, 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$_2$SO$_4$, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JWS Date: 12/21/18

F-KS-C-003-Rev.11, February 28, 2018

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A — Required Client Information:

Company:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B — Required Project Information:

Report To:	Brian Weis
Copy To:	Chris Hoglund
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency	State / Location
	MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION (C°)	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N): 300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn	60290219
1	mw-6 BP3U,2BP1N,AG2S	WT	G	18Dec18	9:50A	18Dec18	10:20A	15.8	7	2	2	3		BP2U,BP3N				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	AG3S		01
2	mw-7	WT	G	18Dec18	11:26A	18Dec18	11:58A	16.5	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			02
3	PZ-2	WT	G	18Dec18	1:37P	18Dec18	2:08P	16.0	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			03
4	mw-5	WT	G	18Dec18	3:06P	18Dec18	3:37P	15.7	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			04
5	mw-4	WT	G	19Dec18	8:42A	19Dec18	9:16A	14.0	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			05
6	mw-3	WT	G	19Dec18	10:23A	19Dec18	11:00A	13.9	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			06
7	mw-2	WT	G	19Dec18	11:49A	19Dec18	12:53P	15.2	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			07
8	Dup-1	WT	G	19Dec18	11:49A	19Dec18	12:53P	15.2	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			08
9	mw-8	WT	G	19Dec18	2:48P	19Dec18	3:22P	15.8	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			09
10	mw-1	WT	G	20Dec18	9:19A	20Dec18	11:08A	14.7	7	2	2	3						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			010
11	mw-1	WT	G	20Dec18	11:00A	20Dec	11:08A	14.7	1	1															✓							011
12	MS 2BP1N,AG2S	WT	G	20Dec18	9:19A	20Dec18	11:08A	14.7	7	2	2	3		BP2U,BP3N				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	AG3S		010

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
TOX EDD needed	Richard Bedford EST&S	20Dec18	1:15pm	David Kilgore EST&S	20Dec18	1:15PM
J-flags on - include MDLs on report.	David Kilgore EST&S	20Dec18	4:15pm	Brian Mullen	12/20/18	4:15PM
				W Cipt / PGS	12-21-18	0610

SAMPLE CONDITIONS			
TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1.2 2.0 2.4 0.4	Y	Y	Y
3.5	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore / Richard Bedford

SIGNATURE of SAMPLER: David Kilgore / Richard Bedford

DATE Signed: 20 Dec 18

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

Section A — Required Client Information:

Company:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bwels@burnsmcd.com
Phone:	816-333-9400 Fax:
Requested Due Date:	

Section B — Required Project Information:

Report To:	Brian Wels
Copy To:	Chris Hoglund
Purchase Order #	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency	State / Location
	MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOL	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn	6029004
1	MS AG3S BP3U	WT	G	20Dec18	11:00A	20Dec18	11:08	14.7	1	1			2BP1N		AG2S											✓					BP2U, BP3U		011
2	MS D	WT	C	20Dec18	9:19A	20Dec18	11:08A	14.7	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			010
3	MS D	WT	G	20Dec18	11:00A	20Dec18	11:08A	14.7	1	1																✓							011
4	Pond surface water 2BP3U	WT	G	20Dec18	11:50A	AG3S		6.5	8	3	2	3	2BP1N, AG2S						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	BP2U, BP3U		012
5																																	
6																																	
7																																	
8																																	
9																																	
10																																	
11																																	
12																																	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
TOX EDD needed	Richard Bedford ESS	20Dec18	1:15pm	David Kilgore ESTS	20Dec18	1:15PM
J-flags on - include MDLs on report.	David Kilgore ESTS	20Dec18	4:15pm	Blinn Lechner	12/20/18	4:15PM
				Wzipf Hosi	12-21-18	0610

SAMPLE CONDITIONS

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1.8	Y	Y	Y
2.0			
2.4			
0.4			
3.5	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Richard Bedford

SIGNATURE of SAMPLER: Richard Bedford DATE Signed: 20 Dec 18

ANALYTICAL REPORT

January 02, 2019

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L1055859
Samples Received:	12/22/2018
Project Number:	60290219
Description:	More's Lake Columbia, MO
Site:	001
Report To:	Jeffrey Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By:

Jason Romer
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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1 Cp
2 Tc
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MW-6 L1055859-01 GW

Collected by	Collected date/time	Received date/time
	12/18/18 10:20	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 12:03	12/27/18 12:03	EEM

MW-7 L1055859-02 GW

Collected by	Collected date/time	Received date/time
	12/18/18 11:58	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 12:24	12/27/18 12:24	EEM

PZ-2 L1055859-03 GW

Collected by	Collected date/time	Received date/time
	12/18/18 14:09	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 12:33	12/27/18 12:33	EEM

MW-5 L1055859-04 GW

Collected by	Collected date/time	Received date/time
	12/18/18 15:37	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 12:42	12/27/18 12:42	EEM

MW-4 L1055859-05 GW

Collected by	Collected date/time	Received date/time
	12/19/18 09:15	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 12:52	12/27/18 12:52	EEM

MW-3 L1055859-06 GW

Collected by	Collected date/time	Received date/time
	12/19/18 11:00	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 13:03	12/27/18 13:03	EEM

MW-2 L1055859-07 GW

Collected by	Collected date/time	Received date/time
	12/19/18 12:53	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 13:20	12/27/18 13:20	EEM

DUP-1 L1055859-08 GW

Collected by	Collected date/time	Received date/time
	12/19/18 12:53	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 13:53	12/27/18 13:53	EEM

MW-8 L1055859-09 GW

Collected by	Collected date/time	Received date/time
	12/19/18 15:22	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 14:01	12/27/18 14:01	EEM

MW-1 L1055859-10 GW

Collected by	Collected date/time	Received date/time
	12/20/18 11:08	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 14:12	12/27/18 14:12	EEM

POND SURFACE WATER L1055859-11 GW

Collected by	Collected date/time	Received date/time
	12/20/18 11:50	12/22/18 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9020B	WG1216057	1	12/27/18 14:46	12/27/18 14:46	EEM

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

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

Jason Romer
Project Manager

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	16.0	J P1	12.0	100	1	12/27/2018 12:03	WG1216057

Sample Narrative:

L1055859-01 WG1216057: 1. Parent/DUP BDL.

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	12/27/2018 12:24	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	60.6	J	12.0	100	1	12/27/2018 12:33	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	15.4	J	12.0	100	1	12/27/2018 12:42	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	12/27/2018 12:52	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	12/27/2018 13:03	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	12/27/2018 13:20	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	12/27/2018 13:53	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	20.2	J	12.0	100	1	12/27/2018 14:01	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U	J3 J5	12.0	100	1	12/27/2018 14:12	WG1216057

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U	P1	12.0	100	1	12/27/2018 14:46	WG1216057

Sample Narrative:

L1055859-11 WG1216057: 1. Parent/DUP BDL.

Method Blank (MB)

(MB) R3371995-1 12/27/18 11:44

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	U		12.0	100

L1055859-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1055859-01 12/27/18 12:03 • (DUP) R3371995-4 12/27/18 12:13

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	16.0	22.0	1	31.7	J P1	20

Sample Narrative:

OS: 1. Parent/DUP BDL.

L1055859-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1055859-11 12/27/18 14:46 • (DUP) R3371995-8 12/27/18 14:55

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	13.0	1	200	J P1	20

Sample Narrative:

OS: 1. Parent/DUP BDL.

Laboratory Control Sample (LCS)

(LCS) R3371995-2 12/27/18 11:53

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOX	200	189	94.3	85.0-115	

L1055859-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1055859-10 12/27/18 14:12 • (MS) R3371995-5 12/27/18 14:22 • (MSD) R3371995-7 12/27/18 14:37

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	U	365	262	122	87.4	1	80.0-120	J5	J3	32.7	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

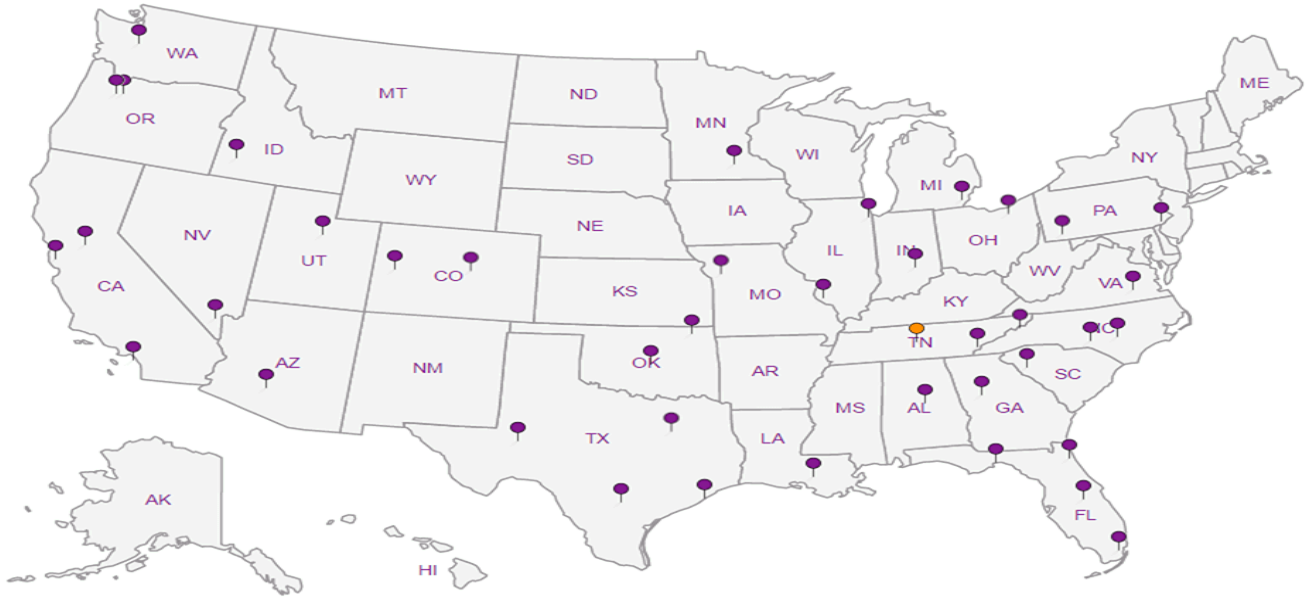
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



L1055859

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60290219 **Workorder Name:** More's Lake Columbia, MO **Results Requested By:** 1/15/2019

Report / Invoice To	Subcontract To
Jeffrey Shopper Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1408 Email: jeff.shopper@pacelabs.com	Pace Analytical National 12065 Lebanon Road Mt Juliet, TN 37122 P.O. SUB-9660

State of Sample Origin: MO

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4						Requested Analysis: TOX												LAB USE ONLY
1	MW-6	12/18/2018 10:20	60290219001	Water	1						X												-01
2	MW-7	12/18/2018 11:58	60290219002	Water	1						X												-02
3	PZ-2	12/18/2018 14:09	60290219003	Water	1						X												-03
4	MW-5	12/18/2018 15:37	60290219004	Water	1						X												-04
5	MW-4	12/19/2018 09:16	60290219005	Water	1						X												-05
6	MW-3	12/19/2018 11:00	60290219006	Water	1						X												-06
7	MW-2	12/19/2018 12:53	60290219007	Water	1						X												-07
8	DUP-1	12/19/2018 12:53	60290219008	Water	1						X												-08
9	MW-8	12/19/2018 15:22	60290219009	Water	1						X												-09
10	MW-1	12/20/2018 11:08	60290219010	Water	~~1~~	3					X												RQS -10
11	POND SURFACE WATER	12/20/2018 11:50	60290219012	Water	1						X												-11
12																							
13																							
14																							
15																							

0.3-.2=0.1 AM M COCSI

RAD SCREEN: <0.5 ...

SUBOUT SAMPLES

L1055859

Completed by Project Manager:

Sub out within Pace Office:

Containers to be sent:

X Sub out outside of Pace

Laboratory: Pace Analytical National

Shipping Address: 12065 Lebanon Rd
Mt Juliet, TN 37122

Containers to be sent: 11-AG2S

Pace Purchase Order Number: SUB-9660

Project Number 60290219

Project Due Date: 1/15/2018

PM Initials: JNS

Sample #	Quanti	Matrix	Test (Description)	Unit Price	Containers to send
60290219-001-010	10	Water	TOX	$1,045.00	11-AG2S
60290219-012	1	Water	TOX		
				$1,045.00	

TOTALS

Receiving lab (80%)	Sending Lab (20%)	Total
$836.00	$209.00	1,045

Initials of Person Placing Work: CNW

Initials of Person Sending Samples:

Contact in other Lab: Nancy McClain

Phone Number: 615-758-5858 ext 9710

Date Sent: 12/21/2018

Courier Used:

Tracking Number: 4746 8739 1519

TRK# 4746 8739 1519

0.3-.2=0.1 mM COCSA

AD SCREEN: <0.5 mR/hr

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: PA ELKS	SDG#	L1055859
Cooler Received/Opened On: 12/ 22 /18	Temperature:	0.1
Received By: Thomas Virden		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

L1055859

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	EBrockett/Pace	12/21/18 1800			
2					
3			[illegible] 12/22/18	09:10	

Cooler Temperature on Receipt 0.3-2=°C	Custody Seal (Y) or N	Received on Ice Y or N	Samples Intact Y or N

0.1 mm/m

RAD SCREEN: <0.5 mR/hr

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

March 19, 2019

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 2019. 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,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116 / E10426
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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(913)599-5665

SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60296523001	**MW-6**	Water	03/12/19 10:36	03/13/19 06:00
60296523002	**MW-7**	Water	03/12/19 11:53	03/13/19 06:00
60296523003	**PZ-2**	Water	03/12/19 13:52	03/13/19 06:00
60296523004	**MW-5**	Water	03/12/19 15:02	03/13/19 06:00
60296523005	**PZ-2**	Water	03/12/19 13:52	03/13/19 06:00

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60296523001	**MW-6**	EPA 7196	RAD	1	PASI-K
60296523002	**MW-7**	EPA 7196	RAD	1	PASI-K
60296523004	**MW-5**	EPA 7196	RAD	1	PASI-K
60296523005	**PZ-2**	EPA 7196	RAD	1	PASI-K

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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: March 19, 2019

General Information:
4 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Sample: MW-6 **Lab ID: 60296523001** Collected: 03/12/19 10:36 Received: 03/13/19 06:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/13/19 09:03	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Sample: MW-7 **Lab ID: 60296523002** Collected: 03/12/19 11:53 Received: 03/13/19 06:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/13/19 09:05	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Sample: MW-5 **Lab ID: 60296523004** Collected: 03/12/19 15:02 Received: 03/13/19 06:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/13/19 09:00	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Sample: PZ-2 **Lab ID: 60296523005** Collected: 03/12/19 13:52 Received: 03/13/19 06:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/13/19 09:02	18540-29-9	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

QC Batch: 573330 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60296523001, 60296523002, 60296523004, 60296523005

METHOD BLANK: 2351617 | Matrix: Water
Associated Lab Samples: 60296523001, 60296523002, 60296523004, 60296523005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0031	03/13/19 08:52	

LABORATORY CONTROL SAMPLE: 2351618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.1	0.096	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2351619 2351620

Parameter	Units	60296523004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.1	0.1	0.098	0.097	98	97	85-115	1	20	

SAMPLE DUPLICATE: 2351621

Parameter	Units	60296523005 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		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.

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296523

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60296523001	**MW-6**	EPA 7196	573330		
60296523002	**MW-7**	EPA 7196	573330		
60296523004	**MW-5**	EPA 7196	573330		
60296523005	**PZ-2**	EPA 7196	573330		

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Pace Analytical
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Sample Condition Upon Receipt

WO# : 60296523

60296523

Client Name: Burns + McDonnell

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 ☒ Zplc

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.9 **Corr. Factor** +0.4 **Corrected** 2.3

Date and initials of person examining contents: 3.13.19 dt

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	CR+6
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: _____

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B — Required Project Information:

Report To:	Brian Weis
Copy To:	Chris Hoglund
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency	
State / Location	
	MO

MATRIX CODE (see valid codes to left): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

SAMPLE TYPE (G=GRAB C=COMP)

Preservatives: Unpreserved, H2SO4, HNO3, HCl, NaOH, Na2S2O3, Methanol, Other

Requested Analysis Filtered (Y/N): 300.0 SO4,Cl,F; TOC; COD; TDS by 2540C; 6010 Metals** Thallium by 6020; Mercury; Hardness; Hexavalent Chromium**SHORT HOLD; Trivalent Chromium Calc; TOX; Radium 226/228 (include combined); pH; Residual Chlorine (Y/N); **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn

60296523

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE	SAMPLE TYPE	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION (°C)	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-6 BP3U	WT	G	12Mar19	10:02A	12Mar19	10:36A	14.4	1	1																✓					
2	MW-7	WT	G	12Mar19	11:20A	12Mar19	11:53A	13.7	1	1																✓					
3	PZ-2	WT	G	12Mar19	1:20P	12Mar19	1:52P	12.4	1	1																✓					
4	MW-5	WT	G	12Mar19	2:30P	12Mar19	3:02P	14.2	1	1																✓					
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ES+S	12Mar19	2:56pm	[illegible]	3-12	4:00				
J-flags on - include MDLs on report.				[illegible]	3-13-19	0600	2.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: David Kilgore

DATE Signed: 12 Mar 19

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical Services, LLC
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(913)599-5665

March 14, 2019

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on March 14, 2019. 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,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116 / E10426
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60296724001	**MW-3**	Water	03/13/19 09:37	03/14/19 05:58
60296724002	**MW-2**	Water	03/13/19 11:37	03/14/19 05:58
60296724003	**DUP-1**	Water	03/13/19 11:37	03/14/19 05:58
60296724004	**MW-8**	Water	03/13/19 14:38	03/14/19 05:58

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60296724001	**MW-3**	EPA 7196	RAD	1	PASI-K
60296724002	**MW-2**	EPA 7196	RAD	1	PASI-K
60296724003	**DUP-1**	EPA 7196	RAD	1	PASI-K
60296724004	**MW-8**	EPA 7196	RAD	1	PASI-K

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: March 14, 2019

General Information:
4 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 573623

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60296722001

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

- MS (Lab ID: 2352787)
  - Chromium, Hexavalent
- MSD (Lab ID: 2352788)
  - Chromium, Hexavalent

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Sample: MW-3 **Lab ID: 60296724001** Collected: 03/13/19 09:37 Received: 03/14/19 05:58 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/14/19 09:33	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Sample: MW-2 **Lab ID: 60296724002** Collected: 03/13/19 11:37 Received: 03/14/19 05:58 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/14/19 10:07	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Sample: DUP-1 **Lab ID: 60296724003** Collected: 03/13/19 11:37 Received: 03/14/19 05:58 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/14/19 10:08	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Sample: MW-8 **Lab ID: 60296724004** Collected: 03/13/19 14:38 Received: 03/14/19 05:58 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/14/19 10:10	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

QC Batch: 573623 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60296724001, 60296724002, 60296724003, 60296724004

METHOD BLANK: 2352785 | Matrix: Water
Associated Lab Samples: 60296724001, 60296724002, 60296724003, 60296724004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0031	03/14/19 09:32	

LABORATORY CONTROL SAMPLE: 2352786

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.1	0.10	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2352787 2352788

Parameter	Units	60296722001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.1	0.1	0.081	0.082	81	82	85-115	1	20	M1

SAMPLE DUPLICATE: 2352789

Parameter	Units	60296724001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		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

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296724

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60296724001	**MW-3**	EPA 7196	573623		
60296724002	**MW-2**	EPA 7196	573623		
60296724003	**DUP-1**	EPA 7196	573623		
60296724004	**MW-8**	EPA 7196	573623		

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Sample Condition Upon Receipt

WO#: 60296724
60296724

Client Name: Burns & McDonnell

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 ☒ Tyvek

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.1 **Corr. Factor** +0.4 **Corrected** 1.5

Date and initials of person examining contents: 3-14-19 [illegible]

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	CR+6
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	MW-2 Time on COC 1137 on
Sample labels match COC: Date / time / ID / analyses	☐Yes ☒No ☐N/A	Container 10.25, Dup-1 COC 1137 - 1025
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	MW-8 COC 238 - Con - 202
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: Jeffrey Shopper

Digitally signed by: Jeffrey Shopper
DN: CN = Jeffrey Shopper email = jeff.shopper@pacelabs.com C = US
Date: 2019.03.14 09:36:46 -06'00'

Date: _____

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:	BURNS & MCDONNELL
Address:	Burns & McDonnell
Kansas City, MO 64114	
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B
Required Project Information:

Report To:	Brian Weis
Copy To:	Chris Hoglund
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency

State / Location
MO

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
One Character per box.
(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 START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION C°	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	60296724 **Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-3 BPJU	WT	G	13Mar19	9:35A	13Mar19	9:37A	13.6	1	1																✓						001
2	MW-2	WT	G	13Mar19	10:25A	13Mar19	11:37A	14.3	1	1																✓						002
3	Dup-1	WT	G	13Mar19	10:25A	13Mar19	11:37A	14.3	1	1																✓						003
4	MW-8	WT	G	13Mar19	2:02P	13Mar19	2:38P	14.0	1	1																✓						004
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	[signature] ES+S	13Mar19		Wz.pt Pgs.	3-14-19	0558	1.5	Y	Y	Y
U-flags on - include MDLs on report.										
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore

SIGNATURE of SAMPLER: [signature] DATE Signed: 13Mar19

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

April 15, 2019

Brian Weis
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

RE: Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Dear Brian Weis:
Enclosed are the analytical results for sample(s) received by the laboratory on March 15, 2019. 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.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Jeffrey Shopper
jeff.shopper@pacelabs.com
1(913)563-1408
Project Manager

Enclosures

cc: CHRIS HOGLUND, BURNS & MCDONNELL

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CERTIFICATIONS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Arkansas Drinking Water
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116 / E10426
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60296854001	**MW-6**	Water	03/12/19 10:36	03/15/19 09:03
60296854002	**MW-7**	Water	03/12/19 11:53	03/15/19 09:03
60296854003	**PZ-2**	Water	03/12/19 13:52	03/15/19 09:03
60296854004	**MW-5**	Water	03/12/19 15:02	03/15/19 09:03
60296854005	**MW-3**	Water	03/13/19 09:32	03/15/19 09:03
60296854006	**MW-2**	Water	03/13/19 11:37	03/15/19 09:03
60296854007	**DUP-1**	Water	03/13/19 11:37	03/15/19 09:03
60296854008	**MW-8**	Water	03/13/19 14:38	03/15/19 09:03
60296854009	**MW-1**	Water	03/14/19 11:01	03/15/19 09:03
60296854010	**POND SURFACE WATER**	Water	03/14/19 11:55	03/15/19 09:03
60296854011	**MW-1**	Water	03/14/19 11:01	03/15/19 09:03
60296854012	**MW-4**	Water	03/14/19 14:56	03/15/19 09:03
60296854013	**MW-1 MS**	Water	03/14/19 11:01	03/15/19 09:03
60296854014	**MW-1 MSD**	Water	03/14/19 11:01	03/15/19 09:03

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60296854001	**MW-6**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JES	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	MGS, WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854002	**MW-7**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JES	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854003	**PZ-2**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JES	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854004	**MW-5**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JES	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854005	**MW-3**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JES	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854006	**MW-2**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JES	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854007	**DUP-1**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JES	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854008	**MW-8**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JES	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854009	**MW-1**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
60296854010	**POND SURFACE WATER**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR, JDE	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
		EPA 7196	RAD	1	PASI-K
60296854011	**MW-1**	EPA 7196	RAD	1	PASI-K
60296854012	**MW-4**	EPA 200.7	JDE	2	PASI-K
		EPA 6010	EMR, JDE	18	PASI-K
		EPA 6020	JGP	4	PASI-K
		EPA 7470	LRS	1	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		Trivalent Chromium Calculation	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
		EPA 410.4	ZMH	1	PASI-K
		SM 5310C	MJK	1	PASI-K
		EPA 7196	RAD	1	PASI-K
60296854013	**MW-1 MS**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60296854014	**MW-1 MSD**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 574916

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60296854003,60296854009

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

- MS (Lab ID: 2358114)
  - Calcium
- MS (Lab ID: 2358115)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 6010**
Description: 6010 MET ICP
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 574580

B: Analyte was detected in the associated method blank.

- BLANK for HBN 574580 [MPRP/499 (Lab ID: 2356652)
  - Copper
  - Iron

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 574580

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60296854009

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

- MSD (Lab ID: 2356655)
  - Sodium

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 6020**
Description: 6020 MET ICPMS
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 574569

B: Analyte was detected in the associated method blank.

