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January 3, 2022

Ms. Linda Hanson P.G.
Office of Water Quality
Arkansas Energy and Environment

RE: El Dorado Chemical Company AFIN: 70-00040
2021 Annual Groundwater Monitoring Report

Ms. Hanson,

Please find the enclosed El Dorado Chemical Company 2021 Annual Groundwater Monitoring Report. This report is being submitted in accordance with CAO LIS No. 06-1563.

Should you have any questions regarding this matter, you may contact me by phone at 870-312-1397 or via e-mail at dsartain@edc-ark.com.

Respectfully,

David Sartain
Environmental Coordinator
El Dorado Chemical Company

219 BROWN LANE, BRYANT, AR
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2021 Annual Groundwater Monitoring Report

THIS REPORT WAS CREATED BY THE
GBMc & ASSOCIATES TEAM FOR
EL DORADO CHEMICAL COMPANY
NOVEMBER 2021

2021 Annual Groundwater Monitoring Report

Prepared for:

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

Prepared by:

GBM^{c} & Associates
219 Brown Lane
Bryant, AR 72022

November 2021

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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. Furthermore, the data and interpretations thereof contained in this report are based on generally recognized engineering principles related to subsurface mapping of the potentiometric surface and assessment of the movement of a fluid (shallow groundwater) through porous and permeable media (using factors developed by a Professional Geologist) that may be commonly shared between Professional Geologists and qualified groundwater scientists. Information and representations contained herein are the professional opinion of the individual certifying the report as a non-geologist and are not an infringement of the "public practice of geology" as defined in Section 3-1(5), Act 701 of 1987, as the undersigned is not claiming nor implying to be a geologist, registered under Act 701 of 1987 or otherwise.

11/4/21

Charles D. Campbell, PE Date
Arkansas No. 6857

11/4/21

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 were 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 location 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 2021 monitoring year occurred in March 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 March and July 2021 sampling events and are shown in Table 2.2. The potentiometric surface map for the 2021 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)	March 2021		July 2021	
		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	5.40	207.98	12.36	201.02
ECMW-2	196.25	0.00	196.25	0.00	196.25
ECMW-3	192.11	7.28	184.83	9.05	183.06
ECMW-4	194.84	7.95	186.89	9.23	185.61
ECMW-5	182.69	2.16	180.53	3.59	179.1
ECMW-6	191.87	4.52	187.35	4.42	187.45
ECMW-7	195.88	6.80	189.08	6.75	189.13
ECMW-8	197.34	6.47	190.87	6.64	190.70
ECMW-9	198.39	7.34	191.05	9.65	188.74
ECMW-10	205.75	11.35	194.4	12.82	192.93
ECMW-11	201.65	9.30	192.35	10.42	191.23
ECMW-12	184.97	5.22	179.75	5.43	179.54
ECMW-13	177.26	4.40	172.86	6.92	170.34
ECMW-14	178.48	4.70	173.78	4.72	173.76
ECMW-15	180.84	2.48	178.36	3.51	177.33
ECMW-16	180.14	1.95	178.19	2.93	177.21
ECMW-17	185.40	26.15	159.25	27.65	157.75
ECMW-18	155.46	3.55	151.91	7.35	148.11
ECMW-19	150.41	1.55	148.86	1.79	148.62
ECMW-20	192.77	23.10	169.67	25.81	166.96
ECMW-21	176.29	15.32	160.97	15.42	160.87
ECMW-22	173.55	2.42	171.13	4.19	169.36

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 42.01 ft and 42.08 ft for the first and second half of 2021, respectively. The distance between the monitoring wells is 4,267 ft. The resulting hydraulic gradients of 9.84×10^{-3} for the first half and 9.86×10^{-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 2.170×10^{-5} cm/s for the first half of 2021 and an average linear velocity of 2.172×10^{-5} cm/s for the second half of 2021.

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 March and July 2021 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 downgradient source removal wells (ECMW 17-22). The target ammonia was determined in the 2007 Human Health Risk Assessment Report and implemented in the RAP. This target was set as the downgradient wells (ECMW 17-22) have the highest potential to leave the facility site. For 2021, ECMW-17 was the only downgradient well sampled as per the sampling frequency outlined in Table 2.1. ECMW-17 ammonia concentration was above the target monitoring value in March 2021 (7.00 mg/L), but was below 0.55 mg/L in July 2021 concentration). 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 wells sampled in 2021.

Type of Monitoring Well	Monitoring Well	Date	Ammonia-N (mg/L)[1]
Control Wells	ECMW-1	3/2/2021	-
		7/13/2021	-
	ECMW-2	3/2/2021	-
		7/14/2021	-
	ECMW-3	3/2/2021	-
		7/14/2021	-
Production Wells	ECMW-4	3/2/2021	0.41
		7/13/2021	1.30
	ECMW-5	3/2/2021	2.90
		7/13/2021	1.20
	ECMW-6	3/2/2021	690.00
		7/13/2021	580.00
	ECMW-7	3/2/2021	850.00
		7/13/2021	840.00
	ECMW-8	3/2/2021	99.00
		7/13/2021	810.00
	ECMW-9	3/2/2021	0.32
		7/13/2021	3.40
	ECMW-10	3/1/2021	0.11
		7/14/2021	0.10
	ECMW-11	3/1/2021	0.10
		7/14/2021	9.80
	ECMW-12	3/1/2021	-
		7/14/2021	-
	ECMW-13	3/2/2021	-
		7/14/2021	-
Mid-gradient Wells	ECMW-14	3/3/2021	0.47
		7/15/2021	0.36
	ECMW-15	3/3/2021	-
		7/15/2021	-
	ECMW-16	3/2/2021	0.25
		7/15/2021	0.40
Downgradient Wells	ECMW-17	3/3/2021	7.00
		7/14/2021	0.10
	ECMW-18	3/3/2021	-
		7/15/2021	-
	ECMW-19	3/3/2021	-
		7/15/2021	-
	ECMW-20	3/3/2021	-
		7/15/2021	-
	ECMW-21	3/3/2021	-
		7/14/2021	-
	ECMW-22	3/3/2021	-
		7/14/2021	-

[1] Based on sampling schedule in Table 2.1, Ammonia-N was not sampled at all wells in 2021.

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 <0.10 mg/L (ECMW-14& 18) to 11,000 mg/L (ECMW-6). The Nitrate concentrations of the control wells were not measured in 2021 (Table 2.1). The Nitrate concentrations within the production area ranged from 0.11 mg/L to 11,000 mg/L. The Nitrate concentrations in the mid-gradient wells ranged from 0.06 (ECMW-14) to 12.0 mg/L (ECMW-16). Downgradient wells ranged from 0.05 mg/L (ECMW-18) to 39 mg/L (ECMW-17).

The sulfate concentrations from all wells ranged from 2.1 mg/L at ECMW-18 to 890 mg/L at ECMW-4. The sulfate concentrations of the control wells were not measured in 2021 (Table 2.1). Sulfate concentrations within the production area ranged from 29 mg/L (ECMW-5) to 890 mg/L (ECMW-4). Sulfate concentrations in the mid-gradient wells ranged from 14 mg/L (ECMW-14, March 2021) to 140 mg/L (ECMW-14, July 2021). Downgradient well sulfate concentrations ranged from 2.1 mg/L (ECMW-18) to 41 mg/L (ECMW-17).

The pH measurements from all wells ranged from 2.19 (ECMW-8) to 5.97 (ECMW-3). The values of the control wells ranged from 3.01 (ECMW-1) to 5.97 (ECMW-3). The values of the production wells ranged from 2.19 (ECMW-8) to 5.65 (ECMW-12). The values of the mid-gradient wells ranged from 2.97 (ECMW-15, March 2021) to 4.93 (ECMW-15, July 2021). The pH values of the down gradient wells ranged from 4.20 (ECMW-17) to 5.94 (ECMW-19).

The specific conductance measurements from all wells ranged from 50 µS/cm (ECMW-1) to 132,195 µS/cm (ECMW-6). The values of the control wells ranged from 50 µS/cm (ECMW-1) to 407 µS/cm (ECMW-2). The values of the production wells ranged from 504 µS/cm (ECMW-13) to 132,195 µS/cm (ECMW-6). The values of the mid-gradient wells ranged from 73 µS/cm (ECMW-15) to 942 µS/cm (ECMW-14). The specific conductance values of the down gradient wells ranged from 53 µS/cm (ECMW-21) to 366 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. Statistical results of the linear regression trend analysis.

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	**Significant**	**Decreasing**	**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	Significant	Increasing
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	**Significant**	**Decreasing**	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-10, ECMW-11, ECMW-15, 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, two mid-gradient wells, and one down-gradient well.

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 specific conductance 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

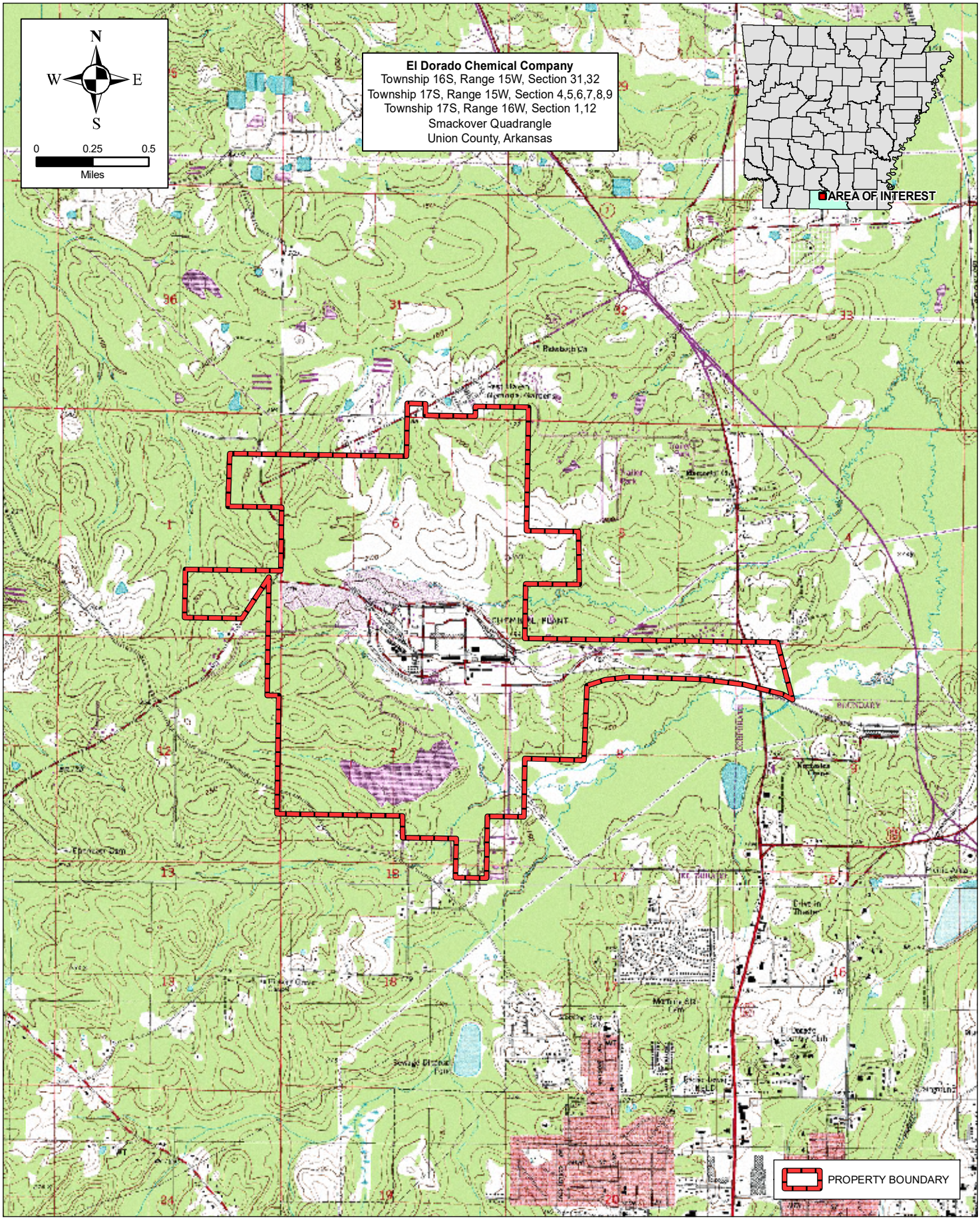
Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance. March 2009. EPA/530-R-09-007. https://www.itrcweb.org/gsmc-1/Content/Resources/Unified_Guidance_2009.pdf

RCRA Groundwater Monitoring: Draft Technical Guidance. 1992. EPA/530-R-93-001. https://archive.epa.gov/epawaste/hazard/web/pdf/rcra_gw.pdf

APPENDIX A

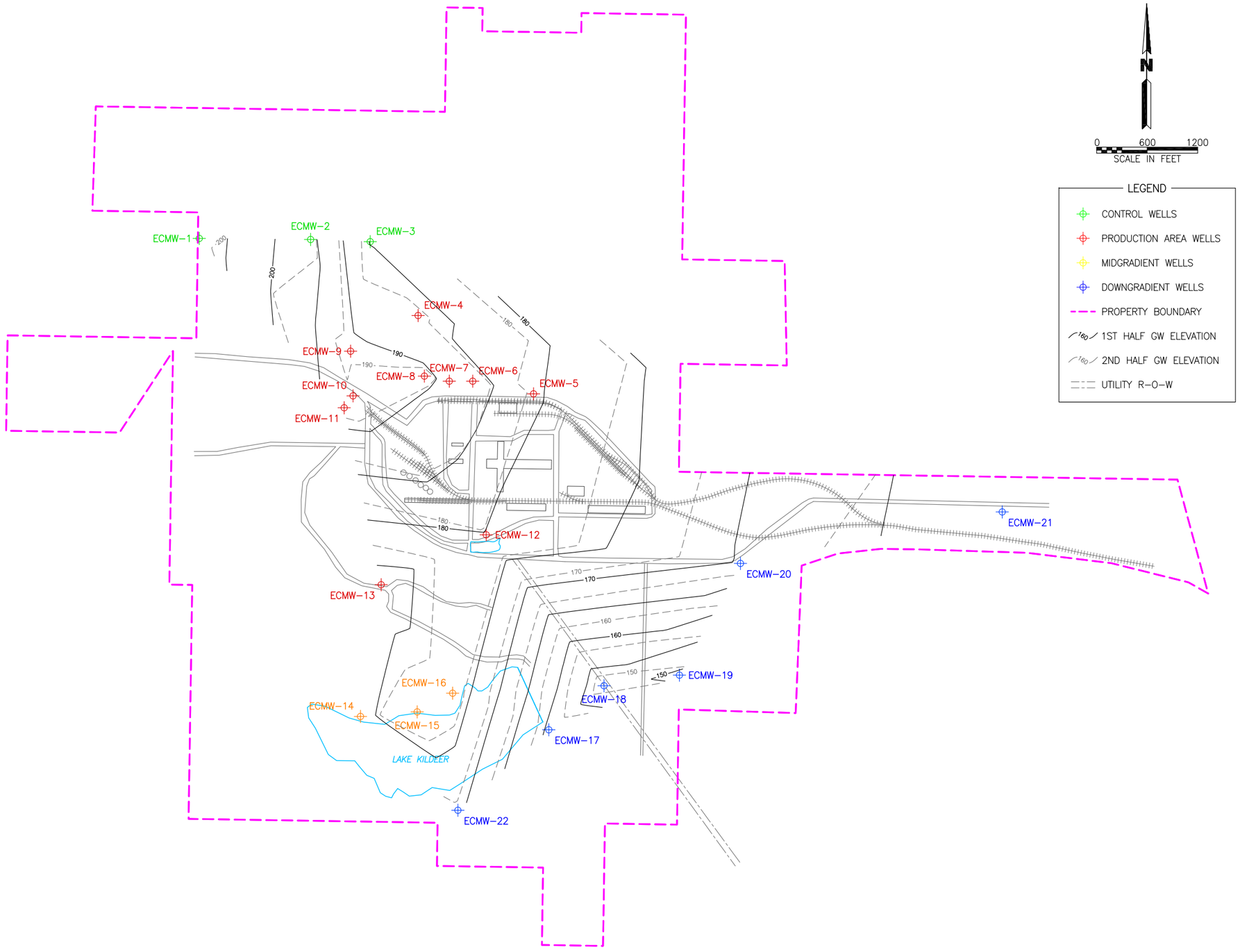
Site Maps

Location Map



DESIGNED BY DMB	GBMc & ASSOCIATES	SHEET TITLE	JOB NAME	PROJECT NO.	REV. NO.
CHECKED BY DMB		TOPOGRAPHIC LOCATION MAP	EL DORADO CHEMICAL COMPANY	2042-99-010	
APPR. BY DMB				DATE 09/14/2021	DWG. NO.
DRAWN BY IT			EL DORADO, ARKANSAS	SCALE SHOWN	

Potentiometric Surface Map



NO	DATE	REVISION	BY	CK.	APPR.

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

GBMc & ASSOCIATES

SHEET TITLE
2021 GROUNDWATER ELEVATION

JOB NAME
2021 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

PROJECT NO. 2042-99-010
DATE 09/13/2021
SCALE SHOWN
REV. NO.
DWG. NO.

APPENDIX B

Laboratory Reports and Sampling Logs

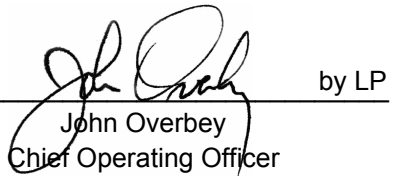
Laboratory Reports

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 March 2, 2021. 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. Jonathan Brown
jbrown@gbmcassoc.com

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:
Two (2) water sample(s) received on March 2, 2021
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
253287-1	MW-10	01-Mar-2021 1350	
253287-2	MW-11	01-Mar-2021 1310	

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. 253287-1
Sample Identification: MW-10 01-Mar-2021 1350

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.11**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 03-Mar-2021 1229 by 355	Analyzed: 03-Mar-2021 1612 by 355		Batch: W75024	
Nitrate as N		**65**	0.5	**mg/l**	D
EPA 300.0	Prep: 02-Mar-2021 1553 by 347	Analyzed: 02-Mar-2021 1653 by 347		Batch: C24134	Dil: 10
Sulfate		**92**	2	**mg/l**	D
EPA 300.0	Prep: 02-Mar-2021 1553 by 347	Analyzed: 02-Mar-2021 1653 by 347		Batch: C24134	Dil: 10

AIC No. 253287-2
Sample Identification: MW-11 01-Mar-2021 1310

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 03-Mar-2021 1229 by 355	Analyzed: 03-Mar-2021 1635 by 355		Batch: W75024	
Nitrate as N		**31**	0.5	**mg/l**	D
EPA 300.0	Prep: 02-Mar-2021 1553 by 347	Analyzed: 02-Mar-2021 1712 by 347		Batch: C24134	Dil: 10
Sulfate		**150**	2	**mg/l**	D
EPA 300.0	Prep: 02-Mar-2021 1553 by 347	Analyzed: 02-Mar-2021 1712 by 347		Batch: C24134	Dil: 10

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	104	80.0-120			W75024	03Mar21 1229 by 355	03Mar21 1610 by 355		
Nitrate as N	5 mg/l	91.8	90.0-110			C24134	02Mar21 1553 by 347	02Mar21 1640 by 347		
Sulfate	25 mg/l	93.6	90.0-110			C24134	02Mar21 1553 by 347	02Mar21 1640 by 347		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	253287-1	1 mg/l	90.7	80.0-120	W75024	03Mar21 1229 by 355	03Mar21 1614 by 355		
	253287-1	1 mg/l	91.9	80.0-120	W75024	03Mar21 1229 by 355	03Mar21 1615 by 355		
	Relative Percent Difference:		1.17	25.0	W75024				
Nitrate as N	253280-1	5 mg/l	89.3	80.0-120	C24134	02Mar21 1553 by 347	02Mar21 1701 by 347		
	253280-1	5 mg/l	89.0	80.0-120	C24134	02Mar21 1553 by 347	02Mar21 1722 by 347		
	Relative Percent Difference:		0.185	10.0	C24134				
Sulfate	253280-1	25 mg/l	92.7	80.0-120	C24134	02Mar21 1553 by 347	02Mar21 1701 by 347		
	253280-1	25 mg/l	92.5	80.0-120	C24134	02Mar21 1553 by 347	02Mar21 1722 by 347		
	Relative Percent Difference:		0.193	10.0	C24134				

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	W75024-1	03Mar21 1229 by 355	03Mar21 1609 by 355	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C24134-1	02Mar21 1553 by 347	02Mar21 1619 by 347	
Sulfate	< 0.1 mg/l	0.1	0.2	C24134-1	02Mar21 1553 by 347	02Mar21 1619 by 347	

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

253287

Chain of Custody

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/ Will Glenn	Address:	
Address:	219 Brown Lane		
	Bryant, AR 72022	Phone No.:	
Phone/Fax No.:	(501) 847-7077	Fax No.:	

SPECIAL INSTRUCTIONS/PRECAUTIONS:

Send a copy of report to Brad Phillips/ Will Glenn at emails:
bphillips@gbmcassoc.com
wglenn@gbmcassoc.com

Parameters for Analysis/Methods

Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	Nitrate as N	Ammonia as N	Sulfate							
MW-10		3-1-21	1350	W	2	X	X	X							
MW-11		1	1310	W	2	X	X	X							
				W		X	X	X							
				W		X	X	X							
				W		X	X	X							
				W		X	X	X							
				W		X	X	X							
Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I							

Sampler(s): WHG/DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: [signature] Date: 3-1-21 Time: 1840		COC Checked by: _____ Date: ___ Time: ___
Relinquished by: [signature] Date: 3-2-21 Time: 653		Received by: [signature] Date: 3-2-21 Time: 1230
Relinquished by: [signature] Date: 3-2-21 Time: 235		Received in lab by: [signature] Date: 3-2-21 Time: 1435

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

V1.2 02/08/21

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 March 3, 2021. 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. Jonathan Brown
jbrown@gbmcassoc.com

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:
Eight (8) water sample(s) received on March 3, 2021
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
253328-1	MW-4	02-Mar-2021 1220	
253328-2	MW-4 Dup	02-Mar-2021 1220	
253328-3	MW-5	02-Mar-2021 1320	
253328-4	MW-6	02-Mar-2021 1410	
253328-5	MW-7	02-Mar-2021 1310	
253328-6	MW-8	02-Mar-2021 0825	
253328-7	MW-9	02-Mar-2021 0900	
253328-8	MW-16	02-Mar-2021 1647	

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. 253328-1
Sample Identification: MW-4 02-Mar-2021 1220

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.41**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 04-Mar-2021 1034 by 355	Analyzed: 10-Mar-2021 1531 by 300		Batch: W75046	
Nitrate as N		**0.11**	0.05	**mg/l**	
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 09-Mar-2021 1057 by 07		Batch: C24136	
Sulfate		**890**	20	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 1549 by 07		Batch: C24136	Dil: 100

AIC No. 253328-2
Sample Identification: MW-4 Dup 02-Mar-2021 1220

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.25**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 04-Mar-2021 1034 by 355	Analyzed: 10-Mar-2021 1532 by 300		Batch: W75046	
Nitrate as N		**0.11**	0.05	**mg/l**	
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 09-Mar-2021 1118 by 07		Batch: C24136	
Sulfate		**860**	20	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 1633 by 07		Batch: C24136	Dil: 100

AIC No. 253328-3
Sample Identification: MW-5 02-Mar-2021 1320

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**2.9**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 04-Mar-2021 1034 by 355	Analyzed: 04-Mar-2021 1446 by 300		Batch: W75046	Dil: 5
Nitrate as N		**140**	5	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 1716 by 07		Batch: C24136	Dil: 100
Sulfate		**36**	2	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 1822 by 07		Batch: C24136	Dil: 10

AIC No. 253328-4
Sample Identification: MW-6 02-Mar-2021 1410

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**690**	200	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 04-Mar-2021 1034 by 355	Analyzed: 05-Mar-2021 0952 by 300		Batch: W75046	Dil: 1300
Nitrate as N		**11000**	300	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 1844 by 07		Batch: C24136	Dil: 5000
Sulfate		**69**	2	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 1905 by 07		Batch: C24136	Dil: 10

AMERICAN INTERPLEX CORPORATION LABORATORIES

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

ANALYTICAL RESULTS

AIC No. 253328-5
Sample Identification: MW-7 02-Mar-2021 1310

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**850**	200	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 04-Mar-2021 1034 by 355	Analyzed: 05-Mar-2021 0954 by 300		Batch: W75046	Dil: 1300
Nitrate as N		**2500**	50	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 1927 by 07		Batch: C24136	Dil: 1000
Sulfate		**500**	2	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 1949 by 07		Batch: C24136	Dil: 10

AIC No. 253328-6
Sample Identification: MW-8 02-Mar-2021 0825

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**99**	6	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 04-Mar-2021 1034 by 355	Analyzed: 04-Mar-2021 1600 by 300		Batch: W75046	Dil: 52
Nitrate as N		**5300**	300	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 2011 by 07		Batch: C24136	Dil: 5000
Sulfate		**150**	2	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 2033 by 07		Batch: C24136	Dil: 10

AIC No. 253328-7
Sample Identification: MW-9 02-Mar-2021 0900

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.32**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 04-Mar-2021 1034 by 355	Analyzed: 04-Mar-2021 1410 by 300		Batch: W75046	
Nitrate as N		**26**	0.5	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 2116 by 07		Batch: C24136	Dil: 10
Sulfate		**650**	20	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 2055 by 07		Batch: C24136	Dil: 100

AIC No. 253328-8
Sample Identification: MW-16 02-Mar-2021 1647

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.25**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 04-Mar-2021 1034 by 355	Analyzed: 04-Mar-2021 1412 by 300		Batch: W75046	
Nitrate as N		**11**	0.5	**mg/l**	D
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 2222 by 07		Batch: C24136	Dil: 10
Sulfate		**20**	0.2	**mg/l**	
EPA 9056A	Prep: 03-Mar-2021 1627 by 07	Analyzed: 08-Mar-2021 2244 by 07		Batch: C24136	

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	100	80.0-120			W75046	04Mar21 1035 by 355	04Mar21 1336 by 300		
Nitrate as N	5 mg/l	98.9	90.0-110			C24136	03Mar21 1628 by 07	08Mar21 1422 by 07		
Sulfate	25 mg/l	101	90.0-110			C24136	03Mar21 1628 by 07	08Mar21 1422 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	253330-1	1 mg/l	97.1	80.0-120	W75046	04Mar21 1035 by 355	04Mar21 1340 by 300		
	253330-1	1 mg/l	95.6	80.0-120	W75046	04Mar21 1035 by 355	04Mar21 1343 by 300		
	Relative Percent Difference:		1.40	25.0	W75046				
Nitrate as N	253331-1	5 mg/l	101	80.0-120	C24136	03Mar21 1628 by 07	08Mar21 1444 by 07		
	253331-1	5 mg/l	101	80.0-120	C24136	03Mar21 1628 by 07	08Mar21 1505 by 07		
	Relative Percent Difference:		0.184	10.0	C24136				
Sulfate	253331-1	25 mg/l	105	80.0-120	C24136	03Mar21 1628 by 07	08Mar21 1444 by 07		
	253331-1	25 mg/l	106	80.0-120	C24136	03Mar21 1628 by 07	08Mar21 1505 by 07		
	Relative Percent Difference:		0.166	10.0	C24136				

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	W75046-1	04Mar21 1035 by 355	04Mar21 1334 by 300	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C24136-1	03Mar21 1628 by 07	08Mar21 1400 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C24136-1	03Mar21 1628 by 07	08Mar21 1400 by 07	

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

Chain of Custody

253378

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/ Will Glenn	Address:	
Address:	219 Brown Lane		
	Bryant, AR 72022	Phone No.:	
Phone/Fax No.:	(501) 847-7077	Fax No.:	

SPECIAL INSTRUCTIONS/PRECAUTIONS:

Send a copy of report to Brad Phillips/ Will Glenn at emails:
bphillips@gbmcassoc.com
wglenn@gbmcassoc.com

Parameters for Analysis/Methods

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	[illegible]	[illegible]	[illegible]	[illegible]			
1	MW-4		3-2-21	1220	W	2	X	X	X	X	X	X	X			
2	MW-4 Dup			1220	W		X	X	X							
3	MW-5			1320	W		X	X	X							
4	MW-6			1410	W		X	X	X							
5	MW-7			1310	W		X	X	X	X						
6	MW-8			825	W		X	X	X				X			
7	MW-9			900	W		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: 3-2-21	Time: 2005	COC Checked by: [signature] Date: 3/3/21 Time: 0650
Relinquished by: [signature]	Date: 3-3-21	Time: 320	Received by: [signature] Date: 3-3-21 Time: 1140
Relinquished by:	Date:	Time:	Received in lab by: D. BROWN Date: 3-3-21 Time: 1520

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

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

Chain of Custody

253328

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

SPECIAL INSTRUCTIONS/PRECAUTIONS:

Send a copy of report to Brad Phillips/ Will Glenn at emails:
bphillips@gbmcassoc.com
wglenn@gbmcassoc.com

Parameters for Analysis/Methods

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	NH4	NO3	SO4	[redacted]	[redacted]	Dissolved Fe	Dissolved Mn			
8	MW-16		3-2-21	1647	W	2	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 Glenn Date: 3-2-21 Time: 2007
COC Checked by: Danny BC Date: 3/3/21 Time: 0650

Relinquished by: Molly Cutler Date: 3-3-21 Time: 320
Received by: Molly Cutler Date: 3-3-21 Time: 1140

Relinquished by: _____ Date: _____ Time: _____
Received in lab by: D. BROWN Date: 3-3-21 Time: 1520

LABORATORY USE ONLY:

Samples Received On Ice?: (YES) or NO

Sample Temperature: 0.1

RUSH

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

This report contains the analytical results and supporting information for samples received on March 4, 2021. 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

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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:
Four (4) water sample(s) received on March 4, 2021
EL Dorado Chemical Comapny

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
253359-1	MW-14	03-Mar-2021 1025	
253359-2	MW-14 Dup	03-Mar-2021 1025	
253359-3	MW-17	03-Mar-2021 1147	
253359-4	MW-18	03-Mar-2021 1500	

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. 253359-1
Sample Identification: MW-14 03-Mar-2021 1025

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.47**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 05-Mar-2021 1120 by 347	Analyzed: 05-Mar-2021 1623 by 355		Batch: W75065	
Nitrate as N		**0.056**	0.05	**mg/l**	
EPA 300.0	Prep: 05-Mar-2021 0808 by 07	Analyzed: 08-Mar-2021 2154 by 07		Batch: C24140	
Sulfate		**14**	0.2	**mg/l**	
EPA 300.0	Prep: 05-Mar-2021 0808 by 07	Analyzed: 08-Mar-2021 2154 by 07		Batch: C24140	

AIC No. 253359-2
Sample Identification: MW-14 Dup 03-Mar-2021 1025

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.44**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 05-Mar-2021 1120 by 347	Analyzed: 05-Mar-2021 1625 by 355		Batch: W75065	
Nitrate as N		**0.059**	0.05	**mg/l**	
EPA 300.0	Prep: 05-Mar-2021 0808 by 07	Analyzed: 08-Mar-2021 2235 by 07		Batch: C24140	
Sulfate		**14**	0.2	**mg/l**	
EPA 300.0	Prep: 05-Mar-2021 0808 by 07	Analyzed: 08-Mar-2021 2235 by 07		Batch: C24140	

AIC No. 253359-3
Sample Identification: MW-17 03-Mar-2021 1147

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**7.0**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 05-Mar-2021 1120 by 347	Analyzed: 05-Mar-2021 1715 by 355		Batch: W75065	Dil: 5
Nitrate as N		**39**	0.05	**mg/l**	
EPA 300.0	Prep: 05-Mar-2021 0808 by 07	Analyzed: 08-Mar-2021 2256 by 07		Batch: C24140	
Sulfate		**41**	0.2	**mg/l**	
EPA 300.0	Prep: 05-Mar-2021 0808 by 07	Analyzed: 08-Mar-2021 2256 by 07		Batch: C24140	

AIC No. 253359-4
Sample Identification: MW-18 03-Mar-2021 1500

Analyte		Result	RL	Units	Qualifier
Nitrate as N		**0.30**	0.05	**mg/l**	
EPA 300.0	Prep: 05-Mar-2021 0808 by 07	Analyzed: 08-Mar-2021 2317 by 07		Batch: C24140	
Sulfate		**3.5**	0.2	**mg/l**	
EPA 300.0	Prep: 05-Mar-2021 0808 by 07	Analyzed: 08-Mar-2021 2317 by 07		Batch: C24140	

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	103	80.0-120			W75065	05Mar21 1120 by 347	05Mar21 1609 by 355		
Nitrate as N	5 mg/l	95.2	90.0-110			C24140	05Mar21 0809 by 07	08Mar21 1723 by 07		
Sulfate	25 mg/l	96.5	90.0-110			C24140	05Mar21 0809 by 07	08Mar21 1723 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	253373-1	1 mg/l	91.6	80.0-120	W75065	05Mar21 1120 by 347	05Mar21 1613 by 355		
	253373-1	1 mg/l	91.9	80.0-120	W75065	05Mar21 1120 by 347	05Mar21 1615 by 355		
	Relative Percent Difference:		0.285	25.0	W75065				
Nitrate as N	253372-1	5 mg/l	88.9	80.0-120	C24140	05Mar21 0809 by 07	08Mar21 1744 by 07		
	253372-1	5 mg/l	89.3	80.0-120	C24140	05Mar21 0809 by 07	08Mar21 1805 by 07		
	Relative Percent Difference:		0.234	10.0	C24140				
Sulfate	253372-1	25 mg/l	98.1	80.0-120	C24140	05Mar21 0809 by 07	08Mar21 1744 by 07		
	253372-1	25 mg/l	98.3	80.0-120	C24140	05Mar21 0809 by 07	08Mar21 1805 by 07		
	Relative Percent Difference:		0.195	10.0	C24140				

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	W75065-1	05Mar21 1120 by 347	05Mar21 1607 by 355	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C24140-1	05Mar21 0809 by 07	08Mar21 1703 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C24140-1	05Mar21 0809 by 07	08Mar21 1703 by 07	

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

253359

Chain of Custody

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

SPECIAL INSTRUCTIONS/PRECAUTIONS:

Send a copy of report to Brad Phillips/ Will Glenn at emails:
bphillips@gbmcassoc.com
wglenn@gbmcassoc.com

Parameters for Analysis/Methods

Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	Nitrate as N	Ammonia as N	Sulfate							
MW-14		3/3/21	1025	W	2	X	X	X							
MW-14 Dup		"	1025	W	2	X	X	X							
MW-17		"	1147	W	2	X	X	X							
MW-18		"	1500	W	1	X	X	X							
				W		X	X	X							
				W		X	X	X							
				W		X	X	X							
Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I							

Sampler(s): WHG/DMB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: Will Glenn	Date: 3-4-21 Time: 730	COC Checked by: Will Glenn Date: 3-4-21 Time: 1205
Relinquished by: Will Glenn	Date: 3-4-21 Time: 1247	Received by: _____ Date: _____ Time: _____
Relinquished by: _____	Date: _____ Time: _____	Received in lab by: [signature] Date: 3-4-21 Time: 1209

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

V1.2 02/08/21

AMERICAN INTERPLEX CORPORATION
LABORATORIES

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples received on July 14, 2021. 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: El Dorado Chemical Company
ATTN: Mr. David Sartain
dsartain@edc-ark.com

GBMc & Associates, Inc.
ATTN: Ms. Amanda Gallagher
agallagher@gbmcassoc.com

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

AMERICAN INTERPLEX CORPORATION LABORATORIES

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

SAMPLE INFORMATION

Project Description:
Six (6) water sample(s) received on July 14, 2021
Monitoring Well Sampling
P.O. No. 21000186

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
257009-1	MW-6	13-Jul-2021 1145	
257009-2	MW-7	13-Jul-2021 1225	
257009-3	MW-8	13-Jul-2021 1307	
257009-4	MW-9	13-Jul-2021 1411	
257009-5	MW-5	13-Jul-2021 1603	
257009-6	MW-4	13-Jul-2021 1643	

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

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

ANALYTICAL RESULTS

AIC No. 257009-1
Sample Identification: MW-6 13-Jul-2021 1145

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**580**	50	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 0823 by 356	Analyzed: 19-Jul-2021 1051 by 300		Batch: W76467	Dil: 450
Nitrate as N		**11000**	500	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 1004 by 338		Batch: C24530	Dil: 10000
Sulfate		**70**	2	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 1025 by 338		Batch: C24530	Dil: 10

AIC No. 257009-2
Sample Identification: MW-7 13-Jul-2021 1225

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**840**	50	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 0823 by 356	Analyzed: 19-Jul-2021 1053 by 300		Batch: W76467	Dil: 450
Nitrate as N		**2700**	50	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 0112 by 338		Batch: C24530	Dil: 1000
Sulfate		**310**	20	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 0133 by 338		Batch: C24530	Dil: 100

AIC No. 257009-3
Sample Identification: MW-8 13-Jul-2021 1307

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**810**	50	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 0823 by 356	Analyzed: 19-Jul-2021 1055 by 300		Batch: W76467	Dil: 450
Nitrate as N		**5400**	50	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 0153 by 338		Batch: C24530	Dil: 1000
Sulfate		**110**	2	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 1045 by 338		Batch: C24530	Dil: 10

AIC No. 257009-4
Sample Identification: MW-9 13-Jul-2021 1411

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**3.4**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 0823 by 356	Analyzed: 16-Jul-2021 1436 by 300		Batch: W76467	Dil: 5
Nitrate as N		**23**	0.5	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 0256 by 338		Batch: C24530	Dil: 10
Sulfate		**580**	20	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 0235 by 338		Batch: C24530	Dil: 100

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

ANALYTICAL RESULTS

AIC No. 257009-5
Sample Identification: MW-5 13-Jul-2021 1603

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**1.2**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 0823 by 356	Analyzed: 16-Jul-2021 1403 by 300		Batch: W76467	
Nitrate as N		**140**	5	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 0316 by 338		Batch: C24530	Dil: 100
Sulfate		**29**	0.2	**mg/l**	
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 1127 by 338		Batch: C24530	

AIC No. 257009-6
Sample Identification: MW-4 13-Jul-2021 1643

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**1.3**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 0823 by 356	Analyzed: 16-Jul-2021 1405 by 300		Batch: W76467	
Nitrate as N		**0.13**	0.05	**mg/l**	
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 1335 by 338		Batch: C24530	
Sulfate		**710**	20	**mg/l**	D
EPA 300.0	Prep: 14-Jul-2021 1617 by 338	Analyzed: 15-Jul-2021 0419 by 338		Batch: C24530	Dil: 100

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

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	108	80.0-120			W76467	16Jul21 0824 by 356	16Jul21 1333 by 300		
Nitrate as N	5 mg/l	98.3	90.0-110			C24530	14Jul21 1249 by 338	14Jul21 1448 by 338		
Sulfate	25 mg/l	98.2	90.0-110			C24530	14Jul21 1249 by 338	14Jul21 1448 by 338		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	257003-1	1 mg/l	109	80.0-120	W76467	16Jul21 0824 by 356	16Jul21 1337 by 300		
	257003-1	1 mg/l	112	80.0-120	W76467	16Jul21 0824 by 356	16Jul21 1338 by 300		
	Relative Percent Difference:		2.72	25.0	W76467				
Nitrate as N	256992-1	5 mg/l	85.3	80.0-120	C24530	14Jul21 1249 by 338	14Jul21 1509 by 338		
	256992-1	5 mg/l	86.4	80.0-120	C24530	14Jul21 1249 by 338	14Jul21 1530 by 338		
	Relative Percent Difference:		1.27	10.0	C24530				
Sulfate	256992-1	25 mg/l	85.1	80.0-120	C24530	14Jul21 1249 by 338	14Jul21 1509 by 338		
	256992-1	25 mg/l	86.5	80.0-120	C24530	14Jul21 1249 by 338	14Jul21 1530 by 338		
	Relative Percent Difference:		1.13	10.0	C24530				

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.09 mg/l	0.09	0.1	W76467-1	16Jul21 0824 by 356	16Jul21 1331 by 300	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C24530-1	14Jul21 1249 by 338	14Jul21 1428 by 338	
Sulfate	< 0.1 mg/l	0.1	0.2	C24530-1	14Jul21 1249 by 338	14Jul21 1428 by 338	

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

Chain of Custody

25TC09

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

SPECIAL INSTRUCTIONS/PRECAUTIONS:

Send a copy of report to Brad Phillips/ Will Glenn at emails:
bphillips@gbmcassoc.com
wglenn@gbmcassoc.com

Parameters for Analysis/Methods

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	Nitrate as N	Ammonia as N	Sulfate							
1	MW-6	Water	7/13/21	1145	W	2	X	X	X							
2	MW-7	Water	7/13/21	1225	W	2	X	X	X							
3	MW-8	Water	7/13/21	1307	W	2	X	X	X							
4	MW-9	Water	7/13/21	1411	W	2	X	X	X							
5	MW-5	Water	7/13/21	1603	W	2	X	X	X							
6	~~10~~ MW-4	Water	7/13/21	1643	W	2	X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
Preservative		(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I							

Sampler(s): DMB / OEB	Shipment Method: ~~FedEx Priority~~	Turnaround Time Required: Normal	
COC Completed by: DMB	Date: 7/13/21 Time: 2005	COC Checked by: OEB	Date: 0630 Time: ~~1130~~ 7/14/21
Relinquished by: DBB	Date: 7/14/21 Time: 0800	Received by:	Date: 7/19/21 Time: 1135
Relinquished by:	Date: 7/14/21 Time: 2301	Received in lab by:	Date: 7-14-21 Time: 1440

LABORATORY USE ONLY:	Samples Received On Ice?: YES or NO	Sample Temperature: 0.7

AMERICAN INTERPLEX CORPORATION
LABORATORIES

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples received on July 15, 2021. 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: El Dorado Chemical Company
ATTN: Mr. David Sartain
dsartain@edc-ark.com

GBMc & Associates, Inc.
ATTN: Ms. Amanda Gallagher
agallagher@gbmcassoc.com

El Dorado Water Utilities
ATTN: Mr. John Peppers
john@eldoradowater.com

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
epearson@edc-ark.com

El Dorado Water Utilities
ATTN: Mr. Jay Honeycut
lab@eldoradowater.com

GBMc & Associates, Inc.
ATTN: Ms. Danielle Braund
dbraund@gbmcassoc.com

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

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

AMERICAN INTERPLEX CORPORATION LABORATORIES

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

SAMPLE INFORMATION

Project Description:
Four (4) water sample(s) received on July 15, 2021
Monitoring Well Sampling
P.O. No. 21000186

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
257049-1	MW-11	14-Jul-2021 0838	
257049-2	MW-10	14-Jul-2021 0930	
257049-3	MW-10 DUP	14-Jul-2021 0930	
257049-4	MW-17	14-Jul-2021 1506	

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

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

ANALYTICAL RESULTS

AIC No. 257049-1
Sample Identification: MW-11 14-Jul-2021 0838

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**9.8**	0.5	**mg/l**	D
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 1328 by 356	Analyzed: 19-Jul-2021 1000 by 347		Batch: W76476	Dil: 5
Nitrate as N		**35**	0.5	**mg/l**	D
EPA 9056A	Prep: 15-Jul-2021 1911 by 07	Analyzed: 15-Jul-2021 1937 by 07		Batch: C24539	Dil: 10
Sulfate		**170**	2	**mg/l**	D
EPA 9056A	Prep: 15-Jul-2021 1911 by 07	Analyzed: 15-Jul-2021 1937 by 07		Batch: C24539	Dil: 10

AIC No. 257049-2
Sample Identification: MW-10 14-Jul-2021 0930

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 1328 by 356	Analyzed: 19-Jul-2021 0922 by 347		Batch: W76476	
Nitrate as N		**68**	0.5	**mg/l**	D
EPA 9056A	Prep: 15-Jul-2021 1911 by 07	Analyzed: 15-Jul-2021 1958 by 07		Batch: C24539	Dil: 10
Sulfate		**71**	2	**mg/l**	D
EPA 9056A	Prep: 15-Jul-2021 1911 by 07	Analyzed: 15-Jul-2021 1958 by 07		Batch: C24539	Dil: 10

AIC No. 257049-3
Sample Identification: MW-10 DUP 14-Jul-2021 0930

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 1328 by 356	Analyzed: 19-Jul-2021 0924 by 347		Batch: W76476	
Nitrate as N		**64**	0.5	**mg/l**	D
EPA 9056A	Prep: 15-Jul-2021 1911 by 07	Analyzed: 15-Jul-2021 2019 by 07		Batch: C24539	Dil: 10
Sulfate		**70**	2	**mg/l**	D
EPA 9056A	Prep: 15-Jul-2021 1911 by 07	Analyzed: 15-Jul-2021 2019 by 07		Batch: C24539	Dil: 10

AIC No. 257049-4
Sample Identification: MW-17 14-Jul-2021 1506

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**< 0.1**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 16-Jul-2021 1328 by 356	Analyzed: 19-Jul-2021 0926 by 347		Batch: W76476	
Nitrate as N		**11**	0.5	**mg/l**	D
EPA 9056A	Prep: 15-Jul-2021 1911 by 07	Analyzed: 15-Jul-2021 2039 by 07		Batch: C24539	Dil: 10
Sulfate		**9.4**	0.2	**mg/l**	
EPA 9056A	Prep: 15-Jul-2021 1911 by 07	Analyzed: 15-Jul-2021 2203 by 07		Batch: C24539	

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

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	98.3	80.0-120			W76476	16Jul21 1329 by 356	19Jul21 0848 by 347		
Nitrate as N	5 mg/l	104	90.0-110			C24539	15Jul21 1342 by 338	15Jul21 1650 by 338		
Sulfate	25 mg/l	104	90.0-110			C24539	15Jul21 1342 by 07	15Jul21 1650 by 338		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	257058-1	1 mg/l	97.0	80.0-120	W76476	16Jul21 1329 by 356	19Jul21 0852 by 347		
	257058-1	1 mg/l	107	80.0-120	W76476	16Jul21 1329 by 356	19Jul21 0854 by 347		
	Relative Percent Difference:		6.56	25.0	W76476				
Nitrate as N	257005-1	5 mg/l	106	80.0-120	C24539	15Jul21 1342 by 338	15Jul21 1711 by 338		
	257005-1	5 mg/l	98.8	80.0-120	C24539	15Jul21 1342 by 338	15Jul21 1732 by 338		
	Relative Percent Difference:		3.99	10.0	C24539				
Sulfate	257005-1	25 mg/l	106	80.0-120	C24539	15Jul21 1342 by 07	15Jul21 1711 by 338		
	257005-1	25 mg/l	101	80.0-120	C24539	15Jul21 1342 by 07	15Jul21 1732 by 338		
	Relative Percent Difference:		3.64	10.0	C24539				

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.09 mg/l	0.09	0.1	W76476-1	16Jul21 1329 by 356	19Jul21 0846 by 347	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C24539-1	15Jul21 1342 by 338	15Jul21 1630 by 338	
Sulfate	< 0.1 mg/l	0.1	0.2	C24539-1	15Jul21 1342 by 07	15Jul21 1630 by 338	

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

Chain of Custody

257049

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

SPECIAL INSTRUCTIONS/PRECAUTIONS:

Send a copy of report to Brad Phillips/ Will Glenn at emails:
bphillips@gbmcassoc.com
wglenn@gbmcassoc.com

Parameters for Analysis/Methods

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	Nitrate as N	Ammonia as N	Sulfate							
1	MW-11	Water	7/14/21	0838	W	2	X	X	X							
2	MW-10	Water	7/14/21	0930	W	2	X	X	X							
3	MW-10DUP	Duplicate	7/14/21	0930	W	2	X	X	X							
4	MW-17	Water	7/14/21	1506	W	2	X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
					W		X	X	X							
Preservative	(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)						I, S	I	I							

Sampler(s): DMB/OEB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: DMB	Date: 7/14/21 Time: 2030	COC Checked by: OEB Date: 7/14/21 Time: 2045
Relinquished by: DMB	Date: 7/15/21 Time: 0800	Received by: _____ Date: _____ Time: _____
Relinquished by: _____	Date: _____ Time: _____	Received in lab by: D. Brown Date: 7/15/21 Time: 1715

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

V1.2 07/01/21

AMERICAN INTERPLEX CORPORATION
LABORATORIES

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples received on July 16, 2021. 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: El Dorado Chemical Company
ATTN: Mr. David Sartain
dsartain@edc-ark.com

GBMc & Associates, Inc.
ATTN: Ms. Amanda Gallagher
agallagher@gbmcassoc.com

El Dorado Water Utilities
ATTN: Mr. John Peppers
john@eldoradowater.com

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
epearson@edc-ark.com

El Dorado Water Utilities
ATTN: Mr. Jay Honeycut
lab@eldoradowater.com

GBMc & Associates, Inc.
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dbraund@gbmcassoc.com

AMERICAN INTERPLEX CORPORATION LABORATORIES

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

SAMPLE INFORMATION

Project Description:
Three (3) water sample(s) received on July 16, 2021
Monitoring Well Sampling
P.O. No. 21000186

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
257077-1	MW-14	15-Jul-2021 1046	
257077-2	MW-16	15-Jul-2021 0849	
257077-3	MW-18	15-Jul-2021 1617	1

Notes:
1. Sample was received unpreserved
   257077-3: Did not receive a preserved bottle for Ammonia as N.

