219 BROWN LANE, BRYANT, AR
WWW.GBMcASSOC.COM
501-847-7077

2020 Annual Groundwater Monitoring Report

THIS REPORT WAS CREATED BY THE
GBMc & ASSOCIATES TEAM FOR
El Dorado Chemical Company
February 22, 2021

2020 Annual Groundwater Monitoring Report

Prepared for:

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

Prepared by:

GBMc & Associates
219 Brown Lane
Bryant, AR 72022

CONTENTS

TABLES

APPENDICES

Groundwater Monitoring Report Certification

I, Charles D. Campbell, have prepared this Groundwater Monitoring Report based upon an evaluation of the groundwater data and information provided to me by El Dorado Chemical Company. As required by Arkansas Regulation 22 (22.1203(k)), certification of the Groundwater Monitoring Report must be provided by a qualified groundwater scientist, as defined in 22.1201(f). The certification is contingent upon the fact that all information supplied, up to the date of this certification, is unquestionably accurate and was provided in good faith.

2/22/21

Charles D. Campbell, PE Date
Arkansas No. 6857

2/22/21

1.0 INTRODUCTION

El Dorado Chemical Company (EDCC) has monitored groundwater on a routine basis since 2001 (analysis for this report included one 1996 sample). In 2006 EDCC entered into CAO LIS 06-153 which required semiannual monitoring of 22 groundwater wells located throughout the property (CAO LIS 06-153 Condition No. 3). Information collected during the groundwater monitoring has been submitted annually to Arkansas Department of Energy & Environment Division of Environmental Quality (DEQ) on or before April 1 as directed by CAO LIS 06-153 Condition No. 4. In November of 2018, EDCC entered into CAO LIS 18-085. CAO LIS 18-085 incorporates the conditions identified in CAO LIS No. 06-153 for assessing and remediating the groundwater as well as the Remedial Action Plan developed and approved pursuant to CAO LIS 06-153.

This Groundwater Monitoring Report has been written with the intent to fulfill conditions of the CAO. Condition No. 4 of CAO LIS No. 18-085 states that each annual report should include the location, potentiometric and constituent concentration maps, and trend analyses. Additionally, the CAO requires an evaluation of the effectiveness of the remedial activities in reaching the target goals and any additional information needed by DEQ to properly evaluate the groundwater. The primary remediation activities at EDCC include operation of a groundwater recovery system and monitored natural attenuation. All constituents collected at the groundwater monitoring wells evaluated statistically to assess the remediation activities.

1.1 Site Location

EDCC facility is located in Sections 6 and 7, Township 17 South, Range 15 West on the north side of El Dorado approximately 1 mile west of Highway 7 Spur in Union County, Arkansas. There are 22 groundwater monitoring wells: 3 control wells (ECMW-1 through ECMW-3), 10 production wells (ECMW-4 through ECMW-13), 3 mid-gradient wells (ECMW-14 through ECMW-16), and 6 downgradient wells (ECMW-17 through ECMW-22). Groundwater recovery wells (ECRW-1 and ECRW-2) are located near ECMW-6 and ECMW-7. A site and potentiometric surface map are provided in Appendix A.

2.0 GROUNDWATER SAMPLING

2.1 Sample Methodology

EDCC currently monitors 22 groundwater wells for the constituents presented in Table 2.1 at the indicated frequencies. DEQ provided approval of the current sampling constituents and frequency in CAO LIS No. 06-153 and subsequent correspondence. Several of the monitoring constituents originally listed in CAO LIS No. 06-153 were removed from the monitoring program through DEQ approval due to low concentrations or proving not necessary for tracking the effectiveness of the November 16, 2007 Remedial Action Plan (RAP).

Table 2.1. Groundwater Monitoring Constituents and Sampling Frequency.[1]

Well	NH_4	NO_3	SO_4	PB		CR		pH
				Dissolved	Total	Dissolved	Total	
ECMW-1	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-2	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-3	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-4	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-5	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-6	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-7	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-8	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-9	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-10	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-11	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-12	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-13	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-14	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-15	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-16	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-17	SA	SA	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-18	SA-Even	SA	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-19	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-20	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-21	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA
ECMW-22	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA-Even	SA

[1]SA: Semi-Annual and SA-Even: Semi-Annual Even Years

Sampling events for the 2020 monitoring year occurred in February for the first half and in July for the second half. Samples, field parameters, and depth to water measurements were collected by GBMc personnel. Depths to water surface were measured from the top of the well casing using an electronic water level indicator. Depth to water surface measurements were used to develop potentiometric maps for each sampling event. Prior to sampling, the respective wells were purged using either a submersible or peristaltic pump until parameter stabilization had occurred for

at least 3 consecutive readings and with minimal water level drawdown to ensure samples originated from the aquifer and not influenced by the open atmosphere within the well. Samples were collected for each well in appropriately preserved containers using a low flow rate with either the submersible or peristaltic pump. Sample containers were placed on ice and delivered to an DEQ certified laboratory for analysis. Field parameters were measured at the time of sample collection with an appropriate handheld in-situ meter.

2.2 Groundwater Elevation Survey Results

Water levels for the potentiometric maps were collected during the February and July 2020 sampling events and are shown in Table 2.2. The potentiometric surface map for the 2020 annual report is included in Appendix A.

Table 2.2. Monitoring well reference point elevations.

Well	Top of casing elevation (ft above mean sea level)	February 2020		July 2020	
		Depth to water (ft from top of casing)	Ground water elevation (ft above MSL)	Depth to water (ft from top of casing)	Ground water elevation (ft above MSL)
ECMW-1	213.38	6.95	206.43	11.6	201.78
ECMW-2	196.25	0.00	196.25	0.0	196.25
ECMW-3	192.11	7.67	184.44	8.63	183.48
ECMW-4	194.84	8.1	186.74	8.45	186.39
ECMW-5	182.69	2.96	179.73	4.12	178.57
ECMW-6	191.87	4.25	187.62	3.95	187.92
ECMW-7	195.88	6.67	189.21	6.31	189.57
ECMW-8	197.34	6.27	191.07	6.13	191.21
ECMW-9	198.39	7.54	190.85	9.05	189.34
ECMW-10	205.75	10.51	195.24	10.44	195.31
ECMW-11	201.65	8.52	193.13	9.59	192.06
ECMW-12	184.97	4.45	180.52	5.12	179.85
ECMW-13	177.26	4.65	172.61	8.5	168.76
ECMW-14	178.48	4.35	174.13	4.46	174.02
ECMW-15	180.84	2.93	177.91	3.84	177
ECMW-16	180.14	2.25	177.89	3.12	177.02
ECMW-17	185.40	25.70	159.7	27.3	158.1
ECMW-18	155.46	4.39	151.07	6.51	148.95
ECMW-19	150.41	1.63	148.78	1.84	148.57
ECMW-20	192.77	23.75	169.02	25.65	167.12
ECMW-21	176.29	13.85	162.44	15.35	160.94
ECMW-22	173.55	2.43	171.12	4.18	169.37

The groundwater flow direction at the site was generally in a southeast direction. The hydraulic gradient was calculated between ECMW-8 and ECMW-19 using the following equation (RCRA Groundwater Monitoring: Draft Technical Guidance, EPA/530-R-93-001):

$$i = \Delta H / L$$

i = hydraulic gradient (unitless)

ΔH = difference in hydraulic head (ft)

L = distance between monitoring wells (ft)

The difference in hydraulic head between monitoring wells ECMW-8 and ECMW-19 was 42.29 ft and 42.64 ft for the first and second half of 2020, respectively. The distance between the monitoring wells is 4,267 ft. The resulting hydraulic gradients of 9.91×10^{-3} for the first half and 9.99×10^{-3} for the second half were used to calculate the average linear velocity of

groundwater flow in the following equation (RCRA Groundwater Monitoring: Draft Technical Guidance, EPA/530-R-93-001):

$$V = Ki/n_e$$

V = average linear velocity (cm/s)

K = hydraulic conductivity (cm/s)

i = hydraulic gradient (unitless)

n_e = effective porosity (unitless)

Based on slug tests performed in 1997 on ECMW-4, ECMW-13, and ECMW-18 the Cockfield Formation in the EDCC area has an average hydraulic conductivity of 6.61×10^{-4} cm/s. An effective porosity value of 0.30 was reported by Woodward-Clyde in 1997 for the EDCC area. Using these values, the equation resulted in an average linear velocity of 2.18×10^{-5} cm/s for the first half of 2020 and an average linear velocity of 2.20×10^{-5} cm/s for the second half of 2020.

2.3 Groundwater Analytical Results

Field measurements and groundwater samples were collected by GBMc personnel and delivered to an DEQ certified commercial laboratory for analysis of the parameters listed in Table 2.1. Laboratory reports and groundwater sampling field records for the February and July 2020 sampling events are included in Appendix B. Constituent concentration maps are located in Appendix C. Appendix D contains tabularized parameter data for each of the wells.

Ammonia Results

Ammonia was the focus of the CAO and the RAP. The target monitoring value for ammonia is 0.55 mg/L at the property boundary or down gradient wells (ECMW 17-22). The target ammonia was determined in the 2007 Human Health Risk Assessment Report and implemented in the Remedial Action Plan. This target was set as the downgradient wells (ECMW 17-22) have the highest potential to leave the facility site. For 2020, all down gradient well ammonia concentrations were below 0.55 mg/L, with the exception of ECMW-17 in February 2020 (9.7 mg/L). Table 2.3 contains ammonia concentrations for all wells. Ammonia concentrations above the 0.55 mg/L in ECMW 17-22 are in red.

Table 2.3. Ammonia concentrations for all wells.

Monitoring Well	Type of Monitoring Well	Date	Ammonia-N (mg/L)*
ECMW-1	Control Wells	2/18/2020	1.20
		7/20/2020	0.10
ECMW-2		2/18/2020	5.90
		7/20/2020	0.10
ECMW-3		2/18/2020	0.72
		7/20/2020	0.11
ECMW-4	Production Wells	2/19/2020	0.18
		2/19/2020	0.62
ECMW-5		2/19/2020	0.26
		7/21/2020	1.50
ECMW-6		2/18/2020	330.00
		7/21/2020	580.00
ECMW-7		2/18/2020	280.00
		7/21/2020	250.00
ECMW-8		2/18/2020	2,000.00
		7/21/2020	590.00
ECMW-9		2/18/2020	0.28
		7/21/2020	0.64
ECMW-10		2/17/2020	0.11
		7/20/2020	0.11
ECMW-11		2/17/2020	10.00
		7/20/2020	9.30
ECMW-12		2/17/2020	2.20
		7/20/2020	2.10
ECMW-13		2/17/2020	0.10
		7/21/2020	0.27
ECMW-14	Mid-gradient Wells	2/19/2020	0.40
		7/22/2020	0.26
ECMW-15		2/19/2020	0.38
		7/22/2020	0.17
ECMW-16		2/17/2020	0.35
		7/22/2020	0.71
ECMW-17	Downgradient Wells	2/19/2020	9.70
		7/22/2020	0.10
ECMW-18		2/19/2020	0.25
		7/21/2020	0.33
ECMW-19		2/19/2020	0.17
		7/21/2020	0.34
ECMW-20		2/20/2020	0.12
		7/22/2020	0.10
ECMW-21		2/20/2020	0.10
		7/21/2020	0.10
ECMW-22		2/19/2020	0.18
		7/22/2020	0.12

The CAO and the RAP target ammonia concentration (0.55 mg/L) was for downgradient wells only as those are the ones with the highest potential to leave the site. The ammonia concentrations were highest near the recovery wells. The recovery wells are closest to monitoring wells 6, 7 and 8. Monitoring wells 6, 7, and 8 were the only wells that had statistically significant increasing trends. There was one other statistically significant trend which was a decreasing one at ECMW-16.

Other Constituents Sampled

The nitrate concentrations from all wells during both sampling events ranged from <0.05 mg/L (ECMW-2, 3, 12, 13, 19 & 22) to 11,000 mg/L (ECMW-6). Nitrate concentrations within the production area ranged from <0.05 mg/L to 11,000 mg/L. Nitrate concentrations in the mid-gradient wells ranged from 2.0 (ECMW-14) to 14.0 mg/L (ECMW-16). Downgradient wells ranged from below detection limit (0.05 mg/L at ECMW-19 & 22) to 16 mg/L (ECMW-17).

The sulfate concentrations from all wells ranged from 2.4 mg/L at ECMW-19 to 970 mg/L at ECMW-4. The sulfate concentrations of the control wells ranged from 5.7 mg/L (ECMW-1) to 23 mg/L (ECMW-3). Sulfate concentrations within the production area ranged from 3.5 mg/L (ECMW-12) to 970 mg/L (ECMW-4). Sulfate concentrations in the mid-gradient wells ranged from 14 mg/L (ECMW-15) to 180 mg/L (ECMW-14). Downgradient well sulfate concentrations ranged from 2.4 mg/L (ECMW-19) to 180 mg/L (ECMW-17).

The pH measurements from all wells ranged from 3.0 (ECMW-17) to 5.8 (ECMW-3). The values of the control wells ranged from 3.2 (ECMW-1) to 5.8 (ECMW-3). The values of the production wells ranged from 3.4 (ECMW-4) to 5.6 (ECMW-12). The values of the mid-gradient wells ranged from 3.8 (ECMW-16) to 4.4 (ECMW-14). The pH values of the down gradient wells ranged from 3.0 (ECMW-17) to 5.5 (ECMW-22).

The specific conductance measurements from all wells ranged from 51 µS/cm (ECMW-1) to 127,298 µS/cm (ECMW-6). The values of the control wells ranged from 51 µS/cm (ECMW-1) to 457 µS/cm (ECMW-2). The values of the production wells ranged from 557 µS/cm (ECMW-13) to 127,298 µS/cm (ECMW-6). The values of the mid-gradient wells ranged from 84 µS/cm (ECMW-15) to 748 µS/cm (ECMW-14). The specific conductance values of the down gradient wells ranged from 61 µS/cm (ECMW-21) to 453 µS/cm (ECMW-17).

3.0 STATISTICAL ANALYSIS RESULTS AND DISCUSSION

Statistical comparisons of parameter concentrations in upgradient and downgradient wells for the EDCC groundwater monitoring program were performed in 2005. Following the statistical comparison analysis and pursuant to CAO LIS No. 18-085, a trend analysis approach was implemented for evaluating the effectiveness of the groundwater remediation program. A one-way ANOVA was completed on all wells that compared the upgradient (control) wells (ECMW 1-3) to all other wells (ECMW 4-22). If statistical differences between the medians of each monitoring well compared to the upgradient wells was significant, then a linear regression was also completed. Linear regression analyses were performed for each monitoring well that was statistically different from the upgradient (control) wells. Table 3.1 summarizes the statistical results of the linear regression trend analysis. Statistical analysis result reports are presented in Appendix D.

Table 3.1 Summary of the regression statistical results comparing control wells and monitoring wells

Monitoring Well[1]	Ammonia		Nitrate		Sulfate		pH		Specific Conductance	
	Regression significant?	Increasing or decreasing trend?	Regression significant?	Increasing or decreasing trend?	Regression significant?	Increasing or decreasing trend?	Regression significant?	Increasing or decreasing trend?	Regression significant?	Increasing or decreasing trend?
ECMW-1	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-2	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-3	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-4	Not significant	N/A	Not significant	N/A	Not significant	N/A	**Significant**	**Decreasing**	Not Significant	N/A
ECMW-5	Not significant	N/A	**Significant**	**Increasing**	**Significant**	**Decreasing**	Not Significant	N/A	Not Significant	N/A
ECMW-6	**Significant**	**Increasing**	**Significant**	**Increasing**	Not Significant	N/A	**Significant**	**Decreasing**	**Significant**	**Increasing**
ECMW-7	**Significant**	**Increasing**	**Significant**	**Increasing**	Not significant	N/A	Not Significant	N/A	**Significant**	**Increasing**
ECMW-8	**Significant**	**Increasing**	**Significant**	**Increasing**	**Significant**	**Decreasing**	**Significant**	**Decreasing**	**Significant**	**Increasing**
ECMW-9	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-10	Not significant	N/A	**Significant**	**Decreasing**	Not significant	N/A	Not Significant	N/A	**Significant**	**Decreasing**
ECMW-11	Not significant	N/A	**Significant**	**Increasing**	**Significant**	**Decreasing**	**Significant**	**Decreasing**	Not Significant	N/A
ECMW-12	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-13	Not significant	N/A	Not significant	N/A	**Significant**	**Decreasing**	Not Significant	N/A	Not Significant	N/A
ECMW-14	Not significant	N/A	**Significant**	**Decreasing**	**Significant**	**Decreasing**	Not Significant	N/A	Not Significant	N/A
ECMW-15	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-16	**Significant**	**Decreasing**	**Significant**	**Decreasing**	Not significant	N/A	**Significant**	**Decreasing**	Not Significant	N/A
ECMW-17	Not significant	N/A	**Significant**	**Decreasing**	Not significant	N/A	**Significant**	**Decreasing**	Not Significant	N/A
ECMW-18	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-19	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-20	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-21	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A
ECMW-22	Not significant	N/A	Not significant	N/A	Not significant	N/A	Not Significant	N/A	Not Significant	N/A

[1]Black indicates the control well, red indicates production area wells; yellow indicates mid-gradient wells; blue indicates downgradient wells.

Ammonia

Statistically significant increasing trends in ammonia concentration over time were observed in ECMW-6, ECMW-7, and ECMW-8. A significant decreasing trend was observed for ECMW-16. The remaining wells did not display a statistically significant trend in ammonia over time. Significant increasing trends were expected for ECMW-6 through ECMW-8 as they are near the groundwater recovery wells. These results indicate that ammonia is being drawn to the recovery wells. The significant decreasing trend in ammonia concentration at ECMW-16, a mid-gradient well, indicates that ammonia is not migrating from the production area and natural attenuation is occurring.

Other Constituents

Statistically significant increasing trends in nitrate concentration over time were observed in ECMW-5, ECMW-6, ECMW-7, ECMW-8, and ECMW-11. Significant decreasing trends in nitrate concentrations were observed in ECMW-10, ECMW-14, ECMW-16 and ECMW-17. The remaining wells did not display a significant trend in nitrate concentrations. As with ammonia, significant increasing nitrate concentration trends at ECMW-5 through ECMW-8 indicate that nitrate is being drawn to the recovery wells. Monitoring well ECMW-10 is on the downgradient edge of the production area, ECMW-14 through ECMW-16 are mid-gradient wells, and ECMW-17 is a downgradient well. Decreasing trends at these wells indicate that nitrate is not migrating out of the production area and natural attenuation is occurring.

None of the monitoring wells showed significant increasing trends for sulfate over time. Significant decreasing trends were observed in ECMW-5, ECMW-8 ECMW-11, ECMW-13, and ECMW-14. Except for ECMW-14, a mid-gradient well, significant decreasing trends in sulfate concentrations were confined to the production area wells. Significant decreasing trends in sulfate concentration indicate that sulfate is not migrating from the production areas and that natural attenuation is occurring.

None of the monitoring wells showed significant increasing trends for pH measurements over time. Significant decreasing trends were observed in ECMW-4, ECMW-6, ECMW-8 ECMW-11, ECMW-16, and ECMW-17. The remaining wells did not display a significant trend in pH measurements. Significant decreasing trends in pH were confined to the production area wells and two down gradient wells.

Statistically significant increasing trends in specific conductance measurements over time were observed in ECMW-6, ECMW-7, and ECMW-8. A significant decreasing trend in specific conductance measurements was observed in ECMW-10. The remaining wells did not display a significant trend in nitrate concentrations. As with ammonia and nitrate, significant increasing specific conductance concentration trends at ECMW-6 through ECMW-8 indicate

that nitrate is being drawn to the recovery wells. Monitoring well ECMW-10 is decreasing and on the downgradient edge of the production area.

4.0 SUMMARY

The data reported for the EDCC groundwater wells suggest that the elevated ammonia and other constituent concentrations in the production area are being contained within the production area and not influencing downgradient groundwater offsite. This is supported by significantly increasing trends in ammonia concentrations in monitoring wells near the groundwater recovery wells. Significant decreasing or no trends in mid- and downgradient wells indicate that ammonia is not migrating from the production area and that groundwater recovery and natural attenuation are effective in reducing concentrations in these areas.

While the target ammonia concentration of 0.55 mg/L has not successfully been achieved consistently at the downgradient wells, concentrations remain relatively low in relation to concentrations in the production area. Significant decreasing trends in ammonia in ECMW-16 indicate that ammonia concentrations are decreasing in wells immediately downgradient of the production area and that natural attenuation is effective in reducing concentrations in these areas.

The recovery well system at EDCC has been successful in removing contaminants from the uppermost saturated layer of the Cockfield Formation and has proven to be a component in reducing potential exposure risk at the site. Continued operation of the recovery well system and groundwater monitoring are recommended to assess the effectiveness of the groundwater remediation activities at EDCC.

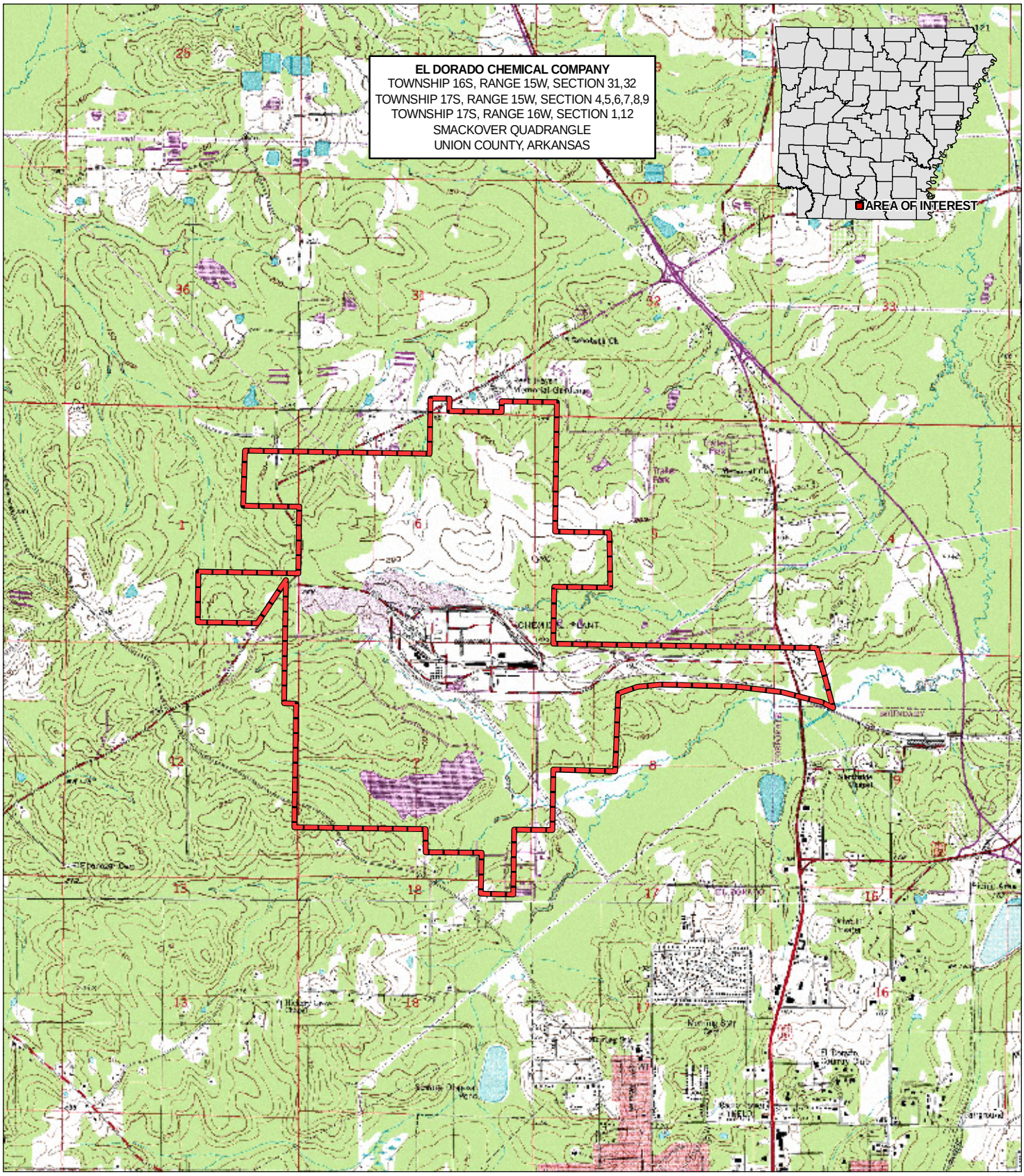
5.0 REFERENCES CITED

Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance. March 2009. EPA 530/R-09-007. https://www.itrcweb.org/gsmc-1/Content/Resources/Unified_Guidance_2009.pdf

APPENDIX A

Site Maps

Location Map



2042.000.G1

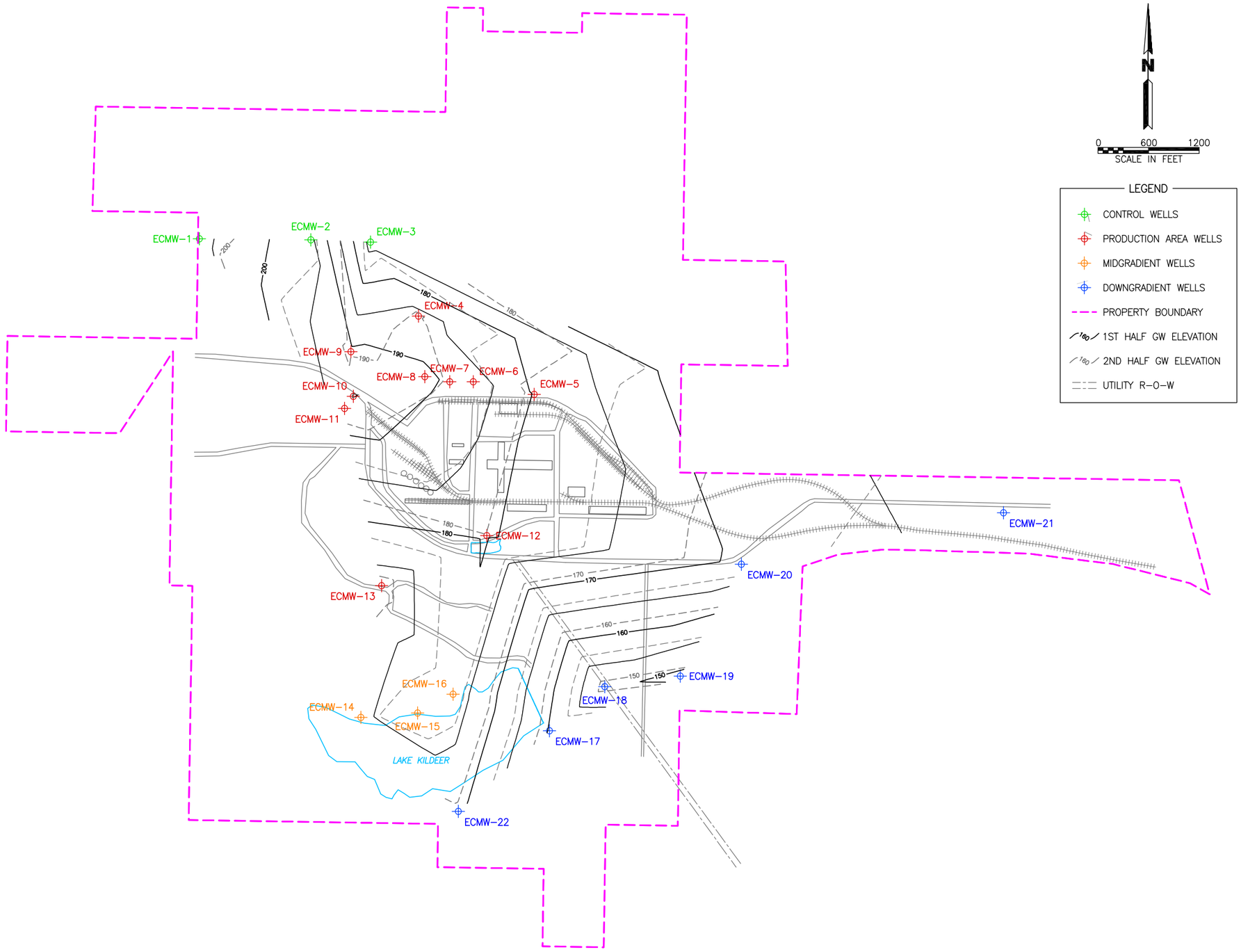
TOPOGRAPHIC
LOCATION MAP

EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

Approved by:	CDC	Project No.:	2042-99-010
Checked by:	WHG	Date:	08/20/2020
Drawn by:	IT	Scale:	SHOWN

GBM C
STRATEGIC ENVIRONMENTAL SERVICES
219 Brown Lane
Bryant, Arkansas 72022

Potentiometric Surface Map



NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY CDC
CHECKED BY WHG
APPR. BY CDC
DRAWN BY IT

GBMc & ASSOCIATES

SHEET TITLE
2020 GROUNDWATER ELEVATION

JOB NAME
2020 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

PROJECT NO. 2042-99-010
DATE 01/19/2021
SCALE SHOWN
REV. NO.
DWG. NO.

APPENDIX B

Laboratory Reports and Sampling Logs

Laboratory Reports

AMERICAN INTERPLEX CORPORATION
LABORATORIES

GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
219 Brown Lane
Bryant, AR 72022

This report replaces American Interplex Corporation (AIC) Control No. 242776 originally sent on February 24, 2020. This report contains the analytical results and supporting information for samples received on February 19, 2020. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Chief Operating Officer or a qualified designee.

Report was revised to correct data for Ammonia as N for Control Nos. 242776-3, 242776-6, and 242776-7.

Steve Bradford
Deputy Laboratory Director

This document has been distributed to the following:

PDF cc: GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
bphillips@gbmcassoc.com

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

SAMPLE INFORMATION

Project Description:
Eight (8) water sample(s) received on February 19, 2020
El Dorado Chemical Company
Monitoring Well Sampling

Receipt Details:
A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
242776-1	MW-1	18-Feb-2020 1010	
242776-2	MW-2	18-Feb-2020 1114	
242776-3	MW-3	18-Feb-2020 1208	
242776-4	MW-6	18-Feb-2020 1721	
242776-5	MW-7	18-Feb-2020 1635	
242776-6	MW-8	18-Feb-2020 1548	
242776-7	MW-3 DUP	18-Feb-2020 1209	
242776-8	MW-9	18-Feb-2020 0908	

Qualifiers:
D Result is from a secondary dilution factor
X Spiking level is invalid due to the high concentration of analyte in the spiked sample

References:
"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", (SM).
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242776-1
Sample Identification: MW-1 18-Feb-2020 1010

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**1.2**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 20-Feb-2020 1027 by 330	Analyzed: 21-Feb-2020 1137 by 350		Batch: W71106	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1044 by 235		Batch: S48626	
Lead		**0.0018**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1044 by 235		Batch: S48626	
Nitrate as N		**0.96**	0.05	**mg/l**	
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1111 by 07		Batch: C23072	
Sulfate		**7.8**	0.2	**mg/l**	
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 19-Feb-2020 1950 by 07		Batch: C23072	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1049 by 235		Batch: S48626	
Dissolved Lead		**0.0018**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1049 by 235		Batch: S48626	

AIC No. 242776-2
Sample Identification: MW-2 18-Feb-2020 1114

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**5.9**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 20-Feb-2020 1027 by 330	Analyzed: 21-Feb-2020 1215 by 350		Batch: W71106	Dil: 5
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1247 by 235		Batch: S48626	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1247 by 235		Batch: S48626	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1134 by 07		Batch: C23072	
Sulfate		**23**	0.2	**mg/l**	
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 19-Feb-2020 2036 by 07		Batch: C23072	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1245 by 235		Batch: S48626	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1245 by 235		Batch: S48626	

AIC No. 242776-3
Sample Identification: MW-3 18-Feb-2020 1208

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.72**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 20-Feb-2020 1027 by 330	Analyzed: 27-Feb-2020 0921 by 350		Batch: W71106	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1252 by 235		Batch: S48626	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242776-3 (Continued)
Sample Identification: MW-3 18-Feb-2020 1208

Analyte		Result	RL	Units	Qualifier
Lead		**0.0013**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1252 by 235		Batch: S48626	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1157 by 07		Batch: C23072	
Sulfate		**16**	0.2	**mg/l**	
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 19-Feb-2020 2122 by 07		Batch: C23072	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1250 by 235		Batch: S48626	
Dissolved Lead		**0.0012**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1250 by 235		Batch: S48626	

AIC No. 242776-4
Sample Identification: MW-6 18-Feb-2020 1721

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**330**	60	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 20-Feb-2020 1027 by 330	Analyzed: 21-Feb-2020 1412 by 350		Batch: W71106	Dil: 520
Chromium		**0.013**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 20-Feb-2020 0818 by 235	Analyzed: 24-Feb-2020 1134 by 328		Batch: S48626	
Lead		**0.053**	0.003	**mg/l**	D
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1337 by 235		Batch: S48626	Dil: 5
Nitrate as N		**11000**	300	**mg/l**	D
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1437 by 07		Batch: C23072	Dil: 5000
Sulfate		**59**	2	**mg/l**	D
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 19-Feb-2020 2145 by 07		Batch: C23072	Dil: 10
Dissolved Chromium		**0.012**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 20-Feb-2020 0818 by 235	Analyzed: 24-Feb-2020 1130 by 328		Batch: S48626	
Dissolved Lead		**0.053**	0.003	**mg/l**	D
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1335 by 235		Batch: S48626	Dil: 5

AIC No. 242776-5
Sample Identification: MW-7 18-Feb-2020 1635

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**280**	60	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 20-Feb-2020 1027 by 330	Analyzed: 21-Feb-2020 1414 by 350		Batch: W71106	Dil: 520
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1303 by 235		Batch: S48626	
Lead		**0.0029**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1303 by 235		Batch: S48626	
Nitrate as N		**2400**	50	**mg/l**	D
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1242 by 07		Batch: C23072	Dil: 1000

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242776-5 (Continued)
Sample Identification: MW-7 18-Feb-2020 1635

Analyte		Result	RL	Units	Qualifier
Sulfate		**470**	2	**mg/l**	D
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 19-Feb-2020 2230 by 07		Batch: C23072	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1300 by 235		Batch: S48626	
Dissolved Lead		**0.0029**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1300 by 235		Batch: S48626	

AIC No. 242776-6
Sample Identification: MW-8 18-Feb-2020 1548

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**2000**	300	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 20-Feb-2020 1027 by 330	Analyzed: 27-Feb-2020 1053 by 350		Batch: W71106	Dil: 2500
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 20-Feb-2020 0818 by 235	Analyzed: 24-Feb-2020 1141 by 328		Batch: S48626	
Lead		**0.037**	0.003	**mg/l**	D
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1343 by 235		Batch: S48626	Dil: 5
Nitrate as N		**5400**	50	**mg/l**	D
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1305 by 07		Batch: C23072	Dil: 1000
Sulfate		**140**	2	**mg/l**	D
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 0024 by 07		Batch: C23072	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 20-Feb-2020 0818 by 235	Analyzed: 24-Feb-2020 1138 by 328		Batch: S48626	
Dissolved Lead		**0.037**	0.003	**mg/l**	D
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1340 by 235		Batch: S48626	Dil: 5

AIC No. 242776-7
Sample Identification: MW-3 DUP 18-Feb-2020 1209

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.79**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 20-Feb-2020 1027 by 330	Analyzed: 27-Feb-2020 0925 by 350		Batch: W71106	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1318 by 235		Batch: S48626	
Lead		**0.0012**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1318 by 235		Batch: S48626	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1328 by 07		Batch: C23072	
Sulfate		**16**	0.2	**mg/l**	
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 0133 by 07		Batch: C23072	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1315 by 235		Batch: S48626	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242776-7 (Continued)
Sample Identification: MW-3 DUP 18-Feb-2020 1209

Analyte		Result	RL	Units	Qualifier
Dissolved Lead		**0.0012**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1315 by 235		Batch: S48626	

AIC No. 242776-8
Sample Identification: MW-9 18-Feb-2020 0908

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.28**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0855 by 300		Batch: W71130	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1354 by 235		Batch: S48626	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1354 by 235		Batch: S48626	
Nitrate as N		**28**	0.5	**mg/l**	D
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1414 by 07		Batch: C23072	Dil: 10
Sulfate		**670**	20	**mg/l**	D
EPA 9056A	Prep: 19-Feb-2020 1626 by 07	Analyzed: 20-Feb-2020 1351 by 07		Batch: C23072	Dil: 100
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1345 by 235		Batch: S48626	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 20-Feb-2020 0818 by 235	Analyzed: 20-Feb-2020 1345 by 235		Batch: S48626	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	101	80.0-120			W71106	20Feb20 1027 by 330	21Feb20 1108 by 350		
Ammonia as N with Distillation	1 mg/l	111	80.0-120			W71130	21Feb20 1356 by 350	24Feb20 0849 by 300		
Chromium	0.02 mg/l	102	85.0-115			S48626	20Feb20 0818 by 235	20Feb20 1036 by 235		
Lead	0.02 mg/l	97.0	85.0-115			S48626	20Feb20 0818 by 235	20Feb20 1036 by 235		
Nitrate as N	5 mg/l	102	90.0-110			C23072	19Feb20 1128 by 07	19Feb20 1200 by 07		
Sulfate	25 mg/l	100	90.0-110			C23072	19Feb20 1128 by 07	19Feb20 1200 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	242767-2	1 mg/l	-	80.0-120	W71106	20Feb20 1027 by 330	21Feb20 1112 by 350	5	X
	242767-2	1 mg/l	-	80.0-120	W71106	20Feb20 1027 by 330	21Feb20 1114 by 350	5	X
	Relative Percent Difference:		11.4	25.0	W71106				D
Ammonia as N with Distillation	242811-1	1 mg/l	108	80.0-120	W71130	21Feb20 1356 by 350	24Feb20 0852 by 300		
	242811-1	1 mg/l	107	80.0-120	W71130	21Feb20 1356 by 350	24Feb20 0854 by 300		
	Relative Percent Difference:		0.637	25.0	W71130				
Chromium	242776-1	0.02 mg/l	105	75.0-125	S48626	20Feb20 0818 by 235	20Feb20 1039 by 235		
	242776-1	0.02 mg/l	104	75.0-125	S48626	20Feb20 0818 by 235	20Feb20 1042 by 235		
	Relative Percent Difference:		0.477	20.0	S48626				
Lead	242776-1	0.02 mg/l	95.6	75.0-125	S48626	20Feb20 0818 by 235	20Feb20 1039 by 235		
	242776-1	0.02 mg/l	96.6	75.0-125	S48626	20Feb20 0818 by 235	20Feb20 1042 by 235		
	Relative Percent Difference:		0.952	20.0	S48626				
Nitrate as N	242754-1	5 mg/l	98.0	80.0-120	C23072	19Feb20 1128 by 07	19Feb20 1223 by 07		
	242754-1	5 mg/l	98.6	80.0-120	C23072	19Feb20 1128 by 07	19Feb20 1246 by 07		
	Relative Percent Difference:		0.590	10.0	C23072				
Sulfate	242754-1	25 mg/l	96.2	80.0-120	C23072	19Feb20 1128 by 07	19Feb20 1223 by 07		
	242754-1	25 mg/l	96.8	80.0-120	C23072	19Feb20 1128 by 07	19Feb20 1246 by 07		
	Relative Percent Difference:		0.618	10.0	C23072				

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W71106-1	20Feb20 1027 by 330	21Feb20 1106 by 350	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W71130-1	21Feb20 1356 by 350	24Feb20 0847 by 300	
Chromium	< 0.005 mg/l	0.005	0.01	S48626-1	20Feb20 0818 by 235	20Feb20 1034 by 235	
Lead	< 0.0003 mg/l	0.0003	0.0005	S48626-1	20Feb20 0818 by 235	20Feb20 1034 by 235	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C23072-1	19Feb20 1128 by 07	19Feb20 1137 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C23072-1	19Feb20 1128 by 07	19Feb20 1137 by 07	

GBMc & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

242776

CLIENT INFORMATION		BILLING INFORMATION		SPECIAL INSTRUCTIONS/PRECAUTIONS:
Company:	El Dorado Chemical Company	Bill To:	GBMc & Assoc.	
Project Name/No.:	Monitoring Well Sampling	Company:		
Send Report To:	Brad Phillips	Address:		
Address:	219 Brown Lane			
	Bryant, AR 72022	Phone No.:		
Phone/Fax No.:	(501) 847-7077	Fax No.:		

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
							Parameters for Analysis/Methods									
1	MW-1		2-18-20	1010	W	4	X	X	X	X	X	X	X			
2	MW-2			1114	W		X	X	X	X	X	X	X			
3	MW-3			1208	W		X	X	X	X	X	X	X			
4	MW-6			1721	W		X	X	X	X	X	X	X			
5	MW-7			1635	W		X	X	X	X	X	X	X			
6	MW-8			1548	W		X	X	X	X	X	X	X			
7	MW-3 DUP			1209	W		X	X	X	X	X	X	X			
	Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Sampler(s): WHG, DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: Will Shu	Date: 2-18-20 Time: 2000	COC Checked by: Will Shu Date: 2-18-20 Time: 2031
Relinquished by: Will Shu	Date: 2-19-20 Time: 749	Received by: Nancy Holmes Date: 2-19-20 Time: 11:39
Relinquished by: Nancy Holmes	Date: 2-19-20 Time: 2:17	Received in lab by: JWSHB Date: 19-Feb-20 Time: 1411

LABORATORY USE ONLY:	Samples Received On Ice?: (YES) or NO	Sample Temperature: 0.1°
	0.1°	

GBMc & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

242776

CLIENT INFORMATION		BILLING INFORMATION	
Company:	El Dorado Chemical Company	Bill To:	GBMc & Assoc
Project Name/No.:	Monitoring Well Sampling	Company:	
Send Report To:	Brad Phillips	Address:	
Address:	219 Brown Lane		
	Bryant, AR 72022	Phone No.:	
Phone/Fax No.:	(501) 847-7077	Fax No.:	

SPECIAL INSTRUCTIONS/PRECAUTIONS:

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	Parameters for Analysis/Methods: NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
8	MW-9		2-18-20	908	W	4	X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
Preservative		(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Sampler(s): WHG, DMB
Shipment Method: Fed Ex Priority
Turnaround Time Required: Normal

COC Completed by: Will Ha Date: 2-18-20 Time: 2025
COC Checked by: Will Ha Date: 2-18-20 Time: 2032

Relinquished by: Will Ha Date: 2-19-20 Time: 749
Received by: Cindy Tillman Date: 2-19-20 Time: 11:39

Relinquished by: Cindy Hillman Date: 2-19-20 Time: 2:19
Received in lab by: JW Date: 19-Feb-20 Time: 14:19

LABORATORY USE ONLY:
Samples Received On Ice?: (YES) or NO
Sample Temperature: 0.1°

V1.2 02/14/20

AMERICAN INTERPLEX CORPORATION
LABORATORIES

GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
219 Brown Lane
Bryant, AR 72022

This report contains the analytical results and supporting information for samples received on February 20, 2020. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Chief Operating Officer or a qualified designee.

Steve Bradford
Deputy Laboratory Director

This document has been distributed to the following:

PDF cc: GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
bphillips@gbmcassoc.com

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

SAMPLE INFORMATION

Project Description:
Eleven (11) water sample(s) received on February 20, 2020
El Dorado Chemical Company
Monitoring Well Sampling

Receipt Details:
A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
242817-1	MW-4	19-Feb-2020 0853	
242817-2	MW-5	19-Feb-2020 0930	
242817-3	MW-14	19-Feb-2020 1209	
242817-4	MW-15	19-Feb-2020 1048	
242817-5	MW-17	19-Feb-2020 1342	
242817-6	MW-18	19-Feb-2020 1632	
242817-7	MW-19	19-Feb-2020 1549	
242817-8	MW-20	20-Feb-2020 0949	
242817-9	MW-21	20-Feb-2020 0900	
242817-10	MW-22	19-Feb-2020 1437	
242817-11	MW-22 DUP	19-Feb-2020 1438	

Qualifiers:
D Result is from a secondary dilution factor

References:
"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", (SM).
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242817-1
Sample Identification: MW-4 19-Feb-2020 0853

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.18**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0907 by 300		Batch: W71130	
Chromium		**0.011**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1427 by 328		Batch: S48640	
Lead		**0.0071**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1454 by 235		Batch: S48640	
Nitrate as N		**0.14**	0.05	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 20-Feb-2020 2305 by 07		Batch: C23082	
Sulfate		**970**	20	**mg/l**	D
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 24-Feb-2020 1558 by 07		Batch: C23082	Dil: 100
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1423 by 328		Batch: S48640	
Dissolved Lead		**0.0068**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1451 by 235		Batch: S48640	

AIC No. 242817-2
Sample Identification: MW-5 19-Feb-2020 0930

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.26**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0909 by 300		Batch: W71130	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1435 by 328		Batch: S48640	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1504 by 235		Batch: S48640	
Nitrate as N		**140**	5	**mg/l**	D
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 24-Feb-2020 1621 by 07		Batch: C23082	Dil: 100
Sulfate		**40**	0.2	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 20-Feb-2020 2328 by 07		Batch: C23082	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1431 by 328		Batch: S48640	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1501 by 235		Batch: S48640	

AIC No. 242817-3
Sample Identification: MW-14 19-Feb-2020 1209

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.40**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0911 by 300		Batch: W71130	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1509 by 235		Batch: S48640	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242817-3 (Continued)
Sample Identification: MW-14 19-Feb-2020 1209

Analyte		Result	RL	Units	Qualifier
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1509 by 235		Batch: S48640	
Nitrate as N		**5.3**	0.05	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 20-Feb-2020 2351 by 07		Batch: C23082	
Sulfate		**180**	2	**mg/l**	D
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 24-Feb-2020 1513 by 07		Batch: C23082	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1506 by 235		Batch: S48640	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1506 by 235		Batch: S48640	

AIC No. 242817-4
Sample Identification: MW-15 19-Feb-2020 1048

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.38**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0912 by 300		Batch: W71130	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1514 by 235		Batch: S48640	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1514 by 235		Batch: S48640	
Nitrate as N		**3.6**	0.05	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 21-Feb-2020 0013 by 07		Batch: C23082	
Sulfate		**15**	0.2	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 21-Feb-2020 0013 by 07		Batch: C23082	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1511 by 235		Batch: S48640	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1511 by 235		Batch: S48640	

AIC No. 242817-5
Sample Identification: MW-17 19-Feb-2020 1342

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**9.7**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0950 by 300		Batch: W71130	Dil: 5
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1519 by 235		Batch: S48640	
Lead		**0.0021**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1519 by 235		Batch: S48640	
Nitrate as N		**16**	0.5	**mg/l**	D
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 24-Feb-2020 1536 by 07		Batch: C23082	Dil: 10

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242817-5 (Continued)
Sample Identification: MW-17 19-Feb-2020 1342

Analyte		Result	RL	Units	Qualifier
Sulfate		**35**	0.2	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 21-Feb-2020 0036 by 07		Batch: C23082	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1516 by 235		Batch: S48640	
Dissolved Lead		**0.0017**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1516 by 235		Batch: S48640	

AIC No. 242817-6
Sample Identification: MW-18 19-Feb-2020 1632

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.25**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0916 by 300		Batch: W71130	
Chromium		**0.020**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1443 by 328		Batch: S48640	
Lead		**0.020**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1524 by 235		Batch: S48640	
Nitrate as N		**0.46**	0.05	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 21-Feb-2020 0059 by 07		Batch: C23082	
Sulfate		**3.7**	0.2	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 21-Feb-2020 0059 by 07		Batch: C23082	
Dissolved Chromium		**0.019**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1439 by 328		Batch: S48640	
Dissolved Lead		**0.018**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1521 by 235		Batch: S48640	

AIC No. 242817-7
Sample Identification: MW-19 19-Feb-2020 1549

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.17**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0917 by 300		Batch: W71130	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1451 by 328		Batch: S48640	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1534 by 235		Batch: S48640	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 21-Feb-2020 0122 by 07		Batch: C23082	
Sulfate		**2.6**	0.2	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1627 by 07	Analyzed: 21-Feb-2020 0122 by 07		Batch: C23082	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1447 by 328		Batch: S48640	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242817-7 (Continued)
Sample Identification: MW-19 19-Feb-2020 1549

Analyte		Result	RL	Units	Qualifier
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1531 by 235		Batch: S48640	

AIC No. 242817-8
Sample Identification: MW-20 20-Feb-2020 0949

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.12**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0919 by 300		Batch: W71130	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1521 by 328		Batch: S48640	
Lead		**0.0013**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1539 by 235		Batch: S48640	
Nitrate as N		**0.14**	0.05	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1628 by 07	Analyzed: 21-Feb-2020 0145 by 07		Batch: C23082	
Sulfate		**12**	0.2	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1628 by 07	Analyzed: 21-Feb-2020 0145 by 07		Batch: C23082	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1517 by 328		Batch: S48640	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1536 by 235		Batch: S48640	

AIC No. 242817-9
Sample Identification: MW-21 20-Feb-2020 0900

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0921 by 300		Batch: W71130	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1544 by 235		Batch: S48640	
Lead		**0.00093**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1544 by 235		Batch: S48640	
Nitrate as N		**2.3**	0.05	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1628 by 07	Analyzed: 21-Feb-2020 0208 by 07		Batch: C23082	
Sulfate		**3.4**	0.2	**mg/l**	
EPA 9056A	Prep: 20-Feb-2020 1628 by 07	Analyzed: 21-Feb-2020 0208 by 07		Batch: C23082	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1541 by 235		Batch: S48640	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1541 by 235		Batch: S48640	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242817-10
Sample Identification: MW-22 19-Feb-2020 1437

Analyte	Result	RL	Units	Qualifier
Ammonia as N with Distillation	**0.18**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011 Prep: 21-Feb-2020 1356 by 350	Analyzed: 24-Feb-2020 0922 by 300		Batch: W71130	
Chromium	**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1529 by 328		Batch: S48640	
Lead	**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1549 by 235		Batch: S48640	
Nitrate as N	**< 0.05**	0.05	**mg/l**	
EPA 9056A Prep: 24-Feb-2020 1610 by 07	Analyzed: 25-Feb-2020 0455 by 07		Batch: C23085	
Sulfate	**5.6**	0.2	**mg/l**	
EPA 9056A Prep: 24-Feb-2020 1610 by 07	Analyzed: 25-Feb-2020 0455 by 07		Batch: C23085	
Dissolved Chromium	**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1525 by 328		Batch: S48640	
Dissolved Lead	**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1546 by 235		Batch: S48640	

AIC No. 242817-11
Sample Identification: MW-22 DUP 19-Feb-2020 1438

Analyte	Result	RL	Units	Qualifier
Ammonia as N with Distillation	**0.10**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011 Prep: 24-Feb-2020 1235 by 330	Analyzed: 24-Feb-2020 1440 by 300		Batch: W71150	
Chromium	**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1536 by 328		Batch: S48640	
Lead	**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1554 by 235		Batch: S48640	
Nitrate as N	**< 0.05**	0.05	**mg/l**	
EPA 9056A Prep: 24-Feb-2020 1610 by 07	Analyzed: 25-Feb-2020 0649 by 07		Batch: C23085	
Sulfate	**5.6**	0.2	**mg/l**	
EPA 9056A Prep: 24-Feb-2020 1610 by 07	Analyzed: 25-Feb-2020 0649 by 07		Batch: C23085	
Dissolved Chromium	**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D Prep: 21-Feb-2020 1251 by 235	Analyzed: 24-Feb-2020 1533 by 328		Batch: S48640	
Dissolved Lead	**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B Prep: 21-Feb-2020 1251 by 235	Analyzed: 21-Feb-2020 1551 by 235		Batch: S48640	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	111	80.0-120			W71130	21Feb20 1356 by 350	24Feb20 0849 by 300		
Ammonia as N with Distillation	1 mg/l	95.6	80.0-120			W71150	24Feb20 1236 by 330	24Feb20 1438 by 300		
Chromium	0.02 mg/l	92.5	85.0-115			S48640	21Feb20 1251 by 235	21Feb20 1439 by 235		
Lead	0.02 mg/l	97.5	85.0-115			S48640	21Feb20 1251 by 235	21Feb20 1439 by 235		
Nitrate as N	5 mg/l	102	90.0-110			C23082	20Feb20 1605 by 07	20Feb20 1642 by 07		
Nitrate as N	5 mg/l	104	90.0-110			C23085	24Feb20 1610 by 07	24Feb20 2118 by 07		
Sulfate	25 mg/l	101	90.0-110			C23082	20Feb20 1605 by 07	20Feb20 1642 by 07		
Sulfate	25 mg/l	107	90.0-110			C23085	24Feb20 1610 by 07	24Feb20 2118 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	242811-1	1 mg/l	108	80.0-120	W71130	21Feb20 1356 by 350	24Feb20 0852 by 300		
	242811-1	1 mg/l	107	80.0-120	W71130	21Feb20 1356 by 350	24Feb20 0854 by 300		
	Relative Percent Difference:		0.637	25.0	W71130				
Ammonia as N with Distillation	242817-11	1 mg/l	94.3	80.0-120	W71150	24Feb20 1236 by 330	24Feb20 1442 by 300		
	242817-11	1 mg/l	91.7	80.0-120	W71150	24Feb20 1236 by 330	24Feb20 1444 by 300		
	Relative Percent Difference:		2.52	25.0	W71150				
Chromium	242787-1	0.02 mg/l	90.4	75.0-125	S48640	21Feb20 1251 by 235	21Feb20 1441 by 235		
	242787-1	0.02 mg/l	94.4	75.0-125	S48640	21Feb20 1251 by 235	21Feb20 1444 by 235		
	Relative Percent Difference:		3.10	20.0	S48640				
Lead	242787-1	0.02 mg/l	90.5	75.0-125	S48640	21Feb20 1251 by 235	21Feb20 1441 by 235		
	242787-1	0.02 mg/l	95.0	75.0-125	S48640	21Feb20 1251 by 235	21Feb20 1444 by 235		
	Relative Percent Difference:		4.77	20.0	S48640				
Nitrate as N	242796-1	5 mg/l	104	80.0-120	C23082	20Feb20 1605 by 07	20Feb20 1705 by 07		
	242796-1	5 mg/l	104	80.0-120	C23082	20Feb20 1605 by 07	20Feb20 1727 by 07		
	Relative Percent Difference:		0.0757	10.0	C23082				
Nitrate as N	242864-1	5 mg/l	105	80.0-120	C23085	24Feb20 1610 by 07	24Feb20 2141 by 07		
	242864-1	5 mg/l	105	80.0-120	C23085	24Feb20 1610 by 07	24Feb20 2204 by 07		
	Relative Percent Difference:		0.0381	10.0	C23085				
Sulfate	242796-1	25 mg/l	97.9	80.0-120	C23082	20Feb20 1605 by 07	20Feb20 1705 by 07		
	242796-1	25 mg/l	96.9	80.0-120	C23082	20Feb20 1605 by 07	20Feb20 1727 by 07		
	Relative Percent Difference:		0.860	10.0	C23082				
Sulfate	242864-1	25 mg/l	110	80.0-120	C23085	24Feb20 1610 by 07	24Feb20 2141 by 07		
	242864-1	25 mg/l	109	80.0-120	C23085	24Feb20 1610 by 07	24Feb20 2204 by 07		
	Relative Percent Difference:		0.399	10.0	C23085				

AMERICAN INTERPLEX CORPORATION
LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W71130-1	21Feb20 1356 by 350	24Feb20 0847 by 300	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W71150-1	24Feb20 1236 by 330	24Feb20 1436 by 300	
Chromium	< 0.005 mg/l	0.005	0.01	S48640-1	21Feb20 1251 by 235	21Feb20 1436 by 235	
Lead	< 0.0003 mg/l	0.0003	0.0005	S48640-1	21Feb20 1251 by 235	21Feb20 1436 by 235	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C23082-1	20Feb20 1605 by 07	20Feb20 1619 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C23082-1	20Feb20 1605 by 07	20Feb20 1619 by 07	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C23085-1	24Feb20 1610 by 07	24Feb20 2055 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C23085-1	24Feb20 1610 by 07	24Feb20 2055 by 07	

GBMc & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

242817

CLIENT INFORMATION		BILLING INFORMATION	
Company:	El Dorado Chemical Company	Bill To:	GBMc & Assoc.
Project Name/No.:	Monitoring Well Sampling	Company:	
Send Report To:	Brad Phillips	Address:	
Address:	219 Brown Lane		
	Bryant, AR 72022	Phone No.:	
Phone/Fax No.:	(501) 847-7077	Fax No.:	

SPECIAL INSTRUCTIONS/PRECAUTIONS:

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	Parameters for Analysis/Methods: NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
1	MW-4		2-19-20	853	W	4	X	X	X	X	X	X	X			
2	MW-5			930	W		X	X	X	X	X	X	X			
3	MW-14			1209	W		X	X	X	X	X	X	X			
4	MW-15			1048	W		X	X	X	X	X	X	X			
5	MW-17			1342	W		X	X	X	X	X	X	X			
6	MW-18			1632	W		X	X	X	X	X	X	X			
7	MW-19			1549	W		X	X	X	X	X	X	X			
	Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Sampler(s): WHG, DMB
Shipment Method: Fed Ex Priority
Turnaround Time Required: Normal

COC Completed by: [signature] Date: 2-19-20 Time: 2142
COC Checked by: [signature] Date: 2-19-20 Time: 2150

Relinquished by: [signature] Date: 2-20-20 Time: 1010
Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____
Received in lab by: JW398 Date: 20-Feb-20 Time: 19:24

LABORATORY USE ONLY:
Samples Received On Ice?: YES or NO
Sample Temperature: 0.1 °C

V1.2 02/14/20

GBMc & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

242817

CLIENT INFORMATION		BILLING INFORMATION		SPECIAL INSTRUCTIONS/PRECAUTIONS:
Company:	El Dorado Chemical Company	Bill To:	GBMc + Assoc.	
Project Name/No.:	Monitoring Well Sampling	Company:		
Send Report To:	Brad Phillips	Address:		
Address:	219 Brown Lane			
	Bryant, AR 72022	Phone No.:		
Phone/Fax No.:	(501) 847-7077	Fax No.:		

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	Parameters for Analysis/Methods: NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
8	MW-20		2-20-20	949	W	4	X	X	X	X	X	X	X			
9	MW-21		2-20-20	900	W		X	X	X	X	X	X	X			
10	MW-22		2-19-20	1437	W	1	X	X	X	X	X	X	X			
11	MW-22 DUP		2-19-20	1438	W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
Preservative		(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Sampler(s): WHG, DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: [signature]	Date: 2-20-20 Time: 1000	COC Checked by: [signature] Date: 2-20-20 Time: 1007
Relinquished by: [signature]	Date: 2-20-20 Time: 1010	Received by: _____ Date: _____ Time: _____
Relinquished by: _____	Date: _____ Time: _____	Received in lab by: SW3018 Date: 20-Feb-20 Time: 19:27

LABORATORY USE ONLY:	Samples Received On Ice?: (YES) or NO	Sample Temperature: 0.1 °C

AMERICAN INTERPLEX CORPORATION
LABORATORIES

GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
219 Brown Lane
Bryant, AR 72022

This report contains the analytical results and supporting information for samples received on February 18, 2020. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Chief Operating Officer or a qualified designee.