- BLANK for HBN 574569 [MPRP/499 (Lab ID: 2356620)
  - Aluminum
  - Antimony
  - Thallium

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 7470**
Description: 7470 Mercury
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
13 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
13 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-1 (Lab ID: 60296854007)
- MW-1 (Lab ID: 60296854009)
- MW-2 (Lab ID: 60296854006)
- MW-3 (Lab ID: 60296854005)
- MW-4 (Lab ID: 60296854012)
- MW-5 (Lab ID: 60296854004)
- MW-6 (Lab ID: 60296854001)
- MW-7 (Lab ID: 60296854002)
- MW-8 (Lab ID: 60296854008)
- POND SURFACE WATER (Lab ID: 60296854010)
- PZ-2 (Lab ID: 60296854003)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **Trivalent Chromium Calculation**
Description: Trivalent Chromium Calculation
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 577845

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60297965001

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

- MS (Lab ID: 2371316)
  - Chloride
- MSD (Lab ID: 2371317)
  - Chloride

QC Batch: 578110

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 2099827040

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

- MS (Lab ID: 2372097)
  - Sulfate

QC Batch: 578112

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60298221001

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

- MS (Lab ID: 2372109)
  - Sulfate

Additional Comments:

Analyte Comments:

QC Batch: 577845

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2371316)
  - Chloride
- MSD (Lab ID: 2371317)
  - Chloride

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 410.4**
Description: 410.4 COD
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for EPA 410.4. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **SM 5310C**
Description: 5310C TOC
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
11 samples were analyzed for SM 5310C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Method: **EPA 7196**
Description: 7196 Chromium, Hexavalent
Client: BURNS & MCDONNELL
Date: April 15, 2019

General Information:
3 samples were analyzed for EPA 7196. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-6 **Lab ID: 60296854001** Collected: 03/12/19 10:36 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**55.9J**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 16:43	7440-42-8	
Calcium	**130000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 16:43	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:19	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:19	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:19	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:19	7440-47-3	
Cobalt	**1.9J**	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:19	7440-48-4	
Copper	**7.9J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:19	7440-50-8	B
Iron	**496**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:19	7439-89-6	
Lead	**4.5J**	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:19	7439-92-1	
Lithium	**37.6**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:19	7439-93-2	
Magnesium	**25100**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:19	7439-95-4	
Manganese	**560**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:19	7439-96-5	
Molybdenum	**1.6J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:19	7439-98-7	
Nickel	**4.6J**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:19	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:19	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:19	7440-22-4	
Sodium	**42000**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:19	7440-23-5	
Total Hardness by 2340B	**422000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:19		
Zinc	**28.7J**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:19	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**1830**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:39	7429-90-5	
Antimony	**0.17J**	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:39	7440-36-0	B
Barium	**71.1**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:39	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:39	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**608**	mg/L	5.0	5.0	1		03/19/19 09:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.10	1		03/18/19 08:47		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**29.9**	mg/L	5.0	0.85	5		04/09/19 09:32	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	0.077	1		04/09/19 09:19	16984-48-8	
Sulfate	**139**	mg/L	10.0	2.3	10		04/09/19 15:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-6 **Lab ID: 60296854001** Collected: 03/12/19 10:36 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**6.2J**	mg/L	10.0	3.7	1		04/02/19 09:38		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.1**	mg/L	1.0	0.29	1		04/05/19 13:57	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-7 **Lab ID: 60296854002** Collected: 03/12/19 11:53 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**184**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 16:45	7440-42-8	
Calcium	**127000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 16:45	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:21	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:21	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:21	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:21	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:21	7440-48-4	
Copper	**8.0J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:21	7440-50-8	B
Iron	**1640**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:21	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:21	7439-92-1	
Lithium	**45.6**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:21	7439-93-2	
Magnesium	**31400**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:21	7439-95-4	
Manganese	**282**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:21	7439-96-5	
Molybdenum	**6.7J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:21	7439-98-7	
Nickel	**3.5J**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:21	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:21	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:21	7440-22-4	
Sodium	**57200**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:21	7440-23-5	
Total Hardness by 2340B	**434000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:21		
Zinc	**65.4**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:21	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**180**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:41	7429-90-5	
Antimony	**0.098J**	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:41	7440-36-0	B
Barium	**81.1**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:41	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:41	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**720**	mg/L	5.0	5.0	1		03/19/19 09:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		03/18/19 08:48		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**48.7**	mg/L	5.0	0.85	5		04/09/19 15:48	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	0.077	1		04/09/19 15:35	16984-48-8	
Sulfate	**179**	mg/L	10.0	2.3	10		04/09/19 16:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-7 **Lab ID: 60296854002** Collected: 03/12/19 11:53 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**7.0J**	mg/L	10.0	3.7	1		04/02/19 09:38		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.3**	mg/L	1.0	0.29	1		04/05/19 14:10	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: PZ-2 **Lab ID: 60296854003** Collected: 03/12/19 13:52 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**578**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 16:47	7440-42-8	
Calcium	**216000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 16:47	7440-70-2	M1
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:24	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:24	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:24	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:24	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:24	7440-48-4	
Copper	**7.4J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:24	7440-50-8	B
Iron	**437**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:24	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:24	7439-92-1	
Lithium	**12.4**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:24	7439-93-2	
Magnesium	**42500**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:24	7439-95-4	
Manganese	**378**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:24	7439-96-5	
Molybdenum	**1.6J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:24	7439-98-7	
Nickel	**4.2J**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:24	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:24	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:24	7440-22-4	
Sodium	**120000**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:24	7440-23-5	
Total Hardness by 2340B	**702000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:24		
Zinc	**5.4J**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:24	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**29.1J**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:42	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:42	7440-36-0	
Barium	**46.3**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:42	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:42	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1160**	mg/L	5.0	5.0	1		03/19/19 09:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.10	1		03/18/19 08:50		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**177**	mg/L	50.0	8.5	50		04/09/19 17:05	16887-00-6	
Fluoride	**0.37**	mg/L	0.20	0.077	1		04/09/19 16:13	16984-48-8	
Sulfate	**329**	mg/L	50.0	11.5	50		04/09/19 17:05	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: PZ-2 **Lab ID: 60296854003** Collected: 03/12/19 13:52 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**8.6J**	mg/L	10.0	3.7	1		04/02/19 09:38		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.2**	mg/L	1.0	0.29	1		04/05/19 14:23	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-5 **Lab ID: 60296854004** Collected: 03/12/19 15:02 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**255**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 16:56	7440-42-8	
Calcium	**118000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 16:56	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	**5.0J**	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:26	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:26	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:26	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:26	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:26	7440-48-4	
Copper	**5.3J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:26	7440-50-8	B
Iron	**171**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:26	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:26	7439-92-1	
Lithium	**42.2**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:26	7439-93-2	
Magnesium	**30100**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:26	7439-95-4	
Manganese	**29.6**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:26	7439-96-5	
Molybdenum	**4.0J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:26	7439-98-7	
Nickel	**1.5J**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:26	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:26	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:26	7440-22-4	
Sodium	**64000**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:26	7440-23-5	
Total Hardness by 2340B	**409000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:26		
Zinc	**17.0J**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:26	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**48.8J**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:43	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:43	7440-36-0	
Barium	**184**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:43	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:43	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**628**	mg/L	5.0	5.0	1		03/19/19 09:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		03/18/19 08:52		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**35.5**	mg/L	5.0	0.85	5		04/09/19 17:30	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	0.077	1		04/09/19 17:17	16984-48-8	
Sulfate	**125**	mg/L	20.0	4.6	20		04/09/19 17:43	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-5 **Lab ID: 60296854004** Collected: 03/12/19 15:02 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.7	1		04/02/19 09:39		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.5**	mg/L	1.0	0.29	1		04/05/19 15:01	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-3 **Lab ID: 60296854005** Collected: 03/13/19 09:32 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**51.7J**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 16:58	7440-42-8	
Calcium	**110000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 16:58	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:28	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:28	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:28	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:28	7440-47-3	
Cobalt	**1.3J**	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:28	7440-48-4	
Copper	**5.8J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:28	7440-50-8	B
Iron	**26.4J**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:28	7439-89-6	B
Lead	ND	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:28	7439-92-1	
Lithium	**31.3**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:28	7439-93-2	
Magnesium	**37100**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:28	7439-95-4	
Manganese	**427**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:28	7439-96-5	
Molybdenum	**6.5J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:28	7439-98-7	
Nickel	**4.0J**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:28	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:28	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:28	7440-22-4	
Sodium	**45000**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:28	7440-23-5	
Total Hardness by 2340B	**414000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:28		
Zinc	ND	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:28	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	ND	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:44	7429-90-5	
Antimony	ND	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:44	7440-36-0	
Barium	**212**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:44	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:44	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**519**	mg/L	5.0	5.0	1		03/20/19 13:52		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		03/18/19 09:00		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**8.3**	mg/L	1.0	0.17	1		04/10/19 01:39	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	0.077	1		04/10/19 01:39	16984-48-8	
Sulfate	**34.7**	mg/L	5.0	1.2	5		04/10/19 01:52	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-3 **Lab ID: 60296854005** Collected: 03/13/19 09:32 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.7	1		04/02/19 09:46		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.85J**	mg/L	1.0	0.29	1		04/05/19 16:45	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-2 **Lab ID: 60296854006** Collected: 03/13/19 11:37 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**77.4J**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 17:01	7440-42-8	
Calcium	**114000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 17:01	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:31	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:31	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:31	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:31	7440-47-3	
Cobalt	**0.94J**	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:31	7440-48-4	
Copper	**4.6J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:31	7440-50-8	B
Iron	**51.2**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:31	7439-89-6	B
Lead	ND	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:31	7439-92-1	
Lithium	**46.1**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:31	7439-93-2	
Magnesium	**39800**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:31	7439-95-4	
Manganese	**381**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:31	7439-96-5	
Molybdenum	**6.3J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:31	7439-98-7	
Nickel	ND	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:31	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:31	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:31	7440-22-4	
Sodium	**31300**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:31	7440-23-5	
Total Hardness by 2340B	**435000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:31		
Zinc	**30.3J**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:31	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**20.5J**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:46	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:46	7440-36-0	
Barium	**138**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:46	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:46	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**528**	mg/L	5.0	5.0	1		03/20/19 13:52		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		03/18/19 09:09		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.6**	mg/L	1.0	0.17	1		04/10/19 02:04	16887-00-6	
Fluoride	**0.57**	mg/L	0.20	0.077	1		04/10/19 02:04	16984-48-8	
Sulfate	**56.1**	mg/L	5.0	1.2	5		04/10/19 02:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-2 **Lab ID: 60296854006** Collected: 03/13/19 11:37 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.7	1		04/03/19 12:34		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**1.7**	mg/L	1.0	0.29	1		04/05/19 16:58	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: DUP-1 **Lab ID: 60296854007** Collected: 03/13/19 11:37 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**74.5J**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 17:03	7440-42-8	
Calcium	**113000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 17:03	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	**5.5J**	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:33	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:33	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:33	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:33	7440-47-3	
Cobalt	**1.1J**	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:33	7440-48-4	
Copper	**5.8J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:33	7440-50-8	B
Iron	**49.1J**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:33	7439-89-6	B
Lead	ND	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:33	7439-92-1	
Lithium	**40.6**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:33	7439-93-2	
Magnesium	**40800**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:33	7439-95-4	
Manganese	**394**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:33	7439-96-5	
Molybdenum	**6.3J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:33	7439-98-7	
Nickel	**1.9J**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:33	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:33	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:33	7440-22-4	
Sodium	**32000**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:33	7440-23-5	
Total Hardness by 2340B	**448000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:33		
Zinc	**28.8J**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:33	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**16.9J**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:47	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:47	7440-36-0	
Barium	**138**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:47	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:47	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**530**	mg/L	5.0	5.0	1		03/20/19 13:52		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		03/18/19 09:10		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.5**	mg/L	1.0	0.17	1		04/10/19 02:30	16887-00-6	
Fluoride	**0.58**	mg/L	0.20	0.077	1		04/10/19 02:30	16984-48-8	
Sulfate	**55.4**	mg/L	5.0	1.2	5		04/10/19 02:43	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: DUP-1 **Lab ID: 60296854007** Collected: 03/13/19 11:37 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.7	1		04/02/19 09:48		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.88J**	mg/L	1.0	0.29	1		04/05/19 17:49	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-8 **Lab ID: 60296854008** Collected: 03/13/19 14:38 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**213**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 17:05	7440-42-8	
Calcium	**210000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 17:05	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:35	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:35	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:35	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:35	7440-47-3	
Cobalt	**1.4J**	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:35	7440-48-4	
Copper	**8.9J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:35	7440-50-8	B
Iron	**2120**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:35	7439-89-6	
Lead	**4.7J**	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:35	7439-92-1	
Lithium	**23.9**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:35	7439-93-2	
Magnesium	**28800**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:35	7439-95-4	
Manganese	**1040**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:35	7439-96-5	
Molybdenum	**1.2J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:35	7439-98-7	
Nickel	**6.9**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:35	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:35	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:35	7440-22-4	
Sodium	**50500**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:35	7440-23-5	
Total Hardness by 2340B	**629000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:35		
Zinc	**40.9J**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:35	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**1910**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:51	7429-90-5	
Antimony	**0.11J**	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:51	7440-36-0	B
Barium	**41.2**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:51	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:51	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**896**	mg/L	5.0	5.0	1		03/20/19 13:52		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.10	1		03/18/19 09:13		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**43.2**	mg/L	10.0	1.7	10		04/10/19 15:33	16887-00-6	
Fluoride	**0.16J**	mg/L	0.20	0.077	1		04/10/19 15:20	16984-48-8	
Sulfate	**390**	mg/L	50.0	11.5	50		04/10/19 15:46	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-8 **Lab ID: 60296854008** Collected: 03/13/19 14:38 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**8.2J**	mg/L	10.0	3.7	1		04/02/19 09:48		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.87J**	mg/L	1.0	0.29	1		04/05/19 18:02	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-1 **Lab ID: 60296854009** Collected: 03/14/19 11:01 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**2250**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 17:07	7440-42-8	
Calcium	**163000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 17:07	7440-70-2	M1
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 15:37	7440-38-2	
Beryllium	ND	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 15:37	7440-41-7	
Cadmium	ND	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 15:37	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 15:37	7440-47-3	
Cobalt	**1.2J**	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 15:37	7440-48-4	
Copper	**7.1J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 15:37	7440-50-8	B
Iron	**93.2**	ug/L	50.0	6.1	1	03/20/19 11:42	03/27/19 15:37	7439-89-6	
Lead	ND	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 15:37	7439-92-1	
Lithium	**45.5**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 15:37	7439-93-2	
Magnesium	**42900**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 15:37	7439-95-4	
Manganese	**234**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 15:37	7439-96-5	
Molybdenum	**3.9J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 15:37	7439-98-7	
Nickel	**5.8**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 15:37	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 15:37	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 15:37	7440-22-4	
Sodium	**78400**	ug/L	500	157	1	03/20/19 11:42	03/27/19 15:37	7440-23-5	M1
Total Hardness by 2340B	**578000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 15:37		
Zinc	ND	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 15:37	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**9.5J**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:52	7429-90-5	B
Antimony	ND	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:52	7440-36-0	
Barium	**58.5**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:52	7440-39-3	
Thallium	ND	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:52	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 10:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**833**	mg/L	5.0	5.0	1		03/21/19 13:16		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.10	1		03/19/19 15:44		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**71.8**	mg/L	10.0	1.7	10		04/10/19 19:50	16887-00-6	
Fluoride	**0.54**	mg/L	0.20	0.077	1		04/10/19 19:24	16984-48-8	
Sulfate	**235**	mg/L	50.0	11.5	50		04/10/19 20:15	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-1 **Lab ID: 60296854009** Collected: 03/14/19 11:01 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	ND	mg/L	10.0	3.7	1		04/02/19 09:49		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**0.81J**	mg/L	1.0	0.29	1		04/05/19 18:41	7440-44-0	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: POND SURFACE WATER **Lab ID: 60296854010** Collected: 03/14/19 11:55 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**433**	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 17:14	7440-42-8	
Calcium	**60400**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 17:14	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 17:04	7440-38-2	
Beryllium	**0.51J**	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 17:04	7440-41-7	
Cadmium	**1.1J**	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 17:04	7440-43-9	
Chromium	**2.8J**	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 17:04	7440-47-3	
Cobalt	**0.94J**	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 17:04	7440-48-4	
Copper	**5.2J**	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 17:04	7440-50-8	B
Iron	**432**	ug/L	50.0	6.1	1	03/20/19 11:42	03/28/19 17:57	7439-89-6	
Lead	**4.5J**	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 17:04	7439-92-1	
Lithium	**14.0**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 17:04	7439-93-2	
Magnesium	**13100**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 17:04	7439-95-4	
Manganese	**60.2**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 17:04	7439-96-5	
Molybdenum	**9.9J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 17:04	7439-98-7	
Nickel	**2.5J**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 17:04	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 17:04	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 17:04	7440-22-4	
Sodium	**24600**	ug/L	500	157	1	03/20/19 11:42	03/27/19 17:04	7440-23-5	
Total Hardness by 2340B	**207000**	ug/L	705	500	1	03/20/19 11:42	03/27/19 17:04		
Zinc	**19.0J**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 17:04	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**2200**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:56	7429-90-5	
Antimony	**0.30J**	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:56	7440-36-0	B
Barium	**62.9**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:56	7440-39-3	
Thallium	**0.11J**	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:56	7440-28-0	B
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 11:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**366**	mg/L	5.0	5.0	1		03/21/19 13:16		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.8**	Std. Units	0.10	0.10	1		03/19/19 15:52		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**26.0**	mg/L	2.0	0.34	2		04/11/19 11:51	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	0.077	1		04/10/19 20:41	16984-48-8	
Sulfate	**29.6**	mg/L	1.0	0.23	1		04/10/19 20:41	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: POND SURFACE WATER **Lab ID: 60296854010** Collected: 03/14/19 11:55 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**8.6J**	mg/L	10.0	3.7	1		04/02/19 09:49		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.7**	mg/L	1.0	0.29	1		04/05/19 19:07	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/15/19 10:47	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-1 **Lab ID: 60296854011** Collected: 03/14/19 11:01 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/15/19 10:45	18540-29-9	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-4 **Lab ID: 60296854012** Collected: 03/14/19 14:56 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	ND	ug/L	100	12.5	1	03/22/19 10:08	03/26/19 17:20	7440-42-8	
Calcium	**31000**	ug/L	200	53.5	1	03/22/19 10:08	03/26/19 17:20	7440-70-2	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	4.9	1	03/20/19 11:42	03/27/19 17:06	7440-38-2	
Beryllium	**0.28J**	ug/L	1.0	0.16	1	03/20/19 11:42	03/27/19 17:06	7440-41-7	
Cadmium	**0.73J**	ug/L	5.0	0.45	1	03/20/19 11:42	03/27/19 17:06	7440-43-9	
Chromium	ND	ug/L	5.0	1.1	1	03/20/19 11:42	03/27/19 17:06	7440-47-3	
Cobalt	ND	ug/L	5.0	0.87	1	03/20/19 11:42	03/27/19 17:06	7440-48-4	
Copper	ND	ug/L	10.0	4.5	1	03/20/19 11:42	03/27/19 17:06	7440-50-8	
Iron	**500**	ug/L	50.0	6.1	1	03/20/19 11:42	03/28/19 18:00	7439-89-6	
Lead	**5.6J**	ug/L	10.0	3.0	1	03/20/19 11:42	03/27/19 17:06	7439-92-1	
Lithium	**9.2J**	ug/L	10.0	4.6	1	03/20/19 11:42	03/27/19 17:06	7439-93-2	
Magnesium	**4440**	ug/L	50.0	14.0	1	03/20/19 11:42	03/27/19 17:06	7439-95-4	
Manganese	**82.6**	ug/L	5.0	0.73	1	03/20/19 11:42	03/27/19 17:06	7439-96-5	
Molybdenum	**1.7J**	ug/L	20.0	0.90	1	03/20/19 11:42	03/27/19 17:06	7439-98-7	
Nickel	**1.8J**	ug/L	5.0	1.4	1	03/20/19 11:42	03/27/19 17:06	7440-02-0	
Selenium	ND	ug/L	15.0	6.1	1	03/20/19 11:42	03/27/19 17:06	7782-49-2	
Silver	ND	ug/L	7.0	2.0	1	03/20/19 11:42	03/27/19 17:06	7440-22-4	
Sodium	**2990**	ug/L	500	157	1	03/20/19 11:42	03/27/19 17:06	7440-23-5	
Total Hardness by 2340B	**96400**	ug/L	705	500	1	03/20/19 11:42	03/27/19 17:06		
Zinc	**172**	ug/L	50.0	3.5	1	03/20/19 11:42	03/27/19 17:06	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Aluminum	**642**	ug/L	50.0	9.5	1	03/20/19 11:56	04/02/19 14:57	7429-90-5	
Antimony	**0.26J**	ug/L	1.0	0.078	1	03/20/19 11:56	04/02/19 14:57	7440-36-0	B
Barium	**51.4**	ug/L	1.0	0.28	1	03/20/19 11:56	04/02/19 14:57	7440-39-3	
Thallium	**0.15J**	ug/L	1.0	0.099	1	03/20/19 11:56	04/02/19 14:57	7440-28-0	B
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.037	1	03/19/19 16:11	03/20/19 11:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**160**	mg/L	5.0	5.0	1		03/21/19 13:16		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.10	1		03/19/19 16:14		H6
Trivalent Chromium Calculation	Analytical Method: Trivalent Chromium Calculation								
Chromium, Trivalent	ND	mg/L	0.010	0.010	1		04/11/19 15:12	16065-83-1	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**1.8**	mg/L	1.0	0.17	1		04/10/19 21:20	16887-00-6	
Fluoride	**0.081J**	mg/L	0.20	0.077	1		04/10/19 21:20	16984-48-8	
Sulfate	**4.1**	mg/L	1.0	0.23	1		04/10/19 21:20	14808-79-8	

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ANALYTICAL RESULTS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-4 **Lab ID: 60296854012** Collected: 03/14/19 14:56 Received: 03/15/19 09:03 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
410.4 COD	Analytical Method: EPA 410.4								
Chemical Oxygen Demand	**60.8**	mg/L	10.0	3.7	1		04/02/19 09:50		
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**16.3**	mg/L	2.0	0.58	2		04/08/19 18:46	7440-44-0	
7196 Chromium, Hexavalent	Analytical Method: EPA 7196								
Chromium, Hexavalent	ND	mg/L	0.010	0.0031	1		03/15/19 10:48	18540-29-9	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574197 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

METHOD BLANK: 2355221 | Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.037	03/20/19 10:26	

LABORATORY CONTROL SAMPLE: 2355222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2355223 2355224

Parameter	Units	60296854009 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	4.8	4.8	95	96	75-125	1	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574916 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

METHOD BLANK: 2358112 | Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	12.5	03/26/19 16:41	
Calcium	ug/L	ND	200	53.5	03/26/19 16:41	

LABORATORY CONTROL SAMPLE: 2358113

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1130	113	85-115	
Calcium	ug/L	10000	11100	111	85-115	

MATRIX SPIKE SAMPLE: 2358114

Parameter	Units	60296854003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	578	1000	1790	121	70-130	
Calcium	ug/L	216000	10000	219000	35	70-130	M1

MATRIX SPIKE SAMPLE: 2358115

Parameter	Units	60296854009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	2250	1000	3200	95	70-130	
Calcium	ug/L	163000	10000	169000	61	70-130	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574580 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

METHOD BLANK: 2356652 | Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	ND	10.0	4.9	03/27/19 14:48	
Beryllium	ug/L	ND	1.0	0.16	03/27/19 14:48	
Cadmium	ug/L	ND	5.0	0.45	03/27/19 14:48	
Chromium	ug/L	ND	5.0	1.1	03/27/19 14:48	
Cobalt	ug/L	ND	5.0	0.87	03/27/19 14:48	
Copper	ug/L	6.0J	10.0	4.5	03/27/19 14:48	
Iron	ug/L	6.5J	50.0	6.1	03/27/19 14:48	
Lead	ug/L	ND	10.0	3.0	03/27/19 14:48	
Lithium	ug/L	ND	10.0	4.6	03/27/19 14:48	
Magnesium	ug/L	ND	50.0	14.0	03/27/19 14:48	
Manganese	ug/L	ND	5.0	0.73	03/27/19 14:48	
Molybdenum	ug/L	ND	20.0	0.90	03/27/19 14:48	
Nickel	ug/L	ND	5.0	1.4	03/27/19 14:48	
Selenium	ug/L	ND	15.0	6.1	03/27/19 14:48	
Silver	ug/L	ND	7.0	2.0	03/27/19 14:48	
Sodium	ug/L	ND	500	157	03/27/19 14:48	
Total Hardness by 2340B	ug/L	ND	705	500	03/27/19 14:48	
Zinc	ug/L	ND	50.0	3.5	03/27/19 14:48	

LABORATORY CONTROL SAMPLE: 2356653

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	955	96	80-120	
Beryllium	ug/L	1000	966	97	80-120	
Cadmium	ug/L	1000	994	99	80-120	
Chromium	ug/L	1000	983	98	80-120	
Cobalt	ug/L	1000	1010	101	80-120	
Copper	ug/L	1000	988	99	80-120	
Iron	ug/L	10000	9270	93	80-120	
Lead	ug/L	1000	1010	101	80-120	
Lithium	ug/L	1000	1070	107	80-120	
Magnesium	ug/L	10000	9920	99	80-120	
Manganese	ug/L	1000	1030	103	80-120	
Molybdenum	ug/L	1000	943	94	80-120	
Nickel	ug/L	1000	999	100	80-120	
Selenium	ug/L	1000	1010	101	80-120	
Silver	ug/L	500	507	101	80-120	
Sodium	ug/L	10000	10700	107	80-120	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

LABORATORY CONTROL SAMPLE: 2356653

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Hardness by 2340B	ug/L		65100			
Zinc	ug/L	1000	1030	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2356654 2356655

Parameter	Units	60296854009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	ND	1000	1000	955	996	95	99	75-125	4	20	
Beryllium	ug/L	ND	1000	1000	957	984	96	98	75-125	3	20	
Cadmium	ug/L	ND	1000	1000	973	1040	97	104	75-125	7	20	
Chromium	ug/L	ND	1000	1000	950	946	95	95	75-125	0	20	
Cobalt	ug/L	1.2J	1000	1000	942	1010	94	101	75-125	7	20	
Copper	ug/L	7.1J	1000	1000	958	1020	95	101	75-125	6	20	
Iron	ug/L	93.2	10000	10000	8960	10100	89	100	75-125	12	20	
Lead	ug/L	ND	1000	1000	936	998	94	100	75-125	6	20	
Lithium	ug/L	45.5	1000	1000	1130	1090	108	104	75-125	4	20	
Magnesium	ug/L	42900	10000	10000	51700	54100	88	112	75-125	4	20	
Manganese	ug/L	234	1000	1000	1220	1160	99	92	75-125	6	20	
Molybdenum	ug/L	3.9J	1000	1000	925	1000	92	100	75-125	8	20	
Nickel	ug/L	5.8	1000	1000	922	1020	92	101	75-125	10	20	
Selenium	ug/L	ND	1000	1000	966	1090	97	109	75-125	12	20	
Silver	ug/L	ND	500	500	503	509	101	102	75-125	1	20	
Sodium	ug/L	78400	10000	10000	89200	83400	108	50	75-125	7	20	M1
Total Hardness by 2340B	ug/L	578000			633000	650000				3		
Zinc	ug/L	ND	1000	1000	952	981	95	98	75-125	3	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574569 | Analysis Method: EPA 6020
QC Batch Method: EPA 3010 | Analysis Description: 6020 MET
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

METHOD BLANK: 2356620 | Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	15.3J	50.0	9.5	04/02/19 14:37	
Antimony	ug/L	0.13J	1.0	0.078	04/02/19 14:37	
Barium	ug/L	0.28J	1.0	0.28	04/02/19 14:37	
Thallium	ug/L	0.13J	1.0	0.099	04/02/19 14:37	

LABORATORY CONTROL SAMPLE: 2356621

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	1000	1000	100	80-120	
Antimony	ug/L	40	37.7	94	80-120	
Barium	ug/L	40	39.2	98	80-120	
Thallium	ug/L	40	38.0	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2356622 2356624