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

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

ANALYTICAL RESULTS

AIC No. 257077-1
Sample Identification: MW-14 15-Jul-2021 1046

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.36**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 19-Jul-2021 1105 by 347	Analyzed: 21-Jul-2021 0959 by 347		Batch: W76490	
Nitrate as N		**0.41**	0.05	**mg/l**	
EPA 9056A	Prep: 16-Jul-2021 1339 by 07	Analyzed: 16-Jul-2021 1600 by 07		Batch: C24545	
Sulfate		**140**	2	**mg/l**	D
EPA 9056A	Prep: 16-Jul-2021 1339 by 07	Analyzed: 16-Jul-2021 1817 by 07		Batch: C24545	Dil: 10

AIC No. 257077-2
Sample Identification: MW-16 15-Jul-2021 0849

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.40**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 19-Jul-2021 1105 by 347	Analyzed: 21-Jul-2021 1000 by 347		Batch: W76490	
Nitrate as N		**12**	0.5	**mg/l**	D
EPA 9056A	Prep: 16-Jul-2021 1339 by 07	Analyzed: 16-Jul-2021 1621 by 07		Batch: C24545	Dil: 10
Sulfate		**17**	0.2	**mg/l**	
EPA 9056A	Prep: 16-Jul-2021 1339 by 07	Analyzed: 16-Jul-2021 1642 by 07		Batch: C24545	

AIC No. 257077-3
Sample Identification: MW-18 15-Jul-2021 1617

Analyte		Result	RL	Units	Qualifier
Ammonia as N with Distillation		**0.23**	0.1	**mg/l**	
SM 4500-NH3 B,G 2011	Prep: 19-Jul-2021 1105 by 347	Analyzed: 21-Jul-2021 1002 by 347		Batch: W76490	
Nitrate as N		**0.053**	0.05	**mg/l**	
EPA 9056A	Prep: 16-Jul-2021 1339 by 07	Analyzed: 16-Jul-2021 1757 by 07		Batch: C24545	
Sulfate		**2.1**	0.2	**mg/l**	
EPA 9056A	Prep: 16-Jul-2021 1339 by 07	Analyzed: 16-Jul-2021 1757 by 07		Batch: C24545	

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

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	107	80.0-120			W76490	19Jul21 1105 by 347	21Jul21 0932 by 347		
Nitrate as N	5 mg/l	96.4	90.0-110			C24545	16Jul21 1025 by 07	16Jul21 1106 by 07		
Sulfate	25 mg/l	96.3	90.0-110			C24545	16Jul21 1025 by 07	16Jul21 1106 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	257053-1	1 mg/l	104	80.0-120	W76490	19Jul21 1105 by 347	21Jul21 0935 by 347		
	257053-1	1 mg/l	105	80.0-120	W76490	19Jul21 1105 by 347	21Jul21 0937 by 347		
	Relative Percent Difference:		0.746	25.0	W76490				
Nitrate as N	257057-1	5 mg/l	98.6	80.0-120	C24545	16Jul21 1025 by 07	16Jul21 1127 by 07		
	257057-1	5 mg/l	98.1	80.0-120	C24545	16Jul21 1025 by 07	16Jul21 1147 by 07		
	Relative Percent Difference:		0.310	10.0	C24545				
Sulfate	257057-1	25 mg/l	98.9	80.0-120	C24545	16Jul21 1025 by 07	16Jul21 1127 by 07		
	257057-1	25 mg/l	98.5	80.0-120	C24545	16Jul21 1025 by 07	16Jul21 1147 by 07		
	Relative Percent Difference:		0.353	10.0	C24545				

LABORATORY BLANK RESULTS

Analyte	Result	RL	LOQ	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.09 mg/l	0.09	0.1	W76490-1	19Jul21 1105 by 347	21Jul21 0930 by 347	
Nitrate as N	< 0.03 mg/l	0.03	0.05	C24545-1	16Jul21 1025 by 07	16Jul21 1045 by 07	
Sulfate	< 0.1 mg/l	0.1	0.2	C24545-1	16Jul21 1025 by 07	16Jul21 1045 by 07	

257077

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

Chain of Custody

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

SPECIAL INSTRUCTIONS/PRECAUTIONS:

Send a copy of report to Brad Phillips/ Will Glenn at emails:
bphillips@gbmcassoc.com
wglenn@gbmcassoc.com

Parameters for Analysis/Methods

	Sample ID	Sample Description	Date	Time	Matrix S=Sed/Soil W=Water	Number of Containers	Nitrate as N	Ammonia as N	Sulfate							
1	MW-14	water	7/15/21	1046	W	2	x	x	x							
2	MW-16	water	7/15/21	0849	W	2	x	x	x							
3	MW-18	water	7/15/21	1617	W	1	x	x	x							
					W		x	x	x							
					W		x	x	x							
					W		x	x	x							
					W		x	x	x							
					W		x	x	x							
					W		x	x	x							
					W		x	x	x							
					W		x	x	x							
					W		x	x	x							
Preservative		(Sulfuric acid =S, Nitric acid =N, NaOH =B, Ice =I)					I, S	I	I							

Sampler(s): DMB/OEB	Shipment Method: Fed Ex Priority	Turnaround Time Required: Normal
COC Completed by: OEB	~~Date:~~ Time: 10:34 ~~Time:~~ Date: 7/16/21	COC Checked by: DMB Date: 7/16/21 Time: 10:35
Relinquished by: [signature]	Date: 7/16/21 Time: 1221	Received by: _____ Date: _____ Time: _____
Relinquished by: _____	Date: _____ Time: _____	Received in lab by: [signature] Date: 7-16-21 Time: 1221

LABORATORY USE ONLY:	Samples Received On Ice?: (YES) or NO	Sample Temperature: 0.4

V1.2 07/01/21

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: 3/2/21

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 12.1 feet to 22.2 feet	STATIC DEPTH TO WATER (feet): 5.35	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)
= (22.2 feet – feet) X 0.65 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): 17.1	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17.1	PURGING INITIATED AT: 915	PURGING ENDED AT: 958	TOTAL VOLUME PURGED (gallons): 3.5

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)
930	1.0	1.0		5.80	3.00	13.95	516	3.00	176.6	N/A	N/A
948	1.5	2.5		6.05	3.03	14.54	49	1.03	176.2	↓	↓
953	0.5	3.0		6.05	3.02	14.56	49	0.95	176.4		
958	0.5	3.5		6.05	3.01	14.40	50	1.04	176.6		

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: N/A	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: N/A	SAMPLING ENDED AT:
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)			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					pH=	1.34			

REMARKS: no sample during odd year

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:	3/2/21		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		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 – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
15.2	15.2	1005	1050	3.25

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)
1020	1.25	1.25		0.3	3.77	14.88	207	1.37	156.5		
1030	0.75	2.00		0.5	3.8	14.81	207	0.81	155.6		
~~1040~~ 1040	0.75	2.75		0.75	3.83	14.77	207	0.50	154.8		
~~1045~~ 1045	0.25	3.0		0.75	3.83	14.84	206	0.47	154.7		
1050	0.25	3.25		0.75	3.84	14.85	206	0.45	154.7		

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:
N/A		N/A	

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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			
MW2					pH=				
						5.85			

REMARKS: no sample during odd year

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:

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	7.24	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (27.1 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
22.1	22.1	1100	1150	

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)
1125	1.5	1.5		8.7	4.55	14.75	196	4.67	135.3	clear	clear
1130	0.5	2		9.3	4.63	14.81	197	4.63	133.6	1	1
1135	0.5	2.5		9.7	4.64	14.64	197	4.64	133.2	1	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:
N/A		NA	

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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			
Equip Blank	1	PP	150 mL			15.46	NO3; SO4	ESP	<200
Equip Blank	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW3					pH=				

REMARKS: no sample during odd year

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:	3/2/21		

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	7.92	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.1 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
17.1	17.1	1200	1225	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)
1210	1.5	1.5		10.10	3.26	15.36	5739	3.34	170.4	N/A	N/A
1215	0.5	2.0		10.50	3.27	15.20	5747	3.54	169.9	"	"
1220	0.25	2.25		10.90	3.23	15.25	5735	3.39	171.0	"	"

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:
WHG/DMB		1220	1225

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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			
MW4	1	PP	150 mL				NO3; SO4	ESP	<200
MW4	1	PP	300 mL	H2SO4		1.35	NH4	ESP	<200
					pH=				
MW-4									
MW-4 Dup									

REMARKS: Duplicate sample 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-5	SAMPLE ID: MW-5		DATE: 3/2/21

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): 2.12	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)
= (17.7 feet – feet) X 0.65 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): 12.7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12.7	PURGING INITIATED AT: 1235	PURGING ENDED AT: 1325	TOTAL VOLUME PURGED (gallons): 3.15

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)
1245	0.75	0.75		2.50	3.66	15.28	1137	3.50	159.5	N/A	N/A
1250	0.25	1.00		2.62	3.73	15.49	1099	2.96	157.7	↓	↓
1310	1.25	2.25		3.00	3.83	15.58	1090	0.50	155.2		
1315	0.5	2.75		3.10	3.82	15.65	1088	0.40	155.3		
1320	0.25	3.00		3.18	3.82	15.77	1088	0.32	155.2		

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: WHG/DMB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1320	SAMPLING ENDED AT: 1325
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)
MW5	1	PP	150 mL				NO3; SO4	ESP	<200
MW5	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH=	0.20			

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: 3/2/21

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 12 feet to 22 feet	STATIC DEPTH TO WATER (feet): 4.21	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)

= (22 feet – feet) X 0.65 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): 17	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17	PURGING INITIATED AT: 1330	PURGING ENDED AT: 1415	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)
1350	1.75			4.89	3.24	16.08	67734	0.78	170.1	Clear	Clear
1400	0.25			4.94	3.31	16.59	68891	0.54	169.4	"	"
1405	~~1~~			~~4.95~~	3.32	16.68	69052	0.52	169.1	"	"
1410	~~1~~				3.32	16.73	69677	0.58	169.0	"	"

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: CHG / DMB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1410	SAMPLING ENDED AT: 1415
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)
MW6	1	PP	150 mL				NO3; SO4	ESP	<200
MW6	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH=	2.80		ESP	

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: 3/2/21

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 13.9 feet to 23.9 feet	STATIC DEPTH TO WATER (feet): 6.78	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)
= (23.9 feet – feet) X 0.65 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) + 1510 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	1425	~~1310~~	

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)
1440	2.0	2.0		6.94	4.64	16.56	15059	1.79	133.6	N/A	N/A
1445	0.5	2.5		↓	4.66	16.59	15511	1.59	133.1		
1450	0.5	3.0		6.94	4.72	16.82	16127	1.26	131.6		
1455	0.5	3.5		7.02	4.80	17.06	17128	1.10	129.5		
1500	0.25	3.75		6.98	4.88	16.95	17778	1.09	126.3		
1505	0.25	4.0		6.98	4.85	16.98	18132	1.04	128.1		

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: WHG / PMB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: ~~1305~~ 1505	SAMPLING ENDED AT: ~~1310~~ 1310
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)
MW7	1	PP	150 mL				NO3; SO4	ESP	<200
MW7	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH=	0.94		ESP	

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: 3/2/2021

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): 6.48	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: (only fill out if applicable) **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

= (29.9 feet – feet) X 0.65 gallons/foot = gallons

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

= 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: 750	PURGING ENDED AT: 830	TOTAL VOLUME PURGED (gallons): 1830 2.15

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)
815	1.5	1.5		6.48	2.12	13.73	35538	2.09	200	N/A	N/A
820	0.25	1.75		6.64	2.15	13.48	35794	2.10	199.2	↓	↓
825	0.25	2.0		6.64	2.19	14.05	35324	1.90	198.2		

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: WHG/DMB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 825	SAMPLING ENDED AT: 830
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)
MW8	1	PP	150 mL				NO3; SO4	ESP	<200
MW8	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH=			ESP	
						1.39			

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: 3/2/21

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 20 feet to 30 feet	STATIC DEPTH TO WATER (feet): 7.20	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)
= (30 feet – feet) x 0.65 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): 7.47	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7.47	PURGING INITIATED AT: 840	PURGING ENDED AT: 905	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)
850	0.5	0.5		7.95	3.96	15.88	2002	3.22	151.6	N/A	N/A
855	0.5	1.0			4.06	16.32	1973	3.30	149.0	↓	↓
900	0.75	1.75		9.10	4.16	16.29	1969	3.34	145.6		

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):	SAMPLING INITIATED AT: 900 BMD	SAMPLING ENDED AT: 905
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)
MW9	1	PP	150 mL				NO3; SO4	ESP	<200
MW9	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH=	2.56		ESP	

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: 3/1/2021

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 12.6 feet to 22.6 feet	STATIC DEPTH TO WATER (feet): 11.40	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)
= (22.6 feet – feet) X 0.65 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): 17.6	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 17.6	PURGING INITIATED AT: 1325	PURGING ENDED AT: 1355	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)
1335	1.0	1.0		12.85	3.25	16.54	748	2.28	174.7	N/A	N/A
1340	0.25	1.25		13.10	3.28	16.53	747	1.85	173.7		
1345	0.25	1.50			3.29	16.18	750	1.84	172.8		
1350	0.25	1.75		13.25	3.27	15.93	749	1.77	173.5		

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: WHG / DMB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1350	SAMPLING ENDED AT: 1355
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)
MW10	1	PP	150 mL				NO3; SO4	ESP	<200
MW10	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH=			ESP	
						0.79			

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: 3/1/2021

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): 9.35	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 – feet) X 0.65 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): 14.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	PURGING INITIATED AT: 1240	PURGING ENDED AT: 1315	TOTAL VOLUME PURGED (gallons): 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)
1215	~~0.75~~	0.75		9.1	2.8	~~14.34~~	617	1.72	198	N/A	N/A
1255 1300 1220	1.0	1.0			2.72	14.07	643	1.50	196.8		
1225	0.2	1.2	9.65	9.65	2.76	14.16	647	1.30	195.1		
1305	0.2	1.4			2.76	14.08	648	1.22	~~199~~ 195.4		
1310	0.2	1.6			2.75	14.01	651	1.24	195.7		

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: WHG / DMB	SAMPLER(S) SIGNATURE(S): WHG / DMB	SAMPLING INITIATED AT: 1310	SAMPLING ENDED AT: 1315
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)
MW11	1	PP	150 mL				NO3; SO4	ESP	<200
MW11	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH=			ESP	
					0.94				

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: 3/1/2021

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 9.9 feet to 19.9 feet	STATIC DEPTH TO WATER (feet): 5.35	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)
= (19.9 feet – feet) X 0.65 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): 5.15	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 15	PURGING INITIATED AT: 1155	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)
1215	0.5	0.5		6.1	2.8	14.34	617	1.72	193	Slight	N/A
1220	0.1	0.6		6.25	3.1	14.59	617	1.27	180.7	rust-q	↓
1225	0.1	0.7			3.2	14.40	618	1.30	175.8	cloudy	↓
1230	0.1	0.8			3.24	14.35	618	1.26	174		

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:
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)
MW12					pH=			ESP	

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: 3/2/21

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): 4.50	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 – feet) X 0.65 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): 14.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14.8	PURGING INITIATED AT: 1530	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)
1553	2.5	2.5		8.38	4.83	14.84	496	3.52	128.1	NA	NA
1558	0.5	3.0		9.19	4.83	14.80	500	3.39	128.1	↓	↓
1603	0.25	3.25		9.73	4.84	14.89	504	3.33	128.1	↓	↓

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: WHB / DMB	SAMPLER(S) SIGNATURE(S): N/A	SAMPLING INITIATED AT: N/A	SAMPLING ENDED AT:
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)
MW13					pH= 3.74			ESP	

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:	3/3/21		

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			4.7	

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (feet – feet) X 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 9.15	PURGING ENDED AT: 1030	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)
1005	3	3			3.92	12.29	503	1.92	156.5	clear	clear
1015	1	4			3.97	12.6	501	1.52	155.2	"	"
1020	0.5	4.5			4.02	12.75	500	1.41	153.8	"	"
1025	0.5	5		4.9	4.03	12.84	498	1.4	153.5	"	"

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: 1025	SAMPLING ENDED AT: 1030
WHB/DMB			

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	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~~			
						1.34			

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-15	SAMPLE ID: MW-15		DATE: 3/3/21

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 7 feet to 17 feet	STATIC DEPTH TO WATER (feet): 2.84	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)

= (17 feet – feet) X 0.65 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): 12	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 12	PURGING INITIATED AT: 805	PURGING ENDED AT: 855	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)
835	3.0	3.0		3.3	2.93	13.65	73	0.87	184.7		
845	1.0	4.0		3.6	3.03	13.78	73	0.54	181.8		
850	0.5	4.5		3.7	3.00	13.89	73	0.59	182.8		
855	0.25	4.75		3.8	2.97	13.74	73	0.55	183.5		

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: N/A	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
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)
MW15					pH=	1.10		ESP	

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: 3/2/21

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): 2.15	PURGE PUMP TYPE OR BAILER:

WELL VOLUME PURGE: (only fill out if applicable) **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY

= (19.3 feet – feet) X 0.65 gallons/foot = gallons

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

= 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: 1414	PURGING ENDED AT: 1443	TOTAL VOLUME PURGED (gallons): 2.30

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)
1428	2.25	2.25		2.70	3.41	13.80	132	0.40	165.7		
1433	0.25	2.50		2.90	3.37	13.82	133	0.32	166.7		
1438	0.25	2.25		3.05	3.37	13.91	133	0.30	166.9		

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: WHG / DMB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1438	SAMPLING ENDED AT: 1443
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)
MW16	1	PP	150 mL				NO3; SO4	ESP	<200
MW16	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH= 3.05	1.37		ESP	

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: 3/3/21

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): 24.54	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)

= (34.7 feet – feet) x 0.65 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): 29.7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 29.7	PURGING INITIATED AT: 1105	PURGING ENDED AT: 1150	TOTAL VOLUME PURGED (gallons): 8.10

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)
1120	3	3.0		24.90	4.40	18.32	364	1.40	144.7	N/A	N/A
1125	1	4.0		24.90	4.48	18.88	367	1.18	142.5	↓	↓
1135	2	6.0		24.92	4.49	18.99	375	0.916	142.1		
1140	1	7.0		24.92	4.48	19.02	3108	0.93	142.3		
1145	1	8.0		24.93	4.45	19.02	3106	0.95	143.4		

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: WHG / DMB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1147	SAMPLING ENDED AT: 1150
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)
MW17	1	PP	150 mL				NO3; SO4	ESP	<200
MW17	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW17					pH=			ESP	
						1.78			

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:	3/3/21		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		7.2 feet to 17.2 feet	3.89	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (17.2 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
12.2	12.2	1430	1505	3.5

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)
1450	2.5	2.5		5.68	4.62	13.53	67	4.90	137.2	very cloudy	N/A
1455	0.5	3.0		5.83	4.57	13.56	66	4.65	138.6	↓	↓
1500	0.5	3.5		5.90	4.49	13.60	66	4.68	139.6		

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:	SAMPLING ENDED AT:
		1500	1505

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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)
MW18					pH=				
MW18	1	PP	150 mL	NA				ESP	
						278	NO3	ESP	<200

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: 3/3/21

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:

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (61.5 feet – feet) x 0.16 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): 56.5	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 56.5	PURGING INITIATED AT: 1520	PURGING ENDED AT: 1555	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)
1350	1.75	1.75		4.89	3.24	16.08	67734	0.78	170.7	clear	strong
1400	0.5	2.25		4.94	3.31	16.42	68854	0.54	169.3		
1405	0.25	2.5			3.32	16.59	69052	0.52	169.1		
1540	2.0	2.0		1.70	5.96	18.00	79	0.68	99.8	N/A	N/A
1545	0.25	2.25		1.70	5.95	18.07	79	0.66	100.2		
1550	0.25	2.5		1.70	5.94	18.15	79	0.65	100.4		

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:
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)
MW19					pH=	21.2		ESP	

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: 3/3/21

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): 21.0	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)
= (54.5 feet – feet) x 0.16 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): 50	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 50	PURGING INITIATED AT: 1707	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)
1730	3	3		38.4	5.58	18.19	85	0.61	110.7	Slightly	None
1735	0.5	3.5		39.2	5.59	18.23	86	0.66	110.5	Cloudy	
1740	0.5	4		40.6	5.56	18.07	86	0.7	111.2	↓	↓

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:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
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					pH=	38.3		ESP	

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:	3/3/21		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
1		24.9 feet to 34.9 feet	20.5	

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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
39.9	39.9	1615	1655	

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)
438	1	1			4.81	17.15	53	2.69	132.8	Slightly Cloudy	Clear
445	0.5	1.5			4.76	17.17	53	2.67	134.2	"	"
450	0.25	1.75			4.68	17.13	53	2.59	137.2	"	"

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:	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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			
MW21					pH= 7.26			PP	

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)

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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: 3/3/21

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): 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)

= (79.8 feet – feet) X 0.16 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): 74.8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 74.8	PURGING INITIATED AT: 1200	PURGING ENDED AT: 1240	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)
1230	2.5	2.5		3.4	5.74	17.42	172	0.48	105.9	clear	clean
1235	0.5	3		3.42	5.72	17.65	172	0.47	104.5	1	1
1240	0.5	3.5			5.88	17.68	172	0.46	101.9	1	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:
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)
MW22					pH=	0.92		ESP	

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

EDCC Monitoring Well Information

Monitoring Well						Well Screened Interval		Notes
	Date	Well Diameter	Depth To Water	Depth To Well Base	Length of tubing Needed	ft from top of casing		
		(inches)	(ft)	(ft)	(ft)	top	bottom	
MW-1	3/11/21	4	5.4		32.1	12.1	22.2	
MW-2		4	0		30.2	10.2	20.2	overflowing
MW-3		4	7.28		37.1	17.1	27.1	
MW-4		4	7.95		32.1	12.1	22.1	
MW-5		4	2.16		27.7	7.7	17.7	
MW-6		4	4.52		32	12	22	
MW-7		4	6.80		33.9	13.9	23.9	
MW-8		4	6.47		39.9	19.9	29.9	
MW-9		4	7.34		40	20	30	
MW-10		4	11.35		32.6	12.6	22.6	
MW-11		4	9.30		29.8	9.8	19.8	
MW-12		4	5.22		29.9	9.9	19.9	
MW-13		4	4.40		29.8	9.8	19.8	
MW-14		4	4.70		28.2	8.2	18.2	
MW-15		4	2.48		27	7	17	
MW-16		4	1.95		29.3	9.3	19.3	
MW-17		4	26.15		44.7	24.7	34.7	
MW-18		4	3.55		27.2	7.2	17.2	
MW-19		2	1.55		71.5	51.5	61.5	
MW-20		2	23.10		64.5	44.5	54.4	
MW-21		1	15.32		44.9	24.9	34.9	
MW-22		2	2.42		89.8	69.8	79.8	

854.2

screen could have disturbed oxides

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: 7/13/21

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 22.2 feet	12.33	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.2 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
32.1	32.1	1440		3.25

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)
1455	1.75			12.59	4.49	19.78	90	5.97	140.3	orange tint	none
1500	0.24	1.9		12.102	4.51	19.43	91	5.67	139.2	clear	none
1505	0.20	2.25		12.105	4.37	19.18	92	0.59	140.4	clear	none
1510	0.25	2.75		12.59	4.39	19.106	90	0.60	145.9	clear	none
1515	0.50	3.25		12.67	4.33	18.916	90	0.50	147.9	clear	none

emptied out bucket of orange water

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:
TMES			

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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					pH=				
						222			

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: 7/14/21

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:

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (20.2 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1040	PURGING ENDED AT: 11:16	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)
1055		1.25		0.85	5.36	19.05	414	0.74	92.6	slight	none
1100	0.25	1.5		1.15	5.33	19.03	414	0.77	94.2	orange	↓
1105	0.5	2.0		1.46	5.34	19.20	413	0.44	93.4	↓	
1110	0.5	2.5		1.83	5.35	19.23	410	0.31	93.4		
1115	0.25	2.75		2.40	5.34	19.41	407	0.24	93.8		

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:	SAMPLING ENDED AT:
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)
MW2					pH= 5.34	25.3			

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: 7/14/21

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	8.91	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (27.1 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
37.1	37.1	0955	1032	3.70

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)
1010		2.0		11.30	5.96	19.31	367	0.85	59.8	none	none
1015	0.5	2.5		11.88	5.95	19.19	367	1.38	60.7		
1020	0.5	3.0		12.19	5.98	19.70	368	1.27	59.0		
1025	0.25	3.25		12.35	5.97	19.74	367	1.22	59.4		
1030	0.45	3.70		12.45	5.97	19.73	367	1.16	59.6		

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:	SAMPLING ENDED AT:
DMB/OEB			

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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					pH= 5.97	3.14			

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-4	SAMPLE ID: MW-4	DATE: 7/13/21

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	9.23	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.1 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
32.1	32.1	1615	1645	3.0

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)
1630	2.0			11.81	3.81	22.13	10,089	4.50	178.6	none	none
1635	0.5	2.5		12.55	3.83	22.46	10,088	4.49	177.9	none	none
1640	0.5	3.0		12.75	3.82	22.91	10,217	4.35	178.6	none	none

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/OEB		1641	1641

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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
					pH= 3.82	1.50			

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:	7/13/21		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		7.7 feet to 17.7 feet	3.70	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (17.7 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
17.7	17.7	1535	1605	

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)
1550	1.8			4.85	4.55	21.08	21169	15.0	137.6	none	none
1555	0.3	2.1		4.82	4.57	21.47	21166	4.8	136.4	none	none
1600	0.4	2.5		4.78	4.57	21.65	21164	4.7	134.7	none	none

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/OEB		1603	1603

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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			
MW5	1	PP	150 mL				NO3; SO4	ESP	<200
MW5	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH= 4.78	15.8			

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: 7/13/21

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 12 feet to 22 feet	STATIC DEPTH TO WATER (feet): 4.35	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)
= (22 feet – feet) X 0.65 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): 32	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 32	PURGING INITIATED AT: 11:15	PURGING ENDED AT: 11:47	TOTAL VOLUME PURGED (gallons): 2.1

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)
11:32	1.75		1	4.75	3.69	22.68	128555	2.11	185.5	colorless	none
11:37	0.15	1.9		4.71	3.71	24.24	128200	2.02	185.8	colorless	none
11:42	0.2	2.1		4.70	3.69	22.05	132195	2.17	185.4	colorless	none

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/OEB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 11:45	SAMPLING ENDED AT: 11:45
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)			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			
MW6	1	PP	150 mL			1.31	NO3; SO4	ESP	<200
MW6	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH= 4.70			ESP	

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:	7/13/21		

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	6.83	

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (23.9 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
33.9	33.9	11:57	1227	3.5

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)
12:13	2.5			7.02	5.32	20.46	37890	0.81	95.1	none	none
12:18	0.5	3.0		6.98	5.35	20.88	38050	0.82	94.0	none	none
12:23	0.5	3.5		6.89	5.34	20.68	39058	0.87	93.9	none	none

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 / OEB		1225	1225

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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			1.01	NO3; SO4	ESP	<200
MW7	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH= 6.34			ESP	

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: 7/13/21

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	10.74	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (29.9 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1240	PURGING ENDED AT: 1309	TOTAL VOLUME PURGED (gallons): 3.00

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)
1255	1.9			10.76	3.77	20.84	73708	0.49	179.9	none	none
1300		2.25		10.76	3.77	20.83	73988	0.37	180.0	none	none
1305	0.75	3.00		10.77	3.76	20.76	74795	0.33	180.5	none	none

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: 1307	SAMPLING ENDED AT: 1307
DMB / OEB			

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)			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			
MW8	1	PP	150 mL			10.5	NO3; SO4	ESP	<200
MW8	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH= 3.76			ESP	

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: 7/13/2021

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		20 feet to 30 feet	9.8	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (30 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1320	PURGING ENDED AT: 1415	TOTAL VOLUME PURGED (gallons): 3.5

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)
1335	1.8			10.46	5.28	20.57	3776	1.55	97.3	none	none
1340	0.2	2.0		10.53	5.30	20.55	3776	1.50	96.4	none	none
1345	0.25	2.25		10.60	5.31	20.47	3777	1.39	96.0	none	none
1350	0.25	2.5		10.62	5.30	20.63	3767	1.26	96.5	none	none
1355	0.25	2.75		10.61	5.31	20.50	3767	1.24	95.7	none	none
1400	0.25	3.00		10.65	5.30	20.14	3766	1.43	95.9	none	none
1405	0.25	3.25		10.66	5.30	20.03	3760	1.41	96.4	none	none
1410	0.25	3.5		10.65	5.32	20.34	3746	1.38	95.2	none	none

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: 1411	SAMPLING ENDED AT: 1411
DMB/OEB			

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)			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			
MW9	1	PP	150 mL				NO3; SO4	ESP	<200
MW9	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH=5.32	8.61		ESP	

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:	7/14/21		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		12.6 feet to 22.6 feet	12.51	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (22.6 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 0850	PURGING ENDED AT: 0935	TOTAL VOLUME PURGED (gallons): 3.25

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)
0905		1.5		13.54	4.02	20.91	1270	4.46	166.2	none	none
0910	0.3	1.8		13.80	4.04	21.00	1270	1.80	165.4	none	none
0915	0.3	2.1		13.92	4.02	21.17	1275	1.69	164.4	none	none
0920	0.4	2.5		14.08	4.05	20.95	1275	1.96	164.9	none	none
0925	0.25	2.75		14.18	4.04	21.04	1275	1.97	165.7	none	none
0930	0.50	3.25		14.33	4.02	21.06	1280	1.92	164.6	none	none

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/OEB		930	930

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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
					pH= 4.06	1.08		ESP	

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:	7/14/21		

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		DEPTH: 9.8 feet to 19.8 feet	10.61	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.8 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 0811	PURGING ENDED AT: 0840	TOTAL VOLUME PURGED (gallons): 1.9

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)
0820		1.25		10.85	4.23	21.24	1020	1.16	154.9	none	none
0831	0.25	1.5		10.86	4.22	21.51	1132	1.21	154.0	none	none
0836	0.4	1.9		10.82	4.20	21.91	1109	1.24	156.9	none	none

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: 0836	SAMPLING ENDED AT: 0838
DMB/OEB			

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)
MW11	1	PP	150 mL				NO3; SO4	ESP	<200
MW11	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH= 4.20	9.21		ESP	

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: 7/14/21

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 9.9 feet to 19.9 feet	STATIC DEPTH TO WATER (feet): 5.40	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)
= (19.9 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 0723	PURGING ENDED AT: 0805	TOTAL VOLUME PURGED (gallons): 3.25

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)
0738		1.5		6.88	5.45	21.49	1253	0.65	88.6	slightly	none
0743	1.75	2.25		7.03	5.57	21.87	1248	0.55	81.6	hazy	
0748	0.25	2.5		7.02	5.61	21.95	1248	0.80	79.7		
0753	0.5	3.0		7.05	5.63	21.97	1246	0.82	78.4		
0758	0.25	3.25		7.06	5.65	22.01	1243	0.93	77.4		

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:
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)			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			
MW12					pH= 5.65	41.6		ESP	

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: 7/14/21

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): 7.07	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 – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1640	PURGING ENDED AT: 1715	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)
1655		1.5		9.18	5.55	20.23	981	1.30	82.4	none	none
1700	0.5	2.0		9.85	5.55	20.35	970	1.80	82.5	"	"
1705	0.5	2.5		10.25	5.55	20.49	972	1.05	82.9	"	"
1710	0.25	2.75		10.37	5.54	20.55	979	1.07	83.5	"	"

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/OEB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
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)
MW13					pH= 5.54	4.41		ESP	

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: 7/15/21

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	8.2 feet to 18.2 feet	4.12	

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (18.2 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons):
28.2	28.2	1010	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)
10:25		1.80			5.07	27.95	973	1.20	111.4	none	none
10:30	0.2	2.00			5.04	28.51	963	1.05	113.7	|	|
10:35	0.25	2.25			4.96	28.77	946	0.88	117.8	|	|
10:40	0.5	2.5			4.94	28.8	942	0.81	119.2	|	|
10:45	0.25	2.75		5.05	4.91	28.91	942	0.75	121.0	|	|

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:
DMB/OEB		1046	1046

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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)
						0.68			

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: 7/15/21

PURGING DATA

WELL DIAMETER (inches): 4	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: 7 feet to 17 feet	STATIC DEPTH TO WATER (feet): 3.81	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)
= (17 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 0857	PURGING ENDED AT: 0945	TOTAL VOLUME PURGED (gallons): 3.75

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)
0912		2.0		4.38	5.07	22.32	1198	1.40	109.4	none	none
0917	0.25	2.25		4.38	5.04	22.56	1176	1.22	111.7	"	"
0922	0.50	2.75		4.37	4.99	22.82	1113	1.45	114.3	"	"
0932	0.50	3.25		4.34	4.97	23.25	1025	0.70	115.1	"	"
0937	0.25	3.5		4.31	4.95	23.47	986	0.68	116.5	"	"
0942		3.75		4.31	4.93	23.68	921	0.73	117.9	"	"
				~~4.91~~	~~28.91~~	~~942~~	~~0.75~~	~~121.0~~			

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:
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)
MW15					pH= 4.31	1.77		ESP	

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: 7/15/21

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
4		9.3 feet to 19.3 feet	3.08	

WELL VOLUME PURGE: **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (19.3 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 0808	PURGING ENDED AT: 0850	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)
0823		2.0		3.55	4.12	20.93	293	3.38	161.1	None	None
0828	0.25	2.25		3.48	4.27	21.26	290	3.20	152.9		
0833	0.25	2.5		3.45	4.32	21.37	290	2.65	150.3		
0838	0.25	2.75		3.48	4.33	21.27	292	2.30	151.1		
0843	0.25	3.00		3.51	4.33	21.25	292	2.28	149.5		
0848	0.25	3.25		3.51	4.35	21.28	292	2.22	148.7		

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:
DMB/OEB		0849	0849

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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)
MW16	1	PP	150 mL				NO3; SO4	ESP	<200
MW16	1	PP	300 mL	H2SO4			NH4	ESP	<200
					pH= 4.35	1.26		ESP	

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: 7/14/21

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): 27.52	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)
= (34.7 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1435	PURGING ENDED AT: 1507	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)
1450		0.75		27.70	4.12	22.6	311	3.80	162.1		
1455	0.25	1.00		27.68	4.10	22.6	307	3.29	163.3		
1500	0.5	1.5		27.71	4.13	22.57	303	3.20	161.4		
1505		1.75		27.63	4.20	22.75	301	3.12	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/DEB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT: 1506	SAMPLING ENDED AT: 1506
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)
MW17	1	PP	150 mL				NO3; SO4	ESP	<200
MW17	1	PP	300 mL	H2SO4			NH4	ESP	<200
MW17					pH= 4.20	1.32		ESP	

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: 7/15/21

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): 6.82	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)
= (17.2 feet – feet) X 0.65 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1540	PURGING ENDED AT: 1620	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)
1555		1.5		8.10	5.42	20.8	135	1.34	89.6	~~Straight~~	none
1600	0.5	2.0		8.39	5.42	20.84	135	1.44	89.0	Orange	
1605	0.25	2.25		8.31	5.50	20.87	134	1.16	85.3	Cloudy	
1610	0.25	2.5		8.11	5.52	20.93	138	1.12	84.3		
1615	0.25	2.75		8.02	5.53	20.97	134	1.10	83.8		

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: 1617	SAMPLING ENDED AT:
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)
MW18					pH= 5.53	3.19		ESP	
MW18	1	PP	150 mL	NA			NO3	ESP	<200

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: 7/15/21

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	1.8	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (61.5 feet – feet) X 0.16 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1500	PURGING ENDED AT: 1530	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)
1515		1.8		3.70	5.56	19.80	153	3.15	82.1	none	none
1520	0.3	2.1		3.72	5.53	19.69	154	3.17	83.3	1	1
1525	0.15	2.25		3.69	5.54	19.61	154	2.98	83.0	1	1
		2.25									

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 / OEB			

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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					pH= 5.54	3.13		ESP	

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: 7/15/21

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): 26.85	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)
= (54.5 feet – feet) X 0.16 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1155	PURGING ENDED AT:	TOTAL VOLUME PURGED (gallons): 0.65

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)
1210		0.25			5.57	20.32	196	2.44	81.40	cloudy	none
1215	0.25	0.50			5.59	20.22	194	2.20	80.20	1	1
1220	0.15	0.65			5.63	20.40	195	2.27	78.20	1	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:
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					pH=	54.3		ESP	

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: 7/14/21

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): 15.41	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 – 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1740	PURGING ENDED AT: 1807	TOTAL VOLUME PURGED (gallons): 0.45

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)
1755		0.25			4.93	24.46	111	4.97	118.2	clear	none
1800		0.35			4.92	24.56	109	4.93	118.2	↓	↓
1805		0.45			4.91	24.65	107	4.82	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: DMB/OEB	SAMPLER(S) SIGNATURE(S):	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
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)			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			
MW21					pH= 4.91	6.02		PP	

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: 7/14/21

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:
2		69.8 feet to 79.8 feet	3.50	

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
= (79.8 feet – feet) X 0.16 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):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT: 1524	PURGING ENDED AT: 1615	TOTAL VOLUME PURGED (gallons): 3.75

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)
1539		1.5		4.84	5.82	21.67	371	1.88	108.0	none	none
1544	0.5	2.0		4.82	5.82	21.64	350	1.52	108.2		
1549	0.25	2.25		4.79	5.82	21.57	346	1.11	108.0		
1554	0.50	2.75		4.75	5.84	21.73	346	0.87	105.9		
1559	0.25	3.00		4.71	5.81	21.46	344	0.85	109.0		
1604	0.25	3.25		4.78	5.83	21.42	345	0.67	107.6		
1609	0.25	3.50		4.76	5.82	21.41	345	0.58	108.3		
1614	0.25	3.75		4.75	5.83	21.53	345	0.54	107.4		

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:
DM B/OEB			

PUMP OR TUBING DEPTH IN WELL (feet):	TUBING MATERIAL CODE:	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm
	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)
MW22					pH= 4.75	2.43		ESP	

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

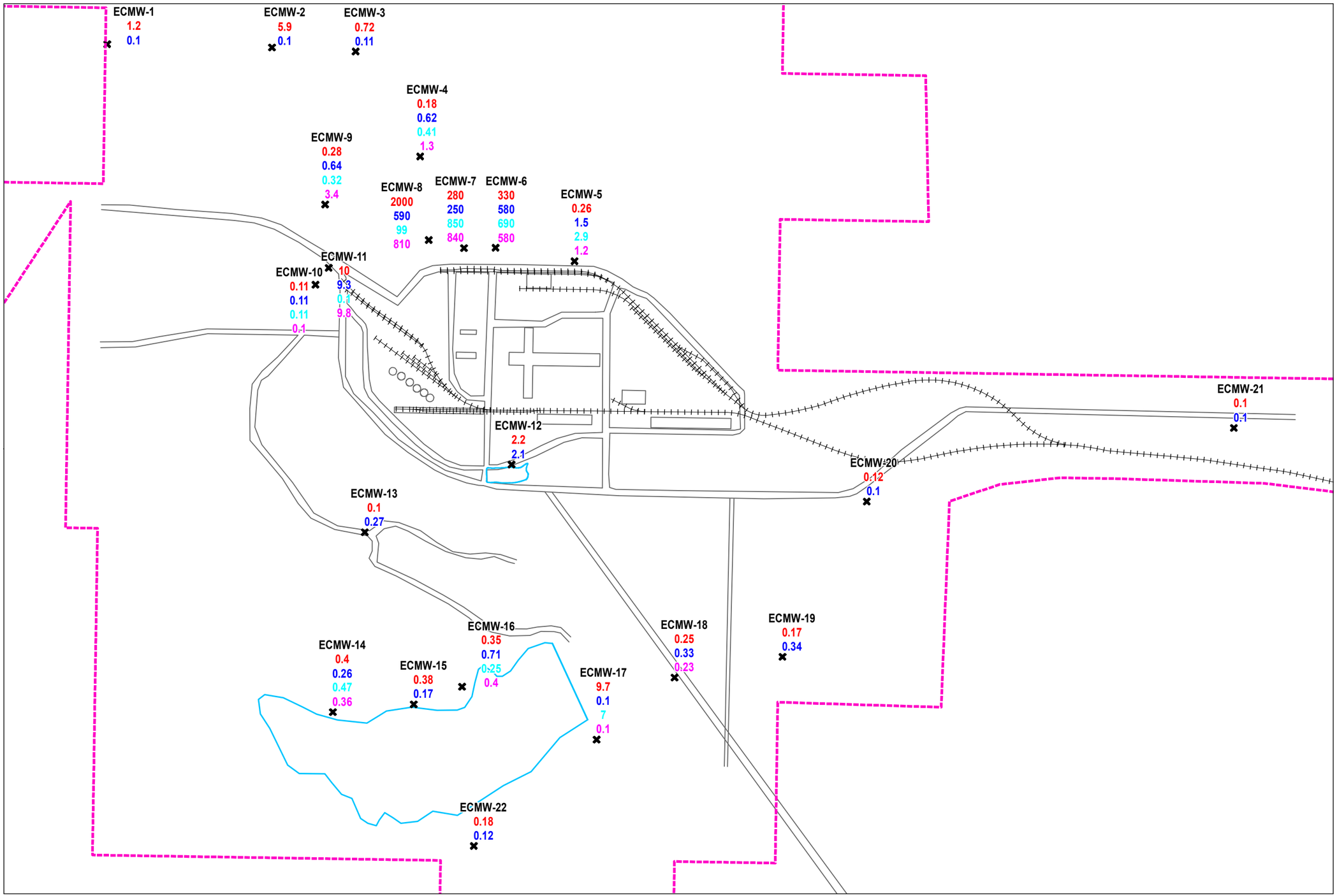
pH: ± 0.1 units **Temperature:** ± 3% **Specific Conductance:** ± 3% **Dissolved Oxygen:** (10% for values greater than 0.5 mg/L, if three dissolved oxygen values are less than 0.5 mg/L, consider the values as stabilized) **Turbidity:** (10% for values greater than 5 NTU; if three Turbidity values are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

EDCC Monitoring Well Information

Monitoring Well						Well Screened Interval			
	Date	Well Diameter	Depth To Water	Depth To Well Base	Length of tubing Needed	ft from top of casing		Notes	Need mow?
		(inches)	(ft)	(ft)	(ft)	top	bottom		
MW-1	7/13/21	4	12.36		32.1	12.1	22.2	tree needs removal	
MW-2	7/13/21	4	0		30.2	10.2	20.2	overflowing	✓
MW-3	7/13/21	4	9.05		37.1	17.1	27.1		✓
MW-4	7/13/21	4	9.23		32.1	12.1	22.1		✓
MW-5	7/13/21	4	3.59		27.7	7.7	17.7		✓
MW-6	7/13/21	4	4.42		32	12	22		
MW-7	7/13/21	4	10.75		33.9	13.9	23.9		✓
MW-8	7/13/21	4	6.64		39.9	19.9	29.9		✓
MW-9	7/13/21	4	9.65		40	20	30		
MW-10	7/13/21	4	12.82		32.6	12.6	22.6		
MW-11	7/13/21	4	10.42		29.8	9.8	19.8		
MW-12	7/13/21	4	5.43		29.9	9.9	19.9		
MW-13	7/13/21	4	6.92		29.8	9.8	19.8		✓
MW-14	7/15/21	4	4.72		28.2	8.2	18.2		✓
MW-15	7/13/21	4	3.51		27	7	17		✓
MW-16	7/13/21	4	2.93		29.3	9.3	19.3		✓
SS MW-17	7/13/21	4	27.65		44.7	24.7	34.7		
MW-18	7/13/21	4	7.35		27.2	7.2	17.2		✓
MW-19	7/13/21	2	1.79		71.5	51.5	61.5	downed tree; hole at base of well near ground	✓
SS MW-20	7/13/21	2	25.81		64.5	44.5	54.4	tree needs to be cleared	
MW-21		1	15.42		44.9	24.9	34.9		
MW-22	7/13/21	2	4.19		89.8	69.8	79.8		✓

APPENDIX C

Constituent Concentration Maps



NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY ENJ
CHECKED BY DMB
APPR. BY CDC
DRAWN BY ALB

GBMc & ASSOCIATES

SHEET TITLE
2021 GROUNDWATER WELL AMMONIA-N CONCENTRATION

JOB NAME
2021 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 09/14/2021
SCALE SHOWN
REV. NO
DWG. NO.