Steve Bradford
Deputy Laboratory Director

This document has been distributed to the following:

PDF cc: GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
bphillips@gbmcassoc.com

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

SAMPLE INFORMATION

Project Description:
Six (6) water sample(s) received on February 18, 2020
El Dorado Chemical Company
Monitoring Well Sampling

Receipt Details:
A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
242742-1	MW-16	17-Feb-2020 1636	
242742-2	MW-12	17-Feb-2020 1240	
242742-3	MW-11	17-Feb-2020 1341	
242742-4	MW-11 DUP	17-Feb-2020 1342	
242742-5	MW-13	17-Feb-2020 1542	
242742-6	MW-10	17-Feb-2020 1442	

Qualifiers:
D Result is from a secondary dilution factor

References:
"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", (SM).
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242742-1
Sample Identification: MW-16 17-Feb-2020 1636

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.35**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 19-Feb-2020 1153 by 330	Analyzed: 20-Feb-2020 0905 by 300		Batch: W71093	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1144 by 235		Batch: S48616	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1144 by 235		Batch: S48616	
Nitrate as N		**12**	0.5	**mg/l**	D
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 18-Feb-2020 2215 by 07		Batch: C23070	Dil: 10
Sulfate		**18**	0.2	**mg/l**	
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0140 by 07		Batch: C23070	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1141 by 235		Batch: S48616	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1141 by 235		Batch: S48616	

AIC No. 242742-2
Sample Identification: MW-12 17-Feb-2020 1240

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**2.2**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 19-Feb-2020 1153 by 330	Analyzed: 20-Feb-2020 0907 by 300		Batch: W71093	Dil: 5
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1151 by 235		Batch: S48616	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1151 by 235		Batch: S48616	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0203 by 07		Batch: C23070	
Sulfate		**3.5**	0.2	**mg/l**	
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0203 by 07		Batch: C23070	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1148 by 235		Batch: S48616	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1148 by 235		Batch: S48616	

AIC No. 242742-3
Sample Identification: MW-11 17-Feb-2020 1341

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**10**	3	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 19-Feb-2020 1153 by 330	Analyzed: 20-Feb-2020 0943 by 300		Batch: W71093	Dil: 26
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1157 by 235		Batch: S48616	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242742-3 (Continued)
Sample Identification: MW-11 17-Feb-2020 1341

Analyte		Result	RL	Units	Qualifier
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1157 by 235		Batch: S48616	
Nitrate as N		**32**	0.5	**mg/l**	D
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 18-Feb-2020 2301 by 07		Batch: C23070	Dil: 10
Sulfate		**160**	2	**mg/l**	D
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 18-Feb-2020 2301 by 07		Batch: C23070	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1154 by 235		Batch: S48616	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1154 by 235		Batch: S48616	

AIC No. 242742-4
Sample Identification: MW-11 DUP 17-Feb-2020 1342

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**13**	3	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 19-Feb-2020 1153 by 330	Analyzed: 20-Feb-2020 0911 by 300		Batch: W71093	Dil: 26
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1210 by 235		Batch: S48616	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1210 by 235		Batch: S48616	
Nitrate as N		**31**	0.5	**mg/l**	D
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0032 by 07		Batch: C23070	Dil: 10
Sulfate		**160**	2	**mg/l**	D
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0032 by 07		Batch: C23070	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1207 by 235		Batch: S48616	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1207 by 235		Batch: S48616	

AIC No. 242742-5
Sample Identification: MW-13 17-Feb-2020 1542

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 19-Feb-2020 1153 by 330	Analyzed: 20-Feb-2020 0913 by 300		Batch: W71093	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1217 by 235		Batch: S48616	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1217 by 235		Batch: S48616	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0312 by 07		Batch: C23070	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 242742-5 (Continued)
Sample Identification: MW-13 17-Feb-2020 1542

Analyte		Result	RL	Units	Qualifier
Sulfate		**260**	2	**mg/l**	D
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0055 by 07		Batch: C23070	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1213 by 235		Batch: S48616	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1213 by 235		Batch: S48616	

AIC No. 242742-6
Sample Identification: MW-10 17-Feb-2020 1442

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.11**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 19-Feb-2020 1153 by 330	Analyzed: 20-Feb-2020 0914 by 300		Batch: W71093	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1223 by 235		Batch: S48616	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1223 by 235		Batch: S48616	
Nitrate as N		**64**	0.5	**mg/l**	D
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0118 by 07		Batch: C23070	Dil: 10
Sulfate		**97**	2	**mg/l**	D
EPA 9056A	Prep: 18-Feb-2020 1630 by 07	Analyzed: 19-Feb-2020 0118 by 07		Batch: C23070	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1220 by 235		Batch: S48616	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 19-Feb-2020 0814 by 235	Analyzed: 19-Feb-2020 1220 by 235		Batch: S48616	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	119	80.0-120			W71093	19Feb20 1153 by 330	20Feb20 0841 by 300		
Chromium	0.02 mg/l	103	85.0-115			S48616	19Feb20 0813 by 235	19Feb20 1034 by 235		
Lead	0.02 mg/l	102	85.0-115			S48616	19Feb20 0813 by 235	19Feb20 1034 by 235		
Nitrate as N	5 mg/l	99.8	90.0-110			C23070	18Feb20 1619 by 07	18Feb20 1655 by 07		
Sulfate	25 mg/l	101	90.0-110			C23070	18Feb20 1619 by 07	18Feb20 1655 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	242732-1	1 mg/l	114	80.0-120	W71093	19Feb20 1153 by 330	20Feb20 0846 by 300		
	242732-1	1 mg/l	98.2	80.0-120	W71093	19Feb20 1153 by 330	20Feb20 0848 by 300		
	Relative Percent Difference:		10.6	25.0	W71093				
Chromium	242732-1	0.02 mg/l	91.0	75.0-125	S48616	19Feb20 0813 by 235	19Feb20 1049 by 235		
	242732-1	0.02 mg/l	87.5	75.0-125	S48616	19Feb20 0813 by 235	19Feb20 1052 by 235		
	Relative Percent Difference:		3.92	20.0	S48616				
Lead	242732-1	0.02 mg/l	91.9	75.0-125	S48616	19Feb20 0813 by 235	19Feb20 1049 by 235		
	242732-1	0.02 mg/l	92.4	75.0-125	S48616	19Feb20 0813 by 235	19Feb20 1052 by 235		
	Relative Percent Difference:		0.462	20.0	S48616				
Nitrate as N	242738-1	5 mg/l	94.0	80.0-120	C23070	18Feb20 1619 by 07	18Feb20 1718 by 07		
	242738-1	5 mg/l	94.3	80.0-120	C23070	18Feb20 1619 by 07	18Feb20 1741 by 07		
	Relative Percent Difference:		0.248	10.0	C23070				
Sulfate	242738-1	25 mg/l	95.4	80.0-120	C23070	18Feb20 1619 by 07	18Feb20 1718 by 07		
	242738-1	25 mg/l	95.7	80.0-120	C23070	18Feb20 1619 by 07	18Feb20 1741 by 07		
	Relative Percent Difference:		0.271	10.0	C23070				

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W71093-1	19Feb20 1153 by 330	20Feb20 0839 by 300	
Chromium	< 0.005 mg/l	0.005	0.01	S48616-1	19Feb20 0813 by 235	19Feb20 1031 by 235	
Lead	< 0.0003 mg/l	0.0003	0.0005	S48616-1	19Feb20 0813 by 235	19Feb20 1031 by 235	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C23070-1	18Feb20 1619 by 07	18Feb20 1633 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C23070-1	18Feb20 1619 by 07	18Feb20 1633 by 07	

GBMc & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

242742

CLIENT INFORMATION		BILLING INFORMATION		SPECIAL INSTRUCTIONS/PRECAUTIONS:
Company:	El Dorado Chemical Company	Bill To:	GBMc & Assoc.	RUSH DELIVERY
Project Name/No.:	Monitoring Well Sampling	Company:		
Send Report To:	Brad Phillips	Address:		
Address:	219 Brown Lane			
	Bryant, AR 72022	Phone No.:		
Phone/Fax No.:	(501) 847-7077	Fax No.:		

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
							Parameters for Analysis/Methods									
1	MW-16		2-17-20	1636	W	4	X	X	X	X	X	X	X			
2	MW-12		2-17-20	1240	W		X	X	X	X	X	X	X			
3	MW-11		"	1341	W		X	X	X	X	X	X	X			
4	MW-11 DUP		"	1342	W		X	X	X	X	X	X	X			
5	MW-13		"	1542	W		X	X	X	X	X	X	X			
6	MW-10		"	1442	W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
	Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Sampler(s): WHG, DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: Will Shin	Date: 2-17-2020 Time: 2023	COC Checked by: Will Shin Date: 2-17-20 Time: 2044
Relinquished by: Will Shin	Date: 2-18-2020 Time: 746	Received by: T. Waddell Date: 2/18/20 Time: 11:10
Relinquished by: T. Waddell	Date: 2/18/20 Time: 11:07	Received in lab by: D. Brown Date: 2-18-20 Time: 1426

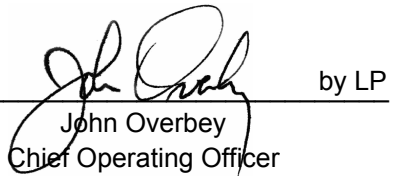
LABORATORY USE ONLY:	Samples Received On Ice?: 2.2 (YES) or NO	Sample Temperature: 0.1

GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
219 Brown Lane
Bryant, AR 72022

This report contains the analytical results and supporting information for samples received on July 21, 2020. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Chief Operating Officer or a qualified designee.



by LP

John Overbey
Chief Operating Officer

This document has been distributed to the following:

PDF cc: GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
bphillips@gbmcassoc.com

GBMc & Associates, Inc.
ATTN: Mr. Will Glenn
wglenn@gbmcassoc.com

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

SAMPLE INFORMATION

Project Description:
Twelve (12) water sample(s) received on July 21, 2020
El Dorado Chemical Company
Monitoring Well Sampling

Receipt Details:
A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
247118-1	MW-1	20-Jul-2020 1455	1
247118-2	MW-2	20-Jul-2020 1540	
247118-3	MW-3	20-Jul-2020 1634	
247118-4	MW-10	20-Jul-2020 1402	
247118-5	MW-10 DUP	20-Jul-2020 1402	
247118-6	MW-11	20-Jul-2020 1321	
247118-7	MW-12	20-Jul-2020 1224	
247118-8	MW-4	21-Jul-2020 0735	
247118-9	MW-9	21-Jul-2020 0827	
247118-10	MW-8	21-Jul-2020 0905	
247118-11	MW-5	21-Jul-2020 0956	
247118-12	MW-6	21-Jul-2020 1045	

Notes:
1. Sample was received unpreserved

Qualifiers:
D Result is from a secondary dilution factor

References:
"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", (SM).
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247118-1
Sample Identification: MW-1 20-Jul-2020 1455

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 0913 by 330	Analyzed: 22-Jul-2020 1242 by 300		Batch: W72844	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1249 by 313		Batch: S49508	
Lead		**0.00083**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1249 by 313		Batch: S49508	
Nitrate as N		**1.4**	0.05	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1647 by 07		Batch: C23538	
Sulfate		**5.7**	0.2	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1647 by 07		Batch: C23538	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1246 by 313		Batch: S49508	
Dissolved Lead		**0.00072**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1246 by 313		Batch: S49508	

AIC No. 247118-2
Sample Identification: MW-2 20-Jul-2020 1540

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 0913 by 330	Analyzed: 22-Jul-2020 1244 by 300		Batch: W72844	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1304 by 313		Batch: S49508	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1304 by 313		Batch: S49508	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1709 by 07		Batch: C23538	
Sulfate		**20**	0.2	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1709 by 07		Batch: C23538	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1300 by 313		Batch: S49508	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1300 by 313		Batch: S49508	

AIC No. 247118-3
Sample Identification: MW-3 20-Jul-2020 1634

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.11**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 0913 by 330	Analyzed: 22-Jul-2020 1246 by 300		Batch: W72844	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1311 by 313		Batch: S49508	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247118-3 (Continued)
Sample Identification: MW-3 20-Jul-2020 1634

Analyte		Result	RL	Units	Qualifier
Lead		**0.00062**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1311 by 313		Batch: S49508	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1731 by 07		Batch: C23538	
Sulfate		**11**	0.2	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1731 by 07		Batch: C23538	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1307 by 313		Batch: S49508	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1307 by 313		Batch: S49508	

AIC No. 247118-4
Sample Identification: MW-10 20-Jul-2020 1402

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.11**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1016 by 300		Batch: W72849	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1318 by 313		Batch: S49508	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1318 by 313		Batch: S49508	
Nitrate as N		**63**	0.5	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1753 by 07		Batch: C23538	Dil: 10
Sulfate		**62**	2	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1753 by 07		Batch: C23538	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1314 by 313		Batch: S49508	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1314 by 313		Batch: S49508	

AIC No. 247118-5
Sample Identification: MW-10 DUP 20-Jul-2020 1402

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.14**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1021 by 300		Batch: W72849	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1344 by 313		Batch: S49508	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1344 by 313		Batch: S49508	
Nitrate as N		**62**	0.5	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1815 by 07		Batch: C23538	Dil: 10

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247118-5 (Continued)
Sample Identification: MW-10 DUP 20-Jul-2020 1402

Analyte		Result	RL	Units	Qualifier
Sulfate		**61**	2	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1815 by 07		Batch: C23538	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1322 by 313		Batch: S49508	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1322 by 313		Batch: S49508	

AIC No. 247118-6
Sample Identification: MW-11 20-Jul-2020 1321

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**9.3**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1112 by 300		Batch: W72849	Dil: 5
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1351 by 313		Batch: S49508	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1351 by 313		Batch: S49508	
Nitrate as N		**22**	0.5	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1836 by 07		Batch: C23538	Dil: 10
Sulfate		**170**	2	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1836 by 07		Batch: C23538	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1347 by 313		Batch: S49508	
Dissolved Lead		**0.0054**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1347 by 313		Batch: S49508	

AIC No. 247118-7
Sample Identification: MW-12 20-Jul-2020 1224

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**2.1**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1113 by 300		Batch: W72849	Dil: 5
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1244 by 328		Batch: S49508	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1358 by 313		Batch: S49508	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1858 by 07		Batch: C23538	
Sulfate		**14**	0.2	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1858 by 07		Batch: C23538	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1355 by 313		Batch: S49508	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247118-7 (Continued)
Sample Identification: MW-12 20-Jul-2020 1224

Analyte		Result	RL	Units	Qualifier
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1240 by 328		Batch: S49508	

AIC No. 247118-8
Sample Identification: MW-4 21-Jul-2020 0735

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.62**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1026 by 300		Batch: W72849	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1252 by 328		Batch: S49508	
Lead		**0.0068**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1405 by 313		Batch: S49508	
Nitrate as N		**0.15**	0.05	**mg/l**	
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 22-Jul-2020 1113 by 07		Batch: C23538	
Sulfate		**710**	20	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 1920 by 07		Batch: C23538	Dil: 100
Dissolved Lead		**0.0069**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1402 by 313		Batch: S49508	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1248 by 328		Batch: S49508	

AIC No. 247118-9
Sample Identification: MW-9 21-Jul-2020 0827

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.64**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1028 by 300		Batch: W72849	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1300 by 328		Batch: S49508	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1413 by 313		Batch: S49508	
Nitrate as N		**25**	0.5	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 2131 by 07		Batch: C23538	Dil: 10
Sulfate		**570**	20	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 2004 by 07		Batch: C23538	Dil: 100
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1410 by 313		Batch: S49508	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1256 by 328		Batch: S49508	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247118-10
Sample Identification: MW-8 21-Jul-2020 0905

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**590**	50	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1455 by 300		Batch: W72849	Dil: 450
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1308 by 328		Batch: S49508	
Lead		**0.021**	0.003	**mg/l**	D
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1249 by 313		Batch: S49508	Dil: 5
Nitrate as N		**4700**	300	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 2153 by 07		Batch: C23538	Dil: 5000
Sulfate		**110**	2	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 2258 by 07		Batch: C23538	Dil: 10
Dissolved Lead		**0.021**	0.003	**mg/l**	D
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1245 by 313		Batch: S49508	Dil: 5
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1304 by 328		Batch: S49508	

AIC No. 247118-11
Sample Identification: MW-5 21-Jul-2020 0956

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**1.5**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1035 by 300		Batch: W72849	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1442 by 328		Batch: S49508	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1436 by 313		Batch: S49508	
Nitrate as N		**120**	5	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 22-Jul-2020 1135 by 07		Batch: C23538	Dil: 100
Sulfate		**32**	2	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 2320 by 07		Batch: C23538	Dil: 10
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1432 by 313		Batch: S49508	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1438 by 328		Batch: S49508	

AIC No. 247118-12
Sample Identification: MW-6 21-Jul-2020 1045

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**580**	50	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 22-Jul-2020 1410 by 330	Analyzed: 23-Jul-2020 1456 by 300		Batch: W72849	Dil: 450
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1450 by 328		Batch: S49508	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247118-12 (Continued)
Sample Identification: MW-6 21-Jul-2020 1045

Analyte		Result	RL	Units	Qualifier
Lead		**0.022**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1443 by 313		Batch: S49508	
Nitrate as N		**10000**	300	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 2236 by 07		Batch: C23538	Dil: 5000
Sulfate		**56**	2	**mg/l**	D
EPA 9056A	Prep: 21-Jul-2020 1531 by 07	Analyzed: 21-Jul-2020 2342 by 07		Batch: C23538	Dil: 10
Dissolved Lead		**0.023**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 22-Jul-2020 0919 by 313	Analyzed: 22-Jul-2020 1439 by 313		Batch: S49508	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 22-Jul-2020 0919 by 313	Analyzed: 27-Jul-2020 1446 by 328		Batch: S49508	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	94.8	80.0-120			W72844	22Jul20 0914 by 330	22Jul20 1212 by 300		
Ammonia as N with Distillation	1 mg/l	108	80.0-120			W72849	22Jul20 1410 by 330	23Jul20 1015 by 300		
Chromium	0.02 mg/l	101	85.0-115			S49508	22Jul20 0919 by 313	22Jul20 1138 by 313		
Lead	0.02 mg/l	104	85.0-115			S49508	22Jul20 0919 by 313	22Jul20 1138 by 313		
Nitrate as N	5 mg/l	95.8	90.0-110			C23538	21Jul20 1531 by 07	21Jul20 1659 by 07		
Sulfate	25 mg/l	97.9	90.0-110			C23538	21Jul20 1531 by 07	21Jul20 1659 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	247110-1	1 mg/l	93.7	80.0-120	W72844	22Jul20 0914 by 330	22Jul20 1216 by 300		
	247110-1	1 mg/l	97.3	80.0-120	W72844	22Jul20 0914 by 330	22Jul20 1218 by 300		
	Relative Percent Difference:		3.48	25.0	W72844				
Ammonia as N with Distillation	247118-4	1 mg/l	104	80.0-120	W72849	22Jul20 1410 by 330	23Jul20 1018 by 300		
	247118-4	1 mg/l	100	80.0-120	W72849	22Jul20 1410 by 330	23Jul20 1020 by 300		
	Relative Percent Difference:		3.27	25.0	W72849				
Chromium	247094-6	0.02 mg/l	94.3	75.0-125	S49508	22Jul20 0919 by 313	22Jul20 1142 by 313		
	247094-6	0.02 mg/l	94.2	75.0-125	S49508	22Jul20 0919 by 313	22Jul20 1145 by 313		
	Relative Percent Difference:		0.130	20.0	S49508				
Lead	247094-6	0.02 mg/l	101	75.0-125	S49508	22Jul20 0919 by 313	22Jul20 1142 by 313		
	247094-6	0.02 mg/l	102	75.0-125	S49508	22Jul20 0919 by 313	22Jul20 1145 by 313		
	Relative Percent Difference:		0.419	20.0	S49508				
Nitrate as N	247116-1	5 mg/l	90.7	80.0-120	C23538	21Jul20 1531 by 07	21Jul20 1720 by 07		
	247116-1	5 mg/l	90.9	80.0-120	C23538	21Jul20 1531 by 07	21Jul20 1742 by 07		
	Relative Percent Difference:		0.152	10.0	C23538				
Sulfate	247116-1	25 mg/l	93.4	80.0-120	C23538	21Jul20 1531 by 07	21Jul20 1720 by 07		
	247116-1	25 mg/l	93.2	80.0-120	C23538	21Jul20 1531 by 07	21Jul20 1742 by 07		
	Relative Percent Difference:		0.247	10.0	C23538				

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W72844-1	22Jul20 0914 by 330	22Jul20 1210 by 300	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W72849-1	22Jul20 1410 by 330	23Jul20 1013 by 300	
Chromium	< 0.005 mg/l	0.005	0.01	S49508-1	22Jul20 0919 by 313	22Jul20 1135 by 313	
Lead	< 0.0003 mg/l	0.0003	0.0005	S49508-1	22Jul20 0919 by 313	22Jul20 1135 by 313	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C23538-1	21Jul20 1531 by 07	21Jul20 1637 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C23538-1	21Jul20 1531 by 07	21Jul20 1637 by 07	

GBMC & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

247118

CLIENT INFORMATION		BILLING INFORMATION		SPECIAL INSTRUCTIONS/PRECAUTIONS:
Company:	El Dorado Chemical Company	Bill To:	GBMc & Associates	Email results to: bphillips@gbmcassoc.com wglenn@gbmcassoc.com
Project Name/No.:	Monitoring Well Sampling	Company:		
Send Report To:	Brad Phillips	Address:		
Address:	219 Brown Lane			
	Bryant, AR 72022	Phone No.:		
Phone/Fax No.:	(501) 847-7077	Fax No.:		

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR
							Parameters for Analysis/Methods						
1	MW-1		7-20-20	1455	W	3	X	X	X	X	X	X	X
2	MW-2			1540	W		X	X	X	X	X	X	X
3	MW-3			1634	W		X	X	X	X	X	X	X
4	MW-10			1358-1402	W		X	X	X	X	X	X	X
5	MW-10DUP			1358-1402	W		X	X	X	X	X	X	X
6	MW-11			1319-1321	W		X	X	X	X	X	X	X
7	MW-12			1221-1224	W		X	X	X	X	X	X	X
	Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I

Sampler(s): WHG, DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: [signature]	Date: 7/21/20 Time: 0545	COC Checked by: [signature] Date: 7/21/20 Time: 0555
Relinquished by: [signature]	Date: 7/21/20 Time: 1100	Received by: [signature] Date: 7/21/20 Time: 1120
Relinquished by: [signature]	Date: 7/21/20 Time: 230	Received in lab by: D. BROWN Date: 7-21-20 Time: 1500

LABORATORY USE ONLY:	Samples Received On Ice?: YES or NO	Sample Temperature: 2.0 °C

V1.2 02/14/20

GBMc & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

247118

CLIENT INFORMATION		BILLING INFORMATION	
Company:	El Dorado Chemical Company	Bill To:	GBMc & Associates
Project Name/No.:	Monitoring Well Sampling	Company:	
Send Report To:	Brad Phillips	Address:	
Address:	219 Brown Lane		
	Bryant, AR 72022	Phone No.:	
Phone/Fax No.:	(501) 847-7077	Fax No.:	

SPECIAL INSTRUCTIONS/PRECAUTIONS:
email results to:
bphillips@gbmcassoc.com
& wglenn@gbmcassoc.com

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
8	MW-4		7/21/20	0735	W	3	X	X	X	X	X	X	X			
9	MW-9		7/21/20	0827	W	3	X	X	X	X	X	X	X			
10	MW-8		7/21/20	0905	W	3	X	X	X	X	X	X	X			
11	MW-15		7/21/20	0956	W	3	X	X	X	X	X	X	X			
12	MW-6		7/21/20	1045	W	3	X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
Preservative		(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Parameters for Analysis/Methods

Sampler(s): WHG, DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: Daniel Brand Date: 7/21/20 Time: 1050		X COC Checked by: [illegible] Date: 7/21/20 Time: 1052
X Relinquished by: Daniel Brand Date: 7/21/20 Time: 1100		Received by: [signature] Date: 7/21/20 Time: 1124
Relinquished by: [signature] Date: 7/21/20 Time: 22		Received in lab by: D. BROWN Date: 7-21-20 Time: 1400

LABORATORY USE ONLY:	Samples Received On Ice?: (YES) or NO	Sample Temperature: 2.0°c

V1.2 02/14/20

AMERICAN INTERPLEX CORPORATION
LABORATORIES

GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
219 Brown Lane
Bryant, AR 72022

This report contains the analytical results and supporting information for samples received on July 23, 2020. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Chief Operating Officer or a qualified designee.

Steve Bradford
Deputy Laboratory Director

This document has been distributed to the following:

PDF cc: GBMc & Associates, Inc.
ATTN: Mr. Will Glenn
wglenn@gbmcassoc.com

GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
bphillips@gbmcassoc.com

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

SAMPLE INFORMATION

Project Description:
Two (2) water sample(s) received on July 23, 2020
Monitoring Well Sampling

Receipt Details:
A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
247160-1	MW-17	22-Jul-2020 1216	
247160-2	MW-20	22-Jul-2020 1440	

Qualifiers:
D Result is from a secondary dilution factor
X Spiking level is invalid due to the high concentration of analyte in the spiked sample

References:
"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", (SM).
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247160-1
Sample Identification: MW-17 22-Jul-2020 1216

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1033 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 23-Jul-2020 0935 by 313	Analyzed: 27-Jul-2020 1510 by 328		Batch: S49514	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1644 by 313		Batch: S49514	
Nitrate as N		**8.9**	0.05	**mg/l**	
EPA 9056A	Prep: 23-Jul-2020 1533 by 07	Analyzed: 23-Jul-2020 2010 by 07		Batch: C23544	
Sulfate		**10**	0.2	**mg/l**	
EPA 9056A	Prep: 23-Jul-2020 1533 by 07	Analyzed: 23-Jul-2020 2010 by 07		Batch: C23544	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 23-Jul-2020 0935 by 313	Analyzed: 27-Jul-2020 1506 by 328		Batch: S49514	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1640 by 313		Batch: S49514	

AIC No. 247160-2
Sample Identification: MW-20 22-Jul-2020 1440

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1035 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 23-Jul-2020 0935 by 313	Analyzed: 27-Jul-2020 1518 by 328		Batch: S49514	
Lead		**0.0020**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1651 by 313		Batch: S49514	
Nitrate as N		**0.35**	0.05	**mg/l**	
EPA 9056A	Prep: 23-Jul-2020 1533 by 07	Analyzed: 23-Jul-2020 2054 by 07		Batch: C23544	
Sulfate		**15**	0.2	**mg/l**	
EPA 9056A	Prep: 23-Jul-2020 1533 by 07	Analyzed: 23-Jul-2020 2054 by 07		Batch: C23544	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 23-Jul-2020 0935 by 313	Analyzed: 27-Jul-2020 1514 by 328		Batch: S49514	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1647 by 313		Batch: S49514	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	99.5	80.0-120			W72864	23Jul20 1322 by 330	24Jul20 0955 by 347		
Chromium	0.02 mg/l	96.7	85.0-115			S49514	23Jul20 0935 by 313	23Jul20 1303 by 313		
Lead	0.02 mg/l	104	85.0-115			S49514	23Jul20 0935 by 313	23Jul20 1303 by 313		
Nitrate as N	5 mg/l	96.7	90.0-110			C23544	23Jul20 1533 by 07	23Jul20 1821 by 07		
Sulfate	25 mg/l	98.9	90.0-110			C23544	23Jul20 1533 by 07	23Jul20 1821 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	247162-1	1 mg/l	-	80.0-120	W72864	23Jul20 1322 by 330	24Jul20 1137 by 347	26	X
	247162-1	1 mg/l	-	80.0-120	W72864	23Jul20 1322 by 330	24Jul20 1139 by 347	26	X
	Relative Percent Difference:		0.721	25.0	W72864				D
Chromium	247135-1	0.02 mg/l	93.7	75.0-125	S49514	23Jul20 0935 by 313	23Jul20 1307 by 313		
	247135-1	0.02 mg/l	94.1	75.0-125	S49514	23Jul20 0935 by 313	23Jul20 1310 by 313		
	Relative Percent Difference:		0.411	20.0	S49514				
Lead	247135-1	0.02 mg/l	96.7	75.0-125	S49514	23Jul20 0935 by 313	23Jul20 1307 by 313		
	247135-1	0.02 mg/l	96.5	75.0-125	S49514	23Jul20 0935 by 313	23Jul20 1310 by 313		
	Relative Percent Difference:		0.203	20.0	S49514				
Nitrate as N	247159-1	5 mg/l	93.8	80.0-120	C23544	23Jul20 1533 by 07	23Jul20 1843 by 07		
	247159-1	5 mg/l	93.5	80.0-120	C23544	23Jul20 1533 by 07	23Jul20 1904 by 07		
	Relative Percent Difference:		0.256	10.0	C23544				
Sulfate	247159-1	25 mg/l	95.1	80.0-120	C23544	23Jul20 1533 by 07	23Jul20 1843 by 07		
	247159-1	25 mg/l	95.7	80.0-120	C23544	23Jul20 1533 by 07	23Jul20 1904 by 07		
	Relative Percent Difference:		0.603	10.0	C23544				

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W72864-1	23Jul20 1322 by 330	24Jul20 0953 by 347	
Chromium	< 0.005 mg/l	0.005	0.01	S49514-1	23Jul20 0935 by 313	23Jul20 1317 by 313	
Lead	< 0.0003 mg/l	0.0003	0.0005	S49514-1	23Jul20 0935 by 313	23Jul20 1317 by 313	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C23544-1	23Jul20 1533 by 07	23Jul20 1759 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C23544-1	23Jul20 1533 by 07	23Jul20 1759 by 07	

GBMc & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

247160

CLIENT INFORMATION		BILLING INFORMATION		SPECIAL INSTRUCTIONS/PRECAUTIONS:
Company:	El Dorado Chemical Company	Bill To:	GBMc & Associates	email results to: bphillips@gbmcassoc.com & wglenn@gbmcassoc.com
Project Name/No.:	Monitoring Well Sampling	Company:		
Send Report To:	Brad Phillips	Address:		
Address:	219 Brown Lane			
	Bryant, AR 72022	Phone No.:		
Phone/Fax No.:	(501) 847-7077	Fax No.:		

Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
		7/22/20				Parameters for Analysis/Methods									
MW-17		3	1210	W	3	X	X	X	X	X	X	X			
MW-20		7/22/20	1440	W	3	X	X	X	X	X	X	X			
				W		X	X	X	X	X	X	X			
				W		X	X	X	X	X	X	X			
				W		X	X	X	X	X	X	X			
				W		X	X	X	X	X	X	X			
				W		X	X	X	X	X	X	X			
Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Sampler(s): WHG, DMB

Shipment Method: Fed Ex Priority

Turnaround Time Required: Normal

COC Completed by: Will Glenn Date: 7/22/20 Time: 1810

COC Checked by: Will Glenn Date: 7/22/20 Time: 1812

Relinquished by: Will Glenn Date: 7/23/20 Time: 0811

Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____

Received in lab by: D. BROWN Date: 7-23-20 Time: 0811

LABORATORY USE ONLY:

Samples Received On Ice? (YES) or NO

Sample Temperature: 0.9 °C

V1.2 02/14/20

AMERICAN INTERPLEX CORPORATION
LABORATORIES

GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
219 Brown Lane
Bryant, AR 72022

This report contains the analytical results and supporting information for samples received on July 22, 2020. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Chief Operating Officer or a qualified designee.

Steve Bradford
Deputy Laboratory Director

This document has been distributed to the following:

PDF cc: GBMc & Associates, Inc.
ATTN: Mr. Brad Phillips
bphillips@gbmcassoc.com

GBMc & Associates, Inc.
ATTN: Mr. Will Glenn
wglenn@gbmcassoc.com

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

SAMPLE INFORMATION

Project Description:
Eleven (11) water sample(s) received on July 22, 2020
El Dorado Chemical Company
Monitoring Well Sampling

Receipt Details:
A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
247156-1	MW-7	21-Jul-2020 1146	
247156-2	MW-19	21-Jul-2020 1254	
247156-3	MW-18	21-Jul-2020 1721	
247156-4	MW-21	21-Jul-2020 1836	
247156-5	MW-13	21-Jul-2020 2007	
247156-6	MW-13 Dup.	21-Jul-2020 2007	
247156-7	MW-16	22-Jul-2020 0707	
247156-8	MW-15	22-Jul-2020 0801	
247156-9	MW-14	22-Jul-2020 0900	
247156-10	MW-22	22-Jul-2020 1020	
247156-11	MW-22 DUP	22-Jul-2020 1020	

Qualifiers:
D Result is from a secondary dilution factor
X Spiking level is invalid due to the high concentration of analyte in the spiked sample

References:
"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", (SM).
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247156-1
Sample Identification: MW-7 21-Jul-2020 1146

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**250**	30	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1348 by 347		Batch: W72864	Dil: 260
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 23-Jul-2020 0935 by 313	Analyzed: 27-Jul-2020 1537 by 328		Batch: S49514	
Lead		**0.0025**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1513 by 313		Batch: S49514	
Nitrate as N		**1800**	50	**mg/l**	D
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1804 by 07		Batch: C23541	Dil: 1000
Sulfate		**390**	2	**mg/l**	D
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 2111 by 07		Batch: C23541	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 23-Jul-2020 0935 by 313	Analyzed: 27-Jul-2020 1533 by 328		Batch: S49514	
Dissolved Lead		**0.0024**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1510 by 313		Batch: S49514	

AIC No. 247156-2
Sample Identification: MW-19 21-Jul-2020 1254

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.34**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1007 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1520 by 313		Batch: S49514	
Lead		**0.00085**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1520 by 313		Batch: S49514	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1848 by 07		Batch: C23541	
Sulfate		**2.4**	0.2	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1848 by 07		Batch: C23541	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1517 by 313		Batch: S49514	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1517 by 313		Batch: S49514	

AIC No. 247156-3
Sample Identification: MW-18 21-Jul-2020 1721

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.33**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1010 by 347		Batch: W72864	
Chromium		**0.020**	0.01	**mg/l**	
EPA 3010A, 6010D	Prep: 23-Jul-2020 0935 by 313	Analyzed: 28-Jul-2020 1234 by 328		Batch: S49514	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247156-3 (Continued)
Sample Identification: MW-18 21-Jul-2020 1721

Analyte		Result	RL	Units	Qualifier
Lead		**0.020**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1527 by 313		Batch: S49514	
Nitrate as N		**0.19**	0.05	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1910 by 07		Batch: C23541	
Sulfate		**2.5**	0.2	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1910 by 07		Batch: C23541	
Dissolved Chromium		**0.019**	0.01	**mg/l**	
EPA 3005A, 6010D	Prep: 23-Jul-2020 0935 by 313	Analyzed: 28-Jul-2020 1237 by 328		Batch: S49514	
Dissolved Lead		**0.018**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1524 by 313		Batch: S49514	

AIC No. 247156-4
Sample Identification: MW-21 21-Jul-2020 1836

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1012 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1541 by 313		Batch: S49514	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1541 by 313		Batch: S49514	
Nitrate as N		**2.3**	0.05	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1605 by 07		Batch: C23541	
Sulfate		**11**	0.2	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1605 by 07		Batch: C23541	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1538 by 313		Batch: S49514	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1538 by 313		Batch: S49514	

AIC No. 247156-5
Sample Identification: MW-13 21-Jul-2020 2007

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.27**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1018 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1548 by 313		Batch: S49514	
Lead		**0.00061**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1548 by 313		Batch: S49514	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1649 by 07		Batch: C23541	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247156-5 (Continued)
Sample Identification: MW-13 21-Jul-2020 2007

Analyte		Result	RL	Units	Qualifier
Sulfate		**180**	2	**mg/l**	D
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1627 by 07		Batch: C23541	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1545 by 313		Batch: S49514	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1545 by 313		Batch: S49514	

AIC No. 247156-6
Sample Identification: MW-13 Dup. 21-Jul-2020 2007

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1020 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1555 by 313		Batch: S49514	
Lead		**0.00060**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1555 by 313		Batch: S49514	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1732 by 07		Batch: C23541	
Sulfate		**180**	2	**mg/l**	D
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1711 by 07		Batch: C23541	Dil: 10
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1552 by 313		Batch: S49514	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1552 by 313		Batch: S49514	

AIC No. 247156-7
Sample Identification: MW-16 22-Jul-2020 0707

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.71**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1022 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1602 by 313		Batch: S49514	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1602 by 313		Batch: S49514	
Nitrate as N		**14**	0.5	**mg/l**	D
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 23-Jul-2020 1115 by 07		Batch: C23541	Dil: 10
Sulfate		**20**	0.2	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1754 by 07		Batch: C23541	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1559 by 313		Batch: S49514	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247156-7 (Continued)
Sample Identification: MW-16 22-Jul-2020 0707

Analyte	Result	RL	Units	Qualifier
Dissolved Lead	**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1559 by 313		Batch: S49514	

AIC No. 247156-8
Sample Identification: MW-15 22-Jul-2020 0801

Analyte	Result	RL	Units	Qualifier
Ammonia as N with Distillation	**0.17**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011 Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1024 by 347		Batch: W72864	
Chromium	**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1609 by 313		Batch: S49514	
Lead	**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1609 by 313		Batch: S49514	
Nitrate as N	**3.1**	0.05	**mg/l**	
EPA 9056A Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1816 by 07		Batch: C23541	
Sulfate	**14**	0.2	**mg/l**	
EPA 9056A Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1816 by 07		Batch: C23541	
Dissolved Chromium	**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1605 by 313		Batch: S49514	
Dissolved Lead	**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1605 by 313		Batch: S49514	

AIC No. 247156-9
Sample Identification: MW-14 22-Jul-2020 0900

Analyte	Result	RL	Units	Qualifier
Ammonia as N with Distillation	**0.26**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011 Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1026 by 347		Batch: W72864	
Chromium	**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1623 by 313		Batch: S49514	
Lead	**0.00051**	0.0005	**mg/l**	
EPA 3010A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1623 by 313		Batch: S49514	
Nitrate as N	**2.0**	0.05	**mg/l**	
EPA 9056A Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1900 by 07		Batch: C23541	
Sulfate	**140**	2	**mg/l**	D
EPA 9056A Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 1838 by 07		Batch: C23541	Dil: 10
Dissolved Chromium	**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1619 by 313		Batch: S49514	
Dissolved Lead	**0.0079**	0.0005	**mg/l**	
EPA 3005A, 6020B Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1619 by 313		Batch: S49514	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

ANALYTICAL RESULTS

AIC No. 247156-10
Sample Identification: MW-22 22-Jul-2020 1020

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.12**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1028 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1630 by 313		Batch: S49514	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1630 by 313		Batch: S49514	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 2027 by 07		Batch: C23541	
Sulfate		**5.5**	0.2	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 2027 by 07		Batch: C23541	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1626 by 313		Batch: S49514	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1626 by 313		Batch: S49514	

AIC No. 247156-11
Sample Identification: MW-22 DUP 22-Jul-2020 1020

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.11**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 23-Jul-2020 1322 by 330	Analyzed: 24-Jul-2020 1030 by 347		Batch: W72864	
Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1637 by 313		Batch: S49514	
Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3010A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1637 by 313		Batch: S49514	
Nitrate as N		**< 0.05**	0.05	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 2049 by 07		Batch: C23541	
Sulfate		**5.3**	0.2	**mg/l**	
EPA 9056A	Prep: 22-Jul-2020 1545 by 07	Analyzed: 22-Jul-2020 2049 by 07		Batch: C23541	
Dissolved Chromium		**< 0.01**	0.01	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1633 by 313		Batch: S49514	
Dissolved Lead		**< 0.0005**	0.0005	**mg/l**	
EPA 3005A, 6020B	Prep: 23-Jul-2020 0935 by 313	Analyzed: 23-Jul-2020 1633 by 313		Batch: S49514	

AMERICAN INTERPLEX CORPORATION LABORATORIES

GBMc & Associates, Inc.
219 Brown Lane
Bryant, AR 72022

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	99.5	80.0-120			W72864	23Jul20 1322 by 330	24Jul20 0955 by 347		
Chromium	0.02 mg/l	96.7	85.0-115			S49514	23Jul20 0935 by 313	23Jul20 1303 by 313		
Lead	0.02 mg/l	104	85.0-115			S49514	23Jul20 0935 by 313	23Jul20 1303 by 313		
Nitrate as N	5 mg/l	95.6	90.0-110			C23541	22Jul20 1546 by 07	22Jul20 1615 by 07		
Sulfate	25 mg/l	95.0	90.0-110			C23541	22Jul20 1546 by 07	22Jul20 1615 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	247162-1	1 mg/l	-	80.0-120	W72864	23Jul20 1322 by 330	24Jul20 1137 by 347	26	X
	247162-1	1 mg/l	-	80.0-120	W72864	23Jul20 1322 by 330	24Jul20 1139 by 347	26	X
	Relative Percent Difference:		0.721	25.0	W72864				D
Chromium	247135-1	0.02 mg/l	93.7	75.0-125	S49514	23Jul20 0935 by 313	23Jul20 1307 by 313		
	247135-1	0.02 mg/l	94.1	75.0-125	S49514	23Jul20 0935 by 313	23Jul20 1310 by 313		
	Relative Percent Difference:		0.411	20.0	S49514				
Lead	247135-1	0.02 mg/l	96.7	75.0-125	S49514	23Jul20 0935 by 313	23Jul20 1307 by 313		
	247135-1	0.02 mg/l	96.5	75.0-125	S49514	23Jul20 0935 by 313	23Jul20 1310 by 313		
	Relative Percent Difference:		0.203	20.0	S49514				
Nitrate as N	247149-1	5 mg/l	86.9	80.0-120	C23541	22Jul20 1546 by 07	22Jul20 1637 by 07		
	247149-1	5 mg/l	87.6	80.0-120	C23541	22Jul20 1546 by 07	22Jul20 1659 by 07		
	Relative Percent Difference:		0.471	10.0	C23541				
Sulfate	247149-1	25 mg/l	88.1	80.0-120	C23541	22Jul20 1546 by 07	22Jul20 1637 by 07		
	247149-1	25 mg/l	89.3	80.0-120	C23541	22Jul20 1546 by 07	22Jul20 1659 by 07		
	Relative Percent Difference:		1.10	10.0	C23541				

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W72864-1	23Jul20 1322 by 330	24Jul20 0953 by 347	
Chromium	< 0.005 mg/l	0.005	0.01	S49514-1	23Jul20 0935 by 313	23Jul20 1317 by 313	
Lead	< 0.0003 mg/l	0.0003	0.0005	S49514-1	23Jul20 0935 by 313	23Jul20 1317 by 313	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C23541-1	22Jul20 1546 by 07	22Jul20 1553 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C23541-1	22Jul20 1546 by 07	22Jul20 1553 by 07	

GBMC & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

247156

CLIENT INFORMATION		BILLING INFORMATION		SPECIAL INSTRUCTIONS/PRECAUTIONS:
Company:	El Dorado Chemical Company	Bill To:	GBMC & Associates	Email results to: bphillips@gbmcassoc.com & wglenn@gbmcassoc.com
Project Name/No.:	Monitoring Well Sampling	Company:		
Send Report To:	Brad Phillips	Address:		
Address:	219 Brown Lane			
	Bryant, AR 72022	Phone No.:		
Phone/Fax No.:	(501) 847-7077	Fax No.:		

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
							Parameters for Analysis/Methods									
1	MW-7		7/21/20	1146	W	3	X	X	X	X	X	X	X			
2	MW-19		7/21/20	1254	W	3	X	X	X	X	X	X	X			
3	MW-18		7/21/20	1721	W	3	X	X	X	X	X	X	X			
4	MW-21		7/21/20	1836	W	3	X	X	X	X	X	X	X			
5	MW-13		7/21/20	2007	W	3	X	X	X	X	X	X	X			
6	MW-13 Dup.		7/21/20	2007	W	3	X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
Preservative		(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Sampler(s): WHG, DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal	
COC Completed by: Daniela Brand	Date: 7/22/20 Time: 0730	COC Checked by: Will Glenn	Date: 7/22/20 Time: 1034
Relinquished by: Daniela Brand	Date: 7/22/20 Time: 1045	Received by: Fedex	Date: 7/22/20 Time: 1130
Relinquished by: Fedex	Date: 7/22/20 Time: 232	Received in lab by: D. BROWN	Date: 7-22-20 Time: 1445

LABORATORY USE ONLY:	Samples Received On Ice?: (YES) or NO	Sample Temperature: 3.5°C

GBMc & Associates
Strategic Environmental Services
219 Brown Ln.
Bryant, AR 72022
(501) 847-7077 Fax (501) 847-7943

Chain of Custody

247156

CLIENT INFORMATION		BILLING INFORMATION		SPECIAL INSTRUCTIONS/PRECAUTIONS:
Company:	El Dorado Chemical Company	Bill To:	GBMc & Associates	Email results to: bphillips@gbmcassoc.com & wglenn@gbmcassoc.com
Project Name/No.:	Monitoring Well Sampling	Company:		
Send Report To:	Brad Phillips	Address:		
Address:	219 Brown Lane			
	Bryant, AR 72022	Phone No.:		
Phone/Fax No.:	(501) 847-7077	Fax No.:		

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	Total PB	Total CR	Dissolved PB	Dissolved CR			
							Parameters for Analysis/Methods									
7	MW-16		7/22/20	0707	W	3	X	X	X	X	X	X	X			
8	MW-15		7/22/20	0801	W	3	X	X	X	X	X	X	X			
9	MW-14		7/22/20	0900	W	3	X	X	X	X	X	X	X			
10	MW-22		7/22/20	1020	W	3	X	X	X	X	X	X	X			
11	MW-22 DUP		7/22/20	1020	W	3	X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
					W		X	X	X	X	X	X	X			
	Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I	I, N	I,N	I	I			

Sampler(s): WHG, DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: Daniel Boaz Date: 7/22/20 Time: 1030		COC Checked by: [illegible] Date: 7/22/20 Time: 1034
Relinquished by: Daniel Boaz Date: 7/22/20 Time: 1045		Received by: [signature] Date: 7/22/20 Time: 1130
Relinquished by: [signature] Date: 7/22/20 Time: 230		Received in lab by: D. BROWN Date: 7-22-20 Time: 1445

LABORATORY USE ONLY:	Samples Received On Ice?: (YES) or NO	Sample Temperature: 3.5 °C

V1.2 02/14/20

Sampling Logs

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-1	SAMPLE ID:	MW-1
DATE:	2-18-2020		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 12.1 feet to 22.2 feet	STATIC DEPTH TO WATER (feet): 7.17	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.2 feet – 7.17 feet) X 0.65 gallons/foot = 9.43 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 17.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17.1	PURGING INITIATED AT: 935	PURGING ENDED AT: 1005	TOTAL VOLUME PURGED (gallons): 2.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
935	–	–	–	7.17						Clear	none
945	0.75	0.75	0.075	7.56	3.51	17.20	93	3.72	188.2	↓	↓
950	0.25	1.00	0.05	7.59	3.61	17.13	92	3.29	183.3		
955	0.5	1.5	0.10	7.59	3.59	17.12	92	2.95	183.9		
1000	0.25	1.75	0.05	7.62	3.63	17.15	92	2.79	182.3		
1005	0.25	2.0	0.05	7.64	3.65	17.07	92	2.79	180.1		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG-GBMC	SAMPLER(S) SIGNATURE(S): Daniel Beard	SAMPLING INITIATED AT: 1010	SAMPLING ENDED AT: 1015
PUMP OR TUBING DEPTH IN WELL (feet): 17.1	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW1	1	PP	300	1, S	pH= 3.65	1.15	NH_4	APP	<200
"	1	"	150	1			NO_3, SO_4	"	"
"	1	"	150	1, N			Total PB/CR	"	"
"	1	"	150	1			Dissolved PB/CR	"	"

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-2	SAMPLE ID:	MW-2
DATE:	2-18-2020		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 10.2 feet to 20.2 feet	STATIC DEPTH TO WATER (feet): 0	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (20.2 feet – 0 feet) X 0.65 gallons/foot = 13.13 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 15.2	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 15.2	PURGING INITIATED AT: 1028	PURGING ENDED AT: 1112	TOTAL VOLUME PURGED (gallons): 3.2

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1028	–	–	–	0							
1038	0.75	0.75	0.075	0.25	4.66	17.25	460	1.33	132.1	clear	none
1043	0.5	1.25	0.05	0.4	4.85	17.19	460	0.97	123.3		
1048	0.25	1.5	0.05	0.5	4.89	17.18	459	1.00	121.1		
1053	0.5	2.0	0.1	0.8	4.91	17.16	458	0.85	119.6		
1058	0.25	2.25	0.05	0.8	4.89	17.17	458	0.80	120.4		
MW 1103	0.25	2.5	0.05	0.8	4.95	17.16	458	0.60	117.4		
1108	0.5	3.0	0.1	0.9	4.99	17.15	458	0.48	116.2		
1110	0.1	3.1		0.9	4.98	17.19	457	0.42	116.4		
1112	0.1	3.2		0.9	4.98	17.17	457	0.40	116.5	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB / WHG	SAMPLER(S) SIGNATURE(S): Daniel Beard	SAMPLING INITIATED AT: 1114	SAMPLING ENDED AT: 1118
PUMP OR TUBING DEPTH IN WELL (feet): 15.2	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW2	1	PP	300 mL	1, S	pH= 4.98	3.17	NH_4	APP	200
1	1	1	500 mL	1			NO_3, SO_4	1	1
1	1	1	1	1, N			Total PB/CR	1	1
				1			Diss. PB/CR		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-3	SAMPLE ID:	MW-3
DATE:	7-18-2020		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		17.1 feet to 27.1 feet	7.56	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (27.1 feet – 7.56 feet) X 0.65 gallons/foot = 12.701 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
22.1	22.1	1135	1205	2.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1145	0.5	0.5	0.05	8.58	5.50	17.79	430	4.86	91.4	Clear	none
1150	0.5	1.0	0.10	8.94	5.61	17.76	430	4.49	86.5		
1155	0.25	1.25	0.05	9.18	5.77	17.79	430	4.21	78.4		
1200	0.25	1.5	0.05	9.35	5.80	17.81	431	4.07	76.9		
1205	0.5	2.0	0.1	9.54	5.80	17.77	430	4.04	77.3		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
DMB/WHG-GBMc	Daniel Brand	1208	

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
22.1	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) (replaced) DUPLICATE: (Y) N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
~~Equip Blank~~	~~1~~	~~PP~~	~~150 mL~~				~~NO3, SO4~~	~~ESP~~	~~<200~~
~~Equip Blank~~	~~1~~	~~PP~~	~~300 mL~~	~~H2SO4~~			~~NH4~~	~~ESP~~	~~<200~~
MW3	1	PP	300	1, S	pH= ~~4.04~~ 5.8	1.51	NH4	APP	<200
"	"	"	150	1	WHG		NO3, SO4	"	"
"	"	"	"	1, N			Total PB/CR	"	"
"	"	"	"	1			Diss PB/CR	"	"

REMARKS: Duplicate sampled

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-4	SAMPLE ID:	MW-4
DATE:	2-19-2020		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 12.1 feet to 22.1 feet	STATIC DEPTH TO WATER (feet): 8.04	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.1 feet – 8.04 feet) X 0.65 gallons/foot = 9.14 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 17.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17.1	PURGING INITIATED AT: 818	PURGING ENDED AT: 849	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
834	1.25	1.25		9.82	3.52	15.38	~~+~~ 8312	3.09	178.6	Clear	⊘ none
839	0.25	1.5	0.05	10.42	3.51	15.39	8310	2.90	179.6	↓	↓
844	0.15	1.65	0.03	10.82	3.48	14.85	8313	2.89	180.8		
849	0.10	1.75	0.02	11.12	3.47	14.93	8304	2.81	181.1		
~~854~~											

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 853	SAMPLING ENDED AT: 858
PUMP OR TUBING DEPTH IN WELL (feet): 17.1	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW4	1	PP	150 mL	I			NO3; SO4	~~ESP~~ APP	<200
MW4	1	PP	300 mL	H2SO4			NH4	~~ESP~~ APP	<200
1	1	1	150	I, N	pH= ~~3.47~~	0.63	Total PB/CR	1	1
1	1	1	150	I			Diss PB/CR	1	1

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-5	SAMPLE ID:	MW-5
DATE:	2-19-20		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 7.7 feet to 17.7 feet	STATIC DEPTH TO WATER (feet): 2.47	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (17.7 feet – 2.47 feet) X 0.65 gallons/foot = 9.90 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 908	PURGING ENDED AT: 928	TOTAL VOLUME PURGED (gallons): PP