Parameter	Units	60296854009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	9.5J	1000	1000	1200	1210	119	120	75-125	1	20	
Antimony	ug/L	ND	40	40	36.9	37.5	92	94	75-125	2	20	
Barium	ug/L	58.5	40	40	97.6	99.0	98	101	75-125	1	20	
Thallium	ug/L	ND	40	40	34.1	34.2	85	85	75-125	0	20	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574177 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004

METHOD BLANK: 2355177 | Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	03/19/19 09:51	

LABORATORY CONTROL SAMPLE: 2355178

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	969	97	80-120	

SAMPLE DUPLICATE: 2355179

Parameter	Units	60296562002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	756	773	2	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574678 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60296854005, 60296854006, 60296854007, 60296854008

METHOD BLANK: 2357116 | Matrix: Water
Associated Lab Samples: 60296854005, 60296854006, 60296854007, 60296854008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	03/20/19 13:52	

LABORATORY CONTROL SAMPLE: 2357117

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	963	96	80-120	

SAMPLE DUPLICATE: 2357118

Parameter	Units	60296854005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	519	518	0	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574795 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60296854009, 60296854010, 60296854012

METHOD BLANK: 2357675 | Matrix: Water
Associated Lab Samples: 60296854009, 60296854010, 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	03/21/19 13:16	

LABORATORY CONTROL SAMPLE: 2357676

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	995	100	80-120	

SAMPLE DUPLICATE: 2357677

Parameter	Units	60296854009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	833	845	1	10	

SAMPLE DUPLICATE: 2357678

Parameter	Units	60296977004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2440	2490	2	10	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574068 | Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B | Analysis Description: 4500H+B pH
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008

SAMPLE DUPLICATE: 2354916

Parameter	Units	60296970014 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.9	7.0	1	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 574466 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60296854009, 60296854010, 60296854012

SAMPLE DUPLICATE: 2356086

Parameter	Units	60296854009 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.2	4	5	H6

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 577845 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60296854001

METHOD BLANK: 2371314 | Matrix: Water
Associated Lab Samples: 60296854001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.22	04/08/19 21:20	
Fluoride	mg/L	ND	0.20	0.085	04/08/19 21:20	

LABORATORY CONTROL SAMPLE: 2371315

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2371316 2371317

Parameter	Units	60297965001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	169	50	50	212	206	87	75	90-110	3	15	E,M1
Fluoride	mg/L	ND	25	25	25.6	25.9	100	101	90-110	1	15	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 578110 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004

METHOD BLANK: 2372093 | Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.22	04/09/19 10:49	
Fluoride	mg/L	ND	0.20	0.085	04/09/19 10:49	
Sulfate	mg/L	ND	1.0	0.23	04/09/19 10:49	

LABORATORY CONTROL SAMPLE: 2372094

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE SAMPLE: 2372097

Parameter	Units	2099827040 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	530	250	833	121	90-110	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 578112 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60296854005, 60296854006, 60296854007

METHOD BLANK: 2372106 | Matrix: Water
Associated Lab Samples: 60296854005, 60296854006, 60296854007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.22	04/09/19 20:56	
Fluoride	mg/L	ND	0.20	0.085	04/09/19 20:56	
Sulfate	mg/L	ND	1.0	0.23	04/09/19 20:56	

LABORATORY CONTROL SAMPLE: 2372107

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	4.7	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2372109 2372110

Parameter	Units	60298221001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	250	250	270	248	103	94	90-110	9	15	
Fluoride	mg/L	ND	125	125	132	122	105	97	90-110	8	15	
Sulfate	mg/L	420	250	250	723	676	122	103	90-110	7	15	M1

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 578300 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60296854008

METHOD BLANK: 2372830 | Matrix: Water
Associated Lab Samples: 60296854008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.22	04/10/19 09:08	
Fluoride	mg/L	ND	0.20	0.085	04/10/19 09:08	
Sulfate	mg/L	ND	1.0	0.23	04/10/19 09:08	

LABORATORY CONTROL SAMPLE: 2372831

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	4.7	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2372833 2372834

Parameter	Units	60298424001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.0	5	5	6.6	7.4	93	108	90-110	11	15	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 578334 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60296854009, 60296854010, 60296854012

METHOD BLANK: 2372961 Matrix: Water
Associated Lab Samples: 60296854009, 60296854010, 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.22	04/10/19 17:03	
Fluoride	mg/L	ND	0.20	0.085	04/10/19 17:03	
Sulfate	mg/L	ND	1.0	0.23	04/10/19 17:03	

LABORATORY CONTROL SAMPLE: 2372962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE SAMPLE: 2372965

Parameter	Units	60296854009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	71.8	50	122	101	90-110	
Fluoride	mg/L	0.54	2.5	3.2	105	90-110	
Sulfate	mg/L	235	250	476	96	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 578483 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60296854010

METHOD BLANK: 2373917 | Matrix: Water
Associated Lab Samples: 60296854010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.26J	1.0	0.22	04/11/19 08:54	

LABORATORY CONTROL SAMPLE: 2373918

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2373919 2373920

Parameter	Units	60298220002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	500	500	529	529	96	96	90-110	0	15	

MATRIX SPIKE SAMPLE: 2373921

Parameter	Units	60298520001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	238	250	492	101	90-110	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 576614 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005

METHOD BLANK: 2366055 Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.7	04/02/19 09:34	

LABORATORY CONTROL SAMPLE: 2366056

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	53.1	106	90-110	

MATRIX SPIKE SAMPLE: 2366057

Parameter	Units	60298034005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	806	500	1260	90	90-110	

MATRIX SPIKE SAMPLE: 2366059

Parameter	Units	60298424004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	59.2	103	90-110	

SAMPLE DUPLICATE: 2366058

Parameter	Units	60298342001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	1420	1410	1	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 576615 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

METHOD BLANK: 2366060 Matrix: Water
Associated Lab Samples: 60296854007, 60296854008, 60296854009, 60296854010, 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.7	04/02/19 09:46	

LABORATORY CONTROL SAMPLE: 2366061

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	46.6	93	90-110	

SAMPLE DUPLICATE: 2366063

Parameter	Units	60296854009 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	ND	ND		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 576892 | Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 | Analysis Description: 410.4 COD
Associated Lab Samples: 60296854006

METHOD BLANK: 2367082 | Matrix: Water
Associated Lab Samples: 60296854006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	10.0	3.7	04/03/19 12:26	

LABORATORY CONTROL SAMPLE: 2367083

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	50	46.7	93	90-110	

MATRIX SPIKE SAMPLE: 2367084

Parameter	Units	60298535001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50	58.4	100	90-110	

MATRIX SPIKE SAMPLE: 2367086

Parameter	Units	60298395005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	31.3	50	77.6	93	90-110	

SAMPLE DUPLICATE: 2367085

Parameter	Units	60297927001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chemical Oxygen Demand	mg/L	3130	3100	1	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 577388 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004

METHOD BLANK: 2369207 | Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.29	04/05/19 10:04	

LABORATORY CONTROL SAMPLE: 2369208

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.4	109	80-120	

MATRIX SPIKE SAMPLE: 2369209

Parameter	Units	60298189002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	8.8	5	14.2	107	80-120	

SAMPLE DUPLICATE: 2369210

Parameter	Units	60298189003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	8.5	8.5	0	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 577391 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010

METHOD BLANK: 2369211 Matrix: Water
Associated Lab Samples: 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.29	04/05/19 16:19	

LABORATORY CONTROL SAMPLE: 2369212

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.5	109	80-120	

MATRIX SPIKE SAMPLE: 2369214

Parameter	Units	60296854009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	0.81J	5	6.3	109	80-120	

SAMPLE DUPLICATE: 2369213

Parameter	Units	60296854006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	1.7	0.89J		25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 577745 | Analysis Method: SM 5310C
QC Batch Method: SM 5310C | Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60296854012

METHOD BLANK: 2371043 | Matrix: Water
Associated Lab Samples: 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.29	04/08/19 15:58	

LABORATORY CONTROL SAMPLE: 2371044

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	5	5.5	111	80-120	

MATRIX SPIKE SAMPLE: 2371045

Parameter	Units	60298983001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	1.4	5	6.9	111	80-120	

SAMPLE DUPLICATE: 2371046

Parameter	Units	60298983002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	1.3	1.2	5	25	

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QUALITY CONTROL DATA

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 573887 | Analysis Method: EPA 7196
QC Batch Method: EPA 7196 | Analysis Description: 7196 Chromium, Hexavalent
Associated Lab Samples: 60296854010, 60296854011, 60296854012

METHOD BLANK: 2353832 | Matrix: Water
Associated Lab Samples: 60296854010, 60296854011, 60296854012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	0.0031	03/15/19 10:39	

LABORATORY CONTROL SAMPLE: 2353833

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.1	0.093	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2353834 2353835

Parameter	Units	60296854011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.1	0.1	0.098	0.099	98	99	85-115	1	20	

SAMPLE DUPLICATE: 2353836

Parameter	Units	60296854010 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/L	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-6 **Lab ID: 60296854001** Collected: 03/12/19 10:36 Received: 03/15/19 09:03 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 ± 0.765 (1.14) C:NA T:88%**	pCi/L	03/29/19 22:47	13982-63-3	
Radium-228	EPA 904.0	**0.444 ± 0.911 (2.00) C:72% T:74%**	pCi/L	04/04/19 20:15	15262-20-1	
Total Radium	Total Radium Calculation	**1.33 ± 1.68 (3.14)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-7 **Lab ID: 60296854002** Collected: 03/12/19 11:53 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.387 ± 0.457 (0.719) C:NA T:93%**	pCi/L	03/29/19 22:47	13982-63-3	
Radium-228	EPA 904.0	**-0.189 ± 0.676 (1.59) C:71% T:82%**	pCi/L	04/04/19 20:15	15262-20-1	
Total Radium	Total Radium Calculation	**0.387 ± 1.13 (2.31)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: PZ-2 **Lab ID: 60296854003** Collected: 03/12/19 13:52 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0874 ± 0.399 (0.237)** **C:NA T:81%**	pCi/L	03/29/19 22:47	13982-63-3	
Radium-228	EPA 904.0	**-0.200 ± 0.744 (1.75)** **C:73% T:76%**	pCi/L	04/04/19 20:15	15262-20-1	
Total Radium	Total Radium Calculation	**0.0874 ± 1.14 (1.99)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-5 **Lab ID: 60296854004** Collected: 03/12/19 15:02 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.218 ± 0.427 (0.781)** **C:NA T:92%**	pCi/L	03/29/19 22:47	13982-63-3	
Radium-228	EPA 904.0	**-0.164 ± 0.725 (1.69)** **C:73% T:82%**	pCi/L	04/04/19 20:15	15262-20-1	
Total Radium	Total Radium Calculation	**0.218 ± 1.15 (2.47)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-3 **Lab ID: 60296854005** Collected: 03/13/19 09:32 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**3.38 ± 1.16 (0.867) C:NA T:87%**	pCi/L	03/29/19 22:47	13982-63-3	
Radium-228	EPA 904.0	**0.269 ± 0.827 (1.84) C:73% T:82%**	pCi/L	04/04/19 20:15	15262-20-1	
Total Radium	Total Radium Calculation	**3.65 ± 1.99 (2.71)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-2 **Lab ID: 60296854006** Collected: 03/13/19 11:37 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.143 ± 0.525 (1.01) C:NA T:95%**	pCi/L	03/29/19 23:02	13982-63-3	
Radium-228	EPA 904.0	**0.645 ± 0.644 (1.33) C:69% T:86%**	pCi/L	04/04/19 20:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.788 ± 1.17 (2.34)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: DUP-1 **Lab ID: 60296854007** Collected: 03/13/19 11:37 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.335 ± 0.616 (1.10)** **C:NA T:82%**	pCi/L	03/29/19 23:02	13982-63-3	
Radium-228	EPA 904.0	**0.701 ± 0.652 (1.33)** **C:69% T:83%**	pCi/L	04/04/19 20:01	15262-20-1	
Total Radium	Total Radium Calculation	**1.04 ± 1.27 (2.43)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-8 **Lab ID: 60296854008** Collected: 03/13/19 14:38 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.075 ± 0.485 (1.05) C:NA T:90%**	pCi/L	03/29/19 23:02	13982-63-3	
Radium-228	EPA 904.0	**1.30 ± 0.672 (1.19) C:76% T:57%**	pCi/L	04/04/19 16:17	15262-20-1	
Total Radium	Total Radium Calculation	**1.30 ± 1.16 (2.24)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-1 **Lab ID: 60296854009** Collected: 03/14/19 11:01 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.274 ± 0.538 (0.983)** **C:NA T:84%**	pCi/L	03/29/19 23:02	13982-63-3	
Radium-228	EPA 904.0	**0.677 ± 0.473 (0.923)** **C:76% T:78%**	pCi/L	04/04/19 16:17	15262-20-1	
Total Radium	Total Radium Calculation	**0.951 ± 1.01 (1.91)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: POND SURFACE WATER **Lab ID: 60296854010** Collected: 03/14/19 11:55 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.444 ± 0.580 (0.957)** **C:NA T:80%**	pCi/L	03/29/19 23:02	13982-63-3	
Radium-228	EPA 904.0	**0.282 ± 0.796 (1.78)** **C:82% T:35%**	pCi/L	04/04/19 16:17	15262-20-1	
Total Radium	Total Radium Calculation	**0.726 ± 1.38 (2.74)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-4 **Lab ID: 60296854012** Collected: 03/14/19 14:56 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.427 ± 0.446 (0.629)** **C:NA T:83%**	pCi/L	03/29/19 23:02	13982-63-3	
Radium-228	EPA 904.0	**1.26 ± 0.942 (1.84)** **C:63% T:40%**	pCi/L	04/04/19 16:17	15262-20-1	
Total Radium	Total Radium Calculation	**1.69 ± 1.39 (2.47)**	pCi/L	04/05/19 11:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-1 MS **Lab ID: 60296854013** Collected: 03/14/19 11:01 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**96.25 %REC ± NA (NA) C:NA T:NA**	pCi/L	03/29/19 23:16	13982-63-3	
Radium-228	EPA 904.0	**105.18 %REC ± NA (NA) C:NA T:NA**	pCi/L	04/04/19 16:17	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Sample: MW-1 MSD **Lab ID: 60296854014** Collected: 03/14/19 11:01 Received: 03/15/19 09:03 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**112.96 %REC 15.97 RPD ± NA (NA) C:NA T:NA**	pCi/L	03/29/19 23:16	13982-63-3	
Radium-228	EPA 904.0	**128.59 %REC 20.02 RPD ± NA (NA) C:NA T:NA**	pCi/L	04/04/19 16:17	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 334691 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012, 60296854013, 60296854014

METHOD BLANK: 1628698 Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012, 60296854013, 60296854014

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.324 ± 0.356 (0.741) C:76% T:79%	pCi/L	04/04/19 16:18	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

QC Batch: 334670 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012, 60296854013, 60296854014

METHOD BLANK: 1628631 Matrix: Water
Associated Lab Samples: 60296854001, 60296854002, 60296854003, 60296854004, 60296854005, 60296854006, 60296854007, 60296854008, 60296854009, 60296854010, 60296854012, 60296854013, 60296854014

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.156 ± 0.374 (0.723) C:NA T:89%	pCi/L	03/29/19 22:47	

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QUALIFIERS

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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 (%)

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TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60296854001	**MW-6**	EPA 200.7	574916	EPA 200.7	575172
60296854002	**MW-7**	EPA 200.7	574916	EPA 200.7	575172
60296854003	**PZ-2**	EPA 200.7	574916	EPA 200.7	575172
60296854004	**MW-5**	EPA 200.7	574916	EPA 200.7	575172
60296854005	**MW-3**	EPA 200.7	574916	EPA 200.7	575172
60296854006	**MW-2**	EPA 200.7	574916	EPA 200.7	575172
60296854007	**DUP-1**	EPA 200.7	574916	EPA 200.7	575172
60296854008	**MW-8**	EPA 200.7	574916	EPA 200.7	575172
60296854009	**MW-1**	EPA 200.7	574916	EPA 200.7	575172
60296854010	**POND SURFACE WATER**	EPA 200.7	574916	EPA 200.7	575172
60296854012	**MW-4**	EPA 200.7	574916	EPA 200.7	575172
60296854001	**MW-6**	EPA 3010	574580	EPA 6010	574691
60296854002	**MW-7**	EPA 3010	574580	EPA 6010	574691
60296854003	**PZ-2**	EPA 3010	574580	EPA 6010	574691
60296854004	**MW-5**	EPA 3010	574580	EPA 6010	574691
60296854005	**MW-3**	EPA 3010	574580	EPA 6010	574691
60296854006	**MW-2**	EPA 3010	574580	EPA 6010	574691
60296854007	**DUP-1**	EPA 3010	574580	EPA 6010	574691
60296854008	**MW-8**	EPA 3010	574580	EPA 6010	574691
60296854009	**MW-1**	EPA 3010	574580	EPA 6010	574691
60296854010	**POND SURFACE WATER**	EPA 3010	574580	EPA 6010	574691
60296854012	**MW-4**	EPA 3010	574580	EPA 6010	574691
60296854001	**MW-6**	EPA 3010	574569	EPA 6020	574699
60296854002	**MW-7**	EPA 3010	574569	EPA 6020	574699
60296854003	**PZ-2**	EPA 3010	574569	EPA 6020	574699
60296854004	**MW-5**	EPA 3010	574569	EPA 6020	574699
60296854005	**MW-3**	EPA 3010	574569	EPA 6020	574699
60296854006	**MW-2**	EPA 3010	574569	EPA 6020	574699
60296854007	**DUP-1**	EPA 3010	574569	EPA 6020	574699
60296854008	**MW-8**	EPA 3010	574569	EPA 6020	574699
60296854009	**MW-1**	EPA 3010	574569	EPA 6020	574699
60296854010	**POND SURFACE WATER**	EPA 3010	574569	EPA 6020	574699
60296854012	**MW-4**	EPA 3010	574569	EPA 6020	574699
60296854001	**MW-6**	EPA 7470	574197	EPA 7470	574494
60296854002	**MW-7**	EPA 7470	574197	EPA 7470	574494
60296854003	**PZ-2**	EPA 7470	574197	EPA 7470	574494
60296854004	**MW-5**	EPA 7470	574197	EPA 7470	574494
60296854005	**MW-3**	EPA 7470	574197	EPA 7470	574494
60296854006	**MW-2**	EPA 7470	574197	EPA 7470	574494
60296854007	**DUP-1**	EPA 7470	574197	EPA 7470	574494
60296854008	**MW-8**	EPA 7470	574197	EPA 7470	574494
60296854009	**MW-1**	EPA 7470	574197	EPA 7470	574494
60296854010	**POND SURFACE WATER**	EPA 7470	574197	EPA 7470	574494
60296854012	**MW-4**	EPA 7470	574197	EPA 7470	574494
60296854001	**MW-6**	EPA 903.1	334670		
60296854002	**MW-7**	EPA 903.1	334670		
60296854003	**PZ-2**	EPA 903.1	334670		

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60296854004	**MW-5**	EPA 903.1	334670		
60296854005	**MW-3**	EPA 903.1	334670		
60296854006	**MW-2**	EPA 903.1	334670		
60296854007	**DUP-1**	EPA 903.1	334670		
60296854008	**MW-8**	EPA 903.1	334670		
60296854009	**MW-1**	EPA 903.1	334670		
60296854010	**POND SURFACE WATER**	EPA 903.1	334670		
60296854012	**MW-4**	EPA 903.1	334670		
60296854013	**MW-1 MS**	EPA 903.1	334670		
60296854014	**MW-1 MSD**	EPA 903.1	334670		
60296854001	**MW-6**	EPA 904.0	334691		
60296854002	**MW-7**	EPA 904.0	334691		
60296854003	**PZ-2**	EPA 904.0	334691		
60296854004	**MW-5**	EPA 904.0	334691		
60296854005	**MW-3**	EPA 904.0	334691		
60296854006	**MW-2**	EPA 904.0	334691		
60296854007	**DUP-1**	EPA 904.0	334691		
60296854008	**MW-8**	EPA 904.0	334691		
60296854009	**MW-1**	EPA 904.0	334691		
60296854010	**POND SURFACE WATER**	EPA 904.0	334691		
60296854012	**MW-4**	EPA 904.0	334691		
60296854013	**MW-1 MS**	EPA 904.0	334691		
60296854014	**MW-1 MSD**	EPA 904.0	334691		
60296854001	**MW-6**	Total Radium Calculation	337117		
60296854002	**MW-7**	Total Radium Calculation	337117		
60296854003	**PZ-2**	Total Radium Calculation	337117		
60296854004	**MW-5**	Total Radium Calculation	337117		
60296854005	**MW-3**	Total Radium Calculation	337117		
60296854006	**MW-2**	Total Radium Calculation	337117		
60296854007	**DUP-1**	Total Radium Calculation	337117		
60296854008	**MW-8**	Total Radium Calculation	337117		
60296854009	**MW-1**	Total Radium Calculation	337117		
60296854010	**POND SURFACE WATER**	Total Radium Calculation	337117		
60296854012	**MW-4**	Total Radium Calculation	337117		
60296854001	**MW-6**	SM 2540C	574177		
60296854002	**MW-7**	SM 2540C	574177		
60296854003	**PZ-2**	SM 2540C	574177		
60296854004	**MW-5**	SM 2540C	574177		
60296854005	**MW-3**	SM 2540C	574678		
60296854006	**MW-2**	SM 2540C	574678		
60296854007	**DUP-1**	SM 2540C	574678		
60296854008	**MW-8**	SM 2540C	574678		
60296854009	**MW-1**	SM 2540C	574795		
60296854010	**POND SURFACE WATER**	SM 2540C	574795		
60296854012	**MW-4**	SM 2540C	574795		
60296854001	**MW-6**	SM 4500-H+B	574068		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60296854002	**MW-7**	SM 4500-H+B	574068		
60296854003	**PZ-2**	SM 4500-H+B	574068		
60296854004	**MW-5**	SM 4500-H+B	574068		
60296854005	**MW-3**	SM 4500-H+B	574068		
60296854006	**MW-2**	SM 4500-H+B	574068		
60296854007	**DUP-1**	SM 4500-H+B	574068		
60296854008	**MW-8**	SM 4500-H+B	574068		
60296854009	**MW-1**	SM 4500-H+B	574466		
60296854010	**POND SURFACE WATER**	SM 4500-H+B	574466		
60296854012	**MW-4**	SM 4500-H+B	574466		
60296854001	**MW-6**	Trivalent Chromium Calculation	578474		
60296854002	**MW-7**	Trivalent Chromium Calculation	578474		
60296854003	**PZ-2**	Trivalent Chromium Calculation	578474		
60296854004	**MW-5**	Trivalent Chromium Calculation	578474		
60296854005	**MW-3**	Trivalent Chromium Calculation	578474		
60296854006	**MW-2**	Trivalent Chromium Calculation	578474		
60296854007	**DUP-1**	Trivalent Chromium Calculation	578474		
60296854008	**MW-8**	Trivalent Chromium Calculation	578474		
60296854009	**MW-1**	Trivalent Chromium Calculation	578474		
60296854010	**POND SURFACE WATER**	Trivalent Chromium Calculation	578474		
60296854012	**MW-4**	Trivalent Chromium Calculation	578474		
60296854001	**MW-6**	EPA 300.0	577845		
60296854001	**MW-6**	EPA 300.0	578110		
60296854002	**MW-7**	EPA 300.0	578110		
60296854003	**PZ-2**	EPA 300.0	578110		
60296854004	**MW-5**	EPA 300.0	578110		
60296854005	**MW-3**	EPA 300.0	578112		
60296854006	**MW-2**	EPA 300.0	578112		
60296854007	**DUP-1**	EPA 300.0	578112		
60296854008	**MW-8**	EPA 300.0	578300		
60296854009	**MW-1**	EPA 300.0	578334		
60296854010	**POND SURFACE WATER**	EPA 300.0	578334		
60296854010	**POND SURFACE WATER**	EPA 300.0	578483		
60296854012	**MW-4**	EPA 300.0	578334		
60296854001	**MW-6**	EPA 410.4	576614		
60296854002	**MW-7**	EPA 410.4	576614		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MORE'S LAKE COLUMBIA, MO
Pace Project No.: 60296854

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60296854003	**PZ-2**	EPA 410.4	576614		
60296854004	**MW-5**	EPA 410.4	576614		
60296854005	**MW-3**	EPA 410.4	576614		
60296854006	**MW-2**	EPA 410.4	576892		
60296854007	**DUP-1**	EPA 410.4	576615		
60296854008	**MW-8**	EPA 410.4	576615		
60296854009	**MW-1**	EPA 410.4	576615		
60296854010	**POND SURFACE WATER**	EPA 410.4	576615		
60296854012	**MW-4**	EPA 410.4	576615		
60296854001	**MW-6**	SM 5310C	577388		
60296854002	**MW-7**	SM 5310C	577388		
60296854003	**PZ-2**	SM 5310C	577388		
60296854004	**MW-5**	SM 5310C	577388		
60296854005	**MW-3**	SM 5310C	577391		
60296854006	**MW-2**	SM 5310C	577391		
60296854007	**DUP-1**	SM 5310C	577391		
60296854008	**MW-8**	SM 5310C	577391		
60296854009	**MW-1**	SM 5310C	577391		
60296854010	**POND SURFACE WATER**	SM 5310C	577391		
60296854012	**MW-4**	SM 5310C	577745		
60296854010	**POND SURFACE WATER**	EPA 7196	573887		
60296854011	**MW-1**	EPA 7196	573887		
60296854012	**MW-4**	EPA 7196	573887		

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Sample Condition Upon Receipt

WO# : 60296854
60296854

Client Name: Burns & McDonnell

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-246 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.6, 1.9, 4.2, 4.4, 2.5 **Corr. Factor** -1.0 **Corrected** 2.6, 0.9, 3.2, 3.4, 1.5

Date and initials of person examining contents: 3/15/19

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	Cr(VI)
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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
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: JW Date: 3/15/19

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

Page : 1 Of 2

Section A
Required Client Information:
Company: BURNS & MCDONNELL
Address: Burns & McDonnell
Kansas City, MO 64114
Email: bweis@burnsmcd.com
Phone: 816-333-9400 Fax
Requested Due Date:

Section B
Required Project Information:
Report To: Brian Weis
Copy To: Chris Hoglund
Purchase Order #:
Project Name: More's Lake Columbia, MO
Project #:

Section C
Invoice Information:
Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: jeff.shopper@pacelabs.com
Pace Profile #: 10268, 2

Regulatory Agency:
State / Location: MO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION (C°)	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn	60296854
1	MW-6 BP3N(2), BP2U, BP3U	WT	G	12Mar19	10:02A	12Mar19	10:36A	14.4	7	2	2	3	3/15/19 HF						✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		BP3N, AG3S	001
2	MW-7	WT	G	12Mar19	11:20A	12Mar19	11:55A	3.5	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			002
3	PZ-2	WT	G	12Mar19	1:20P	12Mar19	1:52P	2.0	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			003
4	MW-5	WT	G	12Mar19	2:30P	12Mar19	3:02P	14.2	7	2	2	3							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			004
5	MW-3	WT	G	13Mar19	8:55A	13Mar19	9:32A	3.6	8	2	2	4							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		BP3N(2)	005
6	MW-2	WT	G	13Mar19	10:25A	13Mar19	11:37A	14.3	8	2	2	4							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			006
7	Dup-1	WT	G	13Mar19	10:25A	13Mar19	11:37A	14.3	8	2	2	4							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			007
8	MW-8	WT	G	13Mar19	2:02P	13Mar19	2:35P	14.0	8	2	2	4							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			008
9	MW-1	WT	G	14Mar19	8:50A	14Mar19	11:01A	14.9	8	2	2	4							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			009
10	MS	WT	G	14Mar19	8:50A	14Mar19	11:01A	14.9	8	2	2	4							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			~~010~~
11	MSD	WT	G	14Mar19	8:50A	14Mar19	11:01A	14.9	8	2	2	4							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			~~011~~ 3/15/19 HF
12	Pond surface water 3/15/19	WT	G	14Mar19	11:55A	BP3U(2)		3.3	9	3	2	4							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			~~012~~ 010

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
TOX EDD needed	David Kilgore ES+S	14Mar19		[illegible]	3/15/19	0803
J-flags on - include MDLs on report.						