ECMW-1
0.96
1.4

ECMW-2
0.05
0.05

ECMW-3
0.05
0.05

ECMW-4
0.14
0.15
0.11
0.13

ECMW-9
28
25
26
23

ECMW-8
5400
4700
5300
5400

ECMW-7
2400
1800
2500
2700

ECMW-6
11000
10000
11000
11000

ECMW-5
140
120
140
140

ECMW-11
32
22
31
35

ECMW-10
64
63
65
68

ECMW-12
0.05
0.05

ECMW-13
0.05
0.05

ECMW-21
2.3
2.3

ECMW-20
0.14
0.35

ECMW-18
0.46
0.19
0.3
0.053

ECMW-19
0.05
0.05

ECMW-16
12
14
11
12

ECMW-14
5.3
2
0.056
0.41

ECMW-15
3.6
3.1

ECMW-17
16
8.9
39
11

ECMW-22
0.05
0.05

N
W E
S

1,000
FEET

Nitrate-N Concentration

- Groundwater Well
- First Half 2020 Concentration (mg/L)
- Second Half 2020 Concentration (mg/L)
- First Half 2021 Concentration (mg/L)
- Second Half 2021 Concentration (mg/L)

NO	DATE	REVISION	BY	CK.	APPR.

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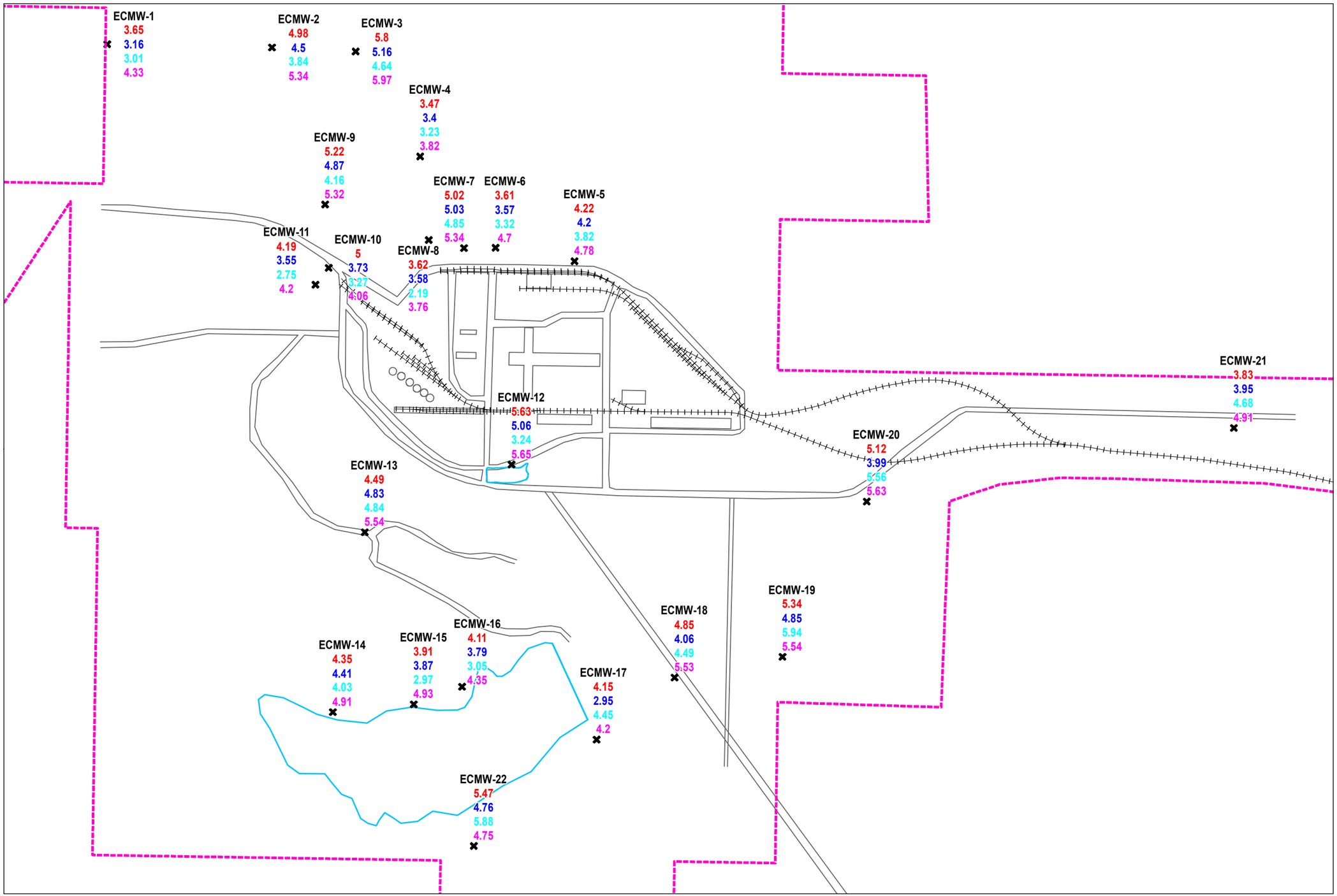
GBMc & ASSOCIATES

SHEET TITLE
2021 GROUNDWATER WELL NITRATE-N CONCENTRATION

JOB NAME
2021
GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 09/14/2021
SCALE SHOWN
REV. NO
DWG. NO.



NO	DATE	REVISION	BY	CK.	APPR.

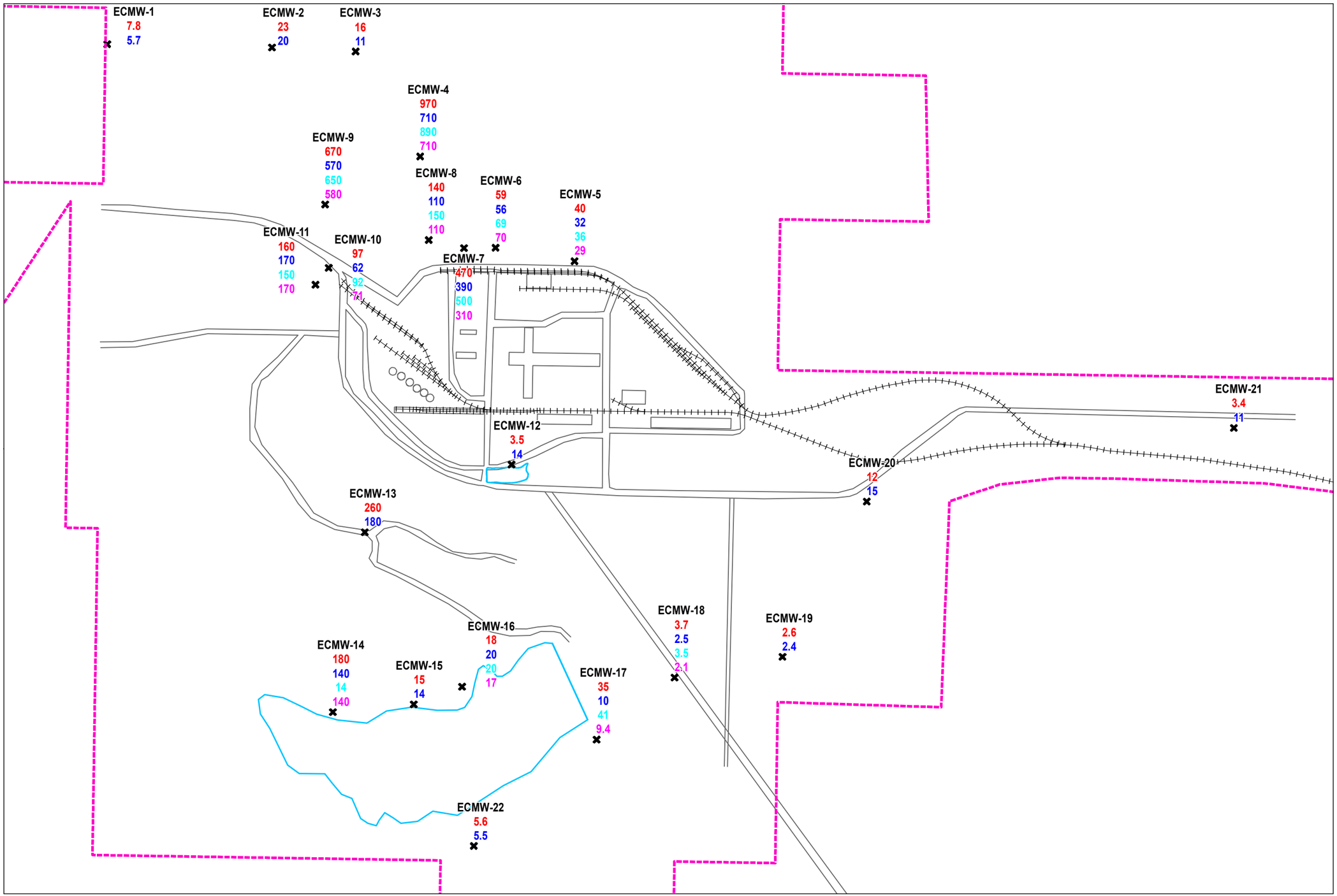
DESIGNED BY	ENJ
CHECKED BY	DMB
APPR. BY	CDC
DRAWN BY	ALB

GBMc & ASSOCIATES

SHEET TITLE
2021 GROUNDWATER WELL PH

JOB NAME
2021 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO.	2042-99-010
DATE	09/14/2021
SCALE	SHOWN
REV. NO	
DWG. NO.	



NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY ENJ
CHECKED BY DMB
APPR. BY CDC
DRAWN BY ALB

GBMc & ASSOCIATES

SHEET TITLE
2021 GROUNDWATER WELL SULFATE CONCENTRATION

JOB NAME
2021
GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 09/14/2021
SCALE SHOWN
REV. NO
DWG. NO.

APPENDIX D

Historical Data and Statistical Analysis

Historical Data

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							4.26	
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
3/2/2021	ECMW-1							3.01	
7/13/2021	ECMW-1							4.33	

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-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
3/2/2021	ECMW-2							3.84	
7/14/2021	ECMW-2							5.34	

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-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
3/2/2021	ECMW-3							4.64	
7/14/2021	ECMW-3							5.97	

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-4		0.005	0.005	0.002	0.0025	1.3		728
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	181.1
7/19/2020	ECMW-4	0.62	0.01	0.01	0.0069	0.0068	0.15	3.4	171.7
3/2/2021	ECMW-4	0.41					0.11	3.23	890
7/13/2021	ECMW-4	1.3					0.13	3.82	710

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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
3/2/2021	ECMW-5	2.9					140	3.82	36
7/13/2021	ECMW-5	1.2					140	4.78	29

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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
3/2/2021	ECMW-6	690					11000	3.32	69
7/13/2021	ECMW-6	580					11000	4.7	70

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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
3/2/2021	ECMW-7	850					2500	4.85	500
7/13/2021	ECMW-7	840					2700	5.34	310

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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
3/2/2021	ECMW-8	99					5300	2.19	150
7/13/2021	ECMW-8	810					5400	3.76	110

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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
3/2/2021	ECMW-9	0.32					26	4.16	650
7/13/2021	ECMW-9	3.4					23	5.32	580

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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
3/1/2021	ECMW-10	0.11					65	3.27	92
7/14/2021	ECMW-10	0.1					68	4.06	71

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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
7/20/2020	ECMW-11	9.3	0.01	0.01	0.0054	0.0005	22	3.55	170
3/1/2021	ECMW-11	0.1					31	2.75	150
7/14/2021	ECMW-11	9.8					35	4.2	170

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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
3/1/2021	ECMW-12							3.24	
7/14/2021	ECMW-12							5.65	

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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
3/2/2021	ECMW-13							4.84	
7/14/2021	ECMW-13							5.54	

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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	Flooded							
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
3/3/2021	ECMW-14	0.47					0.056	4.03	14
7/15/2021	ECMW-14	0.36					0.41	4.91	140

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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
3/3/2021	ECMW-15							2.97	
7/15/2021	ECMW-15							4.93	

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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
3/2/2021	ECMW-16	0.25					11	3.05	20
7/15/2021	ECMW-16	0.4					12	4.35	17

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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
3/3/2021	ECMW-17	7					39	4.45	41
7/14/2021	ECMW-17	0.1					11	4.2	9.4

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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
3/3/2021	ECMW-18						0.3	4.49	3.5
7/15/2021	ECMW-18						0.053	5.53	2.1

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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							5.52	
7/18/2019	ECMW-19							5.55	
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
3/3/2021	ECMW-19							5.94	
7/15/2021	ECMW-19							5.54	

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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
3/3/2021	ECMW-20							5.56	
7/15/2021	ECMW-20							5.63	

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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
3/3/2021	ECMW-21							4.68	
7/14/2021	ECMW-21							4.91	

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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
3/3/2021	ECMW-22							5.88	
7/14/2021	ECMW-22							4.75	

Statistical Analysis

One Way Analysis of Variance Thursday, November 11, 2021, 11:10:26 AM

Data source: Data 1 in Sigma Plot Data 2021

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 Thursday, November 11, 2021, 11:10:26 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	3	8.820	3.530	43.400
ECMW6	52	0	1680.000	1011.250	4072.500
ECMW7	52	0	259.500	143.250	581.750
ECMW8	51	0	551.000	225.000	2430.000
ECMW1050		1	65.900	47.600	116.500
ECMW1150		2	15.900	7.832	29.350
ECMW1247		18	0.500	0.292	0.500
ECMW1350		20	0.500	0.250	0.500
ECMW1450		1	13.200	5.640	24.850
ECMW1549		16	4.520	2.265	8.870
ECMW1649		0	13.000	10.070	39.200
ECMW1750		1	27.200	10.300	71.150
ECMW1849		5	0.500	0.251	0.500
CNTL	144	50	0.500	0.500	1.022
ECMW4	49	1	0.500	0.271	0.594
ECMW9	49	0	28.400	26.150	31.800
ECMW1940		15	0.500	0.250	0.500
ECMW2040		15	0.500	0.500	0.534
ECMW2140		15	2.240	1.625	2.740
ECMW2240		16	1.105	0.500	1.780

H = 755.061 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	687.878	11.912	Yes
ECMW6 vs ECMW12	686.843	11.766	Yes
ECMW6 vs ECMW19	683.034	11.143	Yes
ECMW6 vs ECMW18	680.622	13.192	Yes
ECMW6 vs ECMW4	657.457	13.041	Yes
ECMW6 vs ECMW20	638.794	10.421	Yes
ECMW6 vs CNTL	629.985	14.473	Yes
ECMW6 vs ECMW22	579.269	9.320	Yes

ECMW6 vs ECMW21	508.374	8.293	Yes
ECMW6 vs ECMW15	430.728	7.684	Yes
ECMW6 vs ECMW14	357.109	7.121	Yes
ECMW6 vs ECMW11	332.832	6.602	Yes
ECMW6 vs ECMW5	326.267	6.436	Yes
ECMW6 vs ECMW16	298.068	5.944	Yes
ECMW6 vs ECMW17	264.139	5.267	Yes
ECMW6 vs ECMW9	255.302	5.091	Yes
ECMW6 vs ECMW10	151.292	3.017	No
ECMW6 vs ECMW7	61.240	1.240	Do Not Test
ECMW6 vs ECMW8	45.512	0.917	Do Not Test
ECMW8 vs ECMW13	642.366	11.084	Yes
ECMW8 vs ECMW12	641.331	10.948	Yes
ECMW8 vs ECMW19	637.522	10.367	Yes
ECMW8 vs ECMW18	635.110	12.255	Yes
ECMW8 vs ECMW4	611.945	12.082	Yes
ECMW8 vs ECMW20	593.282	9.648	Yes
ECMW8 vs CNTL	584.473	13.343	Yes
ECMW8 vs ECMW22	533.757	8.561	Yes
ECMW8 vs ECMW21	462.862	7.527	Yes
ECMW8 vs ECMW15	385.216	6.846	Yes
ECMW8 vs ECMW14	311.597	6.184	Yes
ECMW8 vs ECMW11	287.320	5.673	Yes
ECMW8 vs ECMW5	280.755	5.513	Yes
ECMW8 vs ECMW16	252.556	5.013	Yes
ECMW8 vs ECMW17	218.627	4.339	Yes
ECMW8 vs ECMW9	209.791	4.164	Yes
ECMW8 vs ECMW10	105.780	2.099	Do Not Test
ECMW8 vs ECMW7	15.729	0.317	Do Not Test
ECMW7 vs ECMW13	626.637	10.852	Yes
ECMW7 vs ECMW12	625.602	10.717	Yes
ECMW7 vs ECMW19	621.794	10.144	Yes
ECMW7 vs ECMW18	619.381	12.005	Yes
ECMW7 vs ECMW4	596.216	11.826	Yes
ECMW7 vs ECMW20	577.554	9.422	Yes
ECMW7 vs CNTL	568.744	13.066	Yes
ECMW7 vs ECMW22	518.029	8.335	Yes
ECMW7 vs ECMW21	447.134	7.294	Yes
ECMW7 vs ECMW15	369.487	6.591	Yes
ECMW7 vs ECMW14	295.868	5.900	Yes
ECMW7 vs ECMW11	271.591	5.387	Yes
ECMW7 vs ECMW5	265.026	5.228	Yes
ECMW7 vs ECMW16	236.827	4.723	Yes
ECMW7 vs ECMW17	202.899	4.046	Yes
ECMW7 vs ECMW9	194.062	3.870	Yes
ECMW7 vs ECMW10	90.052	1.796	Do Not Test
ECMW10 vs ECMW13	536.585	9.190	Yes
ECMW10 vs ECMW12	535.550	9.076	Yes
ECMW10 vs ECMW19	531.742	8.590	Yes
ECMW10 vs ECMW18	529.329	10.119	Yes
ECMW10 vs ECMW4	506.165	9.896	Yes
ECMW10 vs ECMW20	487.502	7.875	Yes
ECMW10 vs CNTL	478.692	10.786	Yes
ECMW10 vs ECMW22	427.977	6.820	Yes
ECMW10 vs ECMW21	357.082	5.768	Yes
ECMW10 vs ECMW15	279.435	4.927	Yes

ECMW10 vs ECMW14	205.816	4.045	Yes
ECMW10 vs ECMW11	181.540	3.549	No
ECMW10 vs ECMW5	174.974	3.403	Do Not Test
ECMW10 vs ECMW16	146.776	2.884	Do Not Test
ECMW10 vs ECMW17	112.847	2.218	Do Not Test
ECMW10 vs ECMW9	104.010	2.044	Do Not Test
ECMW9 vs ECMW13	432.575	7.409	Yes
ECMW9 vs ECMW12	431.540	7.313	Yes
ECMW9 vs ECMW19	427.732	6.910	Yes
ECMW9 vs ECMW18	425.319	8.131	Yes
ECMW9 vs ECMW4	402.154	7.862	Yes
ECMW9 vs ECMW20	383.492	6.195	Yes
ECMW9 vs CNTL	374.682	8.443	Yes
ECMW9 vs ECMW22	323.967	5.163	Yes
ECMW9 vs ECMW21	253.072	4.088	Yes
ECMW9 vs ECMW15	175.425	3.093	No
ECMW9 vs ECMW14	101.806	2.001	Do Not Test
ECMW9 vs ECMW11	77.529	1.516	Do Not Test
ECMW9 vs ECMW5	70.964	1.380	Do Not Test
ECMW9 vs ECMW16	42.765	0.840	Do Not Test
ECMW9 vs ECMW17	8.837	0.174	Do Not Test
ECMW17 vs ECMW13	423.738	7.257	Yes
ECMW17 vs ECMW12	422.703	7.163	Yes
ECMW17 vs ECMW19	418.895	6.767	Yes
ECMW17 vs ECMW18	416.482	7.962	Yes
ECMW17 vs ECMW4	393.318	7.690	Yes
ECMW17 vs ECMW20	374.655	6.052	Yes
ECMW17 vs CNTL	365.846	8.244	Yes
ECMW17 vs ECMW22	315.130	5.022	Yes
ECMW17 vs ECMW21	244.235	3.945	Yes
ECMW17 vs ECMW15	166.588	2.937	Do Not Test
ECMW17 vs ECMW14	92.969	1.827	Do Not Test
ECMW17 vs ECMW11	68.693	1.343	Do Not Test
ECMW17 vs ECMW5	62.127	1.208	Do Not Test
ECMW17 vs ECMW16	33.929	0.667	Do Not Test
ECMW16 vs ECMW13	389.810	6.676	Yes
ECMW16 vs ECMW12	388.775	6.588	Yes
ECMW16 vs ECMW19	384.967	6.219	Yes
ECMW16 vs ECMW18	382.554	7.313	Yes
ECMW16 vs ECMW4	359.389	7.026	Yes
ECMW16 vs ECMW20	340.727	5.504	Yes
ECMW16 vs CNTL	331.917	7.479	Yes
ECMW16 vs ECMW22	281.202	4.481	Yes
ECMW16 vs ECMW21	210.307	3.397	No
ECMW16 vs ECMW15	132.660	2.339	Do Not Test
ECMW16 vs ECMW14	59.041	1.160	Do Not Test
ECMW16 vs ECMW11	34.764	0.680	Do Not Test
ECMW16 vs ECMW5	28.199	0.548	Do Not Test
ECMW5 vs ECMW13	361.611	6.144	Yes
ECMW5 vs ECMW12	360.576	6.063	Yes
ECMW5 vs ECMW19	356.768	5.722	Yes
ECMW5 vs ECMW18	354.355	6.707	Yes
ECMW5 vs ECMW4	331.190	6.408	Yes
ECMW5 vs ECMW20	312.528	5.013	Yes
ECMW5 vs CNTL	303.718	6.750	Yes
ECMW5 vs ECMW22	253.003	4.004	Yes

ECMW5 vs ECMW21	182.108	2.921	Do Not Test
ECMW5 vs ECMW15	104.461	1.826	Do Not Test
ECMW5 vs ECMW14	30.842	0.600	Do Not Test
ECMW5 vs ECMW11	6.565	0.127	Do Not Test
ECMW11 vs ECMW13	355.046	6.057	Yes
ECMW11 vs ECMW12	354.011	5.976	Yes
ECMW11 vs ECMW19	350.202	5.637	Yes
ECMW11 vs ECMW18	347.790	6.616	Yes
ECMW11 vs ECMW4	324.625	6.314	Yes
ECMW11 vs ECMW20	305.962	4.925	Yes
ECMW11 vs CNTL	297.153	6.650	Yes
ECMW11 vs ECMW22	246.438	3.914	Yes
ECMW11 vs ECMW21	175.543	2.826	Do Not Test
ECMW11 vs ECMW15	97.896	1.719	Do Not Test
ECMW11 vs ECMW14	24.277	0.475	Do Not Test
ECMW14 vs ECMW13	330.769	5.665	Yes
ECMW14 vs ECMW12	329.734	5.588	Yes
ECMW14 vs ECMW19	325.926	5.265	Yes
ECMW14 vs ECMW18	323.513	6.184	Yes
ECMW14 vs ECMW4	300.348	5.872	Yes
ECMW14 vs ECMW20	281.686	4.550	Yes
ECMW14 vs CNTL	272.876	6.149	Yes
ECMW14 vs ECMW22	222.161	3.540	No
ECMW14 vs ECMW21	151.266	2.444	Do Not Test
ECMW14 vs ECMW15	73.619	1.298	Do Not Test
ECMW15 vs ECMW13	257.150	4.047	Yes
ECMW15 vs ECMW12	256.115	3.995	Yes
ECMW15 vs ECMW19	252.307	3.778	Yes
ECMW15 vs ECMW18	249.894	4.308	Yes
ECMW15 vs ECMW4	226.729	3.981	Yes
ECMW15 vs ECMW20	208.067	3.116	No
ECMW15 vs CNTL	199.257	3.910	Do Not Test
ECMW15 vs ECMW22	148.542	2.198	Do Not Test
ECMW15 vs ECMW21	77.647	1.163	Do Not Test
ECMW21 vs ECMW13	179.503	2.632	No
ECMW21 vs ECMW12	178.468	2.596	Do Not Test
ECMW21 vs ECMW19	174.660	2.452	Do Not Test
ECMW21 vs ECMW18	172.247	2.731	Do Not Test
ECMW21 vs ECMW4	149.082	2.400	Do Not Test
ECMW21 vs ECMW20	130.420	1.831	Do Not Test
ECMW21 vs CNTL	121.610	2.146	Do Not Test
ECMW21 vs ECMW22	70.895	0.985	Do Not Test
ECMW22 vs ECMW13	108.608	1.575	Do Not Test
ECMW22 vs ECMW12	107.573	1.548	Do Not Test
ECMW22 vs ECMW19	103.765	1.442	Do Not Test
ECMW22 vs ECMW18	101.352	1.586	Do Not Test
ECMW22 vs ECMW4	78.188	1.242	Do Not Test
ECMW22 vs ECMW20	59.525	0.827	Do Not Test
ECMW22 vs CNTL	50.715	0.880	Do Not Test
CNTL vs ECMW13	57.893	1.096	Do Not Test
CNTL vs ECMW12	56.858	1.063	Do Not Test
CNTL vs ECMW19	53.050	0.936	Do Not Test
CNTL vs ECMW18	50.637	1.101	Do Not Test
CNTL vs ECMW4	27.472	0.615	Do Not Test
CNTL vs ECMW20	8.810	0.155	Do Not Test
ECMW20 vs ECMW13	49.083	0.720	Do Not Test

ECMW20 vs ECMW12	48.048	0.699	Do Not Test
ECMW20 vs ECMW19	44.240	0.621	Do Not Test
ECMW20 vs ECMW18	41.827	0.663	Do Not Test
ECMW20 vs ECMW4	18.662	0.300	Do Not Test
ECMW4 vs ECMW13	30.421	0.519	Do Not Test
ECMW4 vs ECMW12	29.386	0.496	Do Not Test
ECMW4 vs ECMW19	25.577	0.412	Do Not Test
ECMW4 vs ECMW18	23.165	0.441	Do Not Test
ECMW18 vs ECMW13	7.256	0.122	Do Not Test
ECMW18 vs ECMW12	6.221	0.103	Do Not Test
ECMW18 vs ECMW19	2.413	0.0382	Do Not Test
ECMW19 vs ECMW13	4.843	0.0710	Do Not Test
ECMW19 vs ECMW12	3.808	0.0554	Do Not Test
ECMW12 vs ECMW13	1.035	0.0158	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

One Way Analysis of Variance Thursday, November 11, 2021, 11:09:55 AM

Data source: Data 1 in Sigma Plot Data 2021

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 Thursday, November 11, 2021, 11:09:55 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	5	0.500	0.500	0.575
ECMW6	52	1	246.000	35.700	895.000
ECMW7	52	1	147.000	77.000	281.000
ECMW8	51	1	153.500	81.475	599.000
ECMW10	50	4	0.500	0.500	0.525
ECMW11	50	2	11.500	4.790	18.925
ECMW12	47	16	1.870	1.440	2.220
ECMW13	50	21	0.500	0.500	0.500
ECMW14	50	5	0.500	0.500	0.500
ECMW15	49	20	0.500	0.500	0.500
ECMW16	49	1	1.965	0.500	6.065
ECMW17	50	1	1.490	0.565	3.745
ECMW18	49	18	0.500	0.500	0.500
CNTL	144	57	0.500	0.500	0.500
ECMW4	49	4	0.500	0.500	0.630
ECMW9	49	4	0.500	0.500	2.335
ECMW19	40	15	0.500	0.500	0.500
ECMW20	40	15	0.500	0.500	0.500
ECMW21	40	15	0.500	0.500	0.500
ECMW22	40	15	0.500	0.500	0.500

H = 543.283 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	505.589	9.035	Yes
ECMW8 vs ECMW21	501.310	8.537	Yes
ECMW8 vs ECMW18	497.249	9.073	Yes
ECMW8 vs ECMW14	492.352	9.994	Yes
ECMW8 vs ECMW15	492.244	8.796	Yes
ECMW8 vs ECMW20	489.210	8.330	Yes
ECMW8 vs ECMW19	486.830	8.290	Yes

ECMW8 vs CNTL	485.669	11.415	Yes
ECMW8 vs ECMW22	479.150	8.159	Yes
ECMW8 vs ECMW10	467.808	9.551	Yes
ECMW8 vs ECMW4	448.630	9.107	Yes
ECMW8 vs ECMW5	440.119	8.934	Yes
ECMW8 vs ECMW9	387.230	7.860	Yes
ECMW8 vs ECMW16	281.757	5.816	Yes
ECMW8 vs ECMW17	272.014	5.644	Yes
ECMW8 vs ECMW12	200.362	3.656	Yes
ECMW8 vs ECMW11	143.924	2.971	No
ECMW8 vs ECMW6	42.830	0.898	Do Not Test
ECMW8 vs ECMW7	7.555	0.158	Do Not Test
ECMW7 vs ECMW13	498.033	8.932	Yes
ECMW7 vs ECMW21	493.755	8.435	Yes
ECMW7 vs ECMW18	489.694	8.969	Yes
ECMW7 vs ECMW14	484.797	9.887	Yes
ECMW7 vs ECMW15	484.688	8.693	Yes
ECMW7 vs ECMW20	481.655	8.229	Yes
ECMW7 vs ECMW19	479.275	8.188	Yes
ECMW7 vs CNTL	478.114	11.308	Yes
ECMW7 vs ECMW22	471.595	8.057	Yes
ECMW7 vs ECMW10	460.253	9.441	Yes
ECMW7 vs ECMW4	441.075	8.995	Yes
ECMW7 vs ECMW5	432.563	8.822	Yes
ECMW7 vs ECMW9	379.675	7.743	Yes
ECMW7 vs ECMW16	274.202	5.687	Yes
ECMW7 vs ECMW17	264.458	5.514	Yes
ECMW7 vs ECMW12	192.807	3.531	No
ECMW7 vs ECMW11	136.368	2.828	Do Not Test
ECMW7 vs ECMW6	35.275	0.743	Do Not Test
ECMW6 vs ECMW13	462.759	8.299	Yes
ECMW6 vs ECMW21	458.480	7.833	Yes
ECMW6 vs ECMW18	454.419	8.323	Yes
ECMW6 vs ECMW14	449.522	9.168	Yes
ECMW6 vs ECMW15	449.414	8.060	Yes
ECMW6 vs ECMW20	446.380	7.626	Yes
ECMW6 vs ECMW19	444.000	7.585	Yes
ECMW6 vs CNTL	442.839	10.474	Yes
ECMW6 vs ECMW22	436.320	7.454	Yes
ECMW6 vs ECMW10	424.978	8.718	Yes
ECMW6 vs ECMW4	405.800	8.276	Yes
ECMW6 vs ECMW5	397.289	8.102	Yes
ECMW6 vs ECMW9	344.400	7.024	Yes
ECMW6 vs ECMW16	238.927	4.956	Yes
ECMW6 vs ECMW17	229.184	4.779	Yes
ECMW6 vs ECMW12	157.532	2.885	Do Not Test
ECMW6 vs ECMW11	101.094	2.097	Do Not Test
ECMW11 vs ECMW13	361.665	6.414	Yes
ECMW11 vs ECMW21	357.386	6.044	Yes
ECMW11 vs ECMW18	353.326	6.396	Yes
ECMW11 vs ECMW14	348.428	7.004	Yes
ECMW11 vs ECMW15	348.320	6.177	Yes
ECMW11 vs ECMW20	345.286	5.839	Yes
ECMW11 vs ECMW19	342.906	5.799	Yes
ECMW11 vs CNTL	341.745	7.928	Yes
ECMW11 vs ECMW22	335.226	5.669	Yes

ECMW11 vs ECMW10	323.885	6.548	Yes
ECMW11 vs ECMW4	304.706	6.125	Yes
ECMW11 vs ECMW5	296.195	5.954	Yes
ECMW11 vs ECMW9	243.306	4.891	Yes
ECMW11 vs ECMW16	137.833	2.817	No
ECMW11 vs ECMW17	128.090	2.631	Do Not Test
ECMW11 vs ECMW12	56.439	1.022	Do Not Test
ECMW12 vs ECMW13	305.226	4.928	Yes
ECMW12 vs ECMW21	300.948	4.670	Yes
ECMW12 vs ECMW18	296.887	4.875	Yes
ECMW12 vs ECMW14	291.990	5.218	Yes
ECMW12 vs ECMW15	291.882	4.713	Yes
ECMW12 vs ECMW20	288.848	4.482	Yes
ECMW12 vs ECMW19	286.468	4.445	Yes
ECMW12 vs CNTL	285.307	5.689	Yes
ECMW12 vs ECMW22	278.788	4.326	Yes
ECMW12 vs ECMW10	267.446	4.801	Yes
ECMW12 vs ECMW4	248.268	4.437	Yes
ECMW12 vs ECMW5	239.757	4.285	Yes
ECMW12 vs ECMW9	186.868	3.339	No
ECMW12 vs ECMW16	81.395	1.473	Do Not Test
ECMW12 vs ECMW17	71.651	1.302	Do Not Test
ECMW17 vs ECMW13	233.575	4.158	Yes
ECMW17 vs ECMW21	229.296	3.891	Yes
ECMW17 vs ECMW18	225.236	4.094	Yes
ECMW17 vs ECMW14	220.339	4.451	Yes
ECMW17 vs ECMW15	220.230	3.921	Yes
ECMW17 vs ECMW20	217.196	3.686	Yes
ECMW17 vs ECMW19	214.816	3.646	No
ECMW17 vs CNTL	213.655	4.989	Do Not Test
ECMW17 vs ECMW22	207.136	3.515	Do Not Test
ECMW17 vs ECMW10	195.795	3.978	Do Not Test
ECMW17 vs ECMW4	176.616	3.568	Do Not Test
ECMW17 vs ECMW5	168.105	3.396	Do Not Test
ECMW17 vs ECMW9	115.216	2.328	Do Not Test
ECMW17 vs ECMW16	9.743	0.200	Do Not Test
ECMW16 vs ECMW13	223.832	3.970	Yes
ECMW16 vs ECMW21	219.553	3.713	Yes
ECMW16 vs ECMW18	215.492	3.901	Yes
ECMW16 vs ECMW14	210.595	4.233	Yes
ECMW16 vs ECMW15	210.487	3.733	Yes
ECMW16 vs ECMW20	207.453	3.508	No
ECMW16 vs ECMW19	205.073	3.468	Do Not Test
ECMW16 vs CNTL	203.912	4.731	Do Not Test
ECMW16 vs ECMW22	197.393	3.338	Do Not Test
ECMW16 vs ECMW10	186.051	3.761	Do Not Test
ECMW16 vs ECMW4	166.873	3.354	Do Not Test
ECMW16 vs ECMW5	158.362	3.183	Do Not Test
ECMW16 vs ECMW9	105.473	2.120	Do Not Test
ECMW9 vs ECMW13	118.359	2.073	No
ECMW9 vs ECMW21	114.080	1.908	Do Not Test
ECMW9 vs ECMW18	110.019	1.966	Do Not Test
ECMW9 vs ECMW14	105.122	2.080	Do Not Test
ECMW9 vs ECMW15	105.014	1.839	Do Not Test
ECMW9 vs ECMW20	101.980	1.705	Do Not Test
ECMW9 vs ECMW19	99.600	1.665	Do Not Test

ECMW9 vs CNTL	98.439	2.236	Do Not Test
ECMW9 vs ECMW22	91.920	1.537	Do Not Test
ECMW9 vs ECMW10	80.578	1.603	Do Not Test
ECMW9 vs ECMW4	61.400	1.215	Do Not Test
ECMW9 vs ECMW5	52.889	1.046	Do Not Test
ECMW5 vs ECMW13	65.470	1.147	Do Not Test
ECMW5 vs ECMW21	61.191	1.023	Do Not Test
ECMW5 vs ECMW18	57.130	1.021	Do Not Test
ECMW5 vs ECMW14	52.233	1.033	Do Not Test
ECMW5 vs ECMW15	52.125	0.913	Do Not Test
ECMW5 vs ECMW20	49.091	0.821	Do Not Test
ECMW5 vs ECMW19	46.711	0.781	Do Not Test
ECMW5 vs CNTL	45.550	1.035	Do Not Test
ECMW5 vs ECMW22	39.031	0.653	Do Not Test
ECMW5 vs ECMW10	27.689	0.551	Do Not Test
ECMW5 vs ECMW4	8.511	0.168	Do Not Test
ECMW4 vs ECMW13	56.959	0.998	Do Not Test
ECMW4 vs ECMW21	52.680	0.881	Do Not Test
ECMW4 vs ECMW18	48.619	0.869	Do Not Test
ECMW4 vs ECMW14	43.722	0.865	Do Not Test
ECMW4 vs ECMW15	43.614	0.764	Do Not Test
ECMW4 vs ECMW20	40.580	0.679	Do Not Test
ECMW4 vs ECMW19	38.200	0.639	Do Not Test
ECMW4 vs CNTL	37.039	0.841	Do Not Test
ECMW4 vs ECMW22	30.520	0.510	Do Not Test
ECMW4 vs ECMW10	19.178	0.382	Do Not Test
ECMW10 vs ECMW13	37.780	0.665	Do Not Test
ECMW10 vs ECMW21	33.502	0.562	Do Not Test
ECMW10 vs ECMW18	29.441	0.528	Do Not Test
ECMW10 vs ECMW14	24.544	0.488	Do Not Test
ECMW10 vs ECMW15	24.436	0.430	Do Not Test
ECMW10 vs ECMW20	21.402	0.359	Do Not Test
ECMW10 vs ECMW19	19.022	0.319	Do Not Test
ECMW10 vs CNTL	17.861	0.409	Do Not Test
ECMW10 vs ECMW22	11.342	0.190	Do Not Test
ECMW22 vs ECMW13	26.439	0.404	Do Not Test
ECMW22 vs ECMW21	22.160	0.327	Do Not Test
ECMW22 vs ECMW18	18.099	0.281	Do Not Test
ECMW22 vs ECMW14	13.202	0.221	Do Not Test
ECMW22 vs ECMW15	13.094	0.200	Do Not Test
ECMW22 vs ECMW20	10.060	0.148	Do Not Test
ECMW22 vs ECMW19	7.680	0.113	Do Not Test
ECMW22 vs CNTL	6.519	0.120	Do Not Test
CNTL vs ECMW13	19.920	0.387	Do Not Test
CNTL vs ECMW21	15.641	0.287	Do Not Test
CNTL vs ECMW18	11.580	0.231	Do Not Test
CNTL vs ECMW14	6.683	0.152	Do Not Test
CNTL vs ECMW15	6.575	0.128	Do Not Test
CNTL vs ECMW20	3.541	0.0651	Do Not Test
CNTL vs ECMW19	1.161	0.0213	Do Not Test
ECMW19 vs ECMW13	18.759	0.287	Do Not Test
ECMW19 vs ECMW21	14.480	0.214	Do Not Test
ECMW19 vs ECMW18	10.419	0.162	Do Not Test
ECMW19 vs ECMW14	5.522	0.0923	Do Not Test
ECMW19 vs ECMW15	5.414	0.0827	Do Not Test
ECMW19 vs ECMW20	2.380	0.0351	Do Not Test

ECMW20 vs ECMW13	16.379	0.250	Do Not Test
ECMW20 vs ECMW21	12.100	0.178	Do Not Test
ECMW20 vs ECMW18	8.039	0.125	Do Not Test
ECMW20 vs ECMW14	3.142	0.0525	Do Not Test
ECMW20 vs ECMW15	3.034	0.0464	Do Not Test
ECMW15 vs ECMW13	13.345	0.212	Do Not Test
ECMW15 vs ECMW21	9.066	0.139	Do Not Test
ECMW15 vs ECMW18	5.006	0.0808	Do Not Test
ECMW15 vs ECMW14	0.108	0.00190	Do Not Test
ECMW14 vs ECMW13	13.236	0.232	Do Not Test
ECMW14 vs ECMW21	8.958	0.150	Do Not Test
ECMW14 vs ECMW18	4.897	0.0875	Do Not Test
ECMW18 vs ECMW13	8.339	0.135	Do Not Test
ECMW18 vs ECMW21	4.061	0.0630	Do Not Test
ECMW21 vs ECMW13	4.279	0.0654	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Chromium Dissolved

One Way Analysis of Variance Wednesday, November 03, 2021, 9:53:39 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 9:53:39 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	26	0.0200	0.0144	0.0200
ECMW6	52	28	0.0200	0.0144	0.0200
ECMW7	52	27	0.0200	0.0163	0.0200
ECMW8	51	26	0.0200	0.0163	0.0200
ECMW1051		27	0.0200	0.0144	0.0200
ECMW1150		27	0.0200	0.0125	0.0200
ECMW1247		23	0.0200	0.0144	0.0200
ECMW1350		26	0.0200	0.0144	0.0200
ECMW1450		26	0.0200	0.0144	0.0200
ECMW1549		25	0.0200	0.0144	0.0200
ECMW1649		25	0.0200	0.0144	0.0200
ECMW1750		26	0.0200	0.0144	0.0200
ECMW1849		24	0.0200	0.0200	0.0210
CNTL	144	71	0.0200	0.0163	0.0200
ECMW4	50	26	0.0200	0.0144	0.0200
ECMW9	49	25	0.0200	0.0144	0.0200
ECMW1940		20	0.0200	0.0144	0.0200
ECMW2040		20	0.0200	0.0144	0.0200
ECMW2140		20	0.0200	0.0181	0.0200
ECMW2240		20	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)

Chromium Total

One Way Analysis of Variance Wednesday, November 03, 2021, 9:53:56 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 9:53:56 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	20	0.0200	0.0104	0.0200
ECMW6	52	21	0.0200	0.0104	0.0200
ECMW7	52	21	0.0200	0.0104	0.0200
ECMW8	51	21	0.0200	0.0104	0.0200
ECMW1051		21	0.0200	0.0104	0.0200
ECMW1150		21	0.0200	0.0104	0.0200
ECMW1247		18	0.0200	0.0104	0.0200
ECMW1350		20	0.0200	0.0104	0.0200
ECMW1450		20	0.0200	0.0104	0.0200
ECMW1549		19	0.0200	0.0104	0.0200
ECMW1649		19	0.0200	0.0104	0.0200
ECMW1750		20	0.0200	0.0104	0.0200
ECMW1849		18	0.0200	0.0125	0.0430
CNTL	144	54	0.0200	0.0104	0.0200
ECMW4	50	20	0.0200	0.0104	0.0200
ECMW9	49	19	0.0200	0.0104	0.0200
ECMW1940		15	0.0200	0.0104	0.0200
ECMW2040		15	0.0200	0.0104	0.0200
ECMW2140		15	0.0200	0.0104	0.0365
ECMW2240		15	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)

DO %

One Way Analysis of Variance Wednesday, November 03, 2021, 9:54:45 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Dissolved Oxygen (D.O.) (%)

Normality Test (Shapiro-Wilk) Passed (P = 0.364)

Equal Variance Test: Failed (P < 0.050)

Test execution ended by user request, ANOVA on Ranks begun

Kruskal-Wallis One Way Analysis of Variance on Ranks Wednesday, November 03, 2021, 9:54:45 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	48	29.760	20.120	39.400
ECMW6	52	50	36.520	18.800	54.240
ECMW7	52	50	29.845	17.900	41.790
ECMW8	51	49	30.370	15.500	45.240
ECMW1051		49	21.605	19.410	23.800
ECMW1150		48	19.020	18.840	19.200
ECMW1247		45	17.220	10.000	24.440
ECMW1350		48	21.755	17.400	26.110
ECMW1450		49	26.500	26.500	26.500
ECMW1549		47	26.630	24.760	28.500
ECMW1649		47	20.770	18.800	22.740
ECMW1750		48	23.445	13.500	33.390
ECMW1849		47	38.015	27.730	48.300
CNTL	144	138	38.175	15.275	45.065
ECMW4	50	48	29.480	26.700	32.260
ECMW9	49	47	32.190	23.600	40.780
ECMW1940		38	27.685	17.200	38.170
ECMW2040		38	22.190	9.900	34.480
ECMW2140		38	34.995	31.290	38.700
ECMW2240		38	23.560	15.600	31.520

H = 9.730 with 19 degrees of freedom. (P = 0.959)

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 = 0.959)

DO mg/L

One Way Analysis of Variance Wednesday, November 03, 2021, 9:55:00 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 9:55:00 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	33	2.120	0.560	4.665
ECMW6	52	35	1.600	0.450	4.380
ECMW7	52	35	1.400	0.345	4.445
ECMW8	51	34	1.750	0.360	4.575
ECMW1051		33	1.975	1.703	4.088
ECMW1150		33	1.940	1.140	3.790
ECMW1247		31	1.530	0.758	4.223
ECMW1350		34	1.925	1.347	3.280
ECMW1450		33	2.100	1.250	3.620
ECMW1549		33	1.985	0.612	3.785
ECMW1649		32	1.900	0.415	3.285
ECMW1750		34	2.760	1.043	3.742
ECMW1849		32	3.410	2.015	5.330
CNTL	144	96	3.005	1.115	4.622
ECMW4	50	32	3.390	2.425	5.108
ECMW9	49	32	2.960	1.580	4.685
ECMW1940		24	1.415	0.545	3.145
ECMW2040		26	2.260	0.850	3.710
ECMW2140		24	4.640	3.305	5.520
ECMW2240		24	1.580	0.480	3.325

H = 35.187 with 19 degrees of freedom. (P = 0.013)

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 = 0.013)

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
ECMW21 vs ECMW16	140.472	3.843	Yes
ECMW21 vs ECMW19	134.656	3.630	No
ECMW21 vs ECMW7	124.561	3.408	Do Not Test
ECMW21 vs ECMW22	123.656	3.333	Do Not Test
ECMW21 vs ECMW15	120.750	3.255	Do Not Test
ECMW21 vs ECMW8	120.384	3.294	Do Not Test