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
918	1.5	1.5		3.40	4.26	15.44	1435	0.50	143.5	Clear	None
923	0.1	1.6	0.02	3.65	4.24	15.53	1431	0.42	144.3	1	1
928	0.15	1.75	0.02	3.65	4.22	15.42	1428	0.35	145.5		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 930	SAMPLING ENDED AT: 935
PUMP OR TUBING DEPTH IN WELL (feet): 12.7	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW5	1	PP	150 mL	I			NO3; SO4	ESP/APP	<200
MW5	1	PP	300 mL	H2SO4			NH4	ESP	<200
1	1	1	150	I, N	pH= 4.22	0.38	Total PB/CR	1	1
1	1	1	150	I			Diss PB/CR	1	1

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-6	SAMPLE ID:	MW-6
DATE:	2-12-2020		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 12 feet to 22 feet	STATIC DEPTH TO WATER (feet): 4.42	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22 feet – 4.8 feet) X 0.65 gallons/foot = 11.18 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 17	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17	PURGING INITIATED AT: 1647	PURGING ENDED AT: 1720	TOTAL VOLUME PURGED (gallons): 2

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1700	0.75	0.75		4.8	3.49	15.16	108610	1.08	187.8	Clear	none
1705	0.25	1.00	0.05	4.8	3.52	15.70	113888	0.95	186.7	↓	↓
1710	0.25	1.25	0.05	4.9	3.57	16.03	123285	0.64	184.3		
1715	0.5	1.75	0.1	4.9	3.60	16.19	127695	0.55	183.4		
1720	0.25	2.0	0.05	4.9	3.61	16.24	127298	0.52	182.5		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB / WHG	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1721	SAMPLING ENDED AT: 1726
PUMP OR TUBING DEPTH IN WELL (feet): 17	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW6	1	PP	150 mL	1			NO3; SO4	ESP APP	<200
MW6	1	PP	300 mL	H2SO4			NH4	ESP	<200
1	1	1	150	1, N	pH= 3.61	0.82	Total PB/CR	ESP	1
1	1	1	150	1			Diss PB/CR	1	1

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-7	SAMPLE ID: MW-7	DATE: 2-18-2026

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 13.9 feet to 23.9 feet	STATIC DEPTH TO WATER (feet): 6.81	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (23.9 feet – 6.81 feet) X 0.65 gallons/foot = 11.11 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 18.9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 18.9	PURGING INITIATED AT: 1603	PURGING ENDED AT: 1634	TOTAL VOLUME PURGED (gallons): 2.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1618					3.93	15.87	6928	2.04	166.9	Clear	None
NA				~~7.10~~							
1624	2	2		7.10	4.98	17.36	0.81 K → 32963		116.3		
1629	0.25	2.25		7.10	5.06	17.45	35628	0.65	111.9		
1634	0.5	2.5	0.05	7.10	5.02	17.47	35973	0.75	114.5		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1635	SAMPLING ENDED AT: 1640
PUMP OR TUBING DEPTH IN WELL (feet): 18.9	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW7	1	PP	150 mL	N			NO3; SO4	ESP APP	<200
MW7	1	PP	300 mL	H2SO4			NH4	ESP	<200
〃	〃	〃	150	1, N	pH= 5.02	3.17	Total PB/CR	ESP	
〃	〃	〃	150	1			Diss PB/CR	〃	〃

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-8	SAMPLE ID:	MW-8
DATE:	2-18-2020		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		19.9 feet to 29.9 feet	6.45	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (29.9 feet – 6.45 feet) X 0.65 gallons/foot = 15.24 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
24.5	24.5	1505		

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
~~1515~~					~~3.52~~	~~16.08~~		~~2.12~~	~~187.2~~		
1530		1.25		6.55	3.64	16.19	69180	0.72	181.2		
1539		2.0		6.55	3.63	16.44	69602	0.44	181.8		
1543		2.5		6.55	3.62	16.32	70080	0.34	182.3		
1548		2.75		6.55	3.62	16.44	70761	0.30	182.4		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
DMB/ WHG		1548	1549

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
24.5	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) (replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW8	1	PP	150 mL	1			NO3; SO4	ESP APP	<200
MW8	1	PP	300 mL	H2SO4			NH4	ESP	<200
1	1	1	150	1, N	pH= 3.62	2.89	Total PB/CR	ESP	1
			150	1			Diss PB/CR	1	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-9	SAMPLE ID:	MW-9
DATE:	2-18-2020		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 20 feet to 30 feet	STATIC DEPTH TO WATER (feet): 7.47	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (30 feet – 7.47 feet) X 0.65 gallons/foot = 14.65 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 25	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 25	PURGING INITIATED AT: 836	PURGING ENDED AT: 908	TOTAL VOLUME PURGED (gallons): 1.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
844	0.5	0.5		8.12	4.99	18.58	4292	3.72	116.4	Clear	none
849	0.25	0.75	0.05	8.16	5.08	18.67	4291	3.41	112.3	↓	↓
854	0.5	1.25	0.1	8.32	5.14	18.60	4293	3.09	109.3		
859	0.25	1.5	0.05	8.48	5.18	18.69	4287	2.98	107.3		
904	0.5	2.0	0.1	8.41	5.22	18.72	4289	2.96	105.1	↓	↓
908					✓	✓	✓	✓	✓		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG-GBMc	SAMPLER(S) SIGNATURE(S): Danielle Braun/	SAMPLING INITIATED AT: 908	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet): 25	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW9	1	PP	150 mL	/			NO3; SO4	ESP APP	<200
MW9	1	PP	300 mL	H2SO4			NH4	ESP	<200
1	1	1	150	1, N	pH= 5.22	1.29	Total PB/CR	ESP	
1	1	1	150	1			Diss PB/CR	1	1

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-10	SAMPLE ID:	MW-10
DATE:	2-17-2020		

PURGING DATA

WELL DIAMETER (inches):	4	TUBING DIAMETER (inches):	3/8	WELL SCREEN INTERVAL DEPTH:	12.6 feet to 22.6 feet	STATIC DEPTH TO WATER (feet):	10.36	PURGE PUMP TYPE OR BAILER:	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.6 feet – 10.36 feet) X 0.65 gallons/foot = 7.96 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	17.6	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	17.6	PURGING INITIATED AT:	1404	PURGING ENDED AT:	1437	TOTAL VOLUME PURGED (gallons):	

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) (mg/L) or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1404	–	–		10.36						Clear	none
1416	0.25	0.25	~~0.05~~	11.01e	5.05	20.41	1493	3.41	114	"	"
1421	0.25	0.5	0.05	11.28	4.95	20.14	1492	2.70	119	"	"
1427	0.25	0.75	0.05	11.45	4.93	20.01	1492	2.26	120.1	"	"
1432	0.5	1.25	0.1	11.45	4.95	19.99	1492	2.02	119.2	"	"
1437	0.5	1.75	0.1	12.70	5.00	19.92	1491	2.03	116.7	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	DMB/WHG	SAMPLER(S) SIGNATURE(S):	Daniel Beard / Will Hu	SAMPLING INITIATED AT:	1442	SAMPLING ENDED AT:	14
PUMP OR TUBING DEPTH IN WELL (feet):	17.6	TUBING MATERIAL CODE:	PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:		FILTER SIZE: ____ µm	
FIELD DECONTAMINATION: PUMP (X) N		TUBING Y (N) (replaced)		DUPLICATE: Y (N)			

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW10	1	PP	150 mL	1			NO3; SO4	ESP/APP	<200
MW10	1	PP	300 mL	H2SO4			NH4	ESP	<200
1	1	1	150	1, N	pH= 5.00	12.9	Total PB/CR	ESP	1
1	1	1	150	1			Diss PB/CR	1	1

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-11	SAMPLE ID: MW-11	DATE: 1-17-2020

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 9.8 feet to 19.8 feet	STATIC DEPTH TO WATER (feet): 8.42	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.8 feet – 8.42 feet) x 0.65 gallons/foot = 7.40 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	PURGING INITIATED AT: 1314	PURGING ENDED AT: 1339	TOTAL VOLUME PURGED (gallons): 2.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1324	0.5	0.5	0.05	8.91	4.08	18.16	1267	0.73	160.8	Clear	none
1329	0.25	0.75	0.05	8.94	4.12	18.19	1271	0.65	158.6	Clear	none
1334	0.5	1.25	0.10	8.95	4.19	18.22	1274	0.56	155.5	"	"
1339	0.75	2.0	0.15	8.95	4.19	18.24	1275	0.50	155.3	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB / WHG	SAMPLER(S) SIGNATURE(S): David Brand	SAMPLING INITIATED AT: 1341	SAMPLING ENDED AT: 1350
PUMP OR TUBING DEPTH IN WELL (feet): 14.8	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: (Y) N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW11	1	PP	150 mL	I			NO3; SO4	ESP APP	<200
MW11	1	PP	300 mL	H2SO4			NH4	ESP	<200
1	1	1	150	I, N	pH= 4.19	0.55	Total PB, Cr	ESP	1
1	1	1	150	1			Diss Cr	1	2

REMARKS: Duplicate taken

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: El Dorado Chemical Company		SITE LOCATION: 4500 North West Avenue, El Dorado, AR	
WELL NO: MW-12	SAMPLE ID: MW-12		DATE: 2-17-2020

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 9.9 feet to 19.9 feet	STATIC DEPTH TO WATER (feet): 4.48	PURGE PUMP TYPE OR BAILER: (PP) Perisaultic

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.9 feet – 4.48 feet) x 0.65 gallons/foot = 10.02 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 15	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 15	PURGING INITIATED AT: 1210	PURGING ENDED AT: 1238	TOTAL VOLUME PURGED (gallons): 2

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or (μS/cm)	DISSOLVED OXYGEN (circle units) (mg/L) or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1213	0.5	0.5	0.2	5.28	4.95	17.37	1166	1.60	117.8	Rust	none
1218	0.25	0.75	0.1	5.39	5.13	17.65	1165	1.40	107.3	"	"
1223	0.25	1.00	0.1	5.48	5.32	17.57	1165	1.23	99.8	"	"
1228	0.25	1.25	0.1	5.58	5.46	17.58	1165	1.08	93.4	Sight rust	"
1233	0.25	1.50	0.1	5.60	5.55	17.75	1165	0.96	88.7	"	"
1238	0.50	2.0	0.2	5.60	5.66	17.94	1167	0.94	83.9	"	"

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016
PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB / WHG - GBMc	SAMPLER(S) SIGNATURE(S): Daniell Braunel	SAMPLING INITIATED AT: ~~1225~~ 1240	SAMPLING ENDED AT: 1244
PUMP OR TUBING DEPTH IN WELL (feet): 15	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ μm
FIELD DECONTAMINATION: PUMP ~~Y~~ (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW12	1	PP	150	/	pH= 5.63	~~197 NTU~~	NO3; SO4	~~ESP~~ APP	<200
			300	1, S		197	NH4		
			150	1, N			Total PB/CR		
			150	I			Diss PB/CR		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME: El Dorado Chemical Company		SITE LOCATION: 4500 North West Avenue, El Dorado, AR	
WELL NO: MW-13	SAMPLE ID: MW-13		DATE: 2-17-2020

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 9.8 feet to 19.8 feet	STATIC DEPTH TO WATER (feet): 4.60	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.8 feet – 4.60 feet) X 0.65 gallons/foot = 9.88 gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	PURGING INITIATED AT: 1516	PURGING ENDED AT: 1540	TOTAL VOLUME PURGED (gallons): 2.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) μmhos/cm or (μS/cm)	DISSOLVED OXYGEN (circle units) (mg/L) or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1530	0.75	0.75		7.03	4.45	16.74	1308	1.92	142.1	Clear	none
1535	0.75	1.5		7.74	4.52	16.77	1317	1.88	138.8	↓	↓
1540	1.0	2.5		8.51	4.49	16.64	1324	1.85	140.2	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG	SAMPLER(S) SIGNATURE(S): [signatures]	SAMPLING INITIATED AT: 1542	SAMPLING ENDED AT: 1545
PUMP OR TUBING DEPTH IN WELL (feet): 14.8	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: _____ μm
FIELD DECONTAMINATION: PUMP ~~Y~~ (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity			
MW13	1	PP	150	/	pH= 4.49	1.92	NO3,SO4	~~ESP~~ APP	<200
↓	↓	↓	300	1,S			NH4	↓	↓
			150	1,N			Total PB/CR		
			150	1			Diss PB/CR		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-14	SAMPLE ID:	MW-14
DATE:	2-19-2020		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4	3/8		4.30	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (18.2 feet – 4.30 feet) X 0.65 gallons/foot = 9.04 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
13.2	13.2	1120	1208	

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1143	1.5	1.5		–	4.32	12.24	761	2.04	139.0		
1148	0.5	2.0		–	4.32	12.20	758	1.91	139.0		
1153		2.15		–	4.34	12.20	755	1.51	138.2		
1158		2.25		4.85	4.28	11.89	751	1.35	139.6		
1203		2.4		–	4.28	12.03	750	1.16	140.3		
1208		2.5		–	4.35	12.30	748	1.27	137.7		
1213				–							
1218											
1223											

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
WHC/DMB		1209	1212

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
18.2	PP		

FIELD DECONTAMINATION: PUMP Y (N) TUBING Y (N) (replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW-14	1	PP	150	HNO3			NO3/SO4	APP	<200
"	"	"	300	HNO3	pH-4.35	0.60	NH4	"	"
"	"	"	150	HNO3			Total PB/CR	"	"
"	"	"	150	"			Diss PB/CR	"	"

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-15	SAMPLE ID:	MW-15
DATE:	2-19-2020		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 7 feet to 17 feet	STATIC DEPTH TO WATER (feet): 2.75	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (17 feet – 3.15 feet) X 0.65 gallons/foot = 9 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
12	12	1005	1047	

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1022	1.25	1.25		3.15	4.06	15.51	113	1.19	153.0	Clear	none
1027					3.93				158.7		
1032											
1036	2.0	2.0		3.25	3.94	15.38	113	0.64	159.4	clear	none
1041	0.5	2.5		3.25	3.96	15.37	112	0.50	158.0		
1044	0.25	2.75		3.25	3.93	15.23	112	0.60	158.8		
1047	0.25	3.0		3.25	3.91	15.25	113	0.60	160.0		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1048	SAMPLING ENDED AT: 1053
PUMP OR TUBING DEPTH IN WELL (feet): 12	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW15	1	PP	150	1	pH= 3.91	0.57	NO3; SO4	~~ESP~~ APP	<200
"	"	"	300	1, 8			NH4	"	"
"	"	"	150	1, N			Total PB/CR	"	"
"	"	"	150	1			Diss PB/CR	"	"

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-16	SAMPLE ID: MW-16	DATE: 2-17-2020

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 9.3 feet to 19.3 feet	STATIC DEPTH TO WATER (feet): 2.25	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.3 feet – 2.25 feet) X 0.65 gallons/foot = 11.08 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.3	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.3	PURGING INITIATED AT: 1602	PURGING ENDED AT: 1635	TOTAL VOLUME PURGED (gallons): 2.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
~~1600~~											
1600	0.5	0.5	0.05	2.53	3.97	16.69	342	2.28	165.3	clear	none
1605	0.25	0.75	0.05	2.53	3.99	16.63	329	1.78	164.7	↓	↓
1620	0.5	1.25	0.10	2.53	3.99	16.58	321	0.74	164.5		
1625	0.25	1.5	0.05	2.53	4.00	16.54	318	0.59	163.8		
1630	0.5	2.0	0.10	2.53	4.07	16.52	318	0.42	160.0		
1635	0.25	2.25	0.05	2.53	4.11	16.58	318	0.44	158.5	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG - GBMc	SAMPLER(S) SIGNATURE(S): Daniel Brand / Will H	SAMPLING INITIATED AT: 1636	SAMPLING ENDED AT: 1641
PUMP OR TUBING DEPTH IN WELL (feet): ~~9~~ 14.3	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW16	1	PP	150 mL	\			NO3; SO4	~~ESP~~ PP	<200
MW16	1	PP	300 mL	H2SO4			NH4	~~ESP~~	<200
〃	〃	〃	150	1, N	pH= 4.11	1.47	Total PB/CR	~~ESP~~	〃
〃	〃	〃	150	1			Diss PB/CR	〃	〃

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-17	SAMPLE ID: MW-17	DATE: 2-19-2020

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 24.7 feet to 34.7 feet	STATIC DEPTH TO WATER (feet): 25.95	PURGE PUMP TYPE OR BAILER: ESP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (34.7 feet – 25.95 feet) x 0.65 gallons/foot = 5.69 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 29.7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 29.7	PURGING INITIATED AT: 1316	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1329	1.0	@ 1.0		26.20	4.23	18.37	464	0.55	146.1	clear	none
1334	1.0	2.0		26.25	4.18	18.42	462	0.45	147.8	↓	↓
1339	1.0	3.0		26.32	4.15	18.70	453	0.38	149.9	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1342	SAMPLING ENDED AT: 1346
PUMP OR TUBING DEPTH IN WELL (feet): 29.7	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N?) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)						
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW17	1	PP	150 mL				NO3; SO4	ESP APP	<200
MW17	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW17	〃	〃	150	HNO3	pH= 4.15	2.19	Total PB/CR	ESP	〃
〃	〃	〃	150	〃	〃	〃	Diss PB/CR	〃	〃

REMARKS: Pump one wouldn't pump. Needs maintenance

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-18	SAMPLE ID: MW-18	DATE: 2-19-2020

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 7.2 feet to 17.2 feet	STATIC DEPTH TO WATER (feet): 4.10	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (17.2 feet – 4.10 feet) x 0.65 gallons/foot = 8.52 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12.2	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12.2	PURGING INITIATED AT: 1605	PURGING ENDED AT: 1631	TOTAL VOLUME PURGED (gallons): 2.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1623	1.5	1.5		5.55	4.73	13.28	90	4.90	119.8	Rusty & Cloudy	none
1626	0.25	1.75		5.30	4.82	13.24	90	4.57	115.6	↓	↓
1631	0.25	2.0		5.15	4.85	13.16	93	4.62	113.9	↓	↓
~~Ho 3to~~											

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/LOHG	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1632	SAMPLING ENDED AT: 1636
PUMP OR TUBING DEPTH IN WELL (feet): 12.2	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW18	1	PP	300	1, S	pH= 4.85	365	NH4	~~ESP~~ APP	< 200
MW18	1	PP	150 mL	~~NA~~ 1			NO3, SO4	~~ESP~~	<200
1	1	1	1	1, N			Total PB/CR	1	1
				1			Diss PB/CR		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-19	SAMPLE ID: MW-19	DATE:

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 51.5 feet to 61.5 feet	STATIC DEPTH TO WATER (feet): 1.64	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (61.5 feet – 1.64 feet) x 0.16 gallons/foot = 9.57 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 56.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 56.5	PURGING INITIATED AT: 1523	PURGING ENDED AT: 1548	TOTAL VOLUME PURGED (gallons): 2.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1538	1.5	1.5	0.1	2.48	5.41	16.61	110	0.51	88.3	Clear	none
1543	0.25	1.75	0.05	2.48	5.36	16.63	109	0.47	90.7	↓	↓
1548	0.25	2.0	0.05	2.45	5.34	16.82	109	0.39	91.6	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: WHG/DMB	SAMPLER(S) SIGNATURE(S): Will Gb	SAMPLING INITIATED AT: 1549	SAMPLING ENDED AT: 1554
PUMP OR TUBING DEPTH IN WELL (feet): 56.5	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y N	TUBING Y N (replaced)	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW19	1	PP	150	1	pH= 5.34	1.85	NO3; SO4	~~ESP~~ APP	<200
"	"	"	300	1, S			NH4	"	"
"	"	"	150	1, N			Total Pb/Cr	"	"
"	"	"	150	1			Diss Pb/Cr	"	"

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-20	SAMPLE ID:	MW-20
DATE:			

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 44.5 feet to 54.5 feet	STATIC DEPTH TO WATER (feet): 22.0	PURGE PUMP TYPE OR BAILER: ESP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (54.5 feet – 22.0 feet) X 0.16 gallons/foot = 5.2 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 923	PURGING ENDED AT: 948	TOTAL VOLUME PURGED (gallons): 1.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
933	0.5	0.5	—	28.54	5.32	16.38	151	0.43	110.6	Slightly cloudy	none
938	0.25	0.75	0.05	31.15	5.24	16.16	152	0.46	106.9	↓	↓
943	0.25	1.0	0.05	32.20	5.17	15.58	151	0.41	117.9		
948	0.5	1.5	0.1	34.10	5.12	15.96	152	0.36	120.8		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 949	SAMPLING ENDED AT: 953
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW20	1	PP	150	1	pH= 5.12	79.9	NO3; SO4	ESP	< 200
"	"	"	300	1,5			NH4	"	"
"	"	"	150	1, N			Total PB/CD	"	"
"	"	"	150	1			Diss PB/CD	"	"

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-21	SAMPLE ID: MW-21	DATE:

PURGING DATA

WELL DIAMETER (inches): 1	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 24.9 feet to 34.9 feet	STATIC DEPTH TO WATER (feet): no depth	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (34.9 feet – feet) X 0.04 gallons/foot = gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 39.9	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 842	PURGING ENDED AT: 900	TOTAL VOLUME PURGED (gallons): 0.4

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
850	0.1	0.10		—	3.55	12.61	114	5.68	189.2	clear	none
855	0.15	0.25		—	3.73	12.96	114	5.72	186.0	↓	↓
900	0.15	0.4		—	3.83	13.32	112	5.04	177		
				—							

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB/WHG	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 0900	SAMPLING ENDED AT: 0905
PUMP OR TUBING DEPTH IN WELL (feet): 39.9	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y N Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N (replaced))	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW21	1	PP	150	1	pH= 3.83	4.90	NO3; SO4	4PP	<200
1	1	1	500	1, S			NH4	1	1
			150	1, N			Total Pb/Cd		
			150	1			Diss Pb/Cd		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-22	SAMPLE ID: MW-22	DATE: 2-19-2020

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 69.8 feet to 79.8 feet	STATIC DEPTH TO WATER (feet): 2.52	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (79.8 feet – 2.52 feet) X 0.16 gallons/foot = 12.36 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 74.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 74.8	PURGING INITIATED AT: 1358	PURGING ENDED AT: 1436	TOTAL VOLUME PURGED (gallons): 2.75

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1415	1.25	1.25		3.20	5.83	16.34	233	0.85	89.5	Clear	none
1426	0.75	2.0		3.28	5.47	16.65	231	0.50	85.0	↓	↓
1431	0.25	2.25		3.28	5.45	16.74	230	0.49	86.2		
1436	0.5	2.75		3.28	5.47	16.78	230	0.44	85.5		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: DMB / WHG	SAMPLER(S) SIGNATURE(S): Will Jh	SAMPLING INITIATED AT: 1437 1473	SAMPLING ENDED AT: 1443 6
PUMP OR TUBING DEPTH IN WELL (feet): 74.8	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: (Y) N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW22	1	PP	150	1	pH= 5.47	376	NO3, SO4	~~ESP~~ APP	<200
"	"	"	300	1, 5			NH4		
"	"	"	150	1, N			Total PB/CR		
"	"	"	150	1			Diss PB/CR		

REMARKS: Duplicate Performed

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-1	SAMPLE ID:	MW-1
DATE:	7/20/20		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4	3/8	DEPTH: 12.1 feet to 22.2 feet	11.54	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.2 feet – 11.54 feet) X 0.65 gallons/foot = 6.93 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X 17.1 feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
17.1	17.1	1423	1458	1.75

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1434	0.25	0.25	–	11.79	3.05	20.47	52	1.18	188.3	none	none
1439	0.5	0.75	0.10	11.82	3.05	20.29	52	1.09	188.2	↓	↓
1444	0.35	1.10	0.07	11.83	3.09	20.24	52	0.89	186.5		
1449	0.4	1.5	0.08	11.84	3.11	20.14	52	0.91	184.9		
1454	0.25	1.75	0.05	11.85	3.16	20.17	51	0.87	183.1		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Will Glenn	WHG/DMB	1454	1458

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
17.1	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) (replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity			
MW1	1	PP	125	Nitric	pH= 3.16	4.35	CR/PB	APP 1	<200
↓	1	↓	250	–	↓	↓	NO_3N SO_4,	CR/PB aiss.	↓
. ↓	1	↓	250	Sulfuric	↓		NH_3N		1

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-2	SAMPLE ID: MW-2	DATE: 7/20/20

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4	3/8	10.2 feet to 20.2 feet	0.0	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (20.2 feet – 0.0 feet) X 0.65 gallons/foot = 13.13 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
15.2	15.2	1511	1542	1.45

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) (mg/L) or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1526	0.5	0.5	~~0.1~~	0.8	4.34	20.36	238	0.75	124.4	none	none
1531	0.5	1.0	0.1	1.0	4.37	20.36	238	0.68	121.3	↓	↓
1536	0.25	1.25	0.05	1.1	4.45	20.68	239	0.72	119.0	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Will Glenn	WHG / DMB	1539	1542

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
15.2	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N (replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW2	1	PP	125	Nitric	pH= 4.50	5.02	PB/CR	APP 1	<200
↓	↓	↓	250		↓	↓	NO_3N, SO_4, PB/CR diss.	↓	↓
↓	↓	↓	250	Sulfuric	↓	↓	NH_3N		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-3	SAMPLE ID: MW-3	DATE: 7/20/20

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 17.1 feet to 27.1 feet	STATIC DEPTH TO WATER (feet): 8.55	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (27.1 feet – 8.55 feet) X 0.65 gallons/foot = 8.81 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 22.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 22.1	PURGING INITIATED AT: 1556	PURGING ENDED AT: 1636	TOTAL VOLUME PURGED (gallons): 2.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1611	0.5	0.5	—	9.65	4.98	20.91	211	1.19	90.8	none	none
1616	0.5	1.0	0.1	10.25	5.07	20.97	211	0.95	85.9	↓	↓
1621	0.25	1.25	0.05	10.62	5.16	20.40	211	0.80	81.5		
1626	0.5	1.75	0.1	10.80	5.15	20.71	211	0.72	82.2		
1631	0.25	2.0	0.05	11.10	5.16	20.84	211	0.75	81.5	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn	SAMPLER(S) SIGNATURE(S): WAG/DMB	SAMPLING INITIATED AT: 1634	SAMPLING ENDED AT: 1636
PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
Equip Blank	1	PP	150 mL				NO3; SO4	ESP	<200
Equip Blank	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW3	1	PP	125	Nitric	pH=		PB/CR	APP	<200
↓	1	↓	250		↓	↓	NO_3N, SO_4, PB/CR diss.		↓
↓	1	↓	250	Sulfuric	↓	↓	NH_3N dist		↓

REMARKS: Lost tubing down well – try to retrieve

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-4	SAMPLE ID: MW-4	DATE: 7/21/20

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		12.1 feet to 22.1 feet	8.50	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.1 feet – 8.5 feet) X 0.65 gallons/foot = 8.84 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
17.1	17.1	703	737	1.55

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
719	0.75	0.75	–	10.40	3.29	21.57	6178	1.92	177.1	none	none
724	0.25	1.00	0.05	10.95	3.34	21.68	6027	1.94	174.7	↓	↓
729	0.25	1.25	↓	11.40	3.38	21.79	5938	1.94	172.8		
734	0.25	1.50	↓	11.55	3.40	21.88	5898	1.89	171.7	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Will Glenn	WMG/DMB	734	737

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
17.1	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) (replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW4	1	PP	150 mL				~~NO3, SO4~~	~~ESP~~	~~<200~~
MW4	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW4	1	PP	125	Nitric	pH= 3.40	0.74	PB/CR	APP	<200
↓	1	↓	250	–	↓	↓	NO_3N, SO_4, PB/CR diss		↓
↓	1	↓	250	Sulfuric	↓	↓	NH_3N dist		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-5	SAMPLE ID: MW-5	DATE: 7/21/20

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 7.7 feet to 17.7 feet	STATIC DEPTH TO WATER (feet): 4.2	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (17.7 feet – 4.2 feet) X 0.65 gallons/foot = 8.78 gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X 12.7 feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12.7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12.7	PURGING INITIATED AT: 0918	PURGING ENDED AT: 0957	TOTAL VOLUME PURGED (gallons): 2.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) (mg/l or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
0942	1.25	1.25	–	5.4	4.19	21.51	1204	0.50	131.5	none	none
0947	0.5	1.75	0.1	5.45	4.20	21.43	1186	0.44	130.6	↓	↓
0952	0.5	2.25	↓	5.	4.20	21.41	1178	0.46	130.7		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn	SAMPLER(S) SIGNATURE(S): WG/DMB	SAMPLING INITIATED AT: 0955	SAMPLING ENDED AT: 0957 10956
PUMP OR TUBING DEPTH IN WELL (feet): 12.7	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW5	1	PP	150 mL				NO3; SO4	ESP	<200
MW5	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW-5	1	PP	125	Nitric	pH= 4.20	2.13	PB/CR	APP	<200
↓	1	↓	250	–	↓	↓	PB/CR diss, NO3N, SO4		↓
↓	1	↓	250	Sulfuric	↓	↓	NH3N dist		↓

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-6	SAMPLE ID:	MW-6
DATE:	7/21/20		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 12 feet to 22 feet	STATIC DEPTH TO WATER (feet): 3.82	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22 feet – 3.80 feet) X 0.65 gallons/foot = 11.82 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 17	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17	PURGING INITIATED AT: 1015	PURGING ENDED AT: 1046	TOTAL VOLUME PURGED (gallons): 2.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1028	0.75	0.75		4.54	3.52	22.46	65337	1.00	166.0	none	none
1033	0.50	1.25	0.1	4.55	3.56	22.27	72066	0.78	164.0	↓	↓
1038	0.40	1.65	0.08	4.56	3.56	22.18	72036	0.63	162.0		
1043	0.35	2.00	0.06	4.56	3.57	22.24	72547	0.67	163.5		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn	SAMPLER(S) SIGNATURE(S): WG/PMB	SAMPLING INITIATED AT: 1044 (1045)	SAMPLING ENDED AT: 1046
PUMP OR TUBING DEPTH IN WELL (feet): 17	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW6	1	PP	150 mL				~~NO3, SO4~~	ESP	<200
MW6	1	PP	300 mL	H2SO4			NH4	~~ESP~~	<200
MW6	1	PP	125	nitric	pH= 3.57	1.73	PB/CR	~~ESP~~APP	<200
↓	1	↓	250	—	↓	↓	PB/CR diss. SO_4 NO_3N		↓
	1		250	Sulfuric			NH_2N		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-7	SAMPLE ID: MW-7	DATE: 7/21/20

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		13.9 feet to 23.9 feet	6.32	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (23.9 feet – 6.32 feet) X 0.65 gallons/foot = 11.43 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
18.9	18.9	1110	1147	2.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1135 ~~1035~~	1.25	1.25	–	6.5	4.92	22.64	19075	0.5	94.0	none	none
1140 ~~1040~~	0.85	1.75	0.1	6.5	4.99	22.75	18265	0.46	90.9	↓	↓
1145 ~~1045~~	0.5	2.25	↓	6.5	5.03	22.68	19074	0.44	88.6		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: ~~1045~~ ~~1046~~ 1146	SAMPLING ENDED AT: ~~1047~~ 1147
Will Glenn / GBMc	Will Glenn		

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
18.9	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N (replaced)) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW7	1	PP	150 mL				NO3; SO4	ESP	<200
MW7	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW7	1		125	N	pH= 5.03	1.53	PB/CR	ESP	
1	1	1	250	–	1	1	PB/CR Diss/SO4 NO3(APP)		
1	1	1	250	S			NH3N		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-8	SAMPLE ID: MW-8	DATE: 7/21/20

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 19.9 feet to 29.9 feet	STATIC DEPTH TO WATER (feet): 6.10	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (29.9 feet – 6.1 feet) X 0.65 gallons/foot = 15.48 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 24.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 24.5	PURGING INITIATED AT: 0840	PURGING ENDED AT: 0906	TOTAL VOLUME PURGED (gallons): 1.50

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
0853	0.5	0.5	0.1	6.3	3.49	20.94	38624	0.72	166.5	none	none
0858	0.5	1.00	1	6.2	3.53	21.45	38,875	0.71	164.6	↓	↓
0903	0.5	1.50	↓	6.2	3.58	21.86	39,005	0.68	162.7	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn	SAMPLER(S) SIGNATURE(S): WMG / DMB	SAMPLING INITIATED AT: 0904 / 0905	SAMPLING ENDED AT: 0906
PUMP OR TUBING DEPTH IN WELL (feet): 24.5	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW8	1	PP	150 mL				NO3; SO4	ESP	<200
MW8	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW8	1	PP	125	Nitric	pH= 3.58	0.49	PB/CR	ESP/APP	<200
↓	1	↓	250	–	↓	↓	NO_3N SO_4, PB/CR dis		↓
↓	1	↓	250	Sulfuric	↓	↓	NH_3N dist.		↓

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-9	SAMPLE ID:	MW-9
DATE:	7/21/20		

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 20 feet to 30 feet	STATIC DEPTH TO WATER (feet): 9.04	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (30 feet – 9.04 feet) X 0.65 gallons/foot = 20.96 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 25	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 25	PURGING INITIATED AT: 0749	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
0800	0.75	0.75	0.15	9.70	4.77	20.52	2246	0.84	101.4	none	none
0805	0.40	1.15	0.08	9.90	4.80	20.51	2237	0.61	100.00	↓	↓
0810	0.25	1.40	0.05	9.87	4.83	20.72	2235	0.56	98.4		
0815	0.30	1.70	0.06	9.90	4.88	20.83	2234	0.49	96.0		
0820	0.30	2.0	1	9.89	4.89	20.76	2235	0.47	95.4		
0825	0.25	2.25	0.05	9.89	4.87	20.53	2232	0.44	96.3	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn	SAMPLER(S) SIGNATURE(S): WHG/DMP	SAMPLING INITIATED AT: 0826 (0827)	SAMPLING ENDED AT: 0828
PUMP OR TUBING DEPTH IN WELL (feet): 25	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW9	1	PP	150 mL				NO3; SO4	ESP	<200
MW9	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW9	1	PP	125	Nitric	pH= 4.87	2.86	PB/CR	~~ESP~~ APP	2700
↓	1	↓	250	—	↓	↓	PB/CR diss SO4	NO3N	↓
↓	1	↓	250	Sulfuric	↓	↓	NH3N dist		↓

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-10	SAMPLE ID:	MW-10
DATE:	7/20/20		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4	3/8	DEPTH: 12.6 feet to 22.6 feet	11.35	PP

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.6 feet – 11.35 feet) X 0.65 gallons/foot = 11.25 gallons

EQUIPMENT VOLUME PURGE: **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + 1402 gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
17.6	17.6	1330	1402 1330	1402 1.0

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1343	0.25	0.25	—	11.98	3.58	23.59	734	1.44	163.6	none	none
1348	0.25	0.5	0.05	12.25	3.65	23.92	735	1.35	160.0	↓	↓
1353	0.25	0.75	↓	12.7	3.73	24.04	736	1.34	155.9		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Will Glenn	WAG/DMB	1355	1402

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
17.6	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N (replaced)) DUPLICATE: (Y) N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
~~MW10~~	1	PP	150 mL				NO3; SO4	ESP	<200
~~MW10~~	1	~~PP~~	~~300 mL~~	H2SO4			~~NH4~~	ESP	<200
MW10	2	PP	125	Nitric	pH= 3.73	0.96	CR/PB	ESP	<200
↓	2	PP	250		↓	↓	NO_3N, SO_4, CR/PB	dissolved	↓
↓	2	PP	250	Sulfuric	↓	↓	NH_3N	↓	↓

REMARKS: Duplicate taken

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-11	SAMPLE ID: MW-11	DATE: 7/20/20

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 9.8 feet to 19.8 feet	STATIC DEPTH TO WATER (feet): 9.54	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.8 feet – 9.54 feet) X 0.65 gallons/foot = 10.26 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X 14.8 feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	PURGING INITIATED AT: 1237	PURGING ENDED AT: 1320	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1253	0.5	0.5	—	10.15	3.50	23.49	488	2.00	167.9	none	none
1258	0.25	0.75	0.05	10.15	3.53	23.5	531	2.12	166.0		
1303	0.1	0.85	1	10.13	3.58	23.66	626	1.12	163.4		
1308	0.25	1.10	1	10.14	3.64	22.82	664	1.11	160.1		
1313	0.15	1.25	0.03	10.14	3.55	23.03	667	1.04	164.1		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn	SAMPLER(S) SIGNATURE(S): WHG/PMB	SAMPLING INITIATED AT: 1318	SAMPLING ENDED AT: 1320
PUMP OR TUBING DEPTH IN WELL (feet): 14.8	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING (Y) N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW11	1	PP	150 mL				NO3, SO4	ESP	<200
MW11	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH= 3.56	1.72		ESP/APP	
	1	PP	125	Nitric			CR / PB		
	1	PP	250				NO3N, SO4, CR diss, PB diss		
	1	PP	250	Sulfuric			NH3N dist		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-12	SAMPLE ID: MW-12	DATE: 7/20/20

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4	3/8	DEPTH: 9.9 feet to 19.9 feet	5.10	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.9 feet – 5.10 feet) X 0.65 gallons/foot = 9.62 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
15	15	1145	1224	1.35

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1152	0.10	0.10	—	5.5	4.69	25.33	727	0.95	106.9	Slightly yellow	none
1159	0.50	0.60	0.05	5.95	4.88	25.5	720	0.60	97.0	↓	↓
1204	0.15	0.75	↓	6.04	5.09	24.95	725	0.60	85.9		
1209	0.10	0.85	↓	6.24	5.10	24.3	724	0.46 (<5)	85.9		
1214	0.10	0.95	0.02	6.40	5.07	23.88	723	0.44 (<5)	87.3		
1219	0.25	1.20	↓	6.65	5.06	23.59	722	0.48 (<5)	87.5		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Danielle Braund / GBMc	DMB / [illegible]	1220	1224

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ___ µm
15	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) (replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME mL	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW12	1	PP	125	Nitric Acid	pH= 5.06	4.97	CR / PB	~~ESP~~ APP	200
↓	1	PP	250	—	↓	↓	NO_3N, SO_4, CR diss, PB diss		
↓	1		250	Sulfuric acid	↓	↓	NH_3N diss		↓

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-13	SAMPLE ID: MW-13	DATE: 7/21/20

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 9.8 feet to 19.8 feet	STATIC DEPTH TO WATER (feet): 6.93	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.8 feet − 6.93 feet) X 0.65 gallons/foot = 12.87 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1940	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1956	0.5	0.5	0.1	8.65	4.77	20.86	555	0.50	101.6	none	none
2001	0.75	1.25	1	8.90	4.80	20.89	555	0.47	99.7	↓	↓
2006	0.25	1.25	1	9.25	4.83	20.95	557	0.46	98.4	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 2006	SAMPLING ENDED AT: 2008
Will Glenn	WHG/PMB		

PUMP OR TUBING DEPTH IN WELL (feet): 14.8	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) replaced)	DUPLICATE: (Y) N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW13	1	PP	125	1, N	pH= 4.83	5.38	CR/Pb	ESP/APP	<200
↓	1	1	250	1	↓	↓	CR/Pb Diss, NO_3	N, SO_4	
↓	1	1	250	1, S	↓	↓	NH_3 N		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-14	SAMPLE ID: MW-14	DATE:

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet): 4.46	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (18.2 feet – 4.46 feet) X 0.65 gallons/foot = 8.93 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 13.2	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 13.2	PURGING INITIATED AT: 0825	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
843	0.5	0.5	~0.1		4.45	28.22	557	1.54	111.8	none	none
848	0.25	0.75	0.05		4.44	28.42	562	1.34	112.1	↓	↓
853	0.25	1.0	↓		4.43	28.47	565	1.21	112.0		
858	0.25	1.25			4.41	28.58	564	1.23	113.5		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

0900

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 0859	SAMPLING ENDED AT: 0901
William Glenn	Will Glenn		

PUMP OR TUBING DEPTH IN WELL (feet): 13.2	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) (replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW14	1	PP	125	1, N	4.41	0.46	CR/Pb	APP	<200
↓	↓	↓	250	1	↓	↓	CR/Pb diss, NO_3, SO_4	↓	↓
↓	↓	↓	250	1, S	↓	↓	NH_3N	↓	↓

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-15	SAMPLE ID: MW-15	DATE: 7/22/20

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		7 feet to 17 feet	3.20	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (17 feet – 3.2 feet) X 0.65 gallons/foot = 8.97 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
12	12	0727		

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
0742	0.5	0.5	0.1	3.40	3.83	22.84	89	0.95	141.2	none	none
0747	0.25	0.75	0.05	3.52	3.84	23.05	88	0.58	140.4	↓	↓
0752	0.5	1.25	↓	3.65	3.83	23.19	87	0.50	140.7	↓	↓
0757	0.25	1.50	↓	3.66	3.87	23.50	84	0.47	139.3		
0802	0.5	2.0	0.1	3.65	3.87	23.58	84	0.49	139.0		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Will Glenn	Will Glenn	0801	0802

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
12	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW15	1	PP	125	nitric	pH= 3.87	0.58	CR/Pb	~~ESP~~ APP	< 200
↓	1	↓	250	–	↓	↓	CR/Pb diss, NO_3, SO_4	↓	
↓	1	↓	250	sulfuric	↓	↓	NH_3N	↓	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-16	SAMPLE ID: MW-16	DATE: 7/22/20

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 9.3 feet to 19.3 feet	STATIC DEPTH TO WATER (feet): 3.0	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.3 feet – 3 feet) X 0.65 gallons/foot = 10.60 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 14.3	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.3	PURGING INITIATED AT: 630	PURGING ENDED AT: 0709	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) (mg/L) or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
656	1.0	1.0	+	3.10	3.78	22.26	181.0	0.50	143.0	clear	none
701	0.25	1.25	0.05	3.15	3.78	22.30	182.0	0.31	143.0	↓	↓
706	0.25	1.5	0.05	3.20	3.79	22.38	182.0	0.42	142.2	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn	SAMPLER(S) SIGNATURE(S): WHG/DMB	SAMPLING INITIATED AT: 0707	SAMPLING ENDED AT: 0709
PUMP OR TUBING DEPTH IN WELL (feet): 14.3	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW16	1	PP	150 mL				NO3; SO4	ESP	<200
MW16	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW16	1	PP	125	Nitric	pH= 3.79	1.60	Pb/Cr	ESP/APP	<200
↓	1	↓	250	–	↓	↓	Pb/Cr diss, NO_3, SO_4	↓	↓
↓	1	↓	250	Sulfuric	↓	↓	NH_3 N	↓	↓

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential**: ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-17	SAMPLE ID:	MW-17
DATE:	7/22/20		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		24.7 feet to 34.7 feet	27.8	ESP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (34.7 feet – 27.8 feet) X 0.65 gallons/foot = 4.81 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
29.7		1152	1215	

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) (mg/L) or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1205	4.0	4.0	0.3	28.20	2.73	19.26	155	290	194.0	None	None
1210	1.0	5.0	0.2	28.30	2.85	19.20	159	2.77	187.7	1	1
1215	1.5	6.5	0.3	28.25	2.95	19.27	160	2.72	184.0		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Will Flem / GBMc	Will Flem	1216	

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
29.7	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) (replaced) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
~~MW17~~	~~1~~	~~PP~~	~~150 mL~~				~~NO3; SO4~~	~~ESP~~	<200
~~MW17~~	~~1~~	~~PP~~	~~300 mL~~	~~H2SO4~~			NH4	ESP	<200
MW17	1	PP	125	1, N	pH= 2.95	1.06	Pb/Cr	~~ESP~~ APP	
1	1	1	250	1	1	1	Pb/Cr diss, NO_3, SO_4	1	
1	1	1	250	1, S	1	1	NH_3N		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-18	SAMPLE ID: MW-18	DATE: 7/21/20

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches): 3/8	WELL SCREEN INTERVAL DEPTH: 7.2 feet to 17.2 feet	STATIC DEPTH TO WATER (feet): 6.56	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (17.2 feet – 6.56 feet) X 0.65 gallons/foot = 6.92 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X 12.2 feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 12.2	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12.2	PURGING INITIATED AT: 1646	PURGING ENDED AT: 1722	TOTAL VOLUME PURGED (gallons): 1.5

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1706	0.75	0.75	—	7.50	3.77	21.93	81	1.73	152.9	Cloudy	none
1711	0.25	1.00	0.05	7.59	3.96	21.99	74	1.53	143.2	Slightly	↓
1716	0.25	1.25	↓	7.65	4.04	21.79	74	1.50	137.7	Brown	↓
1721	0.25	1.50	↓	7.70	4.06	21.63	75	1.43	134.8		↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn	SAMPLER(S) SIGNATURE(S): WHG/DMB	SAMPLING INITIATED AT: 1721	SAMPLING ENDED AT: 1722
PUMP OR TUBING DEPTH IN WELL (feet): 12.2	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW18					pH=			ESP	
MW18	1	PP	150 mL	NA			NO3	ESP	<200
mw18	1	PP	125	nitric	pH = 4.12	359	PB/CR	APP	<200
↓	1	↓	250	—	↓	↓	PB/CR diss SO_4, NO_3N	↓	↓
↓	1	↓	250	Sulfuric	↓	↓	NH_3N dist		↓

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-19	SAMPLE ID: MW-19	DATE: 7/21/20

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2		51.5 feet to 61.5 feet	1.76	PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (61.5 feet – 1.76 feet) X 0.16 gallons/foot = 9.56 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
56.5	56.5	1218	1255	2.25

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1243	1.5	1.5	—	3.4	4.84	20.56	91.0	0.49	97.4	None	None
1248	0.25	1.75	0.05	3.6	4.9	20.22	89.1	0.44	94.6	↓	↓
1253	0.25	2.0	↓	3.6	4.85	20.21	90.0	0.35	97.0	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
Will Glenn	WAG/DMB	1253 (1254)	1255

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
56.5	PP		

FIELD DECONTAMINATION: PUMP (Y) N TUBING Y (N) (replaced) DUPLICATE: (Y) N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW19	2	PP	125	nitric	pH= 4.85	1.22	PB/CR	ESP	200
↓	2	↓	250	—	↓	↓	PB/CR diss. SO_4, NO_3N		↓
↓	2	↓	250	sulfuric	↓	↓	NH_3N diss.		↓

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-20	SAMPLE ID: MW-20	DATE: 7/22/20

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 44.5 feet to 54.5 feet	STATIC DEPTH TO WATER (feet): 24.3	PURGE PUMP TYPE OR BAILER: ESP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (54.5 feet – 24.3 feet) X 0.16 gallons/foot = 4.83 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 50	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 50	PURGING INITIATED AT: 1250	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1407	0.75	0.75		34.5	3.87	19.08	80	2.30	137.4	Slightly	none
1412	0.5	1.25	0.1	38.7	3.99	19.45	86	2.00	130.0	Cloudy	
1417	1	1.75	1	39.9	3.97	19.72	86	1.77	128.3		
1426	1	2.25	1	41.2	3.98	19.98	84	1.65	126.4		
1435	0.25	2.5	0.05	43.4	3.99	20.08	86	1.71	129.8		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn / GBMC	SAMPLER(S) SIGNATURE(S): WHG/OMB	SAMPLING INITIATED AT: 1438	SAMPLING ENDED AT: 1440
PUMP OR TUBING DEPTH IN WELL (feet): 50	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW20	1	PP	125	Nitric	pH=	113	PB/CR	ESP APP	<200
〃	1	〃	250	—	〃	〃	PB/CR Diss, SO_4, NO_3N	〃	〃
〃	1	〃	250	Sulfuric	〃	〃	NH_3N	〃	〃

REMARKS: Not screen on tubing length

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-21	SAMPLE ID: MW-21	DATE:

PURGING DATA

WELL DIAMETER (inches): 1	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 24.9 feet to 34.9 feet	STATIC DEPTH TO WATER (feet): 15.1	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (34.9 feet – 15.1 feet) X 0.04 gallons/foot = 0.79 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 39.9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 39.9	PURGING INITIATED AT: 1741	PURGING ENDED AT: 1837	TOTAL VOLUME PURGED (gallons): 1.55

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or (µS/cm)	DISSOLVED OXYGEN (circle units) (mg/L) or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1809	1.0	1.0		–	4.02	21.51	61	3.65	140.3	Slightly	none
1813	0.25	1.25	0.05	–	3.89	21.26	61	3.43	146.8	Cloudy	↓
1818	0.10	1.35	0.01	–	3.82	21.66	61	3.25	150.3	↓	
1823	0.10	1.45	↓		3.91	21.53	61	3.67	149.1		
1828	0.05	1.50			3.91	21.57	61	2.83	145.7		
1833	0.05	1.55			3.95	21.62	61	2.77	143.0		

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Hm / GBMc	SAMPLER(S) SIGNATURE(S): Will Hm	SAMPLING INITIATED AT: 1835 (1836)	SAMPLING ENDED AT: 1837
PUMP OR TUBING DEPTH IN WELL (feet): 39.9	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW21	1	PP	125	1, N	pH= 3.95	2.29	CR/Pb	A PP	<200
↓	1	↓	250	1	↓	↓	CR/Pb diss, NO_3, SO_4		
↓	1	↓	250	1, S	↓	↓	NH_3N	↓	↓

REMARKS: Can't measure depth while pumping, depth taken w/ no tubing in well

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

GROUNDWATER SAMPLING LOG

SITE NAME:	El Dorado Chemical Company	SITE LOCATION:	4500 North West Avenue, El Dorado, AR
WELL NO:	MW-22	SAMPLE ID: MW-22	DATE: 7/22/20

PURGING DATA

WELL DIAMETER (inches): 2	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 69.8 feet to 79.8 feet	STATIC DEPTH TO WATER (feet): 4.10	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (79.8 feet – 4.10 feet) X 0.16 gallons/foot = 12.11 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
= gallons + (gallons/foot X feet) + gallons = gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 74.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 74.8	PURGING INITIATED AT: 0946	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN (circle units) mg/L or % saturation	Redox (mV)	COLOR (describe)	ODOR (describe)
1008	0.75	0.75	~~0.75~~	4.80	4.48	21.05	187.0	0.48	106.2	none	none
1013	0.5	1.25		4.80	4.64	21.08	186.0	0.39	98.2	↓	↓
1018	0.5	1.75		4.80	4.76	21.09	186.0	0.33	92.1	↓	↓

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Will Glenn / GBMc	SAMPLER(S) SIGNATURE(S): Will Glenn	SAMPLING INITIATED AT: 1019	SAMPLING ENDED AT: 1021 / 1020
PUMP OR TUBING DEPTH IN WELL (feet): 74.8	TUBING MATERIAL CODE: PP	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
FIELD DECONTAMINATION: PUMP (Y) N	TUBING Y (N (replaced)	DUPLICATE: (Y) N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)					
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	Turbidity	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
MW22	2	PP	125	I, N	pH= 4.76	2.14	Pb/Cr	~~ESP~~ APP	<200
	2	1	250	1	↓	↓	Pb/Cr diss, NO_3, SO_4		1
	2	1	250	1, S	↓	↓	NH_3 N		

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

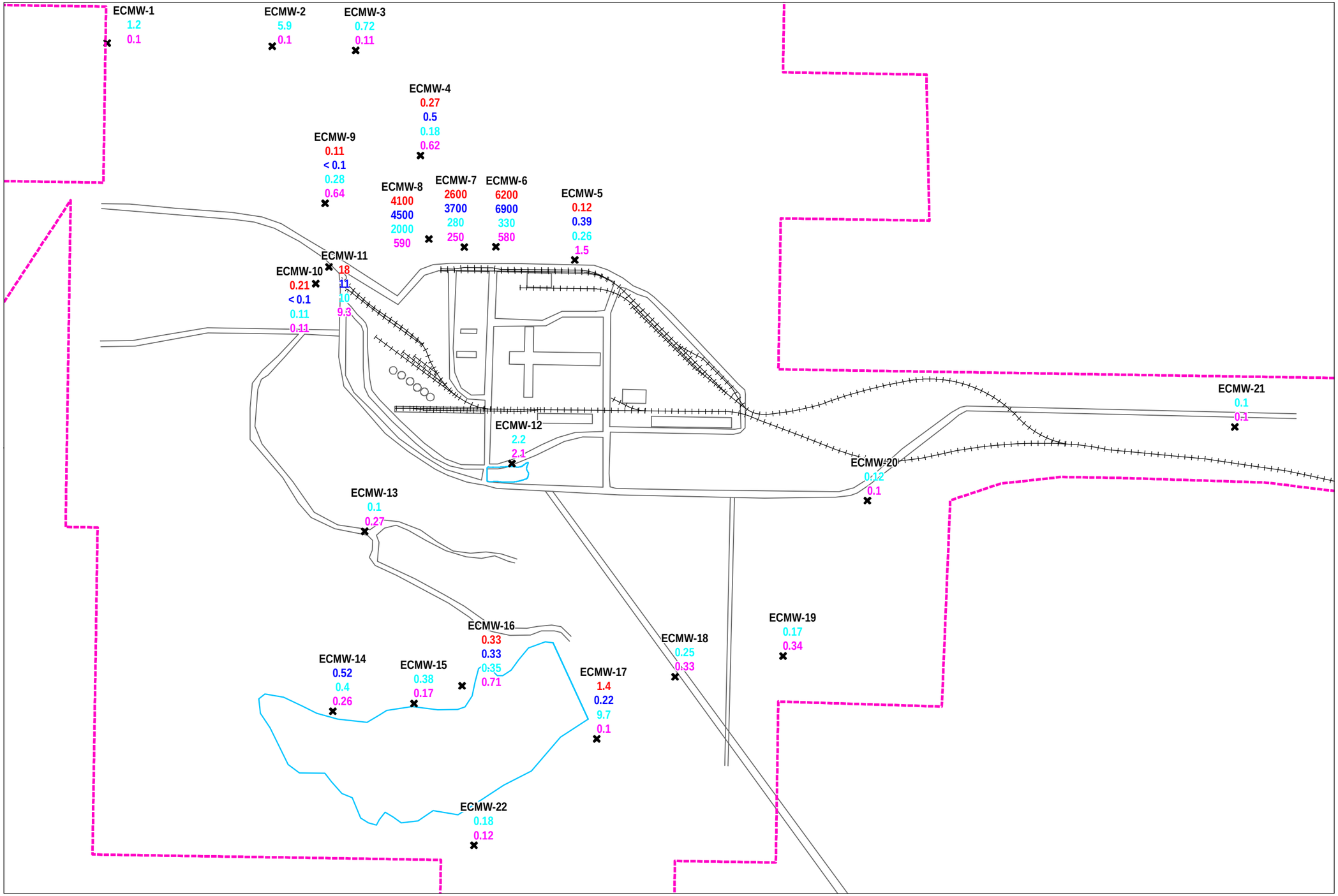
SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **O** = Other (Specify)

NOTES: 1. **The above do not constitute all of the information required by**
2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS

pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized) **Oxidation/Reduction Potential:** ± 10 millivolts

APPENDIX C

Constituent Concentration Maps



NO	DATE	REVISION	BY	CK.	APPR.