SAMPLE CONDITIONS: TEMP in C: 3.5, 1.9, 1.2, 4.0, 2.5 | Received on Ice (Y/N): ✓ | Custody Sealed Cooler (Y/N): ✓ | Samples Intact (Y/N): ✓

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Kilgore Richard Bedford
SIGNATURE of SAMPLER: [signature] Richard Bedford
DATE Signed: 14Mar19

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 2 Of 2

Section A
Required Client Information:

Company:	BURNS & MCDONNELL
Address:	Burns & McDonnell
	Kansas City, MO 64114
Email:	bweis@burnsmcd.com
Phone:	816-333-9400 Fax
Requested Due Date:	

Section B
Required Project Information:

Report To:	Brian Weis
Copy To:	Chris Hoglund
Purchase Order #:	
Project Name:	More's Lake Columbia, MO
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jeff.shopper@pacelabs.com
Pace Profile #:	10268, 2

Regulatory Agency

State / Location
MO

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
One Character per box.
(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 START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	300.0 SO4,Cl,F	TOC	COD	TDS by 2540C	6010 Metals** Thallium by 6020	Mercury	Hardness	Hexavalent Chromium**SHORT HOLD	Trivalent Chromium Calc	TOX	Radium 226/228 (include combined)	pH	Residual Chlorine (Y/N)	**Al,Sb,As,Ba,Be,B,Cd,Ca,Cr,Co,Cu,Fe,Pb,Li,Mg,Mn,Mo,Ni,Se,Ag,Na,Zn
1	MW-1	WT	G	14Mar19	10:53A	14Mar19	11:01A	[illegible]	1	1		BP3U														✓						011 ~~013~~ ~~012~~ 3/15/19 HF
2	MS-	WT	G	14Mar19	10:53A	14Mar19	11:01A	[illegible]	1	1		BP3U(2)														✓						
3	MSD	WT	G	14Mar19	10:53A	14Mar19	11:01A	[illegible]	1	1																✓						
4	MW-4 BP1N(2), BP2U,	WT	G	14Mar19	2:20P	14Mar19	2:56P	12.8	9	3	2	4		BP3U(2)					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		BP3N(2), ~~[illegible]~~ A625, A635 ~~014~~ 012 3/15/19 3/15/19
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

60296854

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TOX EDD needed	David Kilgore ES&S	14Mar19		[illegible]	3/15/19	0903	3.5 3.9	Y	Y	Y
J-flags on - include MDLs on report.							4.2 4.4			
							2.5			
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Kilgore Richard Bedford

SIGNATURE of SAMPLER: [signature] [signature]

DATE Signed: 14Mar19

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MO
Cert. Needed: ☐ Yes ☒ No

Workorder: 60296854 Workorder Name: MORE'S LAKE COLUMBIA, MO
Owner Received Date: 3/15/2019 Results Requested By: 4/8/2019

Report To	Subcontract To
Jeffrey Shopper Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1408	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Requested Analysis

WO#: 30284916

30284916

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Radium 226/228 (include combined)	LAB USE ONLY
1	MW-6	PS	3/12/2019 10:36	60296854001	Water	2	X	001
2	MW-7	PS	3/12/2019 11:53	60296854002	Water	2	X	002
3	PZ-2	PS	3/12/2019 13:52	60296854003	Water	2	X	003
4	MW-5	PS	3/12/2019 15:02	60296854004	Water	2	X	004
5	MW-3	PS	3/13/2019 09:32	60296854005	Water	2	X	005
6	MW-2	PS	3/13/2019 11:37	60296854006	Water	2	X	006
7	DUP-1	PS	3/13/2019 11:37	60296854007	Water	2	X	007
8	MW-8	PS	3/13/2019 14:38	60296854008	Water	2	X	008
9	MW-1	RQS	3/14/2019 11:01	60296854009	Water	2	X	009
10	POND SURFACE WATER	PS	3/14/2019 11:55	60296854010	Water	2	X	010
11	MW-4	PS	3/14/2019 14:56	60296854012	Water	2	X	011
12	MW-1 MS	PS	3/14/2019 11:01	60296854013	Water	2	X	012
13	MW-1 MSD	PS	3/14/2019 11:01	60296854014	Water	2	X	013

Transfers	Released By	Date/Time	Received By	Date/Time
1	E Brackett / Pace	3/18/19 1800	M Smt	3-19-19 0950
2				
3				

Comments

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.

Pittsburgh Lab Sample Condition Upon Receipt

30284916

Pace Analytical

Client Name: Pace KS

Project #

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

Tracking #: 4746 8743 6746

Label MJS

LIMS Login MJS

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 — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 10D3581

Date and Initials of person examining contents: MJS 3/19/19

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 MJS / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MJS Date: 3-19-19

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.

ANALYTICAL REPORT

March 26, 2019

Pace Analytical - Lenexa, KS

Sample Delivery Group:	L1080153
Samples Received:	03/19/2019
Project Number:	60296854
Description:	More's Lake Columbia, MO
Report To:	Jeff Shopper 9608 Loiret Boulevard Lenexa, KS 66219

Entire Report Reviewed By: Nancy F. McLain

Nancy McLain
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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

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MW-6 L1080153-01 GW

Collected by	Collected date/time	Received date/time
	03/12/19 10:36	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/20/19 14:11	03/20/19 14:11	EEM	Mt. Juliet, TN

MW-7 L1080153-02 GW

Collected by	Collected date/time	Received date/time
	03/12/19 11:53	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/20/19 14:30	03/20/19 14:30	EEM	Mt. Juliet, TN

PZ-2 L1080153-03 GW

Collected by	Collected date/time	Received date/time
	03/12/19 13:52	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/20/19 14:49	03/20/19 14:49	EEM	Mt. Juliet, TN

MW-5 L1080153-04 GW

Collected by	Collected date/time	Received date/time
	03/12/19 15:02	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/20/19 15:29	03/20/19 15:29	EEM	Mt. Juliet, TN

MW-3 L1080153-05 GW

Collected by	Collected date/time	Received date/time
	03/13/19 09:32	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/20/19 15:48	03/20/19 15:48	EEM	Mt. Juliet, TN

MW-2 L1080153-06 GW

Collected by	Collected date/time	Received date/time
	03/13/19 11:37	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/21/19 09:48	03/21/19 09:48	SJM	Mt. Juliet, TN

DUP-1 L1080153-07 GW

Collected by	Collected date/time	Received date/time
	03/13/19 11:37	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/21/19 10:07	03/21/19 10:07	SJM	Mt. Juliet, TN

MW-8 L1080153-08 GW

Collected by	Collected date/time	Received date/time
	03/13/19 14:38	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/21/19 10:29	03/21/19 10:29	SJM	Mt. Juliet, TN

MW-1 L1080153-09 GW

Collected by	Collected date/time	Received date/time
	03/14/19 11:01	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/21/19 10:52	03/21/19 10:52	SJM	Mt. Juliet, TN

POND SURFACE WATER L1080153-10 GW

Collected by	Collected date/time	Received date/time
	03/14/19 11:55	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/21/19 12:13	03/21/19 12:13	SJM	Mt. Juliet, TN

MW-4 L1080153-11 GW

Collected by	Collected date/time	Received date/time
	03/14/19 14:56	03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9020B	WG1252221	1	03/21/19 12:33	03/21/19 12:33	SJM	Mt. Juliet, TN

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

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

Nancy F. McLain

Nancy McLain
Project Manager

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/20/2019 14:11	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/20/2019 14:30	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	49.8	B J	12.0	100	1	03/20/2019 14:49	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/20/2019 15:29	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/20/2019 15:48	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/21/2019 09:48	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/21/2019 10:07	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U	P1	12.0	100	1	03/21/2019 10:29	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U	J5	12.0	100	1	03/21/2019 10:52	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/21/2019 12:13	WG1252221

Wet Chemistry by Method 9020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOX	U		12.0	100	1	03/21/2019 12:33	WG1252221

Method Blank (MB)

(MB) R3393490-1 03/20/19 11:26

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOX	19.6	J	12.0	100

L1079994-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1079994-02 03/20/19 12:10 • (DUP) R3393490-4 03/20/19 12:21

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	ND	53.3	1	0.000		20

L1079994-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1079994-03 03/20/19 12:33 • (DUP) R3393490-5 03/20/19 12:42

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	ND	0.000	1	0.000		20

L1079994-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1079994-04 03/20/19 12:52 • (DUP) R3393490-6 03/20/19 13:02

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	ND	24.4	1	0.000		20

L1080034-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1080034-01 03/20/19 13:33 • (DUP) R3393490-7 03/20/19 13:43

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	ND	16.9	1	0.000		20

L1080034-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1080034-02 03/20/19 13:52 • (DUP) R3393490-8 03/20/19 14:02

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	ND	0.000	1	0.000		20

L1080153-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-01 03/20/19 14:11 • (DUP) R3393490-9 03/20/19 14:20

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1080153-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-02 03/20/19 14:30 • (DUP) R3393490-10 03/20/19 14:39

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1080153-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-03 03/20/19 14:49 • (DUP) R3393490-11 03/20/19 14:59

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	49.8	56.0	1	11.8	J	20

L1080153-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-04 03/20/19 15:29 • (DUP) R3393490-12 03/20/19 15:38

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1080153-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-05 03/20/19 15:48 • (DUP) R3393490-13 03/20/19 15:57

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1079994-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1079994-01 03/20/19 11:51 • (DUP) R3393490-3 03/20/19 12:01

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	ND	0.000	1	0.000		20

L1080153-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-06 03/21/19 09:48 • (DUP) R3393490-14 03/21/19 09:57

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1080153-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-07 03/21/19 10:07 • (DUP) R3393490-15 03/21/19 10:18

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1080153-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-08 03/21/19 10:29 • (DUP) R3393490-16 03/21/19 10:40

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	13.5	1	200	J P1	20

L1080153-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-09 03/21/19 10:52 • (DUP) R3393490-17 03/21/19 11:03

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1080153-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-10 03/21/19 12:13 • (DUP) R3393490-20 03/21/19 12:23

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1080153-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1080153-11 03/21/19 12:33 • (DUP) R3393490-21 03/21/19 12:44

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	U	0.000	1	0.000		20

L1080182-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1080182-01 03/21/19 12:54 • (DUP) R3393490-22 03/21/19 13:08

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	25.8	28.2	1	8.86	J	20

L1080182-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1080182-02 03/21/19 13:19 • (DUP) R3393490-23 03/21/19 13:30

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	25.0	32.4	1	25.6	J P1	20

L1080182-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1080182-03 03/21/19 13:42 • (DUP) R3393490-24 03/21/19 13:53

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOX	15.4	35.7	1	79.8	J P1	20

Laboratory Control Sample (LCS)

(LCS) R3393490-2 03/20/19 11:36

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOX	200	210	105	85.0-115	

L1080153-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1080153-09 03/21/19 10:52 • (MS) R3393490-18 03/21/19 11:14 • (MSD) R3393490-19 03/21/19 11:28

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOX	300	U	739	681	246	227	1	80.0-120	J5	J5	8.06	20

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

Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

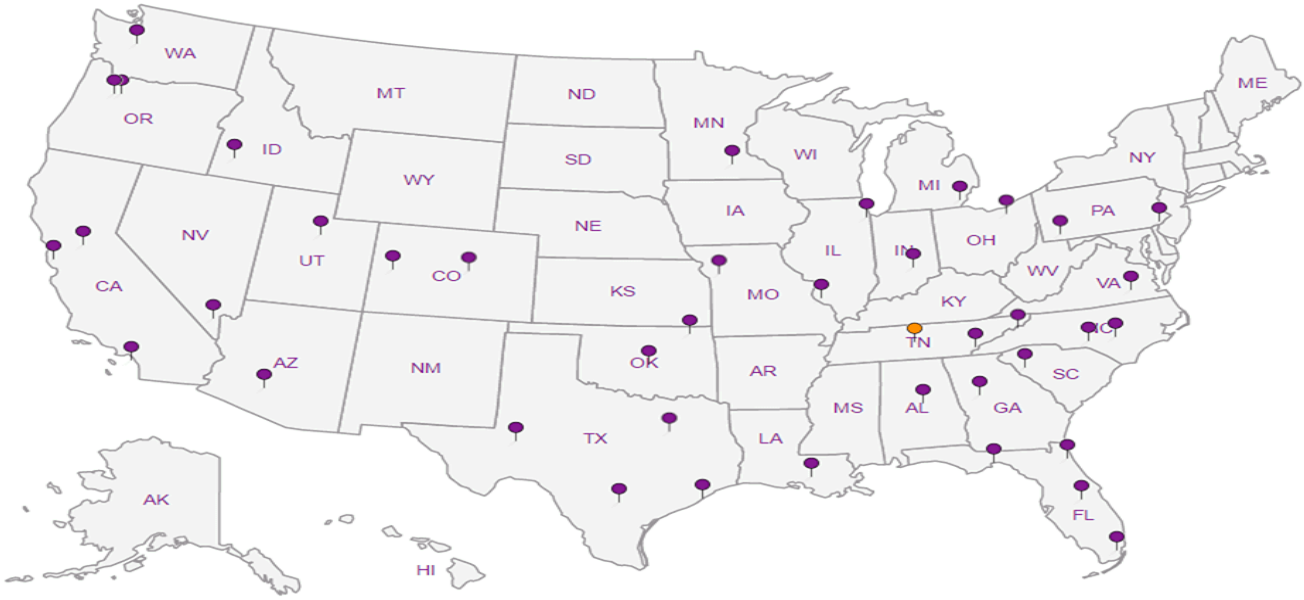
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Chain of Custody

A118

Pace Analytical®
www.pacelabs.com

Workorder: 60296854 **Workorder Name:** MORE'S LAKE COLUMBIA, MO **Results Requested By:** 4/8/2019

Report / Invoice To

Jeffrey Shopper
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1408
Email: jeff.shopper@pacelabs.com

Subcontract To

P.O. SUB-9803

State of Sample Origin: MO

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4	Requested Analysis: TOX	LAB USE ONLY
1	MW-6	3/12/2019 10:36	60296854001	Water		X	-01
2	MW-7	3/12/2019 11:53	60296854002	Water		X	-02
3	PZ-2	3/12/2019 13:52	60296854003	Water		X	-03
4	MW-5	3/12/2019 15:02	60296854004	Water		X	-04
5	MW-3	3/13/2019 09:32	60296854005	Water		X	-05
6	MW-2	3/13/2019 11:37	60296854006	Water		X	-06
7	DUP-1	3/13/2019 11:37	60296854007	Water		X	-07
8	MW-8	3/13/2019 14:38	60296854008	Water		X	-08
9	MW-1	3/14/2019 11:01	60296854009	Water		X	-09
10	POND SURFACE WATER	3/14/2019 11:55	60296854010	Water		X	-10
11	MW-4	3/14/2019 14:56	60296854012	Water		X	-11
12							
13							
14							
15							

L080153

T.C = 13cy

2.3 - 0.3 = 2.0 PN A3

OK

MW-1 = 3CY = MS, MSD

RAD SCREEN: <0.5

4080153

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[illegible]	3/18/19 1620			
2					
3	[illegible]	3/19/19 830	[illegible]	3/19/19 830	

Cooler Temperature on Receipt ____ °C	Custody Seal Y or (N)	Received on Ice (Y) or N	Samples Intact (Y) or N
2.3-0.3=2.0	On the bag		OK

RAD SCREEN: <0.5 mR/hr

SUBOUT SAMPLES

L1080153

Completed by Project Manager:

_____ Sub out within Pace Office: _____

Containers to be sent: _____

X Sub out outside of Pace

Laboratory: Pace Analytical National

Shipping Address: 12065 Lebanon Rd
Mt Juliet, TN 37122

Containers to be sent: 11-AG2S

Pace Purchase Order Number: SUB-9803

Project Number 60296854

Project Due Date: 4/8/2019

PM Initials: JNS

Sample #	Quanti	Matrix	Test (Description)	Unit Price	Containers to send
60296854001-010, 012	11	Water	TOX	$95.00	11-AG2S
				$1,045.00	

TOTALS		
Receiving lab (80%)	Sending Lab (20%)	Total
$836.00	$209.00	1,045

Initials of Person Placing Work: JNS

Initials of Person Sending Samples: JNS

Contact in other Lab: Nancy McClain

Phone Number: 615-758-5858 ext 9710

Date Sent: 3/18/2019

Courier Used: FedEx

Tracking Number: _____

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: PACELKS	SDG#:	L1080153	
Cooler Received/Opened On: 03/19/19	Temperature:	2.0	
Received By: Patrick Nshizirungu			
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

APPENDIX F – DATA VALIDATION REPORTS

Memorandum

Date: February 9, 2018

To: Chris Hoglund

From: Kalli Travlos

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
First Groundwater Monitoring Event, December 2017
at More's Lake – Columbia, Missouri
Project No. 93647

Groundwater samples were collected for More's Lake in Columbia, Missouri on December 20-21, 2017. The samples were analyzed by Pace Analytical (Pace) of Lenexa, KS, unless otherwise noted, for one or more of the following parameters:

Analysis	Method
Appendix III Detection Monitoring	
Metals: boron and calcium	SW-846 Method 6010
Anions: chloride, fluoride, and sulfate	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
pH	SW-846 Method 4500H/9040C
Appendix IV Assessment Monitoring	
Metals 6010: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium	SW-846 Method 6010
Metals 7470: mercury	SW-846 Method 7470
[1]Radium 226/228 Combined	EPA 903.1/904.0
[2]MDNR Water Quality Parameters	
Metals: aluminum, copper, iron, magnesium, manganese, nickel, silver, sodium, zinc	SW-846 Method 6010
Hexavalent and [3]Trivalent Chromium	SW-846 Method 7196
Chemical Oxygen Demand (COD)	EPA 410.4
Total Hardness	EPA 2340B
Total Organic Carbon (TOC)	SM 5310C
[4]Total Organic Halides (TOX)	SW-846 Method 9020B

[1]Radium 226/228 combined analyzed by Pace of Greensburg, Pennsylvania (calculated result)
[2]MDNR – Missouri Department of Natural Resources
[2]Trivalent chromium result based on calculation
[4]TOX analyzed by ESC Lab Sciences of Mount Juliet, Tennessee

The following data sets were reviewed in support of this investigation:

Data Set	Date Collected	Matrix
60260827 (L960765)	12/20/2017	Water
60260933 (L959934)	12/21/2017	Water
60260936 (L959938)	12/21/2017	Water

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2017) and *National Functional Guidelines for Organic Superfund Methods Data Review* (NFGO, 2017). The QA/QC review results are discussed below. All qualifiers are presented in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates on the COCs were present.

2. Requested Analyses Completed – Analysis of pH was inadvertently not completed for all the samples. The lab was contacted to re-issue a report to include pH results, despite the results being analyzed outside of the method required holding time. See the holding time section below for qualification added.

   All other analyses were completed as requested.

3. Holding Times – All samples were analyzed within the recommended method holding times, except for the following:

   - As mentioned previously, all the samples were inadvertently not analyzed for pH in the initial reports. The lab issued revised reports containing pH results, which were flagged for being outside of the 15-minute EPA required holding time. Since pH was also measured in the field, which had generally comparable results to those in the lab, the reported pH results were qualified as estimated (J) rather than rejected.

   - It should be noted the lab flagged the hexavalent chromium result for sample DUP-1 as being outside of the 24-hour hold time; however, this sample was a blind duplicate (no collection time noted to the lab) of sample MW-2. The sample was analyzed within the holding time, and the flag assigned by the lab was disregarded.

4. Sample Preservation – The samples were received by Pace and/or ESC within or slightly below the recommended 4 degrees Celsius (°C) ± 2 °C sample preservation temperature range. Since none of the samples were frozen upon arrival to the lab, all results are considered viable and no qualifiers were necessary.

5. Laboratory Method Blanks – Method blanks were reviewed to determine the potential for sample cross-contamination due to laboratory handling. No detections of target analytes were noted in the method blanks, except for the following:

   - Radium-226 and/or radium-228 had detections in the method blanks in all three data packages; however, they were all below the minimum detectable concentration (MDC). All the samples reported the radium results as combined radium, and had detections which were less than five-times the method blank detections, as well as less than their

respective MDCs, with the exception of MW-6 which had a combined radium result slightly above its MDC. Normally, results which are less than five-times the method blank detection would be qualified as nondetect (U) to account for potential carryover between the samples in the lab. However, due to the relative error associated with each sample result, the samples were qualified as estimated (J) rather than disregarded as nondetect (U). Additionally, an estimated (J) seemed more appropriate, as all but one of the sample results fell below the MDC value. This qualification applies to all combined radium results.

6. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS/LCSD contains a matrix similar to the sample that has been spiked with known concentrations of target analytes. The LCS/LCSD is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS/LCSD are compared against the known analyte concentrations in the spike to determine the REC. The results of these two portions are compared with each other for reproducibility using the relative percent difference (RPD). The purpose of the LCS/LCSD is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference. All LCS/LCSD RECs were within their respective QC limits.

7. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note, only project-specific MS/MSD samples were evaluated.

   - The MS/MSD analysis for sample MW-1 for calcium and sodium were outside of control limits; however, the amount used to spike the sample was less than one-fourth the amount in the parent sample. Thus, no conclusion could be drawn from these MS/MSD analyses, and no qualifiers were necessary. Additionally, COD had an elevated MS REC in this same sample. However, the sample was nondetect for COD, so high bias was not a concern. No qualifiers were necessary for this exceedance.

   All other project-specific MS/MSD RECs and/or RPDs were within QC limits.

8. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

   - Is the compound detected in both portions?

- If the sample concentrations are greater than 5 times the reporting limit, then the maximum allowable RPD is 20 percent for water samples.

- If the sample concentrations are less than 5 times the reporting limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the reporting limit for water samples.

- If the radium results are reported above their minimum detectable concentration (MDC), the normalized difference (also called the relative error ratio) between the duplicate pair was calculated. The maximum normalized difference is 1.96 for the radium samples.

Note that if the dilution factors between the original and duplicate samples differ by a factor of five or more, no qualifiers were added based on discrepancies between the two samples.

The following field duplicate pair was collected:

- MW-2 // DUP-1 (60260933004 // 60260933005): All results were adequately replicated.

9. Laboratory Duplicate Results – In instances where a MS/MSD was not applicable, laboratory duplicate analyses were performed. Laboratory duplicates provide information on the ability to reproduce lab results and to account for error introduced from handling, shipping, storage, preparation, and lab analysis. All project specific laboratory duplicate results were within control limits, except for the following:

- ESC flagged the laboratory duplicate for one or more TOX results with an RPD exceedance. However, since the results were less than five times the reporting limit, a sensitivity test was more appropriate. The results passed the sensitivity test, and no qualifiers were necessary.

10. Detection and Quantitation Limits – Dilutions for chloride and/or sulfate were required for one or more samples. These dilutions were required to bring target analyte concentrations into the linearity range of the instrument calibration and/or to compensate for matrix interference. All reporting limits were adjusted accordingly. No data qualifiers were added based on the dilutions.

11. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. All qualifiers added during this review are presented in Table 1. All data are valid for use, as qualified, in reporting the results of this investigation.

Attachment
Table 1: Data Qualifiers

Table 1
Data Qualifiers
1st Groundwater Sampling Event - December 2017
More's Lake - Columbia, Missouri

Sample Identification	Laboratory Number	Parameter(s)	Data Qualifier	Reason for Qualification
All Samples	All Samples	pH	J	All pH measurements for these samples were performed more than 24 hours after sample collection. Because field pH measurements were also recorded and no significant differences were noted, the results were qualified as estimated (J) rather than rejected (R).
All Samples	All Samples	Combined Radium 226/228	J	Method blank detections (see text for details)

J = Qualified as estimated during data review
R = Rejected

Memorandum

Date: April 25, 2018

To: Chris Hoglund

From: Kalli Travlos

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Second Groundwater Monitoring Event, February 2018
at More's Lake – Columbia, Missouri
Project No. 93647

Groundwater samples were collected for More's Lake in Columbia, Missouri on February 20-23, 2018. The samples were analyzed by Pace Analytical (Pace) of Lenexa, KS, unless otherwise noted, for one or more of the following parameters:

Analysis	Method
Appendix III Detection Monitoring	
Metals: boron and calcium	SW-846 Method 6010
Anions: chloride, fluoride, and sulfate	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
pH	SW-846 Method 4500H/9040C
Appendix IV Assessment Monitoring	
Metals 6010: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium	SW-846 Method 6010
Metals 7470: mercury	SW-846 Method 7470
[1]Radium 226/228 Combined	EPA 903.1/904.0
[2]MDNR Water Quality Parameters	
Metals: aluminum, copper, iron, magnesium, manganese, nickel, silver, sodium, zinc	SW-846 Method 6010
[3]Hexavalent Chromium	3500-Cr B
[4]Trivalent Chromium	Trivalent Chromium Calculation
Chemical Oxygen Demand (COD)	EPA 410.4
Total Hardness	EPA 2340B
Total Organic Carbon (TOC)	SM 5310C
[5]Total Organic Halides (TOX)	SW-846 Method 9020B

[1]Radium 226/228 combined analyzed by Pace of Greensburg, Pennsylvania (calculated result)
[2]MDNR – Missouri Department of Natural Resources
[3]Hexavalent chromium analyzed by ES&S of Columbia, Missouri
[4]Trivalent chromium result based on calculation
[5]TOX analyzed by ESC Lab Sciences of Mount Juliet, Tennessee

The following data sets were reviewed in support of this investigation:

Data Set	Date Collected	Matrix
60264511 L973540 L3880	2/20 – 2/22/2018	Water
60264569 L973536 L3880	2/22 – 2/23/2018	Water

Data Set	Date Collected	Matrix
60264375 L974301 L3880	2/20/2018	Water

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2017) and *National Functional Guidelines for Organic Superfund Methods Data Review* (NFGO, 2017). The QA/QC review results are discussed below. All qualifiers are presented in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates on the COCs were present. In data package 60264511, one container had the date and time which matched collection of sample MW-7, but was inadvertently labeled MW-6. The lab correctly reported the results analyzed from that container under sample name MW-7.