ECMW21 vs ECMW6	119.384	3.266	Do Not Test
ECMW21 vs ECMW12	111.188	2.997	Do Not Test
ECMW21 vs ECMW11	108.678	2.973	Do Not Test
ECMW21 vs ECMW13	108.125	2.914	Do Not Test
ECMW21 vs ECMW14	104.825	2.868	Do Not Test
ECMW21 vs ECMW20	100.353	2.613	Do Not Test
ECMW21 vs ECMW5	97.267	2.661	Do Not Test
ECMW21 vs ECMW10	84.115	2.333	Do Not Test
ECMW21 vs CNTL	83.854	2.768	Do Not Test
ECMW21 vs ECMW17	83.594	2.253	Do Not Test
ECMW21 vs ECMW9	73.031	1.998	Do Not Test
ECMW21 vs ECMW18	48.855	1.337	Do Not Test
ECMW21 vs ECMW4	39.115	1.085	Do Not Test
ECMW4 vs ECMW16	101.358	2.856	No
ECMW4 vs ECMW19	95.542	2.650	Do Not Test
ECMW4 vs ECMW7	85.446	2.408	Do Not Test
ECMW4 vs ECMW22	84.542	2.345	Do Not Test
ECMW4 vs ECMW15	81.635	2.264	Do Not Test
ECMW4 vs ECMW8	81.270	2.290	Do Not Test
ECMW4 vs ECMW6	80.270	2.262	Do Not Test
ECMW4 vs ECMW12	72.073	1.999	Do Not Test
ECMW4 vs ECMW11	69.564	1.960	Do Not Test
ECMW4 vs ECMW13	69.010	1.914	Do Not Test
ECMW4 vs ECMW14	65.711	1.852	Do Not Test
ECMW4 vs ECMW20	61.238	1.638	Do Not Test
ECMW4 vs ECMW5	58.152	1.639	Do Not Test
ECMW4 vs ECMW10	45.000	1.287	Do Not Test
ECMW4 vs CNTL	44.740	1.543	Do Not Test
ECMW4 vs ECMW17	44.479	1.234	Do Not Test
ECMW4 vs ECMW9	33.917	0.956	Do Not Test
ECMW4 vs ECMW18	9.740	0.274	Do Not Test
ECMW18 vs ECMW16	91.618	2.546	Do Not Test
ECMW18 vs ECMW19	85.801	2.348	Do Not Test
ECMW18 vs ECMW7	75.706	2.103	Do Not Test
ECMW18 vs ECMW22	74.801	2.047	Do Not Test
ECMW18 vs ECMW15	71.895	1.967	Do Not Test
ECMW18 vs ECMW8	71.529	1.987	Do Not Test
ECMW18 vs ECMW6	70.529	1.960	Do Not Test
ECMW18 vs ECMW12	62.333	1.705	Do Not Test
ECMW18 vs ECMW11	59.824	1.662	Do Not Test
ECMW18 vs ECMW13	59.270	1.622	Do Not Test
ECMW18 vs ECMW14	55.971	1.555	Do Not Test
ECMW18 vs ECMW20	51.498	1.360	Do Not Test
ECMW18 vs ECMW5	48.412	1.345	Do Not Test
ECMW18 vs ECMW10	35.260	0.994	Do Not Test
ECMW18 vs CNTL	34.999	1.182	Do Not Test
ECMW18 vs ECMW17	34.739	0.950	Do Not Test
ECMW18 vs ECMW9	24.176	0.672	Do Not Test
ECMW9 vs ECMW16	67.441	1.874	Do Not Test
ECMW9 vs ECMW19	61.625	1.686	Do Not Test
ECMW9 vs ECMW7	51.529	1.432	Do Not Test
ECMW9 vs ECMW22	50.625	1.385	Do Not Test
ECMW9 vs ECMW15	47.719	1.306	Do Not Test
ECMW9 vs ECMW8	47.353	1.316	Do Not Test
ECMW9 vs ECMW6	46.353	1.288	Do Not Test
ECMW9 vs ECMW12	38.156	1.044	Do Not Test

ECMW9 vs ECMW11	35.647	0.990	Do Not Test
ECMW9 vs ECMW13	35.094	0.960	Do Not Test
ECMW9 vs ECMW14	31.794	0.883	Do Not Test
ECMW9 vs ECMW20	27.321	0.721	Do Not Test
ECMW9 vs ECMW5	24.235	0.673	Do Not Test
ECMW9 vs ECMW10	11.083	0.312	Do Not Test
ECMW9 vs CNTL	10.823	0.365	Do Not Test
ECMW9 vs ECMW17	10.563	0.289	Do Not Test
ECMW17 vs ECMW16	56.879	1.556	Do Not Test
ECMW17 vs ECMW19	51.063	1.376	Do Not Test
ECMW17 vs ECMW7	40.967	1.121	Do Not Test
ECMW17 vs ECMW22	40.063	1.080	Do Not Test
ECMW17 vs ECMW15	37.156	1.002	Do Not Test
ECMW17 vs ECMW8	36.790	1.007	Do Not Test
ECMW17 vs ECMW6	35.790	0.979	Do Not Test
ECMW17 vs ECMW12	27.594	0.744	Do Not Test
ECMW17 vs ECMW11	25.085	0.686	Do Not Test
ECMW17 vs ECMW13	24.531	0.661	Do Not Test
ECMW17 vs ECMW14	21.232	0.581	Do Not Test
ECMW17 vs ECMW20	16.759	0.436	Do Not Test
ECMW17 vs ECMW5	13.673	0.374	Do Not Test
ECMW17 vs ECMW10	0.521	0.0144	Do Not Test
ECMW17 vs CNTL	0.260	0.00860	Do Not Test
CNTL vs ECMW16	56.618	1.912	Do Not Test
CNTL vs ECMW19	50.802	1.677	Do Not Test
CNTL vs ECMW7	40.706	1.374	Do Not Test
CNTL vs ECMW22	39.802	1.314	Do Not Test
CNTL vs ECMW15	36.896	1.218	Do Not Test
CNTL vs ECMW8	36.530	1.233	Do Not Test
CNTL vs ECMW6	35.530	1.200	Do Not Test
CNTL vs ECMW12	27.333	0.902	Do Not Test
CNTL vs ECMW11	24.824	0.838	Do Not Test
CNTL vs ECMW13	24.271	0.801	Do Not Test
CNTL vs ECMW14	20.971	0.708	Do Not Test
CNTL vs ECMW20	16.499	0.518	Do Not Test
CNTL vs ECMW5	13.412	0.453	Do Not Test
CNTL vs ECMW10	0.260	0.00898	Do Not Test
ECMW10 vs ECMW16	56.358	1.588	Do Not Test
ECMW10 vs ECMW19	50.542	1.402	Do Not Test
ECMW10 vs ECMW7	40.446	1.140	Do Not Test
ECMW10 vs ECMW22	39.542	1.097	Do Not Test
ECMW10 vs ECMW15	36.635	1.016	Do Not Test
ECMW10 vs ECMW8	36.270	1.022	Do Not Test
ECMW10 vs ECMW6	35.270	0.994	Do Not Test
ECMW10 vs ECMW12	27.073	0.751	Do Not Test
ECMW10 vs ECMW11	24.564	0.692	Do Not Test
ECMW10 vs ECMW13	24.010	0.666	Do Not Test
ECMW10 vs ECMW14	20.711	0.584	Do Not Test
ECMW10 vs ECMW20	16.238	0.434	Do Not Test
ECMW10 vs ECMW5	13.152	0.371	Do Not Test
ECMW5 vs ECMW16	43.206	1.200	Do Not Test
ECMW5 vs ECMW19	37.390	1.023	Do Not Test
ECMW5 vs ECMW7	27.294	0.758	Do Not Test
ECMW5 vs ECMW22	26.390	0.722	Do Not Test
ECMW5 vs ECMW15	23.483	0.643	Do Not Test
ECMW5 vs ECMW8	23.118	0.642	Do Not Test

ECMW5 vs ECMW6	22.118	0.615	Do Not Test
ECMW5 vs ECMW12	13.921	0.381	Do Not Test
ECMW5 vs ECMW11	11.412	0.317	Do Not Test
ECMW5 vs ECMW13	10.858	0.297	Do Not Test
ECMW5 vs ECMW14	7.559	0.210	Do Not Test
ECMW5 vs ECMW20	3.086	0.0815	Do Not Test
ECMW20 vs ECMW16	40.120	1.059	Do Not Test
ECMW20 vs ECMW19	34.304	0.893	Do Not Test
ECMW20 vs ECMW7	24.208	0.639	Do Not Test
ECMW20 vs ECMW22	23.304	0.607	Do Not Test
ECMW20 vs ECMW15	20.397	0.531	Do Not Test
ECMW20 vs ECMW8	20.032	0.529	Do Not Test
ECMW20 vs ECMW6	19.032	0.503	Do Not Test
ECMW20 vs ECMW12	10.835	0.282	Do Not Test
ECMW20 vs ECMW11	8.326	0.220	Do Not Test
ECMW20 vs ECMW13	7.772	0.202	Do Not Test
ECMW20 vs ECMW14	4.473	0.118	Do Not Test
ECMW14 vs ECMW16	35.647	0.990	Do Not Test
ECMW14 vs ECMW19	29.831	0.816	Do Not Test
ECMW14 vs ECMW7	19.735	0.548	Do Not Test
ECMW14 vs ECMW22	18.831	0.515	Do Not Test
ECMW14 vs ECMW15	15.925	0.436	Do Not Test
ECMW14 vs ECMW8	15.559	0.432	Do Not Test
ECMW14 vs ECMW6	14.559	0.405	Do Not Test
ECMW14 vs ECMW12	6.362	0.174	Do Not Test
ECMW14 vs ECMW11	3.853	0.107	Do Not Test
ECMW14 vs ECMW13	3.300	0.0903	Do Not Test
ECMW13 vs ECMW16	32.347	0.885	Do Not Test
ECMW13 vs ECMW19	26.531	0.715	Do Not Test
ECMW13 vs ECMW7	16.436	0.450	Do Not Test
ECMW13 vs ECMW22	15.531	0.419	Do Not Test
ECMW13 vs ECMW15	12.625	0.340	Do Not Test
ECMW13 vs ECMW8	12.259	0.335	Do Not Test
ECMW13 vs ECMW6	11.259	0.308	Do Not Test
ECMW13 vs ECMW12	3.063	0.0825	Do Not Test
ECMW13 vs ECMW11	0.553	0.0151	Do Not Test
ECMW11 vs ECMW16	31.794	0.883	Do Not Test
ECMW11 vs ECMW19	25.978	0.711	Do Not Test
ECMW11 vs ECMW7	15.882	0.441	Do Not Test
ECMW11 vs ECMW22	14.978	0.410	Do Not Test
ECMW11 vs ECMW15	12.072	0.330	Do Not Test
ECMW11 vs ECMW8	11.706	0.325	Do Not Test
ECMW11 vs ECMW6	10.706	0.297	Do Not Test
ECMW11 vs ECMW12	2.509	0.0687	Do Not Test
ECMW12 vs ECMW16	29.285	0.801	Do Not Test
ECMW12 vs ECMW19	23.469	0.633	Do Not Test
ECMW12 vs ECMW7	13.373	0.366	Do Not Test
ECMW12 vs ECMW22	12.469	0.336	Do Not Test
ECMW12 vs ECMW15	9.563	0.258	Do Not Test
ECMW12 vs ECMW8	9.197	0.252	Do Not Test
ECMW12 vs ECMW6	8.197	0.224	Do Not Test
ECMW6 vs ECMW16	21.088	0.586	Do Not Test
ECMW6 vs ECMW19	15.272	0.418	Do Not Test
ECMW6 vs ECMW7	5.176	0.144	Do Not Test
ECMW6 vs ECMW22	4.272	0.117	Do Not Test
ECMW6 vs ECMW15	1.366	0.0374	Do Not Test

ECMW6 vs ECMW8	1.000	0.0278	Do Not Test
ECMW8 vs ECMW16	20.088	0.558	Do Not Test
ECMW8 vs ECMW19	14.272	0.390	Do Not Test
ECMW8 vs ECMW7	4.176	0.116	Do Not Test
ECMW8 vs ECMW22	3.272	0.0895	Do Not Test
ECMW8 vs ECMW15	0.366	0.0100	Do Not Test
ECMW15 vs ECMW16	19.722	0.540	Do Not Test
ECMW15 vs ECMW19	13.906	0.375	Do Not Test
ECMW15 vs ECMW7	3.811	0.104	Do Not Test
ECMW15 vs ECMW22	2.906	0.0783	Do Not Test
ECMW22 vs ECMW16	16.816	0.460	Do Not Test
ECMW22 vs ECMW19	11.000	0.296	Do Not Test
ECMW22 vs ECMW7	0.904	0.0247	Do Not Test
ECMW7 vs ECMW16	15.912	0.442	Do Not Test
ECMW7 vs ECMW19	10.096	0.276	Do Not Test
ECMW19 vs ECMW16	5.816	0.159	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Iron Dissolved

One Way Analysis of Variance Wednesday, November 03, 2021, 9:55:14 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 9:55:14 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	47	0.01000	0.01000	0.01000
ECMW6	52	49	0.0110	0.01000	0.0170
ECMW7	52	49	0.0780	0.0600	0.283
ECMW8	51	48	0.01000	0.01000	0.01000
ECMW10	51	49	0.01000	0.01000	0.01000
ECMW11	50	47	0.0160	0.01000	0.0360
ECMW12	47	44	2.160	0.01000	8.450
ECMW13	50	47	0.0320	0.0200	0.0480
ECMW14	50	47	0.01000	0.01000	0.0230
ECMW15	49	46	0.01000	0.01000	0.01000
ECMW16	49	46	0.01000	0.01000	0.0140
ECMW17	50	47	0.01000	0.01000	0.01000
ECMW18	49	46	23.800	17.300	30.200
CNTL	144	135	0.01000	0.01000	0.0175
ECMW4	50	47	0.665	0.535	0.920
ECMW9	49	46	0.01000	0.01000	0.01000
ECMW19	40	37	0.334	0.01000	0.649
ECMW20	40	37	0.0300	0.0130	0.0340
ECMW21	40	37	0.01000	0.01000	0.0700
ECMW22	40	37	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 ECMW8	45.500	2.947	No
ECMW18 vs ECMW10	45.500	2.636	Do Not Test
ECMW18 vs ECMW5	45.500	2.947	Do Not Test
ECMW18 vs ECMW17	45.500	2.947	Do Not Test
ECMW18 vs ECMW22	45.500	2.947	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 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 ECMW8	40.167	2.602	Do Not Test
ECMW4 vs ECMW10	40.167	2.327	Do Not Test
ECMW4 vs ECMW5	40.167	2.602	Do Not Test
ECMW4 vs ECMW17	40.167	2.602	Do Not Test
ECMW4 vs ECMW22	40.167	2.602	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 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 ECMW8	34.500	2.235	Do Not Test
ECMW7 vs ECMW10	34.500	1.999	Do Not Test
ECMW7 vs ECMW5	34.500	2.235	Do Not Test
ECMW7 vs ECMW17	34.500	2.235	Do Not Test
ECMW7 vs ECMW22	34.500	2.235	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 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 ECMW8	28.667	1.857	Do Not Test
ECMW12 vs ECMW10	28.667	1.661	Do Not Test
ECMW12 vs ECMW5	28.667	1.857	Do Not Test
ECMW12 vs ECMW17	28.667	1.857	Do Not Test
ECMW12 vs ECMW22	28.667	1.857	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 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 ECMW8	28.333	1.835	Do Not Test
ECMW13 vs ECMW10	28.333	1.642	Do Not Test
ECMW13 vs ECMW5	28.333	1.835	Do Not Test
ECMW13 vs ECMW17	28.333	1.835	Do Not Test
ECMW13 vs ECMW22	28.333	1.835	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 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 ECMW8	25.667	1.663	Do Not Test
ECMW19 vs ECMW10	25.667	1.487	Do Not Test
ECMW19 vs ECMW5	25.667	1.663	Do Not Test
ECMW19 vs ECMW17	25.667	1.663	Do Not Test
ECMW19 vs ECMW22	25.667	1.663	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 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 ECMW8	25.500	1.652	Do Not Test
ECMW20 vs ECMW10	25.500	1.477	Do Not Test
ECMW20 vs ECMW5	25.500	1.652	Do Not Test
ECMW20 vs ECMW17	25.500	1.652	Do Not Test
ECMW20 vs ECMW22	25.500	1.652	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 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 ECMW8	17.667	1.144	Do Not Test
ECMW11 vs ECMW10	17.667	1.024	Do Not Test
ECMW11 vs ECMW5	17.667	1.144	Do Not Test
ECMW11 vs ECMW17	17.667	1.144	Do Not Test
ECMW11 vs ECMW22	17.667	1.144	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 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 ECMW8	14.000	0.907	Do Not Test
ECMW6 vs ECMW10	14.000	0.811	Do Not Test
ECMW6 vs ECMW5	14.000	0.907	Do Not Test
ECMW6 vs ECMW17	14.000	0.907	Do Not Test
ECMW6 vs ECMW22	14.000	0.907	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 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 ECMW8	11.167	0.723	Do Not Test
ECMW21 vs ECMW10	11.167	0.647	Do Not Test
ECMW21 vs ECMW5	11.167	0.723	Do Not Test
ECMW21 vs ECMW17	11.167	0.723	Do Not Test
ECMW21 vs ECMW22	11.167	0.723	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 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 ECMW8	9.111	0.723	Do Not Test
CNTL vs ECMW10	9.111	0.616	Do Not Test
CNTL vs ECMW5	9.111	0.723	Do Not Test
CNTL vs ECMW17	9.111	0.723	Do Not Test
CNTL vs ECMW22	9.111	0.723	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 ECMW16	2.278	0.181	Do Not Test
CNTL vs ECMW14	0.278	0.0220	Do Not Test
ECMW14 vs ECMW8	8.833	0.572	Do Not Test
ECMW14 vs ECMW10	8.833	0.512	Do Not Test
ECMW14 vs ECMW5	8.833	0.572	Do Not Test
ECMW14 vs ECMW17	8.833	0.572	Do Not Test
ECMW14 vs ECMW22	8.833	0.572	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 ECMW16	2.000	0.130	Do Not Test
ECMW16 vs ECMW8	6.833	0.443	Do Not Test
ECMW16 vs ECMW10	6.833	0.396	Do Not Test
ECMW16 vs ECMW5	6.833	0.443	Do Not Test
ECMW16 vs ECMW17	6.833	0.443	Do Not Test
ECMW16 vs ECMW22	6.833	0.443	Do Not Test
ECMW16 vs ECMW15	6.833	0.443	Do Not Test
ECMW16 vs ECMW9	6.833	0.443	Do Not Test
ECMW9 vs ECMW8	0.000	0.000	Do Not Test
ECMW9 vs ECMW10	0.000	0.000	Do Not Test
ECMW9 vs ECMW5	0.000	0.000	Do Not Test
ECMW9 vs ECMW17	0.000	0.000	Do Not Test
ECMW9 vs ECMW22	0.000	0.000	Do Not Test

ECMW9 vs ECMW15	0.000	0.000	Do Not Test
ECMW15 vs ECMW8	0.000	0.000	Do Not Test
ECMW15 vs ECMW10	0.000	0.000	Do Not Test
ECMW15 vs ECMW5	0.000	0.000	Do Not Test
ECMW15 vs ECMW17	0.000	0.000	Do Not Test
ECMW15 vs ECMW22	0.000	0.000	Do Not Test
ECMW22 vs ECMW8	0.000	0.000	Do Not Test
ECMW22 vs ECMW10	0.000	0.000	Do Not Test
ECMW22 vs ECMW5	0.000	0.000	Do Not Test
ECMW22 vs ECMW17	0.000	0.000	Do Not Test
ECMW17 vs ECMW8	0.000	0.000	Do Not Test
ECMW17 vs ECMW10	0.000	0.000	Do Not Test
ECMW17 vs ECMW5	0.000	0.000	Do Not Test
ECMW5 vs ECMW8	0.000	0.000	Do Not Test
ECMW5 vs ECMW10	0.000	0.000	Do Not Test
ECMW10 vs ECMW8	0.000	0.000	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Iron total

One Way Analysis of Variance Wednesday, November 03, 2021, 9:57:58 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 9:57:58 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	44	0.01000	0.01000	0.0308
ECMW6	52	45	0.0400	0.0200	0.0630
ECMW7	52	45	0.120	0.0720	0.219
ECMW8	51	45	0.0200	0.01000	0.0393
ECMW1051		45	0.0285	0.0183	0.0455
ECMW1150		44	0.0160	0.01000	0.0352
ECMW1247		41	35.850	8.935	65.175
ECMW1350		44	0.0800	0.0488	0.527
ECMW1450		44	0.0300	0.01000	0.0505
ECMW1549		43	0.0150	0.01000	0.0452
ECMW1649		43	0.01000	0.01000	0.0178
ECMW1750		44	0.0150	0.01000	0.0305
ECMW1849		43	22.550	0.813	54.100
CNTL	144	126	0.158	0.0765	0.292
ECMW4	50	44	5.295	2.945	5.985
ECMW9	49	43	0.0250	0.01000	0.0473
ECMW1940		34	1.895	0.0303	2.587
ECMW2040		34	1.080	0.243	3.023
ECMW2140		34	0.0450	0.01000	0.875
ECMW2240		34	0.0445	0.01000	0.196

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.

Lead Dissolved

One Way Analysis of Variance Wednesday, November 03, 2021, 9:58:10 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Lead (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, November 03, 2021, 9:58:10 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	26	0.0150	0.0150	0.0154
ECMW6	52	28	0.0150	0.0150	0.0335
ECMW7	52	26	0.0150	0.0150	0.0157
ECMW8	51	26	0.0150	0.0150	0.0276
ECMW1051		27	0.0150	0.0150	0.0154
ECMW1150		27	0.0150	0.0150	0.0156
ECMW1247		23	0.0150	0.0150	0.0154
ECMW1350		26	0.0150	0.0150	0.0154
ECMW1450		26	0.0150	0.0150	0.0154
ECMW1549		25	0.0150	0.0150	0.0154
ECMW1649		25	0.0150	0.0150	0.0154
ECMW1750		26	0.0150	0.0150	0.0154
ECMW1849		24	0.0150	0.0150	0.0160
CNTL	144	72	0.0150	0.0150	0.0154
ECMW4	50	26	0.0150	0.0150	0.0154
ECMW9	49	25	0.0150	0.0150	0.0154
ECMW1940		20	0.0150	0.0150	0.0156
ECMW2040		20	0.0150	0.0150	0.0154
ECMW2140		20	0.0150	0.0150	0.0154
ECMW2240		20	0.0150	0.0150	0.0154

H = 23.636 with 19 degrees of freedom. (P = 0.210)

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 = 0.210)

Lead total

One Way Analysis of Variance Wednesday, November 03, 2021, 9:58:29 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Lead (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, November 03, 2021, 9:58:29 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	20	0.0150	0.0150	0.0156
ECMW6	52	21	0.0150	0.0150	0.0360
ECMW7	52	18	0.0153	0.0150	0.0172
ECMW8	51	21	0.0150	0.0150	0.0216
ECMW10	51	20	0.0150	0.0150	0.0156
ECMW11	50	21	0.0150	0.0150	0.0156
ECMW12	47	18	0.0150	0.0150	0.0156
ECMW13	50	20	0.0150	0.0150	0.0156
ECMW14	50	20	0.0150	0.0150	0.0156
ECMW15	49	19	0.0150	0.0150	0.0156
ECMW16	49	19	0.0150	0.0150	0.0156
ECMW17	50	20	0.0150	0.0150	0.0156
ECMW18	49	18	0.0180	0.0150	0.0290
CNTL	144	54	0.0150	0.0150	0.0156
ECMW4	50	20	0.0150	0.0150	0.0157
ECMW9	49	19	0.0150	0.0150	0.0156
ECMW19	40	15	0.0150	0.0150	0.0156
ECMW20	40	15	0.0150	0.0150	0.0156
ECMW21	40	15	0.0150	0.0150	0.0156
ECMW22	40	15	0.0150	0.0150	0.0156

H = 40.801 with 19 degrees of freedom. (P = 0.003)

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 = 0.003)

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 ECMW12	174.178	3.618	No
ECMW18 vs ECMW13	168.786	3.537	Do Not Test
ECMW18 vs ECMW5	163.303	3.422	Do Not Test
ECMW18 vs ECMW15	163.303	3.422	Do Not Test
ECMW18 vs ECMW16	162.953	3.415	Do Not Test
ECMW18 vs ECMW17	162.336	3.402	Do Not Test

ECMW18 vs ECMW11	161.161	3.348	Do Not Test
ECMW18 vs ECMW10	159.484	3.370	Do Not Test
ECMW18 vs ECMW22	156.879	3.132	Do Not Test
ECMW18 vs ECMW19	156.579	3.126	Do Not Test
ECMW18 vs ECMW9	152.569	3.197	Do Not Test
ECMW18 vs ECMW14	151.336	3.171	Do Not Test
ECMW18 vs CNTL	150.130	3.869	Do Not Test
ECMW18 vs ECMW20	142.759	2.850	Do Not Test
ECMW18 vs ECMW4	125.186	2.623	Do Not Test
ECMW18 vs ECMW21	111.939	2.235	Do Not Test
ECMW18 vs ECMW7	85.566	1.849	Do Not Test
ECMW18 vs ECMW6	77.871	1.645	Do Not Test
ECMW18 vs ECMW8	71.486	1.498	Do Not Test
ECMW8 vs ECMW12	102.692	2.116	Do Not Test
ECMW8 vs ECMW13	97.300	2.022	Do Not Test
ECMW8 vs ECMW5	91.817	1.908	Do Not Test
ECMW8 vs ECMW15	91.817	1.908	Do Not Test
ECMW8 vs ECMW16	91.467	1.901	Do Not Test
ECMW8 vs ECMW17	90.850	1.888	Do Not Test
ECMW8 vs ECMW11	89.675	1.848	Do Not Test
ECMW8 vs ECMW10	87.998	1.844	Do Not Test
ECMW8 vs ECMW22	85.393	1.692	Do Not Test
ECMW8 vs ECMW19	85.093	1.686	Do Not Test
ECMW8 vs ECMW9	81.083	1.685	Do Not Test
ECMW8 vs ECMW14	79.850	1.660	Do Not Test
ECMW8 vs CNTL	78.644	2.002	Do Not Test
ECMW8 vs ECMW20	71.273	1.412	Do Not Test
ECMW8 vs ECMW4	53.700	1.116	Do Not Test
ECMW8 vs ECMW21	40.453	0.802	Do Not Test
ECMW8 vs ECMW7	14.080	0.302	Do Not Test
ECMW8 vs ECMW6	6.385	0.134	Do Not Test
ECMW6 vs ECMW12	96.307	2.001	Do Not Test
ECMW6 vs ECMW13	90.915	1.905	Do Not Test
ECMW6 vs ECMW5	85.432	1.790	Do Not Test
ECMW6 vs ECMW15	85.432	1.790	Do Not Test
ECMW6 vs ECMW16	85.082	1.783	Do Not Test
ECMW6 vs ECMW17	84.465	1.770	Do Not Test
ECMW6 vs ECMW11	83.290	1.730	Do Not Test
ECMW6 vs ECMW10	81.613	1.724	Do Not Test
ECMW6 vs ECMW22	79.008	1.577	Do Not Test
ECMW6 vs ECMW19	78.708	1.571	Do Not Test
ECMW6 vs ECMW9	74.698	1.565	Do Not Test
ECMW6 vs ECMW14	73.465	1.539	Do Not Test
ECMW6 vs CNTL	72.259	1.862	Do Not Test
ECMW6 vs ECMW20	64.888	1.295	Do Not Test
ECMW6 vs ECMW4	47.315	0.991	Do Not Test
ECMW6 vs ECMW21	34.068	0.680	Do Not Test
ECMW6 vs ECMW7	7.695	0.166	Do Not Test
ECMW7 vs ECMW12	88.612	1.881	Do Not Test
ECMW7 vs ECMW13	83.220	1.783	Do Not Test
ECMW7 vs ECMW5	77.736	1.665	Do Not Test
ECMW7 vs ECMW15	77.736	1.665	Do Not Test
ECMW7 vs ECMW16	77.386	1.658	Do Not Test
ECMW7 vs ECMW17	76.770	1.645	Do Not Test
ECMW7 vs ECMW11	75.594	1.605	Do Not Test
ECMW7 vs ECMW10	73.917	1.597	Do Not Test

ECMW7 vs ECMW22	71.313	1.453	Do Not Test
ECMW7 vs ECMW19	71.013	1.446	Do Not Test
ECMW7 vs ECMW9	67.003	1.435	Do Not Test
ECMW7 vs ECMW14	65.770	1.409	Do Not Test
ECMW7 vs CNTL	64.564	1.721	Do Not Test
ECMW7 vs ECMW20	57.193	1.165	Do Not Test
ECMW7 vs ECMW4	39.620	0.849	Do Not Test
ECMW7 vs ECMW21	26.373	0.537	Do Not Test
ECMW21 vs ECMW12	62.239	1.224	Do Not Test
ECMW21 vs ECMW13	56.847	1.127	Do Not Test
ECMW21 vs ECMW5	51.363	1.018	Do Not Test
ECMW21 vs ECMW15	51.363	1.018	Do Not Test
ECMW21 vs ECMW16	51.013	1.011	Do Not Test
ECMW21 vs ECMW17	50.397	0.999	Do Not Test
ECMW21 vs ECMW11	49.221	0.968	Do Not Test
ECMW21 vs ECMW10	47.545	0.949	Do Not Test
ECMW21 vs ECMW22	44.940	0.853	Do Not Test
ECMW21 vs ECMW19	44.640	0.847	Do Not Test
ECMW21 vs ECMW9	40.630	0.805	Do Not Test
ECMW21 vs ECMW14	39.397	0.781	Do Not Test
ECMW21 vs CNTL	38.191	0.907	Do Not Test
ECMW21 vs ECMW20	30.820	0.585	Do Not Test
ECMW21 vs ECMW4	13.247	0.263	Do Not Test
ECMW4 vs ECMW12	48.992	1.010	Do Not Test
ECMW4 vs ECMW13	43.600	0.906	Do Not Test
ECMW4 vs ECMW5	38.117	0.792	Do Not Test
ECMW4 vs ECMW15	38.117	0.792	Do Not Test
ECMW4 vs ECMW16	37.767	0.785	Do Not Test
ECMW4 vs ECMW17	37.150	0.772	Do Not Test
ECMW4 vs ECMW11	35.975	0.741	Do Not Test
ECMW4 vs ECMW10	34.298	0.719	Do Not Test
ECMW4 vs ECMW22	31.693	0.628	Do Not Test
ECMW4 vs ECMW19	31.393	0.622	Do Not Test
ECMW4 vs ECMW9	27.383	0.569	Do Not Test
ECMW4 vs ECMW14	26.150	0.544	Do Not Test
ECMW4 vs CNTL	24.944	0.635	Do Not Test
ECMW4 vs ECMW20	17.573	0.348	Do Not Test
ECMW20 vs ECMW12	31.419	0.618	Do Not Test
ECMW20 vs ECMW13	26.027	0.516	Do Not Test
ECMW20 vs ECMW5	20.543	0.407	Do Not Test
ECMW20 vs ECMW15	20.543	0.407	Do Not Test
ECMW20 vs ECMW16	20.193	0.400	Do Not Test
ECMW20 vs ECMW17	19.577	0.388	Do Not Test
ECMW20 vs ECMW11	18.401	0.362	Do Not Test
ECMW20 vs ECMW10	16.725	0.334	Do Not Test
ECMW20 vs ECMW22	14.120	0.268	Do Not Test
ECMW20 vs ECMW19	13.820	0.262	Do Not Test
ECMW20 vs ECMW9	9.810	0.194	Do Not Test
ECMW20 vs ECMW14	8.577	0.170	Do Not Test
ECMW20 vs CNTL	7.371	0.175	Do Not Test
CNTL vs ECMW12	24.048	0.604	Do Not Test
CNTL vs ECMW13	18.656	0.475	Do Not Test
CNTL vs ECMW5	13.172	0.335	Do Not Test
CNTL vs ECMW15	13.172	0.335	Do Not Test
CNTL vs ECMW16	12.822	0.326	Do Not Test
CNTL vs ECMW17	12.206	0.311	Do Not Test

CNTL vs ECMW11	11.030	0.277	Do Not Test
CNTL vs ECMW10	9.353	0.241	Do Not Test
CNTL vs ECMW22	6.749	0.160	Do Not Test
CNTL vs ECMW19	6.449	0.153	Do Not Test
CNTL vs ECMW9	2.439	0.0621	Do Not Test
CNTL vs ECMW14	1.206	0.0307	Do Not Test
ECMW14 vs ECMW12	22.842	0.471	Do Not Test
ECMW14 vs ECMW13	17.450	0.363	Do Not Test
ECMW14 vs ECMW5	11.967	0.249	Do Not Test
ECMW14 vs ECMW15	11.967	0.249	Do Not Test
ECMW14 vs ECMW16	11.617	0.241	Do Not Test
ECMW14 vs ECMW17	11.000	0.229	Do Not Test
ECMW14 vs ECMW11	9.825	0.202	Do Not Test
ECMW14 vs ECMW10	8.148	0.171	Do Not Test
ECMW14 vs ECMW22	5.543	0.110	Do Not Test
ECMW14 vs ECMW19	5.243	0.104	Do Not Test
ECMW14 vs ECMW9	1.233	0.0256	Do Not Test
ECMW9 vs ECMW12	21.609	0.445	Do Not Test
ECMW9 vs ECMW13	16.217	0.337	Do Not Test
ECMW9 vs ECMW5	10.733	0.223	Do Not Test
ECMW9 vs ECMW15	10.733	0.223	Do Not Test
ECMW9 vs ECMW16	10.383	0.216	Do Not Test
ECMW9 vs ECMW17	9.767	0.203	Do Not Test
ECMW9 vs ECMW11	8.591	0.177	Do Not Test
ECMW9 vs ECMW10	6.915	0.145	Do Not Test
ECMW9 vs ECMW22	4.310	0.0854	Do Not Test
ECMW9 vs ECMW19	4.010	0.0795	Do Not Test
ECMW19 vs ECMW12	17.599	0.346	Do Not Test
ECMW19 vs ECMW13	12.207	0.242	Do Not Test
ECMW19 vs ECMW5	6.723	0.133	Do Not Test
ECMW19 vs ECMW15	6.723	0.133	Do Not Test
ECMW19 vs ECMW16	6.373	0.126	Do Not Test
ECMW19 vs ECMW17	5.757	0.114	Do Not Test
ECMW19 vs ECMW11	4.581	0.0901	Do Not Test
ECMW19 vs ECMW10	2.905	0.0580	Do Not Test
ECMW19 vs ECMW22	0.300	0.00569	Do Not Test
ECMW22 vs ECMW12	17.299	0.340	Do Not Test
ECMW22 vs ECMW13	11.907	0.236	Do Not Test
ECMW22 vs ECMW5	6.423	0.127	Do Not Test
ECMW22 vs ECMW15	6.423	0.127	Do Not Test
ECMW22 vs ECMW16	6.073	0.120	Do Not Test
ECMW22 vs ECMW17	5.457	0.108	Do Not Test
ECMW22 vs ECMW11	4.281	0.0842	Do Not Test
ECMW22 vs ECMW10	2.605	0.0520	Do Not Test
ECMW10 vs ECMW12	14.694	0.305	Do Not Test
ECMW10 vs ECMW13	9.302	0.195	Do Not Test
ECMW10 vs ECMW5	3.819	0.0800	Do Not Test
ECMW10 vs ECMW15	3.819	0.0800	Do Not Test
ECMW10 vs ECMW16	3.469	0.0727	Do Not Test
ECMW10 vs ECMW17	2.852	0.0598	Do Not Test
ECMW10 vs ECMW11	1.677	0.0348	Do Not Test
ECMW11 vs ECMW12	13.017	0.266	Do Not Test
ECMW11 vs ECMW13	7.625	0.157	Do Not Test
ECMW11 vs ECMW5	2.142	0.0441	Do Not Test
ECMW11 vs ECMW15	2.142	0.0441	Do Not Test
ECMW11 vs ECMW16	1.792	0.0369	Do Not Test

ECMW11 vs ECMW17	1.175	0.0242	Do Not Test
ECMW17 vs ECMW12	11.842	0.244	Do Not Test
ECMW17 vs ECMW13	6.450	0.134	Do Not Test
ECMW17 vs ECMW5	0.967	0.0201	Do Not Test
ECMW17 vs ECMW15	0.967	0.0201	Do Not Test
ECMW17 vs ECMW16	0.617	0.0128	Do Not Test
ECMW16 vs ECMW12	11.225	0.231	Do Not Test
ECMW16 vs ECMW13	5.833	0.121	Do Not Test
ECMW16 vs ECMW5	0.350	0.00727	Do Not Test
ECMW16 vs ECMW15	0.350	0.00727	Do Not Test
ECMW15 vs ECMW12	10.875	0.224	Do Not Test
ECMW15 vs ECMW13	5.483	0.114	Do Not Test
ECMW15 vs ECMW5	0.000	0.000	Do Not Test
ECMW5 vs ECMW12	10.875	0.224	Do Not Test
ECMW5 vs ECMW13	5.483	0.114	Do Not Test
ECMW13 vs ECMW12	5.392	0.111	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Manganese Dissolved

One Way Analysis of Variance Wednesday, November 03, 2021, 9:58:43 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Manganese 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, November 03, 2021, 9:58:43 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	48	2.135	2.080	2.190
ECMW6	52	50	2.925	2.880	2.970
ECMW7	52	50	0.276	0.0960	0.456
ECMW8	51	49	0.456	0.396	0.515
ECMW1051		49	0.178	0.152	0.204
ECMW1150		48	0.0230	0.0220	0.0240
ECMW1247		45	0.192	0.189	0.195
ECMW1350		48	2.795	2.780	2.810
ECMW1450		48	0.0710	0.0710	0.0710
ECMW1549		47	0.0215	0.0140	0.0290
ECMW1649		47	0.122	0.104	0.140
ECMW1750		48	0.197	0.145	0.248
ECMW1849		47	0.0775	0.0730	0.0820
CNTL	144	138	0.01000	0.01000	0.0205
ECMW4	50	48	2.045	1.660	2.430
ECMW9	49	47	0.312	0.303	0.320
ECMW1940		38	0.0790	0.0730	0.0850
ECMW2040		38	0.225	0.215	0.235
ECMW2140		38	0.0665	0.0430	0.0900
ECMW2240		38	0.130	0.0990	0.161

H = 41.240 with 19 degrees of freedom. (P = 0.002)

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 = 0.002)

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 CNTL	39.167	3.734	Yes
ECMW6 vs ECMW15	36.000	2.803	No
ECMW6 vs ECMW11	36.000	2.803	Do Not Test
ECMW6 vs ECMW14	31.000	2.413	Do Not Test
ECMW6 vs ECMW21	29.500	2.297	Do Not Test
ECMW6 vs ECMW18	28.250	2.199	Do Not Test

ECMW6 vs ECMW19	27.750	2.160	Do Not Test
ECMW6 vs ECMW16	22.000	1.713	Do Not Test
ECMW6 vs ECMW22	21.000	1.635	Do Not Test
ECMW6 vs ECMW10	17.500	1.362	Do Not Test
ECMW6 vs ECMW12	17.000	1.323	Do Not Test
ECMW6 vs ECMW17	16.500	1.285	Do Not Test
ECMW6 vs ECMW7	16.500	1.285	Do Not Test
ECMW6 vs ECMW20	14.000	1.090	Do Not Test
ECMW6 vs ECMW9	11.000	0.856	Do Not Test
ECMW6 vs ECMW8	8.500	0.662	Do Not Test
ECMW6 vs ECMW4	5.000	0.389	Do Not Test
ECMW6 vs ECMW5	5.000	0.389	Do Not Test
ECMW6 vs ECMW13	2.000	0.156	Do Not Test
ECMW13 vs CNTL	37.167	3.544	No
ECMW13 vs ECMW15	34.000	2.647	Do Not Test
ECMW13 vs ECMW11	34.000	2.647	Do Not Test
ECMW13 vs ECMW14	29.000	2.258	Do Not Test
ECMW13 vs ECMW21	27.500	2.141	Do Not Test
ECMW13 vs ECMW18	26.250	2.044	Do Not Test
ECMW13 vs ECMW19	25.750	2.005	Do Not Test
ECMW13 vs ECMW16	20.000	1.557	Do Not Test
ECMW13 vs ECMW22	19.000	1.479	Do Not Test
ECMW13 vs ECMW10	15.500	1.207	Do Not Test
ECMW13 vs ECMW12	15.000	1.168	Do Not Test
ECMW13 vs ECMW17	14.500	1.129	Do Not Test
ECMW13 vs ECMW7	14.500	1.129	Do Not Test
ECMW13 vs ECMW20	12.000	0.934	Do Not Test
ECMW13 vs ECMW9	9.000	0.701	Do Not Test
ECMW13 vs ECMW8	6.500	0.506	Do Not Test
ECMW13 vs ECMW4	3.000	0.234	Do Not Test
ECMW13 vs ECMW5	3.000	0.234	Do Not Test
ECMW5 vs CNTL	34.167	3.258	Do Not Test
ECMW5 vs ECMW15	31.000	2.413	Do Not Test
ECMW5 vs ECMW11	31.000	2.413	Do Not Test
ECMW5 vs ECMW14	26.000	2.024	Do Not Test
ECMW5 vs ECMW21	24.500	1.907	Do Not Test
ECMW5 vs ECMW18	23.250	1.810	Do Not Test
ECMW5 vs ECMW19	22.750	1.771	Do Not Test
ECMW5 vs ECMW16	17.000	1.323	Do Not Test
ECMW5 vs ECMW22	16.000	1.246	Do Not Test
ECMW5 vs ECMW10	12.500	0.973	Do Not Test
ECMW5 vs ECMW12	12.000	0.934	Do Not Test
ECMW5 vs ECMW17	11.500	0.895	Do Not Test
ECMW5 vs ECMW7	11.500	0.895	Do Not Test
ECMW5 vs ECMW20	9.000	0.701	Do Not Test
ECMW5 vs ECMW9	6.000	0.467	Do Not Test
ECMW5 vs ECMW8	3.500	0.272	Do Not Test
ECMW5 vs ECMW4	0.000	0.000	Do Not Test
ECMW4 vs CNTL	34.167	3.258	Do Not Test
ECMW4 vs ECMW15	31.000	2.413	Do Not Test
ECMW4 vs ECMW11	31.000	2.413	Do Not Test
ECMW4 vs ECMW14	26.000	2.024	Do Not Test
ECMW4 vs ECMW21	24.500	1.907	Do Not Test
ECMW4 vs ECMW18	23.250	1.810	Do Not Test
ECMW4 vs ECMW19	22.750	1.771	Do Not Test
ECMW4 vs ECMW16	17.000	1.323	Do Not Test

ECMW4 vs ECMW22	16.000	1.246	Do Not Test
ECMW4 vs ECMW10	12.500	0.973	Do Not Test
ECMW4 vs ECMW12	12.000	0.934	Do Not Test
ECMW4 vs ECMW17	11.500	0.895	Do Not Test
ECMW4 vs ECMW7	11.500	0.895	Do Not Test
ECMW4 vs ECMW20	9.000	0.701	Do Not Test
ECMW4 vs ECMW9	6.000	0.467	Do Not Test
ECMW4 vs ECMW8	3.500	0.272	Do Not Test
ECMW8 vs CNTL	30.667	2.924	Do Not Test
ECMW8 vs ECMW15	27.500	2.141	Do Not Test
ECMW8 vs ECMW11	27.500	2.141	Do Not Test
ECMW8 vs ECMW14	22.500	1.752	Do Not Test
ECMW8 vs ECMW21	21.000	1.635	Do Not Test
ECMW8 vs ECMW18	19.750	1.538	Do Not Test
ECMW8 vs ECMW19	19.250	1.499	Do Not Test
ECMW8 vs ECMW16	13.500	1.051	Do Not Test
ECMW8 vs ECMW22	12.500	0.973	Do Not Test
ECMW8 vs ECMW10	9.000	0.701	Do Not Test
ECMW8 vs ECMW12	8.500	0.662	Do Not Test
ECMW8 vs ECMW17	8.000	0.623	Do Not Test
ECMW8 vs ECMW7	8.000	0.623	Do Not Test
ECMW8 vs ECMW20	5.500	0.428	Do Not Test
ECMW8 vs ECMW9	2.500	0.195	Do Not Test
ECMW9 vs CNTL	28.167	2.686	Do Not Test
ECMW9 vs ECMW15	25.000	1.946	Do Not Test
ECMW9 vs ECMW11	25.000	1.946	Do Not Test
ECMW9 vs ECMW14	20.000	1.557	Do Not Test
ECMW9 vs ECMW21	18.500	1.440	Do Not Test
ECMW9 vs ECMW18	17.250	1.343	Do Not Test
ECMW9 vs ECMW19	16.750	1.304	Do Not Test
ECMW9 vs ECMW16	11.000	0.856	Do Not Test
ECMW9 vs ECMW22	10.000	0.778	Do Not Test
ECMW9 vs ECMW10	6.500	0.506	Do Not Test
ECMW9 vs ECMW12	6.000	0.467	Do Not Test
ECMW9 vs ECMW17	5.500	0.428	Do Not Test
ECMW9 vs ECMW7	5.500	0.428	Do Not Test
ECMW9 vs ECMW20	3.000	0.234	Do Not Test
ECMW20 vs CNTL	25.167	2.400	Do Not Test
ECMW20 vs ECMW15	22.000	1.713	Do Not Test
ECMW20 vs ECMW11	22.000	1.713	Do Not Test
ECMW20 vs ECMW14	17.000	1.323	Do Not Test
ECMW20 vs ECMW21	15.500	1.207	Do Not Test
ECMW20 vs ECMW18	14.250	1.109	Do Not Test
ECMW20 vs ECMW19	13.750	1.070	Do Not Test
ECMW20 vs ECMW16	8.000	0.623	Do Not Test
ECMW20 vs ECMW22	7.000	0.545	Do Not Test
ECMW20 vs ECMW10	3.500	0.272	Do Not Test
ECMW20 vs ECMW12	3.000	0.234	Do Not Test
ECMW20 vs ECMW17	2.500	0.195	Do Not Test
ECMW20 vs ECMW7	2.500	0.195	Do Not Test
ECMW7 vs CNTL	22.667	2.161	Do Not Test
ECMW7 vs ECMW15	19.500	1.518	Do Not Test
ECMW7 vs ECMW11	19.500	1.518	Do Not Test
ECMW7 vs ECMW14	14.500	1.129	Do Not Test
ECMW7 vs ECMW21	13.000	1.012	Do Not Test
ECMW7 vs ECMW18	11.750	0.915	Do Not Test

ECMW7 vs ECMW19	11.250	0.876	Do Not Test
ECMW7 vs ECMW16	5.500	0.428	Do Not Test
ECMW7 vs ECMW22	4.500	0.350	Do Not Test
ECMW7 vs ECMW10	1.000	0.0778	Do Not Test
ECMW7 vs ECMW12	0.500	0.0389	Do Not Test
ECMW7 vs ECMW17	0.000	0.000	Do Not Test
ECMW17 vs CNTL	22.667	2.161	Do Not Test
ECMW17 vs ECMW15	19.500	1.518	Do Not Test
ECMW17 vs ECMW11	19.500	1.518	Do Not Test
ECMW17 vs ECMW14	14.500	1.129	Do Not Test
ECMW17 vs ECMW21	13.000	1.012	Do Not Test
ECMW17 vs ECMW18	11.750	0.915	Do Not Test
ECMW17 vs ECMW19	11.250	0.876	Do Not Test
ECMW17 vs ECMW16	5.500	0.428	Do Not Test
ECMW17 vs ECMW22	4.500	0.350	Do Not Test
ECMW17 vs ECMW10	1.000	0.0778	Do Not Test
ECMW17 vs ECMW12	0.500	0.0389	Do Not Test
ECMW12 vs CNTL	22.167	2.114	Do Not Test
ECMW12 vs ECMW15	19.000	1.479	Do Not Test
ECMW12 vs ECMW11	19.000	1.479	Do Not Test
ECMW12 vs ECMW14	14.000	1.090	Do Not Test
ECMW12 vs ECMW21	12.500	0.973	Do Not Test
ECMW12 vs ECMW18	11.250	0.876	Do Not Test
ECMW12 vs ECMW19	10.750	0.837	Do Not Test
ECMW12 vs ECMW16	5.000	0.389	Do Not Test
ECMW12 vs ECMW22	4.000	0.311	Do Not Test
ECMW12 vs ECMW10	0.500	0.0389	Do Not Test
ECMW10 vs CNTL	21.667	2.066	Do Not Test
ECMW10 vs ECMW15	18.500	1.440	Do Not Test
ECMW10 vs ECMW11	18.500	1.440	Do Not Test
ECMW10 vs ECMW14	13.500	1.051	Do Not Test
ECMW10 vs ECMW21	12.000	0.934	Do Not Test
ECMW10 vs ECMW18	10.750	0.837	Do Not Test
ECMW10 vs ECMW19	10.250	0.798	Do Not Test
ECMW10 vs ECMW16	4.500	0.350	Do Not Test
ECMW10 vs ECMW22	3.500	0.272	Do Not Test
ECMW22 vs CNTL	18.167	1.732	Do Not Test
ECMW22 vs ECMW15	15.000	1.168	Do Not Test
ECMW22 vs ECMW11	15.000	1.168	Do Not Test
ECMW22 vs ECMW14	10.000	0.778	Do Not Test
ECMW22 vs ECMW21	8.500	0.662	Do Not Test
ECMW22 vs ECMW18	7.250	0.564	Do Not Test
ECMW22 vs ECMW19	6.750	0.525	Do Not Test
ECMW22 vs ECMW16	1.000	0.0778	Do Not Test
ECMW16 vs CNTL	17.167	1.637	Do Not Test
ECMW16 vs ECMW15	14.000	1.090	Do Not Test
ECMW16 vs ECMW11	14.000	1.090	Do Not Test
ECMW16 vs ECMW14	9.000	0.701	Do Not Test
ECMW16 vs ECMW21	7.500	0.584	Do Not Test
ECMW16 vs ECMW18	6.250	0.487	Do Not Test
ECMW16 vs ECMW19	5.750	0.448	Do Not Test
ECMW19 vs CNTL	11.417	1.089	Do Not Test
ECMW19 vs ECMW15	8.250	0.642	Do Not Test
ECMW19 vs ECMW11	8.250	0.642	Do Not Test
ECMW19 vs ECMW14	3.250	0.253	Do Not Test
ECMW19 vs ECMW21	1.750	0.136	Do Not Test