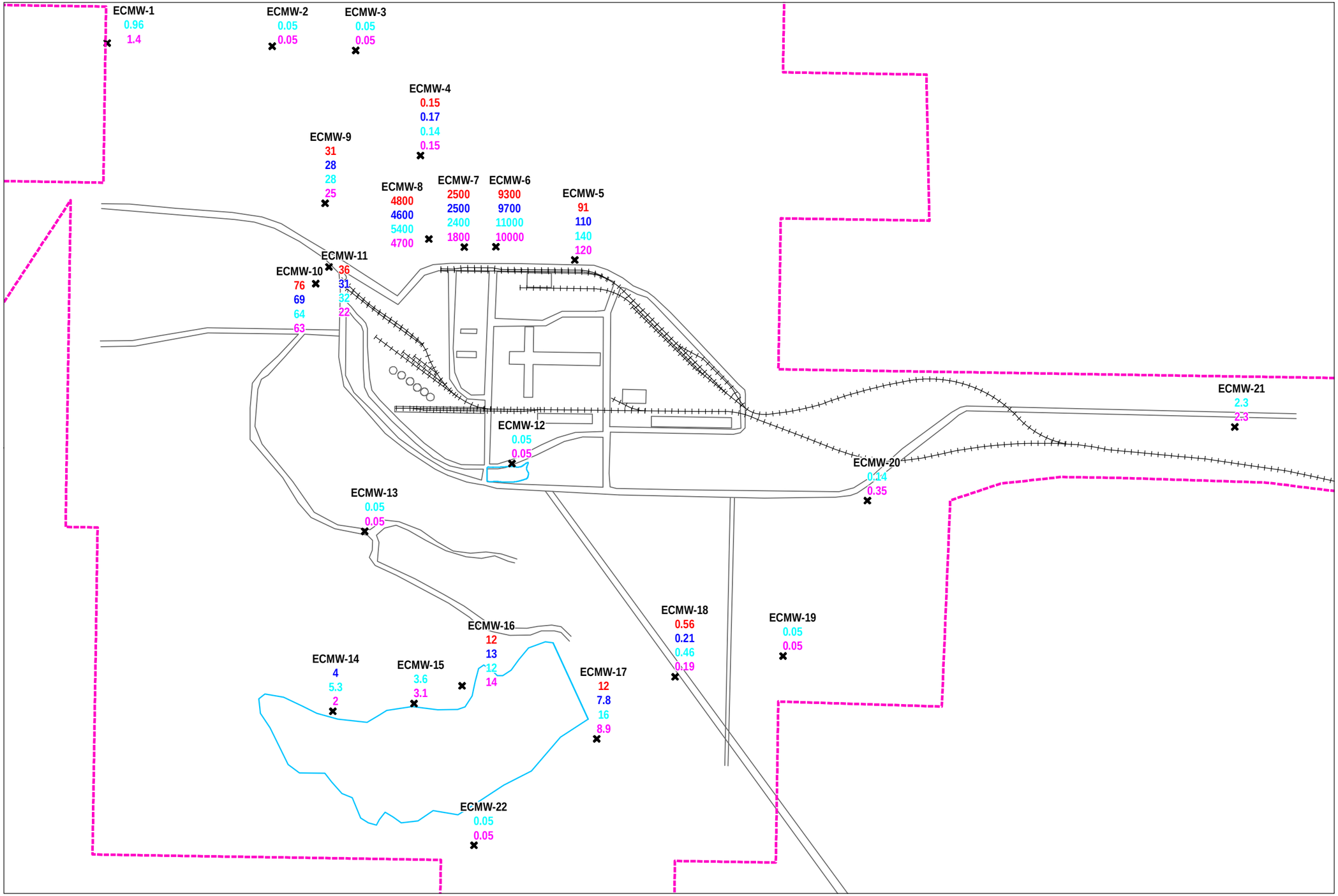
DESIGNED BY WHG
CHECKED BY ENJ
APPR. BY CDC
DRAWN BY ALB

GBMc & ASSOCIATES

SHEET TITLE
2020 GROUNDWATER WELL AMMONIA-N CONCENTRATION

JOB NAME
2020 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 08/14/2020
SCALE SHOWN
REV. NO
DWG. NO.



NO	DATE	REVISION	BY	CK.	APPR.

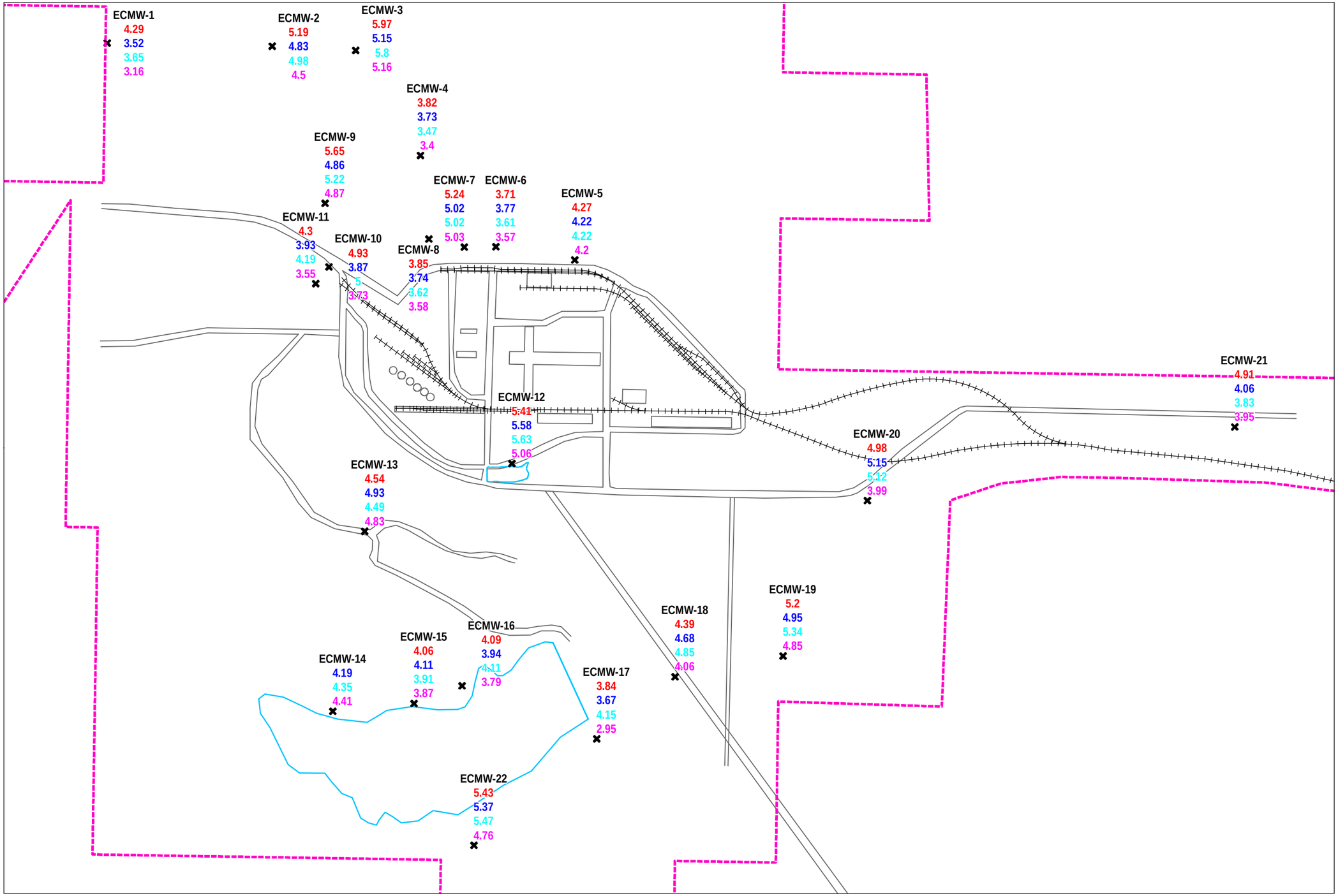
DESIGNED BY	WHG
CHECKED BY	ENJ
APPR. BY	CDC
DRAWN BY	ALB

GBMc & ASSOCIATES

SHEET TITLE
2020 GROUNDWATER WELL NITRATE-N CONCENTRATION

JOB NAME
2020 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO.	2042-99-010
DATE	08/14/2020
SCALE	SHOWN
REV. NO	
DWG. NO.	



NO	DATE	REVISION	BY	CK.	APPR.

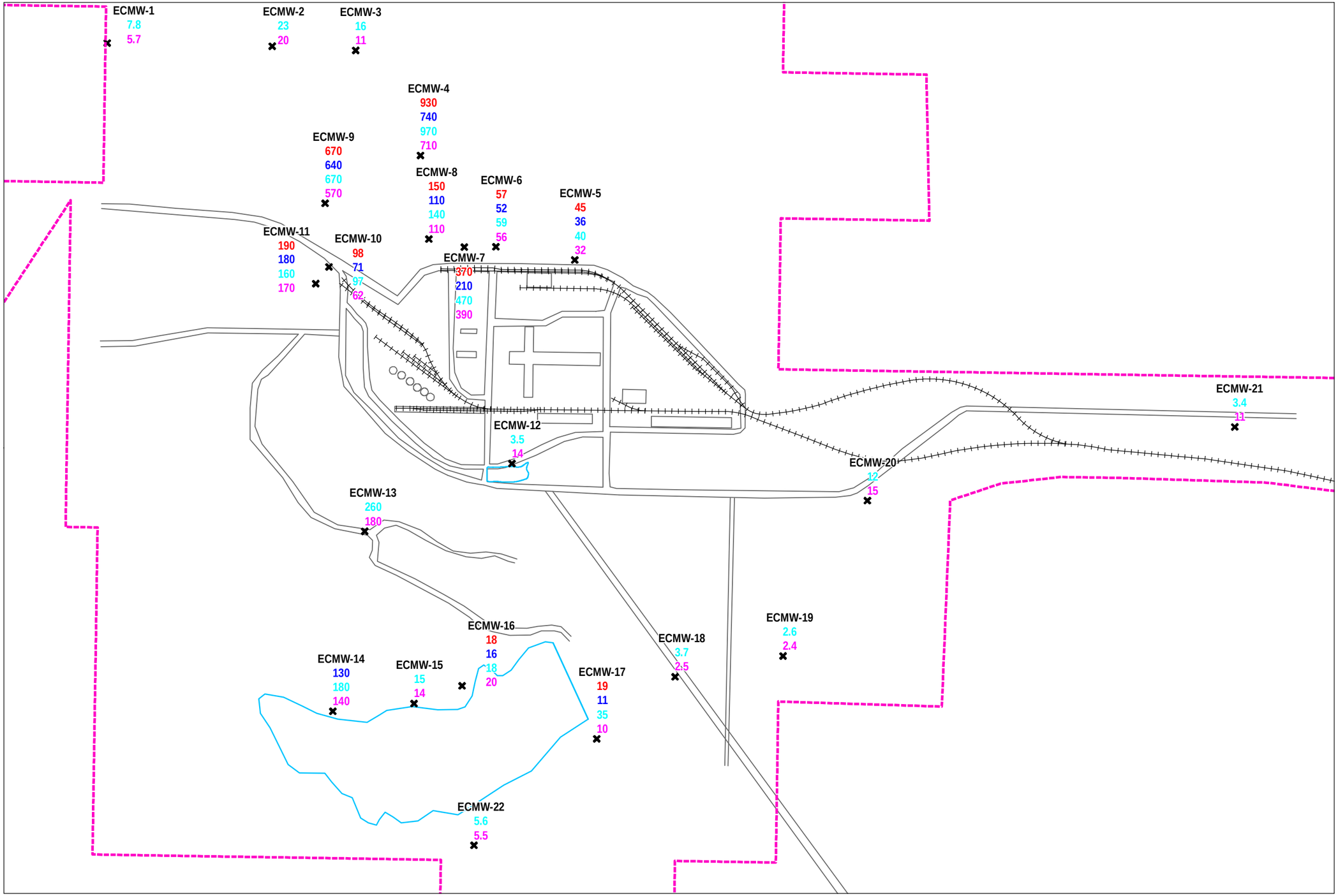
DESIGNED BY	WHG
CHECKED BY	ENJ
APPR. BY	CDC
DRAWN BY	ALB

GBMc & ASSOCIATES

SHEET TITLE
2020 GROUNDWATER WELL PH

JOB NAME
2020 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO.	2042-99-010
DATE	08/14/2020
SCALE	SHOWN
REV. NO	
DWG. NO.	



NO	DATE	REVISION	BY	CK.	APPR.
	January 22, 2021				

DESIGNED BY	WHG
CHECKED BY	ENJ
APPR. BY	CDC
DRAWN BY	ALB

GBMc & ASSOCIATES

SHEET TITLE
2020 GROUNDWATER WELL SULFATE CONCENTRATION

JOB NAME
2020 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO.	2042-99-010
DATE	08/14/2020
SCALE	SHOWN
REV. NO	
DWG. NO.	

APPENDIX D

Historical Data and Statistical Analysis

Historical Data

January 22, 2021

El Dorado Chemical Company
Annual Groundwater Monitoring Report
Groundwater Monitoring Well Data
CAO LIS No. 18-085

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/14/1996	ECMW-1		0.005	0.005	0.002	0.0037	1.7		4.1
5/29/2001	ECMW-1	0.5		0.02		0.04	1.83	5.1	3.67
11/1/2001	ECMW-1	0.5		0.02		0.04	2.74	4.8	3.34
6/3/2002	ECMW-1	0.5	0.02	0.02	0.02	0.02	2.01	5.5	4.66
10/30/2002	ECMW-1	0.66	0.02	0.02	0.015	0.015	1.56	5.6	4.63
12/10/2002	ECMW-1	0.5	0.02	0.02	0.015	0.015	1.8	6.1	6.73
7/24/2003	ECMW-1	0.5	0.02	0.02	0.015	0.015	2.55	7.1	5.05
11/19/2003	ECMW-1	0.5	0.02	0.02	0.015	0.015	1.47	5.11	5.85
1/28/2004	ECMW-1	0.56	0.02	0.02	0.015	0.015	1.6	5.25	6.19
3/16/2004	ECMW-1	0.5	0.02	0.02	0.015	0.015	2.73	5.59	4.22
5/18/2004	ECMW-1	0.5	0.02	0.02	0.015	0.015	4.79	5.51	6.57
7/13/2004	ECMW-1	0.5	0.02	0.02	0.015	0.015	3.68	6.16	3.88
9/14/2004	ECMW-1	0.76	0.02	0.02	0.015	0.015	4.26	5.65	3.48
11/16/2004	ECMW-1	0.5	0.02	0.02	0.015	0.015	3.81	5.11	3.9
1/25/2005	ECMW-1	0.5	0.02	0.02	0.015	0.015	2.88	5.43	6.69
5/24/2005	ECMW-1	0.55	0.02	0.02	0.015	0.015	2.45	5.73	4.39
10/18/2005	ECMW-1							3.61	
4/11/2006	ECMW-1							4.73	
11/1/2006	ECMW-1							4.98	
5/23/2007	ECMW-1							5.24	
11/6/2007	ECMW-1							4.77	
5/21/2008	ECMW-1	0.5	0.02	0.02		0.015	1.57	7.91	4.23
11/5/2008	ECMW-1	0.5		0.02		0.015	0.732	4.63	4.34
4/22/2009	ECMW-1							4.57	
10/20/2009	ECMW-1							4.68	
4/13/2010	ECMW-1	0.5		0.02		0.015	0.5	4.53	6.46
11/2/2010	ECMW-1	0.5		0.01		0.015	1.31	7.69	5.55
4/26/2011	ECMW-1							5.04	
5/2/2012	ECMW-1	0.5	0.02	0.01	0.015	0.015	2.07	5.48	3.35
11/7/2012	ECMW-1	0.5	0.02	0.01	0.015	0.015	0.866	6.43	5.94
5/15/2013	ECMW-1							5.03	
11/4/2013	ECMW-1							5.21	
6/3/2014	ECMW-1	0.5	0.021	0.0104	0.016	0.0156	0.986	4.74	3.98
11/4/2014	ECMW-1	0.5	0.02	0.0104	0.015	0.0156	0.674	3.97	6.29
5/22/2015	ECMW-1							4.83	
11/18/2015	ECMW-1							5.57	
5/24/2016	ECMW-1	0.5	0.021	0.0104	0.016	0.0156	1.79	4.46	5.56
11/10/2016	ECMW-1	0.5	0.0104	0.0104	0.0156	0.0156	0.951	6.84	5.41
3/22/2017	ECMW-1							4.05	
9/13/2017	ECMW-1							4.82	
4/11/2018	ECMW-1	0.5	0.0125	0.0125	0.0156	0.0156	1.13	4.36	5.12
9/12/2018	ECMW-1	0.5	0.0125	0.0248	0.0156	0.0713	0.45	4.47	4.65
1/23/2019	ECMW-1							4.29	
7/17/2019	ECMW-1							3.52	
2/18/2020	ECMW-1	1.2	0.01	0.01	0.0018	0.0018	0.96	3.65	7.8
7/20/2020	ECMW-1	0.1	0.01	0.01	0.00072	0.00083	1.4	3.16	5.7

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/14/1996	ECMW-2		0.005	0.0342	0.002	0.018	0.2		17
5/29/2001	ECMW-2	0.5		0.032		0.04	0.5	5.4	19.6
11/1/2001	ECMW-2	0.5		0.02		0.04	0.5	5.3	22.9
6/3/2002	ECMW-2	0.5	0.02	0.02	0.02	0.02	0.5	6	20
10/30/2002	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	6.1	25.7
12/10/2002	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	6.7	24
7/24/2003	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	7.26	22.9
11/19/2003	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	5.42	28.2
1/28/2004	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	5.2	25.3
3/16/2004	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	5.47	20.9
5/18/2004	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	5.4	24
7/13/2004	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	5.68	22.4
9/14/2004	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	5.44	24.3
11/16/2004	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	6.12	21.5
1/25/2005	ECMW-2	0.5	0.02	0.02	0.015	0.015	0.5	5.38	20.8
5/24/2005	ECMW-2	0.79	0.02	0.02	0.015	0.015	0.5	5.87	22.9
10/18/2005	ECMW-2						0.5	5.15	
4/11/2006	ECMW-2						0.5	5.56	
11/1/2006	ECMW-2							5.2	
5/23/2007	ECMW-2							5.29	
11/6/2007	ECMW-2							5.17	
5/21/2008	ECMW-2	0.5		0.02		0.015	0.5	7.04	20.1
11/5/2008	ECMW-2	0.5		0.02		0.015	0.5	5.47	15.4
4/22/2009	ECMW-2							5.41	
10/20/2009	ECMW-2							5.48	
4/13/2010	ECMW-2	0.5		0.02		0.015	0.5	5.23	16.9
11/2/2010	ECMW-2	0.5		0.01		0.015	0.5	8.28	22.6
4/26/2011	ECMW-2							5.51	
5/2/2012	ECMW-2	0.5	0.02	0.01	0.015	0.015	0.5	5.76	18.7
11/7/2012	ECMW-2	0.5	0.02	0.01	0.015	0.015	0.5	6.57	22
5/15/2013	ECMW-2							5.75	
11/4/2013	ECMW-2							5.91	
6/3/2014	ECMW-2	0.5	0.021	0.0104	0.016	0.0156	3.95	5.1	30.7
11/4/2014	ECMW-2	0.5	0.02	0.0104	0.015	0.0156	0.635	4.45	21.9
5/22/2015	ECMW-2							5.43	
11/18/2015	ECMW-2							5.84	
5/24/2016	ECMW-2	1.37	0.021	0.0104	0.016	0.0156	0.645	5.15	19.8
11/10/2016	ECMW-2	0.5	0.0104	0.0212	0.0156	0.0156	0.25	6.55	22.2
3/22/2017	ECMW-2							5.45	
9/13/2017	ECMW-2							5.26	
4/11/2018	ECMW-2	0.5	0.0125	0.0125	0.0156	0.0156	0.25	5.43	19.4
9/12/2018	ECMW-2	0.5	0.0125	0.0153	0.0156	0.0347	0.25	5.35	24.4
1/23/2019	ECMW-2							5.19	
7/17/2019	ECMW-2							4.83	
2/18/2020	ECMW-2	5.9	0.01	0.01	0.0005	0.0005	0.05	4.98	23
7/20/2020	ECMW-2	0.1	0.01	0.01	0.0005	0.0005	0.05	4.5	20

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/14/1996	ECMW-3		0.005	0.005	0.002	0.0027	0.2		10
5/29/2001	ECMW-3	0.5		0.02		0.04	0.5	6.2	10.6
11/1/2001	ECMW-3	0.5		0.02		0.04	0.5	5.4	22.5
6/3/2002	ECMW-3	0.5	0.02	0.02	0.02	0.02	0.5	6.4	11.4
10/30/2002	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	6.5	21.6
12/10/2002	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	6	16.4
7/24/2003	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	6.23	11.8
11/19/2003	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	5.81	23.5
1/28/2004	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	5.59	26.9
3/16/2004	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	5.94	11.2
5/18/2004	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	5.86	9.75
7/13/2004	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	5.92	13
9/14/2004	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	5.74	18.3
11/16/2004	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	5.96	18.8
1/25/2005	ECMW-3	0.5	0.02	0.02	0.015	0.015	0.5	6.33	15.8
5/24/2005	ECMW-3	0.98	0.02	0.02	0.015	0.015	0.5	6.05	11.8
10/18/2005	ECMW-3						0.5	6.04	
4/12/2006	ECMW-3						0.5	6.39	
11/1/2006	ECMW-3							5.37	
5/23/2007	ECMW-3							5.92	
11/6/2007	ECMW-3							4.85	
5/21/2008	ECMW-3	0.5		0.02		0.015	0.5	7.96	10.5
11/5/2008	ECMW-3	0.5		0.02		0.015	0.5	4.86	9.65
4/22/2009	ECMW-3							5.76	
10/21/2009	ECMW-3							5.83	
4/13/2010	ECMW-3	0.5		0.02		0.015	0.5	6.2	9.39
11/2/2010	ECMW-3	0.5		0.01		0.015	0.5	6.97	17.5
4/26/2011	ECMW-3							6.19	
5/3/2012	ECMW-3	0.5	0.02	0.01	0.015	0.015	0.5	6.28	8.87
11/7/2012	ECMW-3	0.5	0.02	0.01	0.015	0.0169	0.5	6.74	13.4
5/15/2013	ECMW-3							6.29	
11/4/2013	ECMW-3							5.72	
6/3/2014	ECMW-3	0.5	0.021	0.0104	0.016	0.0156	0.25	5.86	9.14
11/4/2014	ECMW-3	0.5	0.02	0.0104	0.015	0.0156	0.239	4.97	12.8
5/22/2015	ECMW-3							6.18	
11/18/2015	ECMW-3							6.11	
5/24/2016	ECMW-3	0.5	0.021	0.0104	0.016	0.0156	0.252	6.26	9.88
11/10/2016	ECMW-3	0.5	0.0104	0.0104	0.0156	0.0156	0.25	6.45	16.2
3/22/2017	ECMW-3							5.91	
9/13/2017	ECMW-3							5.66	
4/11/2018	ECMW-3	0.5	0.0125	0.0125	0.0156	0.0156	0.25	5.73	9.27
9/12/2018	ECMW-3	0.5	0.0125	0.0125	0.0156	0.0156	0.25	5.67	19.1
1/23/2019	ECMW-3							5.97	
7/17/2019	ECMW-3							5.15	
2/18/2020	ECMW-3	0.72	0.01	0.01	0.0012	0.0013	0.05	5.8	16
7/20/2020	ECMW-3	0.11	0.01	0.01	0.0005	0.00062	0.05	5.16	11

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
8/8/2001	ECMW-4	0.66		0.02		0.04	0.5	4.1	925
10/30/2001	ECMW-4	0.5		0.04		0.06	0.5	4.3	936
6/3/2002	ECMW-4	0.5	0.02	0.02	0.02	0.02	0.5	5.2	979
10/30/2002	ECMW-4	0.5	0.02	0.02	0.015	0.02	0.62	4.8	756
12/10/2002	ECMW-4	0.5	0.02	0.02	0.015	0.015	2.4	4.4	976
7/24/2003	ECMW-4	0.5	0.02	0.02	0.015	0.015	0.5	9.08	978
11/19/2003	ECMW-4	0.5	0.02	0.02	0.015	0.015	2.05	4.13	848
1/28/2004	ECMW-4	0.5	0.02	0.02	0.015	0.015	6.39	3.88	1040
3/16/2004	ECMW-4	0.5	0.02	0.02	0.015	0.015	0.5	4.1	919
5/19/2004	ECMW-4	0.5	0.02	0.02	0.015	0.015	1.45	4.05	1040
7/13/2004	ECMW-4	0.5	0.02	0.02	0.015	0.015	0.5	4.35	973
9/14/2004	ECMW-4	0.68	0.02	0.02	0.015	0.015	0.5	4.44	943
11/16/2004	ECMW-4	0.5	0.02	0.02	0.015	0.015	0.5	4.26	874
1/25/2005	ECMW-4	0.64	0.02	0.02	0.015	0.015	8.5	4.63	805
5/24/2005	ECMW-4	2.14	0.02	0.02	0.015	0.015	0.997	4.77	1020
10/18/2005	ECMW-4						0.517	4.06	
4/12/2006	ECMW-4						0.5	4.12	
11/1/2006	ECMW-4							3.69	
5/23/2007	ECMW-4	0.5					0.099	4.13	779
11/6/2007	ECMW-4	0.5					0.5	3.76	1020
5/21/2008	ECMW-4	0.5		0.02		0.017	0.5	3.89	896
11/5/2008	ECMW-4	0.5		0.02		0.015	0.5	3.87	758
4/22/2009	ECMW-4	0.5					0.5	4.17	68.3
10/20/2009	ECMW-4	0.5					0.5	3.62	830
4/13/2010	ECMW-4	0.5		0.02		0.029	0.5	3.75	655
11/2/2010	ECMW-4	0.5		0.01		0.015	0.5	6.57	745
4/27/2011	ECMW-4	1.02					0.5	3.91	845
11/30/2011	ECMW-4	0.5					0.5	3.72	930
5/3/2012	ECMW-4	0.5	0.02	0.01	0.015	0.015	0.5	4.12	865
11/7/2012	ECMW-4	0.5		0.01	0.015	0.015	0.5	6.17	890
5/15/2013	ECMW-4	2.12					0.37	4.03	856
11/5/2013	ECMW-4	2.03	0.02				0.752	4.63	609
6/3/2014	ECMW-4	0.5	0.021	0.0104	0.016	0.0156	0.431	4.5	737
11/4/2014	ECMW-4	1.31	0.02	0.0104	0.015	0.0156	1.29	3.01	772
5/20/2015	ECMW-4	3.5					1.6	3.29	915
11/18/2015	ECMW-4	1.13					0.332	4.04	722
5/24/2016	ECMW-4	0.5	0.021	0.0104	0.016	0.0156	0.666	3.83	843
11/10/2016	ECMW-4	0.5	0.0104	0.014	0.0156	0.0156	0.25	3.75	973
3/21/2017	ECMW-4	0.5					0.25	4.46	954
9/12/2017	ECMW-4	0.5					0.25	3.59	758
6/6/2018	ECMW-4	0.5	0.0125	0.0125	0.0156	0.0156	0.25	3.94	984
9/12/2018	ECMW-4	0.5	0.0125	0.0125	0.0156	0.016	0.25	3.84	979
1/23/2019	ECMW-4	0.27					0.15	3.82	930
7/17/2019	ECMW-4	0.5					0.17	3.73	740
2/19/2020	ECMW-4	0.18	0.011	0.01	0.0068	0.0071	0.14	3.47	970
2/19/2020	ECMW-4	0.62	0.01	0.01	0.0069	0.0068	0.15	3.4	710

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-5		0.005	0.005	0.002	0.002	4.4		441
8/8/2001	ECMW-5	0.5		0.02		0.04	3.54	4.6	657
10/30/2001	ECMW-5	0.5		0.02		0.04	3.27	4.7	526
6/3/2002	ECMW-5	0.5	0.02	0.02	0.02	0.02	3.35	6.3	650
10/30/2002	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.66	5.4	582
12/10/2002	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.26	5.2	489
7/24/2003	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.47	6.85	546
11/19/2003	ECMW-5	0.5	0.02	0.02	0.015	0.015	2.4	4.79	416
1/28/2004	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.19	5.03	476
3/16/2004	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.6	5.13	472
5/19/2004	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.41	5.85	455
7/13/2004	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.75	4.96	511
9/14/2004	ECMW-5	0.59	0.02	0.02	0.015	0.015	3.75	6.7	515
11/16/2004	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.33	5.28	502
1/25/2005	ECMW-5	0.5	0.02	0.02	0.015	0.015	3.18	6.36	461
5/24/2005	ECMW-5	3.62	0.02	0.02	0.015	0.015	3.21	6.42	547
10/19/2005	ECMW-5						3.53	4.96	
4/12/2006	ECMW-5							4.39	
11/1/2006	ECMW-5							4.42	
5/23/2007	ECMW-5	0.5					3.32	5.18	476
11/7/2007	ECMW-5	0.5					4.17	4.64	464
5/21/2008	ECMW-5	0.5		0.02		0.015	4.15	6.45	308
11/12/2008	ECMW-5	0.55		0.02		0.015	7.81	2.4	163
4/22/2009	ECMW-5	0.5					7.58	5.06	133
6/3/2009	ECMW-5							5.92	
10/20/2009	ECMW-5	0.5					8.82	4.98	93.4
4/13/2010	ECMW-5	0.5		0.02		0.015	7.96	4.75	105
11/2/2010	ECMW-5	0.5		0.01		0.015	11	5.64	94.7
4/27/2011	ECMW-5	1.08					15	5.03	92.4
11/30/2011	ECMW-5	0.5					19	4.67	94.4
5/3/2012	ECMW-5	0.5	0.02	0.01	0.015	0.015	23.5	5.13	59.6
11/7/2012	ECMW-5	0.5		0.01	0.015	0.015	26.6	6.43	74.6
5/15/2013	ECMW-5	0.5					32.8	5.07	60.7
11/5/2013	ECMW-5	0.56	0.02				34.7	7.23	66.5
6/3/2014	ECMW-5	0.5	0.021	0.0104	0.016	0.0156	38	7.26	65
11/4/2014	ECMW-5	1	0.02	0.0104	0.015	0.0156	43.4	4.13	55.6
5/20/2015	ECMW-5	1.27					44.6	5.27	54.5
11/18/2015	ECMW-5	0.73					27	5.59	61.2
5/24/2016	ECMW-5	0.5	0.021	0.0104	0.016	0.0156	41.9	5.3	49.4
11/10/2016	ECMW-5	0.5	0.0104	0.0104	0.0156	0.0156	47.2	5.6	59
3/21/2017	ECMW-5	0.5					42.9	4.55	54.8
9/12/2017	ECMW-5	9.58					56.3	4.41	43.8
4/12/2018	ECMW-5	3.28	0.0125	0.0125	0.0156	0.0156	56.5	4.68	64.9
9/13/2018	ECMW-5	0.5	0.0125	0.0125	0.0156	0.0156	74.1	4.43	53.2
1/22/2019	ECMW-5	0.12					91	4.27	45
7/17/2019	ECMW-5	0.39					110	4.22	36
2/19/2020	ECMW-5	0.26	0.01	0.01	0.0005	0.0005	140	4.22	40
7/21/2020	ECMW-5	1.5	0.01	0.01	0.0005	0.0005	120	4.2	32

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-6		0.005	0.005	0.002	0.0026	51.1		24
8/8/2001	ECMW-6	0.5		0.02		0.04	298	4.3	18.3
10/30/2001	ECMW-6	0.5		0.02		0.04	326	4.3	15.7
6/3/2002	ECMW-6	0.5	0.02	0.02	0.02	0.02	459	6.1	12.1
10/30/2002	ECMW-6	0.51	0.02	0.02	0.015	0.015	661	5	8.13
12/10/2002	ECMW-6	0.5	0.02	0.02	0.015	0.015	580	4.6	7.15
7/24/2003	ECMW-6	1.09	0.02	0.02	0.015	0.015	681	7.41	15
11/19/2003	ECMW-6	5.72	0.02	0.02	0.015	0.015	865	4.53	10.7
1/28/2004	ECMW-6	12.3	0.02	0.02	0.015	0.015	835	4.36	17.2
3/16/2004	ECMW-6	13	0.02	0.02	0.015	0.015	826	4.4	17.2
5/19/2004	ECMW-6	21.4	0.02	0.02	0.015	0.015	915	5.04	13.4
7/13/2004	ECMW-6	17.9	0.02	0.02	0.015	0.015	995	4.74	11.7
9/14/2004	ECMW-6	20	0.02	0.02	0.015	0.015	1130	5.51	3.84
11/16/2004	ECMW-6	37.6	0.02	0.02	0.015	0.015	1140	4.59	4.4
1/25/2005	ECMW-6	43.1	0.02	0.02	0.015	0.015	1130	5.36	3.14
5/24/2005	ECMW-6	68.2	0.02	0.02	0.015	0.015	1410	4.57	5.19
10/18/2005	ECMW-6	110					1350	4.43	
4/11/2006	ECMW-6	154					1680	4.45	
11/1/2006	ECMW-6	170					2390	3.94	
5/23/2007	ECMW-6	63.3					3550	6.46	44.9
11/6/2007	ECMW-6	35.7					941	5.15	54.1
5/21/2008	ECMW-6	59.1		0.02		0.015	1130	4.5	23.7
11/5/2008	ECMW-6	103		0.02		0.015	1060	3.89	26.1
4/21/2009	ECMW-6	135					1070	4.47	148
10/20/2009	ECMW-6	181					1330	4.16	24.7
4/13/2010	ECMW-6	92.8		0.02		0.015	1660	4.04	29.2
7/22/2010	ECMW-6	246		0.02		0.015	1940	4.14	42.3
11/2/2010	ECMW-6	311		0.011		0.015	1460	5.71	29.6
4/27/2011	ECMW-6	371					1680	4.3	46.8
6/15/2011	ECMW-6	393					1620		207
11/30/2011	ECMW-6	445		0.01			1970	3.88	60.5
5/3/2012	ECMW-6	344	0.02	0.01	0.032	0.0312	1850	4.28	456
11/7/2012	ECMW-6	620			0.017	0.0185	2520	6.2	112
5/15/2013	ECMW-6	521					3120	4.15	37.7
11/5/2013	ECMW-6	935	0.02				3380	4.49	28.5
6/3/2014	ECMW-6	1110	0.021	0.0104	0.034	0.0339	3560	3.99	28.9
11/4/2014	ECMW-6	1110	0.02	0.0104	0.031	0.036	3550	3.29	33.7
5/20/2015	ECMW-6	2550					2960	3.91	39.8
11/18/2015	ECMW-6	2280					3930	3.96	40.2
5/24/2016	ECMW-6	1390	0.021	0.0104	0.038	0.0379	4120	3.83	30.8
11/10/2016	ECMW-6	1890	0.0104	0.0104	0.0634	0.058	5780	3.71	62.6
3/21/2017	ECMW-6	1680					5160	2.61	119
5/1/2017	ECMW-6	3500					6590	3.79	449
9/12/2017	ECMW-6	895					5710	3.42	49.2
4/12/2018	ECMW-6	1530	0.0125	0.0125	0.0655	0.065	5580	3.55	45.2
9/12/2018	ECMW-6	737	0.0125	0.0125	0.0773	0.0809	6320	3.04	60.6
1/23/2019	ECMW-6	6200					9300	3.71	57
7/17/2019	ECMW-6	6900					9700	3.77	52
2/18/2020	ECMW-6	330	0.012	0.013	0.053	0.053	11000	3.61	59
7/21/2020	ECMW-6	580	0.01	0.01	0.023	0.022	10000	3.57	56

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-7		0.005	0.0078	0.0185	0.0221	282		380
8/8/2001	ECMW-7	184		0.02		0.04	336	9.7	316
10/30/2001	ECMW-7	0.5	0.02	0.02		0.04	189	3.5	322
6/3/2002	ECMW-7	190	0.02	0.02	0.015	0.031	361	4.4	363
10/30/2002	ECMW-7	167	0.02	0.02	0.015	0.017	294	4.2	345
12/10/2002	ECMW-7	180	0.02	0.02	0.016	0.015	344	3.7	275
7/24/2003	ECMW-7	95.1	0.02	0.02	0.015	0.015	141	7.05	378
11/19/2003	ECMW-7	124	0.02	0.02	0.015	0.015	152	4.03	476
1/28/2004	ECMW-7	147	0.02	0.02	0.015	0.018	300	3.99	644
3/16/2004	ECMW-7	190	0.02	0.02	0.017	0.018	310	3.98	496
5/19/2004	ECMW-7	204	0.02	0.02	0.015	0.015	337	3.95	524
7/13/2004	ECMW-7	73.4	0.02	0.02	0.015	0.015	150	3.99	498
9/14/2004	ECMW-7	26.5	0.02	0.02	0.015	0.015	75.5	4.45	142
11/16/2004	ECMW-7	219	0.02	0.02	0.015	0.015	370	3.97	428
1/25/2005	ECMW-7	281	0.02	0.02	0.015	0.016	480	4.08	312
5/24/2005	ECMW-7	323	0.02	0.02	0.017	0.022	595	4.21	349
10/18/2005	ECMW-7	14.3			0.015	0.015	91.6	3.9	
4/11/2006	ECMW-7	267			0.015	0.017	516	4.36	
11/1/2006	ECMW-7	57.4				0.015	105	3.34	
5/23/2007	ECMW-7	96					181	4.3	798
11/6/2007	ECMW-7	49.9					85.3	3.58	906
5/21/2008	ECMW-7	55.2		0.02		0.015	153	2.81	936
11/5/2008	ECMW-7	115		0.02		0.015	237	3.4	962
4/21/2009	ECMW-7	77.8					126	4.13	895
10/20/2009	ECMW-7	51.2					49.9	3.55	1090
4/13/2010	ECMW-7	1000		0.02		0.06	1080	3.53	214
7/22/2010	ECMW-7	43.2		0.02		0.015	103	3.67	3490
11/2/2010	ECMW-7	107		0.01		0.015	155	4.92	156
4/27/2011	ECMW-7	1630					2640	4.47	248
6/15/2011	ECMW-7	56.6					227		899
11/30/2011	ECMW-7	132					192	4.18	259
5/3/2012	ECMW-7	132	0.02	0.01	0.015	0.015	161	4.82	761
11/7/2012	ECMW-7	187		0.01	0.015	0.015	153	6.31	692
5/15/2013	ECMW-7	105					141	5.09	930
11/5/2013	ECMW-7	132	0.02				156	5.81	927
6/3/2014	ECMW-7	100	0.021	0.0104	0.016	0.0156	169	5.24	858
11/4/2014	ECMW-7	77	0.02	0.0104	0.015	0.0156	99.6	4.56	816
5/20/2015	ECMW-7	61					63.6	4.06	866
11/18/2015	ECMW-7	66.2					104	5.31	758
5/24/2016	ECMW-7	91.1	0.021	0.0104	0.016	0.0156	135	5.3	740
11/10/2016	ECMW-7	1450	0.0104	0.0104	0.0156	0.0156	2300	4.92	165
3/21/2017	ECMW-7	6950					12100	5.46	134
5/1/2017	ECMW-7	947					1910	5.51	998
9/12/2017	ECMW-7	1060					10400	5.46	184
4/12/2018	ECMW-7	2310	0.0125	0.0125	0.0156	0.0156	542	5.77	983
9/13/2018	ECMW-7	231	0.0125	0.0125	0.0156	0.0156	413	6	222
1/23/2019	ECMW-7	2600					2500	5.24	370
7/17/2019	ECMW-7	3700					2500	5.02	210
2/18/2020	ECMW-7	280	0.01	0.01	0.0029	0.0029	2400	5.02	470
7/21/2020	ECMW-7	250	0.01	0.01	0.0024	0.0025	1800	5.03	390

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-8		0.005	0.005	0.0238	0.0234	1010		68.3
10/30/2001	ECMW-8	0.94		0.02		0.04	1030	3.9	81.1
6/3/2002	ECMW-8	551	0.02	0.02	0.02	0.02	1070	5.4	77.8
10/30/2002	ECMW-8	406	0.02	0.02	0.015	0.015	1330	4.4	151
12/10/2002	ECMW-8	220	0.02	0.02	0.015	0.015	1080	4	46.2
7/24/2003	ECMW-8	179	0.02	0.02	0.015	0.015	472	6.04	904
11/19/2003	ECMW-8	206	0.02	0.02	0.015	0.015	464	4.99	738
1/28/2004	ECMW-8	45.7	0.02	0.02	0.015	0.015	142	4.29	854
3/16/2004	ECMW-8	88	0.02	0.02	0.015	0.015	203	4.18	805
5/19/2004	ECMW-8	120	0.02	0.02	0.015	0.015	298	4.07	789
7/13/2004	ECMW-8	120	0.02	0.02	0.015	0.015	354	4.48	767
9/14/2004	ECMW-8	107	0.02	0.02	0.015	0.015	392	3.99	743
11/16/2004	ECMW-8	82.1	0.02	0.02	0.015	0.015	304	4.01	808
1/25/2005	ECMW-8	48.9	0.02	0.02	0.015	0.015	126	4.09	1200
5/24/2005	ECMW-8	79.6	0.02	0.02	0.015	0.015	225	6.12	1220
10/18/2005	ECMW-8	84.8					246	4.03	
4/11/2006	ECMW-8	53.5					194	3.78	
11/1/2006	ECMW-8	74.5					224	3.44	
5/23/2007	ECMW-8	122					0.5	4.11	971
11/6/2007	ECMW-8	96.2					340	3.7	816
5/21/2008	ECMW-8	56.8		0.02		0.015	171	3.42	1000
11/5/2008	ECMW-8	70		0.02		0.015	181	3.61	719
4/21/2009	ECMW-8	53.6					108	4.88	839
10/20/2009	ECMW-8	45.8					116	3.79	937
4/13/2010	ECMW-8	62.1		0.02		0.015	52.2	4.56	737
11/2/2010	ECMW-8	63.4		0.01		0.015	163	6.35	860
4/27/2011	ECMW-8	1980					3310	3.85	106
6/29/2011	ECMW-8	175					350		
11/30/2011	ECMW-8	120					401	3.44	727
5/3/2012	ECMW-8	122	0.02	0.01	0.015	0.0159	296	3.97	754
11/7/2012	ECMW-8	193	0.02	0.01	0.015	0.0166	429	5.99	814
5/15/2013	ECMW-8	172					551	3.97	614
11/5/2013	ECMW-8	150					584	4.06	642
6/3/2014	ECMW-8	157	0.021	0.0104	0.016	0.0156	712	4.33	516
11/4/2014	ECMW-8	198	0.02	0.0104	0.015	0.0156	697	3.09	466
5/20/2015	ECMW-8	158					791	4.56	470
11/18/2015	ECMW-8	143					751	3.7	431
5/24/2016	ECMW-8	2020	0.021	0.0104	0.065	0.065	4060	3.61	81
8/4/2016	ECMW-8	2270	0.021	0.0104	0.065	0.0686	4310	3.74	83.6
11/10/2016	ECMW-8	1020	0.0104	0.0104	0.0313	0.0341	1830	3.61	270
3/21/2017	ECMW-8	877					2210	3.61	157
5/1/2017	ECMW-8	1320					2430	3.7	1400
9/12/2017	ECMW-8	654					3490	3.5	83.4
4/12/2018	ECMW-8	626	0.0125	0.0125	0.0676	0.0689	2890	3.64	128
9/13/2018	ECMW-8	556	0.0125	0.0125	0.0636	0.0156	2790	3.95	145
1/24/2019	ECMW-8	4100					4800	3.85	150
7/17/2019	ECMW-8	4500					4600	3.74	110
2/18/2020	ECMW-8	2000	0.01	0.01	0.037	0.037	5400	3.62	140
7/21/2020	ECMW-8	590	0.01	0.01	0.021	0.021	4700	3.58	110

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/14/1996	ECMW-9		0.005	0.005	0.002	0.004	37.3		621
6/27/2001	ECMW-9	0.5		0.02		0.04	28.8	5.4	520
10/30/2001	ECMW-9	0.5		0.02		0.04	26.7	5.5	514
6/3/2002	ECMW-9	0.5	0.02	0.02	0.02	0.02	24.4	6	639
10/30/2002	ECMW-9	18.8	0.02	0.02	0.015	0.015	59	6	655
12/10/2002	ECMW-9	0.7	0.02	0.02	0.015	0.015	28.1	5.2	556
7/24/2003	ECMW-9	0.5	0.02	0.02	0.015	0.015	28.4	7.05	547
11/19/2003	ECMW-9	0.5	0.02	0.02	0.015	0.015	28	5.72	532
1/28/2004	ECMW-9	0.5	0.02	0.02	0.015	0.015	29.2	5.53	575
3/16/2004	ECMW-9	0.5	0.02	0.02	0.015	0.015	30.6	5.88	528
5/19/2004	ECMW-9	0.5	0.02	0.02	0.015	0.015	27.4	5.47	517
7/13/2004	ECMW-9	0.5	0.02	0.02	0.015	0.015	24.6	6.87	588
9/14/2004	ECMW-9	1.14	0.02	0.02	0.015	0.015	25.3	5.04	548
11/16/2004	ECMW-9	0.7	0.02	0.02	0.015	0.015	24	5.67	549
1/25/2005	ECMW-9	0.5	0.02	0.02	0.015	0.015	26.3	5.57	518
5/24/2005	ECMW-9	0.5	0.02	0.02	0.015	0.018	27.4	5.77	600
10/18/2005	ECMW-9						29.9	5.64	
4/11/2006	ECMW-9						29.5	5.83	
11/1/2006	ECMW-9						40.2	5	
5/23/2007	ECMW-9	2.91					32.8	5.57	420
11/6/2007	ECMW-9	3.59					30.6	4.94	642
5/21/2008	ECMW-9	0.5		0.02		0.015	31.7	6.04	522
11/5/2008	ECMW-9	0.5		0.02		0.015	23.7	4.41	391
4/21/2009	ECMW-9	0.5					28	5.91	501
10/20/2009	ECMW-9	2.31					21	5.41	505
4/13/2010	ECMW-9	0.5		0.02		0.015	16.8	5.44	462
11/2/2010	ECMW-9	0.5		0.01		0.015	20	7.04	684
4/27/2011	ECMW-9	2.96					32.1	5.74	542
11/30/2011	ECMW-9	0.7					28.5	5.37	650
5/3/2012	ECMW-9	0.5	0.02	0.01	0.015	0.015	25.5	5.71	520
11/7/2012	ECMW-9	0.68	0.02	0.01	0.015	0.015	32.5	6.5	568
5/15/2013	ECMW-9	0.5					30.1	5.68	514
11/5/2013	ECMW-9	17					53.9	5.51	545
6/3/2014	ECMW-9	3.23	0.021	0.0104	0.016	0.0156	35.6	5.47	525
11/4/2014	ECMW-9	4.61	0.02	0.0104	0.015	0.0156	37.6	4.81	484
5/20/2015	ECMW-9	4.13					31.9	5.52	540
11/18/2015	ECMW-9	2.36					32.7	5.36	526
5/24/2016	ECMW-9	0.888	0.021	0.0104	0.016	0.0156	29.1	5.32	581
11/10/2016	ECMW-9	4.08	0.0104	0.0104	0.0156	0.0156	29.1	5.87	616
3/21/2017	ECMW-9	1.5					32	6.17	531
9/12/2017	ECMW-9	0.5					27.3	5.05	463
4/11/2018	ECMW-9	0.5	0.0125	0.0125	0.0156	0.0156	26.9	5.48	589
9/12/2018	ECMW-9	0.5	0.0125	0.0125	0.0156	0.0156	27.6	5.43	675
1/24/2019	ECMW-9	0.11					31	5.65	670
7/17/2019	ECMW-9	0.1					28	4.86	640
2/18/2020	ECMW-9	0.28	0.01	0.01	0.0005	0.0005	28	5.22	670
7/21/2020	ECMW-9	0.64	0.01	0.01	0.0005	0.0005	25	4.87	570

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-10		0.005	0.005	0.0039	0.0052	257		89
6/27/2001	ECMW-10	0.5		0.025		0.04	156	4.4	100
10/30/2001	ECMW-10	0.5		0.04		0.04	153	3.9	134
6/3/2002	ECMW-10	0.5	0.02	0.02	0.02	0.02	138	5.3	84.9
10/30/2002	ECMW-10	1.84	0.02	0.02	0.015	0.015	137	5.6	140
12/10/2002	ECMW-10	0.5	0.02	0.02	0.015	0.015	70.4	4.5	52.2
7/24/2003	ECMW-10	0.5	0.02	0.02	0.015	0.015	118	5.56	108
11/19/2003	ECMW-10	0.5	0.02	0.02	0.015	0.015	119	4.38	104
1/28/2004	ECMW-10	0.5	0.02	0.02	0.015	0.015	126	4.6	129
3/16/2004	ECMW-10	0.5	0.02	0.02	0.015	0.015	135	5.01	128
5/18/2004	ECMW-10	0.5	0.02	0.02	0.015	0.015	123	5.07	139
7/13/2004	ECMW-10	0.5	0.02	0.02	0.015	0.015	114	4.54	112
9/14/2004	ECMW-10	0.77	0.02	0.02	0.015	0.015	123	4.7	137
11/16/2004	ECMW-10	0.5	0.02	0.02	0.015	0.015	94.4	4.79	71.1
1/25/2005	ECMW-10	0.5	0.02	0.02	0.015	0.015	115	4.63	114
5/25/2005	ECMW-10	1.45	0.02	0.02	0.015	0.015	120	4.93	142
10/18/2005	ECMW-10						97.7	4.3	
4/11/2006	ECMW-10					0.015	97.5	4.4	
11/1/2006	ECMW-10						71	3.83	
5/23/2007	ECMW-10	0.79					79.9	4.18	109
11/6/2007	ECMW-10	0.5					65.9	3.97	121
5/21/2008	ECMW-10	0.5		0.02		0.015	69.2	5.11	153
11/5/2008	ECMW-10	0.5		0.02		0.015	40.9	4.06	105
4/21/2009	ECMW-10	12.7					48.9	4.58	155
6/3/2009	ECMW-10	0.5						6.35	
10/20/2009	ECMW-10	0.5					53.5	4.57	136
4/13/2010	ECMW-10	0.8		0.02		0.015	44.7	4.08	170
11/2/2010	ECMW-10	0.5		0.01		0.015	41.9	6.42	164
4/27/2011	ECMW-10	3.18					54.1	4.3	166
11/30/2011	ECMW-10	0.5					49.2	3.97	94.8
5/3/2012	ECMW-10	0.5	0.02	0.01	0.015	0.015	38.4	4.39	158
11/7/2012	ECMW-10	0.5		0.01	0.015	0.015	44.4	6.13	152
5/15/2013	ECMW-10	0.5					42.1	4.44	163
11/5/2013	ECMW-10	0.5	0.02				47.8	4.91	153
6/3/2014	ECMW-10	2.2	0.021	0.0104	0.016	0.0156	50.6	4.93	136
11/4/2014	ECMW-10	0.5	0.02	0.0104	0.015	0.0156	39.8	3.07	172
5/20/2015	ECMW-10	1.91					50	4.65	148
11/18/2015	ECMW-10	0.5					61.2	4.22	99.9
5/25/2016	ECMW-10	0.5	0.021	0.0104	0.016	0.0156	51.2	3.99	134
11/10/2016	ECMW-10	0.5	0.0104	0.0104	0.0156	0.0156	44.1	4.25	141
3/21/2017	ECMW-10	0.5					43.5	4.65	170
9/12/2017	ECMW-10	0.601					47.2	4.26	140
4/11/2018	ECMW-10	0.5	0.0125	0.0125	0.0156	0.0156	43.3	3.88	152
9/13/2018	ECMW-10	1.15	0.0125	0.0125	0.0156	0.0654	47.4	4.45	181
1/24/2019	ECMW-10	0.21					76	4.93	98
7/16/2019	ECMW-10	0.1					69	3.87	71
2/17/2020	ECMW-10	0.11	0.01	0.01	0.0005	0.0005	64	5	97
7/20/2020	ECMW-10	0.11	0.01	0.01	0.0005	0.0005	63	3.73	62

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-11		0.005	0.005	0.002	0.002	22.1		578
8/8/2001	ECMW-11	4.21		0.02		0.04	7.99	4.3	611
10/30/2001	ECMW-11	0.5		0.02		0.04	21.9	4	334
6/3/2002	ECMW-11	0.5	0.02	0.02	0.02	0.02	6.46	5.4	565
10/30/2002	ECMW-11	18	0.02	0.02	0.015	0.015	9.22	4.8	362
12/10/2002	ECMW-11	10.73	0.02	0.02	0.015	0.015	6.12	4.5	414
7/24/2003	ECMW-11	25.6	0.02	0.02	0.015	0.015	6.68	6.66	278
11/19/2003	ECMW-11	12	0.02	0.02	0.015	0.015	6.26	4.61	289
1/28/2004	ECMW-11	19.6	0.02	0.02	0.015	0.015	6.72	5.04	303
3/16/2004	ECMW-11	15	0.02	0.02	0.015	0.015	9.63	5	262
5/18/2004	ECMW-11	19.9	0.02	0.02	0.015	0.015	13.5	5.17	228
7/13/2004	ECMW-11	17.4	0.02	0.02	0.015	0.015	13.6	4.53	222
9/14/2004	ECMW-11	14.5	0.02	0.02	0.015	0.015	9.85	4.61	247
11/17/2004	ECMW-11	19.1	0.02	0.02	0.015	0.015	11.1	4.86	209
1/25/2005	ECMW-11							4.64	
5/25/2005	ECMW-11	20.6	0.02	0.02	0.015	0.015	1.12	5.05	3.58
10/18/2005	ECMW-11	10.6					2.02	4.42	
4/11/2006	ECMW-11	10.9					6.01	4.63	
11/1/2006	ECMW-11	4.88					1.43	4.06	
5/23/2007	ECMW-11	25.4					29.2	4.23	137
11/6/2007	ECMW-11	8.01					9.75	3.94	223
5/21/2008	ECMW-11	19.5		0.02		0.015	18.9	5.26	208
11/5/2008	ECMW-11	18.4		0.02		0.015	16.9	4.34	98.6
4/21/2009	ECMW-11	0.5					14	4.09	119
6/3/2009	ECMW-11	17.7						6.1	
10/20/2009	ECMW-11	18.2					9.44	4.28	125
4/13/2010	ECMW-11	32.6		0.02		0.015	7.78	4.32	135
11/2/2010	ECMW-11	3.17		0.01		0.015	4.52	5.67	325
4/27/2011	ECMW-11	47					15.8	4.57	146
11/30/2011	ECMW-11	2.19					3.56	4.11	318
5/3/2012	ECMW-11	14.5	0.02	0.01	0.015	0.015	29.4	4.73	95.6
11/7/2012	ECMW-11	33.2	0.02	0.01	0.015	0.015	23.8	5.92	161
5/15/2013	ECMW-11	17					45.4	4.58	98
11/5/2013	ECMW-11	0.5					30.5	4.48	125
6/3/2014	ECMW-11	26	0.021	0.0104	0.016	0.0156	30.7	4.18	105
11/4/2014	ECMW-11	13.9	0.02	0.0104	0.015	0.0156	30.5	3.08	117
5/20/2015	ECMW-11	3.12					28.8	4.19	134
11/18/2015	ECMW-11	39					35.7	4.13	93.4
5/25/2016	ECMW-11	5.86	0.021	0.0104	0.016	0.0156	19.5	4.04	233
11/10/2016	ECMW-11	3.86	0.0104	0.0104	0.0156	0.0156	18.3	4.42	245
3/21/2017	ECMW-11	5.87					16.7	4.07	268
9/12/2017	ECMW-11	4.08					16	4.03	266
4/10/2018	ECMW-11	6.15	0.0125	0.0125	0.0156	0.0156	14.7	5.37	246
9/13/2018	ECMW-11	4.76	0.0125	0.0125	0.0156	0.0156	29.9	4.34	202
1/24/2019	ECMW-11	18					36	4.3	190
7/16/2019	ECMW-11	11					31	3.93	180
2/17/2020	ECMW-11	10	0.01	0.01	0.0005	0.0005	32	4.19	160
44032	ECMW-11	9.3	0.01	0.01	0.0054	0.0005	22	3.55	170