2. Requested Analyses Completed – All analyses were completed as requested.

3. Holding Times – All samples were analyzed within the recommended method holding times, except for the following:

    - All reported pH results were flagged by the lab for being outside of the 15-minute EPA required holding time. The lab pH measurements were also greater than 24 hours after sample collection times. Since pH was also measured in the field, which had generally comparable results to those in the lab, the reported pH results were qualified as estimated (J) rather than rejected.

4. Sample Preservation – The samples were received by the laboratories within or slightly below the recommended 4 degrees Celsius (°C) ± 2 °C sample preservation temperature range. Since none of the samples were frozen upon arrival to the lab, all results are considered viable and no qualifiers were necessary.

5. Laboratory Method Blanks – Method blanks were reviewed to determine the potential for sample cross-contamination due to laboratory handling. No detections of target analytes were noted in the method blanks, except for the following:

    - Radium-226 and/or radium-228 had detections in the method blanks in all three data packages. All the samples reported the radium results as combined radium, and had detections which were less than five-times the method blank detections, with the exception of sample MW-2. Additionally, most samples had combined radium values less than their respective MDCs, with the following exceptions: MW-2, MW-8, MORE'S LAKE, MW-6, and MW-3. Normally, results which are less than five-times the method blank detection would be qualified as nondetect (U) to account for potential carryover

between the samples in the lab. However, due to the relative error associated with each sample result, the samples were qualified as estimated (J) rather than disregarded as nondetect (U). This qualification applies to all combined radium results, with the exception of sample MW-2.

6. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS/LCSD contains a matrix similar to the sample that has been spiked with known concentrations of target analytes. The LCS/LCSD is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS/LCSD are compared against the known analyte concentrations in the spike to determine the REC. The results of these two portions are compared with each other for reproducibility using the relative percent difference (RPD). The purpose of the LCS/LCSD is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference. All LCS/LCSD RECs were within their respective QC limits.

7. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note, only project-specific MS/MSD samples were evaluated.

   - The MS performed on sample PZ-2 (4675) for hexavalent chromium had a REC below the QC limit. The sample was nondetect for the noted analyte and was qualified as estimated at the reporting limit (UJ).

   All other project-specific MS/MSD RECs and/or RPDs were within QC limits.

8. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

   - Is the compound detected in both portions?

   - If the sample concentrations are greater than 5 times the reporting limit, then the maximum allowable RPD is 20 percent for water samples.

   - If the sample concentrations are less than 5 times the reporting limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the reporting limit for water samples.

- If the radium results are reported above their minimum detectable concentration (MDC), the normalized difference (also called the relative error ratio) between the duplicate pair was calculated. The maximum normalized difference is 1.96 for the radium samples.

Note that if the dilution factors between the original and duplicate samples differ by a factor of five or more, no qualifiers were added based on discrepancies between the two samples.

The following field duplicate pair was collected:

- MW-2 // DUP-1 (60264569003 // 60264569004): All results were adequately replicated.

9. Laboratory Duplicate Results – In instances where a MS/MSD was not applicable, laboratory duplicate analyses were performed. Laboratory duplicates provide information on the ability to reproduce lab results and to account for error introduced from handling, shipping, storage, preparation, and lab analysis. All project specific laboratory duplicate results were within control limits, except for the following:

- ESC flagged the laboratory duplicate for one or more TOX results with an RPD exceedance. However, since the results were less than five times the reporting limit, a sensitivity test was more appropriate. The results passed the sensitivity test, and no qualifiers were necessary.

10. Detection and Quantitation Limits – Dilutions for chloride and/or sulfate were required for one or more samples. These dilutions were required to bring target analyte concentrations into the linearity range of the instrument calibration and/or to compensate for matrix interference. All reporting limits were adjusted accordingly. No data qualifiers were added based on the dilutions.

11. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. All qualifiers added during this review are presented in Table 1. All data are valid for use, as qualified, in reporting the results of this investigation.

Attachment
Table 1: Data Qualifiers

Table 1
Data Qualifiers
2nd Groundwater Sampling Event - February 2018
More's Lake - Columbia, Missouri

Sample Identification	Laboratory Number	Parameter(s)	Data Qualifier	Reason for Qualification
All Samples	All Samples	pH	J	All pH measurements for these samples were performed more than 24 hours after sample collection. Because field pH measurements were also recorded and no significant differences were noted, the results were qualified as estimated (J) rather than rejected (R).
All Samples (except MW-2)	All Samples (except MW-2)	Combined Radium 226/228	J	Method blank detections (see text for details)
PZ-2	4675	Hexavalent Chromium	UJ	MS REC < QC Limit

J = Qualified as estimated during data review
MS = Matrix spike
R = Rejected
REC = Percent recovery
UJ = Qualified as estimated at the reporting limit

Memorandum

Date: June 27, 2018

To: Chris Hoglund

From: Kalli Travlos

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Third Groundwater Monitoring Event, April and May 2018
at More's Lake – Columbia, Missouri
Project No. 93647

Groundwater samples and one pond sample were collected for More's Lake in Columbia, Missouri on April 24 through 26, 2018 and May 8, 2018. The samples were analyzed by Pace Analytical (Pace) of Lenexa, KS, unless otherwise noted, for one or more of the following parameters:

Analysis	Method
Appendix III Detection Monitoring	
Metals: boron and calcium	SW-846 Method 6010
Anions: chloride, fluoride, and sulfate	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
pH	SW-846 Method 4500H/9040C
Appendix IV Assessment Monitoring	
Metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium	SW-846 Method 6010 or 6020
Metals 7470: mercury	SW-846 Method 7470
[1]Radium 226/228 Combined	EPA 903.1/904.0
[2]MDNR Water Quality Parameters	
Metals: aluminum, copper, iron, magnesium, manganese, nickel, silver, sodium, zinc	SW-846 Method 6010
Hexavalent Chromium	3500-Cr B
[3]Trivalent Chromium	Trivalent Chromium Calculation
Chemical Oxygen Demand (COD)	EPA 410.4
Total Hardness	EPA 2340B
Total Organic Carbon (TOC)	SM 5310C
[4]Total Organic Halides (TOX)	SW-846 Method 9020B

[1]Radium 226/228 combined analyzed by Pace of Greensburg, Pennsylvania (calculated result)
[2]MDNR – Missouri Department of Natural Resources
[3]Trivalent chromium result based on calculation
[4]TOX analyzed by ESC Lab Sciences of Mount Juliet, Tennessee

The following data sets were reviewed in support of this investigation:

Data Set	Date Collected	Matrix
60269085 L990493	4/24 – 4/26/2018	Water
60269871 L992751	5/8/2018	Water

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States

Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2017). The QA/QC review results are discussed below. All qualifiers are presented in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates on the COCs were present.

2. Requested Analyses Completed – All analyses were completed as requested. It should be noted that the POND sample collected on 5/8/2018 required filtration for radium 226/228 analysis due to suspended solids present in the water sample that would not settle for decantation.

3. Holding Times – All samples were analyzed within the recommended method holding times, except for the following:

    - All reported pH results were flagged by the lab for being outside of the 15-minute EPA required holding time. The lab pH measurements were also greater than 24 hours after sample collection times. Since pH was also measured in the field, which had generally comparable results to those in the lab, the reported pH results were qualified as estimated (J) rather than rejected.

    - Hexavalent chromium was analyzed one hour past the 24-hour holding time in sample MW-4. The sample was nondetect for this analyte. Normally, a nondetect result analyzed past holding time would be rejected, in accordance with the NFGI. However, since it was within one and a half times the holding time, and this analyte has been nondetect in MW-4 in all previous events, the result was qualified as estimated at the reporting limit (UJ), rather than rejected.

4. Sample Preservation – The samples were received by the laboratories within or slightly below the recommended 4 degrees Celsius (°C) ± 2 °C sample preservation temperature range. Since none of the samples were frozen upon arrival to the lab, all results are considered viable and no qualifiers were necessary.

5. Laboratory Method Blanks – Method blanks were reviewed to determine the potential for sample cross-contamination due to laboratory handling. No detections of target analytes were noted in the method blanks, except for the following:

    - Radium-226 and/or radium-228 had detections in the method blanks in all three data packages. All the samples reported the radium results as combined radium, and had detections which were less than five-times the method blank detections, with the exception of sample POND. Additionally, most samples had combined radium values less than their respective MDCs, with the following exceptions: MW-6, MW-5, and SURFACE POND WATER. Normally, results which are less than five-times the method blank detection would be qualified as nondetect (U) to account for potential carryover between the samples in the lab. However, due to the relative error associated with each

sample result, the samples were qualified as estimated (J) rather than disregarded as nondetect (U). This qualification applies to all combined radium results, with the exception of POND.

- One of the method blanks in data package 60269085 had a trace detection of sodium. However, all associated samples were greater than five times the blank value, and no qualifiers were necessary.

6. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS/LCSD contains a matrix similar to the sample that has been spiked with known concentrations of target analytes. The LCS/LCSD is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS/LCSD are compared against the known analyte concentrations in the spike to determine the REC. The results of these two portions are compared with each other for reproducibility using the relative percent difference (RPD). The purpose of the LCS/LCSD is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference. All LCS/LCSD RECs were within their respective QC limits.

7. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note, only project-specific MS/MSD samples were evaluated.

   - The MS/MSD performed on sample MW-1 for hexavalent chromium had a MS REC below the QC limit. The sample was nondetect for the noted analyte and was qualified as estimated at the reporting limit (UJ). Additionally, this same sample had elevated MS/MSD RECs and RPD for TOX analysis. The sample was qualified as estimated for potential high bias (J+) for this analyte. Calcium also had an elevated MS REC; however, the amount used to spike the sample was less than one-fourth the concentration detected in the sample. Thus, no conclusion could be drawn from this MS result, and no qualifiers were added.

   All other project-specific MS/MSD RECs and/or RPDs were within QC limits.

8. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

   - Is the compound detected in both portions?

- If the sample concentrations are greater than 5 times the reporting limit, then the maximum allowable RPD is 20 percent for water samples.

- If the sample concentrations are less than 5 times the reporting limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the reporting limit for water samples.

- If the radium results are reported above their minimum detectable concentration (MDC), the normalized difference (also called the relative error ratio) between the duplicate pair was calculated. The maximum normalized difference is 1.96 for the radium samples.

Note that if the dilution factors between the original and duplicate samples differ by a factor of five or more, no qualifiers were added based on discrepancies between the two samples.

The following field duplicate pair was collected:

- MW-2 // DUP-1 (60269085007 // 60269085008): Iron was detected at levels less than five times the reporting limit in both samples and were evaluated using a sensitivity test. The results slightly failed the sensitivity test. All other results were adequately replicated. Since no major differences were noted between these two samples, and the field duplicate review was more qualitative in nature, no qualifiers were added.

9. Laboratory Duplicate Results – In instances where a MS/MSD was not applicable, laboratory duplicate analyses were performed. Laboratory duplicates provide information on the ability to reproduce lab results and to account for error introduced from handling, shipping, storage, preparation, and lab analysis. All project specific laboratory duplicate results were within control limits.

10. Detection and Quantitation Limits – Dilutions for chloride and/or sulfate were required for one or more samples. These dilutions were required to bring target analyte concentrations into the linearity range of the instrument calibration and/or to compensate for matrix interference. All reporting limits were adjusted accordingly. No data qualifiers were added based on the dilutions.

11. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. All qualifiers added during this review are presented in Table 1. All data are valid for use, as qualified, in reporting the results of this investigation.

Attachment
Table 1: Data Qualifiers

Table 1
Data Qualifiers
3rd Groundwater Sampling Event - April and May 2018
More's Lake - Columbia, Missouri

Sample Identification	Laboratory Number	Parameter(s)	Data Qualifier	Reason for Qualification
All Samples	All Samples	pH	J	All pH measurements for these samples were performed more than 24 hours after sample collection. Because field pH measurements were also recorded and no significant differences were noted, the results were qualified as estimated (J) rather than rejected (R).
MW-4	60269085005 (60269014001)	Hexavalent Chromium	UJ	Analyzed one hour past the 24-hour holding time. Because analysis occurred within 1.5 times the holding time, and the result has been nondetect in previous events, the result was qualified as estimated (J) rather than rejected (R).
All Samples (except POND)	All Samples (except POND)	Combined Radium 226/228	J	Method blank detections (see text for details)
MW-1	60269085010	Hexavalent Chromium	UJ	MS REC < QC Limit
MW-2	L990493-11	TOX	J+	MS/MSD and RPD > QC Limit

J = Qualified as estimated during data review
J+ = Qualified as estimated for potential high bias during data review
MS/MSD = Matrix spike/matrix spike duplicate
R = Rejected
REC = Percent recovery
RPD = relative percent difference
TOX = halides
UJ = Qualified as estimated at the reporting limit

Memorandum

Date: August 29, 2018

To: Chris Hoglund

From: Jordan Friend

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Fourth Groundwater Monitoring Event, June 2018
at More's Lake – Columbia, Missouri
Project No. 93647

Groundwater samples and one pond sample were collected for More's Lake in Columbia, Missouri on June 27 through 29, 2018. The samples were analyzed by Pace Analytical (Pace) of Lenexa, KS, unless otherwise noted, for one or more of the following parameters:

Analysis	Method
Appendix III Detection Monitoring	
Metals: boron and calcium	SW-846 Method 6010
Anions: chloride, fluoride, and sulfate	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
pH	SW-846 Method 4500H
Appendix IV Assessment Monitoring	
Metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium	SW-846 Method 6010 or 6020
Metals 7470: mercury	SW-846 Method 7470
[1]Radium 226/228 Combined	EPA 903.1/904.0
[2]MDNR Water Quality Parameters	
Metals: aluminum, copper, iron, magnesium, manganese, nickel, silver, sodium, zinc	SW-846 Method 6010
Hexavalent Chromium	EPA 7196
[3]Trivalent Chromium	Trivalent Chromium Calculation
Chemical Oxygen Demand (COD)	EPA 410.4
Total Hardness	EPA 2340B
Total Organic Carbon (TOC)	SM 5310C
[4]Total Organic Halides (TOX)	SW-846 Method 9020B

[1]Radium 226/228 combined analyzed by Pace Analytical of Greensburg, Pennsylvania (calculated result)
[2]MDNR – Missouri Department of Natural Resources
[3]Trivalent chromium result based on calculation
[4]TOX analyzed by Pace Analytical of Mount Juliet, Tennessee

The following data sets were reviewed in support of this investigation:

Data Set	Date Collected	Matrix
60273640	6/27/2018	Water
60273743	6/28/2018	Water
60273890 L1006618	6/27 – 6/29/2018	Water

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States

Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2017). The QA/QC review results are discussed below. All qualifiers are presented in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates on the COCs were present.

2. Requested Analyses Completed – All analyses were completed as requested. One minor discrepancy was noted on the sample receipt form for data package 60273640. Sample MW-6 was received by the lab outside of its recommended holding time for hexavalent chromium. Pace was instructed by Burns & McDonnell field personnel to not analyze sample MW-6 due to the holding time exceedance. The Burns & McDonnell field personnel recollected MW-6 and it is reported in data package 60273743. Overall, impact was minimal, and no qualifiers were needed.

3. Holding Times – All samples were analyzed within the recommended method holding times, except for the following:

    - All reported pH results were flagged by the lab for being outside of the 15-minute EPA required holding time. The lab pH measurements were also greater than 24 hours after sample collection times. Since pH was also measured in the field, which had generally comparable results to those in the lab, the reported pH results were qualified as estimated (J) rather than rejected.

    - Hexavalent chromium was analyzed approximately two hours past the 24-hour holding time in sample MW-1 (60273890009). The sample was nondetect for this analyte. Normally, a nondetect result analyzed past holding time would be rejected, in accordance with the NFGI. However, since it was within one and a half times the holding time, and this analyte has been nondetect in MW-1 (60273890009) in all previous events, the result was qualified as estimated at the reporting limit (UJ), rather than rejected (R). The trivalent chromium result for the noted sample also received qualification (UJ) due to the result being calculated based on total and hexavalent chromium concentrations.

4. Sample Preservation – The samples were received by the laboratories within the recommended 4 degrees Celsius (°C) ± 2 °C sample preservation temperature range.

5. Method Requirements – Pace flagged any detection between the method detection limit (MDL) and the method reporting limit (RL) with a "J" to indicate the reported value was estimated. Any detection reported with this "J" qualifier should be used as reported by the lab, unless otherwise noted during this QA/QC evaluation.

6. Laboratory Method Blanks – Method blanks were reviewed to determine the potential for sample cross-contamination due to laboratory handling. No detections of target analytes were noted in the method blanks.

7. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS/LCSD contains a matrix similar to the sample that has been spiked with known concentrations of target analytes. The LCS/LCSD is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS/LCSD are compared against the known analyte concentrations in the spike to determine the REC. The results of these two portions are compared with each other for reproducibility using the relative percent difference (RPD). The purpose of the LCS/LCSD is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference.

   All LCS/LCSD RECs were within their respective QC limits.

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note, only project-specific MS/MSD samples were evaluated.

   - Site-specific MS/MSD performed on MW-1 (60273890009); several analytes had both spike concentrations that were less than the ¼ sample concentration criteria. This is due to high levels of target analytes detected in the parent sample. Analytical assessment was made by review of the associated surrogate, LCS and/or LCSD results. No qualifiers were needed for MS/MSD reasoning.

   All other project-specific MS/MSD RECs and/or RPDs were within QC limits.

9. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

   - Is the compound detected in both portions?

   - If the sample concentrations are greater than 5 times the reporting limit, then the maximum allowable RPD is 20 percent for water samples.

   - If the sample concentrations are less than 5 times the reporting limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the reporting limit for water samples.

   - If the radium results are reported above their minimum detectable concentration (MDC), the normalized difference (also called the relative error ratio) between the duplicate pair was calculated. The maximum normalized difference is 1.96 for the radium samples.

The following field duplicate pair was collected:

- MW-2 // DUP-1 (6026273890007 // 60273890008): All results were adequately replicated.

10. Laboratory Duplicate Results – In instances where a MS/MSD was not applicable, laboratory duplicate analyses were performed. Laboratory duplicates provide information on the ability to reproduce lab results.

    All project-specific laboratory duplicate results were within control limits.

11. Detection and Quantitation Limits – Dilutions for chloride and/or sulfate were required for one or more samples. These dilutions were required to bring target analyte concentrations into the linearity range of the instrument calibration and/or to compensate for matrix interference. All reporting limits were adjusted accordingly. No data qualifiers were added based on the dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. All qualifiers added during this review are presented in Table 1. All data are valid for use, as qualified, in reporting the results of this investigation.

    Attachment
    Table 1: Data Qualifiers

Table 1
Data Qualifiers
4th Groundwater Sampling Event - June 2018
More's Lake - Columbia, Missouri

Sample Identification	Laboratory Number	Parameter(s)	Data Qualifier	Reason for Qualification
All Samples	All Samples	pH	J	All pH measurements for these samples were performed more than 24 hours after sample collection. Because field pH measurements were also recorded and no significant differences were noted, the results were qualified as estimated (J) rather than rejected (R).
MW-1	60273890009	Hexavalent Chromium	UJ	Analyzed past the 24-hour holding time. Because analysis occurred within 1.5 times the holding time, and the result has been nondetect in previous events, the result was qualified as estimated (J) rather than rejected (R).
		Trivalent Chromium	UJ	The trivalent chromium result also received qualification due to the result being calculated based on total and hexavalent chromium concentrations.

Notes:

J = Qualified as estimated during data review
R = Rejected
UJ = Qualified as estimated at the reporting limit

Memorandum

Date: February 22, 2019

To: Chris Hoglund

From: Jordan Friend

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Fifth Groundwater Monitoring Event, August 2018
at More's Lake – Columbia, Missouri
Project No. 93647

Groundwater samples and one pond sample were collected for More's Lake in Columbia, Missouri on August 21 through 23, 2018. The samples were analyzed by Pace Analytical (Pace) of Lenexa, KS, unless otherwise noted, for one or more of the following parameters:

Analysis	Method
Appendix III Detection Monitoring	
Metals: boron and calcium	EPA 200.7
Anions: chloride, fluoride, and sulfate	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
pH	SW-846 Method 4500H
Appendix IV Assessment Monitoring	
Metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium	SW-846 Method 6010 or 6020
Metals 7470: mercury	SW-846 Method 7470
[1]Radium 226/228 Combined	EPA 903.1/904.0
[2]MDNR Water Quality Parameters	
Metals: aluminum, copper, iron, magnesium, manganese, nickel, silver, sodium, zinc	SW-846 Method 6010 or 6020
Hexavalent Chromium	EPA 7196
[3]Trivalent Chromium	Trivalent Chromium Calculation
Chemical Oxygen Demand (COD)	EPA 410.4
Total Hardness	EPA 2340B
Total Organic Carbon (TOC)	SM 5310C
[4]Total Organic Halides (TOX)	SW-846 Method 9020B

[1]Radium 226/228 combined analyzed by Pace Analytical of Greensburg, Pennsylvania (calculated result)
[2]MDNR – Missouri Department of Natural Resources
[3]Trivalent chromium result based on calculation
[4]TOX analyzed by Pace Analytical of Mount Juliet, Tennessee

The following data sets were reviewed in support of this investigation:

Data Set	Date Collected	Matrix
60278290	8/21/2018	Water
60278444 L1020581	8/21 – 8/22/2018	Water
60278591 L1021207	8/22 – 8/23/2018	Water

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2017). The QA/QC review results are discussed below. All qualifiers are presented in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates on the COCs were present.

2. Requested Analyses Completed – All analyses were completed as requested.

3. Holding Times – All samples were analyzed within the recommended method holding times, except for the following:

    - All reported pH results were flagged by the lab for being outside of the 15-minute EPA required holding time. The lab pH measurements were also greater than 24 hours after sample collection times. Since pH was also measured in the field, which had generally comparable results to those in the lab, the reported pH results were qualified as estimated (J) rather than rejected (R).

4. Sample Preservation – The samples were received by the laboratories within or below the recommended 4 degrees Celsius (°C) ± 2 °C sample preservation temperature range. Because the samples were not received in a frozen state, the samples were considered viable, and all analyses were completed. No qualifiers were needed due to low temperatures.

5. Method Requirements – Pace flagged any detection between the method detection limit (MDL) and the method reporting limit (RL) with a "J" to indicate the reported value was estimated. Any detection reported with this "J" qualifier should be used as reported by the lab, unless otherwise noted during this QA/QC evaluation.

6. Laboratory Method Blanks – Method blanks were reviewed to determine the potential for sample cross-contamination due to laboratory handling. No detections of target analytes were noted in the method blanks except for the following:

    - Method blank (2217103): Beryllium, magnesium, molybdenum and sodium were detected in the method blank at 0.52 J micrograms per liter (ug/L), 28.7 J ug/L, 1.0 J ug/L and 252 J ug/L. For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte(s): MW-6 [(60278444001) beryllium and molybdenum], MW-7 [(60278444002) beryllium], PZ-2 [(60278444003) beryllium and molybdenum], and MW-5 [(60278444004) beryllium].

- Method blank (2217974): Magnesium was detected in the method blank at 20 J ug/L. All associated samples were greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed.

- Method blank (R3337729-2): TOX was detected in the method blank at 12.1 J ug/L. For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte: MW-2 and Dup-1 (L1021207-03 and L1021207-04).

- Radium-226 and/or radium-228 had detections in the method blanks in all three data packages; however, they were all below the minimum detectable concentration (MDC). All the samples reported the radium results as combined radium and had detections which were less than five-times the method blank detections, as well as less than their respective MDCs, with the exceptions of MW-6, MW-3, MW-2, MW-8, and MW-1 which all had a combined radium result slightly above its MDC. Normally, results which are less than five-times the method blank detection would be qualified as nondetect (U) to account for potential carryover between the samples in the lab. However, due to the relative error associated with each sample result, the samples were qualified as estimated (J) rather than disregarded as nondetect (U). Additionally, an estimated (J) seemed more appropriate, as all but one of the sample results fell below the MDC value. This qualification applies to all combined radium results.

7. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS/LCSD contains a matrix similar to the sample that has been spiked with known concentrations of target analytes. The LCS/LCSD is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS/LCSD are compared against the known analyte concentrations in the spike to determine the percent recovery (REC). The results of these two portions are compared with each other for reproducibility using the relative percent difference (RPD). The purpose of the LCS/LCSD is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference.

   All LCS/LCSD RECs were within their respective QC limits.

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note, only project-specific MS/MSD samples were evaluated.

- Some site-specific MS/MSDs performed had analyte spike concentrations that were less than the ¼ sample concentration criteria. In these instances, the spike amounts were too low, and sample concentrations were too high to allow accurate recovery of the spike. No data qualifiers were needed as a result of these omissions.

- Site-specific MS/MSD performed on MW-6 (60278290001); The MS REC recovered below its QC limit for hexavalent chromium. The sample was nondetect for the noted analyte and was qualified as estimated at the reporting limit (UJ).

- Site-specific MS/MSD performed on MW-4 (60278591001); The MS REC recovered below its QC limit for COD at 2 percent. The MS recovery is also below the NFGO guidelines of acceptable data of 30 percent. The noted sample has been historically nondetect, and QC problems have not been noted for this analysis. Using professional judgment, MW-4 was qualified as estimated at the reporting limit (UJ) for COD.