ECMW19 vs ECMW18	0.500	0.0389	Do Not Test
ECMW18 vs CNTL	10.917	1.041	Do Not Test
ECMW18 vs ECMW15	7.750	0.603	Do Not Test
ECMW18 vs ECMW11	7.750	0.603	Do Not Test
ECMW18 vs ECMW14	2.750	0.214	Do Not Test
ECMW18 vs ECMW21	1.250	0.0973	Do Not Test
ECMW21 vs CNTL	9.667	0.922	Do Not Test
ECMW21 vs ECMW15	6.500	0.506	Do Not Test
ECMW21 vs ECMW11	6.500	0.506	Do Not Test
ECMW21 vs ECMW14	1.500	0.117	Do Not Test
ECMW14 vs CNTL	8.167	0.779	Do Not Test
ECMW14 vs ECMW15	5.000	0.389	Do Not Test
ECMW14 vs ECMW11	5.000	0.389	Do Not Test
ECMW11 vs CNTL	3.167	0.302	Do Not Test
ECMW11 vs ECMW15	0.000	0.000	Do Not Test
ECMW15 vs CNTL	3.167	0.302	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Manganese Total

One Way Analysis of Variance Wednesday, November 03, 2021, 9:58:55 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Manganese 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, November 03, 2021, 9:58:55 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	43	1.630	0.717	2.160
ECMW6	52	44	2.265	1.653	3.240
ECMW7	52	44	0.195	0.103	0.247
ECMW8	51	44	0.490	0.476	0.563
ECMW1051		44	0.166	0.154	0.203
ECMW1150		43	0.0300	0.0200	0.0300
ECMW1247		40	0.210	0.170	0.239
ECMW1350		43	2.710	2.410	2.870
ECMW1450		43	0.0600	0.0470	0.0700
ECMW1549		43	0.0200	0.01000	0.0240
ECMW1649		42	0.110	0.105	0.170
ECMW1750		43	0.200	0.121	0.240
ECMW1849		43	0.0750	0.0222	0.138
CNTL	144	123	0.01000	0.01000	0.0175
ECMW4	50	43	2.080	1.700	2.540
ECMW9	49	42	0.321	0.297	0.340
ECMW1940		34	0.0645	0.0575	0.0770
ECMW2040		33	0.140	0.110	0.201
ECMW2140		33	0.0270	0.0250	0.160
ECMW2240		33	0.105	0.0900	0.152

H = 134.837 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
ECMW13 vs CNTL	125.833	6.507	Yes
ECMW13 vs ECMW15	124.929	5.068	Yes
ECMW13 vs ECMW11	113.786	4.804	Yes
ECMW13 vs ECMW14	99.714	4.210	Yes
ECMW13 vs ECMW19	95.595	3.878	Yes
ECMW13 vs ECMW21	92.714	3.914	Yes

ECMW13 vs ECMW18	91.345	3.705	Yes
ECMW13 vs ECMW22	77.143	3.257	No
ECMW13 vs ECMW16	69.929	2.952	Do Not Test
ECMW13 vs ECMW20	62.857	2.654	Do Not Test
ECMW13 vs ECMW17	59.643	2.518	Do Not Test
ECMW13 vs ECMW10	57.643	2.434	Do Not Test
ECMW13 vs ECMW7	56.741	2.474	Do Not Test
ECMW13 vs ECMW12	50.357	2.126	Do Not Test
ECMW13 vs ECMW9	33.571	1.417	Do Not Test
ECMW13 vs ECMW8	24.000	1.013	Do Not Test
ECMW13 vs ECMW5	11.857	0.501	Do Not Test
ECMW13 vs ECMW4	7.571	0.320	Do Not Test
ECMW13 vs ECMW6	2.929	0.128	Do Not Test
ECMW6 vs CNTL	122.905	6.676	Yes
ECMW6 vs ECMW15	122.000	5.098	Yes
ECMW6 vs ECMW11	110.857	4.834	Yes
ECMW6 vs ECMW14	96.786	4.220	Yes
ECMW6 vs ECMW19	92.667	3.872	Yes
ECMW6 vs ECMW21	89.786	3.915	Yes
ECMW6 vs ECMW18	88.417	3.695	Yes
ECMW6 vs ECMW22	74.214	3.236	Do Not Test
ECMW6 vs ECMW16	67.000	2.922	Do Not Test
ECMW6 vs ECMW20	59.929	2.613	Do Not Test
ECMW6 vs ECMW17	56.714	2.473	Do Not Test
ECMW6 vs ECMW10	54.714	2.386	Do Not Test
ECMW6 vs ECMW7	53.813	2.429	Do Not Test
ECMW6 vs ECMW12	47.429	2.068	Do Not Test
ECMW6 vs ECMW9	30.643	1.336	Do Not Test
ECMW6 vs ECMW8	21.071	0.919	Do Not Test
ECMW6 vs ECMW5	8.929	0.389	Do Not Test
ECMW6 vs ECMW4	4.643	0.202	Do Not Test
ECMW4 vs CNTL	118.262	6.115	Yes
ECMW4 vs ECMW15	117.357	4.760	Yes
ECMW4 vs ECMW11	106.214	4.484	Yes
ECMW4 vs ECMW14	92.143	3.890	Yes
ECMW4 vs ECMW19	88.024	3.571	No
ECMW4 vs ECMW21	85.143	3.595	Do Not Test
ECMW4 vs ECMW18	83.774	3.398	Do Not Test
ECMW4 vs ECMW22	69.571	2.937	Do Not Test
ECMW4 vs ECMW16	62.357	2.633	Do Not Test
ECMW4 vs ECMW20	55.286	2.334	Do Not Test
ECMW4 vs ECMW17	52.071	2.198	Do Not Test
ECMW4 vs ECMW10	50.071	2.114	Do Not Test
ECMW4 vs ECMW7	49.170	2.144	Do Not Test
ECMW4 vs ECMW12	42.786	1.806	Do Not Test
ECMW4 vs ECMW9	26.000	1.098	Do Not Test
ECMW4 vs ECMW8	16.429	0.694	Do Not Test
ECMW4 vs ECMW5	4.286	0.181	Do Not Test
ECMW5 vs CNTL	113.976	5.894	Yes
ECMW5 vs ECMW15	113.071	4.587	Yes
ECMW5 vs ECMW11	101.929	4.303	Yes
ECMW5 vs ECMW14	87.857	3.709	Yes
ECMW5 vs ECMW19	83.738	3.397	Do Not Test
ECMW5 vs ECMW21	80.857	3.414	Do Not Test
ECMW5 vs ECMW18	79.488	3.224	Do Not Test
ECMW5 vs ECMW22	65.286	2.756	Do Not Test

ECMW5 vs ECMW16	58.071	2.452	Do Not Test
ECMW5 vs ECMW20	51.000	2.153	Do Not Test
ECMW5 vs ECMW17	47.786	2.018	Do Not Test
ECMW5 vs ECMW10	45.786	1.933	Do Not Test
ECMW5 vs ECMW7	44.884	1.957	Do Not Test
ECMW5 vs ECMW12	38.500	1.625	Do Not Test
ECMW5 vs ECMW9	21.714	0.917	Do Not Test
ECMW5 vs ECMW8	12.143	0.513	Do Not Test
ECMW8 vs CNTL	101.833	5.266	Yes
ECMW8 vs ECMW15	100.929	4.094	Yes
ECMW8 vs ECMW11	89.786	3.791	Yes
ECMW8 vs ECMW14	75.714	3.197	No
ECMW8 vs ECMW19	71.595	2.904	Do Not Test
ECMW8 vs ECMW21	68.714	2.901	Do Not Test
ECMW8 vs ECMW18	67.345	2.732	Do Not Test
ECMW8 vs ECMW22	53.143	2.244	Do Not Test
ECMW8 vs ECMW16	45.929	1.939	Do Not Test
ECMW8 vs ECMW20	38.857	1.641	Do Not Test
ECMW8 vs ECMW17	35.643	1.505	Do Not Test
ECMW8 vs ECMW10	33.643	1.420	Do Not Test
ECMW8 vs ECMW7	32.741	1.428	Do Not Test
ECMW8 vs ECMW12	26.357	1.113	Do Not Test
ECMW8 vs ECMW9	9.571	0.404	Do Not Test
ECMW9 vs CNTL	92.262	4.771	Yes
ECMW9 vs ECMW15	91.357	3.706	Yes
ECMW9 vs ECMW11	80.214	3.387	No
ECMW9 vs ECMW14	66.143	2.793	Do Not Test
ECMW9 vs ECMW19	62.024	2.516	Do Not Test
ECMW9 vs ECMW21	59.143	2.497	Do Not Test
ECMW9 vs ECMW18	57.774	2.344	Do Not Test
ECMW9 vs ECMW22	43.571	1.840	Do Not Test
ECMW9 vs ECMW16	36.357	1.535	Do Not Test
ECMW9 vs ECMW20	29.286	1.236	Do Not Test
ECMW9 vs ECMW17	26.071	1.101	Do Not Test
ECMW9 vs ECMW10	24.071	1.016	Do Not Test
ECMW9 vs ECMW7	23.170	1.010	Do Not Test
ECMW9 vs ECMW12	16.786	0.709	Do Not Test
ECMW12 vs CNTL	75.476	3.903	Yes
ECMW12 vs ECMW15	74.571	3.025	No
ECMW12 vs ECMW11	63.429	2.678	Do Not Test
ECMW12 vs ECMW14	49.357	2.084	Do Not Test
ECMW12 vs ECMW19	45.238	1.835	Do Not Test
ECMW12 vs ECMW21	42.357	1.788	Do Not Test
ECMW12 vs ECMW18	40.988	1.663	Do Not Test
ECMW12 vs ECMW22	26.786	1.131	Do Not Test
ECMW12 vs ECMW16	19.571	0.826	Do Not Test
ECMW12 vs ECMW20	12.500	0.528	Do Not Test
ECMW12 vs ECMW17	9.286	0.392	Do Not Test
ECMW12 vs ECMW10	7.286	0.308	Do Not Test
ECMW12 vs ECMW7	6.384	0.278	Do Not Test
ECMW7 vs CNTL	69.092	3.753	Yes
ECMW7 vs ECMW15	68.188	2.849	Do Not Test
ECMW7 vs ECMW11	57.045	2.487	Do Not Test
ECMW7 vs ECMW14	42.973	1.874	Do Not Test
ECMW7 vs ECMW19	38.854	1.624	Do Not Test
ECMW7 vs ECMW21	35.973	1.569	Do Not Test

ECMW7 vs ECMW18	34.604	1.446	Do Not Test
ECMW7 vs ECMW22	20.402	0.890	Do Not Test
ECMW7 vs ECMW16	13.188	0.575	Do Not Test
ECMW7 vs ECMW20	6.116	0.267	Do Not Test
ECMW7 vs ECMW17	2.902	0.127	Do Not Test
ECMW7 vs ECMW10	0.902	0.0393	Do Not Test
ECMW10 vs CNTL	68.190	3.526	No
ECMW10 vs ECMW15	67.286	2.729	Do Not Test
ECMW10 vs ECMW11	56.143	2.370	Do Not Test
ECMW10 vs ECMW14	42.071	1.776	Do Not Test
ECMW10 vs ECMW19	37.952	1.539	Do Not Test
ECMW10 vs ECMW21	35.071	1.481	Do Not Test
ECMW10 vs ECMW18	33.702	1.367	Do Not Test
ECMW10 vs ECMW22	19.500	0.823	Do Not Test
ECMW10 vs ECMW16	12.286	0.519	Do Not Test
ECMW10 vs ECMW20	5.214	0.220	Do Not Test
ECMW10 vs ECMW17	2.000	0.0844	Do Not Test
ECMW17 vs CNTL	66.190	3.423	Do Not Test
ECMW17 vs ECMW15	65.286	2.648	Do Not Test
ECMW17 vs ECMW11	54.143	2.286	Do Not Test
ECMW17 vs ECMW14	40.071	1.692	Do Not Test
ECMW17 vs ECMW19	35.952	1.458	Do Not Test
ECMW17 vs ECMW21	33.071	1.396	Do Not Test
ECMW17 vs ECMW18	31.702	1.286	Do Not Test
ECMW17 vs ECMW22	17.500	0.739	Do Not Test
ECMW17 vs ECMW16	10.286	0.434	Do Not Test
ECMW17 vs ECMW20	3.214	0.136	Do Not Test
ECMW20 vs CNTL	62.976	3.256	Do Not Test
ECMW20 vs ECMW15	62.071	2.518	Do Not Test
ECMW20 vs ECMW11	50.929	2.150	Do Not Test
ECMW20 vs ECMW14	36.857	1.556	Do Not Test
ECMW20 vs ECMW19	32.738	1.328	Do Not Test
ECMW20 vs ECMW21	29.857	1.261	Do Not Test
ECMW20 vs ECMW18	28.488	1.156	Do Not Test
ECMW20 vs ECMW22	14.286	0.603	Do Not Test
ECMW20 vs ECMW16	7.071	0.299	Do Not Test
ECMW16 vs CNTL	55.905	2.891	Do Not Test
ECMW16 vs ECMW15	55.000	2.231	Do Not Test
ECMW16 vs ECMW11	43.857	1.852	Do Not Test
ECMW16 vs ECMW14	29.786	1.258	Do Not Test
ECMW16 vs ECMW19	25.667	1.041	Do Not Test
ECMW16 vs ECMW21	22.786	0.962	Do Not Test
ECMW16 vs ECMW18	21.417	0.869	Do Not Test
ECMW16 vs ECMW22	7.214	0.305	Do Not Test
ECMW22 vs CNTL	48.690	2.518	Do Not Test
ECMW22 vs ECMW15	47.786	1.938	Do Not Test
ECMW22 vs ECMW11	36.643	1.547	Do Not Test
ECMW22 vs ECMW14	22.571	0.953	Do Not Test
ECMW22 vs ECMW19	18.452	0.748	Do Not Test
ECMW22 vs ECMW21	15.571	0.657	Do Not Test
ECMW22 vs ECMW18	14.202	0.576	Do Not Test
ECMW18 vs CNTL	34.488	1.681	Do Not Test
ECMW18 vs ECMW15	33.583	1.313	Do Not Test
ECMW18 vs ECMW11	22.440	0.910	Do Not Test
ECMW18 vs ECMW14	8.369	0.339	Do Not Test
ECMW18 vs ECMW19	4.250	0.166	Do Not Test

ECMW18 vs ECMW21	1.369	0.0555	Do Not Test
ECMW21 vs CNTL	33.119	1.713	Do Not Test
ECMW21 vs ECMW15	32.214	1.307	Do Not Test
ECMW21 vs ECMW11	21.071	0.890	Do Not Test
ECMW21 vs ECMW14	7.000	0.296	Do Not Test
ECMW21 vs ECMW19	2.881	0.117	Do Not Test
ECMW19 vs CNTL	30.238	1.474	Do Not Test
ECMW19 vs ECMW15	29.333	1.147	Do Not Test
ECMW19 vs ECMW11	18.190	0.738	Do Not Test
ECMW19 vs ECMW14	4.119	0.167	Do Not Test
ECMW14 vs CNTL	26.119	1.351	Do Not Test
ECMW14 vs ECMW15	25.214	1.023	Do Not Test
ECMW14 vs ECMW11	14.071	0.594	Do Not Test
ECMW11 vs CNTL	12.048	0.623	Do Not Test
ECMW11 vs ECMW15	11.143	0.452	Do Not Test
ECMW15 vs CNTL	0.905	0.0441	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

ORP

One Way Analysis of Variance Wednesday, November 03, 2021, 10:01:46 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: ORP (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, November 03, 2021, 10:01:46 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	43	249.000	55.100	352.000
ECMW6	52	45	267.900	76.600	321.000
ECMW7	52	45	307.700	131.700	409.000
ECMW8	51	44	309.000	133.200	441.000
ECMW1051		44	242.000	56.800	265.000
ECMW1150		43	229.000	49.500	277.000
ECMW1247		41	-39.400	-150.250	-2.000
ECMW1350		44	310.500	-73.750	392.250
ECMW1450		42	181.650	-14.625	316.250
ECMW1549		43	213.700	95.500	381.750
ECMW1649		42	180.000	140.700	230.000
ECMW1750		44	191.500	46.350	351.000
ECMW1849		42	109.700	-78.000	326.000
CNTL	144	126	157.500	-7.250	310.250
ECMW4	50	43	269.200	116.800	387.000
ECMW9	49	42	183.000	60.700	249.600
ECMW1940		34	64.500	-76.250	267.200
ECMW2040		35	149.900	12.600	288.000
ECMW2140		34	231.000	-67.425	367.500
ECMW2240		35	15.000	-25.050	262.000

H = 20.881 with 19 degrees of freedom. (P = 0.343)

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 = 0.343)

pH

One Way Analysis of Variance Wednesday, November 03, 2021, 10:01:57 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 10:01:57 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	1	5.030	4.575	5.620
ECMW6	52	2	4.300	3.820	4.625
ECMW7	52	2	4.425	3.978	5.255
ECMW8	51	2	3.950	3.630	4.310
ECMW1051		1	4.445	4.060	4.930
ECMW1150		1	4.420	4.120	4.830
ECMW1247		1	5.800	5.580	6.020
ECMW1350		3	4.970	4.710	5.300
ECMW1450		2	4.910	4.500	5.282
ECMW1549		2	4.860	4.360	5.360
ECMW1649		1	4.610	4.273	5.078
ECMW1750		1	4.540	4.085	5.190
ECMW1849		2	5.700	5.230	6.170
CNTL	144	3	5.480	5.100	6.000
ECMW4	50	1	4.040	3.750	4.375
ECMW9	49	1	5.515	5.320	5.815
ECMW1940		1	5.920	5.510	6.270
ECMW2040		2	5.630	5.280	6.065
ECMW2140		1	5.370	4.720	5.910
ECMW2240		0	5.840	5.527	6.265

H = 386.609 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
ECMW19 vs ECMW8	582.328	9.185	Yes
ECMW19 vs ECMW4	575.848	9.082	Yes
ECMW19 vs ECMW6	496.806	7.871	Yes
ECMW19 vs ECMW11	454.563	7.169	Yes
ECMW19 vs ECMW10	451.246	7.149	Yes
ECMW19 vs ECMW7	422.376	6.692	Yes

ECMW19 vs ECMW17	393.165	6.201	Yes
ECMW19 vs ECMW16	380.798	5.978	Yes
ECMW19 vs ECMW15	346.480	5.414	Yes
ECMW19 vs ECMW14	323.944	5.086	Yes
ECMW19 vs ECMW13	270.597	4.228	Yes
ECMW19 vs ECMW5	251.930	3.973	Yes
ECMW19 vs ECMW21	195.667	2.924	No
ECMW19 vs CNTL	129.990	2.432	Do Not Test
ECMW19 vs ECMW9	105.465	1.656	Do Not Test
ECMW19 vs ECMW18	92.724	1.449	Do Not Test
ECMW19 vs ECMW20	73.480	1.091	Do Not Test
ECMW19 vs ECMW12	30.028	0.467	Do Not Test
ECMW19 vs ECMW22	1.206	0.0181	Do Not Test
ECMW22 vs ECMW8	581.121	9.230	Yes
ECMW22 vs ECMW4	574.642	9.127	Yes
ECMW22 vs ECMW6	495.600	7.907	Yes
ECMW22 vs ECMW11	453.356	7.201	Yes
ECMW22 vs ECMW10	450.040	7.180	Yes
ECMW22 vs ECMW7	421.170	6.720	Yes
ECMW22 vs ECMW17	391.958	6.226	Yes
ECMW22 vs ECMW16	379.592	6.001	Yes
ECMW22 vs ECMW15	345.273	5.432	Yes
ECMW22 vs ECMW14	322.737	5.102	Yes
ECMW22 vs ECMW13	269.390	4.238	Yes
ECMW22 vs ECMW5	250.723	3.982	Yes
ECMW22 vs ECMW21	194.460	2.925	Do Not Test
ECMW22 vs CNTL	128.784	2.433	Do Not Test
ECMW22 vs ECMW9	104.258	1.648	Do Not Test
ECMW22 vs ECMW18	91.518	1.440	Do Not Test
ECMW22 vs ECMW20	72.274	1.080	Do Not Test
ECMW22 vs ECMW12	28.822	0.451	Do Not Test
ECMW12 vs ECMW8	552.300	9.105	Yes
ECMW12 vs ECMW4	545.820	8.998	Yes
ECMW12 vs ECMW6	466.778	7.733	Yes
ECMW12 vs ECMW11	424.534	6.999	Yes
ECMW12 vs ECMW10	421.218	6.978	Yes
ECMW12 vs ECMW7	392.348	6.500	Yes
ECMW12 vs ECMW17	363.136	5.987	Yes
ECMW12 vs ECMW16	350.770	5.754	Yes
ECMW12 vs ECMW15	316.452	5.164	Yes
ECMW12 vs ECMW14	293.916	4.821	Yes
ECMW12 vs ECMW13	240.569	3.926	Yes
ECMW12 vs ECMW5	221.902	3.658	Yes
ECMW12 vs ECMW21	165.639	2.576	Do Not Test
ECMW12 vs CNTL	99.962	1.993	Do Not Test
ECMW12 vs ECMW9	75.437	1.237	Do Not Test
ECMW12 vs ECMW18	62.696	1.023	Do Not Test
ECMW12 vs ECMW20	43.452	0.671	Do Not Test
ECMW20 vs ECMW8	508.848	7.967	Yes
ECMW20 vs ECMW4	502.368	7.866	Yes
ECMW20 vs ECMW6	423.326	6.658	Yes
ECMW20 vs ECMW11	381.082	5.967	Yes
ECMW20 vs ECMW10	377.766	5.941	Yes
ECMW20 vs ECMW7	348.896	5.487	Yes
ECMW20 vs ECMW17	319.684	5.006	Yes
ECMW20 vs ECMW16	307.318	4.790	Yes

ECMW20 vs ECMW15	273.000	4.235	Yes
ECMW20 vs ECMW14	250.464	3.904	Yes
ECMW20 vs ECMW13	197.117	3.058	No
ECMW20 vs ECMW5	178.450	2.794	Do Not Test
ECMW20 vs ECMW21	122.187	1.814	Do Not Test
ECMW20 vs CNTL	56.510	1.046	Do Not Test
ECMW20 vs ECMW9	31.985	0.499	Do Not Test
ECMW20 vs ECMW18	19.244	0.299	Do Not Test
ECMW18 vs ECMW8	489.603	8.116	Yes
ECMW18 vs ECMW4	483.124	8.009	Yes
ECMW18 vs ECMW6	404.082	6.732	Yes
ECMW18 vs ECMW11	361.838	5.998	Yes
ECMW18 vs ECMW10	358.522	5.973	Yes
ECMW18 vs ECMW7	329.652	5.492	Yes
ECMW18 vs ECMW17	300.440	4.980	Yes
ECMW18 vs ECMW16	288.074	4.751	Yes
ECMW18 vs ECMW15	253.755	4.163	Yes
ECMW18 vs ECMW14	231.219	3.814	Yes
ECMW18 vs ECMW13	177.872	2.918	Do Not Test
ECMW18 vs ECMW5	159.205	2.639	Do Not Test
ECMW18 vs ECMW21	102.942	1.609	Do Not Test
ECMW18 vs CNTL	37.266	0.749	Do Not Test
ECMW18 vs ECMW9	12.740	0.210	Do Not Test
ECMW9 vs ECMW8	476.863	7.947	Yes
ECMW9 vs ECMW4	470.384	7.839	Yes
ECMW9 vs ECMW6	391.342	6.555	Yes
ECMW9 vs ECMW11	349.098	5.818	Yes
ECMW9 vs ECMW10	345.782	5.792	Yes
ECMW9 vs ECMW7	316.912	5.308	Yes
ECMW9 vs ECMW17	287.700	4.795	Yes
ECMW9 vs ECMW16	275.333	4.565	Yes
ECMW9 vs ECMW15	241.015	3.975	Yes
ECMW9 vs ECMW14	218.479	3.623	No
ECMW9 vs ECMW13	165.132	2.724	Do Not Test
ECMW9 vs ECMW5	146.465	2.441	Do Not Test
ECMW9 vs ECMW21	90.202	1.416	Do Not Test
ECMW9 vs CNTL	24.526	0.497	Do Not Test
CNTL vs ECMW8	452.337	9.232	Yes
CNTL vs ECMW4	445.858	9.100	Yes
CNTL vs ECMW6	366.816	7.543	Yes
CNTL vs ECMW11	324.572	6.624	Yes
CNTL vs ECMW10	321.256	6.606	Yes
CNTL vs ECMW7	292.386	6.012	Yes
CNTL vs ECMW17	263.174	5.371	Yes
CNTL vs ECMW16	250.808	5.080	Yes
CNTL vs ECMW15	216.489	4.350	Yes
CNTL vs ECMW14	193.953	3.928	Do Not Test
CNTL vs ECMW13	140.606	2.825	Do Not Test
CNTL vs ECMW5	121.939	2.489	Do Not Test
CNTL vs ECMW21	65.676	1.229	Do Not Test
ECMW21 vs ECMW8	386.661	6.098	Yes
ECMW21 vs ECMW4	380.182	5.996	Yes
ECMW21 vs ECMW6	301.140	4.771	Yes
ECMW21 vs ECMW11	258.896	4.083	Yes
ECMW21 vs ECMW10	255.580	4.049	Yes
ECMW21 vs ECMW7	226.710	3.592	No

ECMW21 vs ECMW17	197.498	3.115	Do Not Test
ECMW21 vs ECMW16	185.131	2.907	Do Not Test
ECMW21 vs ECMW15	150.813	2.357	Do Not Test
ECMW21 vs ECMW14	128.277	2.014	Do Not Test
ECMW21 vs ECMW13	74.930	1.171	Do Not Test
ECMW21 vs ECMW5	56.263	0.887	Do Not Test
ECMW5 vs ECMW8	330.398	5.535	Yes
ECMW5 vs ECMW4	323.918	5.427	Yes
ECMW5 vs ECMW6	244.877	4.123	Yes
ECMW5 vs ECMW11	202.633	3.395	No
ECMW5 vs ECMW10	199.317	3.356	Do Not Test
ECMW5 vs ECMW7	170.447	2.870	Do Not Test
ECMW5 vs ECMW17	141.235	2.366	Do Not Test
ECMW5 vs ECMW16	128.868	2.148	Do Not Test
ECMW5 vs ECMW15	94.550	1.567	Do Not Test
ECMW5 vs ECMW14	72.014	1.200	Do Not Test
ECMW5 vs ECMW13	18.667	0.309	Do Not Test
ECMW13 vs ECMW8	311.731	5.168	Yes
ECMW13 vs ECMW4	305.251	5.060	Yes
ECMW13 vs ECMW6	226.210	3.768	Yes
ECMW13 vs ECMW11	183.966	3.050	Do Not Test
ECMW13 vs ECMW10	180.650	3.009	Do Not Test
ECMW13 vs ECMW7	151.780	2.529	Do Not Test
ECMW13 vs ECMW17	122.568	2.032	Do Not Test
ECMW13 vs ECMW16	110.201	1.818	Do Not Test
ECMW13 vs ECMW15	75.883	1.245	Do Not Test
ECMW13 vs ECMW14	53.347	0.880	Do Not Test
ECMW14 vs ECMW8	258.384	4.306	Yes
ECMW14 vs ECMW4	251.904	4.198	Yes
ECMW14 vs ECMW6	172.863	2.895	No
ECMW14 vs ECMW11	130.619	2.177	Do Not Test
ECMW14 vs ECMW10	127.303	2.132	Do Not Test
ECMW14 vs ECMW7	98.433	1.649	Do Not Test
ECMW14 vs ECMW17	69.221	1.154	Do Not Test
ECMW14 vs ECMW16	56.854	0.943	Do Not Test
ECMW14 vs ECMW15	22.536	0.372	Do Not Test
ECMW15 vs ECMW8	235.848	3.910	Yes
ECMW15 vs ECMW4	229.368	3.802	Yes
ECMW15 vs ECMW6	150.327	2.504	Do Not Test
ECMW15 vs ECMW11	108.083	1.792	Do Not Test
ECMW15 vs ECMW10	104.767	1.745	Do Not Test
ECMW15 vs ECMW7	75.897	1.264	Do Not Test
ECMW15 vs ECMW17	46.685	0.774	Do Not Test
ECMW15 vs ECMW16	34.318	0.566	Do Not Test
ECMW16 vs ECMW8	201.530	3.359	No
ECMW16 vs ECMW4	195.050	3.251	Do Not Test
ECMW16 vs ECMW6	116.008	1.943	Do Not Test
ECMW16 vs ECMW11	73.764	1.229	Do Not Test
ECMW16 vs ECMW10	70.448	1.180	Do Not Test
ECMW16 vs ECMW7	41.578	0.696	Do Not Test
ECMW16 vs ECMW17	12.366	0.206	Do Not Test
ECMW17 vs ECMW8	189.163	3.169	Do Not Test
ECMW17 vs ECMW4	182.684	3.060	Do Not Test
ECMW17 vs ECMW6	103.642	1.745	Do Not Test
ECMW17 vs ECMW11	61.398	1.029	Do Not Test
ECMW17 vs ECMW10	58.082	0.978	Do Not Test

ECMW17 vs ECMW7	29.212	0.492	Do Not Test
ECMW7 vs ECMW8	159.951	2.693	Do Not Test
ECMW7 vs ECMW4	153.472	2.584	Do Not Test
ECMW7 vs ECMW6	74.430	1.260	Do Not Test
ECMW7 vs ECMW11	32.186	0.542	Do Not Test
ECMW7 vs ECMW10	28.870	0.489	Do Not Test
ECMW10 vs ECMW8	131.081	2.207	Do Not Test
ECMW10 vs ECMW4	124.602	2.098	Do Not Test
ECMW10 vs ECMW6	45.560	0.771	Do Not Test
ECMW10 vs ECMW11	3.316	0.0558	Do Not Test
ECMW11 vs ECMW8	127.765	2.140	Do Not Test
ECMW11 vs ECMW4	121.286	2.032	Do Not Test
ECMW11 vs ECMW6	42.244	0.711	Do Not Test
ECMW6 vs ECMW8	85.521	1.440	Do Not Test
ECMW6 vs ECMW4	79.042	1.331	Do Not Test
ECMW4 vs ECMW8	6.480	0.109	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Phosphorus

One Way Analysis of Variance Wednesday, November 03, 2021, 10:02:08 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Phosphorus (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, November 03, 2021, 10:02:08 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	43	0.0200	0.0200	0.0200
ECMW6	52	45	0.0200	0.0200	0.0270
ECMW7	52	46	0.0675	0.0200	0.112
ECMW8	51	44	0.0200	0.0200	0.0310
ECMW10	51	44	0.0200	0.0200	0.0300
ECMW11	50	43	0.0200	0.0200	0.0440
ECMW12	47	40	0.145	0.0890	0.307
ECMW13	50	43	0.0210	0.0200	0.0610
ECMW14	50	43	0.0200	0.0200	0.0200
ECMW15	49	42	0.0200	0.0200	0.0210
ECMW16	49	42	0.0200	0.0200	0.0200
ECMW17	50	43	0.0200	0.0200	0.0850
ECMW18	49	43	0.410	0.177	0.728
CNTL	144	123	0.0600	0.0245	0.193
ECMW4	50	43	0.0200	0.0200	0.0200
ECMW9	49	42	0.248	0.230	0.307
ECMW19	40	34	0.0835	0.0645	0.130
ECMW20	40	34	0.0380	0.0200	0.108
ECMW21	40	34	0.0210	0.0200	0.0505
ECMW22	40	34	0.0345	0.0200	0.104

H = 82.597 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 ECMW5	103.083	4.322	Yes
ECMW18 vs ECMW14	103.083	4.322	Yes
ECMW18 vs ECMW16	96.155	4.032	Yes
ECMW18 vs ECMW4	95.798	4.017	Yes
ECMW18 vs ECMW15	92.369	3.873	Yes
ECMW18 vs ECMW10	88.512	3.711	Yes

ECMW18 vs ECMW11	82.869	3.475	No
ECMW18 vs ECMW8	80.940	3.394	Do Not Test
ECMW18 vs ECMW6	78.583	3.295	Do Not Test
ECMW18 vs ECMW17	76.298	3.199	Do Not Test
ECMW18 vs ECMW21	74.917	3.027	Do Not Test
ECMW18 vs ECMW13	70.655	2.963	Do Not Test
ECMW18 vs ECMW22	60.417	2.441	Do Not Test
ECMW18 vs ECMW20	58.000	2.343	Do Not Test
ECMW18 vs ECMW7	53.250	2.152	Do Not Test
ECMW18 vs CNTL	43.060	2.170	Do Not Test
ECMW18 vs ECMW19	28.750	1.162	Do Not Test
ECMW18 vs ECMW12	13.298	0.558	Do Not Test
ECMW18 vs ECMW9	8.083	0.339	Do Not Test
ECMW9 vs ECMW5	95.000	4.146	Yes
ECMW9 vs ECMW14	95.000	4.146	Yes
ECMW9 vs ECMW16	88.071	3.844	Yes
ECMW9 vs ECMW4	87.714	3.828	Yes
ECMW9 vs ECMW15	84.286	3.678	Yes
ECMW9 vs ECMW10	80.429	3.510	No
ECMW9 vs ECMW11	74.786	3.264	Do Not Test
ECMW9 vs ECMW8	72.857	3.180	Do Not Test
ECMW9 vs ECMW6	70.500	3.077	Do Not Test
ECMW9 vs ECMW17	68.214	2.977	Do Not Test
ECMW9 vs ECMW21	66.833	2.802	Do Not Test
ECMW9 vs ECMW13	62.571	2.731	Do Not Test
ECMW9 vs ECMW22	52.333	2.194	Do Not Test
ECMW9 vs ECMW20	49.917	2.093	Do Not Test
ECMW9 vs ECMW7	45.167	1.894	Do Not Test
ECMW9 vs CNTL	34.976	1.869	Do Not Test
ECMW9 vs ECMW19	20.667	0.867	Do Not Test
ECMW9 vs ECMW12	5.214	0.228	Do Not Test
ECMW12 vs ECMW5	89.786	3.918	Yes
ECMW12 vs ECMW14	89.786	3.918	Yes
ECMW12 vs ECMW16	82.857	3.616	No
ECMW12 vs ECMW4	82.500	3.600	Do Not Test
ECMW12 vs ECMW15	79.071	3.451	Do Not Test
ECMW12 vs ECMW10	75.214	3.282	Do Not Test
ECMW12 vs ECMW11	69.571	3.036	Do Not Test
ECMW12 vs ECMW8	67.643	2.952	Do Not Test
ECMW12 vs ECMW6	65.286	2.849	Do Not Test
ECMW12 vs ECMW17	63.000	2.749	Do Not Test
ECMW12 vs ECMW21	61.619	2.584	Do Not Test
ECMW12 vs ECMW13	57.357	2.503	Do Not Test
ECMW12 vs ECMW22	47.119	1.976	Do Not Test
ECMW12 vs ECMW20	44.702	1.874	Do Not Test
ECMW12 vs ECMW7	39.952	1.675	Do Not Test
ECMW12 vs CNTL	29.762	1.591	Do Not Test
ECMW12 vs ECMW19	15.452	0.648	Do Not Test
ECMW19 vs ECMW5	74.333	3.117	No
ECMW19 vs ECMW14	74.333	3.117	Do Not Test
ECMW19 vs ECMW16	67.405	2.826	Do Not Test
ECMW19 vs ECMW4	67.048	2.811	Do Not Test
ECMW19 vs ECMW15	63.619	2.668	Do Not Test
ECMW19 vs ECMW10	59.762	2.506	Do Not Test
ECMW19 vs ECMW11	54.119	2.269	Do Not Test
ECMW19 vs ECMW8	52.190	2.188	Do Not Test

ECMW19 vs ECMW6	49.833	2.089	Do Not Test
ECMW19 vs ECMW17	47.548	1.994	Do Not Test
ECMW19 vs ECMW21	46.167	1.865	Do Not Test
ECMW19 vs ECMW13	41.905	1.757	Do Not Test
ECMW19 vs ECMW22	31.667	1.279	Do Not Test
ECMW19 vs ECMW20	29.250	1.182	Do Not Test
ECMW19 vs ECMW7	24.500	0.990	Do Not Test
ECMW19 vs CNTL	14.310	0.721	Do Not Test
CNTL vs ECMW5	60.024	3.208	Do Not Test
CNTL vs ECMW14	60.024	3.208	Do Not Test
CNTL vs ECMW16	53.095	2.838	Do Not Test
CNTL vs ECMW4	52.738	2.819	Do Not Test
CNTL vs ECMW15	49.310	2.636	Do Not Test
CNTL vs ECMW10	45.452	2.429	Do Not Test
CNTL vs ECMW11	39.810	2.128	Do Not Test
CNTL vs ECMW8	37.881	2.025	Do Not Test
CNTL vs ECMW6	35.524	1.899	Do Not Test
CNTL vs ECMW17	33.238	1.777	Do Not Test
CNTL vs ECMW21	31.857	1.605	Do Not Test
CNTL vs ECMW13	27.595	1.475	Do Not Test
CNTL vs ECMW22	17.357	0.875	Do Not Test
CNTL vs ECMW20	14.940	0.753	Do Not Test
CNTL vs ECMW7	10.190	0.514	Do Not Test
ECMW7 vs ECMW5	49.833	2.089	Do Not Test
ECMW7 vs ECMW14	49.833	2.089	Do Not Test
ECMW7 vs ECMW16	42.905	1.799	Do Not Test
ECMW7 vs ECMW4	42.548	1.784	Do Not Test
ECMW7 vs ECMW15	39.119	1.640	Do Not Test
ECMW7 vs ECMW10	35.262	1.479	Do Not Test
ECMW7 vs ECMW11	29.619	1.242	Do Not Test
ECMW7 vs ECMW8	27.690	1.161	Do Not Test
ECMW7 vs ECMW6	25.333	1.062	Do Not Test
ECMW7 vs ECMW17	23.048	0.966	Do Not Test
ECMW7 vs ECMW21	21.667	0.875	Do Not Test
ECMW7 vs ECMW13	17.405	0.730	Do Not Test
ECMW7 vs ECMW22	7.167	0.290	Do Not Test
ECMW7 vs ECMW20	4.750	0.192	Do Not Test
ECMW20 vs ECMW5	45.083	1.890	Do Not Test
ECMW20 vs ECMW14	45.083	1.890	Do Not Test
ECMW20 vs ECMW16	38.155	1.600	Do Not Test
ECMW20 vs ECMW4	37.798	1.585	Do Not Test
ECMW20 vs ECMW15	34.369	1.441	Do Not Test
ECMW20 vs ECMW10	30.512	1.279	Do Not Test
ECMW20 vs ECMW11	24.869	1.043	Do Not Test
ECMW20 vs ECMW8	22.940	0.962	Do Not Test
ECMW20 vs ECMW6	20.583	0.863	Do Not Test
ECMW20 vs ECMW17	18.298	0.767	Do Not Test
ECMW20 vs ECMW21	16.917	0.684	Do Not Test
ECMW20 vs ECMW13	12.655	0.531	Do Not Test
ECMW20 vs ECMW22	2.417	0.0976	Do Not Test
ECMW22 vs ECMW5	42.667	1.789	Do Not Test
ECMW22 vs ECMW14	42.667	1.789	Do Not Test
ECMW22 vs ECMW16	35.738	1.498	Do Not Test
ECMW22 vs ECMW4	35.381	1.484	Do Not Test
ECMW22 vs ECMW15	31.952	1.340	Do Not Test
ECMW22 vs ECMW10	28.095	1.178	Do Not Test

ECMW22 vs ECMW11	22.452	0.941	Do Not Test
ECMW22 vs ECMW8	20.524	0.861	Do Not Test
ECMW22 vs ECMW6	18.167	0.762	Do Not Test
ECMW22 vs ECMW17	15.881	0.666	Do Not Test
ECMW22 vs ECMW21	14.500	0.586	Do Not Test
ECMW22 vs ECMW13	10.238	0.429	Do Not Test
ECMW13 vs ECMW5	32.429	1.415	Do Not Test
ECMW13 vs ECMW14	32.429	1.415	Do Not Test
ECMW13 vs ECMW16	25.500	1.113	Do Not Test
ECMW13 vs ECMW4	25.143	1.097	Do Not Test
ECMW13 vs ECMW15	21.714	0.948	Do Not Test
ECMW13 vs ECMW10	17.857	0.779	Do Not Test
ECMW13 vs ECMW11	12.214	0.533	Do Not Test
ECMW13 vs ECMW8	10.286	0.449	Do Not Test
ECMW13 vs ECMW6	7.929	0.346	Do Not Test
ECMW13 vs ECMW17	5.643	0.246	Do Not Test
ECMW13 vs ECMW21	4.262	0.179	Do Not Test
ECMW21 vs ECMW5	28.167	1.181	Do Not Test
ECMW21 vs ECMW14	28.167	1.181	Do Not Test
ECMW21 vs ECMW16	21.238	0.891	Do Not Test
ECMW21 vs ECMW4	20.881	0.876	Do Not Test
ECMW21 vs ECMW15	17.452	0.732	Do Not Test
ECMW21 vs ECMW10	13.595	0.570	Do Not Test
ECMW21 vs ECMW11	7.952	0.333	Do Not Test
ECMW21 vs ECMW8	6.024	0.253	Do Not Test
ECMW21 vs ECMW6	3.667	0.154	Do Not Test
ECMW21 vs ECMW17	1.381	0.0579	Do Not Test
ECMW17 vs ECMW5	26.786	1.169	Do Not Test
ECMW17 vs ECMW14	26.786	1.169	Do Not Test
ECMW17 vs ECMW16	19.857	0.867	Do Not Test
ECMW17 vs ECMW4	19.500	0.851	Do Not Test
ECMW17 vs ECMW15	16.071	0.701	Do Not Test
ECMW17 vs ECMW10	12.214	0.533	Do Not Test
ECMW17 vs ECMW11	6.571	0.287	Do Not Test
ECMW17 vs ECMW8	4.643	0.203	Do Not Test
ECMW17 vs ECMW6	2.286	0.0998	Do Not Test
ECMW6 vs ECMW5	24.500	1.069	Do Not Test
ECMW6 vs ECMW14	24.500	1.069	Do Not Test
ECMW6 vs ECMW16	17.571	0.767	Do Not Test
ECMW6 vs ECMW4	17.214	0.751	Do Not Test
ECMW6 vs ECMW15	13.786	0.602	Do Not Test
ECMW6 vs ECMW10	9.929	0.433	Do Not Test
ECMW6 vs ECMW11	4.286	0.187	Do Not Test
ECMW6 vs ECMW8	2.357	0.103	Do Not Test
ECMW8 vs ECMW5	22.143	0.966	Do Not Test
ECMW8 vs ECMW14	22.143	0.966	Do Not Test
ECMW8 vs ECMW16	15.214	0.664	Do Not Test
ECMW8 vs ECMW4	14.857	0.648	Do Not Test
ECMW8 vs ECMW15	11.429	0.499	Do Not Test
ECMW8 vs ECMW10	7.571	0.330	Do Not Test
ECMW8 vs ECMW11	1.929	0.0842	Do Not Test
ECMW11 vs ECMW5	20.214	0.882	Do Not Test
ECMW11 vs ECMW14	20.214	0.882	Do Not Test
ECMW11 vs ECMW16	13.286	0.580	Do Not Test
ECMW11 vs ECMW4	12.929	0.564	Do Not Test
ECMW11 vs ECMW15	9.500	0.415	Do Not Test

ECMW11 vs ECMW10	5.643	0.246	Do Not Test
ECMW10 vs ECMW5	14.571	0.636	Do Not Test
ECMW10 vs ECMW14	14.571	0.636	Do Not Test
ECMW10 vs ECMW16	7.643	0.334	Do Not Test
ECMW10 vs ECMW4	7.286	0.318	Do Not Test
ECMW10 vs ECMW15	3.857	0.168	Do Not Test
ECMW15 vs ECMW5	10.714	0.468	Do Not Test
ECMW15 vs ECMW14	10.714	0.468	Do Not Test
ECMW15 vs ECMW16	3.786	0.165	Do Not Test
ECMW15 vs ECMW4	3.429	0.150	Do Not Test
ECMW4 vs ECMW5	7.286	0.318	Do Not Test
ECMW4 vs ECMW14	7.286	0.318	Do Not Test
ECMW4 vs ECMW16	0.357	0.0156	Do Not Test
ECMW16 vs ECMW5	6.929	0.302	Do Not Test
ECMW16 vs ECMW14	6.929	0.302	Do Not Test
ECMW14 vs ECMW5	0.000	0.000	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Total Phosphorus