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-12		0.005	0.005	0.002	0.002	0.2		9.6
6/27/2001	ECMW-12	2.2		0.02		0.04	0.5	5.9	13
6/4/2002	ECMW-12	1.4	0.02	0.02	0.02	0.02	0.5	6	4.85
10/30/2002	ECMW-12	4.2	0.02	0.02	0.015	0.015	0.5	6.1	21.6
12/10/2002	ECMW-12	2.3	0.02	0.02	0.015	0.015	0.5	5.8	12.5
7/24/2003	ECMW-12	1.74	0.02	0.02	0.015	0.015	0.5	4.76	18.7
11/19/2003	ECMW-12	1.83	0.02	0.02	0.015	0.015	0.5	5.79	30.6
1/28/2004	ECMW-12	1.87	0.02	0.02	0.015	0.015	0.5	6.44	6.76
3/16/2004	ECMW-12	2.2	0.02	0.02	0.015	0.015	0.5	5.96	4.04
5/19/2004	ECMW-12	1.94	0.02	0.02	0.015	0.015	0.5	5.8	5.11
7/13/2004	ECMW-12	1.2	0.02	0.02	0.015	0.015	0.5	6.78	7.18
9/15/2004	ECMW-12	2.38	0.02	0.02	0.015	0.015	0.5	5.8	23
11/16/2004	ECMW-12	1.55	0.02	0.02	0.015	0.015	0.5	5.73	18.5
1/26/2005	ECMW-12	1.98	0.02	0.02	0.015	0.015	0.5	5.91	4.88
5/25/2005	ECMW-12	1.02	0.02	0.02	0.015	0.015	0.5	5.96	11.2
10/20/2005	ECMW-12	1.06						5.3	
4/11/2006	ECMW-12	1.58						6.12	
11/1/2006	ECMW-12	1.37						5.3	
5/23/2007	ECMW-12							5.66	
11/6/2007	ECMW-12							5.11	
5/21/2008	ECMW-12	1.67		0.02		0.015	0.5	7.53	7.14
11/7/2008	ECMW-12	1.17		0.02		0.015	0.5	5.75	8.74
4/21/2009	ECMW-12							6.52	
10/21/2009	ECMW-12							7.08	
4/13/2010	ECMW-12	5.56		0.02		0.015	0.5	5.95	2.14
11/3/2010	ECMW-12	1.44		0.01		0.015	0.5	6.64	21.5
4/27/2011	ECMW-12							5.67	
5/3/2012	ECMW-12	1.81	0.02	0.01	0.015	0.015	0.5	6.02	17
11/7/2012	ECMW-12	3.55	0.02	0.01	0.015	0.015	0.5	6.49	21.5
5/15/2013	ECMW-12							6.02	
11/4/2013	ECMW-12							5.84	
6/3/2014	ECMW-12	3.11	0.021	0.0104	0.016	0.0156	0.334	5.56	5.04
11/4/2014	ECMW-12	2.15	0.02	0.0104	0.015	0.0156	0.25	4.53	20.6
5/22/2015	ECMW-12							6.02	
11/18/2015	ECMW-12							5.73	
5/25/2016	ECMW-12	2.24	0.021	0.0104	0.016	0.0156	0.25	5.58	17
11/10/2016	ECMW-12	2.22	0.0104	0.0104	0.0156	0.0156	0.25	5.18	33
3/22/2017	ECMW-12							5.9	
9/13/2017	ECMW-12							5.97	
6/6/2018	ECMW-12	1.05	0.0125	0.0125	0.0156	0.0156	0.25	5.86	16.5
9/13/2018	ECMW-12	1.74	0.0125	0.0125	0.0156	0.0156	1.33	5.66	34.6
1/21/2019	ECMW-12							5.41	
7/16/2019	ECMW-12							5.58	
2/17/2020	ECMW-12	2.2	0.01	0.01	0.0005	0.0005	0.05	5.63	3.5
7/20/2020	ECMW-12	2.1	0.01	0.01	0.0005	0.0005	0.05	5.06	14

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-13		0.005	0.005	0.002	0.002	0.2		809
6/5/2001	ECMW-13	0.5		0.02		0.04	0.5	5.6	538
10/30/2001	ECMW-13	0.5		0.02		0.04	0.5	5.3	606
6/4/2002	ECMW-13	0.5	0.02	0.02	0.02	0.02	0.5	5.7	372
10/30/2002	ECMW-13	1.28	0.02	0.02	0.015	0.015	0.5	6.1	538
12/10/2002	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.5	5.5	598
7/23/2003	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.5	6.05	358
11/19/2003	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.62	4.91	310
1/28/2004	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.5	5.02	565
3/16/2004	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.5	5.19	550
5/18/2004	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.5	5.27	296
7/13/2004	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.5	6.02	510
9/14/2004	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.5	5.03	416
11/16/2004	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.5	4.83	250
1/26/2005	ECMW-13	0.5	0.02	0.02	0.015	0.015	0.72	4.86	564
5/25/2005	ECMW-13	0.54	0.02	0.02	0.015	0.015	0.5	5.07	302
10/19/2005	ECMW-13							4.19	
4/12/2006	ECMW-13							4.97	
11/2/2006	ECMW-13							4.71	
5/23/2007	ECMW-13							4.97	
11/7/2007	ECMW-13							4.64	
5/21/2008	ECMW-13	0.5		0.02		0.015	0.5	5.85	399
11/7/2008	ECMW-13	0.5		0.02		0.015	0.5	5.01	346
4/21/2009	ECMW-13							4.77	
10/21/2009	ECMW-13						0.5	4.63	
4/14/2010	ECMW-13	0.5		0.02		0.015	0.5	4.75	470
11/3/2010	ECMW-13	0.5		0.01		0.015		6.44	589
12/21/2010	ECMW-13								
4/26/2011	ECMW-13							4.68	
11/30/2011	ECMW-13								
5/2/2012	ECMW-13	0.5	0.02	0.01	0.015	0.015	0.5	5.23	505
11/6/2012	ECMW-13	0.5	0.02	0.01	0.015	0.015	0.5	6.25	593
5/15/2013	ECMW-13							5.19	
11/4/2013	ECMW-13							4.83	
6/4/2014	ECMW-13	0.5	0.021	0.0104	0.016	0.0156	0.255	5.33	374
11/5/2014	ECMW-13	0.5	0.02	0.0104	0.015	0.015	0.25	4.03	425
5/22/2015	ECMW-13							5.2	
11/18/2015	ECMW-13							4.68	
5/25/2016	ECMW-13	0.5	0.021	0.0104	0.016	0.016	0.25	4.39	529
11/9/2016	ECMW-13	0.5	0.0104	0.0104	0.0156	0.0156	0.25	5.06	439
3/22/2017	ECMW-13							4.8	
9/13/2017	ECMW-13							5.04	
4/11/2018	ECMW-13	0.5	0.0125	0.0125	0.0156	0.0156	0.25	4.57	364
9/12/2018	ECMW-13	0.5	0.0125	0.0125	0.0156	0.0156	0.25	4.56	496
1/22/2019	ECMW-13							4.54	
7/15/2019	ECMW-13							4.93	
2/17/2020	ECMW-13	0.1	0.01	0.01	0.0005	0.0005	0.05	4.49	260
7/21/2020	ECMW-13	0.27	0.01	0.01	0.0005	0.00061	0.05	4.83	180

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-14		0.005	0.005	0.002	0.002	11.9		139
8/8/2001	ECMW-14	0.5		0.02		0.04	75	4.3	175
10/30/2001	ECMW-14	0.5		0.02		0.04	25.2	4.5	211
6/4/2002	ECMW-14	0.5	0.02	0.02	0.02	0.02	26.5	5.6	187
10/30/2002	ECMW-14	5.32	0.02	0.02	0.015	0.015	17	6.3	288
12/10/2002	ECMW-14	0.5	0.02	0.02	0.015	0.015	23.4	5.3	230
7/23/2003	ECMW-14	0.5	0.02	0.02	0.015	0.015	23.1	4.62	221
11/19/2003	ECMW-14	0.5	0.02	0.02	0.015	0.015	16.1	4.92	227
1/28/2004	ECMW-14	0.5	0.02	0.02	0.015	0.028	24.5	5.19	5.41
3/16/2004	ECMW-14	0.5	0.02	0.02	0.015	0.015	33.4	5.34	211
5/18/2004	ECMW-14	0.5	0.02	0.02	0.015	0.015	32.6	5.23	234
7/13/2004	ECMW-14	0.5	0.02	0.02	0.015	0.015	45.7	5.05	226
9/14/2004	ECMW-14	0.5	0.02	0.02	0.015	0.015	57.7	4.72	232
11/16/2004	ECMW-14	0.5	0.02	0.02	0.015	0.015	21.7	4.88	168
1/26/2005	ECMW-14	0.5	0.02	0.02	0.015	0.015	62.4	4.89	204
5/25/2005	ECMW-14	0.5	0.02	0.02	0.015	0.015	31	5.06	204
10/19/2005	ECMW-14						36	4.96	
4/12/2006	ECMW-14						48.2	4.72	
11/2/2006	ECMW-14						13.6	4.15	
5/23/2007	ECMW-14	0.5					25.5	4.6	233
11/7/2007	ECMW-14	0.5					12.6	4.24	229
5/21/2008	ECMW-14	0.5		0.02		0.015	22.5	5.69	224
11/5/2008	ECMW-14	0.5		0.02		0.015	11.1	4.35	137
4/21/2009	ECMW-14	0.72					13.2	4.36	200
12/16/2009	ECMW-14	0.5					15.7	5.53	212
4/14/2010	ECMW-14	0.5		0.02		0.015	24.3	4.54	166
12/21/2010	ECMW-14	0.5		0.01		0.015	12.7	5.68	152
4/26/2011	ECMW-14	0.5					10.7	5.04	159
11/30/2011	ECMW-14	0.5					8.09	4.5	156
5/2/2012	ECMW-14	0.5		0.01	0.015	0.015	17.4	5.2	139
11/6/2012	ECMW-14	0.5		0.01	0.015	0.015	8.03	6.25	140
5/15/2013	ECMW-14	0.5	0.02				6.17	5.2	108
11/5/2013	ECMW-14	7.52	0.02				6.92	5.46	91.6
6/4/2014	ECMW-14	0.5	0.021	0.0104	0.016	0.0156	4.31	5.73	54.2
11/5/2014	ECMW-14	0.5	0.02	0.0104	0.015	0.0156	5.12	4.09	98.3
9/8/2015	ECMW-14	0.5					9.58	4.89	77.8
11/18/2015	ECMW-14	0.63					17.2	5.15	45.6
7/6/2016	ECMW-14	0.5	0.021	0.0104	0.016	0.0156	8.76	4.93	91.2
11/9/2016	ECMW-14	0.5	0.0104	0.0104	0.0156	0.0156	4.4	5.37	116
3/21/2017	ECMW-14	0.782					5.3	5.43	102
9/12/2017	ECMW-14	0.5					2.76	4.62	123
6/6/2018	ECMW-14	0.5	0.0125	0.0125	0.0156	0.0156	5.98	4.91	136
9/12/2018	ECMW-14	0.5	0.0125	0.0125	0.0156	0.0156	4.8	4.71	143
1/21/2019	ECMW-14								
7/16/2019	ECMW-14	0.52					4	4.19	130
2/19/2020	ECMW-14	0.4	0.01	0.01	0.0005	0.0005	5.3	4.35	180
7/22/2020	ECMW-14	0.26	0.01	0.01	0.0079	0.00051	2	4.41	140

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-15		0.005	0.005	0.002	0.002	34.5		4.4
8/8/2001	ECMW-15	0.5		0.02		0.04	19.1	4.3	7.8
10/30/2001	ECMW-15	0.5		0.02		0.04	12.6	4.3	10.2
6/4/2002	ECMW-15	0.5	0.02	0.02	0.02	0.02	10.7	5.4	11.1
10/30/2002	ECMW-15	1.16	0.02	0.02	0.015	0.015	18.2	5.4	9.22
12/10/2002	ECMW-15	0.5	0.02	0.02	0.015	0.015	12.2	5.8	10.8
7/23/2003	ECMW-15	0.5	0.02	0.02	0.015	0.015	7.63	4.77	12.8
11/19/2003	ECMW-15	0.5	0.02	0.02	0.015	0.015	9.81	4.89	12.6
1/28/2004	ECMW-15	3.96	0.02	0.02	0.015	0.015	4.52	5.56	18.6
3/16/2004	ECMW-15	0.5	0.02	0.02	0.015	0.015	7.66	5.68	13.9
5/18/2004	ECMW-15	0.5	0.02	0.02	0.015	0.015	6.82	5.75	15.2
7/13/2004	ECMW-15	0.5	0.02	0.02	0.015	0.015	9.52	5.39	11
9/14/2004	ECMW-15	0.61	0.02	0.02	0.015	0.015	8.22	4.67	13.2
11/16/2004	ECMW-15	0.5	0.02	0.02	0.015	0.015	7.42	4.92	11.8
1/25/2005	ECMW-15	0.5	0.02	0.02	0.015	0.015	7.62	4.68	11.8
5/25/2005	ECMW-15	0.5	0.02	0.02	0.015	0.015	5.79	4.94	16.1
10/19/2005	ECMW-15						5.63	4.77	
4/11/2006	ECMW-15						1.6	4.95	
11/2/2006	ECMW-15						2.54	4.17	
11/2/2006	ECMW-15								
5/23/2007	ECMW-15							4.43	
11/7/2007	ECMW-15							4.06	
5/21/2008	ECMW-15	0.5		0.02		0.015	1.52	7.35	15.9
11/5/2008	ECMW-15	0.5		0.02		0.015	2.32	5.18	8.79
4/21/2009	ECMW-15							4.53	
10/20/2009	ECMW-15							4.36	
4/14/2010	ECMW-15	0.5		0.02		0.015	2.99	4.39	10.7
11/3/2010	ECMW-15	0.5		0.01		0.015	1.9	5.3	13.2
4/26/2011	ECMW-15							4.86	
5/2/2012	ECMW-15	0.5	0.02	0.01	0.015	0.015	1.08	4.88	13.9
11/6/2012	ECMW-15	0.5	0.02	0.01	0.015	0.015	1.26	6.22	13
5/15/2013	ECMW-15							6.21	
11/4/2013	ECMW-15							4.56	
6/4/2014	ECMW-15	0.5	0.021	0.0122	0.016	0.0156	1.74	5.36	12.4
11/5/2014	ECMW-15	0.5	0.02	0.0104	0.015	0.0156	3.07	2.75	9.58
5/22/2015	ECMW-15							4.68	
11/18/2015	ECMW-15							5.14	
5/25/2016	ECMW-15	0.5	0.021	0.0104	0.016	0.0156	4.52	4.29	9.67
11/9/2016	ECMW-15	0.5	0.0104	0.0104	0.0156	0.0156	4.07	5.04	9.96
3/22/2017	ECMW-15							4.67	
9/13/2017	ECMW-15							4.54	
4/10/2018	ECMW-15	0.5	0.0125	0.0125	0.0156	0.0156	1.55	5.67	12.6
9/12/2018	ECMW-15	0.5	0.0125	0.0125	0.0156	0.0156	2.21	4.87	15.6
1/21/2019	ECMW-15							4.06	
7/16/2019	ECMW-15							4.11	
2/19/2020	ECMW-15	0.38	0.01	0.01	0.0005	0.0005	3.6	3.91	15
7/22/2020	ECMW-15	0.17	0.01	0.01	0.0005	0.0005	3.1	3.87	14

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-16		0.005	0.005	0.0034	0.0036	137		4.6
6/5/2001	ECMW-16	4.61		0.02		0.04	134	4.3	5.09
10/30/2001	ECMW-16	0.5		0.02		0.04	58.4	3.9	6.44
6/4/2002	ECMW-16	6.2	0.02	0.02	0.02	0.02	72.5	5	7.19
10/30/2002	ECMW-16	11.6	0.02	0.02	0.015	0.015	72	5	9.21
12/10/2002	ECMW-16	2.99	0.02	0.02	0.015	0.015	89.4	5.9	5.64
7/23/2003	ECMW-16	6.45	0.02	0.02	0.015	0.015	72.3	4.81	7.15
11/19/2003	ECMW-16	8.61	0.02	0.02	0.015	0.015	44.3	4.99	9.78
1/28/2004	ECMW-16	5.66	0.02	0.02	0.015	0.015	59	5.61	9.84
3/16/2004	ECMW-16	8.39	0.02	0.02	0.015	0.015	34.8	5.83	11.2
5/18/2004	ECMW-16	10.4	0.02	0.02	0.015	0.015	31.9	5.95	13.3
7/13/2004	ECMW-16	9.35	0.02	0.02	0.015	0.015	40.2	5.5	7.7
9/14/2004	ECMW-16	8.57	0.02	0.02	0.015	0.015	47.1	4.49	7.83
11/16/2004	ECMW-16	6.49	0.02	0.02	0.015	0.015	38.2	5.08	8.11
1/25/2005	ECMW-16	4.15	0.02	0.02	0.015	0.015	43.1	4.54	8.13
5/25/2005	ECMW-16	7.62	0.02	0.02	0.015	0.015	26.8	4.62	10.2
10/19/2005	ECMW-16	6.28					17	4.66	
4/11/2006	ECMW-16	2.01					17	4.79	
11/2/2006	ECMW-16	2.16					24.8	4.27	
5/23/2007	ECMW-16	2.21					12.8	4.25	14.4
11/7/2007	ECMW-16	1.77					19.6	4.3	12.6
5/21/2008	ECMW-16	3.35		0.02		0.015	14.8	6.08	15.9
11/5/2008	ECMW-16	1.92		0.02		0.015	11.4	6.5	10.4
4/21/2009	ECMW-16	3.25					8.85	4.66	14.5
10/21/2009	ECMW-16	0.88					13.1	4.38	12.1
4/14/2010	ECMW-16	2.38		0.02		0.015	4.73	4.42	15.3
11/3/2010	ECMW-16	0.96		0.01		0.015	19.2	5.98	13.4
4/26/2011	ECMW-16	3.56					7.5	4.5	15.8
11/30/2011	ECMW-16	0.84					11.6	4.12	17.9
5/2/2012	ECMW-16	0.81	0.02	0.01		0.015	10.7	4.66	15.4
11/6/2012	ECMW-16	1.19		0.01		0.015	9.94	6.09	14.6
5/15/2013	ECMW-16	3.91			0.015		12.2	4.79	13
11/5/2013	ECMW-16	1.58	0.02		0.015		10.3	4.6	13.3
6/4/2014	ECMW-16	1.8	0.021	0.0104	0.016	0.0156	10.9	5.07	10.7
11/5/2014	ECMW-16	1.27	0.02	0.0104	0.015	0.0156	9.2	2.64	11.2
5/20/2015	ECMW-16	6.2					8.65	4.54	12.9
11/18/2015	ECMW-16	0.5					8.43	4.64	15.9
5/25/2016	ECMW-16	0.5	0.021	0.0104	0.016	0.0156	10.2	4.28	15.4
11/9/2016	ECMW-16	0.5	0.0104	0.0104	0.0156	0.0156	8.86	5.3	13.6
3/21/2017	ECMW-16	0.5					7.88	4.44	15.3
9/12/2017	ECMW-16	0.5					8.74	4.13	12.1
4/10/2018	ECMW-16	0.5	0.0125	0.0125	0.0156	0.0156	8.13	5.75	15.6
9/12/2018	ECMW-16	0.5	0.0125	0.0125	0.0156	0.0156	8.46	4.22	9.85
1/22/2019	ECMW-16	0.33					12	4.09	18
7/16/2019	ECMW-16	0.33					13	3.94	16
2/17/2020	ECMW-16	0.35	0.01	0.01	0.0005	0.0005	12	4.11	18
7/22/2020	ECMW-16	0.71	0.01	0.01	0.0005	0.0005	14	3.79	20

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-17		0.005	0.005	0.002	0.002	45		145
6/5/2001	ECMW-17	1.16		0.02		0.04	54.2	4.4	87.7
10/30/2001	ECMW-17	0.5		0.02		0.04	106	4.1	11.5
6/4/2002	ECMW-17	0.5	0.02	0.02	0.02	0.02	83.4	5.1	8.04
10/30/2002	ECMW-17	2.36	0.02	0.02	0.015	0.015	92	5.1	9.53
12/10/2002	ECMW-17	1.22	0.02	0.02	0.015	0.015	101	5.6	28.2
7/23/2003	ECMW-17	0.58	0.02	0.02	0.015	0.015	74.7	4.74	9.31
11/19/2003	ECMW-17	0.55	0.02	0.02	0.015	0.015	77.3	5.28	11.8
1/28/2004	ECMW-17	0.5	0.02	0.02	0.015	0.015	81.3	6.54	42.8
3/16/2004	ECMW-17	8.14	0.02	0.02	0.015	0.015	129	6.62	64
5/18/2004	ECMW-17	8.05	0.02	0.02	0.015	0.015	134	6.73	60.1
7/13/2004	ECMW-17	0.5	0.02	0.02	0.015	0.015	67.6	6.57	6.54
9/14/2004	ECMW-17	1.42	0.02	0.02	0.015	0.015	78.4	4.4	3.14
11/16/2004	ECMW-17	9.55	0.02	0.02	0.015	0.015	219	5.41	54.8
1/26/2005	ECMW-17	1.79	0.02	0.02	0.015	0.015	53.3	4.54	12.2
5/25/2005	ECMW-17	0.5	0.02	0.02	0.015	0.015	56.4	4.86	19.1
10/20/2005	ECMW-17	0.67					48.9	5.74	
4/11/2006	ECMW-17	1.15					66.6	3.35	
11/2/2006	ECMW-17	4.81					47.6	3.56	
5/23/2007	ECMW-17	1.49					58.5	4.19	12.7
11/7/2007	ECMW-17	0.64					83.3	3.7	1.27
5/21/2008	ECMW-17	1.63		0.02		0.015	63.1	4.84	63
11/5/2008	ECMW-17	1.31		0.02		0.015	34.6	3.85	17.5
4/21/2009	ECMW-17	12.2					27.1	4.25	99.9
6/3/2009	ECMW-17	3.04						5.84	
10/21/2009	ECMW-17	11.2					14.4	4.68	87.1
4/14/2010	ECMW-17	0.5		0.02		0.015	15.9	4.07	6.73
11/3/2010	ECMW-17	1.94		0.01		0.015	27.2	7.02	13.1
4/26/2011	ECMW-17	10.1					4.03	4.34	40.2
11/30/2011	ECMW-17	2.75					5.95	4.65	36.1
5/2/2012	ECMW-17	2.51	0.02	0.01	0.015	0.015	8.13	4.75	20.9
11/6/2012	ECMW-17	3.82		0.01	0.015	0.015	1.82	6.21	39.2
5/15/2013	ECMW-17	1.41					3.6	4.7	34.5
11/5/2013	ECMW-17	0.5	0.02				1.24	4.77	39.6
6/4/2014	ECMW-17	2.46	0.021	0.0104	0.016	0.0156	7.19	4.62	29.3
11/5/2014	ECMW-17	3.46	0.02	0.0104	0.015	0.0156	7.5	2.73	34.3
5/20/2015	ECMW-17	6.53					10.4	4.1	18.7
11/18/2015	ECMW-17	3.67					14.3	4.04	22.9
5/25/2016	ECMW-17	0.5	0.021	0.0104	0.016	0.0156	14.3	3.96	6.64
11/9/2016	ECMW-17	0.826	0.0104	0.0104	0.0156	0.0156	12.2	6.42	6.86
3/21/2017	ECMW-17	5.16					19.2	4.6	21.2
9/12/2017	ECMW-17	0.865					13.4	4.32	11.3
4/10/2018	ECMW-17	3.5	0.0125	0.0125	0.0156	0.0156	10.2	4.32	20.5
9/12/2018	ECMW-17	1.61	0.0125	0.0125	0.0156	0.0156	6.95	4.03	24.9
1/22/2019	ECMW-17	1.4					12	3.84	19
7/15/2019	ECMW-17	0.22					7.8	3.67	11
2/19/2020	ECMW-17	9.7	0.01	0.01	0.0017	0.0021	16	4.15	35
7/22/2020	ECMW-17	0.1	0.01	0.01	0.0005	0.0005	8.9	2.95	10

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/13/1996	ECMW-18		0.005	0.0194	0.002	0.017	0.4		3.3
10/30/2001	ECMW-18	0.5		0.05		0.04	0.5	5.4	3.74
6/4/2002	ECMW-18	0.5	0.137	0.147	0.02	0.115	0.5	6.2	8.38
10/30/2002	ECMW-18	0.43	0.02	0.02	0.015	0.018	0.5	6.3	3.22
12/10/2002	ECMW-18	0.5	0.02	0.02	0.015	0.015	0.5	6.4	5.01
7/23/2003	ECMW-18	0.5	0.02	0.047	0.015	0.029	113	5.38	115
11/19/2003	ECMW-18	0.5	0.02	0.02	0.015	0.015	0.5	5.9	9.68
1/28/2004	ECMW-18							6.17	
3/16/2004	ECMW-18	0.5	0.021	0.027	0.015	0.021	0.5	6.4	7.01
5/19/2004	ECMW-18	0.5	0.02	0.088	0.015	0.063	0.5	6.43	5.63
7/13/2004	ECMW-18	0.5	0.02	0.043	0.015	0.033	0.5	6.05	5.68
9/15/2004	ECMW-18	0.56	0.05	0.12	0.038	0.109	0.5	5.89	3.88
11/17/2004	ECMW-18	0.5	0.02	0.027	0.015	0.015	0.5	5.96	4.61
1/26/2005	ECMW-18	0.5	0.022	0.055	0.015	0.056	0.5	5.9	5.13
5/25/2005	ECMW-18	0.5	0.02	0.032	0.015	0.018	0.5	6.04	5.18
10/19/2005	ECMW-18		0.052	0.02	0.015	0.015		5.82	
4/12/2006	ECMW-18		0.065	0.02	0.016	0.015		1.34	
11/2/2006	ECMW-18			0.02		0.015		5.23	
5/23/2007	ECMW-18						0.98	5.34	
11/7/2007	ECMW-18						0.5	5.03	
5/21/2008	ECMW-18	0.5		0.028		0.02	0.567	7.82	6.57
11/7/2008	ECMW-18	0.5		0.025		0.032	0.5	5.05	1.52
4/22/2009	ECMW-18						0.5	5.42	
10/21/2009	ECMW-18						0.5	7.16	
4/14/2010	ECMW-18	0.5		0.02		0.015	0.5	5.5	2.82
11/3/2010	ECMW-18	0.5		0.01		0.015	1	8.22	3.65
4/26/2011	ECMW-18							5.77	
6/30/2011	ECMW-18						0.5		
11/30/2011	ECMW-18						0.5	5.64	
5/2/2012	ECMW-18	0.5	0.02	0.01		0.015	0.5	5.89	2.17
11/6/2012	ECMW-18	0.5		0.01		0.015	0.5	6.61	2.99
5/15/2013	ECMW-18	0.5			0.015		0.328	5.96	6.25
11/5/2013	ECMW-18	9.64	0.02		0.015		0.25	6.28	6.3
6/4/2014	ECMW-18	0.5	0.021	0.0531	0.016	0.0274	0.299	5.82	7.15
11/5/2014	ECMW-18	0.5	0.02	0.0104	0.015	0.0156	0.254	4.71	2.64
5/20/2015	ECMW-18						0.295	5.64	5.63
11/18/2015	ECMW-18						0.25	5.7	
5/25/2016	ECMW-18	0.5	0.021	0.0104	0.016	0.0167	0.25	5.33	1.78
11/10/2016	ECMW-18	0.788	0.0104	0.0104	0.0156	0.0248	0.25	6.42	1.29
3/21/2017	ECMW-18						0.25	5.35	
9/12/2017	ECMW-18	0.5					0.25	5.11	1.29
4/12/2018	ECMW-18	1.38	0.0125	0.0125	0.0156	0.0156	0.25	5.28	1.58
9/13/2018	ECMW-18	0.5	0.0125	0.0125	0.0156	0.0156	0.25	4.19	1.72
1/22/2019	ECMW-18						0.56	4.39	
7/18/2019	ECMW-18						0.21	4.68	
2/19/2020	ECMW-18	0.25	0.02	0.019	0.018	0.02	0.46	4.85	3.7
7/21/2020	ECMW-18	0.33	0.019	0.02	0.018	0.02	0.19	4.06	2.5

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
1/28/2004	ECMW-19	0.64	0.077	0.077	0.045	0.122	0.5	6.73	8.32
3/16/2004	ECMW-19	0.5	0.02	0.02	0.015	0.019	0.5	6.49	6.38
5/19/2004	ECMW-19	0.5	0.02	0.02	0.015	0.015	0.5	6.19	9.05
7/13/2004	ECMW-19	0.5	0.02	0.02	0.015	0.015	0.5	6.37	6.85
9/15/2004	ECMW-19	0.54	0.02	0.02	0.015	0.015	0.5	6.23	4.11
11/17/2004	ECMW-19	0.5	0.02	0.02	0.015	0.015	0.5	6.02	4.63
1/26/2005	ECMW-19	0.5	0.02	0.02	0.015	0.015	0.5	5.82	3.67
5/25/2005	ECMW-19	0.5	0.02	0.02	0.015	0.015	0.5	5.88	4.56
10/19/2005	ECMW-19	0.5	0.02	0.02	0.015	0.015	0.5	6.27	
4/12/2006	ECMW-19	0.5	0.02	0.02	0.015	0.015	0.5	6.1	
11/2/2006	ECMW-19	0.5		0.02		0.015	0.5	5.51	
5/23/2007	ECMW-19							5.18	
11/7/2007	ECMW-19							8.17	
5/21/2008	ECMW-19	0.5		0.02		0.015	0.5	5.9	3.18
11/7/2008	ECMW-19	0.5		0.02		0.015	0.5	5.66	2.04
4/22/2009	ECMW-19								
10/21/2009	ECMW-19							7.82	
4/14/2010	ECMW-19	0.5		0.02		0.015	0.5	5.62	2.46
11/3/2010	ECMW-19	0.5		0.01		0.015	0.5	6.87	2.97
4/26/2011	ECMW-19							5.82	
5/2/2012	ECMW-19	0.5	0.02	0.01	0.015	0.015	0.5	5.98	2.31
11/6/2012	ECMW-19	0.5	0.02	0.01	0.015	0.015	0.5	6.68	2.88
5/14/2013	ECMW-19							6.13	
11/5/2013	ECMW-19							6.73	
6/4/2014	ECMW-19	0.5	0.021	0.0104	0.016	0.0156	0.25	5.92	2.78
11/5/2014	ECMW-19	0.5	0.02	0.0104	0.015	0.0156	0.25	5.05	2.97
5/22/2015	ECMW-19							5.95	
11/18/2015	ECMW-19							6.13	
5/25/2016	ECMW-19	0.5	0.021	0.0104	0.016	0.0156	0.25	5.06	2.26
11/9/2016	ECMW-19	0.5	0.0104	0.0104	0.0156	0.0156	0.25	6.56	2.25
3/22/2017	ECMW-19							5.52	
9/13/2017	ECMW-19							5.55	
4/12/2018	ECMW-19	0.752	0.0125	0.0125	0.0156	0.0156	0.25	5.51	3.64
9/13/2018	ECMW-19	1.21	0.0125	0.0125	0.0156	0.0156	5.27	5.07	2.79
1/22/2019	ECMW-19							5.2	
7/18/2019	ECMW-19							4.95	
2/19/2020	ECMW-19	0.17	0.01	0.01	0.0005	0.0005	0.05	5.34	2.6
7/21/2020	ECMW-19	0.34	0.01	0.01	0.0005	0.00085	0.05	4.85	2.4

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
1/28/2004	ECMW-20	0.5	0.02	0.034	0.015	0.024	0.5	5.93	11.4
3/16/2004	ECMW-20	0.5	0.02	0.02	0.015	0.015	0.5	6.51	15.9
5/19/2004	ECMW-20	0.5	0.02	0.02	0.015	0.015	0.5	6.23	10.6
7/13/2004	ECMW-20	0.5	0.02	0.02	0.015	0.015	0.5	5.8	17.2
9/15/2004	ECMW-20	0.86	0.02	0.02	0.015	0.015	0.5	5.61	17.2
11/17/2004	ECMW-20	0.5	0.02	0.02	0.015	0.015	0.5	5.36	13.5
1/26/2005	ECMW-20	0.5	0.02	0.02	0.015	0.017	0.5	6.02	13.8
5/26/2005	ECMW-20	0.5	0.02	0.02	0.015	0.015	1.86	6.03	7.72
10/20/2005	ECMW-20	0.5	0.02	0.02	0.015	0.015	0.5		
4/12/2006	ECMW-20	3.58	0.02	0.02	0.015	0.015	6.29		
11/2/2006	ECMW-20	0.5		0.02		0.015	1.21	6.2	
5/23/2007	ECMW-20							6.06	
11/7/2007	ECMW-20							5.52	
5/21/2008	ECMW-20	0.5		0.02		0.015	0.5	8.6	8.94
11/7/2008	ECMW-20	0.5		0.02		0.016	0.5	6.36	7.94
4/22/2009	ECMW-20							6.22	
10/21/2009	ECMW-20					0.015		7.37	
4/14/2010	ECMW-20	0.5		0.02		0.015	0.5	5.64	10.1
12/21/2010	ECMW-20	0.5		0.01			0.5	5.02	8.95
4/26/2011	ECMW-20							6.03	
5/2/2012	ECMW-20	0.5	0.02	0.01	0.015	0.015	0.5	5.96	7.82
11/6/2012	ECMW-20	0.5	0.02	0.01	0.015	0.015	0.5	6.74	9.31
5/14/2013	ECMW-20							5.29	
11/5/2013	ECMW-20							6	
6/4/2014	ECMW-20	0.5	0.021	0.0104	0.016	0.0156	0.25	5.63	8.17
11/5/2014	ECMW-20	0.5	0.02	0.0104	0.015	0.0156	0.262	3.61	9.87
5/22/2015	ECMW-20							5.61	
11/18/2015	ECMW-20							6.08	
5/25/2016	ECMW-20	0.5	0.021	0.0104	0.016	0.0156	0.25	5.37	9.46
11/9/2016	ECMW-20	0.5	0.0104	0.0104	0.0156	0.0156	2.31	5.18	4.59
3/22/2017	ECMW-20							5.39	
9/13/2017	ECMW-20							5.28	
4/12/2018	ECMW-20	1.62	0.0125	0.0125	0.0156	0.0202	5.44	5.28	13.1
9/13/2018	ECMW-20	0.5	0.0125	0.0125	0.0156	0.0156	0.568	4.79	17.4
1/21/2019	ECMW-20							4.98	
7/16/2019	ECMW-20							5.15	
2/20/2020	ECMW-20	0.12	0.01	0.01	0.0005	0.0013	0.14	5.12	12
7/22/2020	ECMW-20	0.1	0.01	0.01	0.0005	0.002	0.35	3.99	15

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
1/28/2004	ECMW-21	0.5	0.02	0.837	0.015	0.169	1.63	5.56	8.17
3/16/2004	ECMW-21	0.5	0.02	0.028	0.015	0.015	0.54	6.34	3.62
5/19/2004	ECMW-21	0.5	0.02	0.07	0.015	0.029	2.15	6.75	4.59
7/13/2004	ECMW-21	0.5	0.02	0.056	0.015	0.032	2.5	6.39	3.74
9/15/2004	ECMW-21	0.81	0.02	0.029	0.015	0.015	4.65	5.47	4.15
11/17/2004	ECMW-21	0.5	0.02	0.047	0.015	0.015	2.97	5.96	3.14
1/26/2005	ECMW-21	4.06	0.02	0.044	0.015	0.02	3.23	5.37	2.88
5/26/2005	ECMW-21	0.5	0.02	0.265	0.015	0.063	3.17	5.69	3.64
10/20/2005	ECMW-21	0.5	0.02	0.02	0.015	0.015	4.16	4.17	
4/12/2006	ECMW-21	0.5	0.02	0.02	0.015	0.015	3.19	3.05	
11/2/2006	ECMW-21	0.5		0.02		0.015	2.23		
5/23/2007	ECMW-21							5.56	
11/7/2007	ECMW-21							5.07	
5/21/2008	ECMW-21	0.5		0.02		0.015	1.85	7.81	5.18
11/7/2008	ECMW-21	0.5		0.02		0.015	1.26	5.32	3
4/22/2009	ECMW-21							5.24	
10/21/2009	ECMW-21							5.91	
4/14/2010	ECMW-21	0.5		0.02		0.015	2.24	4.88	3.7
11/3/2010	ECMW-21	0.5		0.01		0.015	1.8	7.13	6.07
4/26/2011	ECMW-21							5.85	
5/2/2012	ECMW-21	0.5	0.02	0.01	0.015	0.015	1.4	5.68	3.94
11/6/2012	ECMW-21	0.5	0.02	0.01	0.015	0.015	1.1	6.48	6.28
5/15/2013	ECMW-21							6.09	
11/5/2013	ECMW-21							5.68	
6/4/2014	ECMW-21	0.5	0.021	0.0105	0.016	0.0156	1.63	5.22	4.57
11/5/2014	ECMW-21	0.5	0.02	0.0104	0.015	0.0156	1.62	3.81	5.25
5/22/2015	ECMW-21							5.37	
11/18/2015	ECMW-21							5.39	
5/25/2016	ECMW-21	0.5	0.021	0.0104	0.016	0.0156	2.25	4.88	3.62
11/9/2016	ECMW-21	0.5	0.0104	0.0104	0.0156	0.0156	0.25	6.25	21.4
3/22/2017	ECMW-21							4.72	
9/13/2017	ECMW-21							4.18	
6/6/2018	ECMW-21	0.5	0.0125	0.0125	0.0156	0.0156	2.45	4.49	3.95
9/13/2018	ECMW-21	0.5	0.0174	0.0174	0.0156	0.0156	2.51	5.76	4.85
1/21/2019	ECMW-21							4.91	
7/16/2019	ECMW-21							4.06	
2/20/2020	ECMW-21	0.1	0.01	0.01	0.0005	0.00093	2.3	3.83	3.4
7/21/2020	ECMW-21	0.1	0.01	0.01	0.0005	0.0005	2.3	3.95	11

Date	Monitoring Well	Ammonia-N (mg/L)	Chromium (Dissolved) (mg/L)	Chromium (Total) (mg/L)	Lead (Dissolved) (mg/L)	Lead (Total) (mg/L)	Nitrate- N (mg/L)	pH (s.u.)	Sulfate (mg/L)
3/14/1996	ECMW-22		0.005	0.005	0.002	0.0025	1.3		728
1/28/2004	ECMW-22	0.61	0.02	0.021	0.015	0.021	0.53	7.68	6.62
3/16/2004	ECMW-22	0.5	0.02	0.02	0.015	0.015	0.66	6.65	2.88
5/18/2004	ECMW-22	0.5	0.02	0.02	0.015	0.015	0.95	6.76	3.74
7/13/2004	ECMW-22	0.5	0.02	0.02	0.015	0.015	0.5	6.74	3.8
9/14/2004	ECMW-22	0.7	0.02	0.02	0.015	0.015	0.5	5.84	2.94
11/16/2004	ECMW-22	0.5	0.02	0.02	0.015	0.015	0.5	6.95	2.51
1/26/2005	ECMW-22	0.5	0.02	0.02	0.015	0.015	1.09	5.79	3.56
5/25/2005	ECMW-22	0.5	0.02	0.02	0.015	0.015	1.12	6.46	3.61
10/19/2005	ECMW-22	0.5	0.02	0.02	0.015	0.056	0.5	6.21	
4/11/2006	ECMW-22	0.5	0.02	0.02	0.015	0.015	2.56	6.22	
11/2/2006	ECMW-22	0.5		0.02		0.015		5.37	
5/23/2007	ECMW-22							5.67	
11/7/2007	ECMW-22							5.01	7.6
5/21/2008	ECMW-22	0.5		0.02		0.015	3.65	7.93	4.7
11/5/2008	ECMW-22	0.5		0.02		0.015	1.87	5.06	
4/22/2009	ECMW-22							5.8	
10/21/2009	ECMW-22							6.15	
4/14/2010	ECMW-22	0.5		0.02		0.015	1.13	5.84	7.73
11/3/2010	ECMW-22	0.5		0.01		0.015	1.31	8.15	6.68
4/26/2011	ECMW-22							6.05	
5/2/2012	ECMW-22	0.5	0.02	0.01	0.015	0.015	1.15	6.1	4.99
11/6/2012	ECMW-22	0.5	0.02	0.01	0.015	0.015	1.74	6.73	7.01
5/14/2013	ECMW-22							6.19	
11/4/2013	ECMW-22							5.64	
6/4/2014	ECMW-22	0.5	0.021	0.0104	0.016	0.0156	1.75	5.79	5.05
11/5/2014	ECMW-22	0.61	0.02	0.0104	0.015	0.0156	2.58	4.42	5.66
5/22/2015	ECMW-22							6.28	
11/18/2015	ECMW-22							6.07	
5/25/2016	ECMW-22	1.25	0.021	0.0104	0.016	0.0156	4.37	5.5	11.8
11/9/2016	ECMW-22	0.5	0.0104	0.0104	0.0156	0.0156	0.53	6.04	5.16
3/22/2017	ECMW-22							5.64	
9/13/2017	ECMW-22							5.71	
4/10/2018	ECMW-22	0.5	0.0125	0.0125	0.0156	0.0156	0.25	5.61	0.722
9/12/2018	ECMW-22	0.583	0.0125	0.0125	0.0156	0.0156	1.79	5.69	12.8
1/22/2019	ECMW-22							5.43	
7/15/2019	ECMW-22							5.37	
2/19/2020	ECMW-22	0.18	0.01	0.01	0.0005	0.0005	0.05	5.47	5.6
7/22/2020	ECMW-22	0.12	0.01	0.01	0.0005	0.0005	0.05	4.76	5.5

Statistical Analysis

January 22, 2021

One Way Analysis of Variance Wednesday, August 26, 2020, 2:14:10 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Ammonia-N (mg/L)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:14:10 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	51	0.500	0.500	0.500
ECMW10	48	4	0.500	0.500	0.576
ECMW11	48	2	12.950	4.850	19.200
ECMW12	45	14	1.870	1.440	2.220
ECMW13	48	19	0.500	0.500	0.500
ECMW14	47	5	0.500	0.500	0.500
ECMW15	47	18	0.500	0.500	0.500
ECMW16	47	1	2.085	0.657	6.200
ECMW17	48	1	1.490	0.580	3.670
ECMW18	47	17	0.500	0.500	0.500
ECMW19	38	13	0.500	0.500	0.500
ECMW20	38	13	0.500	0.500	0.500
ECMW21	38	13	0.500	0.500	0.500
ECMW22	38	13	0.500	0.500	0.500
ECMW4	47	4	0.500	0.500	0.620
ECMW5	48	5	0.500	0.500	0.550
ECMW6	50	1	181.000	28.550	915.000
ECMW7	50	1	132.000	75.200	273.500
ECMW8	49	1	153.500	80.225	581.500
ECMW9	47	4	0.500	0.500	2.310

H = 543.660 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW8 vs ECMW13	497.005	9.077	Yes
ECMW8 vs ECMW21	492.581	8.578	Yes
ECMW8 vs ECMW15	483.919	8.838	Yes
ECMW8 vs ECMW18	481.398	8.884	Yes
ECMW8 vs ECMW20	480.661	8.371	Yes
ECMW8 vs ECMW19	478.301	8.329	Yes
ECMW8 vs CNTL	477.356	11.404	Yes

ECMW8 vs ECMW22	470.501	8.194	Yes
ECMW8 vs ECMW14	469.043	9.535	Yes
ECMW8 vs ECMW10	446.918	9.197	Yes
ECMW8 vs ECMW5	442.944	9.061	Yes
ECMW8 vs ECMW4	439.618	8.993	Yes
ECMW8 vs ECMW9	377.270	7.717	Yes
ECMW8 vs ECMW17	258.845	5.418	Yes
ECMW8 vs ECMW16	256.770	5.345	Yes
ECMW8 vs ECMW12	194.233	3.621	No
ECMW8 vs ECMW11	128.586	2.677	Do Not Test
ECMW8 vs ECMW6	45.414	0.961	Do Not Test
ECMW8 vs ECMW7	9.169	0.194	Do Not Test
ECMW7 vs ECMW13	487.836	8.944	Yes
ECMW7 vs ECMW21	483.412	8.448	Yes
ECMW7 vs ECMW15	474.750	8.704	Yes
ECMW7 vs ECMW18	472.229	8.750	Yes
ECMW7 vs ECMW20	471.492	8.240	Yes
ECMW7 vs ECMW19	469.132	8.198	Yes
ECMW7 vs CNTL	468.187	11.259	Yes
ECMW7 vs ECMW22	461.332	8.062	Yes
ECMW7 vs ECMW14	459.874	9.393	Yes
ECMW7 vs ECMW10	437.749	9.053	Yes
ECMW7 vs ECMW5	433.775	8.916	Yes
ECMW7 vs ECMW4	430.449	8.848	Yes
ECMW7 vs ECMW9	368.101	7.566	Yes
ECMW7 vs ECMW17	249.676	5.253	Yes
ECMW7 vs ECMW16	247.601	5.180	Yes
ECMW7 vs ECMW12	185.064	3.464	Do Not Test
ECMW7 vs ECMW11	119.417	2.498	Do Not Test
ECMW7 vs ECMW6	36.245	0.771	Do Not Test
ECMW6 vs ECMW13	451.591	8.279	Yes
ECMW6 vs ECMW21	447.167	7.815	Yes
ECMW6 vs ECMW15	438.505	8.039	Yes
ECMW6 vs ECMW18	435.984	8.078	Yes
ECMW6 vs ECMW20	435.247	7.606	Yes
ECMW6 vs ECMW19	432.887	7.565	Yes
ECMW6 vs CNTL	431.942	10.387	Yes
ECMW6 vs ECMW22	425.087	7.429	Yes
ECMW6 vs ECMW14	423.629	8.653	Yes
ECMW6 vs ECMW10	401.504	8.303	Yes
ECMW6 vs ECMW5	397.530	8.171	Yes
ECMW6 vs ECMW4	394.205	8.103	Yes
ECMW6 vs ECMW9	331.856	6.821	Yes
ECMW6 vs ECMW17	213.431	4.490	Yes
ECMW6 vs ECMW16	211.356	4.422	Yes
ECMW6 vs ECMW12	148.819	2.785	Do Not Test
ECMW6 vs ECMW11	83.172	1.740	Do Not Test
ECMW11 vs ECMW13	368.420	6.674	Yes
ECMW11 vs ECMW21	363.996	6.292	Yes
ECMW11 vs ECMW15	355.334	6.437	Yes
ECMW11 vs ECMW18	352.812	6.457	Yes
ECMW11 vs ECMW20	352.076	6.086	Yes
ECMW11 vs ECMW19	349.716	6.045	Yes
ECMW11 vs CNTL	348.770	8.217	Yes
ECMW11 vs ECMW22	341.916	5.911	Yes
ECMW11 vs ECMW14	340.458	6.852	Yes

ECMW11 vs ECMW10	318.332	6.484	Yes
ECMW11 vs ECMW5	314.358	6.365	Yes
ECMW11 vs ECMW4	311.033	6.298	Yes
ECMW11 vs ECMW9	248.684	5.036	Yes
ECMW11 vs ECMW17	130.259	2.698	No
ECMW11 vs ECMW16	128.185	2.641	Do Not Test
ECMW11 vs ECMW12	65.647	1.213	Do Not Test
ECMW12 vs ECMW13	302.773	5.034	Yes
ECMW12 vs ECMW21	298.348	4.767	Yes
ECMW12 vs ECMW15	289.686	4.816	Yes
ECMW12 vs ECMW18	287.165	4.816	Yes
ECMW12 vs ECMW20	286.428	4.577	Yes
ECMW12 vs ECMW19	284.068	4.539	Yes
ECMW12 vs CNTL	283.123	5.814	Yes
ECMW12 vs ECMW22	276.268	4.414	Yes
ECMW12 vs ECMW14	274.810	4.985	Yes
ECMW12 vs ECMW10	252.685	4.629	Yes
ECMW12 vs ECMW5	248.711	4.534	Yes
ECMW12 vs ECMW4	245.386	4.473	Yes
ECMW12 vs ECMW9	183.037	3.337	No
ECMW12 vs ECMW17	64.612	1.199	Do Not Test
ECMW12 vs ECMW16	62.538	1.156	Do Not Test
ECMW16 vs ECMW13	240.235	4.352	Yes
ECMW16 vs ECMW21	235.811	4.076	Yes
ECMW16 vs ECMW15	227.149	4.115	Yes
ECMW16 vs ECMW18	224.628	4.111	Yes
ECMW16 vs ECMW20	223.891	3.870	Yes
ECMW16 vs ECMW19	221.531	3.829	Yes
ECMW16 vs CNTL	220.586	5.197	Yes
ECMW16 vs ECMW22	213.731	3.695	Yes
ECMW16 vs ECMW14	212.273	4.272	Yes
ECMW16 vs ECMW10	190.147	3.873	Yes
ECMW16 vs ECMW5	186.174	3.770	Yes
ECMW16 vs ECMW4	182.848	3.702	Yes
ECMW16 vs ECMW9	120.499	2.440	Do Not Test
ECMW16 vs ECMW17	2.075	0.0430	Do Not Test
ECMW17 vs ECMW13	238.160	4.332	Yes
ECMW17 vs ECMW21	233.736	4.056	Yes
ECMW17 vs ECMW15	225.074	4.094	Yes
ECMW17 vs ECMW18	222.553	4.091	Yes
ECMW17 vs ECMW20	221.816	3.849	Yes
ECMW17 vs ECMW19	219.456	3.808	Yes
ECMW17 vs CNTL	218.511	5.185	Yes
ECMW17 vs ECMW22	211.656	3.673	Yes
ECMW17 vs ECMW14	210.198	4.252	Yes
ECMW17 vs ECMW10	188.073	3.851	Yes
ECMW17 vs ECMW5	184.099	3.747	Yes
ECMW17 vs ECMW4	180.773	3.679	Yes
ECMW17 vs ECMW9	118.425	2.410	Do Not Test
ECMW9 vs ECMW13	119.736	2.140	No
ECMW9 vs ECMW21	115.312	1.969	Do Not Test
ECMW9 vs ECMW15	106.650	1.906	Do Not Test
ECMW9 vs ECMW18	104.128	1.880	Do Not Test
ECMW9 vs ECMW20	103.392	1.766	Do Not Test
ECMW9 vs ECMW19	101.032	1.725	Do Not Test
ECMW9 vs CNTL	100.086	2.306	Do Not Test

ECMW9 vs ECMW22	93.232	1.592	Do Not Test
ECMW9 vs ECMW14	91.774	1.817	Do Not Test
ECMW9 vs ECMW10	69.648	1.395	Do Not Test
ECMW9 vs ECMW5	65.674	1.308	Do Not Test
ECMW9 vs ECMW4	62.349	1.242	Do Not Test
ECMW4 vs ECMW13	57.387	1.026	Do Not Test
ECMW4 vs ECMW21	52.963	0.904	Do Not Test
ECMW4 vs ECMW15	44.301	0.792	Do Not Test
ECMW4 vs ECMW18	41.779	0.754	Do Not Test
ECMW4 vs ECMW20	41.043	0.701	Do Not Test
ECMW4 vs ECMW19	38.683	0.661	Do Not Test
ECMW4 vs CNTL	37.738	0.870	Do Not Test
ECMW4 vs ECMW22	30.883	0.527	Do Not Test
ECMW4 vs ECMW14	29.425	0.583	Do Not Test
ECMW4 vs ECMW10	7.299	0.146	Do Not Test
ECMW4 vs ECMW5	3.326	0.0662	Do Not Test
ECMW5 vs ECMW13	54.061	0.966	Do Not Test
ECMW5 vs ECMW21	49.637	0.848	Do Not Test
ECMW5 vs ECMW15	40.975	0.732	Do Not Test
ECMW5 vs ECMW18	38.454	0.694	Do Not Test
ECMW5 vs ECMW20	37.717	0.644	Do Not Test
ECMW5 vs ECMW19	35.357	0.604	Do Not Test
ECMW5 vs CNTL	34.412	0.793	Do Not Test
ECMW5 vs ECMW22	27.557	0.471	Do Not Test
ECMW5 vs ECMW14	26.099	0.517	Do Not Test
ECMW5 vs ECMW10	3.974	0.0796	Do Not Test
ECMW10 vs ECMW13	50.088	0.899	Do Not Test
ECMW10 vs ECMW21	45.664	0.783	Do Not Test
ECMW10 vs ECMW15	37.002	0.664	Do Not Test
ECMW10 vs ECMW18	34.480	0.626	Do Not Test
ECMW10 vs ECMW20	33.744	0.579	Do Not Test
ECMW10 vs ECMW19	31.384	0.538	Do Not Test
ECMW10 vs CNTL	30.438	0.707	Do Not Test
ECMW10 vs ECMW22	23.584	0.404	Do Not Test
ECMW10 vs ECMW14	22.126	0.441	Do Not Test
ECMW14 vs ECMW13	27.962	0.497	Do Not Test
ECMW14 vs ECMW21	23.538	0.400	Do Not Test
ECMW14 vs ECMW15	14.876	0.265	Do Not Test
ECMW14 vs ECMW18	12.355	0.222	Do Not Test
ECMW14 vs ECMW20	11.618	0.198	Do Not Test
ECMW14 vs ECMW19	9.258	0.157	Do Not Test
ECMW14 vs CNTL	8.313	0.190	Do Not Test
ECMW14 vs ECMW22	1.458	0.0248	Do Not Test
ECMW22 vs ECMW13	26.504	0.417	Do Not Test
ECMW22 vs ECMW21	22.080	0.335	Do Not Test
ECMW22 vs ECMW15	13.418	0.211	Do Not Test
ECMW22 vs ECMW18	10.897	0.173	Do Not Test
ECMW22 vs ECMW20	10.160	0.154	Do Not Test
ECMW22 vs ECMW19	7.800	0.118	Do Not Test
ECMW22 vs CNTL	6.855	0.130	Do Not Test
CNTL vs ECMW13	19.649	0.394	Do Not Test
CNTL vs ECMW21	15.225	0.288	Do Not Test
CNTL vs ECMW15	6.563	0.131	Do Not Test
CNTL vs ECMW18	4.042	0.0820	Do Not Test
CNTL vs ECMW20	3.305	0.0626	Do Not Test
CNTL vs ECMW19	0.945	0.0179	Do Not Test

ECMW19 vs ECMW13	18.704	0.294	Do Not Test
ECMW19 vs ECMW21	14.280	0.217	Do Not Test
ECMW19 vs ECMW15	5.618	0.0884	Do Not Test
ECMW19 vs ECMW18	3.097	0.0491	Do Not Test
ECMW19 vs ECMW20	2.360	0.0358	Do Not Test
ECMW20 vs ECMW13	16.344	0.257	Do Not Test
ECMW20 vs ECMW21	11.920	0.181	Do Not Test
ECMW20 vs ECMW15	3.258	0.0513	Do Not Test
ECMW20 vs ECMW18	0.737	0.0117	Do Not Test
ECMW18 vs ECMW13	15.607	0.257	Do Not Test
ECMW18 vs ECMW21	11.183	0.177	Do Not Test
ECMW18 vs ECMW15	2.521	0.0416	Do Not Test
ECMW15 vs ECMW13	13.086	0.214	Do Not Test
ECMW15 vs ECMW21	8.662	0.136	Do Not Test
ECMW21 vs ECMW13	4.424	0.0696	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:14:17 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Chromium (Dissolved) (mg/L)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:14:17 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	65	0.0200	0.0163	0.0200
ECMW10	48	24	0.0200	0.0144	0.0200
ECMW11	48	25	0.0200	0.0125	0.0200
ECMW12	45	21	0.0200	0.0144	0.0200
ECMW13	48	24	0.0200	0.0144	0.0200
ECMW14	47	23	0.0200	0.0144	0.0200
ECMW15	47	23	0.0200	0.0144	0.0200
ECMW16	47	23	0.0200	0.0144	0.0200
ECMW17	48	24	0.0200	0.0144	0.0200
ECMW18	47	22	0.0200	0.0200	0.0210
ECMW19	38	18	0.0200	0.0144	0.0200
ECMW20	38	18	0.0200	0.0144	0.0200
ECMW21	38	18	0.0200	0.0181	0.0200
ECMW22	38	18	0.0200	0.0144	0.0200
ECMW4	47	23	0.0200	0.0144	0.0200
ECMW5	48	24	0.0200	0.0144	0.0200
ECMW6	50	26	0.0200	0.0144	0.0200
ECMW7	50	25	0.0200	0.0163	0.0200
ECMW8	49	24	0.0200	0.0163	0.0200
ECMW9	47	23	0.0200	0.0144	0.0200

H = 6.676 with 19 degrees of freedom. (P = 0.996)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.996)