- Site-specific MS/MSD performed on MW-3 (60278591002); The MS/MSD RECs exceeded their QC limits for chloride and fluoride. The noted analytes were detected and qualified as estimated potential high bias (J+).

- Site-specific MS/MSD performed on MW-1 (60278591006); The MS REC recovered below its QC limit for fluoride. The noted analyte was detected and was qualified as estimated potential low bias (J-).

All other project-specific MS/MSD RECs and/or RPDs were within QC limits.

9. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

- Is the compound detected in both portions?

- If the sample concentrations are greater than 5 times the reporting limit, then the maximum allowable RPD is 20 percent for water samples.

- If the sample concentrations are less than 5 times the reporting limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the reporting limit for water samples.

- If the radium results are reported above their minimum detectable concentration (MDC), the normalized difference (also called the relative error ratio) between the duplicate pair was calculated. The maximum normalized difference is 1.96 for the radium samples.

The following field duplicate pair was collected:

- MW-2 // DUP-1 (60278591003 and 60278444007 // 60278591004 and 60278444008): All results were adequately replicated.

10. Laboratory Duplicate Results – In instances where a MS/MSD was not applicable, laboratory duplicate analyses were performed. Laboratory duplicates provide information on the ability to reproduce lab results. All project-specific laboratory duplicate results were within control limits except for the following:

    - Laboratory duplicate performed on sample MW-4 (L1021207-01) exceeded its QC limit for TOX. However, upon further review, a sensitivity test was more practical since the result was less than five times the reporting limit. The analyte passed the sensitivity test, and no data qualifiers were necessary.

11. Detection and Quantitation Limits – Dilutions for chloride and/or sulfate were required for one or more samples. These dilutions were required to bring target analyte concentrations into the linearity range of the instrument calibration and/or to compensate for matrix interference. All reporting limits were adjusted accordingly. No data qualifiers were added based on the dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. All qualifiers added during this review are presented in Table 1. All data are valid for use, as qualified, in reporting the results of this investigation.

Attachment
Table 1: Data Qualifiers

Table 1
Data Qualifiers
5th Groundwater Sampling Event - August 2018
More's Lake - Columbia, Missouri

Sample Identification	Laboratory Number	Parameter(s)	Data Qualifier	Reason for Qualification
All Samples	All Samples	pH	J	All pH measurements for these samples were performed more than 24 hours after sample collection. Because field pH measurements were also recorded and no significant differences were noted, the results were qualified as estimated (J) rather than rejected (R).
All Samples	All Samples	Combined Radium 226/228	J	Method blank detections (see text for details)
MW-1	60278591006	Flouride	J-	MS REC < QC limit
MW-2	L1021207-03	TOX	U	Sample concentration less than 5 times the method blank concentration
Dup-1	L1021207-04	TOX	U	
MW-3	60278591002	Chloride	J+	MS/MSD RECs > QC limits
		Fluoride		
MW-4	60278591001	COD	UJ	MS REC < QC limit
MW-5	60278444004	Beryllium	U	Sample concentration less than 5 times the method blank concentration
MW-6	60278290001	Hexavalent chromium	UJ	MS REC < QC limit
	60278444001	Beryllium	U	Sample concentration less than 5 times the method blank concentration
		Molybdenum		
MW-7	60278444002	Beryllium	U	
PZ-2	60278444003	Beryllium	U	
		Molybdenum		

Notes:

COD = Chemical oxygen demand
J = Qualified as estimated during data review
J+ = Qualified as estimated for potential high bias during data review
J- = Qualified as estimated for potential low bias during data review
MS/MSD = Matrix spike/matrix spike duplicate
QC = Quality control
R = Rejected
REC = Percent recovery
TOX = Total organic halides
U = Qualified as nondetect
UJ = Qualified as estimated at the reporting limit

Memorandum

Date: February 25, 2019

To: Chris Hoglund

From: Jordan Friend

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Sixth Groundwater Monitoring Event, October 2018
at More's Lake – Columbia, Missouri
Project No. 93647

Groundwater samples and one pond sample were collected for More's Lake in Columbia, Missouri on October 23 through 25, 2018. The samples were analyzed by Pace Analytical (Pace) of Lenexa, KS, unless otherwise noted, for one or more of the following parameters:

Analysis	Method
Appendix III Detection Monitoring	
Metals: boron and calcium	EPA 200.7
Anions: chloride, fluoride, and sulfate	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
pH	SW-846 Method 4500H
Appendix IV Assessment Monitoring	
Metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium	SW-846 Method 6010 or 6020
Metals 7470: mercury	SW-846 Method 7470
[1]Radium 226/228 Combined	EPA 903.1/904.0
[2]MDNR Water Quality Parameters	
Metals: aluminum, copper, iron, magnesium, manganese, nickel, silver, sodium, zinc	SW-846 Method 6010 or 6020
Hexavalent Chromium	EPA 7196
[3]Trivalent Chromium	Trivalent Chromium Calculation
Chemical Oxygen Demand (COD)	EPA 410.4
Total Hardness	EPA 2340B
Total Organic Carbon (TOC)	SM 5310C
[4]Total Organic Halides (TOX)	SW-846 Method 9020B

[1]Radium 226/228 combined analyzed by Pace Analytical of Greensburg, Pennsylvania (calculated result)
[2]MDNR – Missouri Department of Natural Resources
[3]Trivalent chromium result based on calculation
[4]TOX analyzed by Pace Analytical of Mount Juliet, Tennessee

The following data sets were reviewed in support of this investigation:

Data Set	Date Collected	Matrix
60284534 L1037950	10/23/2018	Water
60284690 L1038610	10/24/2018	Water
60284830 L1038702	10/25/2018	Water

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2017). The QA/QC review results are discussed below. All qualifiers are presented in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates on the COCs were present.

2. Requested Analyses Completed – All analyses were completed as requested.

3. Holding Times – All samples were analyzed within the recommended method holding times, except for the following:

    - All reported pH results were flagged by the lab for being outside of the 15-minute EPA required holding time. The lab pH measurements were also greater than 24 hours after sample collection times. Since pH was also measured in the field, which had generally comparable results to those in the lab, the reported pH results were qualified as estimated (J) rather than rejected (R).

4. Sample Preservation – The samples were received by the laboratories within or below the recommended 4 degrees Celsius (°C) ± 2 °C sample preservation temperature range. Because the samples were not received in a frozen state, the samples were considered viable, and all analyses were completed. No qualifiers were needed due to low temperatures.

5. Method Requirements – Pace flagged any detection between the method detection limit (MDL) and the method reporting limit (RL) with a "J" to indicate the reported value was estimated. Any detection reported with this "J" qualifier should be used as reported by the lab, unless otherwise noted during this QA/QC evaluation.

6. Laboratory Method Blanks – Method blanks were reviewed to determine the potential for sample cross-contamination due to laboratory handling. No detections of target analytes were noted in the method blanks except for the following:

    - Method blank (2262481): Beryllium, cadmium and sodium were detected in the method blank at 0.34 J micrograms per liter (ug/L), 0.66 J ug/L and 231 J ug/L. For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte(s): MW-6 [(602845534001) beryllium and cadmium], MW-7 [(602845534002) beryllium and cadmium], PZ-2 [(602845534003) beryllium and cadmium], MW-4 [(60284690001) cadmium], MW-2 [(60284690004) beryllium], Dup-1 [(60284690005) beryllium], and

MW-8 [(60284690006) beryllium].

- Method blank (2277295): Chloride was detected in the method blank at 0.74 J milligrams per liter (mg/L). For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte(s): MW-2 and Dup-1 (60284690004 and 60284690005).

- Radium-226 and/or radium-228 had detections in the method blanks in all three data packages; however, they were all below the minimum detectable concentration (MDC). All the samples reported the radium results as combined radium and had detections which were less than five-times the method blank detections, as well as less than their respective MDCs, with the exceptions of MW-6, PZ-2, and MW-4 which all had a combined radium result slightly above its MDC. Normally, results which are less than five-times the method blank detection would be qualified as nondetect (U) to account for potential carryover between the samples in the lab. However, due to the relative error associated with each sample result, the samples were qualified as estimated (J) rather than disregarded as nondetect (U). Additionally, an estimated (J) seemed more appropriate, as all but one of the sample results fell below the MDC value. This qualification applies to all combined radium results.

7. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS/LCSD contains a matrix similar to the sample that has been spiked with known concentrations of target analytes. The LCS/LCSD is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS/LCSD are compared against the known analyte concentrations in the spike to determine the percent recovery (REC). The results of these two portions are compared with each other for reproducibility using the relative percent difference (RPD). The purpose of the LCS/LCSD is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference.

   All LCS/LCSD RECs were within their respective QC limits.

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note, only project-specific MS/MSD samples were evaluated.

   - Some site-specific MS/MSDs performed had analyte spike concentrations that were less than the ¼ sample concentration criteria. In these instances, the spike amounts were too low, and sample concentrations were too high to allow accurate recovery of the spike. No

data qualifiers were needed as a result of these omissions.

- Site-specific MS/MSD performed on MW-1 (60284830001); The MS RECs exceeded their QC limits for aluminum, antimony, barium and thallium. Aluminum and barium were detected and qualified as estimated potential high bias (J+). Antimony and thallium were nondetect and high bias was not a concern. No data qualifiers were needed.

All other project-specific MS/MSD RECs and/or RPDs were within QC limits.

9. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

- Is the compound detected in both portions?
- If the sample concentrations are greater than 5 times the reporting limit, then the maximum allowable RPD is 20 percent for water samples.
- If the sample concentrations are less than 5 times the reporting limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the reporting limit for water samples.
- If the radium results are reported above their minimum detectable concentration (MDC), the normalized difference (also called the relative error ratio) between the duplicate pair was calculated. The maximum normalized difference is 1.96 for the radium samples.

The following field duplicate pair was collected:

- MW-2 // DUP-1 (60284690004 // 60284690005): The iron, nickel and TDS results exceeded the RPD limit. The field duplicated pair were qualified as estimated (J) for the noted analytes. The beryllium, cobalt and zinc results passed the sensitivity test, and no data qualifiers were needed. All other results were adequately replicated.

10. Laboratory Duplicate Results – In instances where a MS/MSD was not applicable, laboratory duplicate analyses were performed. Laboratory duplicates provide information on the ability to reproduce lab results. All project-specific laboratory duplicate results were within control limits except for the following:

- Laboratory duplicate performed on sample MW-3 (L1038610-02) exceeded its QC limit for TOX. However, upon further review, a sensitivity test was more practical since the result was less than five times the reporting limit. The analyte passed the sensitivity test,

and no data qualifiers were necessary.

- Laboratory duplicate performed on sample POND SURFACE WATER (60284830002) exceeded its QC limit for TDS. The noted analyte was detected and qualified as estimated (J).

11. Detection and Quantitation Limits – Dilutions for chloride and/or sulfate were required for one or more samples. These dilutions were required to bring target analyte concentrations into the linearity range of the instrument calibration and/or to compensate for matrix interference. All reporting limits were adjusted accordingly. No data qualifiers were added based on the dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. All qualifiers added during this review are presented in Table 1. All data are valid for use, as qualified, in reporting the results of this investigation.

Attachment
Table 1: Data Qualifiers

Table 1
Data Qualifiers
6th Groundwater Sampling Event - October 2018
More's Lake - Columbia, Missouri

Sample Identification	Laboratory Number	Parameter(s)	Data Qualifier	Reason for Qualification
All Samples	All Samples	pH	J	All pH measurements for these samples were performed more than 24 hours after sample collection. Because field pH measurements were also recorded and no significant differences were noted, the results were qualified as estimated (J) rather than rejected (R).
All Samples	All Samples	Combined Radium 226/228	J	Method blank detections (see text for details)
MW-1	60284830001	Aluminum	J+	MS REC > QC limit
		Barium		
MW-2	60284690004	Beryllium	U	Sample concentration less than 5 times the method blank concentration
		Chloride		
		Iron	J	Field duplicate discrepancy
		Nickel		
		TDS		
Dup-1	60284690005	Beryllium	U	Sample concentration less than 5 times the method blank concentration
		Chloride		
		Iron	J	Field duplicate discrepancy
		Nickel		
		TDS		
MW-4	60284690001	Cadmium	U	Sample concentration less than 5 times the method blank concentration
MW-6	602845534001	Beryllium	U	
		Cadmium		
MW-7	602845534002	Beryllium	U	
		Cadmium		
MW-8	60284690006	Beryllium	U	
PZ-2	602845534003	Beryllium	U	
		Cadmium		
POND SURFACE WATER	60284830002	TDS	J	LD > RPD limit

Notes:

J = Qualified as estimated during data review
J+ = Qualified as estimated for potential high bias during data review
LD = Laboratory duplicate
MS = Matrix spike
QC = Quality control
R = Rejected
REC = Percent recovery
RPD = Relative percent difference
TDS = Total dissolved solids
U = Qualified as nondetect

Memorandum

Date: February 26, 2019

To: Chris Hoglund

From: Jordan Friend

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Seventh Groundwater Monitoring Event, December 2018
at More's Lake – Columbia, Missouri
Project No. 93647

Groundwater samples and one pond sample were collected for More's Lake in Columbia, Missouri on December 18 through 20, 2018. The samples were analyzed by Pace Analytical (Pace) of Lenexa, KS, unless otherwise noted, for one or more of the following parameters:

Analysis	Method
Appendix III Detection Monitoring	
Metals: boron and calcium	EPA 200.7
Anions: chloride, fluoride, and sulfate	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
pH	SW-846 Method 4500H
Appendix IV Assessment Monitoring	
Metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium	SW-846 Method 6010 or 6020
Metals 7470: mercury	SW-846 Method 7470
[1]Radium 226/228 Combined	EPA 903.1/904.0
[2]MDNR Water Quality Parameters	
Metals: aluminum, copper, iron, magnesium, manganese, nickel, silver, sodium, zinc	SW-846 Method 6010 or 6020
Hexavalent Chromium	EPA 7196
[3]Trivalent Chromium	Trivalent Chromium Calculation
Chemical Oxygen Demand (COD)	EPA 410.4
Total Hardness	EPA 2340B
Total Organic Carbon (TOC)	SM 5310C
[4]Total Organic Halides (TOX)	SW-846 Method 9020B

[1]Radium 226/228 combined analyzed by Pace Analytical of Greensburg, Pennsylvania (calculated result)
[2]MDNR – Missouri Department of Natural Resources
[3]Trivalent chromium result based on calculation
[4]TOX analyzed by Pace Analytical of Mount Juliet, Tennessee

The following data sets were reviewed in support of this investigation:

Data Set	Date Collected	Matrix
60289935	12/18/2018	Water
60290072	12/19/2018	Water
60290219 L1055859	12/18 – 12/20/2018	Water

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States

Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2017). The QA/QC review results are discussed below. All qualifiers are presented in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates on the COCs were present.

2. Requested Analyses Completed – All analyses were completed as requested.

3. Holding Times – All samples were analyzed within the recommended method holding times, except for the following:

    - All reported pH results were flagged by the lab for being outside of the 15-minute EPA required holding time. The lab pH measurements were also greater than 24 hours after sample collection times. Since pH was also measured in the field, which had generally comparable results to those in the lab, the reported pH results were qualified as estimated (J) rather than rejected (R).

4. Sample Preservation – The samples were received by the laboratories within or below the recommended 4 degrees Celsius (°C) ± 2 °C sample preservation temperature range. Because the samples were not received in a frozen state, the samples were considered viable, and all analyses were completed. No qualifiers were needed due to low temperatures.

5. Method Requirements – Pace flagged any detection between the method detection limit (MDL) and the method reporting limit (RL) with a "J" to indicate the reported value was estimated. Any detection reported with this "J" qualifier should be used as reported by the lab, unless otherwise noted during this QA/QC evaluation.

6. Laboratory Method Blanks – Method blanks were reviewed to determine the potential for sample cross-contamination due to laboratory handling. No detections of target analytes were noted in the method blanks except for the following:

    - Method blank (2310455): Sodium and zinc were detected in the method blank at 203 J micrograms per liter (ug/L) and 10.6 J ug/L. For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte(s): MW-6 [(60290219001) zinc], PZ-2 [(60290219003) zinc], MW-5 [(60290219004) zinc], MW-2 [(60290219007) zinc], Dup-1 [(60290219008) zinc], and POND SURFACE WATER [(60290219012) zinc].

    - Method blank (2308067): Aluminum and barium were detected in the method blank at 17.1 J ug/L and 0.29 J ug/L. For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and

no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte(s): MW-7 [(60290219002) aluminum], PZ-2 [(60290219003) aluminum], MW-5 [(60290219004) aluminum], MW-4 [(60290219005) aluminum], MW-2 [(60290219007) aluminum], Dup-1 [(60290219008) aluminum], MW-8 [(60290219009) aluminum] and MW-1 [(60290219010) aluminum].

- Radium-226 and/or radium-228 had detections in the method blanks in all three data packages; however, they were all below the minimum detectable concentration (MDC). All the samples reported the radium results as combined radium and had detections which were less than five-times the method blank detections, as well as less than their respective MDCs, with the exceptions of MW-6, MW-8, and MW-1 which all had a combined radium result slightly above its MDC. Normally, results which are less than five-times the method blank detection would be qualified as nondetect (U) to account for potential carryover between the samples in the lab. However, due to the relative error associated with each sample result, the samples were qualified as estimated (J) rather than disregarded as nondetect (U). Additionally, an estimated (J) seemed more appropriate, as all but one of the sample results fell below the MDC value. This qualification applies to all combined radium results.

7. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS/LCSD contains a matrix similar to the sample that has been spiked with known concentrations of target analytes. The LCS/LCSD is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS/LCSD are compared against the known analyte concentrations in the spike to determine the percent recovery (REC). The results of these two portions are compared with each other for reproducibility using the relative percent difference (RPD). The purpose of the LCS/LCSD is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference.

   All LCS/LCSD RECs were within their respective QC limits.

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note, only project-specific MS/MSD samples were evaluated.

   - Site-specific MS/MSD performed on MW-1 (L1055859-10); The MS REC and MS/MSD RPD exceeded their QC limits for TOX. The noted analyte was nondetect and no data qualifiers were needed.

   All other project-specific MS/MSD RECs and/or RPDs were within QC limits.

9. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

   - Is the compound detected in both portions?
   - If the sample concentrations are greater than 5 times the reporting limit, then the maximum allowable RPD is 20 percent for water samples.
   - If the sample concentrations are less than 5 times the reporting limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the reporting limit for water samples.
   - If the radium results are reported above their minimum detectable concentration (MDC), the normalized difference (also called the relative error ratio) between the duplicate pair was calculated. The maximum normalized difference is 1.96 for the radium samples.

   The following field duplicate pair was collected:

   - MW-2 // DUP-1 (60290072003 and 60290219007 // 60290072005 and 60290219008): All results were adequately replicated.

10. Laboratory Duplicate Results – In instances where a MS/MSD was not applicable, laboratory duplicate analyses were performed. Laboratory duplicates provide information on the ability to reproduce lab results. All project-specific laboratory duplicate results were within control limits except for the following:

    - Laboratory duplicate performed on sample MW-6 (L1055859-01) exceeded its QC limit for TOX. However, upon further review, a sensitivity test was more practical since the result was less than five times the reporting limit. The analyte passed the sensitivity test, and no data qualifiers were necessary.
    - Laboratory duplicate performed on sample POND SURFACE WATER (L1055859-11) exceeded its QC limit for TOX. The noted analyte was nondetect and no data qualifiers were needed.

11. Detection and Quantitation Limits – Dilutions for chloride and/or sulfate were required for one or more samples. These dilutions were required to bring target analyte concentrations into the linearity range of the instrument calibration and/or to compensate for matrix interference. All reporting limits were adjusted accordingly. No data qualifiers were added based on the dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. All qualifiers added during this review are presented in Table 1. All data are valid for use, as qualified, in reporting the results of this investigation.

Attachment
Table 1: Data Qualifiers

Table 1
Data Qualifiers
7th Groundwater Sampling Event - December 2018
More's Lake - Columbia, Missouri

Sample Identification	Laboratory Number	Parameter(s)	Data Qualifier	Reason for Qualification
All Samples	All Samples	pH	J	All pH measurements for these samples were performed more than 24 hours after sample collection. Because field pH measurements were also recorded and no significant differences were noted, the results were qualified as estimated (J) rather than rejected (R).
All Samples	All Samples	Combined Radium 226/228	J	Method blank detections (see text for details)
MW-1	60290219010	Aluminum	U	Sample concentration less than 5 times the method blank concentration
MW-2	60290219007	Zinc	U	
		Aluminum		
Dup-1	60290219008	Zinc	U	
		Aluminum		
MW-4	60290219005	Aluminum	U	
MW-5	60290219004	Zinc	U	
		Aluminum		
MW-6	60290219001	Zinc	U	
MW-7	60290219002	Aluminum	U	
MW-8	60290219009	Aluminum	U	
PZ-2	60290219003	Zinc	U	
		Aluminum		
POND SURFACE WATER	60290219012	Zinc	U	

Notes:

J = Qualified as estimated during data review
R = Rejected
U = Qualified as nondetect

Memorandum

Date: April 19, 2019

To: Chris Hoglund

From: Jordan Friend

Re: Quality Assurance/Quality Control (QA/QC) Review of Analytical Data
Eighth Groundwater Monitoring Event, March 2019
at More's Lake – Columbia, Missouri
Project No. 93647

Groundwater samples and one pond sample were collected for More's Lake in Columbia, Missouri on March 12 through 14, 2019. The samples were analyzed by Pace Analytical (Pace) of Lenexa, KS, unless otherwise noted, for one or more of the following parameters:

Analysis	Method
Appendix III Detection Monitoring	
Metals: boron and calcium	EPA 200.7
Anions: chloride, fluoride, and sulfate	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
pH	SW-846 Method 4500H
Appendix IV Assessment Monitoring	
Metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium	SW-846 Method 6010 or 6020
Metals 7470: mercury	SW-846 Method 7470
[1]Radium 226/228 Combined	EPA 903.1/904.0
[2]MDNR Water Quality Parameters	
Metals: aluminum, copper, iron, magnesium, manganese, nickel, silver, sodium, zinc	SW-846 Method 6010 or 6020
Hexavalent Chromium	EPA 7196
[3]Trivalent Chromium	Trivalent Chromium Calculation
Chemical Oxygen Demand (COD)	EPA 410.4
Total Hardness	EPA 2340B
Total Organic Carbon (TOC)	SM 5310C
[4]Total Organic Halides (TOX)	SW-846 Method 9020B

[1]Radium 226/228 combined analyzed by Pace Analytical of Greensburg, Pennsylvania (calculated result)
[2]MDNR – Missouri Department of Natural Resources
[3]Trivalent chromium result based on calculation
[4]TOX analyzed by Pace Analytical of Mount Juliet, Tennessee

The following data sets were reviewed in support of this investigation:

Data Set	Date Collected	Matrix
60296523	03/12/2019	Water
60296724	03/13/2019	Water
60296854 L1080153	03/12 – 03/14/2019	Water

The QA/QC results in association with the samples collected were examined for any method-specific requirements. Data qualifiers, when appropriate, were added to the data as recommended in United States

Environmental Protection Agency's (USEPA's) *National Functional Guidelines for Inorganic Superfund Methods Data Review* (NFGI, 2017). The QA/QC review results are discussed below. All qualifiers are presented in Table 1.

1. Chain-of-Custody (COC) – The relinquished and received signatures, times, and dates on the COCs were present. Upon check-in to the lab, samples MW-2, DUP-1 and MW-8 presented different collection times on their sample containers vs the COC. Pace logged the samples per the COC for the collection times. Overall, the impact was minimal, and no data qualifiers were needed.

2. Requested Analyses Completed – All analyses were completed as requested.

3. Holding Times – All samples were analyzed within the recommended method holding times, except for the following:

    - All reported pH results were flagged by the lab for being outside of the 15-minute EPA required holding time. The lab pH measurements were also greater than 24 hours after sample collection times. Since pH was also measured in the field, which had generally comparable results to those in the lab, the reported pH results were qualified as estimated (J) rather than rejected (R).

4. Sample Preservation – The samples were received by the laboratories within or below the recommended 4 degrees Celsius (°C) ± 2 °C sample preservation temperature range. Because the samples were not received in a frozen state, the samples were considered viable, and all analyses were completed. No qualifiers were needed due to low temperatures.

5. Method Requirements – Pace flagged any detection between the method detection limit (MDL) and the method reporting limit (RL) with a "J" to indicate the reported value was estimated. Any detection reported with this "J" qualifier should be used as reported by the lab, unless otherwise noted during this QA/QC evaluation.

6. Laboratory Method Blanks – Method blanks were reviewed to determine the potential for sample cross-contamination due to laboratory handling. No detections of target analytes were noted in the method blanks except for the following:

    - Method blank (2356652): Copper and iron were detected in the method blank at 6 J micrograms per liter (ug/L) and 6.5 J ug/L. For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte(s): MW-6 [(60296854001) copper], MW-7 [(60296854002) copper], PZ-2 [(60296854003) copper], MW-5 [(60296854004) copper], MW-3 [(60296854005) copper and iron], MW-2 [(60296854006) copper], DUP-1 [(60296854007) copper], MW-8 [(60296854008) copper], MW-1 [(60296854009)

copper], and POND SURFACE WATER [(60296854010) copper].

- Method blank (2356620): Aluminum, antimony, barium and thallium were detected in the method blank at 15.3 J ug/L, 0.13 J ug/L, 0.28 J ug/L and 0.13 J ug/L. For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte(s): MW-6 [(60296854001) antimony], MW-7 [(60296854002) antimony], PZ-2 [(60296854003) aluminum], MW-5 [(60296854004) aluminum], MW-2 [(60296854006) aluminum], DUP-1 [(60296854007) aluminum], MW-8 [(60296854008) antimony], MW-1 [(60296854009) aluminum], POND SURFACE WATER [(60296854010) antimony and thallium] and MW-4 [(60296854012) antimony and thallium].

- Method blank (2373917): Chloride was detected in the method blank at 0.26 J milligrams per liter (mg/L). All associated samples were greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed.

- Method blank (R3393490-1): TOX was detected in the method blank at 19.6 J ug/L. For associated samples that were nondetect or greater than five times the method blank concentration, cross contamination was not a concern, and no data qualifiers were needed. The following samples were less than five times the method blank concentration and were disregarded as false positive and qualified as nondetect (U) for the respective analyte: PZ-2 (L1080153-03).