One Way Analysis of Variance Wednesday, November 03, 2021, 10:02:19 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Total Phosphorus (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, November 03, 2021, 10:02:19 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	45	0.0200	0.0200	0.0200
ECMW6	52	45	0.0200	0.0200	0.0200
ECMW7	52	45	0.0200	0.0200	0.0910
ECMW8	51	46	0.0200	0.0200	0.0200
ECMW10	51	46	0.0200	0.0200	0.0285
ECMW11	50	45	0.0200	0.0200	0.0305
ECMW12	47	42	0.0570	0.0380	0.271
ECMW13	50	45	0.0200	0.0200	0.0405
ECMW14	50	45	0.0200	0.0200	0.0895
ECMW15	49	44	0.0200	0.0200	0.0215
ECMW16	49	44	0.0200	0.0200	0.0200
ECMW17	50	45	0.0200	0.0200	0.0200
ECMW18	49	43	0.344	0.181	0.665
CNTL	144	129	0.161	0.0200	0.236
ECMW4	50	45	0.0200	0.0200	0.0200
ECMW9	49	44	0.133	0.0905	0.262
ECMW19	40	35	0.132	0.0485	0.230
ECMW20	40	35	0.0870	0.0370	0.184
ECMW21	40	35	0.0200	0.0200	0.0225
ECMW22	40	35	0.0610	0.0400	0.122

H = 71.153 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 ECMW6	69.155	3.728	Yes
ECMW18 vs ECMW8	64.583	3.199	No
ECMW18 vs ECMW16	64.583	3.199	Do Not Test
ECMW18 vs ECMW5	64.583	3.199	Do Not Test
ECMW18 vs ECMW17	64.583	3.199	Do Not Test
ECMW18 vs ECMW4	64.583	3.199	Do Not Test

ECMW18 vs ECMW15	58.183	2.882	Do Not Test
ECMW18 vs ECMW21	57.983	2.872	Do Not Test
ECMW18 vs ECMW10	56.683	2.808	Do Not Test
ECMW18 vs ECMW14	51.783	2.565	Do Not Test
ECMW18 vs ECMW11	50.383	2.496	Do Not Test
ECMW18 vs ECMW13	48.983	2.426	Do Not Test
ECMW18 vs ECMW7	41.440	2.234	Do Not Test
ECMW18 vs ECMW12	18.483	0.915	Do Not Test
ECMW18 vs CNTL	17.583	1.092	Do Not Test
ECMW18 vs ECMW22	15.883	0.787	Do Not Test
ECMW18 vs ECMW20	11.783	0.584	Do Not Test
ECMW18 vs ECMW19	7.483	0.371	Do Not Test
ECMW18 vs ECMW9	2.283	0.113	Do Not Test
ECMW9 vs ECMW6	66.871	3.425	No
ECMW9 vs ECMW8	62.300	2.954	Do Not Test
ECMW9 vs ECMW16	62.300	2.954	Do Not Test
ECMW9 vs ECMW5	62.300	2.954	Do Not Test
ECMW9 vs ECMW17	62.300	2.954	Do Not Test
ECMW9 vs ECMW4	62.300	2.954	Do Not Test
ECMW9 vs ECMW15	55.900	2.651	Do Not Test
ECMW9 vs ECMW21	55.700	2.641	Do Not Test
ECMW9 vs ECMW10	54.400	2.580	Do Not Test
ECMW9 vs ECMW14	49.500	2.347	Do Not Test
ECMW9 vs ECMW11	48.100	2.281	Do Not Test
ECMW9 vs ECMW13	46.700	2.215	Do Not Test
ECMW9 vs ECMW7	39.157	2.006	Do Not Test
ECMW9 vs ECMW12	16.200	0.768	Do Not Test
ECMW9 vs CNTL	15.300	0.889	Do Not Test
ECMW9 vs ECMW22	13.600	0.645	Do Not Test
ECMW9 vs ECMW20	9.500	0.451	Do Not Test
ECMW9 vs ECMW19	5.200	0.247	Do Not Test
ECMW19 vs ECMW6	61.671	3.159	Do Not Test
ECMW19 vs ECMW8	57.100	2.708	Do Not Test
ECMW19 vs ECMW16	57.100	2.708	Do Not Test
ECMW19 vs ECMW5	57.100	2.708	Do Not Test
ECMW19 vs ECMW17	57.100	2.708	Do Not Test
ECMW19 vs ECMW4	57.100	2.708	Do Not Test
ECMW19 vs ECMW15	50.700	2.404	Do Not Test
ECMW19 vs ECMW21	50.500	2.395	Do Not Test
ECMW19 vs ECMW10	49.200	2.333	Do Not Test
ECMW19 vs ECMW14	44.300	2.101	Do Not Test
ECMW19 vs ECMW11	42.900	2.034	Do Not Test
ECMW19 vs ECMW13	41.500	1.968	Do Not Test
ECMW19 vs ECMW7	33.957	1.739	Do Not Test
ECMW19 vs ECMW12	11.000	0.522	Do Not Test
ECMW19 vs CNTL	10.100	0.587	Do Not Test
ECMW19 vs ECMW22	8.400	0.398	Do Not Test
ECMW19 vs ECMW20	4.300	0.204	Do Not Test
ECMW20 vs ECMW6	57.371	2.939	Do Not Test
ECMW20 vs ECMW8	52.800	2.504	Do Not Test
ECMW20 vs ECMW16	52.800	2.504	Do Not Test
ECMW20 vs ECMW5	52.800	2.504	Do Not Test
ECMW20 vs ECMW17	52.800	2.504	Do Not Test
ECMW20 vs ECMW4	52.800	2.504	Do Not Test
ECMW20 vs ECMW15	46.400	2.200	Do Not Test
ECMW20 vs ECMW21	46.200	2.191	Do Not Test

ECMW20 vs ECMW10	44.900	2.129	Do Not Test
ECMW20 vs ECMW14	40.000	1.897	Do Not Test
ECMW20 vs ECMW11	38.600	1.831	Do Not Test
ECMW20 vs ECMW13	37.200	1.764	Do Not Test
ECMW20 vs ECMW7	29.657	1.519	Do Not Test
ECMW20 vs ECMW12	6.700	0.318	Do Not Test
ECMW20 vs CNTL	5.800	0.337	Do Not Test
ECMW20 vs ECMW22	4.100	0.194	Do Not Test
ECMW22 vs ECMW6	53.271	2.729	Do Not Test
ECMW22 vs ECMW8	48.700	2.309	Do Not Test
ECMW22 vs ECMW16	48.700	2.309	Do Not Test
ECMW22 vs ECMW5	48.700	2.309	Do Not Test
ECMW22 vs ECMW17	48.700	2.309	Do Not Test
ECMW22 vs ECMW4	48.700	2.309	Do Not Test
ECMW22 vs ECMW15	42.300	2.006	Do Not Test
ECMW22 vs ECMW21	42.100	1.996	Do Not Test
ECMW22 vs ECMW10	40.800	1.935	Do Not Test
ECMW22 vs ECMW14	35.900	1.702	Do Not Test
ECMW22 vs ECMW11	34.500	1.636	Do Not Test
ECMW22 vs ECMW13	33.100	1.570	Do Not Test
ECMW22 vs ECMW7	25.557	1.309	Do Not Test
ECMW22 vs ECMW12	2.600	0.123	Do Not Test
ECMW22 vs CNTL	1.700	0.0987	Do Not Test
CNTL vs ECMW6	51.571	3.379	Do Not Test
CNTL vs ECMW8	47.000	2.730	Do Not Test
CNTL vs ECMW16	47.000	2.730	Do Not Test
CNTL vs ECMW5	47.000	2.730	Do Not Test
CNTL vs ECMW17	47.000	2.730	Do Not Test
CNTL vs ECMW4	47.000	2.730	Do Not Test
CNTL vs ECMW15	40.600	2.358	Do Not Test
CNTL vs ECMW21	40.400	2.346	Do Not Test
CNTL vs ECMW10	39.100	2.271	Do Not Test
CNTL vs ECMW14	34.200	1.986	Do Not Test
CNTL vs ECMW11	32.800	1.905	Do Not Test
CNTL vs ECMW13	31.400	1.824	Do Not Test
CNTL vs ECMW7	23.857	1.563	Do Not Test
CNTL vs ECMW12	0.900	0.0523	Do Not Test
ECMW12 vs ECMW6	50.671	2.595	Do Not Test
ECMW12 vs ECMW8	46.100	2.186	Do Not Test
ECMW12 vs ECMW16	46.100	2.186	Do Not Test
ECMW12 vs ECMW5	46.100	2.186	Do Not Test
ECMW12 vs ECMW17	46.100	2.186	Do Not Test
ECMW12 vs ECMW4	46.100	2.186	Do Not Test
ECMW12 vs ECMW15	39.700	1.883	Do Not Test
ECMW12 vs ECMW21	39.500	1.873	Do Not Test
ECMW12 vs ECMW10	38.200	1.812	Do Not Test
ECMW12 vs ECMW14	33.300	1.579	Do Not Test
ECMW12 vs ECMW11	31.900	1.513	Do Not Test
ECMW12 vs ECMW13	30.500	1.446	Do Not Test
ECMW12 vs ECMW7	22.957	1.176	Do Not Test
ECMW7 vs ECMW6	27.714	1.555	Do Not Test
ECMW7 vs ECMW8	23.143	1.185	Do Not Test
ECMW7 vs ECMW16	23.143	1.185	Do Not Test
ECMW7 vs ECMW5	23.143	1.185	Do Not Test
ECMW7 vs ECMW17	23.143	1.185	Do Not Test
ECMW7 vs ECMW4	23.143	1.185	Do Not Test

ECMW7 vs ECMW15	16.743	0.858	Do Not Test
ECMW7 vs ECMW21	16.543	0.847	Do Not Test
ECMW7 vs ECMW10	15.243	0.781	Do Not Test
ECMW7 vs ECMW14	10.343	0.530	Do Not Test
ECMW7 vs ECMW11	8.943	0.458	Do Not Test
ECMW7 vs ECMW13	7.543	0.386	Do Not Test
ECMW13 vs ECMW6	20.171	1.033	Do Not Test
ECMW13 vs ECMW8	15.600	0.740	Do Not Test
ECMW13 vs ECMW16	15.600	0.740	Do Not Test
ECMW13 vs ECMW5	15.600	0.740	Do Not Test
ECMW13 vs ECMW17	15.600	0.740	Do Not Test
ECMW13 vs ECMW4	15.600	0.740	Do Not Test
ECMW13 vs ECMW15	9.200	0.436	Do Not Test
ECMW13 vs ECMW21	9.000	0.427	Do Not Test
ECMW13 vs ECMW10	7.700	0.365	Do Not Test
ECMW13 vs ECMW14	2.800	0.133	Do Not Test
ECMW13 vs ECMW11	1.400	0.0664	Do Not Test
ECMW11 vs ECMW6	18.771	0.962	Do Not Test
ECMW11 vs ECMW8	14.200	0.673	Do Not Test
ECMW11 vs ECMW16	14.200	0.673	Do Not Test
ECMW11 vs ECMW5	14.200	0.673	Do Not Test
ECMW11 vs ECMW17	14.200	0.673	Do Not Test
ECMW11 vs ECMW4	14.200	0.673	Do Not Test
ECMW11 vs ECMW15	7.800	0.370	Do Not Test
ECMW11 vs ECMW21	7.600	0.360	Do Not Test
ECMW11 vs ECMW10	6.300	0.299	Do Not Test
ECMW11 vs ECMW14	1.400	0.0664	Do Not Test
ECMW14 vs ECMW6	17.371	0.890	Do Not Test
ECMW14 vs ECMW8	12.800	0.607	Do Not Test
ECMW14 vs ECMW16	12.800	0.607	Do Not Test
ECMW14 vs ECMW5	12.800	0.607	Do Not Test
ECMW14 vs ECMW17	12.800	0.607	Do Not Test
ECMW14 vs ECMW4	12.800	0.607	Do Not Test
ECMW14 vs ECMW15	6.400	0.304	Do Not Test
ECMW14 vs ECMW21	6.200	0.294	Do Not Test
ECMW14 vs ECMW10	4.900	0.232	Do Not Test
ECMW10 vs ECMW6	12.471	0.639	Do Not Test
ECMW10 vs ECMW8	7.900	0.375	Do Not Test
ECMW10 vs ECMW16	7.900	0.375	Do Not Test
ECMW10 vs ECMW5	7.900	0.375	Do Not Test
ECMW10 vs ECMW17	7.900	0.375	Do Not Test
ECMW10 vs ECMW4	7.900	0.375	Do Not Test
ECMW10 vs ECMW15	1.500	0.0711	Do Not Test
ECMW10 vs ECMW21	1.300	0.0616	Do Not Test
ECMW21 vs ECMW6	11.171	0.572	Do Not Test
ECMW21 vs ECMW8	6.600	0.313	Do Not Test
ECMW21 vs ECMW16	6.600	0.313	Do Not Test
ECMW21 vs ECMW5	6.600	0.313	Do Not Test
ECMW21 vs ECMW17	6.600	0.313	Do Not Test
ECMW21 vs ECMW4	6.600	0.313	Do Not Test
ECMW21 vs ECMW15	0.200	0.00948	Do Not Test
ECMW15 vs ECMW6	10.971	0.562	Do Not Test
ECMW15 vs ECMW8	6.400	0.304	Do Not Test
ECMW15 vs ECMW16	6.400	0.304	Do Not Test
ECMW15 vs ECMW5	6.400	0.304	Do Not Test
ECMW15 vs ECMW17	6.400	0.304	Do Not Test

ECMW15 vs ECMW4	6.400	0.304	Do Not Test
ECMW4 vs ECMW6	4.571	0.234	Do Not Test
ECMW4 vs ECMW8	0.000	0.000	Do Not Test
ECMW4 vs ECMW16	0.000	0.000	Do Not Test
ECMW4 vs ECMW5	0.000	0.000	Do Not Test
ECMW4 vs ECMW17	0.000	0.000	Do Not Test
ECMW17 vs ECMW6	4.571	0.234	Do Not Test
ECMW17 vs ECMW8	0.000	0.000	Do Not Test
ECMW17 vs ECMW16	0.000	0.000	Do Not Test
ECMW17 vs ECMW5	0.000	0.000	Do Not Test
ECMW5 vs ECMW6	4.571	0.234	Do Not Test
ECMW5 vs ECMW8	0.000	0.000	Do Not Test
ECMW5 vs ECMW16	0.000	0.000	Do Not Test
ECMW16 vs ECMW6	4.571	0.234	Do Not Test
ECMW16 vs ECMW8	0.000	0.000	Do Not Test
ECMW8 vs ECMW6	4.571	0.234	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Redox

One Way Analysis of Variance Wednesday, November 03, 2021, 10:04:09 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 10:04:09 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	36	142.700	129.800	216.200
ECMW6	52	38	168.850	156.075	183.225
ECMW7	52	38	126.450	93.575	235.275
ECMW8	51	37	181.450	163.750	210.600
ECMW10	51	36	160.500	137.500	173.500
ECMW11	50	36	157.600	145.975	211.625
ECMW12	47	33	66.900	-23.175	84.800
ECMW13	50	36	126.500	98.375	198.375
ECMW14	50	37	145.400	132.500	181.050
ECMW15	49	35	151.850	123.750	264.625
ECMW16	49	35	147.100	111.625	188.300
ECMW17	50	37	169.000	146.250	237.750
ECMW18	49	35	117.850	87.250	147.475
CNTL	144	102	124.350	87.000	202.725
ECMW4	50	35	171.500	166.600	181.100
ECMW9	49	35	99.600	78.750	142.525
ECMW19	40	26	85.550	60.175	101.125
ECMW20	40	29	97.000	78.200	120.800
ECMW21	40	26	143.800	112.725	221.800
ECMW22	40	26	88.800	64.600	111.025

H = 72.978 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 ECMW12	158.786	4.764	Yes
ECMW8 vs ECMW19	130.714	3.921	Yes
ECMW8 vs ECMW22	127.071	3.812	Yes
ECMW8 vs ECMW20	116.094	3.267	No
ECMW8 vs ECMW9	98.964	2.969	Do Not Test
ECMW8 vs ECMW18	84.643	2.539	Do Not Test

ECMW8 vs CNTL	68.512	2.517	Do Not Test
ECMW8 vs ECMW13	59.679	1.790	Do Not Test
ECMW8 vs ECMW16	53.500	1.605	Do Not Test
ECMW8 vs ECMW7	49.321	1.480	Do Not Test
ECMW8 vs ECMW21	43.750	1.313	Do Not Test
ECMW8 vs ECMW5	41.214	1.236	Do Not Test
ECMW8 vs ECMW14	33.283	0.980	Do Not Test
ECMW8 vs ECMW10	28.155	0.859	Do Not Test
ECMW8 vs ECMW15	27.250	0.818	Do Not Test
ECMW8 vs ECMW6	18.750	0.563	Do Not Test
ECMW8 vs ECMW11	14.857	0.446	Do Not Test
ECMW8 vs ECMW17	13.783	0.406	Do Not Test
ECMW8 vs ECMW4	2.188	0.0668	Do Not Test
ECMW4 vs ECMW12	156.598	4.778	Yes
ECMW4 vs ECMW19	128.526	3.922	Yes
ECMW4 vs ECMW22	124.883	3.811	Yes
ECMW4 vs ECMW20	113.906	3.254	Do Not Test
ECMW4 vs ECMW9	96.776	2.953	Do Not Test
ECMW4 vs ECMW18	82.455	2.516	Do Not Test
ECMW4 vs CNTL	66.324	2.500	Do Not Test
ECMW4 vs ECMW13	57.490	1.754	Do Not Test
ECMW4 vs ECMW16	51.312	1.566	Do Not Test
ECMW4 vs ECMW7	47.133	1.438	Do Not Test
ECMW4 vs ECMW21	41.562	1.268	Do Not Test
ECMW4 vs ECMW5	39.026	1.191	Do Not Test
ECMW4 vs ECMW14	31.095	0.930	Do Not Test
ECMW4 vs ECMW10	25.967	0.806	Do Not Test
ECMW4 vs ECMW15	25.062	0.765	Do Not Test
ECMW4 vs ECMW6	16.562	0.505	Do Not Test
ECMW4 vs ECMW11	12.669	0.387	Do Not Test
ECMW4 vs ECMW17	11.595	0.347	Do Not Test
ECMW17 vs ECMW12	145.003	4.269	Yes
ECMW17 vs ECMW19	116.931	3.442	No
ECMW17 vs ECMW22	113.288	3.335	Do Not Test
ECMW17 vs ECMW20	102.311	2.832	Do Not Test
ECMW17 vs ECMW9	85.181	2.508	Do Not Test
ECMW17 vs ECMW18	70.860	2.086	Do Not Test
ECMW17 vs CNTL	54.729	1.955	Do Not Test
ECMW17 vs ECMW13	45.896	1.351	Do Not Test
ECMW17 vs ECMW16	39.717	1.169	Do Not Test
ECMW17 vs ECMW7	35.538	1.046	Do Not Test
ECMW17 vs ECMW21	29.967	0.882	Do Not Test
ECMW17 vs ECMW5	27.431	0.808	Do Not Test
ECMW17 vs ECMW14	19.500	0.564	Do Not Test
ECMW17 vs ECMW10	14.372	0.430	Do Not Test
ECMW17 vs ECMW15	13.467	0.396	Do Not Test
ECMW17 vs ECMW6	4.967	0.146	Do Not Test
ECMW17 vs ECMW11	1.074	0.0316	Do Not Test
ECMW11 vs ECMW12	143.929	4.318	Yes
ECMW11 vs ECMW19	115.857	3.476	Do Not Test
ECMW11 vs ECMW22	112.214	3.366	Do Not Test
ECMW11 vs ECMW20	101.237	2.849	Do Not Test
ECMW11 vs ECMW9	84.107	2.523	Do Not Test
ECMW11 vs ECMW18	69.786	2.094	Do Not Test
ECMW11 vs CNTL	53.655	1.971	Do Not Test
ECMW11 vs ECMW13	44.821	1.345	Do Not Test

ECMW11 vs ECMW16	38.643	1.159	Do Not Test
ECMW11 vs ECMW7	34.464	1.034	Do Not Test
ECMW11 vs ECMW21	28.893	0.867	Do Not Test
ECMW11 vs ECMW5	26.357	0.791	Do Not Test
ECMW11 vs ECMW14	18.426	0.542	Do Not Test
ECMW11 vs ECMW10	13.298	0.406	Do Not Test
ECMW11 vs ECMW15	12.393	0.372	Do Not Test
ECMW11 vs ECMW6	3.893	0.117	Do Not Test
ECMW6 vs ECMW12	140.036	4.201	Yes
ECMW6 vs ECMW19	111.964	3.359	Do Not Test
ECMW6 vs ECMW22	108.321	3.250	Do Not Test
ECMW6 vs ECMW20	97.344	2.740	Do Not Test
ECMW6 vs ECMW9	80.214	2.406	Do Not Test
ECMW6 vs ECMW18	65.893	1.977	Do Not Test
ECMW6 vs CNTL	49.762	1.828	Do Not Test
ECMW6 vs ECMW13	40.929	1.228	Do Not Test
ECMW6 vs ECMW16	34.750	1.043	Do Not Test
ECMW6 vs ECMW7	30.571	0.917	Do Not Test
ECMW6 vs ECMW21	25.000	0.750	Do Not Test
ECMW6 vs ECMW5	22.464	0.674	Do Not Test
ECMW6 vs ECMW14	14.533	0.428	Do Not Test
ECMW6 vs ECMW10	9.405	0.287	Do Not Test
ECMW6 vs ECMW15	8.500	0.255	Do Not Test
ECMW15 vs ECMW12	131.536	3.946	Yes
ECMW15 vs ECMW19	103.464	3.104	Do Not Test
ECMW15 vs ECMW22	99.821	2.995	Do Not Test
ECMW15 vs ECMW20	88.844	2.500	Do Not Test
ECMW15 vs ECMW9	71.714	2.151	Do Not Test
ECMW15 vs ECMW18	57.393	1.722	Do Not Test
ECMW15 vs CNTL	41.262	1.516	Do Not Test
ECMW15 vs ECMW13	32.429	0.973	Do Not Test
ECMW15 vs ECMW16	26.250	0.788	Do Not Test
ECMW15 vs ECMW7	22.071	0.662	Do Not Test
ECMW15 vs ECMW21	16.500	0.495	Do Not Test
ECMW15 vs ECMW5	13.964	0.419	Do Not Test
ECMW15 vs ECMW14	6.033	0.178	Do Not Test
ECMW15 vs ECMW10	0.905	0.0276	Do Not Test
ECMW10 vs ECMW12	130.631	3.986	Yes
ECMW10 vs ECMW19	102.560	3.129	Do Not Test
ECMW10 vs ECMW22	98.917	3.018	Do Not Test
ECMW10 vs ECMW20	87.939	2.512	Do Not Test
ECMW10 vs ECMW9	70.810	2.161	Do Not Test
ECMW10 vs ECMW18	56.488	1.724	Do Not Test
ECMW10 vs CNTL	40.357	1.521	Do Not Test
ECMW10 vs ECMW13	31.524	0.962	Do Not Test
ECMW10 vs ECMW16	25.345	0.773	Do Not Test
ECMW10 vs ECMW7	21.167	0.646	Do Not Test
ECMW10 vs ECMW21	15.595	0.476	Do Not Test
ECMW10 vs ECMW5	13.060	0.398	Do Not Test
ECMW10 vs ECMW14	5.128	0.153	Do Not Test
ECMW14 vs ECMW12	125.503	3.695	Yes
ECMW14 vs ECMW19	97.431	2.868	Do Not Test
ECMW14 vs ECMW22	93.788	2.761	Do Not Test
ECMW14 vs ECMW20	82.811	2.292	Do Not Test
ECMW14 vs ECMW9	65.681	1.934	Do Not Test
ECMW14 vs ECMW18	51.360	1.512	Do Not Test

ECMW14 vs CNTL	35.229	1.259	Do Not Test
ECMW14 vs ECMW13	26.396	0.777	Do Not Test
ECMW14 vs ECMW16	20.217	0.595	Do Not Test
ECMW14 vs ECMW7	16.038	0.472	Do Not Test
ECMW14 vs ECMW21	10.467	0.308	Do Not Test
ECMW14 vs ECMW5	7.931	0.233	Do Not Test
ECMW5 vs ECMW12	117.571	3.527	No
ECMW5 vs ECMW19	89.500	2.685	Do Not Test
ECMW5 vs ECMW22	85.857	2.576	Do Not Test
ECMW5 vs ECMW20	74.880	2.107	Do Not Test
ECMW5 vs ECMW9	57.750	1.733	Do Not Test
ECMW5 vs ECMW18	43.429	1.303	Do Not Test
ECMW5 vs CNTL	27.298	1.003	Do Not Test
ECMW5 vs ECMW13	18.464	0.554	Do Not Test
ECMW5 vs ECMW16	12.286	0.369	Do Not Test
ECMW5 vs ECMW7	8.107	0.243	Do Not Test
ECMW5 vs ECMW21	2.536	0.0761	Do Not Test
ECMW21 vs ECMW12	115.036	3.451	Do Not Test
ECMW21 vs ECMW19	86.964	2.609	Do Not Test
ECMW21 vs ECMW22	83.321	2.500	Do Not Test
ECMW21 vs ECMW20	72.344	2.036	Do Not Test
ECMW21 vs ECMW9	55.214	1.656	Do Not Test
ECMW21 vs ECMW18	40.893	1.227	Do Not Test
ECMW21 vs CNTL	24.762	0.910	Do Not Test
ECMW21 vs ECMW13	15.929	0.478	Do Not Test
ECMW21 vs ECMW16	9.750	0.293	Do Not Test
ECMW21 vs ECMW7	5.571	0.167	Do Not Test
ECMW7 vs ECMW12	109.464	3.284	Do Not Test
ECMW7 vs ECMW19	81.393	2.442	Do Not Test
ECMW7 vs ECMW22	77.750	2.333	Do Not Test
ECMW7 vs ECMW20	66.773	1.879	Do Not Test
ECMW7 vs ECMW9	49.643	1.489	Do Not Test
ECMW7 vs ECMW18	35.321	1.060	Do Not Test
ECMW7 vs CNTL	19.190	0.705	Do Not Test
ECMW7 vs ECMW13	10.357	0.311	Do Not Test
ECMW7 vs ECMW16	4.179	0.125	Do Not Test
ECMW16 vs ECMW12	105.286	3.159	Do Not Test
ECMW16 vs ECMW19	77.214	2.316	Do Not Test
ECMW16 vs ECMW22	73.571	2.207	Do Not Test
ECMW16 vs ECMW20	62.594	1.762	Do Not Test
ECMW16 vs ECMW9	45.464	1.364	Do Not Test
ECMW16 vs ECMW18	31.143	0.934	Do Not Test
ECMW16 vs CNTL	15.012	0.552	Do Not Test
ECMW16 vs ECMW13	6.179	0.185	Do Not Test
ECMW13 vs ECMW12	99.107	2.973	Do Not Test
ECMW13 vs ECMW19	71.036	2.131	Do Not Test
ECMW13 vs ECMW22	67.393	2.022	Do Not Test
ECMW13 vs ECMW20	56.416	1.588	Do Not Test
ECMW13 vs ECMW9	39.286	1.179	Do Not Test
ECMW13 vs ECMW18	24.964	0.749	Do Not Test
ECMW13 vs CNTL	8.833	0.325	Do Not Test
CNTL vs ECMW12	90.274	3.317	Do Not Test
CNTL vs ECMW19	62.202	2.286	Do Not Test
CNTL vs ECMW22	58.560	2.152	Do Not Test
CNTL vs ECMW20	47.582	1.593	Do Not Test
CNTL vs ECMW9	30.452	1.119	Do Not Test

CNTL vs ECMW18	16.131	0.593	Do Not Test
ECMW18 vs ECMW12	74.143	2.224	Do Not Test
ECMW18 vs ECMW19	46.071	1.382	Do Not Test
ECMW18 vs ECMW22	42.429	1.273	Do Not Test
ECMW18 vs ECMW20	31.451	0.885	Do Not Test
ECMW18 vs ECMW9	14.321	0.430	Do Not Test
ECMW9 vs ECMW12	59.821	1.795	Do Not Test
ECMW9 vs ECMW19	31.750	0.953	Do Not Test
ECMW9 vs ECMW22	28.107	0.843	Do Not Test
ECMW9 vs ECMW20	17.130	0.482	Do Not Test
ECMW20 vs ECMW12	42.692	1.201	Do Not Test
ECMW20 vs ECMW19	14.620	0.411	Do Not Test
ECMW20 vs ECMW22	10.977	0.309	Do Not Test
ECMW22 vs ECMW12	31.714	0.951	Do Not Test
ECMW22 vs ECMW19	3.643	0.109	Do Not Test
ECMW19 vs ECMW12	28.071	0.842	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

SPC

One Way Analysis of Variance Wednesday, November 03, 2021, 10:04:20 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 10:04:20 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	10	824.000	445.500	979.750
ECMW6	52	13	7920.000	4000.000	15399.000
ECMW7	52	13	5970.000	4000.000	19074.000
ECMW8	51	14	10881.000	6125.000	20640.000
ECMW1051		10	906.000	741.500	1150.500
ECMW1150		10	745.500	667.000	900.000
ECMW1247		10	614.000	564.500	684.500
ECMW1350		12	935.500	643.000	1215.000
ECMW1450		12	677.000	464.750	914.500
ECMW1549		11	107.000	73.225	145.500
ECMW1649		10	292.000	175.000	525.000
ECMW1750		10	455.500	244.375	717.750
ECMW1849		11	87.150	75.750	99.100
CNTL	144	30	233.500	67.725	332.500
ECMW4	50	10	6620.000	4196.500	7536.250
ECMW9	49	10	1969.000	1686.000	2232.000
ECMW1940		10	97.500	82.950	144.150
ECMW2040		11	111.000	85.500	173.700
ECMW2140		10	64.000	56.125	92.000
ECMW2240		9	145.900	124.000	179.200

H = 665.048 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	656.411	11.321	Yes
ECMW8 vs ECMW18	610.226	11.196	Yes
ECMW8 vs ECMW19	594.278	10.250	Yes
ECMW8 vs ECMW15	588.134	10.790	Yes
ECMW8 vs ECMW20	568.095	9.706	Yes
ECMW8 vs ECMW22	529.933	9.223	Yes

ECMW8 vs CNTL	519.919	11.644	Yes
ECMW8 vs ECMW16	428.748	7.916	Yes
ECMW8 vs ECMW17	355.982	6.613	Yes
ECMW8 vs ECMW12	295.203	5.380	Yes
ECMW8 vs ECMW14	289.924	5.319	Yes
ECMW8 vs ECMW5	266.670	4.954	Yes
ECMW8 vs ECMW11	239.357	4.447	Yes
ECMW8 vs ECMW13	221.200	4.058	Yes
ECMW8 vs ECMW10	197.729	3.695	Yes
ECMW8 vs ECMW9	97.954	1.809	No
ECMW8 vs ECMW4	33.607	0.624	Do Not Test
ECMW8 vs ECMW7	30.556	0.564	Do Not Test
ECMW8 vs ECMW6	12.518	0.231	Do Not Test
ECMW6 vs ECMW21	643.894	11.235	Yes
ECMW6 vs ECMW18	597.709	11.111	Yes
ECMW6 vs ECMW19	581.760	10.151	Yes
ECMW6 vs ECMW15	575.616	10.701	Yes
ECMW6 vs ECMW20	555.577	9.601	Yes
ECMW6 vs ECMW22	517.416	9.112	Yes
ECMW6 vs CNTL	507.401	11.590	Yes
ECMW6 vs ECMW16	416.231	7.789	Yes
ECMW6 vs ECMW17	343.464	6.467	Yes
ECMW6 vs ECMW12	282.685	5.220	Yes
ECMW6 vs ECMW14	277.406	5.157	Yes
ECMW6 vs ECMW5	254.152	4.786	Yes
ECMW6 vs ECMW11	226.839	4.271	Yes
ECMW6 vs ECMW13	208.682	3.879	Yes
ECMW6 vs ECMW10	185.211	3.509	No
ECMW6 vs ECMW9	85.436	1.599	Do Not Test
ECMW6 vs ECMW4	21.089	0.397	Do Not Test
ECMW6 vs ECMW7	18.038	0.338	Do Not Test
ECMW7 vs ECMW21	625.855	10.921	Yes
ECMW7 vs ECMW18	579.670	10.776	Yes
ECMW7 vs ECMW19	563.722	9.836	Yes
ECMW7 vs ECMW15	557.578	10.365	Yes
ECMW7 vs ECMW20	537.538	9.289	Yes
ECMW7 vs ECMW22	499.377	8.794	Yes
ECMW7 vs CNTL	489.363	11.178	Yes
ECMW7 vs ECMW16	398.192	7.451	Yes
ECMW7 vs ECMW17	325.426	6.128	Yes
ECMW7 vs ECMW12	264.647	4.886	Yes
ECMW7 vs ECMW14	259.367	4.822	Yes
ECMW7 vs ECMW5	236.113	4.446	Yes
ECMW7 vs ECMW11	208.801	3.932	Yes
ECMW7 vs ECMW13	190.644	3.544	No
ECMW7 vs ECMW10	167.173	3.167	Do Not Test
ECMW7 vs ECMW9	67.397	1.261	Do Not Test
ECMW7 vs ECMW4	3.051	0.0574	Do Not Test
ECMW4 vs ECMW21	622.804	10.927	Yes
ECMW4 vs ECMW18	576.619	10.786	Yes
ECMW4 vs ECMW19	560.671	9.837	Yes
ECMW4 vs ECMW15	554.527	10.373	Yes
ECMW4 vs ECMW20	534.487	9.286	Yes
ECMW4 vs ECMW22	496.326	8.789	Yes
ECMW4 vs CNTL	486.312	11.213	Yes
ECMW4 vs ECMW16	395.141	7.441	Yes

ECMW4 vs ECMW17	322.375	6.109	Yes
ECMW4 vs ECMW12	261.596	4.860	Yes
ECMW4 vs ECMW14	256.316	4.795	Yes
ECMW4 vs ECMW5	233.062	4.417	Yes
ECMW4 vs ECMW11	205.750	3.899	Yes
ECMW4 vs ECMW13	187.593	3.509	Do Not Test
ECMW4 vs ECMW10	164.122	3.129	Do Not Test
ECMW4 vs ECMW9	64.346	1.212	Do Not Test
ECMW9 vs ECMW21	558.458	9.745	Yes
ECMW9 vs ECMW18	512.273	9.523	Yes
ECMW9 vs ECMW19	496.324	8.660	Yes
ECMW9 vs ECMW15	490.180	9.113	Yes
ECMW9 vs ECMW20	470.141	8.125	Yes
ECMW9 vs ECMW22	431.980	7.607	Yes
ECMW9 vs CNTL	421.966	9.639	Yes
ECMW9 vs ECMW16	330.795	6.190	Yes
ECMW9 vs ECMW17	258.029	4.859	Yes
ECMW9 vs ECMW12	197.249	3.642	No
ECMW9 vs ECMW14	191.970	3.569	Do Not Test
ECMW9 vs ECMW5	168.716	3.177	Do Not Test
ECMW9 vs ECMW11	141.404	2.663	Do Not Test
ECMW9 vs ECMW13	123.246	2.291	Do Not Test
ECMW9 vs ECMW10	99.775	1.890	Do Not Test
ECMW10 vs ECMW21	458.683	8.090	Yes
ECMW10 vs ECMW18	412.497	7.762	Yes
ECMW10 vs ECMW19	396.549	6.994	Yes
ECMW10 vs ECMW15	390.405	7.347	Yes
ECMW10 vs ECMW20	370.366	6.468	Yes
ECMW10 vs ECMW22	332.205	5.914	Yes
ECMW10 vs CNTL	322.190	7.497	Yes
ECMW10 vs ECMW16	231.020	4.377	Yes
ECMW10 vs ECMW17	158.253	3.017	No
ECMW10 vs ECMW12	97.474	1.822	Do Not Test
ECMW10 vs ECMW14	92.195	1.735	Do Not Test
ECMW10 vs ECMW5	68.941	1.314	Do Not Test
ECMW10 vs ECMW11	41.628	0.794	Do Not Test
ECMW10 vs ECMW13	23.471	0.442	Do Not Test
ECMW13 vs ECMW21	435.211	7.551	Yes
ECMW13 vs ECMW18	389.026	7.186	Yes
ECMW13 vs ECMW19	373.078	6.473	Yes
ECMW13 vs ECMW15	366.934	6.777	Yes
ECMW13 vs ECMW20	346.895	5.961	Yes
ECMW13 vs ECMW22	308.733	5.405	Yes
ECMW13 vs CNTL	298.719	6.758	Yes
ECMW13 vs ECMW16	207.549	3.858	Yes
ECMW13 vs ECMW17	134.782	2.521	Do Not Test
ECMW13 vs ECMW12	74.003	1.358	Do Not Test
ECMW13 vs ECMW14	68.724	1.269	Do Not Test
ECMW13 vs ECMW5	45.470	0.851	Do Not Test
ECMW13 vs ECMW11	18.157	0.340	Do Not Test
ECMW11 vs ECMW21	417.054	7.317	Yes
ECMW11 vs ECMW18	370.869	6.937	Yes
ECMW11 vs ECMW19	354.921	6.227	Yes
ECMW11 vs ECMW15	348.777	6.524	Yes
ECMW11 vs ECMW20	328.738	5.712	Yes
ECMW11 vs ECMW22	290.576	5.146	Yes

ECMW11 vs CNTL	280.562	6.469	Yes
ECMW11 vs ECMW16	189.391	3.566	No
ECMW11 vs ECMW17	116.625	2.210	Do Not Test
ECMW11 vs ECMW12	55.846	1.037	Do Not Test
ECMW11 vs ECMW14	50.566	0.946	Do Not Test
ECMW11 vs ECMW5	27.313	0.518	Do Not Test
ECMW5 vs ECMW21	389.742	6.838	Yes
ECMW5 vs ECMW18	343.557	6.427	Yes
ECMW5 vs ECMW19	327.608	5.748	Yes
ECMW5 vs ECMW15	321.464	6.013	Yes
ECMW5 vs ECMW20	301.425	5.237	Yes
ECMW5 vs ECMW22	263.264	4.662	Yes
ECMW5 vs CNTL	253.250	5.839	Yes
ECMW5 vs ECMW16	162.079	3.052	Do Not Test
ECMW5 vs ECMW17	89.313	1.693	Do Not Test
ECMW5 vs ECMW12	28.533	0.530	Do Not Test
ECMW5 vs ECMW14	23.254	0.435	Do Not Test
ECMW14 vs ECMW21	366.488	6.359	Yes
ECMW14 vs ECMW18	320.303	5.916	Yes
ECMW14 vs ECMW19	304.354	5.281	Yes
ECMW14 vs ECMW15	298.211	5.508	Yes
ECMW14 vs ECMW20	278.171	4.780	Yes
ECMW14 vs ECMW22	240.010	4.202	Yes
ECMW14 vs CNTL	229.996	5.203	Yes
ECMW14 vs ECMW16	138.825	2.581	Do Not Test
ECMW14 vs ECMW17	66.059	1.236	Do Not Test
ECMW14 vs ECMW12	5.279	0.0969	Do Not Test
ECMW12 vs ECMW21	361.209	6.230	Yes
ECMW12 vs ECMW18	315.023	5.780	Yes
ECMW12 vs ECMW19	299.075	5.158	Yes
ECMW12 vs ECMW15	292.931	5.374	Yes
ECMW12 vs ECMW20	272.892	4.663	Yes
ECMW12 vs ECMW22	234.731	4.085	Yes
ECMW12 vs CNTL	224.716	5.033	Yes
ECMW12 vs ECMW16	133.546	2.466	Do Not Test
ECMW12 vs ECMW17	60.779	1.129	Do Not Test
ECMW17 vs ECMW21	300.429	5.271	Yes
ECMW17 vs ECMW18	254.244	4.756	Yes
ECMW17 vs ECMW19	238.296	4.181	Yes
ECMW17 vs ECMW15	232.152	4.343	Yes
ECMW17 vs ECMW20	212.113	3.685	Yes
ECMW17 vs ECMW22	173.951	3.080	No
ECMW17 vs CNTL	163.937	3.780	Do Not Test
ECMW17 vs ECMW16	72.766	1.370	Do Not Test
ECMW16 vs ECMW21	227.663	3.972	Yes
ECMW16 vs ECMW18	181.478	3.374	No
ECMW16 vs ECMW19	165.529	2.888	Do Not Test
ECMW16 vs ECMW15	159.386	2.963	Do Not Test
ECMW16 vs ECMW20	139.346	2.408	Do Not Test
ECMW16 vs ECMW22	101.185	1.782	Do Not Test
ECMW16 vs CNTL	91.171	2.083	Do Not Test
CNTL vs ECMW21	136.492	2.819	No
CNTL vs ECMW18	90.307	2.043	Do Not Test
CNTL vs ECMW19	74.359	1.536	Do Not Test
CNTL vs ECMW15	68.215	1.543	Do Not Test
CNTL vs ECMW20	48.175	0.982	Do Not Test

CNTL vs ECMW22	10.014	0.209	Do Not Test
ECMW22 vs ECMW21	126.478	2.093	Do Not Test
ECMW22 vs ECMW18	80.293	1.406	Do Not Test
ECMW22 vs ECMW19	64.345	1.065	Do Not Test
ECMW22 vs ECMW15	58.201	1.019	Do Not Test
ECMW22 vs ECMW20	38.161	0.626	Do Not Test
ECMW20 vs ECMW21	88.317	1.437	Do Not Test
ECMW20 vs ECMW18	42.132	0.724	Do Not Test
ECMW20 vs ECMW19	26.183	0.426	Do Not Test
ECMW20 vs ECMW15	20.039	0.344	Do Not Test
ECMW15 vs ECMW21	68.277	1.185	Do Not Test
ECMW15 vs ECMW18	22.092	0.408	Do Not Test
ECMW15 vs ECMW19	6.144	0.107	Do Not Test
ECMW19 vs ECMW21	62.133	1.020	Do Not Test
ECMW19 vs ECMW18	15.948	0.277	Do Not Test
ECMW18 vs ECMW21	46.185	0.801	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Sulfate

One Way Analysis of Variance Wednesday, November 03, 2021, 10:04:31 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 10:04:31 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	4	94.550	55.400	476.000
ECMW6	52	3	33.700	16.450	58.000
ECMW7	52	3	476.000	311.000	862.000
ECMW8	51	4	614.000	128.000	814.000
ECMW1051		4	134.000	98.000	152.000
ECMW1150		5	208.000	134.500	273.000
ECMW1247		18	13.000	5.935	21.050
ECMW1350		20	454.500	355.000	553.500
ECMW1450		4	154.000	114.000	211.250
ECMW1549		19	12.500	10.140	13.925
ECMW1649		3	12.950	9.637	15.450
ECMW1750		4	20.700	10.750	39.750
ECMW1849		15	3.720	2.418	5.822
CNTL	144	54	12.300	5.918	21.050
ECMW4	50	3	874.000	758.000	970.000
ECMW9	49	3	547.500	519.500	617.250
ECMW1940		18	2.970	2.445	4.578
ECMW2040		18	10.350	8.748	14.100
ECMW2140		18	4.050	3.620	5.455
ECMW2240		18	5.105	3.598	6.763

H = 690.674 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	709.234	11.663	Yes
ECMW4 vs ECMW18	684.369	12.912	Yes
ECMW4 vs ECMW21	673.279	11.071	Yes
ECMW4 vs ECMW22	665.643	10.946	Yes
ECMW4 vs ECMW20	553.234	9.097	Yes
ECMW4 vs ECMW12	539.368	9.703	Yes

ECMW4 vs CNTL	539.080	12.724	Yes
ECMW4 vs ECMW15	538.808	9.794	Yes
ECMW4 vs ECMW16	537.238	11.003	Yes
ECMW4 vs ECMW17	466.303	9.550	Yes
ECMW4 vs ECMW6	413.330	8.600	Yes
ECMW4 vs ECMW10	272.989	5.621	Yes
ECMW4 vs ECMW14	258.803	5.301	Yes
ECMW4 vs ECMW5	242.911	4.975	Yes
ECMW4 vs ECMW11	216.574	4.411	Yes
ECMW4 vs ECMW8	124.862	2.571	No
ECMW4 vs ECMW13	114.508	2.081	Do Not Test
ECMW4 vs ECMW7	91.840	1.911	Do Not Test
ECMW4 vs ECMW9	76.161	1.560	Do Not Test
ECMW9 vs ECMW19	633.072	10.374	Yes
ECMW9 vs ECMW18	608.207	11.423	Yes
ECMW9 vs ECMW21	597.118	9.785	Yes
ECMW9 vs ECMW22	589.481	9.660	Yes
ECMW9 vs ECMW20	477.072	7.818	Yes
ECMW9 vs ECMW12	463.206	8.298	Yes
ECMW9 vs CNTL	462.919	10.849	Yes
ECMW9 vs ECMW15	462.646	8.374	Yes
ECMW9 vs ECMW16	461.076	9.393	Yes
ECMW9 vs ECMW17	390.141	7.948	Yes
ECMW9 vs ECMW6	337.168	6.976	Yes
ECMW9 vs ECMW10	196.828	4.031	Yes
ECMW9 vs ECMW14	182.641	3.721	Yes
ECMW9 vs ECMW5	166.750	3.397	No
ECMW9 vs ECMW11	140.413	2.845	Do Not Test
ECMW9 vs ECMW8	48.700	0.997	Do Not Test
ECMW9 vs ECMW13	38.346	0.694	Do Not Test
ECMW9 vs ECMW7	15.678	0.324	Do Not Test
ECMW7 vs ECMW19	617.394	10.219	Yes
ECMW7 vs ECMW18	592.529	11.277	Yes
ECMW7 vs ECMW21	581.439	9.624	Yes
ECMW7 vs ECMW22	573.803	9.498	Yes
ECMW7 vs ECMW20	461.394	7.637	Yes
ECMW7 vs ECMW12	447.528	8.114	Yes
ECMW7 vs CNTL	447.240	10.701	Yes
ECMW7 vs ECMW15	446.968	8.190	Yes
ECMW7 vs ECMW16	445.398	9.216	Yes
ECMW7 vs ECMW17	374.463	7.748	Yes
ECMW7 vs ECMW6	321.490	6.760	Yes
ECMW7 vs ECMW10	181.150	3.769	Yes
ECMW7 vs ECMW14	166.963	3.455	No
ECMW7 vs ECMW5	151.072	3.126	Do Not Test
ECMW7 vs ECMW11	124.735	2.566	Do Not Test
ECMW7 vs ECMW8	33.022	0.687	Do Not Test
ECMW7 vs ECMW13	22.668	0.415	Do Not Test
ECMW13 vs ECMW19	594.726	9.000	Yes
ECMW13 vs ECMW18	569.861	9.664	Yes
ECMW13 vs ECMW21	558.771	8.456	Yes
ECMW13 vs ECMW22	551.135	8.341	Yes
ECMW13 vs ECMW20	438.726	6.639	Yes
ECMW13 vs ECMW12	424.860	6.930	Yes
ECMW13 vs CNTL	424.572	8.555	Yes
ECMW13 vs ECMW15	424.300	6.980	Yes