One Way Analysis of Variance Wednesday, August 26, 2020, 2:14:25 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Chromium (Total) (mg/L)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:14:25 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	48	0.0200	0.0104	0.0200
ECMW10	48	18	0.0200	0.0104	0.0200
ECMW11	48	19	0.0200	0.0104	0.0200
ECMW12	45	16	0.0200	0.0104	0.0200
ECMW13	48	18	0.0200	0.0104	0.0200
ECMW14	47	17	0.0200	0.0104	0.0200
ECMW15	47	17	0.0200	0.0104	0.0200
ECMW16	47	17	0.0200	0.0104	0.0200
ECMW17	48	18	0.0200	0.0104	0.0200
ECMW18	47	16	0.0200	0.0125	0.0430
ECMW19	38	13	0.0200	0.0104	0.0200
ECMW20	38	13	0.0200	0.0104	0.0200
ECMW21	38	13	0.0200	0.0104	0.0365
ECMW22	38	13	0.0200	0.0104	0.0200
ECMW4	47	17	0.0200	0.0104	0.0200
ECMW5	48	18	0.0200	0.0104	0.0200
ECMW6	50	19	0.0200	0.0104	0.0200
ECMW7	50	19	0.0200	0.0104	0.0200
ECMW8	49	19	0.0200	0.0104	0.0200
ECMW9	47	17	0.0200	0.0104	0.0200

H = 17.224 with 19 degrees of freedom. (P = 0.575)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.575)

One Way Analysis of Variance Wednesday, August 26, 2020, 2:14:41 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: D.O. (mg/L)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:14:41 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	96	3.090	1.460	4.715
ECMW10	48	33	2.500	1.500	4.260
ECMW11	48	33	2.090	1.040	3.820
ECMW12	45	31	2.385	0.698	4.375
ECMW13	48	34	1.925	1.223	3.250
ECMW14	47	33	2.395	1.260	4.080
ECMW15	47	33	2.150	0.637	4.110
ECMW16	47	32	1.900	0.420	3.430
ECMW17	48	34	2.760	1.148	4.500
ECMW18	47	32	3.410	2.200	5.980
ECMW19	38	24	1.415	0.508	3.320
ECMW20	38	26	2.625	1.053	4.070
ECMW21	38	24	4.640	3.515	6.090
ECMW22	38	24	2.230	0.785	3.780
ECMW4	47	32	3.290	2.200	5.760
ECMW5	48	33	2.120	0.660	4.630
ECMW6	50	35	1.600	0.380	4.400
ECMW7	50	35	2.110	0.250	4.580
ECMW8	49	34	1.750	0.390	5.100
ECMW9	47	32	2.960	1.780	5.290

H = 27.675 with 19 degrees of freedom. (P = 0.090)

The differences in the median values among the treatment groups are not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference (P = 0.090)

One Way Analysis of Variance Wednesday, August 26, 2020, 2:14:50 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Iron (Dissolved) (mg/L)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:14:50 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	129	0.01000	0.01000	0.0175
ECMW10	48	46	0.01000	0.01000	0.01000
ECMW11	48	45	0.0160	0.01000	0.0360
ECMW12	45	42	2.160	0.01000	8.450
ECMW13	48	45	0.0320	0.0200	0.0480
ECMW14	47	44	0.01000	0.01000	0.0230
ECMW15	47	44	0.01000	0.01000	0.01000
ECMW16	47	44	0.01000	0.01000	0.0140
ECMW17	48	45	0.01000	0.01000	0.01000
ECMW18	47	44	23.800	17.300	30.200
ECMW19	38	35	0.334	0.01000	0.649
ECMW20	38	35	0.0300	0.0130	0.0340
ECMW21	38	35	0.01000	0.01000	0.0700
ECMW22	38	35	0.01000	0.01000	0.01000
ECMW4	47	44	0.665	0.535	0.920
ECMW5	48	45	0.01000	0.01000	0.01000
ECMW6	50	47	0.0110	0.01000	0.0170
ECMW7	50	47	0.0780	0.0600	0.283
ECMW8	49	46	0.01000	0.01000	0.01000
ECMW9	47	44	0.01000	0.01000	0.01000

H = 43.047 with 19 degrees of freedom. (P = 0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = 0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW18 vs ECMW22	45.500	2.947	No
ECMW18 vs ECMW10	45.500	2.636	Do Not Test
ECMW18 vs ECMW15	45.500	2.947	Do Not Test
ECMW18 vs ECMW9	45.500	2.947	Do Not Test
ECMW18 vs ECMW17	45.500	2.947	Do Not Test
ECMW18 vs ECMW8	45.500	2.947	Do Not Test
ECMW18 vs ECMW5	45.500	2.947	Do Not Test

ECMW18 vs ECMW16	38.667	2.505	Do Not Test
ECMW18 vs ECMW14	36.667	2.375	Do Not Test
ECMW18 vs CNTL	36.389	2.887	Do Not Test
ECMW18 vs ECMW21	34.333	2.224	Do Not Test
ECMW18 vs ECMW6	31.500	2.040	Do Not Test
ECMW18 vs ECMW11	27.833	1.803	Do Not Test
ECMW18 vs ECMW20	20.000	1.296	Do Not Test
ECMW18 vs ECMW19	19.833	1.285	Do Not Test
ECMW18 vs ECMW13	17.167	1.112	Do Not Test
ECMW18 vs ECMW12	16.833	1.090	Do Not Test
ECMW18 vs ECMW7	11.000	0.713	Do Not Test
ECMW18 vs ECMW4	5.333	0.345	Do Not Test
ECMW4 vs ECMW22	40.167	2.602	Do Not Test
ECMW4 vs ECMW10	40.167	2.327	Do Not Test
ECMW4 vs ECMW15	40.167	2.602	Do Not Test
ECMW4 vs ECMW9	40.167	2.602	Do Not Test
ECMW4 vs ECMW17	40.167	2.602	Do Not Test
ECMW4 vs ECMW8	40.167	2.602	Do Not Test
ECMW4 vs ECMW5	40.167	2.602	Do Not Test
ECMW4 vs ECMW16	33.333	2.159	Do Not Test
ECMW4 vs ECMW14	31.333	2.030	Do Not Test
ECMW4 vs CNTL	31.056	2.464	Do Not Test
ECMW4 vs ECMW21	29.000	1.878	Do Not Test
ECMW4 vs ECMW6	26.167	1.695	Do Not Test
ECMW4 vs ECMW11	22.500	1.457	Do Not Test
ECMW4 vs ECMW20	14.667	0.950	Do Not Test
ECMW4 vs ECMW19	14.500	0.939	Do Not Test
ECMW4 vs ECMW13	11.833	0.767	Do Not Test
ECMW4 vs ECMW12	11.500	0.745	Do Not Test
ECMW4 vs ECMW7	5.667	0.367	Do Not Test
ECMW7 vs ECMW22	34.500	2.235	Do Not Test
ECMW7 vs ECMW10	34.500	1.999	Do Not Test
ECMW7 vs ECMW15	34.500	2.235	Do Not Test
ECMW7 vs ECMW9	34.500	2.235	Do Not Test
ECMW7 vs ECMW17	34.500	2.235	Do Not Test
ECMW7 vs ECMW8	34.500	2.235	Do Not Test
ECMW7 vs ECMW5	34.500	2.235	Do Not Test
ECMW7 vs ECMW16	27.667	1.792	Do Not Test
ECMW7 vs ECMW14	25.667	1.663	Do Not Test
ECMW7 vs CNTL	25.389	2.014	Do Not Test
ECMW7 vs ECMW21	23.333	1.511	Do Not Test
ECMW7 vs ECMW6	20.500	1.328	Do Not Test
ECMW7 vs ECMW11	16.833	1.090	Do Not Test
ECMW7 vs ECMW20	9.000	0.583	Do Not Test
ECMW7 vs ECMW19	8.833	0.572	Do Not Test
ECMW7 vs ECMW13	6.167	0.399	Do Not Test
ECMW7 vs ECMW12	5.833	0.378	Do Not Test
ECMW12 vs ECMW22	28.667	1.857	Do Not Test
ECMW12 vs ECMW10	28.667	1.661	Do Not Test
ECMW12 vs ECMW15	28.667	1.857	Do Not Test
ECMW12 vs ECMW9	28.667	1.857	Do Not Test
ECMW12 vs ECMW17	28.667	1.857	Do Not Test
ECMW12 vs ECMW8	28.667	1.857	Do Not Test
ECMW12 vs ECMW5	28.667	1.857	Do Not Test
ECMW12 vs ECMW16	21.833	1.414	Do Not Test
ECMW12 vs ECMW14	19.833	1.285	Do Not Test

ECMW12 vs CNTL	19.556	1.551	Do Not Test
ECMW12 vs ECMW21	17.500	1.134	Do Not Test
ECMW12 vs ECMW6	14.667	0.950	Do Not Test
ECMW12 vs ECMW11	11.000	0.713	Do Not Test
ECMW12 vs ECMW20	3.167	0.205	Do Not Test
ECMW12 vs ECMW19	3.000	0.194	Do Not Test
ECMW12 vs ECMW13	0.333	0.0216	Do Not Test
ECMW13 vs ECMW22	28.333	1.835	Do Not Test
ECMW13 vs ECMW10	28.333	1.642	Do Not Test
ECMW13 vs ECMW15	28.333	1.835	Do Not Test
ECMW13 vs ECMW9	28.333	1.835	Do Not Test
ECMW13 vs ECMW17	28.333	1.835	Do Not Test
ECMW13 vs ECMW8	28.333	1.835	Do Not Test
ECMW13 vs ECMW5	28.333	1.835	Do Not Test
ECMW13 vs ECMW16	21.500	1.393	Do Not Test
ECMW13 vs ECMW14	19.500	1.263	Do Not Test
ECMW13 vs CNTL	19.222	1.525	Do Not Test
ECMW13 vs ECMW21	17.167	1.112	Do Not Test
ECMW13 vs ECMW6	14.333	0.928	Do Not Test
ECMW13 vs ECMW11	10.667	0.691	Do Not Test
ECMW13 vs ECMW20	2.833	0.184	Do Not Test
ECMW13 vs ECMW19	2.667	0.173	Do Not Test
ECMW19 vs ECMW22	25.667	1.663	Do Not Test
ECMW19 vs ECMW10	25.667	1.487	Do Not Test
ECMW19 vs ECMW15	25.667	1.663	Do Not Test
ECMW19 vs ECMW9	25.667	1.663	Do Not Test
ECMW19 vs ECMW17	25.667	1.663	Do Not Test
ECMW19 vs ECMW8	25.667	1.663	Do Not Test
ECMW19 vs ECMW5	25.667	1.663	Do Not Test
ECMW19 vs ECMW16	18.833	1.220	Do Not Test
ECMW19 vs ECMW14	16.833	1.090	Do Not Test
ECMW19 vs CNTL	16.556	1.313	Do Not Test
ECMW19 vs ECMW21	14.500	0.939	Do Not Test
ECMW19 vs ECMW6	11.667	0.756	Do Not Test
ECMW19 vs ECMW11	8.000	0.518	Do Not Test
ECMW19 vs ECMW20	0.167	0.0108	Do Not Test
ECMW20 vs ECMW22	25.500	1.652	Do Not Test
ECMW20 vs ECMW10	25.500	1.477	Do Not Test
ECMW20 vs ECMW15	25.500	1.652	Do Not Test
ECMW20 vs ECMW9	25.500	1.652	Do Not Test
ECMW20 vs ECMW17	25.500	1.652	Do Not Test
ECMW20 vs ECMW8	25.500	1.652	Do Not Test
ECMW20 vs ECMW5	25.500	1.652	Do Not Test
ECMW20 vs ECMW16	18.667	1.209	Do Not Test
ECMW20 vs ECMW14	16.667	1.080	Do Not Test
ECMW20 vs CNTL	16.389	1.300	Do Not Test
ECMW20 vs ECMW21	14.333	0.928	Do Not Test
ECMW20 vs ECMW6	11.500	0.745	Do Not Test
ECMW20 vs ECMW11	7.833	0.507	Do Not Test
ECMW11 vs ECMW22	17.667	1.144	Do Not Test
ECMW11 vs ECMW10	17.667	1.024	Do Not Test
ECMW11 vs ECMW15	17.667	1.144	Do Not Test
ECMW11 vs ECMW9	17.667	1.144	Do Not Test
ECMW11 vs ECMW17	17.667	1.144	Do Not Test
ECMW11 vs ECMW8	17.667	1.144	Do Not Test
ECMW11 vs ECMW5	17.667	1.144	Do Not Test

ECMW11 vs ECMW16	10.833	0.702	Do Not Test
ECMW11 vs ECMW14	8.833	0.572	Do Not Test
ECMW11 vs CNTL	8.556	0.679	Do Not Test
ECMW11 vs ECMW21	6.500	0.421	Do Not Test
ECMW11 vs ECMW6	3.667	0.238	Do Not Test
ECMW6 vs ECMW22	14.000	0.907	Do Not Test
ECMW6 vs ECMW10	14.000	0.811	Do Not Test
ECMW6 vs ECMW15	14.000	0.907	Do Not Test
ECMW6 vs ECMW9	14.000	0.907	Do Not Test
ECMW6 vs ECMW17	14.000	0.907	Do Not Test
ECMW6 vs ECMW8	14.000	0.907	Do Not Test
ECMW6 vs ECMW5	14.000	0.907	Do Not Test
ECMW6 vs ECMW16	7.167	0.464	Do Not Test
ECMW6 vs ECMW14	5.167	0.335	Do Not Test
ECMW6 vs CNTL	4.889	0.388	Do Not Test
ECMW6 vs ECMW21	2.833	0.184	Do Not Test
ECMW21 vs ECMW22	11.167	0.723	Do Not Test
ECMW21 vs ECMW10	11.167	0.647	Do Not Test
ECMW21 vs ECMW15	11.167	0.723	Do Not Test
ECMW21 vs ECMW9	11.167	0.723	Do Not Test
ECMW21 vs ECMW17	11.167	0.723	Do Not Test
ECMW21 vs ECMW8	11.167	0.723	Do Not Test
ECMW21 vs ECMW5	11.167	0.723	Do Not Test
ECMW21 vs ECMW16	4.333	0.281	Do Not Test
ECMW21 vs ECMW14	2.333	0.151	Do Not Test
ECMW21 vs CNTL	2.056	0.163	Do Not Test
CNTL vs ECMW22	9.111	0.723	Do Not Test
CNTL vs ECMW10	9.111	0.616	Do Not Test
CNTL vs ECMW15	9.111	0.723	Do Not Test
CNTL vs ECMW9	9.111	0.723	Do Not Test
CNTL vs ECMW17	9.111	0.723	Do Not Test
CNTL vs ECMW8	9.111	0.723	Do Not Test
CNTL vs ECMW5	9.111	0.723	Do Not Test
CNTL vs ECMW16	2.278	0.181	Do Not Test
CNTL vs ECMW14	0.278	0.0220	Do Not Test
ECMW14 vs ECMW22	8.833	0.572	Do Not Test
ECMW14 vs ECMW10	8.833	0.512	Do Not Test
ECMW14 vs ECMW15	8.833	0.572	Do Not Test
ECMW14 vs ECMW9	8.833	0.572	Do Not Test
ECMW14 vs ECMW17	8.833	0.572	Do Not Test
ECMW14 vs ECMW8	8.833	0.572	Do Not Test
ECMW14 vs ECMW5	8.833	0.572	Do Not Test
ECMW14 vs ECMW16	2.000	0.130	Do Not Test
ECMW16 vs ECMW22	6.833	0.443	Do Not Test
ECMW16 vs ECMW10	6.833	0.396	Do Not Test
ECMW16 vs ECMW15	6.833	0.443	Do Not Test
ECMW16 vs ECMW9	6.833	0.443	Do Not Test
ECMW16 vs ECMW17	6.833	0.443	Do Not Test
ECMW16 vs ECMW8	6.833	0.443	Do Not Test
ECMW16 vs ECMW5	6.833	0.443	Do Not Test
ECMW5 vs ECMW22	0.000	0.000	Do Not Test
ECMW5 vs ECMW10	0.000	0.000	Do Not Test
ECMW5 vs ECMW15	0.000	0.000	Do Not Test
ECMW5 vs ECMW9	0.000	0.000	Do Not Test
ECMW5 vs ECMW17	0.000	0.000	Do Not Test
ECMW5 vs ECMW8	0.000	0.000	Do Not Test

ECMW8 vs ECMW22	0.000	0.000	Do Not Test
ECMW8 vs ECMW10	0.000	0.000	Do Not Test
ECMW8 vs ECMW15	0.000	0.000	Do Not Test
ECMW8 vs ECMW9	0.000	0.000	Do Not Test
ECMW8 vs ECMW17	0.000	0.000	Do Not Test
ECMW17 vs ECMW22	0.000	0.000	Do Not Test
ECMW17 vs ECMW10	0.000	0.000	Do Not Test
ECMW17 vs ECMW15	0.000	0.000	Do Not Test
ECMW17 vs ECMW9	0.000	0.000	Do Not Test
ECMW9 vs ECMW22	0.000	0.000	Do Not Test
ECMW9 vs ECMW10	0.000	0.000	Do Not Test
ECMW9 vs ECMW15	0.000	0.000	Do Not Test
ECMW15 vs ECMW22	0.000	0.000	Do Not Test
ECMW15 vs ECMW10	0.000	0.000	Do Not Test
ECMW10 vs ECMW22	0.000	0.000	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:15:10 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Iron (Total) (mg/L)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:15:10 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	120	0.158	0.0765	0.292
ECMW10	48	42	0.0285	0.0183	0.0455
ECMW11	48	42	0.0160	0.01000	0.0352
ECMW12	45	39	35.850	8.935	65.175
ECMW13	48	42	0.0800	0.0488	0.527
ECMW14	47	41	0.0300	0.01000	0.0505
ECMW15	47	41	0.0150	0.01000	0.0452
ECMW16	47	41	0.01000	0.01000	0.0178
ECMW17	48	42	0.0150	0.01000	0.0305
ECMW18	47	41	22.550	0.813	54.100
ECMW19	38	32	1.895	0.0303	2.587
ECMW20	38	32	1.080	0.243	3.023
ECMW21	38	32	0.0450	0.01000	0.875
ECMW22	38	32	0.0445	0.01000	0.196
ECMW4	47	41	5.295	2.945	5.985
ECMW5	48	42	0.01000	0.01000	0.0308
ECMW6	50	43	0.0400	0.0200	0.0630
ECMW7	50	43	0.120	0.0720	0.219
ECMW8	49	43	0.0200	0.01000	0.0393
ECMW9	47	41	0.0250	0.01000	0.0473

H = 89.468 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW12 vs ECMW16	105.833	4.721	Yes
ECMW12 vs ECMW5	99.333	4.431	Yes
ECMW12 vs ECMW17	96.500	4.305	Yes
ECMW12 vs ECMW15	94.333	4.208	Yes
ECMW12 vs ECMW11	91.917	4.100	Yes
ECMW12 vs ECMW8	90.333	4.030	Yes
ECMW12 vs ECMW9	90.000	4.015	Yes

ECMW12 vs ECMW14	84.833	3.784	Yes
ECMW12 vs ECMW10	79.333	3.539	No
ECMW12 vs ECMW6	75.214	3.482	Do Not Test
ECMW12 vs ECMW22	73.083	3.260	Do Not Test
ECMW12 vs ECMW21	70.333	3.138	Do Not Test
ECMW12 vs CNTL	48.444	2.647	Do Not Test
ECMW12 vs ECMW13	45.500	2.030	Do Not Test
ECMW12 vs ECMW7	43.071	1.994	Do Not Test
ECMW12 vs ECMW19	41.667	1.859	Do Not Test
ECMW12 vs ECMW20	21.667	0.967	Do Not Test
ECMW12 vs ECMW4	9.333	0.416	Do Not Test
ECMW12 vs ECMW18	7.333	0.327	Do Not Test
ECMW18 vs ECMW16	98.500	4.394	Yes
ECMW18 vs ECMW5	92.000	4.104	Yes
ECMW18 vs ECMW17	89.167	3.978	Yes
ECMW18 vs ECMW15	87.000	3.881	Yes
ECMW18 vs ECMW11	84.583	3.773	Yes
ECMW18 vs ECMW8	83.000	3.703	Yes
ECMW18 vs ECMW9	82.667	3.688	Yes
ECMW18 vs ECMW14	77.500	3.457	No
ECMW18 vs ECMW10	72.000	3.212	Do Not Test
ECMW18 vs ECMW6	67.881	3.142	Do Not Test
ECMW18 vs ECMW22	65.750	2.933	Do Not Test
ECMW18 vs ECMW21	63.000	2.810	Do Not Test
ECMW18 vs CNTL	41.111	2.246	Do Not Test
ECMW18 vs ECMW13	38.167	1.703	Do Not Test
ECMW18 vs ECMW7	35.738	1.654	Do Not Test
ECMW18 vs ECMW19	34.333	1.532	Do Not Test
ECMW18 vs ECMW20	14.333	0.639	Do Not Test
ECMW18 vs ECMW4	2.000	0.0892	Do Not Test
ECMW4 vs ECMW16	96.500	4.305	Yes
ECMW4 vs ECMW5	90.000	4.015	Yes
ECMW4 vs ECMW17	87.167	3.889	Yes
ECMW4 vs ECMW15	85.000	3.792	Yes
ECMW4 vs ECMW11	82.583	3.684	Yes
ECMW4 vs ECMW8	81.000	3.613	No
ECMW4 vs ECMW9	80.667	3.599	Do Not Test
ECMW4 vs ECMW14	75.500	3.368	Do Not Test
ECMW4 vs ECMW10	70.000	3.123	Do Not Test
ECMW4 vs ECMW6	65.881	3.050	Do Not Test
ECMW4 vs ECMW22	63.750	2.844	Do Not Test
ECMW4 vs ECMW21	61.000	2.721	Do Not Test
ECMW4 vs CNTL	39.111	2.137	Do Not Test
ECMW4 vs ECMW13	36.167	1.613	Do Not Test
ECMW4 vs ECMW7	33.738	1.562	Do Not Test
ECMW4 vs ECMW19	32.333	1.442	Do Not Test
ECMW4 vs ECMW20	12.333	0.550	Do Not Test
ECMW20 vs ECMW16	84.167	3.755	Yes
ECMW20 vs ECMW5	77.667	3.465	No
ECMW20 vs ECMW17	74.833	3.338	Do Not Test
ECMW20 vs ECMW15	72.667	3.242	Do Not Test
ECMW20 vs ECMW11	70.250	3.134	Do Not Test
ECMW20 vs ECMW8	68.667	3.063	Do Not Test
ECMW20 vs ECMW9	68.333	3.048	Do Not Test
ECMW20 vs ECMW14	63.167	2.818	Do Not Test
ECMW20 vs ECMW10	57.667	2.573	Do Not Test

ECMW20 vs ECMW6	53.548	2.479	Do Not Test
ECMW20 vs ECMW22	51.417	2.294	Do Not Test
ECMW20 vs ECMW21	48.667	2.171	Do Not Test
ECMW20 vs CNTL	26.778	1.463	Do Not Test
ECMW20 vs ECMW13	23.833	1.063	Do Not Test
ECMW20 vs ECMW7	21.405	0.991	Do Not Test
ECMW20 vs ECMW19	20.000	0.892	Do Not Test
ECMW19 vs ECMW16	64.167	2.862	No
ECMW19 vs ECMW5	57.667	2.573	Do Not Test
ECMW19 vs ECMW17	54.833	2.446	Do Not Test
ECMW19 vs ECMW15	52.667	2.349	Do Not Test
ECMW19 vs ECMW11	50.250	2.242	Do Not Test
ECMW19 vs ECMW8	48.667	2.171	Do Not Test
ECMW19 vs ECMW9	48.333	2.156	Do Not Test
ECMW19 vs ECMW14	43.167	1.926	Do Not Test
ECMW19 vs ECMW10	37.667	1.680	Do Not Test
ECMW19 vs ECMW6	33.548	1.553	Do Not Test
ECMW19 vs ECMW22	31.417	1.401	Do Not Test
ECMW19 vs ECMW21	28.667	1.279	Do Not Test
ECMW19 vs CNTL	6.778	0.370	Do Not Test
ECMW19 vs ECMW13	3.833	0.171	Do Not Test
ECMW19 vs ECMW7	1.405	0.0650	Do Not Test
ECMW7 vs ECMW16	62.762	2.905	Do Not Test
ECMW7 vs ECMW5	56.262	2.605	Do Not Test
ECMW7 vs ECMW17	53.429	2.473	Do Not Test
ECMW7 vs ECMW15	51.262	2.373	Do Not Test
ECMW7 vs ECMW11	48.845	2.261	Do Not Test
ECMW7 vs ECMW8	47.262	2.188	Do Not Test
ECMW7 vs ECMW9	46.929	2.173	Do Not Test
ECMW7 vs ECMW14	41.762	1.933	Do Not Test
ECMW7 vs ECMW10	36.262	1.679	Do Not Test
ECMW7 vs ECMW6	32.143	1.549	Do Not Test
ECMW7 vs ECMW22	30.012	1.389	Do Not Test
ECMW7 vs ECMW21	27.262	1.262	Do Not Test
ECMW7 vs CNTL	5.373	0.311	Do Not Test
ECMW7 vs ECMW13	2.429	0.112	Do Not Test
ECMW13 vs ECMW16	60.333	2.691	Do Not Test
ECMW13 vs ECMW5	53.833	2.402	Do Not Test
ECMW13 vs ECMW17	51.000	2.275	Do Not Test
ECMW13 vs ECMW15	48.833	2.178	Do Not Test
ECMW13 vs ECMW11	46.417	2.071	Do Not Test
ECMW13 vs ECMW8	44.833	2.000	Do Not Test
ECMW13 vs ECMW9	44.500	1.985	Do Not Test
ECMW13 vs ECMW14	39.333	1.755	Do Not Test
ECMW13 vs ECMW10	33.833	1.509	Do Not Test
ECMW13 vs ECMW6	29.714	1.376	Do Not Test
ECMW13 vs ECMW22	27.583	1.230	Do Not Test
ECMW13 vs ECMW21	24.833	1.108	Do Not Test
ECMW13 vs CNTL	2.944	0.161	Do Not Test
CNTL vs ECMW16	57.389	3.135	Do Not Test
CNTL vs ECMW5	50.889	2.780	Do Not Test
CNTL vs ECMW17	48.056	2.626	Do Not Test
CNTL vs ECMW15	45.889	2.507	Do Not Test
CNTL vs ECMW11	43.472	2.375	Do Not Test
CNTL vs ECMW8	41.889	2.289	Do Not Test
CNTL vs ECMW9	41.556	2.270	Do Not Test

CNTL vs ECMW14	36.389	1.988	Do Not Test
CNTL vs ECMW10	30.889	1.688	Do Not Test
CNTL vs ECMW6	26.770	1.548	Do Not Test
CNTL vs ECMW22	24.639	1.346	Do Not Test
CNTL vs ECMW21	21.889	1.196	Do Not Test
ECMW21 vs ECMW16	35.500	1.584	Do Not Test
ECMW21 vs ECMW5	29.000	1.294	Do Not Test
ECMW21 vs ECMW17	26.167	1.167	Do Not Test
ECMW21 vs ECMW15	24.000	1.071	Do Not Test
ECMW21 vs ECMW11	21.583	0.963	Do Not Test
ECMW21 vs ECMW8	20.000	0.892	Do Not Test
ECMW21 vs ECMW9	19.667	0.877	Do Not Test
ECMW21 vs ECMW14	14.500	0.647	Do Not Test
ECMW21 vs ECMW10	9.000	0.401	Do Not Test
ECMW21 vs ECMW6	4.881	0.226	Do Not Test
ECMW21 vs ECMW22	2.750	0.123	Do Not Test
ECMW22 vs ECMW16	32.750	1.461	Do Not Test
ECMW22 vs ECMW5	26.250	1.171	Do Not Test
ECMW22 vs ECMW17	23.417	1.045	Do Not Test
ECMW22 vs ECMW15	21.250	0.948	Do Not Test
ECMW22 vs ECMW11	18.833	0.840	Do Not Test
ECMW22 vs ECMW8	17.250	0.770	Do Not Test
ECMW22 vs ECMW9	16.917	0.755	Do Not Test
ECMW22 vs ECMW14	11.750	0.524	Do Not Test
ECMW22 vs ECMW10	6.250	0.279	Do Not Test
ECMW22 vs ECMW6	2.131	0.0987	Do Not Test
ECMW6 vs ECMW16	30.619	1.417	Do Not Test
ECMW6 vs ECMW5	24.119	1.117	Do Not Test
ECMW6 vs ECMW17	21.286	0.985	Do Not Test
ECMW6 vs ECMW15	19.119	0.885	Do Not Test
ECMW6 vs ECMW11	16.702	0.773	Do Not Test
ECMW6 vs ECMW8	15.119	0.700	Do Not Test
ECMW6 vs ECMW9	14.786	0.684	Do Not Test
ECMW6 vs ECMW14	9.619	0.445	Do Not Test
ECMW6 vs ECMW10	4.119	0.191	Do Not Test
ECMW10 vs ECMW16	26.500	1.182	Do Not Test
ECMW10 vs ECMW5	20.000	0.892	Do Not Test
ECMW10 vs ECMW17	17.167	0.766	Do Not Test
ECMW10 vs ECMW15	15.000	0.669	Do Not Test
ECMW10 vs ECMW11	12.583	0.561	Do Not Test
ECMW10 vs ECMW8	11.000	0.491	Do Not Test
ECMW10 vs ECMW9	10.667	0.476	Do Not Test
ECMW10 vs ECMW14	5.500	0.245	Do Not Test
ECMW14 vs ECMW16	21.000	0.937	Do Not Test
ECMW14 vs ECMW5	14.500	0.647	Do Not Test
ECMW14 vs ECMW17	11.667	0.520	Do Not Test
ECMW14 vs ECMW15	9.500	0.424	Do Not Test
ECMW14 vs ECMW11	7.083	0.316	Do Not Test
ECMW14 vs ECMW8	5.500	0.245	Do Not Test
ECMW14 vs ECMW9	5.167	0.230	Do Not Test
ECMW9 vs ECMW16	15.833	0.706	Do Not Test
ECMW9 vs ECMW5	9.333	0.416	Do Not Test
ECMW9 vs ECMW17	6.500	0.290	Do Not Test
ECMW9 vs ECMW15	4.333	0.193	Do Not Test
ECMW9 vs ECMW11	1.917	0.0855	Do Not Test
ECMW9 vs ECMW8	0.333	0.0149	Do Not Test

ECMW8 vs ECMW16	15.500	0.691	Do Not Test
ECMW8 vs ECMW5	9.000	0.401	Do Not Test
ECMW8 vs ECMW17	6.167	0.275	Do Not Test
ECMW8 vs ECMW15	4.000	0.178	Do Not Test
ECMW8 vs ECMW11	1.583	0.0706	Do Not Test
ECMW11 vs ECMW16	13.917	0.621	Do Not Test
ECMW11 vs ECMW5	7.417	0.331	Do Not Test
ECMW11 vs ECMW17	4.583	0.204	Do Not Test
ECMW11 vs ECMW15	2.417	0.108	Do Not Test
ECMW15 vs ECMW16	11.500	0.513	Do Not Test
ECMW15 vs ECMW5	5.000	0.223	Do Not Test
ECMW15 vs ECMW17	2.167	0.0967	Do Not Test
ECMW17 vs ECMW16	9.333	0.416	Do Not Test
ECMW17 vs ECMW5	2.833	0.126	Do Not Test
ECMW5 vs ECMW16	6.500	0.290	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:15:56 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Nitrate- N (mg/L)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:15:56 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	44	0.500	0.500	1.022
ECMW10	48	1	65.900	47.400	118.000
ECMW11	48	2	15.250	7.515	28.900
ECMW12	45	16	0.500	0.292	0.500
ECMW13	48	18	0.500	0.250	0.500
ECMW14	47	1	14.650	6.732	25.275
ECMW15	47	14	4.520	2.265	8.870
ECMW16	47	0	13.100	9.940	40.200
ECMW17	48	1	27.200	10.200	74.700
ECMW18	47	5	0.500	0.253	0.500
ECMW19	38	13	0.500	0.250	0.500
ECMW20	38	13	0.500	0.500	0.534
ECMW21	38	13	2.240	1.625	2.740
ECMW22	38	14	1.105	0.500	1.780
ECMW4	47	1	0.500	0.360	0.632
ECMW5	48	3	7.960	3.500	42.400
ECMW6	50	0	1670.000	981.500	3652.500
ECMW7	50	0	232.000	141.000	522.500
ECMW8	49	0	472.000	224.500	2020.000
ECMW9	47	0	28.500	26.700	31.900

H = 741.745 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW6 vs ECMW13	672.020	11.894	Yes
ECMW6 vs ECMW12	671.056	11.751	Yes
ECMW6 vs ECMW19	667.150	11.133	Yes
ECMW6 vs ECMW18	660.589	12.900	Yes
ECMW6 vs ECMW4	635.579	12.716	Yes
ECMW6 vs ECMW20	623.510	10.404	Yes
ECMW6 vs CNTL	614.529	14.350	Yes

ECMW6 vs ECMW22	563.678	9.278	Yes
ECMW6 vs ECMW21	493.370	8.233	Yes
ECMW6 vs ECMW15	416.349	7.588	Yes
ECMW6 vs ECMW5	324.937	6.464	Yes
ECMW6 vs ECMW11	324.905	6.500	Yes
ECMW6 vs ECMW14	317.100	6.344	Yes
ECMW6 vs ECMW16	284.502	5.724	Yes
ECMW6 vs ECMW17	253.598	5.102	Yes
ECMW6 vs ECMW9	244.257	4.914	Yes
ECMW6 vs ECMW10	145.406	2.925	No
ECMW6 vs ECMW7	61.010	1.247	Do Not Test
ECMW6 vs ECMW8	45.858	0.932	Do Not Test
ECMW8 vs ECMW13	626.162	11.040	Yes
ECMW8 vs ECMW12	625.198	10.907	Yes
ECMW8 vs ECMW19	621.292	10.332	Yes
ECMW8 vs ECMW18	614.731	11.949	Yes
ECMW8 vs ECMW4	589.721	11.741	Yes
ECMW8 vs ECMW20	577.652	9.607	Yes
ECMW8 vs CNTL	568.671	13.192	Yes
ECMW8 vs ECMW22	517.821	8.495	Yes
ECMW8 vs ECMW21	447.512	7.442	Yes
ECMW8 vs ECMW15	370.491	6.725	Yes
ECMW8 vs ECMW5	279.079	5.525	Yes
ECMW8 vs ECMW11	279.047	5.556	Yes
ECMW8 vs ECMW14	271.243	5.400	Yes
ECMW8 vs ECMW16	238.644	4.778	Yes
ECMW8 vs ECMW17	207.740	4.159	Yes
ECMW8 vs ECMW9	198.399	3.972	Yes
ECMW8 vs ECMW10	99.548	1.993	Do Not Test
ECMW8 vs ECMW7	15.152	0.308	Do Not Test
ECMW7 vs ECMW13	611.010	10.814	Yes
ECMW7 vs ECMW12	610.046	10.683	Yes
ECMW7 vs ECMW19	606.140	10.115	Yes
ECMW7 vs ECMW18	599.579	11.709	Yes
ECMW7 vs ECMW4	574.569	11.495	Yes
ECMW7 vs ECMW20	562.500	9.386	Yes
ECMW7 vs CNTL	553.519	12.926	Yes
ECMW7 vs ECMW22	502.668	8.274	Yes
ECMW7 vs ECMW21	432.360	7.215	Yes
ECMW7 vs ECMW15	355.339	6.476	Yes
ECMW7 vs ECMW5	263.927	5.250	Yes
ECMW7 vs ECMW11	263.895	5.280	Yes
ECMW7 vs ECMW14	256.090	5.124	Yes
ECMW7 vs ECMW16	223.492	4.496	Yes
ECMW7 vs ECMW17	192.588	3.875	Yes
ECMW7 vs ECMW9	183.247	3.687	Yes
ECMW7 vs ECMW10	84.396	1.698	Do Not Test
ECMW10 vs ECMW13	526.614	9.211	Yes
ECMW10 vs ECMW12	525.650	9.099	Yes
ECMW10 vs ECMW19	521.744	8.615	Yes
ECMW10 vs ECMW18	515.183	9.917	Yes
ECMW10 vs ECMW4	490.173	9.660	Yes
ECMW10 vs ECMW20	478.104	7.895	Yes
ECMW10 vs CNTL	469.122	10.733	Yes
ECMW10 vs ECMW22	418.272	6.815	Yes
ECMW10 vs ECMW21	347.964	5.746	Yes

ECMW10 vs ECMW15	270.943	4.876	Yes
ECMW10 vs ECMW5	179.530	3.518	No
ECMW10 vs ECMW11	179.499	3.538	Do Not Test
ECMW10 vs ECMW14	171.694	3.384	Do Not Test
ECMW10 vs ECMW16	139.096	2.756	Do Not Test
ECMW10 vs ECMW17	108.191	2.144	Do Not Test
ECMW10 vs ECMW9	98.851	1.959	Do Not Test
ECMW9 vs ECMW13	427.763	7.482	Yes
ECMW9 vs ECMW12	426.799	7.388	Yes
ECMW9 vs ECMW19	422.893	6.983	Yes
ECMW9 vs ECMW18	416.332	8.014	Yes
ECMW9 vs ECMW4	391.321	7.712	Yes
ECMW9 vs ECMW20	379.253	6.262	Yes
ECMW9 vs CNTL	370.271	8.472	Yes
ECMW9 vs ECMW22	319.421	5.204	Yes
ECMW9 vs ECMW21	249.113	4.113	Yes
ECMW9 vs ECMW15	172.092	3.097	No
ECMW9 vs ECMW5	80.679	1.581	Do Not Test
ECMW9 vs ECMW11	80.648	1.589	Do Not Test
ECMW9 vs ECMW14	72.843	1.436	Do Not Test
ECMW9 vs ECMW16	40.245	0.797	Do Not Test
ECMW9 vs ECMW17	9.340	0.185	Do Not Test
ECMW17 vs ECMW13	418.422	7.319	Yes
ECMW17 vs ECMW12	417.459	7.226	Yes
ECMW17 vs ECMW19	413.552	6.829	Yes
ECMW17 vs ECMW18	406.991	7.835	Yes
ECMW17 vs ECMW4	381.981	7.528	Yes
ECMW17 vs ECMW20	369.912	6.108	Yes
ECMW17 vs CNTL	360.931	8.258	Yes
ECMW17 vs ECMW22	310.081	5.052	Yes
ECMW17 vs ECMW21	239.772	3.959	Yes
ECMW17 vs ECMW15	162.751	2.929	Do Not Test
ECMW17 vs ECMW5	71.339	1.398	Do Not Test
ECMW17 vs ECMW11	71.307	1.405	Do Not Test
ECMW17 vs ECMW14	63.503	1.251	Do Not Test
ECMW17 vs ECMW16	30.904	0.612	Do Not Test
ECMW16 vs ECMW13	387.518	6.778	Yes
ECMW16 vs ECMW12	386.554	6.691	Yes
ECMW16 vs ECMW19	382.648	6.318	Yes
ECMW16 vs ECMW18	376.087	7.240	Yes
ECMW16 vs ECMW4	351.077	6.919	Yes
ECMW16 vs ECMW20	339.008	5.598	Yes
ECMW16 vs CNTL	330.027	7.551	Yes
ECMW16 vs ECMW22	279.176	4.548	Yes
ECMW16 vs ECMW21	208.868	3.449	No
ECMW16 vs ECMW15	131.847	2.373	Do Not Test
ECMW16 vs ECMW5	40.435	0.792	Do Not Test
ECMW16 vs ECMW11	40.403	0.796	Do Not Test
ECMW16 vs ECMW14	32.599	0.642	Do Not Test
ECMW14 vs ECMW13	354.920	6.182	Yes
ECMW14 vs ECMW12	353.956	6.102	Yes
ECMW14 vs ECMW19	350.050	5.758	Yes
ECMW14 vs ECMW18	343.489	6.578	Yes
ECMW14 vs ECMW4	318.478	6.243	Yes
ECMW14 vs ECMW20	306.410	5.040	Yes
ECMW14 vs CNTL	297.428	6.756	Yes

ECMW14 vs ECMW22	246.578	4.003	Yes
ECMW14 vs ECMW21	176.270	2.900	Do Not Test
ECMW14 vs ECMW15	99.248	1.778	Do Not Test
ECMW14 vs ECMW5	7.836	0.153	Do Not Test
ECMW14 vs ECMW11	7.804	0.153	Do Not Test
ECMW11 vs ECMW13	347.115	6.046	Yes
ECMW11 vs ECMW12	346.151	5.967	Yes
ECMW11 vs ECMW19	342.245	5.630	Yes
ECMW11 vs ECMW18	335.684	6.429	Yes
ECMW11 vs ECMW4	310.674	6.090	Yes
ECMW11 vs ECMW20	298.605	4.912	Yes
ECMW11 vs CNTL	289.624	6.579	Yes
ECMW11 vs ECMW22	238.774	3.876	Yes
ECMW11 vs ECMW21	168.465	2.771	Do Not Test
ECMW11 vs ECMW15	91.444	1.638	Do Not Test
ECMW11 vs ECMW5	0.0319	0.000622	Do Not Test
ECMW5 vs ECMW13	347.083	6.019	Yes
ECMW5 vs ECMW12	346.120	5.941	Yes
ECMW5 vs ECMW19	342.213	5.608	Yes
ECMW5 vs ECMW18	335.652	6.395	Yes
ECMW5 vs ECMW4	310.642	6.056	Yes
ECMW5 vs ECMW20	298.573	4.892	Yes
ECMW5 vs CNTL	289.592	6.530	Yes
ECMW5 vs ECMW22	238.742	3.861	Yes
ECMW5 vs ECMW21	168.433	2.760	Do Not Test
ECMW5 vs ECMW15	91.412	1.630	Do Not Test
ECMW15 vs ECMW13	255.671	4.143	Yes
ECMW15 vs ECMW12	254.707	4.090	Yes
ECMW15 vs ECMW19	250.801	3.866	Yes
ECMW15 vs ECMW18	244.240	4.292	Yes
ECMW15 vs ECMW4	219.230	3.928	Yes
ECMW15 vs ECMW20	207.161	3.194	No
ECMW15 vs CNTL	198.180	4.003	Do Not Test
ECMW15 vs ECMW22	147.330	2.245	Do Not Test
ECMW15 vs ECMW21	77.021	1.187	Do Not Test
ECMW21 vs ECMW13	178.650	2.697	No
ECMW21 vs ECMW12	177.686	2.661	Do Not Test
ECMW21 vs ECMW19	173.780	2.511	Do Not Test
ECMW21 vs ECMW18	167.219	2.706	Do Not Test
ECMW21 vs ECMW4	142.209	2.339	Do Not Test
ECMW21 vs ECMW20	130.140	1.881	Do Not Test
ECMW21 vs CNTL	121.159	2.201	Do Not Test
ECMW21 vs ECMW22	70.308	1.006	Do Not Test
ECMW22 vs ECMW13	108.342	1.617	Do Not Test
ECMW22 vs ECMW12	107.378	1.590	Do Not Test
ECMW22 vs ECMW19	103.472	1.480	Do Not Test
ECMW22 vs ECMW18	96.911	1.548	Do Not Test
ECMW22 vs ECMW4	71.900	1.167	Do Not Test
ECMW22 vs ECMW20	59.832	0.856	Do Not Test
ECMW22 vs CNTL	50.850	0.909	Do Not Test
CNTL vs ECMW13	57.491	1.121	Do Not Test
CNTL vs ECMW12	56.528	1.088	Do Not Test
CNTL vs ECMW19	52.621	0.956	Do Not Test
CNTL vs ECMW18	46.061	1.014	Do Not Test
CNTL vs ECMW4	21.050	0.478	Do Not Test
CNTL vs ECMW20	8.981	0.163	Do Not Test

ECMW20 vs ECMW13	48.510	0.732	Do Not Test
ECMW20 vs ECMW12	47.546	0.712	Do Not Test
ECMW20 vs ECMW19	43.640	0.631	Do Not Test
ECMW20 vs ECMW18	37.079	0.600	Do Not Test
ECMW20 vs ECMW4	12.069	0.199	Do Not Test
ECMW4 vs ECMW13	36.441	0.635	Do Not Test
ECMW4 vs ECMW12	35.478	0.612	Do Not Test
ECMW4 vs ECMW19	31.571	0.519	Do Not Test
ECMW4 vs ECMW18	25.010	0.479	Do Not Test
ECMW18 vs ECMW13	11.431	0.195	Do Not Test
ECMW18 vs ECMW12	10.467	0.177	Do Not Test
ECMW18 vs ECMW19	6.561	0.106	Do Not Test
ECMW19 vs ECMW13	4.870	0.0735	Do Not Test
ECMW19 vs ECMW12	3.906	0.0585	Do Not Test
ECMW12 vs ECMW13	0.964	0.0151	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:16:34 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: pH (s.u.)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:16:34 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	3	5.510	5.110	6.040
ECMW10	48	1	4.500	4.180	4.930
ECMW11	48	1	4.420	4.130	4.860
ECMW12	45	1	5.820	5.593	6.020
ECMW13	48	3	4.970	4.695	5.285
ECMW14	47	2	4.920	4.520	5.320
ECMW15	47	2	4.860	4.375	5.375
ECMW16	47	1	4.630	4.277	5.135
ECMW17	48	1	4.600	4.070	5.280
ECMW18	47	2	5.770	5.255	6.185
ECMW19	38	1	5.920	5.510	6.320
ECMW20	38	2	5.635	5.280	6.075
ECMW21	38	1	5.390	4.800	5.935
ECMW22	38	0	5.840	5.583	6.325
ECMW4	47	1	4.055	3.757	4.410
ECMW5	48	1	5.060	4.600	5.640
ECMW6	50	2	4.300	3.843	4.598
ECMW7	50	2	4.380	3.973	5.240
ECMW8	49	2	3.970	3.640	4.330
ECMW9	47	1	5.525	5.350	5.840

H = 375.328 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW22 vs ECMW8	558.546	9.083	Yes
ECMW22 vs ECMW4	548.647	8.879	Yes
ECMW22 vs ECMW6	480.460	7.849	Yes
ECMW22 vs ECMW11	435.270	7.078	Yes
ECMW22 vs ECMW10	427.823	6.957	Yes
ECMW22 vs ECMW7	419.179	6.848	Yes
ECMW22 vs ECMW17	378.780	6.159	Yes

ECMW22 vs ECMW16	362.625	5.868	Yes
ECMW22 vs ECMW15	332.719	5.357	Yes
ECMW22 vs ECMW14	306.397	4.934	Yes
ECMW22 vs ECMW13	270.963	4.363	Yes
ECMW22 vs ECMW5	238.429	3.877	Yes
ECMW22 vs ECMW21	186.867	2.870	No
ECMW22 vs CNTL	120.482	2.327	Do Not Test
ECMW22 vs ECMW9	98.484	1.594	Do Not Test
ECMW22 vs ECMW18	88.608	1.427	Do Not Test
ECMW22 vs ECMW20	78.602	1.199	Do Not Test
ECMW22 vs ECMW12	20.931	0.335	Do Not Test
ECMW22 vs ECMW19	6.651	0.102	Do Not Test
ECMW19 vs ECMW8	551.895	8.908	Yes
ECMW19 vs ECMW4	541.996	8.707	Yes
ECMW19 vs ECMW6	473.809	7.683	Yes
ECMW19 vs ECMW11	428.618	6.918	Yes
ECMW19 vs ECMW10	421.172	6.798	Yes
ECMW19 vs ECMW7	412.528	6.689	Yes
ECMW19 vs ECMW17	372.129	6.007	Yes
ECMW19 vs ECMW16	355.974	5.718	Yes
ECMW19 vs ECMW15	326.068	5.212	Yes
ECMW19 vs ECMW14	299.746	4.792	Yes
ECMW19 vs ECMW13	264.312	4.225	Yes
ECMW19 vs ECMW5	231.778	3.741	Yes
ECMW19 vs ECMW21	180.216	2.750	Do Not Test
ECMW19 vs CNTL	113.831	2.176	Do Not Test
ECMW19 vs ECMW9	91.833	1.475	Do Not Test
ECMW19 vs ECMW18	81.957	1.310	Do Not Test
ECMW19 vs ECMW20	71.951	1.090	Do Not Test
ECMW19 vs ECMW12	14.279	0.227	Do Not Test
ECMW12 vs ECMW8	537.616	9.092	Yes
ECMW12 vs ECMW4	527.716	8.878	Yes
ECMW12 vs ECMW6	459.529	7.811	Yes
ECMW12 vs ECMW11	414.339	7.007	Yes
ECMW12 vs ECMW10	406.892	6.881	Yes
ECMW12 vs ECMW7	398.248	6.769	Yes
ECMW12 vs ECMW17	357.850	6.052	Yes
ECMW12 vs ECMW16	341.695	5.748	Yes
ECMW12 vs ECMW15	311.788	5.217	Yes
ECMW12 vs ECMW14	285.466	4.777	Yes
ECMW12 vs ECMW13	250.033	4.184	Yes
ECMW12 vs ECMW5	217.499	3.678	Yes
ECMW12 vs ECMW21	165.937	2.639	Do Not Test
ECMW12 vs CNTL	99.551	2.034	Do Not Test
ECMW12 vs ECMW9	77.553	1.305	Do Not Test
ECMW12 vs ECMW18	67.677	1.132	Do Not Test
ECMW12 vs ECMW20	57.672	0.910	Do Not Test
ECMW20 vs ECMW8	479.944	7.687	Yes
ECMW20 vs ECMW4	470.045	7.493	Yes
ECMW20 vs ECMW6	401.858	6.466	Yes
ECMW20 vs ECMW11	356.667	5.713	Yes
ECMW20 vs ECMW10	349.220	5.593	Yes
ECMW20 vs ECMW7	340.576	5.480	Yes
ECMW20 vs ECMW17	300.178	4.808	Yes
ECMW20 vs ECMW16	284.023	4.528	Yes
ECMW20 vs ECMW15	254.117	4.031	Yes

ECMW20 vs ECMW14	227.794	3.614	No
ECMW20 vs ECMW13	192.361	3.052	Do Not Test
ECMW20 vs ECMW5	159.827	2.560	Do Not Test
ECMW20 vs ECMW21	108.265	1.641	Do Not Test
ECMW20 vs CNTL	41.880	0.792	Do Not Test
ECMW20 vs ECMW9	19.882	0.317	Do Not Test
ECMW20 vs ECMW18	10.006	0.159	Do Not Test
ECMW18 vs ECMW8	469.938	7.993	Yes
ECMW18 vs ECMW4	460.039	7.784	Yes
ECMW18 vs ECMW6	391.852	6.699	Yes
ECMW18 vs ECMW11	346.662	5.896	Yes
ECMW18 vs ECMW10	339.215	5.770	Yes
ECMW18 vs ECMW7	330.571	5.652	Yes
ECMW18 vs ECMW17	290.172	4.936	Yes
ECMW18 vs ECMW16	274.017	4.636	Yes
ECMW18 vs ECMW15	244.111	4.108	Yes
ECMW18 vs ECMW14	217.789	3.665	Do Not Test
ECMW18 vs ECMW13	182.356	3.069	Do Not Test
ECMW18 vs ECMW5	149.821	2.548	Do Not Test
ECMW18 vs ECMW21	98.259	1.571	Do Not Test
ECMW18 vs CNTL	31.874	0.657	Do Not Test
ECMW18 vs ECMW9	9.876	0.167	Do Not Test
ECMW9 vs ECMW8	460.062	7.869	Yes
ECMW9 vs ECMW4	450.163	7.659	Yes
ECMW9 vs ECMW6	381.976	6.567	Yes
ECMW9 vs ECMW11	336.786	5.760	Yes
ECMW9 vs ECMW10	329.339	5.633	Yes
ECMW9 vs ECMW7	320.695	5.514	Yes
ECMW9 vs ECMW17	280.296	4.794	Yes
ECMW9 vs ECMW16	264.141	4.494	Yes
ECMW9 vs ECMW15	234.235	3.963	Yes
ECMW9 vs ECMW14	207.913	3.518	Do Not Test
ECMW9 vs ECMW13	172.479	2.918	Do Not Test
ECMW9 vs ECMW5	139.945	2.394	Do Not Test
ECMW9 vs ECMW21	88.383	1.420	Do Not Test
ECMW9 vs CNTL	21.998	0.457	Do Not Test
CNTL vs ECMW8	438.064	9.176	Yes
CNTL vs ECMW4	428.165	8.897	Yes
CNTL vs ECMW6	359.978	7.599	Yes
CNTL vs ECMW11	314.788	6.594	Yes
CNTL vs ECMW10	307.341	6.438	Yes
CNTL vs ECMW7	298.697	6.305	Yes
CNTL vs ECMW17	258.298	5.410	Yes
CNTL vs ECMW16	242.143	5.031	Yes
CNTL vs ECMW15	212.237	4.374	Yes
CNTL vs ECMW14	185.915	3.832	Do Not Test
CNTL vs ECMW13	150.481	3.101	Do Not Test
CNTL vs ECMW5	117.947	2.471	Do Not Test
CNTL vs ECMW21	66.385	1.269	Do Not Test
ECMW21 vs ECMW8	371.679	5.999	Yes
ECMW21 vs ECMW4	361.780	5.812	Yes
ECMW21 vs ECMW6	293.593	4.761	Yes
ECMW21 vs ECMW11	248.402	4.009	Yes
ECMW21 vs ECMW10	240.955	3.889	Yes
ECMW21 vs ECMW7	232.311	3.767	Yes
ECMW21 vs ECMW17	191.913	3.098	No

ECMW21 vs ECMW16	175.758	2.823	Do Not Test
ECMW21 vs ECMW15	145.852	2.331	Do Not Test
ECMW21 vs ECMW14	119.529	1.911	Do Not Test
ECMW21 vs ECMW13	84.096	1.344	Do Not Test
ECMW21 vs ECMW5	51.562	0.832	Do Not Test
ECMW5 vs ECMW8	320.117	5.505	Yes
ECMW5 vs ECMW4	310.218	5.306	Yes
ECMW5 vs ECMW6	242.031	4.184	Yes
ECMW5 vs ECMW11	196.840	3.385	No
ECMW5 vs ECMW10	189.394	3.257	Do Not Test
ECMW5 vs ECMW7	180.750	3.125	Do Not Test
ECMW5 vs ECMW17	140.351	2.414	Do Not Test
ECMW5 vs ECMW16	124.196	2.124	Do Not Test
ECMW5 vs ECMW15	94.290	1.604	Do Not Test
ECMW5 vs ECMW14	67.968	1.156	Do Not Test
ECMW5 vs ECMW13	32.534	0.553	Do Not Test
ECMW13 vs ECMW8	287.583	4.892	Yes
ECMW13 vs ECMW4	277.684	4.698	Yes
ECMW13 vs ECMW6	209.497	3.582	No
ECMW13 vs ECMW11	164.306	2.795	Do Not Test
ECMW13 vs ECMW10	156.859	2.668	Do Not Test
ECMW13 vs ECMW7	148.215	2.534	Do Not Test
ECMW13 vs ECMW17	107.817	1.834	Do Not Test
ECMW13 vs ECMW16	91.662	1.551	Do Not Test
ECMW13 vs ECMW15	61.756	1.039	Do Not Test
ECMW13 vs ECMW14	35.433	0.596	Do Not Test
ECMW14 vs ECMW8	252.149	4.289	Yes
ECMW14 vs ECMW4	242.250	4.099	Yes
ECMW14 vs ECMW6	174.063	2.976	Do Not Test
ECMW14 vs ECMW11	128.873	2.192	Do Not Test
ECMW14 vs ECMW10	121.426	2.065	Do Not Test
ECMW14 vs ECMW7	112.782	1.928	Do Not Test
ECMW14 vs ECMW17	72.383	1.231	Do Not Test
ECMW14 vs ECMW16	56.229	0.951	Do Not Test
ECMW14 vs ECMW15	26.322	0.443	Do Not Test
ECMW15 vs ECMW8	225.827	3.841	Yes
ECMW15 vs ECMW4	215.928	3.653	Yes
ECMW15 vs ECMW6	147.741	2.526	Do Not Test
ECMW15 vs ECMW11	102.551	1.744	Do Not Test
ECMW15 vs ECMW10	95.104	1.618	Do Not Test
ECMW15 vs ECMW7	86.460	1.478	Do Not Test
ECMW15 vs ECMW17	46.061	0.783	Do Not Test
ECMW15 vs ECMW16	29.906	0.506	Do Not Test
ECMW16 vs ECMW8	195.921	3.351	No
ECMW16 vs ECMW4	186.022	3.165	Do Not Test
ECMW16 vs ECMW6	117.835	2.026	Do Not Test
ECMW16 vs ECMW11	72.644	1.243	Do Not Test
ECMW16 vs ECMW10	65.198	1.115	Do Not Test
ECMW16 vs ECMW7	56.553	0.972	Do Not Test
ECMW16 vs ECMW17	16.155	0.276	Do Not Test
ECMW17 vs ECMW8	179.766	3.091	Do Not Test
ECMW17 vs ECMW4	169.867	2.905	Do Not Test
ECMW17 vs ECMW6	101.680	1.758	Do Not Test
ECMW17 vs ECMW11	56.489	0.971	Do Not Test
ECMW17 vs ECMW10	49.043	0.843	Do Not Test
ECMW17 vs ECMW7	40.398	0.698	Do Not Test