- Radium-226 and/or radium-228 had detections in the method blanks in all three data packages; however, they were all below the minimum detectable concentration (MDC). All the samples reported the radium results as combined radium and had detections which were less than five-times the method blank detections, as well as less than their respective MDCs. Normally, results which are less than five-times the method blank detection would be qualified as nondetect (U) to account for potential carryover between the samples in the lab. However, due to the relative error associated with each sample result, the samples were qualified as estimated (J) rather than disregarded as nondetect (U). Additionally, an estimated (J) seemed more appropriate, as all but one of the sample results fell below the MDC value. This qualification applies to all combined radium results except for the following: MW-3 (60296854005).

7. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – The LCS/LCSD contains a matrix similar to the sample that has been spiked with known concentrations of target analytes. The LCS/LCSD is prepared and analyzed by the same method as the samples. As a measure of analytical accuracy, the results of the LCS/LCSD are compared against the known analyte concentrations in the spike to determine the percent recovery (REC). The results of these two portions are compared with each other for reproducibility using the

relative percent difference (RPD). The purpose of the LCS/LCSD is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interference.

All LCS/LCSD RECs and/or RPDs were within their respective QC limits.

8. Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are typically run for organic and inorganic analyses. A sample is split into three portions (original, MS and MSD), and a known amount of a target analyte is added (spiked) to two portions (MS and MSD) of the sample. The results of these two portions are compared with each other for reproducibility using the RPD. They are also compared against the unspiked portion of the sample for REC of the spike. Note, only project-specific MS/MSD samples were evaluated.

   - Some site-specific MS/MSDs performed had analyte spike concentrations that were less than the ¼ sample concentration criteria. In these instances, the spike amounts were too low, and sample concentrations were too high to allow accurate recovery of the spike. No data qualifiers were needed as a result of these omissions.

   All other project-specific MS/MSD RECs and/or RPDs were within QC limits.

9. Field Duplicate Results – Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. There are no specific USEPA criteria for qualifying data from field duplicate results. Depending upon the sample concentration, one of the following criteria based upon NFGI is applicable:

   - Is the compound detected in both portions?
   - If the sample concentrations are greater than 5 times the reporting limit, then the maximum allowable RPD is 20 percent for water samples.
   - If the sample concentrations are less than 5 times the reporting limit, then a sensitivity test is applied. For the sensitivity test, the sample concentrations must agree within ± the reporting limit for water samples.
   - If the radium results are reported above their minimum detectable concentration (MDC), the normalized difference (also called the relative error ratio) between the duplicate pair was calculated. The maximum normalized difference is 1.96 for the radium samples.

   The following field duplicate pair was collected:

   - MW-2 // DUP-1 (60296724002 and 60296854006 // 60296724003 and 60296854007): All results were adequately replicated.

10. Laboratory Duplicate Results – In instances where a MS/MSD was not applicable, laboratory duplicate analyses were performed. Laboratory duplicates provide information on the ability to reproduce lab results. All project-specific laboratory duplicate results were within control limits except for the following:

    - Laboratory duplicate performed on sample MW-8 (L1080153-08) exceeded its QC limit for TOX. However, upon further review, a sensitivity test was more practical since the result was less than five times the reporting limit. The analyte passed the sensitivity test, and no data qualifiers were necessary.

11. Detection and Quantitation Limits – Dilutions for chloride and/or sulfate were required for one or more samples. These dilutions were required to bring target analyte concentrations into the linearity range of the instrument calibration and/or to compensate for matrix interference. All reporting limits were adjusted accordingly. No data qualifiers were added based on the dilutions.

12. Conclusion – The data were reviewed for achievement of any method-specified QA/QC criteria. All qualifiers added during this review are presented in Table 1. All data are valid for use, as qualified, in reporting the results of this investigation.

    Attachment
    Table 1: Data Qualifiers

Table 1
Data Qualifiers
8th Groundwater Sampling Event - March 2019
More's Lake - Columbia, Missouri

Sample Identification	Laboratory Number	Parameter(s)	Data Qualifier	Reason for Qualification
All Samples	All Samples	pH	J	All pH measurements for these samples were performed more than 24 hours after sample collection. Because field pH measurements were also recorded and no significant differences were noted, the results were qualified as estimated (J) rather than rejected (R).
All Samples (except MW-3)	All Samples	Combined Radium 226/228	J	Method blank detections (see text for details)
MW-1	60296854009	Copper	U	Sample concentration less than 5 times the method blank concentration
		Aluminum		
MW-2	60296854006	Copper		
		Aluminum		
Dup-1	60296854007	Copper		
		Aluminum		
MW-3	60296854005	Copper		
		Iron		
MW-4	60296854012	Antimony		
		Thallium		
MW-5	60296854004	Copper		
		Aluminum		
MW-6	60296854001	Copper		
		Antimony		
MW-7	60296854002	Copper		
		Antimony		
MW-8	60296854008	Copper		
		Antimony		
PZ-2	60296854003	Copper		
		Aluminum		
		TOX		
POND SURFACE WATER	60296854010	Copper		
		Antimony		
		Thallium		

Notes:

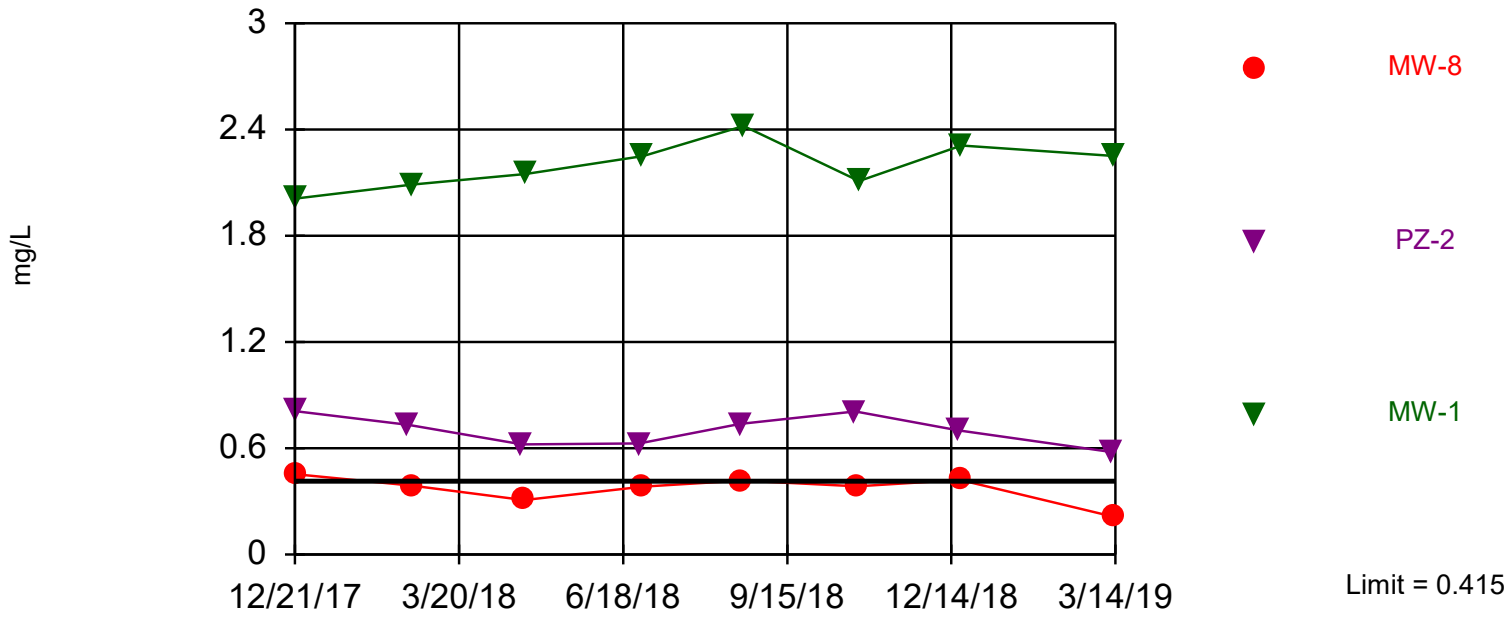
J = Qualified as estimated during data review
R = Rejected
TOX = Total organic halides
U = Qualified as nondetect

APPENDIX G – STATISTICAL OUTPUT

Exceeds Limit: PZ-2, MW-1

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 48 background values. 18.75% NDs. Annual per-constituent alpha = 0.002495. Individual comparison alpha = 0.0008323 (1 of 2). Comparing 3 points to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified. Seasonality was not detected with 95% confidence.

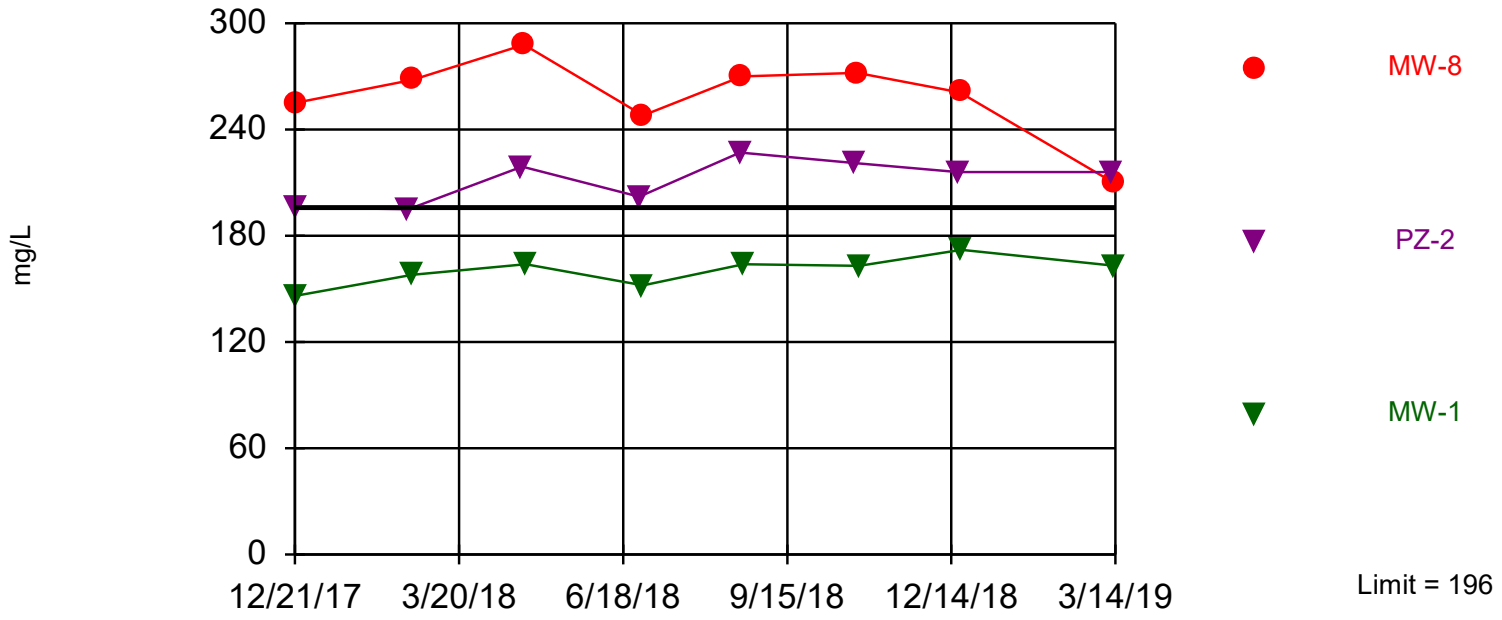
Constituent: Boron Analysis Run 6/14/2019 10:49 AM View: Detection Monitoring

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Exceeds Limit: MW-8, PZ-2

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 48 background values. Annual per-constituent alpha = 0.002495. Individual comparison alpha = 0.0008323 (1 of 2). Comparing 3 points to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Seasonality was not detected with 95% confidence.

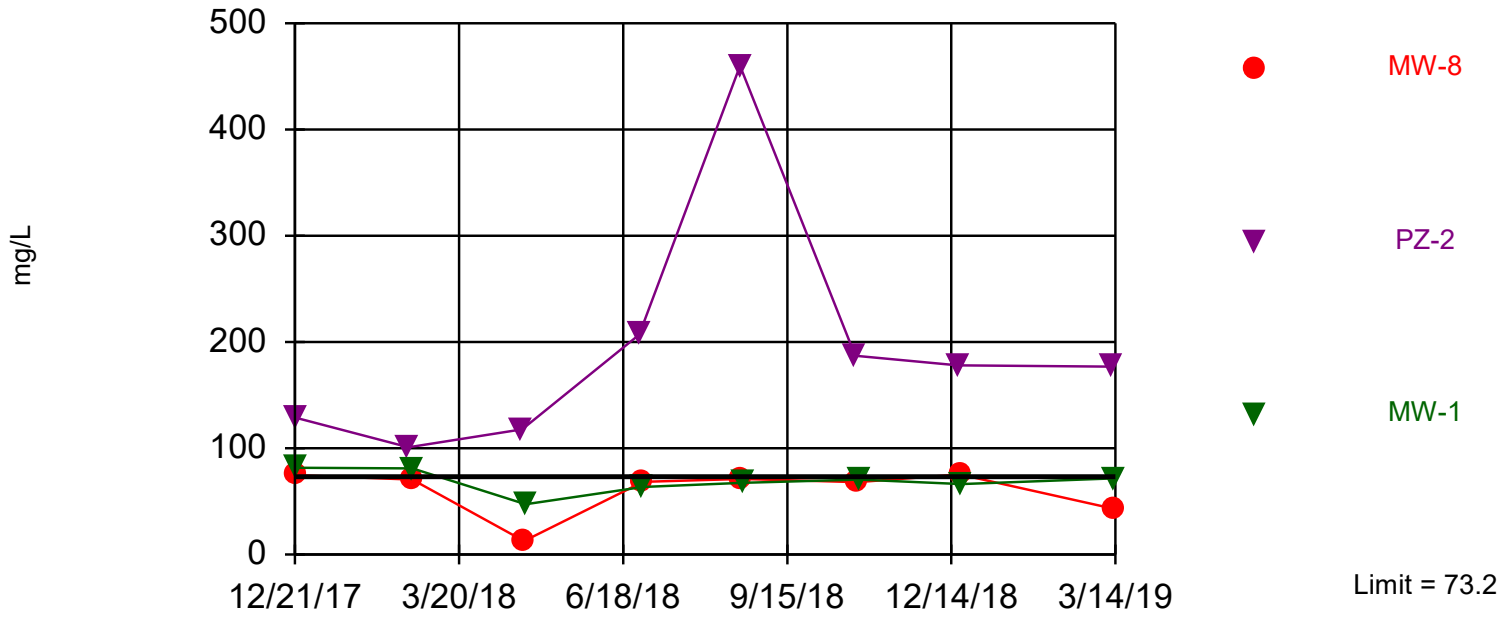
Constituent: Calcium Analysis Run 6/14/2019 10:49 AM View: Detection Monitoring

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Exceeds Limit: PZ-2

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 48 background values. Annual per-constituent alpha = 0.002495. Individual comparison alpha = 0.0008323 (1 of 2). Comparing 3 points to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified. Seasonality was not detected with 95% confidence.

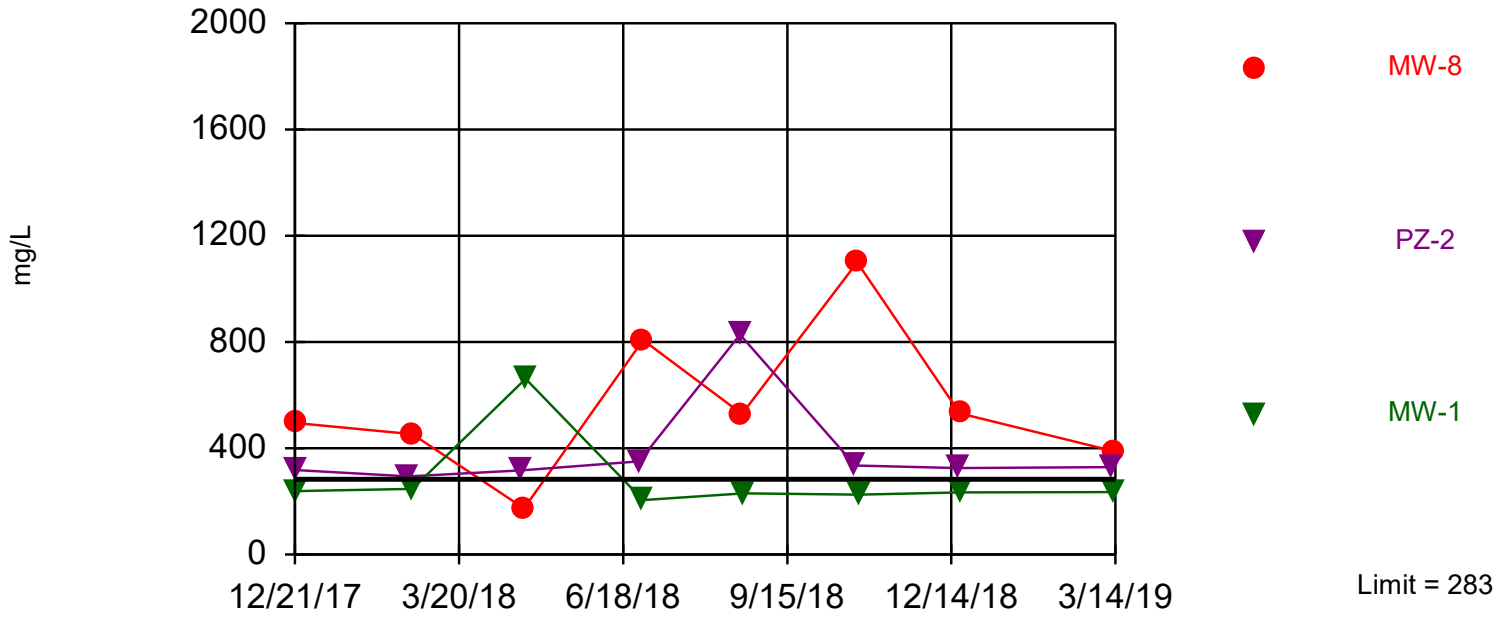
Constituent: Chloride Analysis Run 6/14/2019 10:49 AM View: Detection Monitoring

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Exceeds Limit: MW-8, PZ-2

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=10.45, Std. Dev.=3.423, n=48. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9483, critical = 0.947. Kappa = 1.862 (c=22, w=3, 1 of 2, event alpha = 0.1). Report alpha = 0.004778. Individual comparison alpha = 0.001595. Comparing 3 points to limit. After outlier removal distribution was non-normal, so outlier results were invalidated.

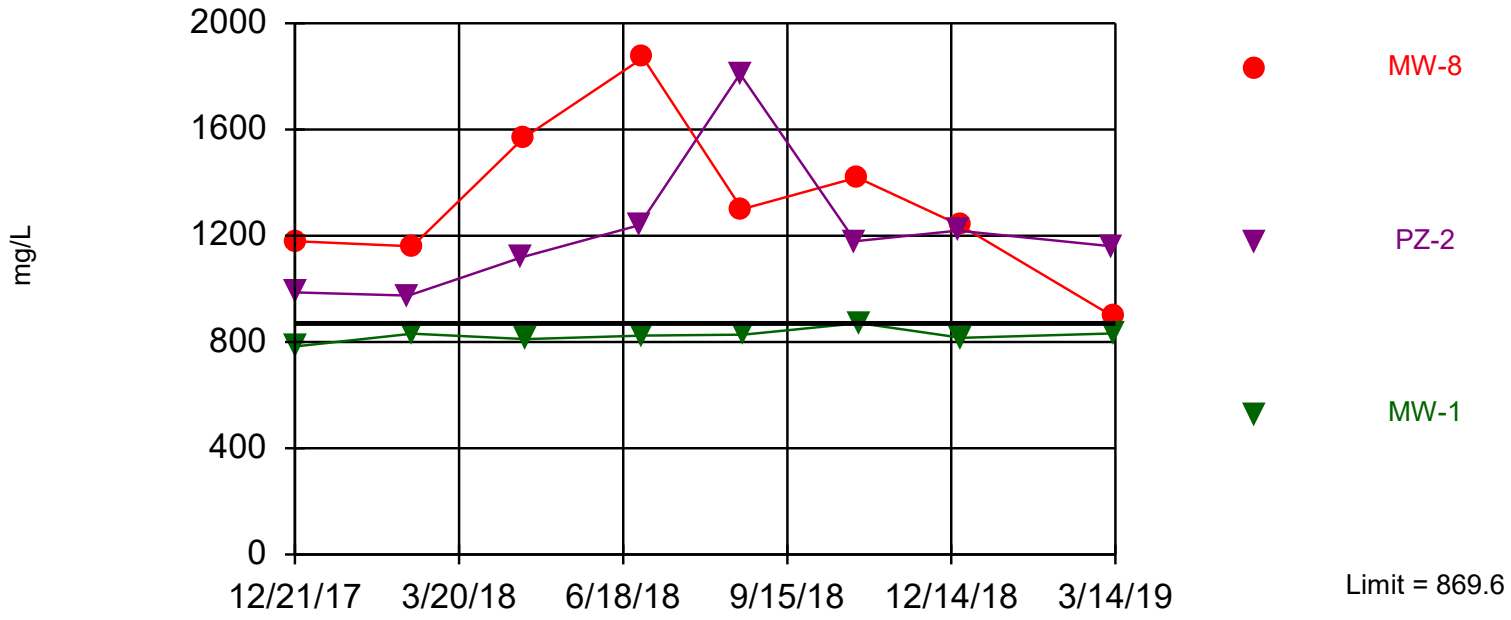
Constituent: Sulfate Analysis Run 6/14/2019 10:49 AM View: Detection Monitoring

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Exceeds Limit: MW-8, PZ-2

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=24.42, Std. Dev.=2.715, n=45. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.947, critical = 0.945. Kappa = 1.868 (c=22, w=3, 1 of 2, event alpha = 0.1). Report alpha = 0.004778. Individual comparison alpha = 0.001595. Comparing 3 points to limit. EPA 1989 outlier screening was performed on the background data. Three background outliers were removed: 1340 (10/23/2018); 1500 (12/18/2018); 160 (3/14/2019).

Constituent: Total Dissolved Solids Analysis Run 6/14/2019 10:50 AM View: Detection Monitoring

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Interwell Prediction Limit Significant Constituents

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics Printed 6/14/2019, 10:51 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	**PZ-2**	**0.415**	**n/a**	**3/12/2019**	**0.578**	**Yes**	**48**	**18.75**	**n/a**	**0.000...**	NP (normality) 1 of 2
Boron (mg/L)	**MW-1**	**0.415**	**n/a**	**3/14/2019**	**2.25**	**Yes**	**48**	**18.75**	**n/a**	**0.000...**	NP (normality) 1 of 2
Calcium (mg/L)	**MW-8**	**196**	**n/a**	**3/13/2019**	**210**	**Yes**	**48**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Calcium (mg/L)	**PZ-2**	**196**	**n/a**	**3/12/2019**	**216**	**Yes**	**48**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Chloride (mg/L)	**PZ-2**	**73.2**	**n/a**	**3/12/2019**	**177**	**Yes**	**48**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Sulfate (mg/L)	**MW-8**	**283**	**n/a**	**3/13/2019**	**390**	**Yes**	**48**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Sulfate (mg/L)	**PZ-2**	**283**	**n/a**	**3/12/2019**	**329**	**Yes**	**48**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-8**	**869.6**	**n/a**	**3/13/2019**	**896**	**Yes**	**45**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Total Dissolved Solids (mg/L)	**PZ-2**	**869.6**	**n/a**	**3/12/2019**	**1160**	**Yes**	**45**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2

Interwell Prediction Limit All Constituents

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics Printed 6/14/2019, 10:51 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	MW-8	0.415	n/a	3/13/2019	0.213	No	48	18.75	n/a	0.000...	NP (normality) 1 of 2
Boron (mg/L)	**PZ-2**	**0.415**	**n/a**	**3/12/2019**	**0.578**	**Yes**	**48**	**18.75**	**n/a**	**0.000...**	NP (normality) 1 of 2
Boron (mg/L)	**MW-1**	**0.415**	**n/a**	**3/14/2019**	**2.25**	**Yes**	**48**	**18.75**	**n/a**	**0.000...**	NP (normality) 1 of 2
Calcium (mg/L)	**MW-8**	**196**	**n/a**	**3/13/2019**	**210**	**Yes**	**48**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Calcium (mg/L)	**PZ-2**	**196**	**n/a**	**3/12/2019**	**216**	**Yes**	**48**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Calcium (mg/L)	MW-1	196	n/a	3/14/2019	163	No	48	0	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	MW-8	73.2	n/a	3/13/2019	43.2	No	48	0	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	**PZ-2**	**73.2**	**n/a**	**3/12/2019**	**177**	**Yes**	**48**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Chloride (mg/L)	MW-1	73.2	n/a	3/14/2019	71.8	No	48	0	n/a	0.000...	NP (normality) 1 of 2
Fluoride (mg/L)	MW-8	0.6833	n/a	3/13/2019	0.16	No	48	0	x^2	0.001595	Param 1 of 2
Fluoride (mg/L)	PZ-2	0.6833	n/a	3/12/2019	0.37	No	48	0	x^2	0.001595	Param 1 of 2
Fluoride (mg/L)	MW-1	0.6833	n/a	3/14/2019	0.54	No	48	0	x^2	0.001595	Param 1 of 2
pH at 25 Degrees C (Std._Units)	MW-8	7.734	6.853	3/13/2019	6.996	No	48	0	No	0.000...	Param 1 of 2 Deseas
pH at 25 Degrees C (Std._Units)	PZ-2	7.734	6.853	3/12/2019	6.896	No	48	0	No	0.000...	Param 1 of 2 Deseas
pH at 25 Degrees C (Std._Units)	MW-1	7.734	6.853	3/14/2019	7.596	No	48	0	No	0.000...	Param 1 of 2 Deseas
Sulfate (mg/L)	**MW-8**	**283**	**n/a**	**3/13/2019**	**390**	**Yes**	**48**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Sulfate (mg/L)	**PZ-2**	**283**	**n/a**	**3/12/2019**	**329**	**Yes**	**48**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Sulfate (mg/L)	MW-1	283	n/a	3/14/2019	235	No	48	0	sqrt(x)	0.001595	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-8**	**869.6**	**n/a**	**3/13/2019**	**896**	**Yes**	**45**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Total Dissolved Solids (mg/L)	**PZ-2**	**869.6**	**n/a**	**3/12/2019**	**1160**	**Yes**	**45**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	869.6	n/a	3/14/2019	833	No	45	0	sqrt(x)	0.001595	Param 1 of 2

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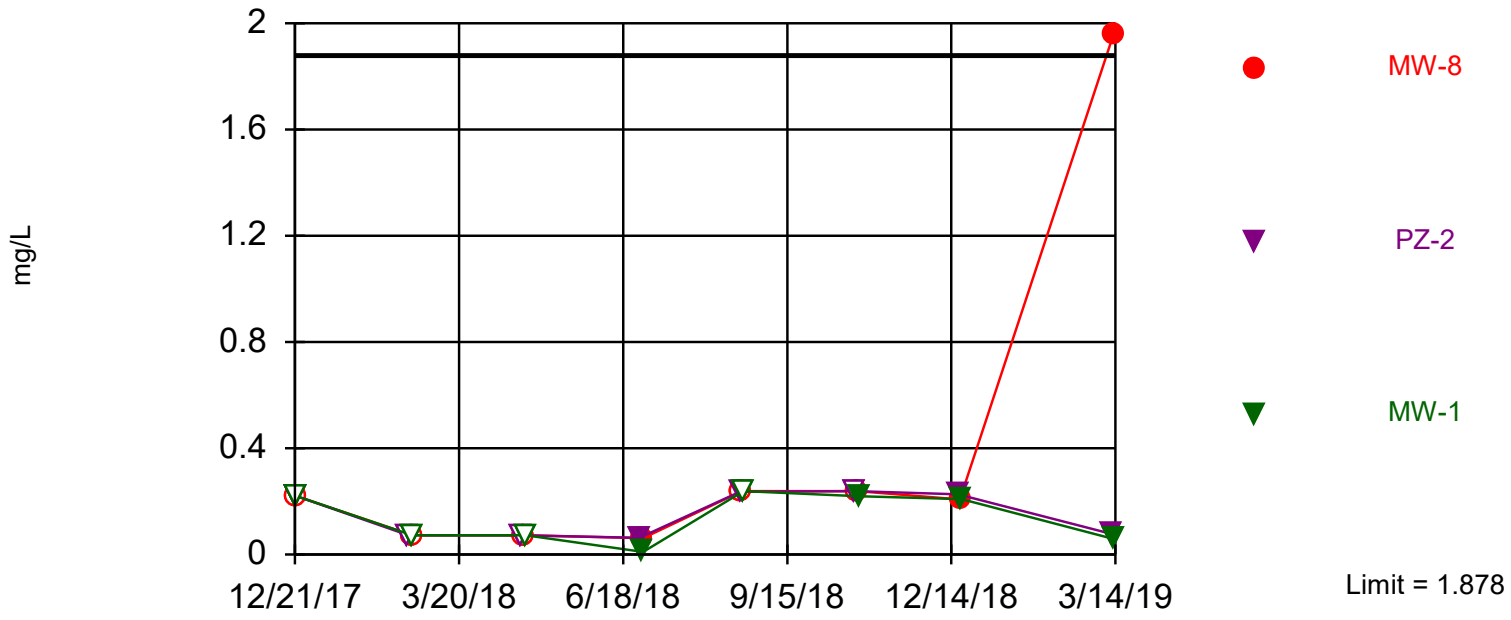
Hollow symbols indicate censored values.