ECMW13 vs ECMW16	422.730	7.652	Yes
ECMW13 vs ECMW17	351.795	6.368	Yes
ECMW13 vs ECMW6	298.822	5.476	Yes
ECMW13 vs ECMW10	158.482	2.881	No
ECMW13 vs ECMW14	144.295	2.612	Do Not Test
ECMW13 vs ECMW5	128.404	2.324	Do Not Test
ECMW13 vs ECMW11	102.067	1.839	Do Not Test
ECMW13 vs ECMW8	10.354	0.188	Do Not Test
ECMW8 vs ECMW19	584.372	9.609	Yes
ECMW8 vs ECMW18	559.507	10.556	Yes
ECMW8 vs ECMW21	548.417	9.018	Yes
ECMW8 vs ECMW22	540.781	8.892	Yes
ECMW8 vs ECMW20	428.372	7.044	Yes
ECMW8 vs ECMW12	414.506	7.457	Yes
ECMW8 vs CNTL	414.218	9.777	Yes
ECMW8 vs ECMW15	413.946	7.524	Yes
ECMW8 vs ECMW16	412.376	8.446	Yes
ECMW8 vs ECMW17	341.441	6.993	Yes
ECMW8 vs ECMW6	288.468	6.002	Yes
ECMW8 vs ECMW10	148.128	3.050	Do Not Test
ECMW8 vs ECMW14	133.941	2.743	Do Not Test
ECMW8 vs ECMW5	118.050	2.418	Do Not Test
ECMW8 vs ECMW11	91.713	1.868	Do Not Test
ECMW11 vs ECMW19	492.659	8.044	Yes
ECMW11 vs ECMW18	467.794	8.745	Yes
ECMW11 vs ECMW21	456.705	7.457	Yes
ECMW11 vs ECMW22	449.068	7.333	Yes
ECMW11 vs ECMW20	336.659	5.497	Yes
ECMW11 vs ECMW12	322.793	5.758	Yes
ECMW11 vs CNTL	322.506	7.504	Yes
ECMW11 vs ECMW15	322.233	5.807	Yes
ECMW11 vs ECMW16	320.663	6.497	Yes
ECMW11 vs ECMW17	249.728	5.059	Yes
ECMW11 vs ECMW6	196.755	4.048	Yes
ECMW11 vs ECMW10	56.415	1.149	Do Not Test
ECMW11 vs ECMW14	42.228	0.856	Do Not Test
ECMW11 vs ECMW5	26.337	0.534	Do Not Test
ECMW5 vs ECMW19	466.322	7.642	Yes
ECMW5 vs ECMW18	441.457	8.291	Yes
ECMW5 vs ECMW21	430.368	7.052	Yes
ECMW5 vs ECMW22	422.731	6.927	Yes
ECMW5 vs ECMW20	310.322	5.085	Yes
ECMW5 vs ECMW12	296.456	5.311	Yes
ECMW5 vs CNTL	296.169	6.941	Yes
ECMW5 vs ECMW15	295.896	5.356	Yes
ECMW5 vs ECMW16	294.326	5.996	Yes
ECMW5 vs ECMW17	223.391	4.551	Yes
ECMW5 vs ECMW6	170.418	3.526	No
ECMW5 vs ECMW10	30.078	0.616	Do Not Test
ECMW5 vs ECMW14	15.891	0.324	Do Not Test
ECMW14 vs ECMW19	450.431	7.381	Yes
ECMW14 vs ECMW18	425.566	7.993	Yes
ECMW14 vs ECMW21	414.476	6.792	Yes
ECMW14 vs ECMW22	406.840	6.667	Yes
ECMW14 vs ECMW20	294.431	4.825	Yes
ECMW14 vs ECMW12	280.565	5.026	Yes

ECMW14 vs CNTL	280.277	6.569	Yes
ECMW14 vs ECMW15	280.005	5.068	Yes
ECMW14 vs ECMW16	278.435	5.672	Yes
ECMW14 vs ECMW17	207.500	4.227	Yes
ECMW14 vs ECMW6	154.527	3.197	Do Not Test
ECMW14 vs ECMW10	14.187	0.291	Do Not Test
ECMW10 vs ECMW19	436.244	7.174	Yes
ECMW10 vs ECMW18	411.379	7.762	Yes
ECMW10 vs ECMW21	400.290	6.582	Yes
ECMW10 vs ECMW22	392.653	6.457	Yes
ECMW10 vs ECMW20	280.244	4.608	Yes
ECMW10 vs ECMW12	266.378	4.792	Yes
ECMW10 vs CNTL	266.091	6.281	Yes
ECMW10 vs ECMW15	265.818	4.832	Yes
ECMW10 vs ECMW16	264.248	5.412	Yes
ECMW10 vs ECMW17	193.313	3.959	Yes
ECMW10 vs ECMW6	140.340	2.920	Do Not Test
ECMW6 vs ECMW19	295.904	4.898	Yes
ECMW6 vs ECMW18	271.039	5.158	Yes
ECMW6 vs ECMW21	259.949	4.303	Yes
ECMW6 vs ECMW22	252.313	4.176	Yes
ECMW6 vs ECMW20	139.904	2.316	No
ECMW6 vs ECMW12	126.038	2.285	Do Not Test
ECMW6 vs CNTL	125.750	3.009	Do Not Test
ECMW6 vs ECMW15	125.478	2.299	Do Not Test
ECMW6 vs ECMW16	123.908	2.564	Do Not Test
ECMW6 vs ECMW17	52.973	1.096	Do Not Test
ECMW17 vs ECMW19	242.931	3.981	Yes
ECMW17 vs ECMW18	218.066	4.096	Yes
ECMW17 vs ECMW21	206.976	3.392	No
ECMW17 vs ECMW22	199.340	3.267	Do Not Test
ECMW17 vs ECMW20	86.931	1.425	Do Not Test
ECMW17 vs ECMW12	73.065	1.309	Do Not Test
ECMW17 vs CNTL	72.777	1.706	Do Not Test
ECMW17 vs ECMW15	72.505	1.312	Do Not Test
ECMW17 vs ECMW16	70.935	1.445	Do Not Test
ECMW16 vs ECMW19	171.996	2.819	No
ECMW16 vs ECMW18	147.131	2.763	Do Not Test
ECMW16 vs ECMW21	136.042	2.229	Do Not Test
ECMW16 vs ECMW22	128.405	2.104	Do Not Test
ECMW16 vs ECMW20	15.996	0.262	Do Not Test
ECMW16 vs ECMW12	2.130	0.0382	Do Not Test
ECMW16 vs CNTL	1.843	0.0432	Do Not Test
ECMW16 vs ECMW15	1.570	0.0284	Do Not Test
ECMW15 vs ECMW19	170.426	2.579	Do Not Test
ECMW15 vs ECMW18	145.561	2.468	Do Not Test
ECMW15 vs ECMW21	134.471	2.035	Do Not Test
ECMW15 vs ECMW22	126.835	1.919	Do Not Test
ECMW15 vs ECMW20	14.426	0.218	Do Not Test
ECMW15 vs ECMW12	0.560	0.00913	Do Not Test
ECMW15 vs CNTL	0.272	0.00549	Do Not Test
CNTL vs ECMW19	170.154	3.039	Do Not Test
CNTL vs ECMW18	145.289	3.066	Do Not Test
CNTL vs ECMW21	134.199	2.397	Do Not Test
CNTL vs ECMW22	126.563	2.260	Do Not Test
CNTL vs ECMW20	14.154	0.253	Do Not Test

CNTL vs ECMW12	0.288	0.00572	Do Not Test
ECMW12 vs ECMW19	169.866	2.552	Do Not Test
ECMW12 vs ECMW18	145.001	2.437	Do Not Test
ECMW12 vs ECMW21	133.911	2.012	Do Not Test
ECMW12 vs ECMW22	126.275	1.897	Do Not Test
ECMW12 vs ECMW20	13.866	0.208	Do Not Test
ECMW20 vs ECMW19	156.000	2.198	Do Not Test
ECMW20 vs ECMW18	131.135	2.036	Do Not Test
ECMW20 vs ECMW21	120.045	1.691	Do Not Test
ECMW20 vs ECMW22	112.409	1.584	Do Not Test
ECMW22 vs ECMW19	43.591	0.614	Do Not Test
ECMW22 vs ECMW18	18.726	0.291	Do Not Test
ECMW22 vs ECMW21	7.636	0.108	Do Not Test
ECMW21 vs ECMW19	35.955	0.507	Do Not Test
ECMW21 vs ECMW18	11.090	0.172	Do Not Test
ECMW18 vs ECMW19	24.865	0.386	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Temperature C

One Way Analysis of Variance Wednesday, November 03, 2021, 10:04:52 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 10:04:52 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	17	19.400	17.255	21.450
ECMW6	52	19	19.970	18.025	20.700
ECMW7	52	19	20.300	18.815	20.740
ECMW8	51	19	19.250	18.525	20.375
ECMW10	51	17	21.060	19.425	21.825
ECMW11	50	19	20.100	18.200	22.100
ECMW12	47	16	21.200	18.660	22.870
ECMW13	50	19	19.160	16.650	20.680
ECMW14	50	18	19.600	16.568	21.558
ECMW15	49	18	20.160	16.100	22.470
ECMW16	49	17	20.500	16.422	22.495
ECMW17	50	17	19.000	18.175	20.400
ECMW18	49	17	18.450	15.433	19.822
CNTL	144	51	18.500	16.750	19.350
ECMW4	50	17	19.400	16.515	21.110
ECMW9	49	17	19.465	18.180	20.190
ECMW19	40	10	17.900	17.142	18.325
ECMW20	40	11	18.900	17.800	20.400
ECMW21	40	10	18.700	17.453	19.525
ECMW22	40	10	19.000	18.275	20.550

H = 78.060 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	262.896	5.113	Yes
ECMW12 vs ECMW18	215.066	4.251	Yes
ECMW12 vs CNTL	211.118	5.070	Yes
ECMW12 vs ECMW21	165.930	3.227	No
ECMW12 vs ECMW13	142.774	2.800	Do Not Test
ECMW12 vs ECMW20	129.009	2.487	Do Not Test

ECMW12 vs ECMW4	124.310	2.475	Do Not Test
ECMW12 vs ECMW22	123.913	2.410	Do Not Test
ECMW12 vs ECMW17	121.325	2.416	Do Not Test
ECMW12 vs ECMW8	117.035	2.313	Do Not Test
ECMW12 vs ECMW9	114.160	2.256	Do Not Test
ECMW12 vs ECMW14	109.285	2.160	Do Not Test
ECMW12 vs ECMW5	106.840	2.128	Do Not Test
ECMW12 vs ECMW6	88.552	1.763	Do Not Test
ECMW12 vs ECMW15	79.081	1.551	Do Not Test
ECMW12 vs ECMW16	76.800	1.518	Do Not Test
ECMW12 vs ECMW7	52.189	1.039	Do Not Test
ECMW12 vs ECMW11	47.113	0.924	Do Not Test
ECMW12 vs ECMW10	1.819	0.0365	Do Not Test
ECMW10 vs ECMW19	261.077	5.191	Yes
ECMW10 vs ECMW18	213.247	4.312	Yes
ECMW10 vs CNTL	209.299	5.202	Yes
ECMW10 vs ECMW21	164.111	3.263	Do Not Test
ECMW10 vs ECMW13	140.955	2.827	Do Not Test
ECMW10 vs ECMW20	127.191	2.506	Do Not Test
ECMW10 vs ECMW4	122.491	2.497	Do Not Test
ECMW10 vs ECMW22	122.094	2.428	Do Not Test
ECMW10 vs ECMW17	119.506	2.436	Do Not Test
ECMW10 vs ECMW8	115.216	2.330	Do Not Test
ECMW10 vs ECMW9	112.341	2.272	Do Not Test
ECMW10 vs ECMW14	107.466	2.173	Do Not Test
ECMW10 vs ECMW5	105.021	2.141	Do Not Test
ECMW10 vs ECMW6	86.734	1.768	Do Not Test
ECMW10 vs ECMW15	77.262	1.550	Do Not Test
ECMW10 vs ECMW16	74.982	1.516	Do Not Test
ECMW10 vs ECMW7	50.370	1.027	Do Not Test
ECMW10 vs ECMW11	45.294	0.908	Do Not Test
ECMW11 vs ECMW19	215.783	4.197	Yes
ECMW11 vs ECMW18	167.953	3.319	No
ECMW11 vs CNTL	164.005	3.939	Do Not Test
ECMW11 vs ECMW21	118.817	2.311	Do Not Test
ECMW11 vs ECMW13	95.661	1.876	Do Not Test
ECMW11 vs ECMW20	81.897	1.579	Do Not Test
ECMW11 vs ECMW4	77.197	1.537	Do Not Test
ECMW11 vs ECMW22	76.800	1.494	Do Not Test
ECMW11 vs ECMW17	74.212	1.478	Do Not Test
ECMW11 vs ECMW8	69.922	1.382	Do Not Test
ECMW11 vs ECMW9	67.047	1.325	Do Not Test
ECMW11 vs ECMW14	62.172	1.229	Do Not Test
ECMW11 vs ECMW5	59.727	1.189	Do Not Test
ECMW11 vs ECMW6	41.439	0.825	Do Not Test
ECMW11 vs ECMW15	31.968	0.627	Do Not Test
ECMW11 vs ECMW16	29.688	0.587	Do Not Test
ECMW11 vs ECMW7	5.076	0.101	Do Not Test
ECMW7 vs ECMW19	210.708	4.160	Yes
ECMW7 vs ECMW18	162.877	3.270	Do Not Test
ECMW7 vs CNTL	158.930	3.907	Do Not Test
ECMW7 vs ECMW21	113.741	2.246	Do Not Test
ECMW7 vs ECMW13	90.586	1.804	Do Not Test
ECMW7 vs ECMW20	76.821	1.503	Do Not Test
ECMW7 vs ECMW4	72.121	1.459	Do Not Test
ECMW7 vs ECMW22	71.724	1.416	Do Not Test

ECMW7 vs ECMW17	69.136	1.399	Do Not Test
ECMW7 vs ECMW8	64.846	1.302	Do Not Test
ECMW7 vs ECMW9	61.971	1.244	Do Not Test
ECMW7 vs ECMW14	57.096	1.146	Do Not Test
ECMW7 vs ECMW5	54.652	1.106	Do Not Test
ECMW7 vs ECMW6	36.364	0.736	Do Not Test
ECMW7 vs ECMW15	26.892	0.536	Do Not Test
ECMW7 vs ECMW16	24.612	0.494	Do Not Test
ECMW16 vs ECMW19	186.096	3.647	No
ECMW16 vs ECMW18	138.266	2.755	Do Not Test
ECMW16 vs CNTL	134.318	3.264	Do Not Test
ECMW16 vs ECMW21	89.129	1.747	Do Not Test
ECMW16 vs ECMW13	65.974	1.304	Do Not Test
ECMW16 vs ECMW20	52.209	1.014	Do Not Test
ECMW16 vs ECMW4	47.509	0.954	Do Not Test
ECMW16 vs ECMW22	47.113	0.923	Do Not Test
ECMW16 vs ECMW17	44.525	0.894	Do Not Test
ECMW16 vs ECMW8	40.234	0.802	Do Not Test
ECMW16 vs ECMW9	37.359	0.744	Do Not Test
ECMW16 vs ECMW14	32.484	0.647	Do Not Test
ECMW16 vs ECMW5	30.040	0.603	Do Not Test
ECMW16 vs ECMW6	11.752	0.236	Do Not Test
ECMW16 vs ECMW15	2.280	0.0451	Do Not Test
ECMW15 vs ECMW19	183.816	3.575	Do Not Test
ECMW15 vs ECMW18	135.985	2.688	Do Not Test
ECMW15 vs CNTL	132.038	3.171	Do Not Test
ECMW15 vs ECMW21	86.849	1.689	Do Not Test
ECMW15 vs ECMW13	63.694	1.249	Do Not Test
ECMW15 vs ECMW20	49.929	0.963	Do Not Test
ECMW15 vs ECMW4	45.229	0.901	Do Not Test
ECMW15 vs ECMW22	44.832	0.872	Do Not Test
ECMW15 vs ECMW17	42.244	0.841	Do Not Test
ECMW15 vs ECMW8	37.954	0.750	Do Not Test
ECMW15 vs ECMW9	35.079	0.693	Do Not Test
ECMW15 vs ECMW14	30.204	0.597	Do Not Test
ECMW15 vs ECMW5	27.760	0.553	Do Not Test
ECMW15 vs ECMW6	9.472	0.189	Do Not Test
ECMW6 vs ECMW19	174.344	3.442	Do Not Test
ECMW6 vs ECMW18	126.514	2.540	Do Not Test
ECMW6 vs CNTL	122.566	3.013	Do Not Test
ECMW6 vs ECMW21	77.377	1.528	Do Not Test
ECMW6 vs ECMW13	54.222	1.080	Do Not Test
ECMW6 vs ECMW20	40.457	0.792	Do Not Test
ECMW6 vs ECMW4	35.758	0.723	Do Not Test
ECMW6 vs ECMW22	35.361	0.698	Do Not Test
ECMW6 vs ECMW17	32.773	0.663	Do Not Test
ECMW6 vs ECMW8	28.482	0.572	Do Not Test
ECMW6 vs ECMW9	25.607	0.514	Do Not Test
ECMW6 vs ECMW14	20.732	0.416	Do Not Test
ECMW6 vs ECMW5	18.288	0.370	Do Not Test
ECMW5 vs ECMW19	156.056	3.081	Do Not Test
ECMW5 vs ECMW18	108.226	2.173	Do Not Test
ECMW5 vs CNTL	104.278	2.563	Do Not Test
ECMW5 vs ECMW21	59.089	1.167	Do Not Test
ECMW5 vs ECMW13	35.934	0.716	Do Not Test
ECMW5 vs ECMW20	22.169	0.434	Do Not Test

ECMW5 vs ECMW4	17.470	0.353	Do Not Test
ECMW5 vs ECMW22	17.073	0.337	Do Not Test
ECMW5 vs ECMW17	14.485	0.293	Do Not Test
ECMW5 vs ECMW8	10.195	0.205	Do Not Test
ECMW5 vs ECMW9	7.320	0.147	Do Not Test
ECMW5 vs ECMW14	2.445	0.0491	Do Not Test
ECMW14 vs ECMW19	153.611	3.011	Do Not Test
ECMW14 vs ECMW18	105.781	2.107	Do Not Test
ECMW14 vs CNTL	101.834	2.475	Do Not Test
ECMW14 vs ECMW21	56.645	1.110	Do Not Test
ECMW14 vs ECMW13	33.489	0.662	Do Not Test
ECMW14 vs ECMW20	19.725	0.383	Do Not Test
ECMW14 vs ECMW4	15.025	0.302	Do Not Test
ECMW14 vs ECMW22	14.628	0.287	Do Not Test
ECMW14 vs ECMW17	12.040	0.242	Do Not Test
ECMW14 vs ECMW8	7.750	0.154	Do Not Test
ECMW14 vs ECMW9	4.875	0.0971	Do Not Test
ECMW9 vs ECMW19	148.736	2.915	Do Not Test
ECMW9 vs ECMW18	100.906	2.010	Do Not Test
ECMW9 vs CNTL	96.959	2.356	Do Not Test
ECMW9 vs ECMW21	51.770	1.015	Do Not Test
ECMW9 vs ECMW13	28.614	0.566	Do Not Test
ECMW9 vs ECMW20	14.850	0.288	Do Not Test
ECMW9 vs ECMW4	10.150	0.204	Do Not Test
ECMW9 vs ECMW22	9.753	0.191	Do Not Test
ECMW9 vs ECMW17	7.165	0.144	Do Not Test
ECMW9 vs ECMW8	2.875	0.0573	Do Not Test
ECMW8 vs ECMW19	145.861	2.859	Do Not Test
ECMW8 vs ECMW18	98.031	1.953	Do Not Test
ECMW8 vs CNTL	94.084	2.286	Do Not Test
ECMW8 vs ECMW21	48.895	0.958	Do Not Test
ECMW8 vs ECMW13	25.739	0.509	Do Not Test
ECMW8 vs ECMW20	11.975	0.233	Do Not Test
ECMW8 vs ECMW4	7.275	0.146	Do Not Test
ECMW8 vs ECMW22	6.878	0.135	Do Not Test
ECMW8 vs ECMW17	4.290	0.0861	Do Not Test
ECMW17 vs ECMW19	141.571	2.795	Do Not Test
ECMW17 vs ECMW18	93.741	1.882	Do Not Test
ECMW17 vs CNTL	89.793	2.207	Do Not Test
ECMW17 vs ECMW21	44.605	0.881	Do Not Test
ECMW17 vs ECMW13	21.449	0.427	Do Not Test
ECMW17 vs ECMW20	7.684	0.150	Do Not Test
ECMW17 vs ECMW4	2.985	0.0604	Do Not Test
ECMW17 vs ECMW22	2.588	0.0511	Do Not Test
ECMW22 vs ECMW19	138.983	2.681	Do Not Test
ECMW22 vs ECMW18	91.153	1.787	Do Not Test
ECMW22 vs CNTL	87.205	2.069	Do Not Test
ECMW22 vs ECMW21	42.017	0.811	Do Not Test
ECMW22 vs ECMW13	18.861	0.367	Do Not Test
ECMW22 vs ECMW20	5.097	0.0975	Do Not Test
ECMW22 vs ECMW4	0.397	0.00784	Do Not Test
ECMW4 vs ECMW19	138.586	2.736	Do Not Test
ECMW4 vs ECMW18	90.756	1.822	Do Not Test
ECMW4 vs CNTL	86.808	2.134	Do Not Test
ECMW4 vs ECMW21	41.620	0.822	Do Not Test
ECMW4 vs ECMW13	18.464	0.368	Do Not Test

ECMW4 vs ECMW20	4.700	0.0920	Do Not Test
ECMW20 vs ECMW19	133.887	2.561	Do Not Test
ECMW20 vs ECMW18	86.057	1.672	Do Not Test
ECMW20 vs CNTL	82.109	1.923	Do Not Test
ECMW20 vs ECMW21	36.920	0.706	Do Not Test
ECMW20 vs ECMW13	13.765	0.265	Do Not Test
ECMW13 vs ECMW19	120.122	2.336	Do Not Test
ECMW13 vs ECMW18	72.292	1.429	Do Not Test
ECMW13 vs CNTL	68.344	1.641	Do Not Test
ECMW13 vs ECMW21	23.155	0.450	Do Not Test
ECMW21 vs ECMW19	96.967	1.871	Do Not Test
ECMW21 vs ECMW18	49.136	0.963	Do Not Test
ECMW21 vs CNTL	45.189	1.072	Do Not Test
CNTL vs ECMW19	51.778	1.228	Do Not Test
CNTL vs ECMW18	3.948	0.0959	Do Not Test
ECMW18 vs ECMW19	47.830	0.937	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Total Alkalinity

One Way Analysis of Variance Wednesday, November 03, 2021, 10:05:05 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Total Alkalinity (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, November 03, 2021, 10:05:05 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	38	7.500	5.250	8.750
ECMW6	52	38	5.000	5.000	5.000
ECMW7	52	38	5.000	5.000	5.000
ECMW8	51	39	71.500	14.250	139.750
ECMW10	51	39	5.000	5.000	5.000
ECMW11	50	38	5.000	5.000	5.000
ECMW12	47	35	167.000	147.250	235.750
ECMW13	50	38	5.000	5.000	15.000
ECMW14	50	38	6.500	5.000	13.000
ECMW15	49	37	5.000	5.000	5.000
ECMW16	49	37	5.000	5.000	5.000
ECMW17	50	38	5.000	5.000	5.000
ECMW18	48	36	15.000	13.500	19.500
CNTL	144	108	16.000	5.000	57.000
ECMW4	50	38	5.000	5.000	5.000
ECMW9	49	37	26.000	23.500	30.000
ECMW19	40	29	32.000	28.000	34.000
ECMW20	40	28	37.000	30.750	42.750
ECMW21	40	29	5.000	5.000	6.000
ECMW22	40	28	47.000	42.750	49.750

H = 200.213 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 ECMW6	194.185	6.392	Yes
ECMW12 vs ECMW7	194.185	6.392	Yes
ECMW12 vs ECMW11	189.292	6.004	Yes
ECMW12 vs ECMW17	189.292	6.004	Yes
ECMW12 vs ECMW4	189.292	6.004	Yes
ECMW12 vs ECMW15	189.292	6.004	Yes

ECMW12 vs ECMW16	189.292	6.004	Yes
ECMW12 vs ECMW10	182.458	5.788	Yes
ECMW12 vs ECMW21	169.064	5.245	Yes
ECMW12 vs ECMW13	150.917	4.787	Yes
ECMW12 vs ECMW14	144.750	4.592	Yes
ECMW12 vs ECMW5	131.833	4.182	Yes
ECMW12 vs CNTL	95.500	3.710	Yes
ECMW12 vs ECMW18	89.061	2.881	No
ECMW12 vs ECMW9	61.458	1.950	Do Not Test
ECMW12 vs ECMW19	53.883	1.672	Do Not Test
ECMW12 vs ECMW8	52.792	1.675	Do Not Test
ECMW12 vs ECMW20	43.000	1.364	Do Not Test
ECMW12 vs ECMW22	33.625	1.067	Do Not Test
ECMW22 vs ECMW6	160.560	5.285	Yes
ECMW22 vs ECMW7	160.560	5.285	Yes
ECMW22 vs ECMW11	155.667	4.938	Yes
ECMW22 vs ECMW17	155.667	4.938	Yes
ECMW22 vs ECMW4	155.667	4.938	Yes
ECMW22 vs ECMW15	155.667	4.938	Yes
ECMW22 vs ECMW16	155.667	4.938	Yes
ECMW22 vs ECMW10	148.833	4.721	Yes
ECMW22 vs ECMW21	135.439	4.202	Yes
ECMW22 vs ECMW13	117.292	3.721	Yes
ECMW22 vs ECMW14	111.125	3.525	No
ECMW22 vs ECMW5	98.208	3.115	Do Not Test
ECMW22 vs CNTL	61.875	2.404	Do Not Test
ECMW22 vs ECMW18	55.436	1.793	Do Not Test
ECMW22 vs ECMW9	27.833	0.883	Do Not Test
ECMW22 vs ECMW19	20.258	0.628	Do Not Test
ECMW22 vs ECMW8	19.167	0.608	Do Not Test
ECMW22 vs ECMW20	9.375	0.297	Do Not Test
ECMW20 vs ECMW6	151.185	4.977	Yes
ECMW20 vs ECMW7	151.185	4.977	Yes
ECMW20 vs ECMW11	146.292	4.640	Yes
ECMW20 vs ECMW17	146.292	4.640	Yes
ECMW20 vs ECMW4	146.292	4.640	Yes
ECMW20 vs ECMW15	146.292	4.640	Yes
ECMW20 vs ECMW16	146.292	4.640	Yes
ECMW20 vs ECMW10	139.458	4.424	Yes
ECMW20 vs ECMW21	126.064	3.911	Yes
ECMW20 vs ECMW13	107.917	3.423	No
ECMW20 vs ECMW14	101.750	3.228	Do Not Test
ECMW20 vs ECMW5	88.833	2.818	Do Not Test
ECMW20 vs CNTL	52.500	2.040	Do Not Test
ECMW20 vs ECMW18	46.061	1.490	Do Not Test
ECMW20 vs ECMW9	18.458	0.586	Do Not Test
ECMW20 vs ECMW19	10.883	0.338	Do Not Test
ECMW20 vs ECMW8	9.792	0.311	Do Not Test
ECMW8 vs ECMW6	141.393	4.654	Yes
ECMW8 vs ECMW7	141.393	4.654	Yes
ECMW8 vs ECMW11	136.500	4.330	Yes
ECMW8 vs ECMW17	136.500	4.330	Yes
ECMW8 vs ECMW4	136.500	4.330	Yes
ECMW8 vs ECMW15	136.500	4.330	Yes
ECMW8 vs ECMW16	136.500	4.330	Yes
ECMW8 vs ECMW10	129.667	4.113	Yes

ECMW8 vs ECMW21	116.273	3.607	No
ECMW8 vs ECMW13	98.125	3.113	Do Not Test
ECMW8 vs ECMW14	91.958	2.917	Do Not Test
ECMW8 vs ECMW5	79.042	2.507	Do Not Test
ECMW8 vs CNTL	42.708	1.659	Do Not Test
ECMW8 vs ECMW18	36.269	1.173	Do Not Test
ECMW8 vs ECMW9	8.667	0.275	Do Not Test
ECMW8 vs ECMW19	1.091	0.0338	Do Not Test
ECMW19 vs ECMW6	140.302	4.509	Yes
ECMW19 vs ECMW7	140.302	4.509	Yes
ECMW19 vs ECMW11	135.409	4.201	Yes
ECMW19 vs ECMW17	135.409	4.201	Yes
ECMW19 vs ECMW4	135.409	4.201	Yes
ECMW19 vs ECMW15	135.409	4.201	Yes
ECMW19 vs ECMW16	135.409	4.201	Yes
ECMW19 vs ECMW10	128.576	3.989	Yes
ECMW19 vs ECMW21	115.182	3.498	Do Not Test
ECMW19 vs ECMW13	97.034	3.010	Do Not Test
ECMW19 vs ECMW14	90.867	2.819	Do Not Test
ECMW19 vs ECMW5	77.951	2.418	Do Not Test
ECMW19 vs CNTL	41.617	1.564	Do Not Test
ECMW19 vs ECMW18	35.178	1.112	Do Not Test
ECMW19 vs ECMW9	7.576	0.235	Do Not Test
ECMW9 vs ECMW6	132.726	4.369	Yes
ECMW9 vs ECMW7	132.726	4.369	Yes
ECMW9 vs ECMW11	127.833	4.055	Yes
ECMW9 vs ECMW17	127.833	4.055	Yes
ECMW9 vs ECMW4	127.833	4.055	Yes
ECMW9 vs ECMW15	127.833	4.055	Yes
ECMW9 vs ECMW16	127.833	4.055	Yes
ECMW9 vs ECMW10	121.000	3.838	Yes
ECMW9 vs ECMW21	107.606	3.338	Do Not Test
ECMW9 vs ECMW13	89.458	2.838	Do Not Test
ECMW9 vs ECMW14	83.292	2.642	Do Not Test
ECMW9 vs ECMW5	70.375	2.232	Do Not Test
ECMW9 vs CNTL	34.042	1.323	Do Not Test
ECMW9 vs ECMW18	27.603	0.893	Do Not Test
ECMW18 vs ECMW6	105.124	3.534	No
ECMW18 vs ECMW7	105.124	3.534	Do Not Test
ECMW18 vs ECMW11	100.231	3.242	Do Not Test
ECMW18 vs ECMW17	100.231	3.242	Do Not Test
ECMW18 vs ECMW4	100.231	3.242	Do Not Test
ECMW18 vs ECMW15	100.231	3.242	Do Not Test
ECMW18 vs ECMW16	100.231	3.242	Do Not Test
ECMW18 vs ECMW10	93.397	3.021	Do Not Test
ECMW18 vs ECMW21	80.003	2.529	Do Not Test
ECMW18 vs ECMW13	61.856	2.001	Do Not Test
ECMW18 vs ECMW14	55.689	1.801	Do Not Test
ECMW18 vs ECMW5	42.772	1.384	Do Not Test
ECMW18 vs CNTL	6.439	0.258	Do Not Test
CNTL vs ECMW6	98.685	4.057	Do Not Test
CNTL vs ECMW7	98.685	4.057	Do Not Test
CNTL vs ECMW11	93.792	3.644	Do Not Test
CNTL vs ECMW17	93.792	3.644	Do Not Test
CNTL vs ECMW4	93.792	3.644	Do Not Test
CNTL vs ECMW15	93.792	3.644	Do Not Test

CNTL vs ECMW16	93.792	3.644	Do Not Test
CNTL vs ECMW10	86.958	3.378	Do Not Test
CNTL vs ECMW21	73.564	2.765	Do Not Test
CNTL vs ECMW13	55.417	2.153	Do Not Test
CNTL vs ECMW14	49.250	1.913	Do Not Test
CNTL vs ECMW5	36.333	1.412	Do Not Test
ECMW5 vs ECMW6	62.351	2.052	Do Not Test
ECMW5 vs ECMW7	62.351	2.052	Do Not Test
ECMW5 vs ECMW11	57.458	1.823	Do Not Test
ECMW5 vs ECMW17	57.458	1.823	Do Not Test
ECMW5 vs ECMW4	57.458	1.823	Do Not Test
ECMW5 vs ECMW15	57.458	1.823	Do Not Test
ECMW5 vs ECMW16	57.458	1.823	Do Not Test
ECMW5 vs ECMW10	50.625	1.606	Do Not Test
ECMW5 vs ECMW21	37.231	1.155	Do Not Test
ECMW5 vs ECMW13	19.083	0.605	Do Not Test
ECMW5 vs ECMW14	12.917	0.410	Do Not Test
ECMW14 vs ECMW6	49.435	1.627	Do Not Test
ECMW14 vs ECMW7	49.435	1.627	Do Not Test
ECMW14 vs ECMW11	44.542	1.413	Do Not Test
ECMW14 vs ECMW17	44.542	1.413	Do Not Test
ECMW14 vs ECMW4	44.542	1.413	Do Not Test
ECMW14 vs ECMW15	44.542	1.413	Do Not Test
ECMW14 vs ECMW16	44.542	1.413	Do Not Test
ECMW14 vs ECMW10	37.708	1.196	Do Not Test
ECMW14 vs ECMW21	24.314	0.754	Do Not Test
ECMW14 vs ECMW13	6.167	0.196	Do Not Test
ECMW13 vs ECMW6	43.268	1.424	Do Not Test
ECMW13 vs ECMW7	43.268	1.424	Do Not Test
ECMW13 vs ECMW11	38.375	1.217	Do Not Test
ECMW13 vs ECMW17	38.375	1.217	Do Not Test
ECMW13 vs ECMW4	38.375	1.217	Do Not Test
ECMW13 vs ECMW15	38.375	1.217	Do Not Test
ECMW13 vs ECMW16	38.375	1.217	Do Not Test
ECMW13 vs ECMW10	31.542	1.001	Do Not Test
ECMW13 vs ECMW21	18.148	0.563	Do Not Test
ECMW21 vs ECMW6	25.120	0.807	Do Not Test
ECMW21 vs ECMW7	25.120	0.807	Do Not Test
ECMW21 vs ECMW11	20.227	0.628	Do Not Test
ECMW21 vs ECMW17	20.227	0.628	Do Not Test
ECMW21 vs ECMW4	20.227	0.628	Do Not Test
ECMW21 vs ECMW15	20.227	0.628	Do Not Test
ECMW21 vs ECMW16	20.227	0.628	Do Not Test
ECMW21 vs ECMW10	13.394	0.416	Do Not Test
ECMW10 vs ECMW6	11.726	0.386	Do Not Test
ECMW10 vs ECMW7	11.726	0.386	Do Not Test
ECMW10 vs ECMW11	6.833	0.217	Do Not Test
ECMW10 vs ECMW17	6.833	0.217	Do Not Test
ECMW10 vs ECMW4	6.833	0.217	Do Not Test
ECMW10 vs ECMW15	6.833	0.217	Do Not Test
ECMW10 vs ECMW16	6.833	0.217	Do Not Test
ECMW16 vs ECMW6	4.893	0.161	Do Not Test
ECMW16 vs ECMW7	4.893	0.161	Do Not Test
ECMW16 vs ECMW11	0.000	0.000	Do Not Test
ECMW16 vs ECMW17	0.000	0.000	Do Not Test
ECMW16 vs ECMW4	0.000	0.000	Do Not Test

ECMW16 vs ECMW15	0.000	0.000	Do Not Test
ECMW15 vs ECMW6	4.893	0.161	Do Not Test
ECMW15 vs ECMW7	4.893	0.161	Do Not Test
ECMW15 vs ECMW11	0.000	0.000	Do Not Test
ECMW15 vs ECMW17	0.000	0.000	Do Not Test
ECMW15 vs ECMW4	0.000	0.000	Do Not Test
ECMW4 vs ECMW6	4.893	0.161	Do Not Test
ECMW4 vs ECMW7	4.893	0.161	Do Not Test
ECMW4 vs ECMW11	0.000	0.000	Do Not Test
ECMW4 vs ECMW17	0.000	0.000	Do Not Test
ECMW17 vs ECMW6	4.893	0.161	Do Not Test
ECMW17 vs ECMW7	4.893	0.161	Do Not Test
ECMW17 vs ECMW11	0.000	0.000	Do Not Test
ECMW11 vs ECMW6	4.893	0.161	Do Not Test
ECMW11 vs ECMW7	4.893	0.161	Do Not Test
ECMW7 vs ECMW6	0.000	0.000	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

TDS

One Way Analysis of Variance Wednesday, November 03, 2021, 10:05:18 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Total Dissolved Solids (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, November 03, 2021, 10:05:18 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	35	870.000	780.000	934.000
ECMW6	52	37	5106.000	3360.000	6300.000
ECMW7	52	37	1324.000	1280.000	1500.000
ECMW8	51	37	2750.000	2475.000	4324.500
ECMW1051		36	1000.000	970.000	1120.000
ECMW1150		36	530.000	473.000	671.000
ECMW1247		33	365.000	327.500	428.000
ECMW1350		35	1100.000	718.000	1300.000
ECMW1450		35	750.000	700.000	820.000
ECMW1549		34	100.000	97.000	110.000
ECMW1649		34	280.000	180.000	396.000
ECMW1750		35	570.000	530.000	760.000
ECMW1849		36	720.000	445.000	1050.000
CNTL	144	99	228.000	72.000	302.500
ECMW4	50	35	5200.000	4700.000	5300.000
ECMW9	49	34	1600.000	1500.000	1600.000
ECMW1940		32	155.000	120.000	233.500
ECMW2040		32	150.000	122.500	179.500
ECMW2140		32	106.500	78.250	125.000
ECMW2240		32	140.000	131.500	177.500

H = 256.734 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 ECMW15	252.067	8.038	Yes
ECMW4 vs ECMW21	251.854	6.699	Yes
ECMW4 vs ECMW22	226.417	6.022	Yes
ECMW4 vs ECMW20	220.917	5.876	Yes
ECMW4 vs CNTL	219.833	8.586	Yes
ECMW4 vs ECMW19	208.479	5.545	Yes
ECMW4 vs ECMW16	189.367	6.039	Yes

ECMW4 vs ECMW12	176.024	5.516	Yes
ECMW4 vs ECMW11	139.310	4.365	Yes
ECMW4 vs ECMW17	130.400	4.158	Yes
ECMW4 vs ECMW18	124.051	3.812	Yes
ECMW4 vs ECMW14	115.333	3.678	Yes
ECMW4 vs ECMW5	102.467	3.268	No
ECMW4 vs ECMW13	85.200	2.717	Do Not Test
ECMW4 vs ECMW10	78.833	2.514	Do Not Test
ECMW4 vs ECMW7	53.567	1.708	Do Not Test
ECMW4 vs ECMW9	44.433	1.417	Do Not Test
ECMW4 vs ECMW8	17.095	0.536	Do Not Test
ECMW4 vs ECMW6	13.767	0.439	Do Not Test
ECMW6 vs ECMW15	238.300	7.599	Yes
ECMW6 vs ECMW21	238.087	6.332	Yes
ECMW6 vs ECMW22	212.650	5.656	Yes
ECMW6 vs ECMW20	207.150	5.510	Yes
ECMW6 vs CNTL	206.067	8.048	Yes
ECMW6 vs ECMW19	194.712	5.179	Yes
ECMW6 vs ECMW16	175.600	5.600	Yes
ECMW6 vs ECMW12	162.257	5.084	Yes
ECMW6 vs ECMW11	125.543	3.934	Yes
ECMW6 vs ECMW17	116.633	3.719	Yes
ECMW6 vs ECMW18	110.285	3.389	No
ECMW6 vs ECMW14	101.567	3.239	Do Not Test
ECMW6 vs ECMW5	88.700	2.829	Do Not Test
ECMW6 vs ECMW13	71.433	2.278	Do Not Test
ECMW6 vs ECMW10	65.067	2.075	Do Not Test
ECMW6 vs ECMW7	39.800	1.269	Do Not Test
ECMW6 vs ECMW9	30.667	0.978	Do Not Test
ECMW6 vs ECMW8	3.329	0.104	Do Not Test
ECMW8 vs ECMW15	234.971	7.363	Yes
ECMW8 vs ECMW21	234.759	6.168	Yes
ECMW8 vs ECMW22	209.321	5.499	Yes
ECMW8 vs ECMW20	203.821	5.355	Yes
ECMW8 vs CNTL	202.738	7.714	Yes
ECMW8 vs ECMW19	191.384	5.028	Yes
ECMW8 vs ECMW16	172.271	5.398	Yes
ECMW8 vs ECMW12	158.929	4.896	Yes
ECMW8 vs ECMW11	122.214	3.765	Yes
ECMW8 vs ECMW17	113.305	3.550	No
ECMW8 vs ECMW18	106.956	3.233	Do Not Test
ECMW8 vs ECMW14	98.238	3.078	Do Not Test
ECMW8 vs ECMW5	85.371	2.675	Do Not Test
ECMW8 vs ECMW13	68.105	2.134	Do Not Test
ECMW8 vs ECMW10	61.738	1.934	Do Not Test
ECMW8 vs ECMW7	36.471	1.143	Do Not Test
ECMW8 vs ECMW9	27.338	0.857	Do Not Test
ECMW9 vs ECMW15	207.633	6.621	Yes
ECMW9 vs ECMW21	207.421	5.517	Yes
ECMW9 vs ECMW22	181.983	4.840	Yes
ECMW9 vs ECMW20	176.483	4.694	Yes
ECMW9 vs CNTL	175.400	6.850	Yes
ECMW9 vs ECMW19	164.046	4.363	Yes
ECMW9 vs ECMW16	144.933	4.622	Yes
ECMW9 vs ECMW12	131.590	4.123	Yes
ECMW9 vs ECMW11	94.876	2.973	No

ECMW9 vs ECMW17	85.967	2.741	Do Not Test
ECMW9 vs ECMW18	79.618	2.447	Do Not Test
ECMW9 vs ECMW14	70.900	2.261	Do Not Test
ECMW9 vs ECMW5	58.033	1.851	Do Not Test
ECMW9 vs ECMW13	40.767	1.300	Do Not Test
ECMW9 vs ECMW10	34.400	1.097	Do Not Test
ECMW9 vs ECMW7	9.133	0.291	Do Not Test
ECMW7 vs ECMW15	198.500	6.330	Yes
ECMW7 vs ECMW21	198.287	5.274	Yes
ECMW7 vs ECMW22	172.850	4.597	Yes
ECMW7 vs ECMW20	167.350	4.451	Yes
ECMW7 vs CNTL	166.267	6.494	Yes
ECMW7 vs ECMW19	154.912	4.120	Yes
ECMW7 vs ECMW16	135.800	4.330	Yes
ECMW7 vs ECMW12	122.457	3.837	Yes
ECMW7 vs ECMW11	85.743	2.687	Do Not Test
ECMW7 vs ECMW17	76.833	2.450	Do Not Test
ECMW7 vs ECMW18	70.485	2.166	Do Not Test
ECMW7 vs ECMW14	61.767	1.970	Do Not Test
ECMW7 vs ECMW5	48.900	1.559	Do Not Test
ECMW7 vs ECMW13	31.633	1.009	Do Not Test
ECMW7 vs ECMW10	25.267	0.806	Do Not Test
ECMW10 vs ECMW15	173.233	5.524	Yes
ECMW10 vs ECMW21	173.021	4.602	Yes
ECMW10 vs ECMW22	147.583	3.925	Yes
ECMW10 vs ECMW20	142.083	3.779	Yes
ECMW10 vs CNTL	141.000	5.507	Yes
ECMW10 vs ECMW19	129.646	3.448	No
ECMW10 vs ECMW16	110.533	3.525	Do Not Test
ECMW10 vs ECMW12	97.190	3.045	Do Not Test
ECMW10 vs ECMW11	60.476	1.895	Do Not Test
ECMW10 vs ECMW17	51.567	1.644	Do Not Test
ECMW10 vs ECMW18	45.218	1.389	Do Not Test
ECMW10 vs ECMW14	36.500	1.164	Do Not Test
ECMW10 vs ECMW5	23.633	0.754	Do Not Test
ECMW10 vs ECMW13	6.367	0.203	Do Not Test
ECMW13 vs ECMW15	166.867	5.321	Yes
ECMW13 vs ECMW21	166.654	4.432	Yes
ECMW13 vs ECMW22	141.217	3.756	Yes
ECMW13 vs ECMW20	135.717	3.610	No
ECMW13 vs CNTL	134.633	5.258	Do Not Test
ECMW13 vs ECMW19	123.279	3.279	Do Not Test
ECMW13 vs ECMW16	104.167	3.322	Do Not Test
ECMW13 vs ECMW12	90.824	2.846	Do Not Test
ECMW13 vs ECMW11	54.110	1.695	Do Not Test
ECMW13 vs ECMW17	45.200	1.441	Do Not Test
ECMW13 vs ECMW18	38.851	1.194	Do Not Test
ECMW13 vs ECMW14	30.133	0.961	Do Not Test
ECMW13 vs ECMW5	17.267	0.551	Do Not Test
ECMW5 vs ECMW15	149.600	4.771	Yes
ECMW5 vs ECMW21	149.387	3.973	Yes
ECMW5 vs ECMW22	123.950	3.297	No
ECMW5 vs ECMW20	118.450	3.150	Do Not Test
ECMW5 vs CNTL	117.367	4.584	Do Not Test
ECMW5 vs ECMW19	106.012	2.820	Do Not Test
ECMW5 vs ECMW16	86.900	2.771	Do Not Test