ECMW7 vs ECMW8	139.367	2.409	Do Not Test
ECMW7 vs ECMW4	129.468	2.226	Do Not Test
ECMW7 vs ECMW6	61.281	1.065	Do Not Test
ECMW7 vs ECMW11	16.091	0.278	Do Not Test
ECMW7 vs ECMW10	8.644	0.149	Do Not Test
ECMW10 vs ECMW8	130.723	2.248	Do Not Test
ECMW10 vs ECMW4	120.824	2.067	Do Not Test
ECMW10 vs ECMW6	52.637	0.910	Do Not Test
ECMW10 vs ECMW11	7.447	0.128	Do Not Test
ECMW11 vs ECMW8	123.277	2.120	Do Not Test
ECMW11 vs ECMW4	113.377	1.939	Do Not Test
ECMW11 vs ECMW6	45.190	0.781	Do Not Test
ECMW6 vs ECMW8	78.086	1.350	Do Not Test
ECMW6 vs ECMW4	68.187	1.172	Do Not Test
ECMW4 vs ECMW8	9.899	0.169	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:16:54 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Redox (mV)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:16:54 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	102	118.500	87.000	204.825
ECMW10	48	36	157.050	121.900	226.575
ECMW11	48	36	156.800	145.925	240.600
ECMW12	45	33	63.000	-27.725	81.150
ECMW13	48	36	132.550	101.375	246.525
ECMW14	47	37	142.750	135.100	229.725
ECMW15	47	35	151.850	128.450	268.875
ECMW16	47	35	143.850	65.875	229.000
ECMW17	48	37	169.600	149.100	259.700
ECMW18	47	35	117.850	93.425	162.025
ECMW19	38	26	83.900	55.725	101.725
ECMW20	38	29	97.000	68.350	129.500
ECMW21	38	26	158.200	101.925	229.000
ECMW22	38	26	88.800	59.250	115.875
ECMW4	47	35	171.600	164.275	305.900
ECMW5	48	36	142.700	128.000	224.400
ECMW6	50	38	166.250	154.825	181.225
ECMW7	50	38	142.250	93.270	317.625
ECMW8	49	37	180.400	163.050	233.825
ECMW9	47	35	99.600	78.250	140.700

H = 58.927 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW4 vs ECMW12	136.333	4.475	Yes
ECMW4 vs ECMW19	101.583	3.334	No
ECMW4 vs ECMW22	97.083	3.187	Do Not Test
ECMW4 vs ECMW20	86.736	2.636	Do Not Test
ECMW4 vs ECMW9	77.458	2.543	Do Not Test
ECMW4 vs ECMW18	61.250	2.011	Do Not Test
ECMW4 vs CNTL	51.458	2.069	Do Not Test

ECMW4 vs ECMW16	43.042	1.413	Do Not Test
ECMW4 vs ECMW13	36.333	1.193	Do Not Test
ECMW4 vs ECMW5	28.250	0.927	Do Not Test
ECMW4 vs ECMW7	27.375	0.899	Do Not Test
ECMW4 vs ECMW21	26.792	0.879	Do Not Test
ECMW4 vs ECMW10	23.625	0.775	Do Not Test
ECMW4 vs ECMW15	16.750	0.550	Do Not Test
ECMW4 vs ECMW14	16.692	0.522	Do Not Test
ECMW4 vs ECMW6	16.417	0.539	Do Not Test
ECMW4 vs ECMW11	10.333	0.339	Do Not Test
ECMW4 vs ECMW17	4.610	0.148	Do Not Test
ECMW4 vs ECMW8	1.333	0.0438	Do Not Test
ECMW8 vs ECMW12	135.000	4.431	Yes
ECMW8 vs ECMW19	100.250	3.291	Do Not Test
ECMW8 vs ECMW22	95.750	3.143	Do Not Test
ECMW8 vs ECMW20	85.403	2.595	Do Not Test
ECMW8 vs ECMW9	76.125	2.499	Do Not Test
ECMW8 vs ECMW18	59.917	1.967	Do Not Test
ECMW8 vs CNTL	50.125	2.015	Do Not Test
ECMW8 vs ECMW16	41.708	1.369	Do Not Test
ECMW8 vs ECMW13	35.000	1.149	Do Not Test
ECMW8 vs ECMW5	26.917	0.884	Do Not Test
ECMW8 vs ECMW7	26.042	0.855	Do Not Test
ECMW8 vs ECMW21	25.458	0.836	Do Not Test
ECMW8 vs ECMW10	22.292	0.732	Do Not Test
ECMW8 vs ECMW15	15.417	0.506	Do Not Test
ECMW8 vs ECMW14	15.358	0.481	Do Not Test
ECMW8 vs ECMW6	15.083	0.495	Do Not Test
ECMW8 vs ECMW11	9.000	0.295	Do Not Test
ECMW8 vs ECMW17	3.277	0.105	Do Not Test
ECMW17 vs ECMW12	131.723	4.229	Yes
ECMW17 vs ECMW19	96.973	3.113	Do Not Test
ECMW17 vs ECMW22	92.473	2.969	Do Not Test
ECMW17 vs ECMW20	82.126	2.449	Do Not Test
ECMW17 vs ECMW9	72.848	2.339	Do Not Test
ECMW17 vs ECMW18	56.640	1.818	Do Not Test
ECMW17 vs CNTL	46.848	1.822	Do Not Test
ECMW17 vs ECMW16	38.432	1.234	Do Not Test
ECMW17 vs ECMW13	31.723	1.018	Do Not Test
ECMW17 vs ECMW5	23.640	0.759	Do Not Test
ECMW17 vs ECMW7	22.765	0.731	Do Not Test
ECMW17 vs ECMW21	22.182	0.712	Do Not Test
ECMW17 vs ECMW10	19.015	0.610	Do Not Test
ECMW17 vs ECMW15	12.140	0.390	Do Not Test
ECMW17 vs ECMW14	12.082	0.371	Do Not Test
ECMW17 vs ECMW6	11.807	0.379	Do Not Test
ECMW17 vs ECMW11	5.723	0.184	Do Not Test
ECMW11 vs ECMW12	126.000	4.136	Yes
ECMW11 vs ECMW19	91.250	2.995	Do Not Test
ECMW11 vs ECMW22	86.750	2.848	Do Not Test
ECMW11 vs ECMW20	76.403	2.322	Do Not Test
ECMW11 vs ECMW9	67.125	2.203	Do Not Test
ECMW11 vs ECMW18	50.917	1.671	Do Not Test
ECMW11 vs CNTL	41.125	1.653	Do Not Test
ECMW11 vs ECMW16	32.708	1.074	Do Not Test
ECMW11 vs ECMW13	26.000	0.853	Do Not Test

ECMW11 vs ECMW5	17.917	0.588	Do Not Test
ECMW11 vs ECMW7	17.042	0.559	Do Not Test
ECMW11 vs ECMW21	16.458	0.540	Do Not Test
ECMW11 vs ECMW10	13.292	0.436	Do Not Test
ECMW11 vs ECMW15	6.417	0.211	Do Not Test
ECMW11 vs ECMW14	6.358	0.199	Do Not Test
ECMW11 vs ECMW6	6.083	0.200	Do Not Test
ECMW6 vs ECMW12	119.917	3.936	Yes
ECMW6 vs ECMW19	85.167	2.796	Do Not Test
ECMW6 vs ECMW22	80.667	2.648	Do Not Test
ECMW6 vs ECMW20	70.319	2.137	Do Not Test
ECMW6 vs ECMW9	61.042	2.004	Do Not Test
ECMW6 vs ECMW18	44.833	1.472	Do Not Test
ECMW6 vs CNTL	35.042	1.409	Do Not Test
ECMW6 vs ECMW16	26.625	0.874	Do Not Test
ECMW6 vs ECMW13	19.917	0.654	Do Not Test
ECMW6 vs ECMW5	11.833	0.388	Do Not Test
ECMW6 vs ECMW7	10.958	0.360	Do Not Test
ECMW6 vs ECMW21	10.375	0.341	Do Not Test
ECMW6 vs ECMW10	7.208	0.237	Do Not Test
ECMW6 vs ECMW15	0.333	0.0109	Do Not Test
ECMW6 vs ECMW14	0.275	0.00861	Do Not Test
ECMW14 vs ECMW12	119.642	3.744	Yes
ECMW14 vs ECMW19	84.892	2.657	Do Not Test
ECMW14 vs ECMW22	80.392	2.516	Do Not Test
ECMW14 vs ECMW20	70.044	2.043	Do Not Test
ECMW14 vs ECMW9	60.767	1.902	Do Not Test
ECMW14 vs ECMW18	44.558	1.395	Do Not Test
ECMW14 vs CNTL	34.767	1.303	Do Not Test
ECMW14 vs ECMW16	26.350	0.825	Do Not Test
ECMW14 vs ECMW13	19.642	0.615	Do Not Test
ECMW14 vs ECMW5	11.558	0.362	Do Not Test
ECMW14 vs ECMW7	10.683	0.334	Do Not Test
ECMW14 vs ECMW21	10.100	0.316	Do Not Test
ECMW14 vs ECMW10	6.933	0.217	Do Not Test
ECMW14 vs ECMW15	0.0583	0.00183	Do Not Test
ECMW15 vs ECMW12	119.583	3.925	Yes
ECMW15 vs ECMW19	84.833	2.785	Do Not Test
ECMW15 vs ECMW22	80.333	2.637	Do Not Test
ECMW15 vs ECMW20	69.986	2.127	Do Not Test
ECMW15 vs ECMW9	60.708	1.993	Do Not Test
ECMW15 vs ECMW18	44.500	1.461	Do Not Test
ECMW15 vs CNTL	34.708	1.395	Do Not Test
ECMW15 vs ECMW16	26.292	0.863	Do Not Test
ECMW15 vs ECMW13	19.583	0.643	Do Not Test
ECMW15 vs ECMW5	11.500	0.377	Do Not Test
ECMW15 vs ECMW7	10.625	0.349	Do Not Test
ECMW15 vs ECMW21	10.042	0.330	Do Not Test
ECMW15 vs ECMW10	6.875	0.226	Do Not Test
ECMW10 vs ECMW12	112.708	3.700	Yes
ECMW10 vs ECMW19	77.958	2.559	Do Not Test
ECMW10 vs ECMW22	73.458	2.411	Do Not Test
ECMW10 vs ECMW20	63.111	1.918	Do Not Test
ECMW10 vs ECMW9	53.833	1.767	Do Not Test
ECMW10 vs ECMW18	37.625	1.235	Do Not Test
ECMW10 vs CNTL	27.833	1.119	Do Not Test

ECMW10 vs ECMW16	19.417	0.637	Do Not Test
ECMW10 vs ECMW13	12.708	0.417	Do Not Test
ECMW10 vs ECMW5	4.625	0.152	Do Not Test
ECMW10 vs ECMW7	3.750	0.123	Do Not Test
ECMW10 vs ECMW21	3.167	0.104	Do Not Test
ECMW21 vs ECMW12	109.542	3.596	No
ECMW21 vs ECMW19	74.792	2.455	Do Not Test
ECMW21 vs ECMW22	70.292	2.307	Do Not Test
ECMW21 vs ECMW20	59.944	1.822	Do Not Test
ECMW21 vs ECMW9	50.667	1.663	Do Not Test
ECMW21 vs ECMW18	34.458	1.131	Do Not Test
ECMW21 vs CNTL	24.667	0.992	Do Not Test
ECMW21 vs ECMW16	16.250	0.533	Do Not Test
ECMW21 vs ECMW13	9.542	0.313	Do Not Test
ECMW21 vs ECMW5	1.458	0.0479	Do Not Test
ECMW21 vs ECMW7	0.583	0.0191	Do Not Test
ECMW7 vs ECMW12	108.958	3.577	Do Not Test
ECMW7 vs ECMW19	74.208	2.436	Do Not Test
ECMW7 vs ECMW22	69.708	2.288	Do Not Test
ECMW7 vs ECMW20	59.361	1.804	Do Not Test
ECMW7 vs ECMW9	50.083	1.644	Do Not Test
ECMW7 vs ECMW18	33.875	1.112	Do Not Test
ECMW7 vs CNTL	24.083	0.968	Do Not Test
ECMW7 vs ECMW16	15.667	0.514	Do Not Test
ECMW7 vs ECMW13	8.958	0.294	Do Not Test
ECMW7 vs ECMW5	0.875	0.0287	Do Not Test
ECMW5 vs ECMW12	108.083	3.548	Do Not Test
ECMW5 vs ECMW19	73.333	2.407	Do Not Test
ECMW5 vs ECMW22	68.833	2.259	Do Not Test
ECMW5 vs ECMW20	58.486	1.777	Do Not Test
ECMW5 vs ECMW9	49.208	1.615	Do Not Test
ECMW5 vs ECMW18	33.000	1.083	Do Not Test
ECMW5 vs CNTL	23.208	0.933	Do Not Test
ECMW5 vs ECMW16	14.792	0.486	Do Not Test
ECMW5 vs ECMW13	8.083	0.265	Do Not Test
ECMW13 vs ECMW12	100.000	3.283	Do Not Test
ECMW13 vs ECMW19	65.250	2.142	Do Not Test
ECMW13 vs ECMW22	60.750	1.994	Do Not Test
ECMW13 vs ECMW20	50.403	1.532	Do Not Test
ECMW13 vs ECMW9	41.125	1.350	Do Not Test
ECMW13 vs ECMW18	24.917	0.818	Do Not Test
ECMW13 vs CNTL	15.125	0.608	Do Not Test
ECMW13 vs ECMW16	6.708	0.220	Do Not Test
ECMW16 vs ECMW12	93.292	3.062	Do Not Test
ECMW16 vs ECMW19	58.542	1.922	Do Not Test
ECMW16 vs ECMW22	54.042	1.774	Do Not Test
ECMW16 vs ECMW20	43.694	1.328	Do Not Test
ECMW16 vs ECMW9	34.417	1.130	Do Not Test
ECMW16 vs ECMW18	18.208	0.598	Do Not Test
ECMW16 vs CNTL	8.417	0.338	Do Not Test
CNTL vs ECMW12	84.875	3.412	Do Not Test
CNTL vs ECMW19	50.125	2.015	Do Not Test
CNTL vs ECMW22	45.625	1.834	Do Not Test
CNTL vs ECMW20	35.278	1.269	Do Not Test
CNTL vs ECMW9	26.000	1.045	Do Not Test
CNTL vs ECMW18	9.792	0.394	Do Not Test

ECMW18 vs ECMW12	75.083	2.465	Do Not Test
ECMW18 vs ECMW19	40.333	1.324	Do Not Test
ECMW18 vs ECMW22	35.833	1.176	Do Not Test
ECMW18 vs ECMW20	25.486	0.775	Do Not Test
ECMW18 vs ECMW9	16.208	0.532	Do Not Test
ECMW9 vs ECMW12	58.875	1.933	Do Not Test
ECMW9 vs ECMW19	24.125	0.792	Do Not Test
ECMW9 vs ECMW22	19.625	0.644	Do Not Test
ECMW9 vs ECMW20	9.278	0.282	Do Not Test
ECMW20 vs ECMW12	49.597	1.507	Do Not Test
ECMW20 vs ECMW19	14.847	0.451	Do Not Test
ECMW20 vs ECMW22	10.347	0.314	Do Not Test
ECMW22 vs ECMW12	39.250	1.288	Do Not Test
ECMW22 vs ECMW19	4.500	0.148	Do Not Test
ECMW19 vs ECMW12	34.750	1.141	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:17:04 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Specific Conductance (uS)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:17:04 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	30	235.500	66.975	330.750
ECMW10	48	10	903.000	735.250	1082.750
ECMW11	48	10	745.500	667.000	896.000
ECMW12	45	10	610.000	554.000	683.000
ECMW13	48	12	937.500	658.250	1225.000
ECMW14	47	12	690.000	434.000	914.000
ECMW15	47	11	107.000	74.225	143.750
ECMW16	47	10	292.000	178.500	527.000
ECMW17	48	10	479.000	238.125	720.250
ECMW18	47	11	87.150	76.300	97.500
ECMW19	38	10	97.500	83.250	139.425
ECMW20	38	11	111.000	85.000	168.800
ECMW21	38	10	64.000	57.050	90.800
ECMW22	38	9	141.700	124.000	176.100
ECMW4	47	10	6700.000	3680.000	7507.500
ECMW5	48	10	817.000	429.900	959.500
ECMW6	50	13	7800.000	3975.000	14965.000
ECMW7	50	13	5920.000	3550.000	18897.000
ECMW8	49	14	10210.000	6000.000	18980.000
ECMW9	47	10	1944.000	1618.000	2215.000

H = 626.196 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW8 vs ECMW21	617.754	10.954	Yes
ECMW8 vs ECMW18	573.357	10.859	Yes
ECMW8 vs ECMW15	561.204	10.629	Yes
ECMW8 vs ECMW19	558.718	9.907	Yes
ECMW8 vs ECMW20	533.935	9.372	Yes
ECMW8 vs ECMW22	501.395	8.977	Yes
ECMW8 vs CNTL	488.658	11.295	Yes

ECMW8 vs ECMW16	398.978	7.607	Yes
ECMW8 vs ECMW17	330.593	6.344	Yes
ECMW8 vs ECMW12	281.271	5.290	Yes
ECMW8 vs ECMW14	270.100	5.080	Yes
ECMW8 vs ECMW5	256.501	4.922	Yes
ECMW8 vs ECMW11	224.080	4.300	Yes
ECMW8 vs ECMW13	203.801	3.860	Yes
ECMW8 vs ECMW10	186.014	3.570	No
ECMW8 vs ECMW9	91.127	1.738	Do Not Test
ECMW8 vs ECMW4	30.248	0.577	Do Not Test
ECMW8 vs ECMW7	30.086	0.574	Do Not Test
ECMW8 vs ECMW6	12.910	0.246	Do Not Test
ECMW6 vs ECMW21	604.843	10.856	Yes
ECMW6 vs ECMW18	560.446	10.763	Yes
ECMW6 vs ECMW15	548.294	10.530	Yes
ECMW6 vs ECMW19	545.807	9.797	Yes
ECMW6 vs ECMW20	521.025	9.255	Yes
ECMW6 vs ECMW22	488.484	8.855	Yes
ECMW6 vs CNTL	475.747	11.229	Yes
ECMW6 vs ECMW16	386.068	7.466	Yes
ECMW6 vs ECMW17	317.682	6.184	Yes
ECMW6 vs ECMW12	268.361	5.117	Yes
ECMW6 vs ECMW14	257.190	4.904	Yes
ECMW6 vs ECMW5	243.590	4.742	Yes
ECMW6 vs ECMW11	211.169	4.111	Yes
ECMW6 vs ECMW13	190.891	3.666	Yes
ECMW6 vs ECMW10	173.103	3.370	Do Not Test
ECMW6 vs ECMW9	78.216	1.513	Do Not Test
ECMW6 vs ECMW4	17.338	0.335	Do Not Test
ECMW6 vs ECMW7	17.176	0.332	Do Not Test
ECMW7 vs ECMW21	587.667	10.548	Yes
ECMW7 vs ECMW18	543.271	10.433	Yes
ECMW7 vs ECMW15	531.118	10.200	Yes
ECMW7 vs ECMW19	528.632	9.488	Yes
ECMW7 vs ECMW20	503.849	8.950	Yes
ECMW7 vs ECMW22	471.308	8.544	Yes
ECMW7 vs CNTL	458.572	10.823	Yes
ECMW7 vs ECMW16	368.892	7.134	Yes
ECMW7 vs ECMW17	300.507	5.850	Yes
ECMW7 vs ECMW12	251.185	4.789	Yes
ECMW7 vs ECMW14	240.014	4.576	Yes
ECMW7 vs ECMW5	226.415	4.407	Yes
ECMW7 vs ECMW11	193.994	3.776	Yes
ECMW7 vs ECMW13	173.715	3.336	No
ECMW7 vs ECMW10	155.928	3.035	Do Not Test
ECMW7 vs ECMW9	61.041	1.180	Do Not Test
ECMW7 vs ECMW4	0.162	0.00314	Do Not Test
ECMW4 vs ECMW21	587.505	10.545	Yes
ECMW4 vs ECMW18	543.108	10.430	Yes
ECMW4 vs ECMW15	530.956	10.197	Yes
ECMW4 vs ECMW19	528.470	9.486	Yes
ECMW4 vs ECMW20	503.687	8.947	Yes
ECMW4 vs ECMW22	471.146	8.541	Yes
ECMW4 vs CNTL	458.409	10.819	Yes
ECMW4 vs ECMW16	368.730	7.130	Yes
ECMW4 vs ECMW17	300.345	5.847	Yes

ECMW4 vs ECMW12	251.023	4.786	Yes
ECMW4 vs ECMW14	239.852	4.573	Yes
ECMW4 vs ECMW5	226.252	4.404	Yes
ECMW4 vs ECMW11	193.831	3.773	Yes
ECMW4 vs ECMW13	173.553	3.333	Do Not Test
ECMW4 vs ECMW10	155.766	3.032	Do Not Test
ECMW4 vs ECMW9	60.878	1.177	Do Not Test
ECMW9 vs ECMW21	526.627	9.452	Yes
ECMW9 vs ECMW18	482.230	9.261	Yes
ECMW9 vs ECMW15	470.077	9.028	Yes
ECMW9 vs ECMW19	467.591	8.393	Yes
ECMW9 vs ECMW20	442.809	7.866	Yes
ECMW9 vs ECMW22	410.268	7.437	Yes
ECMW9 vs CNTL	397.531	9.382	Yes
ECMW9 vs ECMW16	307.851	5.953	Yes
ECMW9 vs ECMW17	239.466	4.661	Yes
ECMW9 vs ECMW12	190.145	3.626	No
ECMW9 vs ECMW14	178.973	3.413	Do Not Test
ECMW9 vs ECMW5	165.374	3.219	Do Not Test
ECMW9 vs ECMW11	132.953	2.588	Do Not Test
ECMW9 vs ECMW13	112.675	2.164	Do Not Test
ECMW9 vs ECMW10	94.887	1.847	Do Not Test
ECMW10 vs ECMW21	431.740	7.794	Yes
ECMW10 vs ECMW18	387.343	7.488	Yes
ECMW10 vs ECMW15	375.190	7.253	Yes
ECMW10 vs ECMW19	372.704	6.728	Yes
ECMW10 vs ECMW20	347.922	6.215	Yes
ECMW10 vs ECMW22	315.381	5.751	Yes
ECMW10 vs CNTL	302.644	7.214	Yes
ECMW10 vs ECMW16	212.964	4.146	Yes
ECMW10 vs ECMW17	144.579	2.833	No
ECMW10 vs ECMW12	95.258	1.828	Do Not Test
ECMW10 vs ECMW14	84.086	1.614	Do Not Test
ECMW10 vs ECMW5	70.487	1.381	Do Not Test
ECMW10 vs ECMW11	38.066	0.746	Do Not Test
ECMW10 vs ECMW13	17.787	0.344	Do Not Test
ECMW13 vs ECMW21	413.952	7.386	Yes
ECMW13 vs ECMW18	369.556	7.049	Yes
ECMW13 vs ECMW15	357.403	6.817	Yes
ECMW13 vs ECMW19	354.917	6.333	Yes
ECMW13 vs ECMW20	330.134	5.830	Yes
ECMW13 vs ECMW22	297.593	5.362	Yes
ECMW13 vs CNTL	284.856	6.655	Yes
ECMW13 vs ECMW16	195.177	3.748	Yes
ECMW13 vs ECMW17	126.792	2.451	Do Not Test
ECMW13 vs ECMW12	77.470	1.467	Do Not Test
ECMW13 vs ECMW14	66.299	1.256	Do Not Test
ECMW13 vs ECMW5	52.700	1.019	Do Not Test
ECMW13 vs ECMW11	20.279	0.392	Do Not Test
ECMW11 vs ECMW21	393.674	7.106	Yes
ECMW11 vs ECMW18	349.277	6.752	Yes
ECMW11 vs ECMW15	337.124	6.517	Yes
ECMW11 vs ECMW19	334.638	6.041	Yes
ECMW11 vs ECMW20	309.856	5.535	Yes
ECMW11 vs ECMW22	277.315	5.056	Yes
ECMW11 vs CNTL	264.578	6.307	Yes

ECMW11 vs ECMW16	174.898	3.405	No
ECMW11 vs ECMW17	106.513	2.087	Do Not Test
ECMW11 vs ECMW12	57.192	1.098	Do Not Test
ECMW11 vs ECMW14	46.020	0.883	Do Not Test
ECMW11 vs ECMW5	32.421	0.635	Do Not Test
ECMW5 vs ECMW21	361.253	6.521	Yes
ECMW5 vs ECMW18	316.856	6.125	Yes
ECMW5 vs ECMW15	304.703	5.890	Yes
ECMW5 vs ECMW19	302.217	5.456	Yes
ECMW5 vs ECMW20	277.435	4.956	Yes
ECMW5 vs ECMW22	244.894	4.465	Yes
ECMW5 vs CNTL	232.157	5.534	Yes
ECMW5 vs ECMW16	142.477	2.773	Do Not Test
ECMW5 vs ECMW17	74.092	1.452	Do Not Test
ECMW5 vs ECMW12	24.771	0.475	Do Not Test
ECMW5 vs ECMW14	13.599	0.261	Do Not Test
ECMW14 vs ECMW21	347.654	6.165	Yes
ECMW14 vs ECMW18	303.257	5.744	Yes
ECMW14 vs ECMW15	291.104	5.513	Yes
ECMW14 vs ECMW19	288.618	5.118	Yes
ECMW14 vs ECMW20	263.835	4.631	Yes
ECMW14 vs ECMW22	231.295	4.141	Yes
ECMW14 vs CNTL	218.558	5.052	Yes
ECMW14 vs ECMW16	128.878	2.457	Do Not Test
ECMW14 vs ECMW17	60.493	1.161	Do Not Test
ECMW14 vs ECMW12	11.171	0.210	Do Not Test
ECMW12 vs ECMW21	336.482	5.967	Yes
ECMW12 vs ECMW18	292.085	5.532	Yes
ECMW12 vs ECMW15	279.933	5.302	Yes
ECMW12 vs ECMW19	277.446	4.920	Yes
ECMW12 vs ECMW20	252.664	4.435	Yes
ECMW12 vs ECMW22	220.123	3.941	Yes
ECMW12 vs CNTL	207.386	4.794	Yes
ECMW12 vs ECMW16	117.707	2.244	Do Not Test
ECMW12 vs ECMW17	49.321	0.946	Do Not Test
ECMW17 vs ECMW21	287.161	5.184	Yes
ECMW17 vs ECMW18	242.764	4.693	Yes
ECMW17 vs ECMW15	230.611	4.458	Yes
ECMW17 vs ECMW19	228.125	4.118	Yes
ECMW17 vs ECMW20	203.343	3.632	No
ECMW17 vs ECMW22	170.802	3.114	Do Not Test
ECMW17 vs CNTL	158.065	3.768	Do Not Test
ECMW17 vs ECMW16	68.385	1.331	Do Not Test
ECMW16 vs ECMW21	218.776	3.927	Yes
ECMW16 vs ECMW18	174.379	3.349	No
ECMW16 vs ECMW15	162.226	3.116	Do Not Test
ECMW16 vs ECMW19	159.740	2.867	Do Not Test
ECMW16 vs ECMW20	134.957	2.397	Do Not Test
ECMW16 vs ECMW22	102.417	1.857	Do Not Test
ECMW16 vs CNTL	89.680	2.117	Do Not Test
CNTL vs ECMW21	129.096	2.737	No
CNTL vs ECMW18	84.699	1.979	Do Not Test
CNTL vs ECMW15	72.546	1.695	Do Not Test
CNTL vs ECMW19	70.060	1.485	Do Not Test
CNTL vs ECMW20	45.278	0.946	Do Not Test
CNTL vs ECMW22	12.737	0.274	Do Not Test

ECMW22 vs ECMW21	116.359	1.975	Do Not Test
ECMW22 vs ECMW18	71.962	1.297	Do Not Test
ECMW22 vs ECMW15	59.809	1.078	Do Not Test
ECMW22 vs ECMW19	57.323	0.973	Do Not Test
ECMW22 vs ECMW20	32.541	0.547	Do Not Test
ECMW20 vs ECMW21	83.818	1.397	Do Not Test
ECMW20 vs ECMW18	39.421	0.696	Do Not Test
ECMW20 vs ECMW15	27.269	0.482	Do Not Test
ECMW20 vs ECMW19	24.782	0.413	Do Not Test
ECMW19 vs ECMW21	59.036	0.993	Do Not Test
ECMW19 vs ECMW18	14.639	0.261	Do Not Test
ECMW19 vs ECMW15	2.486	0.0444	Do Not Test
ECMW15 vs ECMW21	56.550	1.009	Do Not Test
ECMW15 vs ECMW18	12.153	0.232	Do Not Test
ECMW18 vs ECMW21	44.397	0.792	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:17:19 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Sulfate (mg/L)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:17:19 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	48	12.300	5.918	21.050
ECMW10	48	4	135.000	101.000	152.750
ECMW11	48	5	209.000	134.000	278.000
ECMW12	45	16	13.000	5.935	21.050
ECMW13	48	18	454.500	355.000	553.500
ECMW14	47	4	159.000	123.000	212.000
ECMW15	47	17	12.500	10.140	13.925
ECMW16	47	3	12.750	9.352	15.375
ECMW17	48	4	20.700	11.075	39.500
ECMW18	47	15	3.810	2.535	6.108
ECMW19	38	16	2.970	2.445	4.578
ECMW20	38	16	10.350	8.748	14.100
ECMW21	38	16	4.050	3.620	5.455
ECMW22	38	16	5.105	3.598	6.763
ECMW4	47	3	882.000	758.000	972.250
ECMW5	48	4	99.850	59.150	476.000
ECMW6	50	3	30.800	15.700	56.000
ECMW7	50	3	476.000	312.000	866.000
ECMW8	49	4	642.000	134.000	815.000
ECMW9	47	3	546.000	518.500	612.000

H = 668.295 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW4 vs ECMW19	685.318	11.530	Yes
ECMW4 vs ECMW18	657.655	12.436	Yes
ECMW4 vs ECMW21	650.091	10.938	Yes
ECMW4 vs ECMW22	642.227	10.805	Yes
ECMW4 vs ECMW20	531.182	8.937	Yes
ECMW4 vs ECMW16	519.205	10.699	Yes
ECMW4 vs ECMW12	518.347	9.521	Yes

ECMW4 vs CNTL	518.018	12.372	Yes
ECMW4 vs ECMW15	516.862	9.590	Yes
ECMW4 vs ECMW17	446.875	9.208	Yes
ECMW4 vs ECMW6	399.817	8.373	Yes
ECMW4 vs ECMW10	260.466	5.367	Yes
ECMW4 vs ECMW14	239.656	4.910	Yes
ECMW4 vs ECMW5	226.841	4.674	Yes
ECMW4 vs ECMW11	209.272	4.287	Yes
ECMW4 vs ECMW8	114.640	2.376	No
ECMW4 vs ECMW13	110.712	2.054	Do Not Test
ECMW4 vs ECMW7	87.540	1.833	Do Not Test
ECMW4 vs ECMW9	74.261	1.530	Do Not Test
ECMW9 vs ECMW19	611.057	10.281	Yes
ECMW9 vs ECMW18	583.393	11.032	Yes
ECMW9 vs ECMW21	575.830	9.688	Yes
ECMW9 vs ECMW22	567.966	9.556	Yes
ECMW9 vs ECMW20	456.920	7.688	Yes
ECMW9 vs ECMW16	444.943	9.169	Yes
ECMW9 vs ECMW12	444.086	8.157	Yes
ECMW9 vs CNTL	443.756	10.598	Yes
ECMW9 vs ECMW15	442.601	8.212	Yes
ECMW9 vs ECMW17	372.614	7.678	Yes
ECMW9 vs ECMW6	325.555	6.818	Yes
ECMW9 vs ECMW10	186.205	3.837	Yes
ECMW9 vs ECMW14	165.395	3.389	No
ECMW9 vs ECMW5	152.580	3.144	Do Not Test
ECMW9 vs ECMW11	135.011	2.766	Do Not Test
ECMW9 vs ECMW8	40.379	0.837	Do Not Test
ECMW9 vs ECMW13	36.451	0.676	Do Not Test
ECMW9 vs ECMW7	13.279	0.278	Do Not Test
ECMW7 vs ECMW19	597.778	10.166	Yes
ECMW7 vs ECMW18	570.115	10.929	Yes
ECMW7 vs ECMW21	562.551	9.567	Yes
ECMW7 vs ECMW22	554.687	9.433	Yes
ECMW7 vs ECMW20	443.642	7.545	Yes
ECMW7 vs ECMW16	431.664	9.040	Yes
ECMW7 vs ECMW12	430.807	8.015	Yes
ECMW7 vs CNTL	430.478	10.509	Yes
ECMW7 vs ECMW15	429.322	8.071	Yes
ECMW7 vs ECMW17	359.335	7.526	Yes
ECMW7 vs ECMW6	312.277	6.651	Yes
ECMW7 vs ECMW10	172.926	3.622	No
ECMW7 vs ECMW14	152.116	3.167	Do Not Test
ECMW7 vs ECMW5	139.301	2.917	Do Not Test
ECMW7 vs ECMW11	121.732	2.534	Do Not Test
ECMW7 vs ECMW8	27.100	0.571	Do Not Test
ECMW7 vs ECMW13	23.172	0.436	Do Not Test
ECMW13 vs ECMW19	574.606	8.994	Yes
ECMW13 vs ECMW18	546.943	9.455	Yes
ECMW13 vs ECMW21	539.379	8.442	Yes
ECMW13 vs ECMW22	531.515	8.319	Yes
ECMW13 vs ECMW20	420.470	6.581	Yes
ECMW13 vs ECMW16	408.492	7.580	Yes
ECMW13 vs ECMW12	407.635	6.877	Yes
ECMW13 vs CNTL	407.306	8.488	Yes
ECMW13 vs ECMW15	406.150	6.911	Yes

ECMW13 vs ECMW17	336.163	6.237	Yes
ECMW13 vs ECMW6	289.105	5.435	Yes
ECMW13 vs ECMW10	149.754	2.779	Do Not Test
ECMW13 vs ECMW14	128.944	2.381	Do Not Test
ECMW13 vs ECMW5	116.129	2.155	Do Not Test
ECMW13 vs ECMW11	98.560	1.820	Do Not Test
ECMW13 vs ECMW8	3.928	0.0732	Do Not Test
ECMW8 vs ECMW19	570.678	9.637	Yes
ECMW8 vs ECMW18	543.015	10.317	Yes
ECMW8 vs ECMW21	535.451	9.043	Yes
ECMW8 vs ECMW22	527.587	8.910	Yes
ECMW8 vs ECMW20	416.542	7.034	Yes
ECMW8 vs ECMW16	404.565	8.383	Yes
ECMW8 vs ECMW12	403.707	7.448	Yes
ECMW8 vs CNTL	403.378	9.706	Yes
ECMW8 vs ECMW15	402.222	7.497	Yes
ECMW8 vs ECMW17	332.235	6.884	Yes
ECMW8 vs ECMW6	285.177	6.007	Yes
ECMW8 vs ECMW10	145.826	3.022	Do Not Test
ECMW8 vs ECMW14	125.016	2.575	Do Not Test
ECMW8 vs ECMW5	112.201	2.325	Do Not Test
ECMW8 vs ECMW11	94.632	1.950	Do Not Test
ECMW11 vs ECMW19	476.046	7.979	Yes
ECMW11 vs ECMW18	448.383	8.438	Yes
ECMW11 vs ECMW21	440.819	7.388	Yes
ECMW11 vs ECMW22	432.955	7.256	Yes
ECMW11 vs ECMW20	321.910	5.395	Yes
ECMW11 vs ECMW16	309.932	6.350	Yes
ECMW11 vs ECMW12	309.075	5.651	Yes
ECMW11 vs CNTL	308.745	7.317	Yes
ECMW11 vs ECMW15	307.590	5.681	Yes
ECMW11 vs ECMW17	237.603	4.868	Yes
ECMW11 vs ECMW6	190.545	3.967	Yes
ECMW11 vs ECMW10	51.194	1.049	Do Not Test
ECMW11 vs ECMW14	30.384	0.619	Do Not Test
ECMW11 vs ECMW5	17.569	0.360	Do Not Test
ECMW5 vs ECMW19	458.477	7.714	Yes
ECMW5 vs ECMW18	430.814	8.147	Yes
ECMW5 vs ECMW21	423.250	7.121	Yes
ECMW5 vs ECMW22	415.386	6.989	Yes
ECMW5 vs ECMW20	304.341	5.121	Yes
ECMW5 vs ECMW16	292.364	6.025	Yes
ECMW5 vs ECMW12	291.506	5.354	Yes
ECMW5 vs CNTL	291.177	6.954	Yes
ECMW5 vs ECMW15	290.021	5.381	Yes
ECMW5 vs ECMW17	220.034	4.534	Yes
ECMW5 vs ECMW6	172.976	3.623	No
ECMW5 vs ECMW10	33.625	0.693	Do Not Test
ECMW5 vs ECMW14	12.815	0.263	Do Not Test
ECMW14 vs ECMW19	445.662	7.469	Yes
ECMW14 vs ECMW18	417.999	7.866	Yes
ECMW14 vs ECMW21	410.435	6.879	Yes
ECMW14 vs ECMW22	402.571	6.747	Yes
ECMW14 vs ECMW20	291.526	4.886	Yes
ECMW14 vs ECMW16	279.549	5.727	Yes
ECMW14 vs ECMW12	278.691	5.095	Yes

ECMW14 vs CNTL	278.362	6.597	Yes
ECMW14 vs ECMW15	277.206	5.119	Yes
ECMW14 vs ECMW17	207.219	4.245	Yes
ECMW14 vs ECMW6	160.161	3.334	Do Not Test
ECMW14 vs ECMW10	20.810	0.426	Do Not Test
ECMW10 vs ECMW19	424.852	7.148	Yes
ECMW10 vs ECMW18	397.189	7.511	Yes
ECMW10 vs ECMW21	389.625	6.555	Yes
ECMW10 vs ECMW22	381.761	6.423	Yes
ECMW10 vs ECMW20	270.716	4.555	Yes
ECMW10 vs ECMW16	258.739	5.332	Yes
ECMW10 vs ECMW12	257.881	4.737	Yes
ECMW10 vs CNTL	257.552	6.151	Yes
ECMW10 vs ECMW15	256.396	4.757	Yes
ECMW10 vs ECMW17	186.409	3.841	Yes
ECMW10 vs ECMW6	139.351	2.918	Do Not Test
ECMW6 vs ECMW19	285.501	4.855	Yes
ECMW6 vs ECMW18	257.838	4.942	Yes
ECMW6 vs ECMW21	250.274	4.256	Yes
ECMW6 vs ECMW22	242.411	4.123	Yes
ECMW6 vs ECMW20	131.365	2.234	No
ECMW6 vs ECMW16	119.388	2.500	Do Not Test
ECMW6 vs ECMW12	118.530	2.205	Do Not Test
ECMW6 vs CNTL	118.201	2.885	Do Not Test
ECMW6 vs ECMW15	117.045	2.200	Do Not Test
ECMW6 vs ECMW17	47.058	0.986	Do Not Test
ECMW17 vs ECMW19	238.443	4.012	Yes
ECMW17 vs ECMW18	210.780	3.986	Yes
ECMW17 vs ECMW21	203.216	3.419	No
ECMW17 vs ECMW22	195.352	3.287	Do Not Test
ECMW17 vs ECMW20	84.307	1.418	Do Not Test
ECMW17 vs ECMW16	72.330	1.490	Do Not Test
ECMW17 vs ECMW12	71.472	1.313	Do Not Test
ECMW17 vs CNTL	71.143	1.699	Do Not Test
ECMW17 vs ECMW15	69.987	1.299	Do Not Test
ECMW15 vs ECMW19	168.456	2.637	No
ECMW15 vs ECMW18	140.793	2.434	Do Not Test
ECMW15 vs ECMW21	133.229	2.085	Do Not Test
ECMW15 vs ECMW22	125.365	1.962	Do Not Test
ECMW15 vs ECMW20	14.320	0.224	Do Not Test
ECMW15 vs ECMW16	2.342	0.0435	Do Not Test
ECMW15 vs ECMW12	1.485	0.0251	Do Not Test
ECMW15 vs CNTL	1.156	0.0241	Do Not Test
CNTL vs ECMW19	167.301	3.090	Do Not Test
CNTL vs ECMW18	139.637	2.981	Do Not Test
CNTL vs ECMW21	132.073	2.440	Do Not Test
CNTL vs ECMW22	124.210	2.294	Do Not Test
CNTL vs ECMW20	13.164	0.243	Do Not Test
CNTL vs ECMW16	1.187	0.0283	Do Not Test
CNTL vs ECMW12	0.330	0.00678	Do Not Test
ECMW12 vs ECMW19	166.971	2.595	Do Not Test
ECMW12 vs ECMW18	139.308	2.387	Do Not Test
ECMW12 vs ECMW21	131.744	2.047	Do Not Test
ECMW12 vs ECMW22	123.880	1.925	Do Not Test
ECMW12 vs ECMW20	12.835	0.199	Do Not Test
ECMW12 vs ECMW16	0.857	0.0157	Do Not Test

ECMW16 vs ECMW19	166.114	2.795	Do Not Test
ECMW16 vs ECMW18	138.450	2.618	Do Not Test
ECMW16 vs ECMW21	130.886	2.202	Do Not Test
ECMW16 vs ECMW22	123.023	2.070	Do Not Test
ECMW16 vs ECMW20	11.977	0.202	Do Not Test
ECMW20 vs ECMW19	154.136	2.246	Do Not Test
ECMW20 vs ECMW18	126.473	2.006	Do Not Test
ECMW20 vs ECMW21	118.909	1.733	Do Not Test
ECMW20 vs ECMW22	111.045	1.618	Do Not Test
ECMW22 vs ECMW19	43.091	0.628	Do Not Test
ECMW22 vs ECMW18	15.428	0.245	Do Not Test
ECMW22 vs ECMW21	7.864	0.115	Do Not Test
ECMW21 vs ECMW19	35.227	0.513	Do Not Test
ECMW21 vs ECMW18	7.564	0.120	Do Not Test
ECMW18 vs ECMW19	27.663	0.439	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:17:37 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Temperature (°C)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:17:37 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	51	18.500	16.900	19.300
ECMW10	48	17	21.100	19.500	21.990
ECMW11	48	19	20.100	18.220	22.145
ECMW12	45	16	21.200	18.980	23.035
ECMW13	48	19	19.160	16.975	20.740
ECMW14	47	18	19.700	17.285	21.515
ECMW15	47	18	20.160	16.465	22.335
ECMW16	47	17	20.500	16.528	22.505
ECMW17	48	17	18.900	18.150	20.300
ECMW18	47	17	18.450	15.478	19.808
ECMW19	38	10	17.785	17.028	18.288
ECMW20	38	11	18.900	17.700	20.400
ECMW21	38	10	18.700	17.648	19.495
ECMW22	38	10	19.000	18.313	20.425
ECMW4	47	17	19.500	17.578	21.105
ECMW5	48	17	19.400	17.800	21.410
ECMW6	50	19	19.970	18.090	20.700
ECMW7	50	19	20.300	18.930	20.800
ECMW8	49	19	19.250	18.575	20.325
ECMW9	47	17	19.465	18.340	20.130

H = 82.712 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW12 vs ECMW19	267.986	5.403	Yes
ECMW12 vs ECMW18	213.896	4.387	Yes
ECMW12 vs CNTL	205.753	5.126	Yes
ECMW12 vs ECMW21	174.344	3.515	No
ECMW12 vs ECMW13	140.948	2.867	Do Not Test
ECMW12 vs ECMW17	132.589	2.742	Do Not Test
ECMW12 vs ECMW20	132.472	2.646	Do Not Test

ECMW12 vs ECMW22	129.111	2.603	Do Not Test
ECMW12 vs ECMW4	118.079	2.422	Do Not Test
ECMW12 vs ECMW8	114.496	2.349	Do Not Test
ECMW12 vs ECMW9	112.329	2.304	Do Not Test
ECMW12 vs ECMW5	108.266	2.239	Do Not Test
ECMW12 vs ECMW14	100.621	2.047	Do Not Test
ECMW12 vs ECMW6	91.783	1.898	Do Not Test
ECMW12 vs ECMW15	81.638	1.661	Do Not Test
ECMW12 vs ECMW16	75.796	1.555	Do Not Test
ECMW12 vs ECMW7	52.154	1.078	Do Not Test
ECMW12 vs ECMW11	47.569	0.968	Do Not Test
ECMW12 vs ECMW10	3.395	0.0702	Do Not Test
ECMW10 vs ECMW19	264.591	5.421	Yes
ECMW10 vs ECMW18	210.501	4.390	Yes
ECMW10 vs CNTL	202.357	5.168	Yes
ECMW10 vs ECMW21	170.948	3.503	Do Not Test
ECMW10 vs ECMW13	137.553	2.844	Do Not Test
ECMW10 vs ECMW17	129.194	2.717	Do Not Test
ECMW10 vs ECMW20	129.076	2.619	Do Not Test
ECMW10 vs ECMW22	125.716	2.576	Do Not Test
ECMW10 vs ECMW4	114.684	2.392	Do Not Test
ECMW10 vs ECMW8	111.101	2.317	Do Not Test
ECMW10 vs ECMW9	108.934	2.272	Do Not Test
ECMW10 vs ECMW5	104.871	2.205	Do Not Test
ECMW10 vs ECMW14	97.225	2.010	Do Not Test
ECMW10 vs ECMW6	88.387	1.859	Do Not Test
ECMW10 vs ECMW15	78.242	1.618	Do Not Test
ECMW10 vs ECMW16	72.401	1.510	Do Not Test
ECMW10 vs ECMW7	48.758	1.025	Do Not Test
ECMW10 vs ECMW11	44.174	0.913	Do Not Test
ECMW11 vs ECMW19	220.417	4.444	Yes
ECMW11 vs ECMW18	166.327	3.412	No
ECMW11 vs CNTL	158.184	3.941	Do Not Test
ECMW11 vs ECMW21	126.775	2.556	Do Not Test
ECMW11 vs ECMW13	93.379	1.899	Do Not Test
ECMW11 vs ECMW17	85.020	1.758	Do Not Test
ECMW11 vs ECMW20	84.903	1.696	Do Not Test
ECMW11 vs ECMW22	81.542	1.644	Do Not Test
ECMW11 vs ECMW4	70.510	1.446	Do Not Test
ECMW11 vs ECMW8	66.927	1.373	Do Not Test
ECMW11 vs ECMW9	64.760	1.328	Do Not Test
ECMW11 vs ECMW5	60.697	1.255	Do Not Test
ECMW11 vs ECMW14	53.052	1.079	Do Not Test
ECMW11 vs ECMW6	44.214	0.914	Do Not Test
ECMW11 vs ECMW15	34.069	0.693	Do Not Test
ECMW11 vs ECMW16	28.227	0.579	Do Not Test
ECMW11 vs ECMW7	4.585	0.0948	Do Not Test
ECMW7 vs ECMW19	215.833	4.422	Yes
ECMW7 vs ECMW18	161.742	3.374	Do Not Test
ECMW7 vs CNTL	153.599	3.923	Do Not Test
ECMW7 vs ECMW21	122.190	2.504	Do Not Test
ECMW7 vs ECMW13	88.795	1.836	Do Not Test
ECMW7 vs ECMW17	80.435	1.692	Do Not Test
ECMW7 vs ECMW20	80.318	1.630	Do Not Test
ECMW7 vs ECMW22	76.958	1.577	Do Not Test
ECMW7 vs ECMW4	65.926	1.375	Do Not Test

ECMW7 vs ECMW8	62.342	1.300	Do Not Test
ECMW7 vs ECMW9	60.176	1.255	Do Not Test
ECMW7 vs ECMW5	56.113	1.180	Do Not Test
ECMW7 vs ECMW14	48.467	1.002	Do Not Test
ECMW7 vs ECMW6	39.629	0.833	Do Not Test
ECMW7 vs ECMW15	29.484	0.610	Do Not Test
ECMW7 vs ECMW16	23.642	0.493	Do Not Test
ECMW16 vs ECMW19	192.190	3.907	Yes
ECMW16 vs ECMW18	138.100	2.857	Do Not Test
ECMW16 vs CNTL	129.957	3.279	Do Not Test
ECMW16 vs ECMW21	98.548	2.003	Do Not Test
ECMW16 vs ECMW13	65.152	1.336	Do Not Test
ECMW16 vs ECMW17	56.793	1.185	Do Not Test
ECMW16 vs ECMW20	56.676	1.141	Do Not Test
ECMW16 vs ECMW22	53.315	1.084	Do Not Test
ECMW16 vs ECMW4	42.283	0.875	Do Not Test
ECMW16 vs ECMW8	38.700	0.801	Do Not Test
ECMW16 vs ECMW9	36.533	0.756	Do Not Test
ECMW16 vs ECMW5	32.470	0.677	Do Not Test
ECMW16 vs ECMW14	24.825	0.509	Do Not Test
ECMW16 vs ECMW6	15.987	0.333	Do Not Test
ECMW16 vs ECMW15	5.842	0.120	Do Not Test
ECMW15 vs ECMW19	186.349	3.757	Yes
ECMW15 vs ECMW18	132.258	2.713	Do Not Test
ECMW15 vs CNTL	124.115	3.092	Do Not Test
ECMW15 vs ECMW21	92.706	1.869	Do Not Test
ECMW15 vs ECMW13	59.310	1.206	Do Not Test
ECMW15 vs ECMW17	50.951	1.054	Do Not Test
ECMW15 vs ECMW20	50.834	1.015	Do Not Test
ECMW15 vs ECMW22	47.474	0.957	Do Not Test
ECMW15 vs ECMW4	36.441	0.747	Do Not Test
ECMW15 vs ECMW8	32.858	0.674	Do Not Test
ECMW15 vs ECMW9	30.691	0.630	Do Not Test
ECMW15 vs ECMW5	26.628	0.551	Do Not Test
ECMW15 vs ECMW14	18.983	0.386	Do Not Test
ECMW15 vs ECMW6	10.145	0.210	Do Not Test
ECMW6 vs ECMW19	176.204	3.610	No
ECMW6 vs ECMW18	122.113	2.547	Do Not Test
ECMW6 vs CNTL	113.970	2.911	Do Not Test
ECMW6 vs ECMW21	82.561	1.692	Do Not Test
ECMW6 vs ECMW13	49.166	1.017	Do Not Test
ECMW6 vs ECMW17	40.806	0.858	Do Not Test
ECMW6 vs ECMW20	40.689	0.826	Do Not Test
ECMW6 vs ECMW22	37.329	0.765	Do Not Test
ECMW6 vs ECMW4	26.297	0.548	Do Not Test
ECMW6 vs ECMW8	22.713	0.474	Do Not Test
ECMW6 vs ECMW9	20.547	0.429	Do Not Test
ECMW6 vs ECMW5	16.484	0.347	Do Not Test
ECMW6 vs ECMW14	8.838	0.183	Do Not Test
ECMW14 vs ECMW19	167.366	3.374	Do Not Test
ECMW14 vs ECMW18	113.275	2.324	Do Not Test
ECMW14 vs CNTL	105.132	2.619	Do Not Test
ECMW14 vs ECMW21	73.723	1.486	Do Not Test
ECMW14 vs ECMW13	40.328	0.820	Do Not Test
ECMW14 vs ECMW17	31.968	0.661	Do Not Test
ECMW14 vs ECMW20	31.851	0.636	Do Not Test

ECMW14 vs ECMW22	28.491	0.574	Do Not Test
ECMW14 vs ECMW4	17.459	0.358	Do Not Test
ECMW14 vs ECMW8	13.875	0.285	Do Not Test
ECMW14 vs ECMW9	11.709	0.240	Do Not Test
ECMW14 vs ECMW5	7.646	0.158	Do Not Test
ECMW5 vs ECMW19	159.720	3.272	Do Not Test
ECMW5 vs ECMW18	105.630	2.203	Do Not Test
ECMW5 vs CNTL	97.486	2.490	Do Not Test
ECMW5 vs ECMW21	66.077	1.354	Do Not Test
ECMW5 vs ECMW13	32.682	0.676	Do Not Test
ECMW5 vs ECMW17	24.323	0.512	Do Not Test
ECMW5 vs ECMW20	24.205	0.491	Do Not Test
ECMW5 vs ECMW22	20.845	0.427	Do Not Test
ECMW5 vs ECMW4	9.813	0.205	Do Not Test
ECMW5 vs ECMW8	6.230	0.130	Do Not Test
ECMW5 vs ECMW9	4.063	0.0847	Do Not Test
ECMW9 vs ECMW19	155.657	3.164	Do Not Test
ECMW9 vs ECMW18	101.567	2.101	Do Not Test
ECMW9 vs CNTL	93.424	2.357	Do Not Test
ECMW9 vs ECMW21	62.014	1.261	Do Not Test
ECMW9 vs ECMW13	28.619	0.587	Do Not Test
ECMW9 vs ECMW17	20.260	0.423	Do Not Test
ECMW9 vs ECMW20	20.143	0.406	Do Not Test
ECMW9 vs ECMW22	16.782	0.341	Do Not Test
ECMW9 vs ECMW4	5.750	0.119	Do Not Test
ECMW9 vs ECMW8	2.167	0.0448	Do Not Test
ECMW8 vs ECMW19	153.490	3.120	Do Not Test
ECMW8 vs ECMW18	99.400	2.056	Do Not Test
ECMW8 vs CNTL	91.257	2.302	Do Not Test
ECMW8 vs ECMW21	59.848	1.217	Do Not Test
ECMW8 vs ECMW13	26.452	0.543	Do Not Test
ECMW8 vs ECMW17	18.093	0.377	Do Not Test
ECMW8 vs ECMW20	17.976	0.362	Do Not Test
ECMW8 vs ECMW22	14.615	0.297	Do Not Test
ECMW8 vs ECMW4	3.583	0.0741	Do Not Test
ECMW4 vs ECMW19	149.907	3.047	Do Not Test
ECMW4 vs ECMW18	95.817	1.982	Do Not Test
ECMW4 vs CNTL	87.674	2.212	Do Not Test
ECMW4 vs ECMW21	56.264	1.144	Do Not Test
ECMW4 vs ECMW13	22.869	0.469	Do Not Test
ECMW4 vs ECMW17	14.510	0.303	Do Not Test
ECMW4 vs ECMW20	14.393	0.290	Do Not Test
ECMW4 vs ECMW22	11.032	0.224	Do Not Test
ECMW22 vs ECMW19	138.875	2.776	Do Not Test
ECMW22 vs ECMW18	84.785	1.724	Do Not Test
ECMW22 vs CNTL	76.641	1.884	Do Not Test
ECMW22 vs ECMW21	45.232	0.904	Do Not Test
ECMW22 vs ECMW13	11.837	0.239	Do Not Test
ECMW22 vs ECMW17	3.478	0.0713	Do Not Test
ECMW22 vs ECMW20	3.360	0.0666	Do Not Test
ECMW20 vs ECMW19	135.515	2.684	Do Not Test
ECMW20 vs ECMW18	81.424	1.640	Do Not Test
ECMW20 vs CNTL	73.281	1.777	Do Not Test
ECMW20 vs ECMW21	41.872	0.829	Do Not Test
ECMW20 vs ECMW13	8.476	0.169	Do Not Test
ECMW20 vs ECMW17	0.117	0.00238	Do Not Test

ECMW17 vs ECMW19	135.397	2.774	Do Not Test
ECMW17 vs ECMW18	81.307	1.696	Do Not Test
ECMW17 vs CNTL	73.164	1.868	Do Not Test
ECMW17 vs ECMW21	41.755	0.855	Do Not Test
ECMW17 vs ECMW13	8.359	0.173	Do Not Test
ECMW13 vs ECMW19	127.038	2.561	Do Not Test
ECMW13 vs ECMW18	72.948	1.496	Do Not Test
ECMW13 vs CNTL	64.805	1.614	Do Not Test
ECMW13 vs ECMW21	33.395	0.673	Do Not Test
ECMW21 vs ECMW19	93.643	1.872	Do Not Test
ECMW21 vs ECMW18	39.552	0.804	Do Not Test
ECMW21 vs CNTL	31.409	0.772	Do Not Test
CNTL vs ECMW19	62.234	1.530	Do Not Test
CNTL vs ECMW18	8.143	0.205	Do Not Test
ECMW18 vs ECMW19	54.090	1.100	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Wednesday, August 26, 2020, 2:17:54 PM

Data source: Data 1 in Data - WHG Copy

Dependent Variable: Turbidity (ntu)

Normality Test (Shapiro-Wilk) Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, August 26, 2020, 2:17:54 PM

Data source: Data 1 in Data - WHG Copy

Group	N	Missing	Median	25%	75%
CNTL	138	126	2.180	1.607	4.462
ECMW10	48	44	0.865	0.763	9.915
ECMW11	48	45	1.720	0.550	1.930
ECMW12	45	41	10.035	2.720	71.275
ECMW13	48	44	3.980	2.085	5.987
ECMW14	47	44	0.460	0.230	0.600
ECMW15	47	43	0.640	0.573	1.735
ECMW16	47	43	1.545	1.475	2.493
ECMW17	48	44	2.130	1.313	2.978
ECMW18	47	43	356.500	333.750	363.500
ECMW19	38	34	4.435	1.377	8.550
ECMW20	38	34	84.100	73.375	106.825
ECMW21	38	34	11.500	2.942	72.175
ECMW22	38	34	4.680	2.545	8.533
ECMW4	47	43	1.075	0.657	1.695
ECMW5	48	44	1.440	0.473	7.320
ECMW6	50	46	1.855	1.047	7.207
ECMW7	50	46	2.350	0.750	3.185
ECMW8	49	45	0.890	0.490	2.490
ECMW9	47	43	1.885	1.403	2.652

H = 50.805 with 19 degrees of freedom. (P = <0.001)

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = <0.001)

To isolate the group or groups that differ from the others use a multiple comparison procedure.