Exceeds Limit: MW-8

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 48 background values. 41.67% NDs. Annual per-constituent alpha = 0.002495. Individual comparison alpha = 0.0008323 (1 of 2). Comparing 3 points to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Data were deseasonalized.

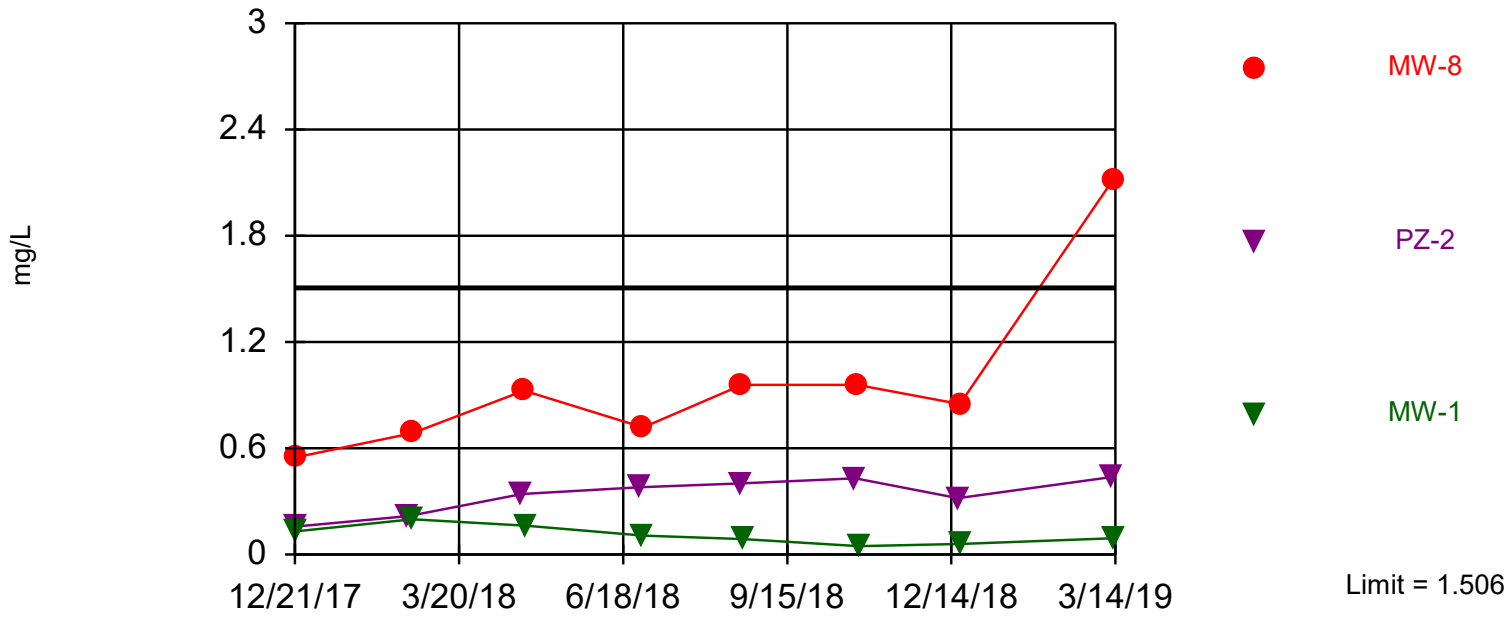
Constituent: Aluminum Analysis Run 6/14/2019 10:59 AM View: MDNR

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Exceeds Limit: MW-8

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=0.6628, Std. Dev.=0.2597, n=48, 2.083% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9475, critical = 0.947. Kappa = 1.862 (c=22, w=3, 1 of 2, event alpha = 0.1). Report alpha = 0.004778. Individual comparison alpha = 0.001595. Comparing 3 points to limit. EPA 1989 outlier screening was performed on the background data. No background outliers were found.

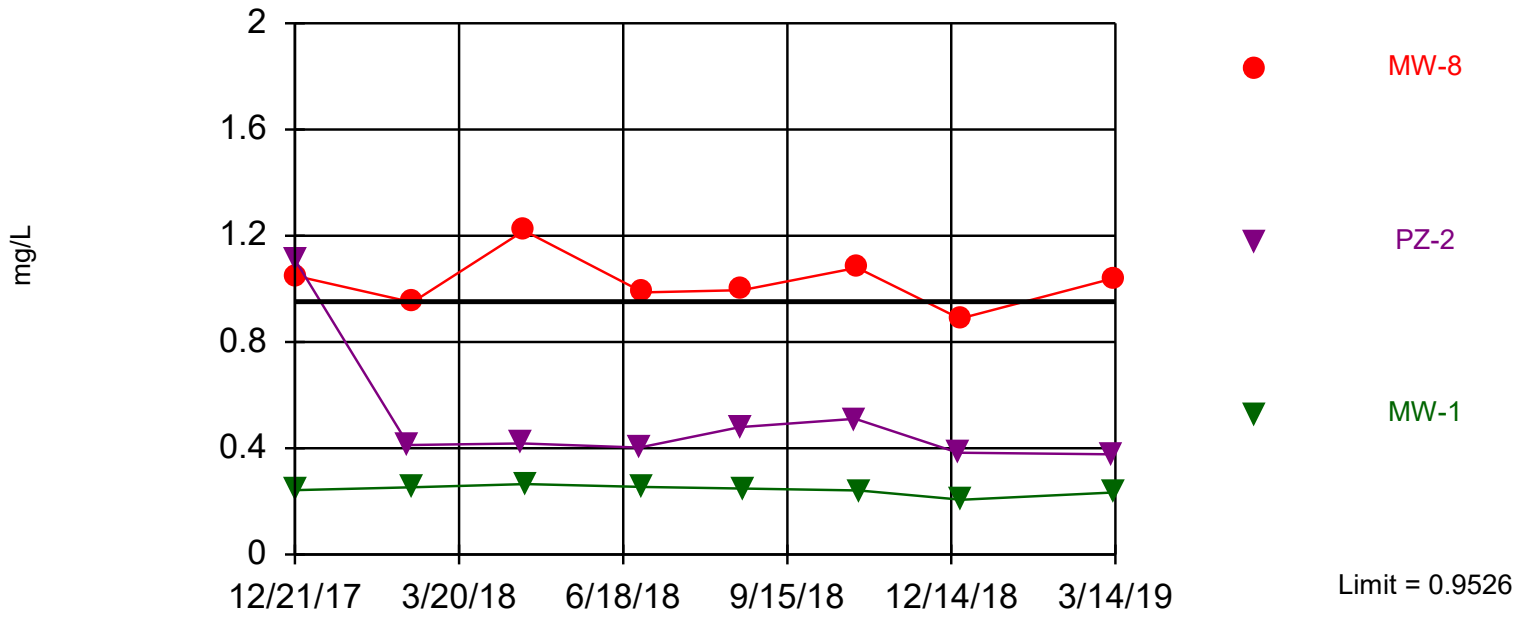
Constituent: Iron Analysis Run 6/14/2019 10:59 AM View: MDNR

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Exceeds Limit: MW-8

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=0.5485, Std. Dev.=0.2296, n=48. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9499, critical = 0.947. Kappa = 1.862 (c=22, w=3, 1 of 2, event alpha = 0.1). Report alpha = 0.004778. Individual comparison alpha = 0.001595. Comparing 3 points to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified.

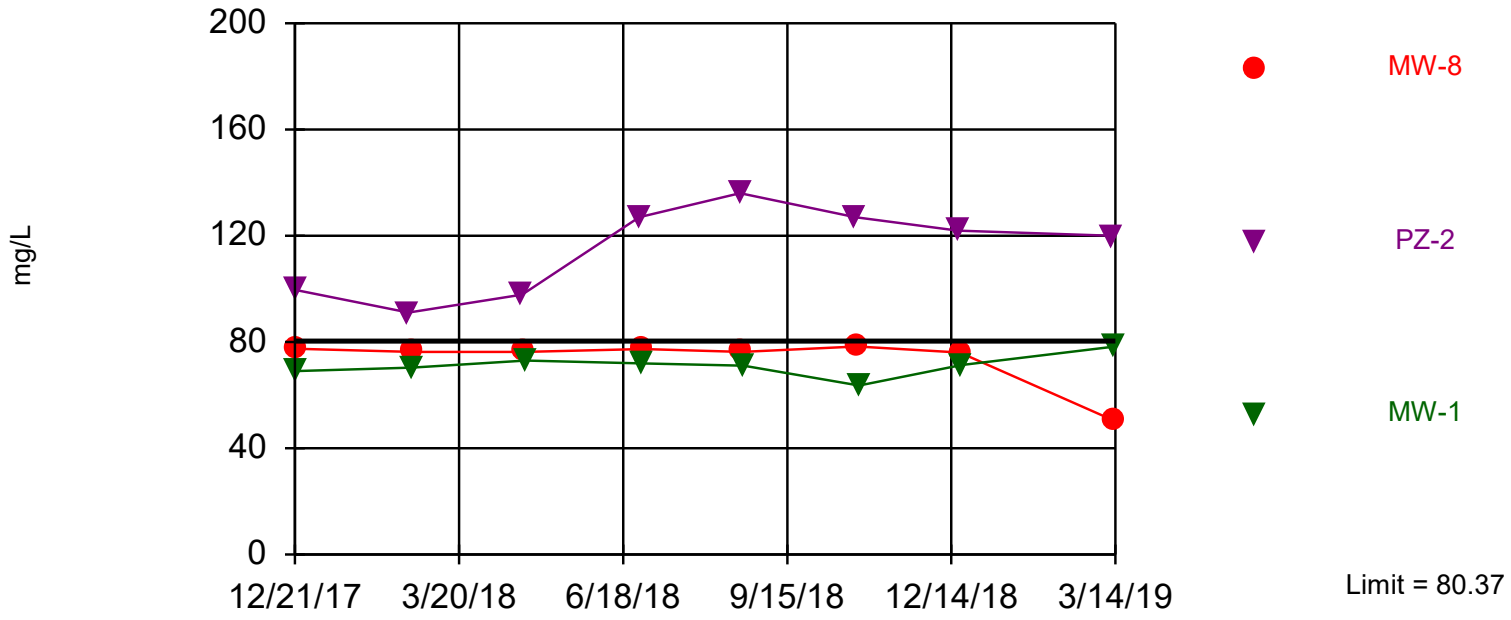
Constituent: Manganese Analysis Run 6/14/2019 10:59 AM View: MDNR

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Exceeds Limit: PZ-2

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation): Mean=6.761, Std. Dev.=1.181, n=46. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9579, critical = 0.945. Kappa = 1.866 (c=22, w=3, 1 of 2, event alpha = 0.1). Report alpha = 0.004778. Individual comparison alpha = 0.001595. Comparing 3 points to limit. EPA 1989 outlier screening was performed on the background data. Two background outliers were removed: <0.5 (12/20/2017); 2.99 (3/14/2019).

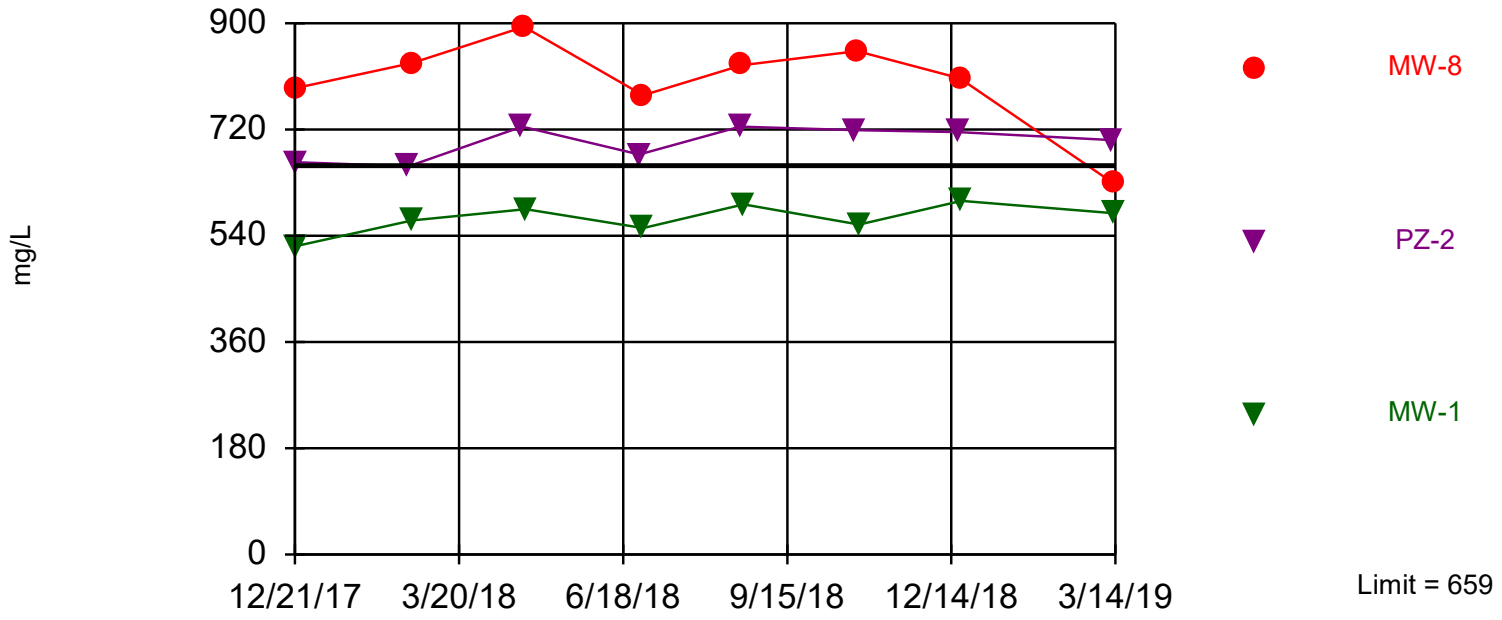
Constituent: Sodium Analysis Run 6/14/2019 10:59 AM View: MDNR

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Exceeds Limit: PZ-2

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 48 background values. Annual per-constituent alpha = 0.002495. Individual comparison alpha = 0.0008323 (1 of 2). Comparing 3 points to limit. After outlier removal distribution was non-normal, so outlier results were invalidated. Seasonality was not detected with 95% confidence.

Constituent: Total Hardness Analysis Run 6/14/2019 11:00 AM View: MDNR

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics

Interwell Prediction Limit Significant Constituents

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics Printed 6/14/2019, 11:01 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Aluminum (mg/L)	**MW-8**	**1.878**	**n/a**	**3/13/2019**	**1.958**	**Yes**	**48**	**41.67**	**n/a**	**0.000...**	NP (normality) 1 of 2...
Iron (mg/L)	**MW-8**	**1.506**	**n/a**	**3/13/2019**	**2.12**	**Yes**	**48**	**2.083**	**x^(1/3)**	**0.001595**	Param 1 of 2
Manganese (mg/L)	**MW-8**	**0.9526**	**n/a**	**3/13/2019**	**1.04**	**Yes**	**48**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Sodium (mg/L)	**PZ-2**	**80.37**	**n/a**	**3/12/2019**	**120**	**Yes**	**46**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Total Hardness (mg/L)	**PZ-2**	**659**	**n/a**	**3/12/2019**	**702**	**Yes**	**48**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2

Interwell Prediction Limit All Constituents

More`s Lake Client: Burns & McDonnell Data: Mores Lake_statistics Printed 6/14/2019, 11:02 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Aluminum (mg/L)	**MW-8**	**1.878**	**n/a**	**3/13/2019**	**1.958**	**Yes**	**48**	**41.67**	**n/a**	**0.000...**	NP (normality) 1 of 2...
Aluminum (mg/L)	PZ-2	1.878	n/a	3/12/2019	0.07706	No	48	41.67	n/a	0.000...	NP (normality) 1 of 2...
Aluminum (mg/L)	MW-1	1.878	n/a	3/14/2019	0.05746	No	48	41.67	n/a	0.000...	NP (normality) 1 of 2...
Chemical Oxygen Demand (mg/L)	MW-8	60.8	n/a	3/13/2019	8.2	No	48	77.08	n/a	0.000...	NP (NDs) 1 of 2
Chemical Oxygen Demand (mg/L)	PZ-2	60.8	n/a	3/12/2019	8.6	No	48	77.08	n/a	0.000...	NP (NDs) 1 of 2
Chemical Oxygen Demand (mg/L)	MW-1	60.8	n/a	3/14/2019	5ND	No	48	77.08	n/a	0.000...	NP (NDs) 1 of 2
Chromium, Hexavalent (mg/L)	MW-8	0.007	n/a	3/13/2019	0.005ND	No	48	87.5	n/a	0.000...	NP (NDs) 1 of 2
Chromium, Hexavalent (mg/L)	PZ-2	0.007	n/a	3/12/2019	0.005ND	No	48	87.5	n/a	0.000...	NP (NDs) 1 of 2
Chromium, Hexavalent (mg/L)	MW-1	0.007	n/a	3/14/2019	0.005ND	No	48	87.5	n/a	0.000...	NP (NDs) 1 of 2
Chromium, Trivalent (mg/L)	MW-8	0.01	n/a	3/13/2019	0.005ND	No	48	100	n/a	0.000...	NP (NDs) 1 of 2
Chromium, Trivalent (mg/L)	PZ-2	0.01	n/a	3/12/2019	0.005ND	No	48	100	n/a	0.000...	NP (NDs) 1 of 2
Chromium, Trivalent (mg/L)	MW-1	0.01	n/a	3/14/2019	0.005ND	No	48	100	n/a	0.000...	NP (NDs) 1 of 2
Copper (mg/L)	MW-8	0.008	n/a	3/13/2019	0.0089	No	48	83.33	n/a	0.000...	NP (NDs) 1 of 2
Copper (mg/L)	PZ-2	0.008	n/a	3/12/2019	0.0074	No	48	83.33	n/a	0.000...	NP (NDs) 1 of 2
Copper (mg/L)	MW-1	0.008	n/a	3/14/2019	0.0071	No	48	83.33	n/a	0.000...	NP (NDs) 1 of 2
Iron (mg/L)	**MW-8**	**1.506**	**n/a**	**3/13/2019**	**2.12**	**Yes**	**48**	**2.083**	**x^(1/3)**	**0.001595**	Param 1 of 2
Iron (mg/L)	PZ-2	1.506	n/a	3/12/2019	0.437	No	48	2.083	x^(1/3)	0.001595	Param 1 of 2
Iron (mg/L)	MW-1	1.506	n/a	3/14/2019	0.0932	No	48	2.083	x^(1/3)	0.001595	Param 1 of 2
Magnesium (mg/L)	MW-8	43	n/a	3/13/2019	28.8	No	48	0	n/a	0.000...	NP (normality) 1 of 2
Magnesium (mg/L)	PZ-2	43	n/a	3/12/2019	42.5	No	48	0	n/a	0.000...	NP (normality) 1 of 2
Magnesium (mg/L)	MW-1	43	n/a	3/14/2019	42.9	No	48	0	n/a	0.000...	NP (normality) 1 of 2
Manganese (mg/L)	**MW-8**	**0.9526**	**n/a**	**3/13/2019**	**1.04**	**Yes**	**48**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Manganese (mg/L)	PZ-2	0.9526	n/a	3/12/2019	0.378	No	48	0	sqrt(x)	0.001595	Param 1 of 2
Manganese (mg/L)	MW-1	0.9526	n/a	3/14/2019	0.234	No	48	0	sqrt(x)	0.001595	Param 1 of 2
Nickel (mg/L)	MW-8	0.0317	n/a	3/13/2019	0.0069	No	48	43.75	n/a	0.000...	NP (normality) 1 of 2
Nickel (mg/L)	PZ-2	0.0317	n/a	3/12/2019	0.0042	No	48	43.75	n/a	0.000...	NP (normality) 1 of 2
Nickel (mg/L)	MW-1	0.0317	n/a	3/14/2019	0.0058	No	48	43.75	n/a	0.000...	NP (normality) 1 of 2
pH at 25 Degrees C (Std._Units)	MW-8	7.734	6.853	3/13/2019	6.996	No	48	0	No	0.000...	Param 1 of 2 Deseas
pH at 25 Degrees C (Std._Units)	PZ-2	7.734	6.853	3/12/2019	6.896	No	48	0	No	0.000...	Param 1 of 2 Deseas
pH at 25 Degrees C (Std._Units)	MW-1	7.734	6.853	3/14/2019	7.596	No	48	0	No	0.000...	Param 1 of 2 Deseas
Silver (mg/L)	MW-8	0.007	n/a	3/13/2019	0.0035ND	No	48	100	n/a	0.000...	NP (NDs) 1 of 2
Silver (mg/L)	PZ-2	0.007	n/a	3/12/2019	0.0035ND	No	48	100	n/a	0.000...	NP (NDs) 1 of 2
Silver (mg/L)	MW-1	0.007	n/a	3/14/2019	0.0035ND	No	48	100	n/a	0.000...	NP (NDs) 1 of 2
Sodium (mg/L)	MW-8	80.37	n/a	3/13/2019	50.5	No	46	0	sqrt(x)	0.001595	Param 1 of 2
Sodium (mg/L)	**PZ-2**	**80.37**	**n/a**	**3/12/2019**	**120**	**Yes**	**46**	**0**	**sqrt(x)**	**0.001595**	Param 1 of 2
Sodium (mg/L)	MW-1	80.37	n/a	3/14/2019	78.4	No	46	0	sqrt(x)	0.001595	Param 1 of 2
Total Hardness (mg/L)	MW-8	659	n/a	3/13/2019	629	No	48	0	n/a	0.000...	NP (normality) 1 of 2
Total Hardness (mg/L)	**PZ-2**	**659**	**n/a**	**3/12/2019**	**702**	**Yes**	**48**	**0**	**n/a**	**0.000...**	NP (normality) 1 of 2
Total Hardness (mg/L)	MW-1	659	n/a	3/14/2019	578	No	48	0	n/a	0.000...	NP (normality) 1 of 2
Total Organic Carbon (mg/L)	MW-8	2.479	n/a	3/13/2019	0.87	No	47	8.511	x^(1/3)	0.001595	Param 1 of 2
Total Organic Carbon (mg/L)	PZ-2	2.479	n/a	3/12/2019	2.2	No	47	8.511	x^(1/3)	0.001595	Param 1 of 2
Total Organic Carbon (mg/L)	MW-1	2.479	n/a	3/14/2019	0.81	No	47	8.511	x^(1/3)	0.001595	Param 1 of 2
TOX (mg/L)	MW-8	0.3946	n/a	3/13/2019	0.19252...	No	48	31.25	n/a	0.000...	NP (normality) 1 of 2...
TOX (mg/L)	PZ-2	0.3946	n/a	3/12/2019	0.1923	No	48	31.25	n/a	0.000...	NP (normality) 1 of 2...
TOX (mg/L)	MW-1	0.3946	n/a	3/14/2019	0.19252...	No	48	31.25	n/a	0.000...	NP (normality) 1 of 2...
Zinc (mg/L)	MW-8	0.603	n/a	3/13/2019	0.0409	No	48	43.75	n/a	0.000...	NP (normality) 1 of 2
Zinc (mg/L)	PZ-2	0.603	n/a	3/12/2019	0.0054	No	48	43.75	n/a	0.000...	NP (normality) 1 of 2
Zinc (mg/L)	MW-1	0.603	n/a	3/14/2019	0.025ND	No	48	43.75	n/a	0.000...	NP (normality) 1 of 2

CREATE AMAZING.

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