All Pairwise Multiple Comparison Procedures (Dunn's Method) :

Comparison	Diff of Ranks	Q	P<0.05
ECMW18 vs ECMW14	79.833	4.186	Yes
ECMW18 vs ECMW15	66.250	3.752	Yes
ECMW18 vs ECMW4	64.000	3.625	No
ECMW18 vs ECMW8	62.875	3.561	Do Not Test
ECMW18 vs ECMW11	59.167	3.102	Do Not Test
ECMW18 vs ECMW10	54.000	3.058	Do Not Test
ECMW18 vs ECMW5	51.750	2.931	Do Not Test

ECMW18 vs ECMW16	50.750	2.874	Do Not Test
ECMW18 vs ECMW7	47.875	2.711	Do Not Test
ECMW18 vs ECMW9	46.875	2.655	Do Not Test
ECMW18 vs ECMW6	45.000	2.549	Do Not Test
ECMW18 vs ECMW17	42.500	2.407	Do Not Test
ECMW18 vs CNTL	37.708	2.616	Do Not Test
ECMW18 vs ECMW19	35.750	2.025	Do Not Test
ECMW18 vs ECMW13	29.500	1.671	Do Not Test
ECMW18 vs ECMW22	23.750	1.345	Do Not Test
ECMW18 vs ECMW12	20.500	1.161	Do Not Test
ECMW18 vs ECMW21	17.250	0.977	Do Not Test
ECMW18 vs ECMW20	5.500	0.312	Do Not Test
ECMW20 vs ECMW14	74.333	3.898	Yes
ECMW20 vs ECMW15	60.750	3.441	No
ECMW20 vs ECMW4	58.500	3.313	Do Not Test
ECMW20 vs ECMW8	57.375	3.250	Do Not Test
ECMW20 vs ECMW11	53.667	2.814	Do Not Test
ECMW20 vs ECMW10	48.500	2.747	Do Not Test
ECMW20 vs ECMW5	46.250	2.619	Do Not Test
ECMW20 vs ECMW16	45.250	2.563	Do Not Test
ECMW20 vs ECMW7	42.375	2.400	Do Not Test
ECMW20 vs ECMW9	41.375	2.343	Do Not Test
ECMW20 vs ECMW6	39.500	2.237	Do Not Test
ECMW20 vs ECMW17	37.000	2.096	Do Not Test
ECMW20 vs CNTL	32.208	2.234	Do Not Test
ECMW20 vs ECMW19	30.250	1.713	Do Not Test
ECMW20 vs ECMW13	24.000	1.359	Do Not Test
ECMW20 vs ECMW22	18.250	1.034	Do Not Test
ECMW20 vs ECMW12	15.000	0.850	Do Not Test
ECMW20 vs ECMW21	11.750	0.665	Do Not Test
ECMW21 vs ECMW14	62.583	3.282	No
ECMW21 vs ECMW15	49.000	2.775	Do Not Test
ECMW21 vs ECMW4	46.750	2.648	Do Not Test
ECMW21 vs ECMW8	45.625	2.584	Do Not Test
ECMW21 vs ECMW11	41.917	2.198	Do Not Test
ECMW21 vs ECMW10	36.750	2.081	Do Not Test
ECMW21 vs ECMW5	34.500	1.954	Do Not Test
ECMW21 vs ECMW16	33.500	1.897	Do Not Test
ECMW21 vs ECMW7	30.625	1.734	Do Not Test
ECMW21 vs ECMW9	29.625	1.678	Do Not Test
ECMW21 vs ECMW6	27.750	1.572	Do Not Test
ECMW21 vs ECMW17	25.250	1.430	Do Not Test
ECMW21 vs CNTL	20.458	1.419	Do Not Test
ECMW21 vs ECMW19	18.500	1.048	Do Not Test
ECMW21 vs ECMW13	12.250	0.694	Do Not Test
ECMW21 vs ECMW22	6.500	0.368	Do Not Test
ECMW21 vs ECMW12	3.250	0.184	Do Not Test
ECMW12 vs ECMW14	59.333	3.111	Do Not Test
ECMW12 vs ECMW15	45.750	2.591	Do Not Test
ECMW12 vs ECMW4	43.500	2.464	Do Not Test
ECMW12 vs ECMW8	42.375	2.400	Do Not Test
ECMW12 vs ECMW11	38.667	2.027	Do Not Test
ECMW12 vs ECMW10	33.500	1.897	Do Not Test
ECMW12 vs ECMW5	31.250	1.770	Do Not Test
ECMW12 vs ECMW16	30.250	1.713	Do Not Test
ECMW12 vs ECMW7	27.375	1.550	Do Not Test

ECMW12 vs ECMW9	26.375	1.494	Do Not Test
ECMW12 vs ECMW6	24.500	1.388	Do Not Test
ECMW12 vs ECMW17	22.000	1.246	Do Not Test
ECMW12 vs CNTL	17.208	1.194	Do Not Test
ECMW12 vs ECMW19	15.250	0.864	Do Not Test
ECMW12 vs ECMW13	9.000	0.510	Do Not Test
ECMW12 vs ECMW22	3.250	0.184	Do Not Test
ECMW22 vs ECMW14	56.083	2.941	Do Not Test
ECMW22 vs ECMW15	42.500	2.407	Do Not Test
ECMW22 vs ECMW4	40.250	2.280	Do Not Test
ECMW22 vs ECMW8	39.125	2.216	Do Not Test
ECMW22 vs ECMW11	35.417	1.857	Do Not Test
ECMW22 vs ECMW10	30.250	1.713	Do Not Test
ECMW22 vs ECMW5	28.000	1.586	Do Not Test
ECMW22 vs ECMW16	27.000	1.529	Do Not Test
ECMW22 vs ECMW7	24.125	1.366	Do Not Test
ECMW22 vs ECMW9	23.125	1.310	Do Not Test
ECMW22 vs ECMW6	21.250	1.204	Do Not Test
ECMW22 vs ECMW17	18.750	1.062	Do Not Test
ECMW22 vs CNTL	13.958	0.968	Do Not Test
ECMW22 vs ECMW19	12.000	0.680	Do Not Test
ECMW22 vs ECMW13	5.750	0.326	Do Not Test
ECMW13 vs ECMW14	50.333	2.639	Do Not Test
ECMW13 vs ECMW15	36.750	2.081	Do Not Test
ECMW13 vs ECMW4	34.500	1.954	Do Not Test
ECMW13 vs ECMW8	33.375	1.890	Do Not Test
ECMW13 vs ECMW11	29.667	1.556	Do Not Test
ECMW13 vs ECMW10	24.500	1.388	Do Not Test
ECMW13 vs ECMW5	22.250	1.260	Do Not Test
ECMW13 vs ECMW16	21.250	1.204	Do Not Test
ECMW13 vs ECMW7	18.375	1.041	Do Not Test
ECMW13 vs ECMW9	17.375	0.984	Do Not Test
ECMW13 vs ECMW6	15.500	0.878	Do Not Test
ECMW13 vs ECMW17	13.000	0.736	Do Not Test
ECMW13 vs CNTL	8.208	0.569	Do Not Test
ECMW13 vs ECMW19	6.250	0.354	Do Not Test
ECMW19 vs ECMW14	44.083	2.312	Do Not Test
ECMW19 vs ECMW15	30.500	1.727	Do Not Test
ECMW19 vs ECMW4	28.250	1.600	Do Not Test
ECMW19 vs ECMW8	27.125	1.536	Do Not Test
ECMW19 vs ECMW11	23.417	1.228	Do Not Test
ECMW19 vs ECMW10	18.250	1.034	Do Not Test
ECMW19 vs ECMW5	16.000	0.906	Do Not Test
ECMW19 vs ECMW16	15.000	0.850	Do Not Test
ECMW19 vs ECMW7	12.125	0.687	Do Not Test
ECMW19 vs ECMW9	11.125	0.630	Do Not Test
ECMW19 vs ECMW6	9.250	0.524	Do Not Test
ECMW19 vs ECMW17	6.750	0.382	Do Not Test
ECMW19 vs CNTL	1.958	0.136	Do Not Test
CNTL vs ECMW14	42.125	2.614	Do Not Test
CNTL vs ECMW15	28.542	1.980	Do Not Test
CNTL vs ECMW4	26.292	1.824	Do Not Test
CNTL vs ECMW8	25.167	1.746	Do Not Test
CNTL vs ECMW11	21.458	1.331	Do Not Test
CNTL vs ECMW10	16.292	1.130	Do Not Test
CNTL vs ECMW5	14.042	0.974	Do Not Test

CNTL vs ECMW16	13.042	0.905	Do Not Test
CNTL vs ECMW7	10.167	0.705	Do Not Test
CNTL vs ECMW9	9.167	0.636	Do Not Test
CNTL vs ECMW6	7.292	0.506	Do Not Test
CNTL vs ECMW17	4.792	0.332	Do Not Test
ECMW17 vs ECMW14	37.333	1.958	Do Not Test
ECMW17 vs ECMW15	23.750	1.345	Do Not Test
ECMW17 vs ECMW4	21.500	1.218	Do Not Test
ECMW17 vs ECMW8	20.375	1.154	Do Not Test
ECMW17 vs ECMW11	16.667	0.874	Do Not Test
ECMW17 vs ECMW10	11.500	0.651	Do Not Test
ECMW17 vs ECMW5	9.250	0.524	Do Not Test
ECMW17 vs ECMW16	8.250	0.467	Do Not Test
ECMW17 vs ECMW7	5.375	0.304	Do Not Test
ECMW17 vs ECMW9	4.375	0.248	Do Not Test
ECMW17 vs ECMW6	2.500	0.142	Do Not Test
ECMW6 vs ECMW14	34.833	1.826	Do Not Test
ECMW6 vs ECMW15	21.250	1.204	Do Not Test
ECMW6 vs ECMW4	19.000	1.076	Do Not Test
ECMW6 vs ECMW8	17.875	1.012	Do Not Test
ECMW6 vs ECMW11	14.167	0.743	Do Not Test
ECMW6 vs ECMW10	9.000	0.510	Do Not Test
ECMW6 vs ECMW5	6.750	0.382	Do Not Test
ECMW6 vs ECMW16	5.750	0.326	Do Not Test
ECMW6 vs ECMW7	2.875	0.163	Do Not Test
ECMW6 vs ECMW9	1.875	0.106	Do Not Test
ECMW9 vs ECMW14	32.958	1.728	Do Not Test
ECMW9 vs ECMW15	19.375	1.097	Do Not Test
ECMW9 vs ECMW4	17.125	0.970	Do Not Test
ECMW9 vs ECMW8	16.000	0.906	Do Not Test
ECMW9 vs ECMW11	12.292	0.645	Do Not Test
ECMW9 vs ECMW10	7.125	0.404	Do Not Test
ECMW9 vs ECMW5	4.875	0.276	Do Not Test
ECMW9 vs ECMW16	3.875	0.219	Do Not Test
ECMW9 vs ECMW7	1.000	0.0566	Do Not Test
ECMW7 vs ECMW14	31.958	1.676	Do Not Test
ECMW7 vs ECMW15	18.375	1.041	Do Not Test
ECMW7 vs ECMW4	16.125	0.913	Do Not Test
ECMW7 vs ECMW8	15.000	0.850	Do Not Test
ECMW7 vs ECMW11	11.292	0.592	Do Not Test
ECMW7 vs ECMW10	6.125	0.347	Do Not Test
ECMW7 vs ECMW5	3.875	0.219	Do Not Test
ECMW7 vs ECMW16	2.875	0.163	Do Not Test
ECMW16 vs ECMW14	29.083	1.525	Do Not Test
ECMW16 vs ECMW15	15.500	0.878	Do Not Test
ECMW16 vs ECMW4	13.250	0.750	Do Not Test
ECMW16 vs ECMW8	12.125	0.687	Do Not Test
ECMW16 vs ECMW11	8.417	0.441	Do Not Test
ECMW16 vs ECMW10	3.250	0.184	Do Not Test
ECMW16 vs ECMW5	1.000	0.0566	Do Not Test
ECMW5 vs ECMW14	28.083	1.473	Do Not Test
ECMW5 vs ECMW15	14.500	0.821	Do Not Test
ECMW5 vs ECMW4	12.250	0.694	Do Not Test
ECMW5 vs ECMW8	11.125	0.630	Do Not Test
ECMW5 vs ECMW11	7.417	0.389	Do Not Test
ECMW5 vs ECMW10	2.250	0.127	Do Not Test

ECMW10 vs ECMW14	25.833	1.355	Do Not Test
ECMW10 vs ECMW15	12.250	0.694	Do Not Test
ECMW10 vs ECMW4	10.000	0.566	Do Not Test
ECMW10 vs ECMW8	8.875	0.503	Do Not Test
ECMW10 vs ECMW11	5.167	0.271	Do Not Test
ECMW11 vs ECMW14	20.667	1.014	Do Not Test
ECMW11 vs ECMW15	7.083	0.371	Do Not Test
ECMW11 vs ECMW4	4.833	0.253	Do Not Test
ECMW11 vs ECMW8	3.708	0.194	Do Not Test
ECMW8 vs ECMW14	16.958	0.889	Do Not Test
ECMW8 vs ECMW15	3.375	0.191	Do Not Test
ECMW8 vs ECMW4	1.125	0.0637	Do Not Test
ECMW4 vs ECMW14	15.833	0.830	Do Not Test
ECMW4 vs ECMW15	2.250	0.127	Do Not Test
ECMW15 vs ECMW14	13.583	0.712	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Linear Regression Thursday, September 03, 2020, 11:23:57 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39267.749 + (0.0463 * 4 Average of Specific Conducta)

N = 36 Missing Observations = 73

R = 0.0616 Rsqr = 0.00379 Adj Rsqr = 0.000

Standard Error of Estimate = 1867.609

	Coefficient	Std. Error	t	P
Constant	39267.749	808.401	48.575	<0.001
4 Average of Specific Conducta	0.0463	0.129	0.360	0.721

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	451193.739	451193.739	0.129	0.721
Residual	34	118590807.011	3487964.912		
Total	35	119042000.750	3401200.021		

Normality Test (Shapiro-Wilk) Failed (P = 0.012)

Constant Variance Test: Passed (P = 0.339)

Power of performed test with alpha = 0.050: 0.054

The power of the performed test (0.054) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:20:45 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 43020.721 - (670.026 * 4 pH)

N = 45 Missing Observations = 64

R = 0.311 Rsqr = 0.0968 Adj Rsqr = 0.0758

Standard Error of Estimate = 2006.349

	Coefficient	Std. Error	t	P
Constant	43020.721	1364.384	31.531	<0.001
4 pH	-670.026	312.105	-2.147	0.037

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	18552148.415	18552148.415	4.609	0.037
Residual	43	173093695.230	4025434.773		
Total	44	191645843.644	4355587.356		

Normality Test (Shapiro-Wilk) Failed (P = 0.005)

Constant Variance Test: Passed (P = 0.592)

Power of performed test with alpha = 0.050: 0.550

Linear Regression Thursday, September 03, 2020, 11:25:55 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 41548.914 - (1.655 * 4 Sulfate (mg/L))

N = 43 Missing Observations = 66

R = 0.120 Rsqr = 0.0145 Adj Rsqr = 0.000

Standard Error of Estimate = 2254.519

	Coefficient	Std. Error	t	P
Constant	41548.914	1850.183	22.457	<0.001
4 Sulfate (mg/L)	-1.655	2.134	-0.775	0.443

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	3056403.212	3056403.212	0.601	0.443
Residual	41	208397063.299	5082855.202		
Total	42	211453466.512	5034606.346		

Normality Test (Shapiro-Wilk) Passed (P = 0.069)

Constant Variance Test: Passed (P = 0.223)

Power of performed test with alpha = 0.050: 0.116

The power of the performed test (0.116) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:24:09 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39973.227 - (0.427 * 5 Average of Specific Conducta)

N = 38 Missing Observations = 71

R = 0.0679 Rsqr = 0.00461 Adj Rsqr = 0.000

Standard Error of Estimate = 1959.039

	Coefficient	Std. Error	t	P
Constant	39973.227	816.738	48.943	<0.001
5 Average of Specific Conducta	-0.427	1.047	-0.408	0.685

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	640047.622	640047.622	0.167	0.685
Residual	36	138161951.352	3837831.982		
Total	37	138801998.974	3751405.378		

Normality Test (Shapiro-Wilk) Failed (P = 0.002)

Constant Variance Test: Failed (P = 0.002)

Power of performed test with alpha = 0.050: 0.060

The power of the performed test (0.060) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:11:32 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 38713.479 + (55.533 * 5 Nitrate- N (mg/L))

N = 45 Missing Observations = 64

R = 0.830 Rsqr = 0.688 Adj Rsqr = 0.681

Standard Error of Estimate = 1286.373

	Coefficient	Std. Error	t	P
Constant	38713.479	244.459	158.364	<0.001
5 Nitrate- N (mg/L)	55.533	5.697	9.748	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	157236526.740	157236526.740	95.021	<0.001
Residual	43	71154530.238	1654756.517		
Total	44	228391056.978	5190705.840		

Normality Test (Shapiro-Wilk) Failed (P = 0.011)

Constant Variance Test: Passed (P = 0.058)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:26:05 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 42579.314 - (9.205 * 5 Sulfate (mg/L))

N = 44 Missing Observations = 65

R = 0.894 Rsqr = 0.798 Adj Rsqr = 0.794

Standard Error of Estimate = 1041.435

	Coefficient	Std. Error	t	P
Constant	42579.314	240.688	176.907	<0.001
5 Sulfate (mg/L)	-9.205	0.714	-12.897	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	180389507.851	180389507.851	166.321	<0.001
Residual	42	45552612.786	1084586.019		
Total	43	225942120.636	5254467.922		

Normality Test (Shapiro-Wilk) Passed (P = 0.165)

Constant Variance Test: Failed (P = 0.046)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, September 02, 2020, 3:58:47 PM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39588.880 + (0.926 * 6 Ammonia-N (mg/L))

N = 49 Missing Observations = 60

R = 0.627 Rsqr = 0.393 Adj Rsqr = 0.380

Standard Error of Estimate = 1657.301

	Coefficient	Std. Error	t	P
Constant	39588.880	270.512	146.348	<0.001
6 Ammonia-N (mg/L)	0.926	0.168	5.521	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	83709471.567	83709471.567	30.477	<0.001
Residual	47	129092431.984	2746647.489		
Total	48	212801903.551	4433372.991		

Normality Test (Shapiro-Wilk) Passed (P = 0.055)

Constant Variance Test: Passed (P = 0.406)

Power of performed test with alpha = 0.050: 0.999

Linear Regression Thursday, September 03, 2020, 2:17:45 PM

Data source: Data 1 in Data - WHG Copy

Row Labels = 38647.377 + (0.0604 * 6 Average of Specific Conducta)

N = 37 Missing Observations = 72

R = 0.789 Rsqr = 0.622 Adj Rsqr = 0.612

Standard Error of Estimate = 1210.009

	Coefficient	Std. Error	t	P
Constant	38647.377	236.935	163.114	<0.001
6 Average of Specific Conducta	0.0604	0.00795	7.597	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	84501727.643	84501727.643	57.715	<0.001
Residual	35	51244294.627	1464122.704		
Total	36	135746022.270	3770722.841		

Normality Test (Shapiro-Wilk) Passed (P = 0.087)

Constant Variance Test: Passed (P = 0.883)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:16:17 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 38259.421 + (0.690 * 6 Nitrate- N (mg/L))

N = 50 Missing Observations = 59

R = 0.853 Rsqr = 0.727 Adj Rsqr = 0.722

Standard Error of Estimate = 1165.246

	Coefficient	Std. Error	t	P
Constant	38259.421	238.331	160.531	<0.001
6 Nitrate- N (mg/L)	0.690	0.0609	11.316	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	173865149.350	173865149.350	128.049	<0.001
Residual	48	65174315.230	1357798.234		
Total	49	239039464.580	4878356.420		

Normality Test (Shapiro-Wilk) Failed (P = <0.001)

Constant Variance Test: Passed (P = 0.376)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:20:57 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 46644.244 - (1441.128 * 6 pH)

N = 48 Missing Observations = 61

R = 0.609 Rsqr = 0.371 Adj Rsqr = 0.357

Standard Error of Estimate = 1705.847

	Coefficient	Std. Error	t	P
Constant	46644.244	1243.322	37.516	<0.001
6 pH	-1441.128	276.964	-5.203	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	78784295.216	78784295.216	27.074	<0.001
Residual	46	133856119.763	2909915.647		
Total	47	212640414.979	4524264.148		

Normality Test (Shapiro-Wilk) Passed (P = 0.353)

Constant Variance Test: Passed (P = 0.492)

Power of performed test with alpha = 0.050: 0.997

Linear Regression Wednesday, September 02, 2020, 3:59:20 PM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39895.401 + (0.758 * 7 Ammonia-N (mg/L))

N = 49 Missing Observations = 60

R = 0.429 Rsqr = 0.184 Adj Rsqr = 0.166

Standard Error of Estimate = 1922.482

	Coefficient	Std. Error	t	P
Constant	39895.401	302.947	131.691	<0.001
7 Ammonia-N (mg/L)	0.758	0.233	3.253	0.002

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	39098877.428	39098877.428	10.579	0.002
Residual	47	173709114.572	3695938.608		
Total	48	212807992.000	4433499.833		

Normality Test (Shapiro-Wilk) Failed (P = 0.034)

Constant Variance Test: Passed (P = 0.130)

Power of performed test with alpha = 0.050: 0.874

Linear Regression Thursday, September 03, 2020, 11:24:19 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 37982.452 + (0.163 * 7 Average of Specific Conducta)

N = 37 Missing Observations = 72

R = 0.740 Rsqr = 0.548 Adj Rsqr = 0.535

Standard Error of Estimate = 1326.379

	Coefficient	Std. Error	t	P
Constant	37982.452	334.028	113.710	<0.001
7 Average of Specific Conducta	0.163	0.0250	6.510	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	74562786.259	74562786.259	42.383	<0.001
Residual	35	61574848.552	1759281.387		
Total	36	136137634.811	3781600.967		

Normality Test (Shapiro-Wilk) Failed (P = <0.001)

Constant Variance Test: Passed (P = 0.520)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:16:28 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39827.307 + (0.391 * 7 Nitrate- N (mg/L))

N = 50 Missing Observations = 59

R = 0.398 Rsqr = 0.159 Adj Rsqr = 0.141

Standard Error of Estimate = 2046.982

	Coefficient	Std. Error	t	P
Constant	39827.307	315.912	126.071	<0.001
7 Nitrate- N (mg/L)	0.391	0.130	3.008	0.004

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	37919181.389	37919181.389	9.050	0.004
Residual	48	201126578.611	4190137.054		
Total	49	239045760.000	4878484.898		

Normality Test (Shapiro-Wilk) Passed (P = 0.068)

Constant Variance Test: Failed (P = 0.046)

Power of performed test with alpha = 0.050: 0.824

Linear Regression Thursday, September 03, 2020, 11:21:05 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 38016.495 + (491.567 * 7 pH)

N = 48 Missing Observations = 61

R = 0.264 Rsqr = 0.0698 Adj Rsqr = 0.0496

Standard Error of Estimate = 2073.669

	Coefficient	Std. Error	t	P
Constant	38016.495	1266.619	30.014	<0.001
7 pH	491.567	264.594	1.858	0.070

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	14841768.235	14841768.235	3.451	0.070
Residual	46	197804751.765	4300103.299		
Total	47	212646520.000	4524394.043		

Normality Test (Shapiro-Wilk) Passed (P = 0.225)

Constant Variance Test: Failed (P = 0.004)

Power of performed test with alpha = 0.050: 0.442

The power of the performed test (0.442) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:26:54 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 40058.768 + (0.390 * 7 Sulfate (mg/L))

N = 47 Missing Observations = 62

R = 0.0900 Rsqr = 0.00811 Adj Rsqr = 0.000

Standard Error of Estimate = 2265.718

	Coefficient	Std. Error	t	P
Constant	40058.768	511.947	78.248	<0.001
7 Sulfate (mg/L)	0.390	0.643	0.606	0.547

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1888230.256	1888230.256	0.368	0.547
Residual	45	231006522.212	5133478.271		
Total	46	232894752.468	5062929.401		

Normality Test (Shapiro-Wilk) Passed (P = 0.088)

Constant Variance Test: Failed (P = 0.010)

Power of performed test with alpha = 0.050: 0.087

The power of the performed test (0.087) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:10:47 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39750.239 + (1.192 * 8 Ammonia-N (mg/L))

N = 48 Missing Observations = 61

R = 0.555 Rsqr = 0.308 Adj Rsqr = 0.293

Standard Error of Estimate = 1765.436

	Coefficient	Std. Error	t	P
Constant	39750.239	295.183	134.663	<0.001
8 Ammonia-N (mg/L)	1.192	0.264	4.523	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	63770141.220	63770141.220	20.460	<0.001
Residual	46	143371100.697	3116763.059		
Total	47	207141241.917	4407260.466		

Normality Test (Shapiro-Wilk) Passed (P = 0.076)

Constant Variance Test: Failed (P = 0.017)

Power of performed test with alpha = 0.050: 0.987

Linear Regression Thursday, September 03, 2020, 11:24:29 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 38069.017 + (0.114 * 8 Average of Specific Conducta)

N = 35 Missing Observations = 74

R = 0.804 Rsqr = 0.647 Adj Rsqr = 0.636

Standard Error of Estimate = 1175.073

	Coefficient	Std. Error	t	P
Constant	38069.017	286.952	132.667	<0.001
8 Average of Specific Conducta	0.114	0.0147	7.780	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	83581199.444	83581199.444	60.531	<0.001
Residual	33	45566289.699	1380796.658		
Total	34	129147489.143	3798455.563		

Normality Test (Shapiro-Wilk) Passed (P = 0.346)

Constant Variance Test: Passed (P = 0.265)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:16:43 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39083.691 + (0.964 * 8 Nitrate- N (mg/L))

N = 49 Missing Observations = 60

R = 0.674 Rsqr = 0.454 Adj Rsqr = 0.443

Standard Error of Estimate = 1650.404

	Coefficient	Std. Error	t	P
Constant	39083.691	307.319	127.176	<0.001
8 Nitrate- N (mg/L)	0.964	0.154	6.253	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	106505197.440	106505197.440	39.101	<0.001
Residual	47	128020114.968	2723832.233		
Total	48	234525312.408	4885944.009		

Normality Test (Shapiro-Wilk) Passed (P = 0.056)

Constant Variance Test: Passed (P = 0.132)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:21:16 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 44815.299 - (1061.313 * 8 pH)

N = 47 Missing Observations = 62

R = 0.375 Rsqr = 0.140 Adj Rsqr = 0.121

Standard Error of Estimate = 1988.692

	Coefficient	Std. Error	t	P
Constant	44815.299	1647.450	27.203	<0.001
8 pH	-1061.313	391.396	-2.712	0.009

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	29079708.931	29079708.931	7.353	0.009
Residual	45	177970357.027	3954896.823		
Total	46	207050065.957	4501088.390		

Normality Test (Shapiro-Wilk) Failed (P = 0.004)

Constant Variance Test: Passed (P = 0.997)

Power of performed test with alpha = 0.050: 0.743

Linear Regression Thursday, September 03, 2020, 11:27:38 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 41398.842 - (1.820 * 8 Sulfate (mg/L))

N = 45 Missing Observations = 64

R = 0.305 Rsqr = 0.0930 Adj Rsqr = 0.0719

Standard Error of Estimate = 2189.511

	Coefficient	Std. Error	t	P
Constant	41398.842	574.378	72.076	<0.001
8 Sulfate (mg/L)	-1.820	0.867	-2.100	0.042

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	21133350.667	21133350.667	4.408	0.042
Residual	43	206140296.578	4793960.386		
Total	44	227273647.244	5165310.165		

Normality Test (Shapiro-Wilk) Passed (P = 0.055)

Constant Variance Test: Failed (P = <0.001)

Power of performed test with alpha = 0.050: 0.532

Linear Regression Thursday, September 03, 2020, 11:24:37 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39780.214 - (0.0407 * 9 Average of Specific Conducta)

N = 37 Missing Observations = 72

R = 0.146 Rsqr = 0.0213 Adj Rsqr = 0.000

Standard Error of Estimate = 1971.056

	Coefficient	Std. Error	t	P
Constant	39780.214	353.744	112.455	<0.001
9 Average of Specific Conducta	-0.0407	0.0467	-0.872	0.389

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	2956592.785	2956592.785	0.761	0.389
Residual	35	135977110.296	3885060.294		
Total	36	138933703.081	3859269.530		

Normality Test (Shapiro-Wilk) Failed (P = 0.009)

Constant Variance Test: Passed (P = 0.328)

Power of performed test with alpha = 0.050: 0.135

The power of the performed test (0.135) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:16:55 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 40494.560 - (11.995 * 9 Nitrate- N (mg/L))

N = 47 Missing Observations = 62

R = 0.0381 Rsqr = 0.00146 Adj Rsqr = 0.000

Standard Error of Estimate = 2267.743

	Coefficient	Std. Error	t	P
Constant	40494.560	1437.917	28.162	<0.001
9 Nitrate- N (mg/L)	-11.995	46.841	-0.256	0.799

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	337241.541	337241.541	0.0656	0.799
Residual	45	231419526.332	5142656.141		
Total	46	231756767.872	5038190.606		

Normality Test (Shapiro-Wilk) Failed (P = 0.048)

Constant Variance Test: Passed (P = 0.772)

Power of performed test with alpha = 0.050: 0.044

The power of the performed test (0.044) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:47:48 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 37546.409 + (4.801 * 9 Sulfate (mg/L))

N = 44 Missing Observations = 65

R = 0.142 Rsqr = 0.0202 Adj Rsqr = 0.000

Standard Error of Estimate = 2297.124

	Coefficient	Std. Error	t	P
Constant	37546.409	2898.558	12.953	<0.001
9 Sulfate (mg/L)	4.801	5.157	0.931	0.357

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	4573004.546	4573004.546	0.867	0.357
Residual	42	221624682.249	5276778.149		
Total	43	226197686.795	5260411.321		

Normality Test (Shapiro-Wilk) Passed (P = 0.052)

Constant Variance Test: Failed (P = 0.010)

Power of performed test with alpha = 0.050: 0.148

The power of the performed test (0.148) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:24:51 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 42483.334 - (3.015 * 10 Average of Specific Conduct)

N = 38 Missing Observations = 71

R = 0.422 Rsqr = 0.178 Adj Rsqr = 0.155

Standard Error of Estimate = 1781.758

	Coefficient	Std. Error	t	P
Constant	42483.334	1050.789	40.430	<0.001
10 Average of Specific Conduct	-3.015	1.081	-2.790	0.008

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	24715347.211	24715347.211	7.785	0.008
Residual	36	114287852.262	3174662.563		
Total	37	139003199.474	3756843.229		

Normality Test (Shapiro-Wilk) Failed (P = <0.001)

Constant Variance Test: Passed (P = 0.876)

Power of performed test with alpha = 0.050: 0.758

Linear Regression Thursday, September 03, 2020, 11:17:40 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 43372.007 - (39.645 * 10 Nitrate- N (mg/L))

N = 47 Missing Observations = 62

R = 0.783 Rsqr = 0.613 Adj Rsqr = 0.604

Standard Error of Estimate = 1412.129

	Coefficient	Std. Error	t	P
Constant	43372.007	435.253	99.648	<0.001
10 Nitrate- N (mg/L)	-39.645	4.698	-8.439	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	142021522.151	142021522.151	71.221	<0.001
Residual	45	89734850.488	1994107.789		
Total	46	231756372.638	5038182.014		

Normality Test (Shapiro-Wilk) Failed (P = 0.007)

Constant Variance Test: Failed (P = 0.042)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:21:32 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 43520.512 - (714.775 * 10 pH)

N = 47 Missing Observations = 62

R = 0.224 Rsqr = 0.0504 Adj Rsqr = 0.0293

Standard Error of Estimate = 2086.487

	Coefficient	Std. Error	t	P
Constant	43520.512	2145.593	20.284	<0.001
10 pH	-714.775	462.616	-1.545	0.129

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	10392707.034	10392707.034	2.387	0.129
Residual	45	195904221.774	4353427.151		
Total	46	206296928.809	4484715.844		

Normality Test (Shapiro-Wilk) Failed (P = 0.015)

Constant Variance Test: Passed (P = 0.972)

Power of performed test with alpha = 0.050: 0.328

The power of the performed test (0.328) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:48:02 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 38130.615 + (16.500 * 10 Sulfate (mg/L))

N = 44 Missing Observations = 65

R = 0.232 Rsqr = 0.0536 Adj Rsqr = 0.0311

Standard Error of Estimate = 2257.627

	Coefficient	Std. Error	t	P
Constant	38130.615	1399.945	27.237	<0.001
10 Sulfate (mg/L)	16.500	10.696	1.543	0.130

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	12128717.074	12128717.074	2.380	0.130
Residual	42	214068931.358	5096879.318		
Total	43	226197648.432	5260410.429		

Normality Test (Shapiro-Wilk) Passed (P = 0.273)

Constant Variance Test: Failed (P = 0.004)

Power of performed test with alpha = 0.050: 0.326

The power of the performed test (0.326) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:53:04 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 38401.667 + (84.754 * 10 temp)

N = 31 Missing Observations = 78

R = 0.0884 Rsqr = 0.00782 Adj Rsqr = 0.000

Standard Error of Estimate = 1837.971

	Coefficient	Std. Error	t	P
Constant	38401.667	3672.304	10.457	<0.001
10 temp	84.754	177.301	0.478	0.636

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	771919.173	771919.173	0.229	0.636
Residual	29	97966008.827	3378138.235		
Total	30	98737928.000	3291264.267		

Normality Test (Shapiro-Wilk) Failed (P = 0.008)

Constant Variance Test: Passed (P = 0.460)

Power of performed test with alpha = 0.050: 0.068

The power of the performed test (0.068) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:10:56 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 40489.695 - (14.983 * 11 Ammonia-N (mg/L))

N = 46 Missing Observations = 63

R = 0.0744 Rsqr = 0.00553 Adj Rsqr = 0.000

Standard Error of Estimate = 2139.226

	Coefficient	Std. Error	t	P
Constant	40489.695	527.774	76.718	<0.001
11 Ammonia-N (mg/L)	-14.983	30.282	-0.495	0.623

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1120312.064	1120312.064	0.245	0.623
Residual	44	201356710.044	4576288.865		
Total	45	202477022.109	4499489.380		

Normality Test (Shapiro-Wilk) Failed (P = 0.026)

Constant Variance Test: Passed (P = 0.137)

Power of performed test with alpha = 0.050: 0.071

The power of the performed test (0.071) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:25:00 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 40324.859 - (0.835 * 11 Average of Specific Conduct)

N = 38 Missing Observations = 71

R = 0.0940 Rsqr = 0.00883 Adj Rsqr = 0.000

Standard Error of Estimate = 1954.756

	Coefficient	Std. Error	t	P
Constant	40324.859	1206.383	33.426	<0.001
11 Average of Specific Conduct	-0.835	1.475	-0.566	0.575

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1225585.928	1225585.928	0.321	0.575
Residual	36	137558590.625	3821071.962		
Total	37	138784176.553	3750923.691		

Normality Test (Shapiro-Wilk) Failed (P = 0.003)

Constant Variance Test: Passed (P = 0.259)

Power of performed test with alpha = 0.050: 0.080

The power of the performed test (0.080) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:18:40 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 38130.473 + (120.215 * 11 Nitrate- N (mg/L))

N = 46 Missing Observations = 63

R = 0.589 Rsqr = 0.347 Adj Rsqr = 0.332

Standard Error of Estimate = 1840.839

	Coefficient	Std. Error	t	P
Constant	38130.473	502.517	75.879	<0.001
11 Nitrate- N (mg/L)	120.215	24.863	4.835	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	79223240.001	79223240.001	23.379	<0.001
Residual	44	149102262.108	3388687.775		
Total	45	228325502.109	5073900.047		

Normality Test (Shapiro-Wilk) Passed (P = 0.302)

Constant Variance Test: Passed (P = 0.649)

Power of performed test with alpha = 0.050: 0.993

Linear Regression Thursday, September 03, 2020, 11:23:09 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 45655.292 - (1185.389 * 11 pH)

N = 47 Missing Observations = 62

R = 0.368 Rsqr = 0.135 Adj Rsqr = 0.116

Standard Error of Estimate = 1989.654

	Coefficient	Std. Error	t	P
Constant	45655.292	2061.173	22.150	<0.001
11 pH	-1185.389	446.675	-2.654	0.011

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	27880078.501	27880078.501	7.043	0.011
Residual	45	178142516.137	3958722.581		
Total	46	206022594.638	4478752.057		

Normality Test (Shapiro-Wilk) Passed (P = 0.075)

Constant Variance Test: Passed (P = 0.501)

Power of performed test with alpha = 0.050: 0.726

Linear Regression Thursday, September 03, 2020, 11:52:27 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 42444.946 - (9.518 * 11 Sulfate (mg/L))

N = 43 Missing Observations = 66

R = 0.538 Rsqr = 0.290 Adj Rsqr = 0.272

Standard Error of Estimate = 1962.905

	Coefficient	Std. Error	t	P
Constant	42444.946	610.378	69.539	<0.001
11 Sulfate (mg/L)	-9.518	2.327	-4.090	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	64451936.190	64451936.190	16.728	<0.001
Residual	41	157972915.578	3852997.941		
Total	42	222424851.767	5295829.804		

Normality Test (Shapiro-Wilk) Failed (P = 0.004)

Constant Variance Test: Passed (P = 0.268)

Power of performed test with alpha = 0.050: 0.968

Linear Regression Thursday, September 03, 2020, 11:11:05 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39411.979 + (184.249 * 12 Ammonia-N (mg/L))

N = 31 Missing Observations = 78

R = 0.0812 Rsqr = 0.00660 Adj Rsqr = 0.000

Standard Error of Estimate = 2197.403

	Coefficient	Std. Error	t	P
Constant	39411.979	950.379	41.470	<0.001
12 Ammonia-N (mg/L)	184.249	419.885	0.439	0.664

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	929759.782	929759.782	0.193	0.664
Residual	29	140028819.314	4828579.976		
Total	30	140958579.097	4698619.303		

Normality Test (Shapiro-Wilk) Failed (P = 0.005)

Constant Variance Test: Passed (P = 0.076)

Power of performed test with alpha = 0.050: 0.063

The power of the performed test (0.063) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:25:08 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 37248.146 + (3.906 * 12 Average of Specific Conduct)

N = 35 Missing Observations = 74

R = 0.290 Rsqr = 0.0842 Adj Rsqr = 0.0564

Standard Error of Estimate = 1908.681

	Coefficient	Std. Error	t	P
Constant	37248.146	1439.858	25.869	<0.001
12 Average of Specific Conduct	3.906	2.243	1.742	0.091

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	11049655.049	11049655.049	3.033	0.091
Residual	33	120221084.951	3643063.180		
Total	34	131270740.000	3860904.118		

Normality Test (Shapiro-Wilk) Failed (P = 0.026)

Constant Variance Test: Passed (P = 0.223)

Power of performed test with alpha = 0.050: 0.393

The power of the performed test (0.393) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:53:17 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 41455.005 - (63.255 * 12 twmp)

N = 29 Missing Observations = 80

R = 0.0834 Rsqr = 0.00695 Adj Rsqr = 0.000

Standard Error of Estimate = 1899.730

	Coefficient	Std. Error	t	P
Constant	41455.005	3064.402	13.528	<0.001
12 twmp	-63.255	145.475	-0.435	0.667

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	682329.015	682329.015	0.189	0.667
Residual	27	97442258.019	3608972.519		
Total	28	98124587.034	3504449.537		

Normality Test (Shapiro-Wilk) Failed (P = 0.027)

Constant Variance Test: Passed (P = 0.402)

Power of performed test with alpha = 0.050: 0.063

The power of the performed test (0.063) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:25:22 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 39526.160 + (0.0993 * 13 Average of Specific Conduc)

N = 36 Missing Observations = 73

R = 0.0206 Rsqr = 0.000426 Adj Rsqr = 0.000

Standard Error of Estimate = 2010.310

	Coefficient	Std. Error	t	P
Constant	39526.160	863.310	45.784	<0.001
13 Average of Specific Conduc	0.0993	0.824	0.120	0.905

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	58605.005	58605.005	0.0145	0.905
Residual	34	137405709.967	4041344.411		
Total	35	137464314.972	3927551.856		

Normality Test (Shapiro-Wilk) Failed (P = 0.006)

Constant Variance Test: Passed (P = 0.789)

Power of performed test with alpha = 0.050: 0.033

The power of the performed test (0.033) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:52:40 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 42763.632 - (6.908 * 13 Sulfate (mg/L))

N = 30 Missing Observations = 79

R = 0.394 Rsqr = 0.155 Adj Rsqr = 0.125

Standard Error of Estimate = 2235.043

	Coefficient	Std. Error	t	P
Constant	42763.632	1434.203	29.817	<0.001
13 Sulfate (mg/L)	-6.908	3.044	-2.270	0.031

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	25729605.167	25729605.167	5.151	0.031
Residual	28	139871728.200	4995418.864		
Total	29	165601333.367	5710390.806		

Normality Test (Shapiro-Wilk) Failed (P = 0.009)

Constant Variance Test: Failed (P = 0.033)

Power of performed test with alpha = 0.050: 0.581

Linear Regression Thursday, September 03, 2020, 11:25:37 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 40572.396 - (1.448 * 14 Average of Specific Conduct)

N = 35 Missing Observations = 74

R = 0.212 Rsqr = 0.0449 Adj Rsqr = 0.0160

Standard Error of Estimate = 1874.040

	Coefficient	Std. Error	t	P
Constant	40572.396	843.520	48.099	<0.001
14 Average of Specific Conduct	-1.448	1.162	-1.246	0.222

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5453231.640	5453231.640	1.553	0.222
Residual	33	115896852.532	3512025.834		
Total	34	121350084.171	3569120.123		

Normality Test (Shapiro-Wilk) Passed (P = 0.056)

Constant Variance Test: Failed (P = 0.032)

Power of performed test with alpha = 0.050: 0.229

The power of the performed test (0.229) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:18:51 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 41757.624 - (86.251 * 14 Nitrate- N (mg/L))

N = 46 Missing Observations = 63

R = 0.646 Rsqr = 0.417 Adj Rsqr = 0.404

Standard Error of Estimate = 1711.941

	Coefficient	Std. Error	t	P
Constant	41757.624	392.622	106.356	<0.001
14 Nitrate- N (mg/L)	-86.251	15.381	-5.608	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	92162021.672	92162021.672	31.447	<0.001
Residual	44	128952713.567	2930743.490		
Total	45	221114735.239	4913660.783		

Normality Test (Shapiro-Wilk) Failed (P = 0.046)

Constant Variance Test: Passed (P = 0.691)

Power of performed test with alpha = 0.050: 0.999

Linear Regression Thursday, September 03, 2020, 11:52:50 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 43460.469 - (20.445 * 14 Sulfate (mg/L))

N = 43 Missing Observations = 66

R = 0.548 Rsqr = 0.300 Adj Rsqr = 0.283

Standard Error of Estimate = 1920.972

	Coefficient	Std. Error	t	P
Constant	43460.469	840.838	51.687	<0.001
14 Sulfate (mg/L)	-20.445	4.879	-4.190	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	64792469.992	64792469.992	17.558	<0.001
Residual	41	151295532.426	3690134.937		
Total	42	216088002.419	5144952.439		

Normality Test (Shapiro-Wilk) Failed (P = 0.023)

Constant Variance Test: Passed (P = 0.721)

Power of performed test with alpha = 0.050: 0.973

Linear Regression Thursday, September 03, 2020, 11:23:18 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 43946.544 - (761.105 * 15 pH)

N = 45 Missing Observations = 64

R = 0.269 Rsqr = 0.0722 Adj Rsqr = 0.0506

Standard Error of Estimate = 2106.032

	Coefficient	Std. Error	t	P
Constant	43946.544	2055.521	21.380	<0.001
15 pH	-761.105	416.214	-1.829	0.074

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	14831490.443	14831490.443	3.344	0.074
Residual	43	190720951.468	4435370.964		
Total	44	205552441.911	4671646.407		

Normality Test (Shapiro-Wilk) Failed (P = 0.004)

Constant Variance Test: Passed (P = 0.546)

Power of performed test with alpha = 0.050: 0.430

The power of the performed test (0.430) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:11:13 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 41824.451 - (468.491 * 16 Ammonia-N (mg/L))

N = 46 Missing Observations = 63

R = 0.694 Rsqr = 0.482 Adj Rsqr = 0.470

Standard Error of Estimate = 1558.922

	Coefficient	Std. Error	t	P
Constant	41824.451	337.435	123.948	<0.001
16 Ammonia-N (mg/L)	-468.491	73.250	-6.396	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	99410566.676	99410566.676	40.906	<0.001
Residual	44	106930432.476	2430237.102		
Total	45	206340999.152	4585355.537		

Normality Test (Shapiro-Wilk) Passed (P = 0.871)

Constant Variance Test: Failed (P = 0.016)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:19:05 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 41711.742 - (54.187 * 16 Nitrate- N (mg/L))

N = 47 Missing Observations = 62

R = 0.750 Rsqr = 0.563 Adj Rsqr = 0.553

Standard Error of Estimate = 1501.212

	Coefficient	Std. Error	t	P
Constant	41711.742	301.424	138.382	<0.001
16 Nitrate- N (mg/L)	-54.187	7.122	-7.608	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	130458009.901	130458009.901	57.888	<0.001
Residual	45	101413643.035	2253636.512		
Total	46	231871652.936	5040688.107		

Normality Test (Shapiro-Wilk) Failed (P = 0.011)

Constant Variance Test: Passed (P = 0.603)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:23:29 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 44684.828 - (930.523 * 16 pH)

N = 46 Missing Observations = 63

R = 0.327 Rsqr = 0.107 Adj Rsqr = 0.0865

Standard Error of Estimate = 2046.622

	Coefficient	Std. Error	t	P
Constant	44684.828	1959.162	22.808	<0.001
16 pH	-930.523	405.658	-2.294	0.027

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	22039858.509	22039858.509	5.262	0.027
Residual	44	184301140.643	4188662.287		
Total	45	206340999.152	4585355.537		

Normality Test (Shapiro-Wilk) Passed (P = 0.052)

Constant Variance Test: Passed (P = 0.205)

Power of performed test with alpha = 0.050: 0.604

Linear Regression Thursday, September 03, 2020, 11:11:20 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 40118.450 + (40.620 * 17 Ammonia-N (mg/L))

N = 47 Missing Observations = 62

R = 0.0627 Rsqr = 0.00394 Adj Rsqr = 0.000

Standard Error of Estimate = 2137.521

	Coefficient	Std. Error	t	P
Constant	40118.450	422.351	94.988	<0.001
17 Ammonia-N (mg/L)	40.620	96.339	0.422	0.675

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	812277.294	812277.294	0.178	0.675
Residual	45	205604848.196	4568996.627		
Total	46	206417125.489	4487328.815		

Normality Test (Shapiro-Wilk) Failed (P = 0.010)

Constant Variance Test: Passed (P = 0.075)

Power of performed test with alpha = 0.050: 0.061

The power of the performed test (0.061) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists.
Negative results should be interpreted cautiously.

Linear Regression Thursday, September 03, 2020, 11:19:18 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 41730.920 - (35.282 * 17 Nitrate- N (mg/L))

N = 47 Missing Observations = 62

R = 0.703 Rsqr = 0.494 Adj Rsqr = 0.482

Standard Error of Estimate = 1615.490

	Coefficient	Std. Error	t	P
Constant	41730.920	336.982	123.837	<0.001
17 Nitrate- N (mg/L)	-35.282	5.328	-6.622	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	114431646.225	114431646.225	43.847	<0.001
Residual	45	117441429.052	2609809.534		
Total	46	231873075.277	5040719.028		

Normality Test (Shapiro-Wilk) Failed (P = 0.020)

Constant Variance Test: Passed (P = 0.573)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, September 03, 2020, 11:23:38 AM

Data source: Data 1 in Data - WHG Copy

Row Labels = 44065.857 - (809.369 * 17 pH)

N = 47 Missing Observations = 62

R = 0.387 Rsqr = 0.150 Adj Rsqr = 0.131

Standard Error of Estimate = 1974.740

	Coefficient	Std. Error	t	P
Constant	44065.857	1389.051	31.724	<0.001
17 pH	-809.369	287.362	-2.817	0.007

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	30935243.229	30935243.229	7.933	0.007
Residual	45	175481882.260	3899597.384		
Total	46	206417125.489	4487328.815		

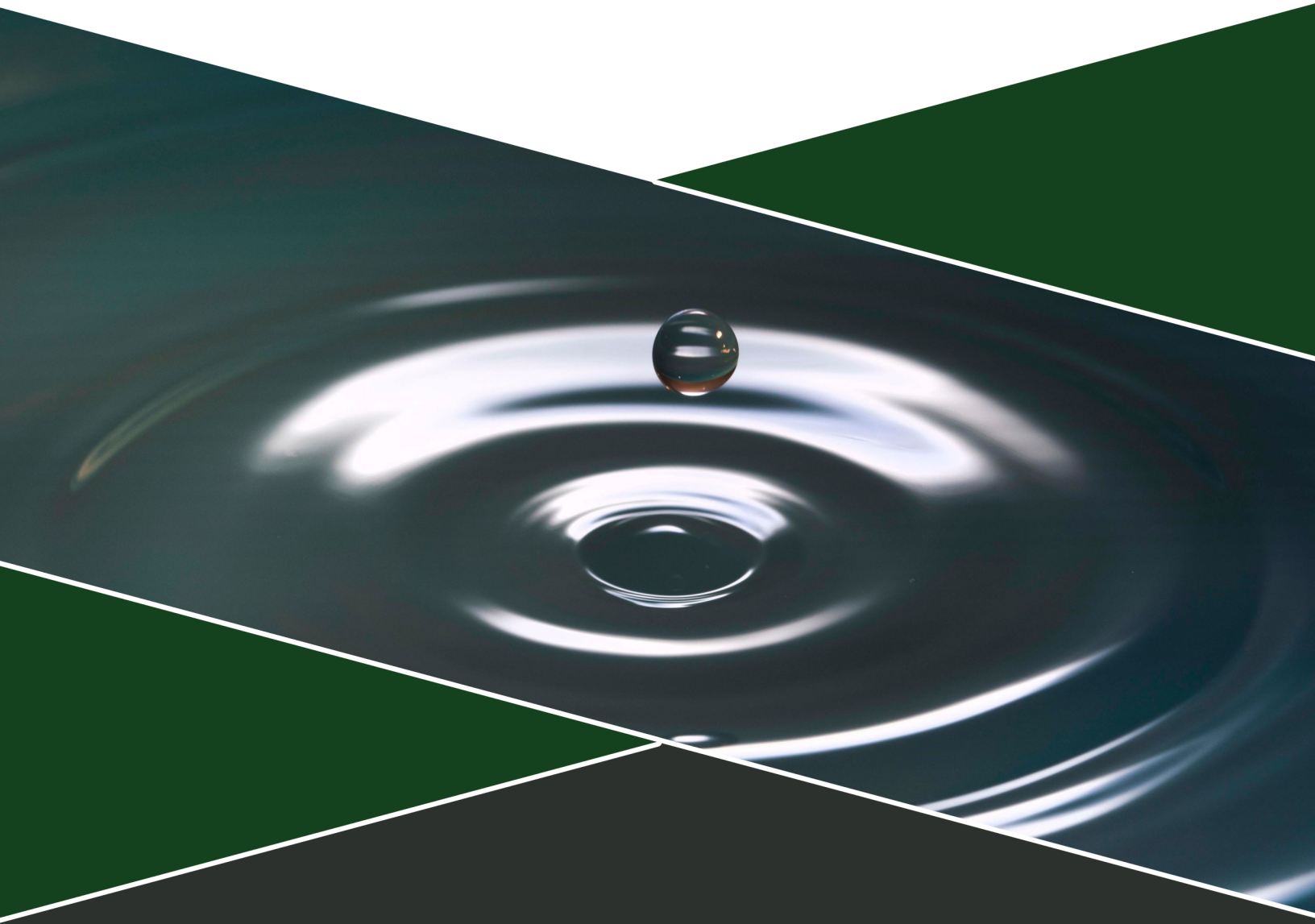
Normality Test (Shapiro-Wilk) Passed (P = 0.081)

Constant Variance Test: Passed (P = 0.097)

Power of performed test with alpha = 0.050: 0.773

GBMc & ASSOCIATES

219 BROWN LANE, BRYANT, AR
WWW.GBMcASSOC.COM
501-847-7077



January 22, 2021