ECMW5 vs ECMW12	73.557	2.305	Do Not Test
ECMW5 vs ECMW11	36.843	1.154	Do Not Test
ECMW5 vs ECMW17	27.933	0.891	Do Not Test
ECMW5 vs ECMW18	21.585	0.663	Do Not Test
ECMW5 vs ECMW14	12.867	0.410	Do Not Test
ECMW14 vs ECMW15	136.733	4.360	Yes
ECMW14 vs ECMW21	136.521	3.631	No
ECMW14 vs ECMW22	111.083	2.954	Do Not Test
ECMW14 vs ECMW20	105.583	2.808	Do Not Test
ECMW14 vs CNTL	104.500	4.081	Do Not Test
ECMW14 vs ECMW19	93.146	2.477	Do Not Test
ECMW14 vs ECMW16	74.033	2.361	Do Not Test
ECMW14 vs ECMW12	60.690	1.902	Do Not Test
ECMW14 vs ECMW11	23.976	0.751	Do Not Test
ECMW14 vs ECMW17	15.067	0.480	Do Not Test
ECMW14 vs ECMW18	8.718	0.268	Do Not Test
ECMW18 vs ECMW15	128.015	3.934	Yes
ECMW18 vs ECMW21	127.803	3.312	Do Not Test
ECMW18 vs ECMW22	102.365	2.653	Do Not Test
ECMW18 vs ECMW20	96.865	2.510	Do Not Test
ECMW18 vs CNTL	95.782	3.542	Do Not Test
ECMW18 vs ECMW19	84.428	2.188	Do Not Test
ECMW18 vs ECMW16	65.315	2.007	Do Not Test
ECMW18 vs ECMW12	51.973	1.571	Do Not Test
ECMW18 vs ECMW11	15.258	0.461	Do Not Test
ECMW18 vs ECMW17	6.349	0.195	Do Not Test
ECMW17 vs ECMW15	121.667	3.880	Yes
ECMW17 vs ECMW21	121.454	3.230	Do Not Test
ECMW17 vs ECMW22	96.017	2.554	Do Not Test
ECMW17 vs ECMW20	90.517	2.407	Do Not Test
ECMW17 vs CNTL	89.433	3.493	Do Not Test
ECMW17 vs ECMW19	78.079	2.077	Do Not Test
ECMW17 vs ECMW16	58.967	1.880	Do Not Test
ECMW17 vs ECMW12	45.624	1.430	Do Not Test
ECMW17 vs ECMW11	8.910	0.279	Do Not Test
ECMW11 vs ECMW15	112.757	3.533	No
ECMW11 vs ECMW21	112.545	2.957	Do Not Test
ECMW11 vs ECMW22	87.107	2.289	Do Not Test
ECMW11 vs ECMW20	81.607	2.144	Do Not Test
ECMW11 vs CNTL	80.524	3.064	Do Not Test
ECMW11 vs ECMW19	69.170	1.817	Do Not Test
ECMW11 vs ECMW16	50.057	1.568	Do Not Test
ECMW11 vs ECMW12	36.714	1.131	Do Not Test
ECMW12 vs ECMW15	76.043	2.383	Do Not Test
ECMW12 vs ECMW21	75.830	1.992	Do Not Test
ECMW12 vs ECMW22	50.393	1.324	Do Not Test
ECMW12 vs ECMW20	44.893	1.179	Do Not Test
ECMW12 vs CNTL	43.810	1.667	Do Not Test
ECMW12 vs ECMW19	32.455	0.853	Do Not Test
ECMW12 vs ECMW16	13.343	0.418	Do Not Test
ECMW16 vs ECMW15	62.700	1.999	Do Not Test
ECMW16 vs ECMW21	62.487	1.662	Do Not Test
ECMW16 vs ECMW22	37.050	0.985	Do Not Test
ECMW16 vs ECMW20	31.550	0.839	Do Not Test
ECMW16 vs CNTL	30.467	1.190	Do Not Test
ECMW16 vs ECMW19	19.112	0.508	Do Not Test

ECMW19 vs ECMW15	43.587	1.159	Do Not Test
ECMW19 vs ECMW21	43.375	1.010	Do Not Test
ECMW19 vs ECMW22	17.938	0.418	Do Not Test
ECMW19 vs ECMW20	12.438	0.290	Do Not Test
ECMW19 vs CNTL	11.354	0.345	Do Not Test
CNTL vs ECMW15	32.233	1.259	Do Not Test
CNTL vs ECMW21	32.021	0.972	Do Not Test
CNTL vs ECMW22	6.583	0.200	Do Not Test
CNTL vs ECMW20	1.083	0.0329	Do Not Test
ECMW20 vs ECMW15	31.150	0.828	Do Not Test
ECMW20 vs ECMW21	30.938	0.720	Do Not Test
ECMW20 vs ECMW22	5.500	0.128	Do Not Test
ECMW22 vs ECMW15	25.650	0.682	Do Not Test
ECMW22 vs ECMW21	25.438	0.592	Do Not Test
ECMW21 vs ECMW15	0.212	0.00565	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

TOC

One Way Analysis of Variance Wednesday, November 03, 2021, 10:08:06 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Total Organic Carbon (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, November 03, 2021, 10:08:06 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	38	1.490	1.263	2.583
ECMW6	52	38	1.705	1.627	2.748
ECMW7	52	38	15.700	12.313	16.500
ECMW8	51	39	10.950	10.250	12.250
ECMW1051		39	6.865	6.005	7.393
ECMW1150		38	10.450	9.275	13.375
ECMW1247		35	19.250	16.150	20.700
ECMW1350		38	7.300	6.255	7.985
ECMW1450		38	13.400	12.050	16.800
ECMW1549		37	1.560	1.403	2.162
ECMW1649		37	2.730	2.240	3.045
ECMW1750		38	1.790	1.420	2.630
ECMW1849		36	1.390	1.000	1.630
CNTL	144	108	2.545	1.055	3.270
ECMW4	50	38	24.650	23.050	25.375
ECMW9	49	37	21.250	19.925	22.975
ECMW1940		29	1.000	1.000	2.820
ECMW2040		28	1.000	1.000	1.458
ECMW2140		29	1.300	1.000	1.650
ECMW2240		28	1.180	1.000	1.622

H = 210.279 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 ECMW20	216.458	6.866	Yes
ECMW4 vs ECMW22	199.708	6.335	Yes
ECMW4 vs ECMW21	198.420	6.156	Yes
ECMW4 vs ECMW19	198.148	6.147	Yes
ECMW4 vs ECMW18	193.490	6.259	Yes
ECMW4 vs ECMW15	175.208	5.558	Yes
ECMW4 vs ECMW5	173.833	5.514	Yes

ECMW4 vs ECMW17	163.208	5.177	Yes
ECMW4 vs CNTL	157.264	6.110	Yes
ECMW4 vs ECMW6	151.375	4.983	Yes
ECMW4 vs ECMW16	130.250	4.132	Yes
ECMW4 vs ECMW10	89.292	2.832	No
ECMW4 vs ECMW13	85.292	2.706	Do Not Test
ECMW4 vs ECMW8	58.750	1.864	Do Not Test
ECMW4 vs ECMW11	56.458	1.791	Do Not Test
ECMW4 vs ECMW7	46.875	1.543	Do Not Test
ECMW4 vs ECMW14	46.625	1.479	Do Not Test
ECMW4 vs ECMW12	23.042	0.731	Do Not Test
ECMW4 vs ECMW9	6.250	0.198	Do Not Test
ECMW9 vs ECMW20	210.208	6.668	Yes
ECMW9 vs ECMW22	193.458	6.137	Yes
ECMW9 vs ECMW21	192.170	5.962	Yes
ECMW9 vs ECMW19	191.898	5.953	Yes
ECMW9 vs ECMW18	187.240	6.057	Yes
ECMW9 vs ECMW15	168.958	5.359	Yes
ECMW9 vs ECMW5	167.583	5.316	Yes
ECMW9 vs ECMW17	156.958	4.979	Yes
ECMW9 vs CNTL	151.014	5.867	Yes
ECMW9 vs ECMW6	145.125	4.777	Yes
ECMW9 vs ECMW16	124.000	3.933	Yes
ECMW9 vs ECMW10	83.042	2.634	Do Not Test
ECMW9 vs ECMW13	79.042	2.507	Do Not Test
ECMW9 vs ECMW8	52.500	1.665	Do Not Test
ECMW9 vs ECMW11	50.208	1.593	Do Not Test
ECMW9 vs ECMW7	40.625	1.337	Do Not Test
ECMW9 vs ECMW14	40.375	1.281	Do Not Test
ECMW9 vs ECMW12	16.792	0.533	Do Not Test
ECMW12 vs ECMW20	193.417	6.135	Yes
ECMW12 vs ECMW22	176.667	5.604	Yes
ECMW12 vs ECMW21	175.379	5.441	Yes
ECMW12 vs ECMW19	175.106	5.432	Yes
ECMW12 vs ECMW18	170.449	5.514	Yes
ECMW12 vs ECMW15	152.167	4.827	Yes
ECMW12 vs ECMW5	150.792	4.783	Yes
ECMW12 vs ECMW17	140.167	4.446	Yes
ECMW12 vs CNTL	134.222	5.215	Yes
ECMW12 vs ECMW6	128.333	4.224	Yes
ECMW12 vs ECMW16	107.208	3.401	No
ECMW12 vs ECMW10	66.250	2.101	Do Not Test
ECMW12 vs ECMW13	62.250	1.975	Do Not Test
ECMW12 vs ECMW8	35.708	1.133	Do Not Test
ECMW12 vs ECMW11	33.417	1.060	Do Not Test
ECMW12 vs ECMW7	23.833	0.785	Do Not Test
ECMW12 vs ECMW14	23.583	0.748	Do Not Test
ECMW14 vs ECMW20	169.833	5.387	Yes
ECMW14 vs ECMW22	153.083	4.856	Yes
ECMW14 vs ECMW21	151.795	4.709	Yes
ECMW14 vs ECMW19	151.523	4.701	Yes
ECMW14 vs ECMW18	146.865	4.751	Yes
ECMW14 vs ECMW15	128.583	4.079	Yes
ECMW14 vs ECMW5	127.208	4.035	Yes
ECMW14 vs ECMW17	116.583	3.698	Yes
ECMW14 vs CNTL	110.639	4.298	Yes

ECMW14 vs ECMW6	104.750	3.448	No
ECMW14 vs ECMW16	83.625	2.653	Do Not Test
ECMW14 vs ECMW10	42.667	1.353	Do Not Test
ECMW14 vs ECMW13	38.667	1.227	Do Not Test
ECMW14 vs ECMW8	12.125	0.385	Do Not Test
ECMW14 vs ECMW11	9.833	0.312	Do Not Test
ECMW14 vs ECMW7	0.250	0.00823	Do Not Test
ECMW7 vs ECMW20	169.583	5.582	Yes
ECMW7 vs ECMW22	152.833	5.031	Yes
ECMW7 vs ECMW21	151.545	4.871	Yes
ECMW7 vs ECMW19	151.273	4.862	Yes
ECMW7 vs ECMW18	146.615	4.929	Yes
ECMW7 vs ECMW15	128.333	4.224	Yes
ECMW7 vs ECMW5	126.958	4.179	Yes
ECMW7 vs ECMW17	116.333	3.829	Yes
ECMW7 vs CNTL	110.389	4.539	Yes
ECMW7 vs ECMW6	104.500	3.580	Do Not Test
ECMW7 vs ECMW16	83.375	2.745	Do Not Test
ECMW7 vs ECMW10	42.417	1.396	Do Not Test
ECMW7 vs ECMW13	38.417	1.265	Do Not Test
ECMW7 vs ECMW8	11.875	0.391	Do Not Test
ECMW7 vs ECMW11	9.583	0.315	Do Not Test
ECMW11 vs ECMW20	160.000	5.075	Yes
ECMW11 vs ECMW22	143.250	4.544	Yes
ECMW11 vs ECMW21	141.962	4.404	Yes
ECMW11 vs ECMW19	141.689	4.396	Yes
ECMW11 vs ECMW18	137.032	4.433	Yes
ECMW11 vs ECMW15	118.750	3.767	Yes
ECMW11 vs ECMW5	117.375	3.723	Yes
ECMW11 vs ECMW17	106.750	3.386	No
ECMW11 vs CNTL	100.806	3.916	Do Not Test
ECMW11 vs ECMW6	94.917	3.124	Do Not Test
ECMW11 vs ECMW16	73.792	2.341	Do Not Test
ECMW11 vs ECMW10	32.833	1.041	Do Not Test
ECMW11 vs ECMW13	28.833	0.915	Do Not Test
ECMW11 vs ECMW8	2.292	0.0727	Do Not Test
ECMW8 vs ECMW20	157.708	5.003	Yes
ECMW8 vs ECMW22	140.958	4.471	Yes
ECMW8 vs ECMW21	139.670	4.333	Yes
ECMW8 vs ECMW19	139.398	4.325	Yes
ECMW8 vs ECMW18	134.740	4.359	Yes
ECMW8 vs ECMW15	116.458	3.694	Yes
ECMW8 vs ECMW5	115.083	3.651	Yes
ECMW8 vs ECMW17	104.458	3.313	Do Not Test
ECMW8 vs CNTL	98.514	3.827	Do Not Test
ECMW8 vs ECMW6	92.625	3.049	Do Not Test
ECMW8 vs ECMW16	71.500	2.268	Do Not Test
ECMW8 vs ECMW10	30.542	0.969	Do Not Test
ECMW8 vs ECMW13	26.542	0.842	Do Not Test
ECMW13 vs ECMW20	131.167	4.161	Yes
ECMW13 vs ECMW22	114.417	3.629	No
ECMW13 vs ECMW21	113.129	3.510	Do Not Test
ECMW13 vs ECMW19	112.856	3.501	Do Not Test
ECMW13 vs ECMW18	108.199	3.500	Do Not Test
ECMW13 vs ECMW15	89.917	2.852	Do Not Test
ECMW13 vs ECMW5	88.542	2.809	Do Not Test

ECMW13 vs ECMW17	77.917	2.472	Do Not Test
ECMW13 vs CNTL	71.972	2.796	Do Not Test
ECMW13 vs ECMW6	66.083	2.175	Do Not Test
ECMW13 vs ECMW16	44.958	1.426	Do Not Test
ECMW13 vs ECMW10	4.000	0.127	Do Not Test
ECMW10 vs ECMW20	127.167	4.034	Yes
ECMW10 vs ECMW22	110.417	3.502	Do Not Test
ECMW10 vs ECMW21	109.129	3.386	Do Not Test
ECMW10 vs ECMW19	108.856	3.377	Do Not Test
ECMW10 vs ECMW18	104.199	3.371	Do Not Test
ECMW10 vs ECMW15	85.917	2.725	Do Not Test
ECMW10 vs ECMW5	84.542	2.682	Do Not Test
ECMW10 vs ECMW17	73.917	2.345	Do Not Test
ECMW10 vs CNTL	67.972	2.641	Do Not Test
ECMW10 vs ECMW6	62.083	2.044	Do Not Test
ECMW10 vs ECMW16	40.958	1.299	Do Not Test
ECMW16 vs ECMW20	86.208	2.735	No
ECMW16 vs ECMW22	69.458	2.203	Do Not Test
ECMW16 vs ECMW21	68.170	2.115	Do Not Test
ECMW16 vs ECMW19	67.898	2.106	Do Not Test
ECMW16 vs ECMW18	63.240	2.046	Do Not Test
ECMW16 vs ECMW15	44.958	1.426	Do Not Test
ECMW16 vs ECMW5	43.583	1.382	Do Not Test
ECMW16 vs ECMW17	32.958	1.045	Do Not Test
ECMW16 vs CNTL	27.014	1.049	Do Not Test
ECMW16 vs ECMW6	21.125	0.695	Do Not Test
ECMW6 vs ECMW20	65.083	2.142	Do Not Test
ECMW6 vs ECMW22	48.333	1.591	Do Not Test
ECMW6 vs ECMW21	47.045	1.512	Do Not Test
ECMW6 vs ECMW19	46.773	1.503	Do Not Test
ECMW6 vs ECMW18	42.115	1.416	Do Not Test
ECMW6 vs ECMW15	23.833	0.785	Do Not Test
ECMW6 vs ECMW5	22.458	0.739	Do Not Test
ECMW6 vs ECMW17	11.833	0.390	Do Not Test
ECMW6 vs CNTL	5.889	0.242	Do Not Test
CNTL vs ECMW20	59.194	2.300	Do Not Test
CNTL vs ECMW22	42.444	1.649	Do Not Test
CNTL vs ECMW21	41.157	1.547	Do Not Test
CNTL vs ECMW19	40.884	1.537	Do Not Test
CNTL vs ECMW18	36.226	1.450	Do Not Test
CNTL vs ECMW15	17.944	0.697	Do Not Test
CNTL vs ECMW5	16.569	0.644	Do Not Test
CNTL vs ECMW17	5.944	0.231	Do Not Test
ECMW17 vs ECMW20	53.250	1.689	Do Not Test
ECMW17 vs ECMW22	36.500	1.158	Do Not Test
ECMW17 vs ECMW21	35.212	1.092	Do Not Test
ECMW17 vs ECMW19	34.939	1.084	Do Not Test
ECMW17 vs ECMW18	30.282	0.980	Do Not Test
ECMW17 vs ECMW15	12.000	0.381	Do Not Test
ECMW17 vs ECMW5	10.625	0.337	Do Not Test
ECMW5 vs ECMW20	42.625	1.352	Do Not Test
ECMW5 vs ECMW22	25.875	0.821	Do Not Test
ECMW5 vs ECMW21	24.587	0.763	Do Not Test
ECMW5 vs ECMW19	24.314	0.754	Do Not Test
ECMW5 vs ECMW18	19.657	0.636	Do Not Test
ECMW5 vs ECMW15	1.375	0.0436	Do Not Test

ECMW15 vs ECMW20	41.250	1.308	Do Not Test
ECMW15 vs ECMW22	24.500	0.777	Do Not Test
ECMW15 vs ECMW21	23.212	0.720	Do Not Test
ECMW15 vs ECMW19	22.939	0.712	Do Not Test
ECMW15 vs ECMW18	18.282	0.591	Do Not Test
ECMW18 vs ECMW20	22.968	0.743	Do Not Test
ECMW18 vs ECMW22	6.218	0.201	Do Not Test
ECMW18 vs ECMW21	4.930	0.156	Do Not Test
ECMW18 vs ECMW19	4.657	0.147	Do Not Test
ECMW19 vs ECMW20	18.311	0.568	Do Not Test
ECMW19 vs ECMW22	1.561	0.0484	Do Not Test
ECMW19 vs ECMW21	0.273	0.00828	Do Not Test
ECMW21 vs ECMW20	18.038	0.560	Do Not Test
ECMW21 vs ECMW22	1.288	0.0400	Do Not Test
ECMW22 vs ECMW20	16.750	0.531	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Total Vanadium

One Way Analysis of Variance Wednesday, November 03, 2021, 10:08:28 AM

Data source: Data 1 in Sigma Plot Data 2021

Dependent Variable: Vanadium (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, November 03, 2021, 10:08:28 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	38	0.0200	0.0200	0.0200
ECMW6	52	40	0.0200	0.0200	0.0200
ECMW7	52	40	0.0200	0.0200	0.0200
ECMW8	51	39	0.0200	0.0200	0.0200
ECMW10	51	39	0.0200	0.0200	0.0200
ECMW11	50	38	0.0200	0.0200	0.0200
ECMW12	47	35	0.0200	0.0200	0.0200
ECMW13	50	38	0.0200	0.0200	0.0200
ECMW14	50	38	0.0200	0.0200	0.0200
ECMW15	49	36	0.0200	0.0200	0.0200
ECMW16	49	37	0.0200	0.0200	0.0200
ECMW17	50	38	0.0200	0.0200	0.0200
ECMW18	49	37	0.0425	0.0200	0.0500
CNTL	144	108	0.0200	0.0200	0.0200
ECMW4	50	38	0.0200	0.0200	0.0200
ECMW9	49	37	0.0200	0.0200	0.0200
ECMW19	40	28	0.0200	0.0200	0.0200
ECMW20	40	28	0.0200	0.0200	0.0200
ECMW21	40	28	0.0200	0.0200	0.0200
ECMW22	40	28	0.0200	0.0200	0.0200

H = 154.600 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	88.167	2.818	No
ECMW18 vs ECMW13	88.167	2.818	Do Not Test
ECMW18 vs ECMW12	88.167	2.818	Do Not Test
ECMW18 vs ECMW5	88.167	2.818	Do Not Test
ECMW18 vs ECMW6	88.167	2.818	Do Not Test
ECMW18 vs ECMW10	88.167	2.818	Do Not Test
ECMW18 vs ECMW8	88.167	2.818	Do Not Test

ECMW18 vs ECMW7	88.167	2.818	Do Not Test
ECMW18 vs ECMW11	88.167	2.818	Do Not Test
ECMW18 vs ECMW22	88.167	2.818	Do Not Test
ECMW18 vs ECMW20	88.167	2.818	Do Not Test
ECMW18 vs ECMW19	88.167	2.818	Do Not Test
ECMW18 vs ECMW15	88.167	2.874	Do Not Test
ECMW18 vs ECMW4	88.167	2.818	Do Not Test
ECMW18 vs ECMW16	88.167	2.818	Do Not Test
ECMW18 vs CNTL	88.167	3.451	Do Not Test
ECMW18 vs ECMW17	88.167	2.818	Do Not Test
ECMW18 vs ECMW9	88.167	2.818	Do Not Test
ECMW18 vs ECMW21	76.958	2.460	Do Not Test
ECMW21 vs ECMW14	11.208	0.358	Do Not Test
ECMW21 vs ECMW13	11.208	0.358	Do Not Test
ECMW21 vs ECMW12	11.208	0.358	Do Not Test
ECMW21 vs ECMW5	11.208	0.358	Do Not Test
ECMW21 vs ECMW6	11.208	0.358	Do Not Test
ECMW21 vs ECMW10	11.208	0.358	Do Not Test
ECMW21 vs ECMW8	11.208	0.358	Do Not Test
ECMW21 vs ECMW7	11.208	0.358	Do Not Test
ECMW21 vs ECMW11	11.208	0.358	Do Not Test
ECMW21 vs ECMW22	11.208	0.358	Do Not Test
ECMW21 vs ECMW20	11.208	0.358	Do Not Test
ECMW21 vs ECMW19	11.208	0.358	Do Not Test
ECMW21 vs ECMW15	11.208	0.365	Do Not Test
ECMW21 vs ECMW4	11.208	0.358	Do Not Test
ECMW21 vs ECMW16	11.208	0.358	Do Not Test
ECMW21 vs CNTL	11.208	0.439	Do Not Test
ECMW21 vs ECMW17	11.208	0.358	Do Not Test
ECMW21 vs ECMW9	11.208	0.358	Do Not Test
ECMW9 vs ECMW14	0.000	0.000	Do Not Test
ECMW9 vs ECMW13	0.000	0.000	Do Not Test
ECMW9 vs ECMW12	0.000	0.000	Do Not Test
ECMW9 vs ECMW5	0.000	0.000	Do Not Test
ECMW9 vs ECMW6	0.000	0.000	Do Not Test
ECMW9 vs ECMW10	0.000	0.000	Do Not Test
ECMW9 vs ECMW8	0.000	0.000	Do Not Test
ECMW9 vs ECMW7	0.000	0.000	Do Not Test
ECMW9 vs ECMW11	0.000	0.000	Do Not Test
ECMW9 vs ECMW22	0.000	0.000	Do Not Test
ECMW9 vs ECMW20	0.000	0.000	Do Not Test
ECMW9 vs ECMW19	0.000	0.000	Do Not Test
ECMW9 vs ECMW15	0.000	0.000	Do Not Test
ECMW9 vs ECMW4	0.000	0.000	Do Not Test
ECMW9 vs ECMW16	0.000	0.000	Do Not Test
ECMW9 vs CNTL	0.000	0.000	Do Not Test
ECMW9 vs ECMW17	0.000	0.000	Do Not Test
ECMW17 vs ECMW14	0.000	0.000	Do Not Test
ECMW17 vs ECMW13	0.000	0.000	Do Not Test
ECMW17 vs ECMW12	0.000	0.000	Do Not Test
ECMW17 vs ECMW5	0.000	0.000	Do Not Test
ECMW17 vs ECMW6	0.000	0.000	Do Not Test
ECMW17 vs ECMW10	0.000	0.000	Do Not Test
ECMW17 vs ECMW8	0.000	0.000	Do Not Test
ECMW17 vs ECMW7	0.000	0.000	Do Not Test
ECMW17 vs ECMW11	0.000	0.000	Do Not Test

ECMW17 vs ECMW22	0.000	0.000	Do Not Test
ECMW17 vs ECMW20	0.000	0.000	Do Not Test
ECMW17 vs ECMW19	0.000	0.000	Do Not Test
ECMW17 vs ECMW15	0.000	0.000	Do Not Test
ECMW17 vs ECMW4	0.000	0.000	Do Not Test
ECMW17 vs ECMW16	0.000	0.000	Do Not Test
ECMW17 vs CNTL	0.000	0.000	Do Not Test
CNTL vs ECMW14	0.000	0.000	Do Not Test
CNTL vs ECMW13	0.000	0.000	Do Not Test
CNTL vs ECMW12	0.000	0.000	Do Not Test
CNTL vs ECMW5	0.000	0.000	Do Not Test
CNTL vs ECMW6	0.000	0.000	Do Not Test
CNTL vs ECMW10	0.000	0.000	Do Not Test
CNTL vs ECMW8	0.000	0.000	Do Not Test
CNTL vs ECMW7	0.000	0.000	Do Not Test
CNTL vs ECMW11	0.000	0.000	Do Not Test
CNTL vs ECMW22	0.000	0.000	Do Not Test
CNTL vs ECMW20	0.000	0.000	Do Not Test
CNTL vs ECMW19	0.000	0.000	Do Not Test
CNTL vs ECMW15	0.000	0.000	Do Not Test
CNTL vs ECMW4	0.000	0.000	Do Not Test
CNTL vs ECMW16	0.000	0.000	Do Not Test
ECMW16 vs ECMW14	0.000	0.000	Do Not Test
ECMW16 vs ECMW13	0.000	0.000	Do Not Test
ECMW16 vs ECMW12	0.000	0.000	Do Not Test
ECMW16 vs ECMW5	0.000	0.000	Do Not Test
ECMW16 vs ECMW6	0.000	0.000	Do Not Test
ECMW16 vs ECMW10	0.000	0.000	Do Not Test
ECMW16 vs ECMW8	0.000	0.000	Do Not Test
ECMW16 vs ECMW7	0.000	0.000	Do Not Test
ECMW16 vs ECMW11	0.000	0.000	Do Not Test
ECMW16 vs ECMW22	0.000	0.000	Do Not Test
ECMW16 vs ECMW20	0.000	0.000	Do Not Test
ECMW16 vs ECMW19	0.000	0.000	Do Not Test
ECMW16 vs ECMW15	0.000	0.000	Do Not Test
ECMW16 vs ECMW4	0.000	0.000	Do Not Test
ECMW4 vs ECMW14	0.000	0.000	Do Not Test
ECMW4 vs ECMW13	0.000	0.000	Do Not Test
ECMW4 vs ECMW12	0.000	0.000	Do Not Test
ECMW4 vs ECMW5	0.000	0.000	Do Not Test
ECMW4 vs ECMW6	0.000	0.000	Do Not Test
ECMW4 vs ECMW10	0.000	0.000	Do Not Test
ECMW4 vs ECMW8	0.000	0.000	Do Not Test
ECMW4 vs ECMW7	0.000	0.000	Do Not Test
ECMW4 vs ECMW11	0.000	0.000	Do Not Test
ECMW4 vs ECMW22	0.000	0.000	Do Not Test
ECMW4 vs ECMW20	0.000	0.000	Do Not Test
ECMW4 vs ECMW19	0.000	0.000	Do Not Test
ECMW4 vs ECMW15	0.000	0.000	Do Not Test
ECMW15 vs ECMW14	0.000	0.000	Do Not Test
ECMW15 vs ECMW13	0.000	0.000	Do Not Test
ECMW15 vs ECMW12	0.000	0.000	Do Not Test
ECMW15 vs ECMW5	0.000	0.000	Do Not Test
ECMW15 vs ECMW6	0.000	0.000	Do Not Test
ECMW15 vs ECMW10	0.000	0.000	Do Not Test
ECMW15 vs ECMW8	0.000	0.000	Do Not Test

ECMW15 vs ECMW7	0.000	0.000	Do Not Test
ECMW15 vs ECMW11	0.000	0.000	Do Not Test
ECMW15 vs ECMW22	0.000	0.000	Do Not Test
ECMW15 vs ECMW20	0.000	0.000	Do Not Test
ECMW15 vs ECMW19	0.000	0.000	Do Not Test
ECMW19 vs ECMW14	0.000	0.000	Do Not Test
ECMW19 vs ECMW13	0.000	0.000	Do Not Test
ECMW19 vs ECMW12	0.000	0.000	Do Not Test
ECMW19 vs ECMW5	0.000	0.000	Do Not Test
ECMW19 vs ECMW6	0.000	0.000	Do Not Test
ECMW19 vs ECMW10	0.000	0.000	Do Not Test
ECMW19 vs ECMW8	0.000	0.000	Do Not Test
ECMW19 vs ECMW7	0.000	0.000	Do Not Test
ECMW19 vs ECMW11	0.000	0.000	Do Not Test
ECMW19 vs ECMW22	0.000	0.000	Do Not Test
ECMW19 vs ECMW20	0.000	0.000	Do Not Test
ECMW20 vs ECMW14	0.000	0.000	Do Not Test
ECMW20 vs ECMW13	0.000	0.000	Do Not Test
ECMW20 vs ECMW12	0.000	0.000	Do Not Test
ECMW20 vs ECMW5	0.000	0.000	Do Not Test
ECMW20 vs ECMW6	0.000	0.000	Do Not Test
ECMW20 vs ECMW10	0.000	0.000	Do Not Test
ECMW20 vs ECMW8	0.000	0.000	Do Not Test
ECMW20 vs ECMW7	0.000	0.000	Do Not Test
ECMW20 vs ECMW11	0.000	0.000	Do Not Test
ECMW20 vs ECMW22	0.000	0.000	Do Not Test
ECMW22 vs ECMW14	0.000	0.000	Do Not Test
ECMW22 vs ECMW13	0.000	0.000	Do Not Test
ECMW22 vs ECMW12	0.000	0.000	Do Not Test
ECMW22 vs ECMW5	0.000	0.000	Do Not Test
ECMW22 vs ECMW6	0.000	0.000	Do Not Test
ECMW22 vs ECMW10	0.000	0.000	Do Not Test
ECMW22 vs ECMW8	0.000	0.000	Do Not Test
ECMW22 vs ECMW7	0.000	0.000	Do Not Test
ECMW22 vs ECMW11	0.000	0.000	Do Not Test
ECMW11 vs ECMW14	0.000	0.000	Do Not Test
ECMW11 vs ECMW13	0.000	0.000	Do Not Test
ECMW11 vs ECMW12	0.000	0.000	Do Not Test
ECMW11 vs ECMW5	0.000	0.000	Do Not Test
ECMW11 vs ECMW6	0.000	0.000	Do Not Test
ECMW11 vs ECMW10	0.000	0.000	Do Not Test
ECMW11 vs ECMW8	0.000	0.000	Do Not Test
ECMW11 vs ECMW7	0.000	0.000	Do Not Test
ECMW7 vs ECMW14	0.000	0.000	Do Not Test
ECMW7 vs ECMW13	0.000	0.000	Do Not Test
ECMW7 vs ECMW12	0.000	0.000	Do Not Test
ECMW7 vs ECMW5	0.000	0.000	Do Not Test
ECMW7 vs ECMW6	0.000	0.000	Do Not Test
ECMW7 vs ECMW10	0.000	0.000	Do Not Test
ECMW7 vs ECMW8	0.000	0.000	Do Not Test
ECMW8 vs ECMW14	0.000	0.000	Do Not Test
ECMW8 vs ECMW13	0.000	0.000	Do Not Test
ECMW8 vs ECMW12	0.000	0.000	Do Not Test
ECMW8 vs ECMW5	0.000	0.000	Do Not Test
ECMW8 vs ECMW6	0.000	0.000	Do Not Test
ECMW8 vs ECMW10	0.000	0.000	Do Not Test

ECMW10 vs ECMW14	0.000	0.000	Do Not Test
ECMW10 vs ECMW13	0.000	0.000	Do Not Test
ECMW10 vs ECMW12	0.000	0.000	Do Not Test
ECMW10 vs ECMW5	0.000	0.000	Do Not Test
ECMW10 vs ECMW6	0.000	0.000	Do Not Test
ECMW6 vs ECMW14	0.000	0.000	Do Not Test
ECMW6 vs ECMW13	0.000	0.000	Do Not Test
ECMW6 vs ECMW12	0.000	0.000	Do Not Test
ECMW6 vs ECMW5	0.000	0.000	Do Not Test
ECMW5 vs ECMW14	0.000	0.000	Do Not Test
ECMW5 vs ECMW13	0.000	0.000	Do Not Test
ECMW5 vs ECMW12	0.000	0.000	Do Not Test
ECMW12 vs ECMW14	0.000	0.000	Do Not Test
ECMW12 vs ECMW13	0.000	0.000	Do Not Test
ECMW13 vs ECMW14	0.000	0.000	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Turbidity

One Way Analysis of Variance Wednesday, November 03, 2021, 10:08:39 AM

Data source: Data 1 in Sigma Plot Data 2021

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, November 03, 2021, 10:08:39 AM

Data source: Data 1 in Sigma Plot Data 2021

Group	N	Missing	Median	25%	75%
ECMW5	50	44	1.440	0.335	10.738
ECMW6	52	46	1.855	1.188	4.337
ECMW7	52	46	1.270	0.828	3.175
ECMW8	51	45	1.340	0.490	4.793
ECMW10	51	44	0.960	0.770	1.080
ECMW11	50	45	1.720	0.745	2.570
ECMW12	47	41	10.035	2.818	53.700
ECMW13	50	44	4.075	2.415	5.583
ECMW14	50	44	0.640	0.403	1.340
ECMW15	49	43	0.900	0.578	1.848
ECMW16	49	43	1.480	1.343	1.898
ECMW17	50	44	1.925	1.255	2.453
ECMW18	49	43	340.500	308.750	360.500
CNTL	144	126	3.155	1.803	5.558
ECMW4	50	43	1.350	0.740	1.500
ECMW9	49	43	2.295	1.627	4.297
ECMW19	40	34	5.075	1.693	12.095
ECMW20	40	34	75.550	50.300	94.475
ECMW21	40	34	6.640	4.248	36.125
ECMW22	40	34	3.095	1.835	6.577

H = 74.495 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	112.833	5.071	Yes
ECMW18 vs ECMW15	99.833	4.487	Yes
ECMW18 vs ECMW10	95.643	4.461	Yes
ECMW18 vs ECMW4	93.786	4.374	Yes
ECMW18 vs ECMW7	84.833	3.813	Yes
ECMW18 vs ECMW11	84.400	3.617	No
ECMW18 vs ECMW8	84.083	3.779	Do Not Test

ECMW18 vs ECMW16	81.333	3.655	Do Not Test
ECMW18 vs ECMW5	79.167	3.558	Do Not Test
ECMW18 vs ECMW17	73.333	3.296	Do Not Test
ECMW18 vs ECMW6	71.333	3.206	Do Not Test
ECMW18 vs ECMW9	61.917	2.783	Do Not Test
ECMW18 vs ECMW22	53.500	2.405	Do Not Test
ECMW18 vs CNTL	51.028	2.809	Do Not Test
ECMW18 vs ECMW19	47.500	2.135	Do Not Test
ECMW18 vs ECMW13	44.500	2.000	Do Not Test
ECMW18 vs ECMW12	31.667	1.423	Do Not Test
ECMW18 vs ECMW21	28.500	1.281	Do Not Test
ECMW18 vs ECMW20	8.833	0.397	Do Not Test
ECMW20 vs ECMW14	104.000	4.674	Yes
ECMW20 vs ECMW15	91.000	4.090	Yes
ECMW20 vs ECMW10	86.810	4.049	Yes
ECMW20 vs ECMW4	84.952	3.962	Yes
ECMW20 vs ECMW7	76.000	3.416	No
ECMW20 vs ECMW11	75.567	3.238	Do Not Test
ECMW20 vs ECMW8	75.250	3.382	Do Not Test
ECMW20 vs ECMW16	72.500	3.258	Do Not Test
ECMW20 vs ECMW5	70.333	3.161	Do Not Test
ECMW20 vs ECMW17	64.500	2.899	Do Not Test
ECMW20 vs ECMW6	62.500	2.809	Do Not Test
ECMW20 vs ECMW9	53.083	2.386	Do Not Test
ECMW20 vs ECMW22	44.667	2.008	Do Not Test
ECMW20 vs CNTL	42.194	2.323	Do Not Test
ECMW20 vs ECMW19	38.667	1.738	Do Not Test
ECMW20 vs ECMW13	35.667	1.603	Do Not Test
ECMW20 vs ECMW12	22.833	1.026	Do Not Test
ECMW20 vs ECMW21	19.667	0.884	Do Not Test
ECMW21 vs ECMW14	84.333	3.790	Yes
ECMW21 vs ECMW15	71.333	3.206	No
ECMW21 vs ECMW10	67.143	3.132	Do Not Test
ECMW21 vs ECMW4	65.286	3.045	Do Not Test
ECMW21 vs ECMW7	56.333	2.532	Do Not Test
ECMW21 vs ECMW11	55.900	2.395	Do Not Test
ECMW21 vs ECMW8	55.583	2.498	Do Not Test
ECMW21 vs ECMW16	52.833	2.375	Do Not Test
ECMW21 vs ECMW5	50.667	2.277	Do Not Test
ECMW21 vs ECMW17	44.833	2.015	Do Not Test
ECMW21 vs ECMW6	42.833	1.925	Do Not Test
ECMW21 vs ECMW9	33.417	1.502	Do Not Test
ECMW21 vs ECMW22	25.000	1.124	Do Not Test
ECMW21 vs CNTL	22.528	1.240	Do Not Test
ECMW21 vs ECMW19	19.000	0.854	Do Not Test
ECMW21 vs ECMW13	16.000	0.719	Do Not Test
ECMW21 vs ECMW12	3.167	0.142	Do Not Test
ECMW12 vs ECMW14	81.167	3.648	No
ECMW12 vs ECMW15	68.167	3.064	Do Not Test
ECMW12 vs ECMW10	63.976	2.984	Do Not Test
ECMW12 vs ECMW4	62.119	2.897	Do Not Test
ECMW12 vs ECMW7	53.167	2.390	Do Not Test
ECMW12 vs ECMW11	52.733	2.260	Do Not Test
ECMW12 vs ECMW8	52.417	2.356	Do Not Test
ECMW12 vs ECMW16	49.667	2.232	Do Not Test
ECMW12 vs ECMW5	47.500	2.135	Do Not Test

ECMW12 vs ECMW17	41.667	1.873	Do Not Test
ECMW12 vs ECMW6	39.667	1.783	Do Not Test
ECMW12 vs ECMW9	30.250	1.360	Do Not Test
ECMW12 vs ECMW22	21.833	0.981	Do Not Test
ECMW12 vs CNTL	19.361	1.066	Do Not Test
ECMW12 vs ECMW19	15.833	0.712	Do Not Test
ECMW12 vs ECMW13	12.833	0.577	Do Not Test
ECMW13 vs ECMW14	68.333	3.071	Do Not Test
ECMW13 vs ECMW15	55.333	2.487	Do Not Test
ECMW13 vs ECMW10	51.143	2.385	Do Not Test
ECMW13 vs ECMW4	49.286	2.299	Do Not Test
ECMW13 vs ECMW7	40.333	1.813	Do Not Test
ECMW13 vs ECMW11	39.900	1.710	Do Not Test
ECMW13 vs ECMW8	39.583	1.779	Do Not Test
ECMW13 vs ECMW16	36.833	1.655	Do Not Test
ECMW13 vs ECMW5	34.667	1.558	Do Not Test
ECMW13 vs ECMW17	28.833	1.296	Do Not Test
ECMW13 vs ECMW6	26.833	1.206	Do Not Test
ECMW13 vs ECMW9	17.417	0.783	Do Not Test
ECMW13 vs ECMW22	9.000	0.404	Do Not Test
ECMW13 vs CNTL	6.528	0.359	Do Not Test
ECMW13 vs ECMW19	3.000	0.135	Do Not Test
ECMW19 vs ECMW14	65.333	2.936	Do Not Test
ECMW19 vs ECMW15	52.333	2.352	Do Not Test
ECMW19 vs ECMW10	48.143	2.245	Do Not Test
ECMW19 vs ECMW4	46.286	2.159	Do Not Test
ECMW19 vs ECMW7	37.333	1.678	Do Not Test
ECMW19 vs ECMW11	36.900	1.581	Do Not Test
ECMW19 vs ECMW8	36.583	1.644	Do Not Test
ECMW19 vs ECMW16	33.833	1.521	Do Not Test
ECMW19 vs ECMW5	31.667	1.423	Do Not Test
ECMW19 vs ECMW17	25.833	1.161	Do Not Test
ECMW19 vs ECMW6	23.833	1.071	Do Not Test
ECMW19 vs ECMW9	14.417	0.648	Do Not Test
ECMW19 vs ECMW22	6.000	0.270	Do Not Test
ECMW19 vs CNTL	3.528	0.194	Do Not Test
CNTL vs ECMW14	61.806	3.402	Do Not Test
CNTL vs ECMW15	48.806	2.687	Do Not Test
CNTL vs ECMW10	44.615	2.599	Do Not Test
CNTL vs ECMW4	42.758	2.491	Do Not Test
CNTL vs ECMW7	33.806	1.861	Do Not Test
CNTL vs ECMW11	33.372	1.713	Do Not Test
CNTL vs ECMW8	33.056	1.820	Do Not Test
CNTL vs ECMW16	30.306	1.668	Do Not Test
CNTL vs ECMW5	28.139	1.549	Do Not Test
CNTL vs ECMW17	22.306	1.228	Do Not Test
CNTL vs ECMW6	20.306	1.118	Do Not Test
CNTL vs ECMW9	10.889	0.599	Do Not Test
CNTL vs ECMW22	2.472	0.136	Do Not Test
ECMW22 vs ECMW14	59.333	2.667	Do Not Test
ECMW22 vs ECMW15	46.333	2.082	Do Not Test
ECMW22 vs ECMW10	42.143	1.966	Do Not Test
ECMW22 vs ECMW4	40.286	1.879	Do Not Test
ECMW22 vs ECMW7	31.333	1.408	Do Not Test
ECMW22 vs ECMW11	30.900	1.324	Do Not Test
ECMW22 vs ECMW8	30.583	1.375	Do Not Test

ECMW22 vs ECMW16	27.833	1.251	Do Not Test
ECMW22 vs ECMW5	25.667	1.154	Do Not Test
ECMW22 vs ECMW17	19.833	0.891	Do Not Test
ECMW22 vs ECMW6	17.833	0.802	Do Not Test
ECMW22 vs ECMW9	8.417	0.378	Do Not Test
ECMW9 vs ECMW14	50.917	2.288	Do Not Test
ECMW9 vs ECMW15	37.917	1.704	Do Not Test
ECMW9 vs ECMW10	33.726	1.573	Do Not Test
ECMW9 vs ECMW4	31.869	1.486	Do Not Test
ECMW9 vs ECMW7	22.917	1.030	Do Not Test
ECMW9 vs ECMW11	22.483	0.963	Do Not Test
ECMW9 vs ECMW8	22.167	0.996	Do Not Test
ECMW9 vs ECMW16	19.417	0.873	Do Not Test
ECMW9 vs ECMW5	17.250	0.775	Do Not Test
ECMW9 vs ECMW17	11.417	0.513	Do Not Test
ECMW9 vs ECMW6	9.417	0.423	Do Not Test
ECMW6 vs ECMW14	41.500	1.865	Do Not Test
ECMW6 vs ECMW15	28.500	1.281	Do Not Test
ECMW6 vs ECMW10	24.310	1.134	Do Not Test
ECMW6 vs ECMW4	22.452	1.047	Do Not Test
ECMW6 vs ECMW7	13.500	0.607	Do Not Test
ECMW6 vs ECMW11	13.067	0.560	Do Not Test
ECMW6 vs ECMW8	12.750	0.573	Do Not Test
ECMW6 vs ECMW16	10.000	0.449	Do Not Test
ECMW6 vs ECMW5	7.833	0.352	Do Not Test
ECMW6 vs ECMW17	2.000	0.0899	Do Not Test
ECMW17 vs ECMW14	39.500	1.775	Do Not Test
ECMW17 vs ECMW15	26.500	1.191	Do Not Test
ECMW17 vs ECMW10	22.310	1.041	Do Not Test
ECMW17 vs ECMW4	20.452	0.954	Do Not Test
ECMW17 vs ECMW7	11.500	0.517	Do Not Test
ECMW17 vs ECMW11	11.067	0.474	Do Not Test
ECMW17 vs ECMW8	10.750	0.483	Do Not Test
ECMW17 vs ECMW16	8.000	0.360	Do Not Test
ECMW17 vs ECMW5	5.833	0.262	Do Not Test
ECMW5 vs ECMW14	33.667	1.513	Do Not Test
ECMW5 vs ECMW15	20.667	0.929	Do Not Test
ECMW5 vs ECMW10	16.476	0.768	Do Not Test
ECMW5 vs ECMW4	14.619	0.682	Do Not Test
ECMW5 vs ECMW7	5.667	0.255	Do Not Test
ECMW5 vs ECMW11	5.233	0.224	Do Not Test
ECMW5 vs ECMW8	4.917	0.221	Do Not Test
ECMW5 vs ECMW16	2.167	0.0974	Do Not Test
ECMW16 vs ECMW14	31.500	1.416	Do Not Test
ECMW16 vs ECMW15	18.500	0.831	Do Not Test
ECMW16 vs ECMW10	14.310	0.667	Do Not Test
ECMW16 vs ECMW4	12.452	0.581	Do Not Test
ECMW16 vs ECMW7	3.500	0.157	Do Not Test
ECMW16 vs ECMW11	3.067	0.131	Do Not Test
ECMW16 vs ECMW8	2.750	0.124	Do Not Test
ECMW8 vs ECMW14	28.750	1.292	Do Not Test
ECMW8 vs ECMW15	15.750	0.708	Do Not Test
ECMW8 vs ECMW10	11.560	0.539	Do Not Test
ECMW8 vs ECMW4	9.702	0.453	Do Not Test
ECMW8 vs ECMW7	0.750	0.0337	Do Not Test
ECMW8 vs ECMW11	0.317	0.0136	Do Not Test

ECMW11 vs ECMW14	28.433	1.218	Do Not Test
ECMW11 vs ECMW15	15.433	0.661	Do Not Test
ECMW11 vs ECMW10	11.243	0.498	Do Not Test
ECMW11 vs ECMW4	9.386	0.416	Do Not Test
ECMW11 vs ECMW7	0.433	0.0186	Do Not Test
ECMW7 vs ECMW14	28.000	1.258	Do Not Test
ECMW7 vs ECMW15	15.000	0.674	Do Not Test
ECMW7 vs ECMW10	10.810	0.504	Do Not Test
ECMW7 vs ECMW4	8.952	0.418	Do Not Test
ECMW4 vs ECMW14	19.048	0.888	Do Not Test
ECMW4 vs ECMW15	6.048	0.282	Do Not Test
ECMW4 vs ECMW10	1.857	0.0902	Do Not Test
ECMW10 vs ECMW14	17.190	0.802	Do Not Test
ECMW10 vs ECMW15	4.190	0.195	Do Not Test
ECMW15 vs ECMW14	13.000	0.584	Do Not Test

Note: The multiple comparisons on ranks do not include an adjustment for ties.

Linear Regression Wednesday, November 03, 2021, 3:18:26 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39760.744 + (0.914 * 6 Ammonia-N (mg/L))

N = 51 Missing Observations = 64

R = 0.579 Rsqr = 0.335 Adj Rsqr = 0.321

Standard Error of Estimate = 1819.080

	Coefficient	Std. Error	t	P
Constant	39760.744	291.895	136.216	<0.001
6 Ammonia-N (mg/L)	0.914	0.184	4.966	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	81600644.382	81600644.382	24.660	<0.001
Residual	49	162143567.775	3309052.404		
Total	50	243744212.157	4874884.243		

Normality Test (Shapiro-Wilk) Failed (P = 0.016)

Constant Variance Test: Passed (P = 0.269)

Power of performed test with alpha = 0.050: 0.996

Linear Regression Wednesday, November 03, 2021, 3:18:33 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40026.231 + (0.790 * 7 Ammonia-N (mg/L))

N = 51 Missing Observations = 64

R = 0.418 Rsqr = 0.174 Adj Rsqr = 0.158

Standard Error of Estimate = 2026.448

	Coefficient	Std. Error	t	P
Constant	40026.231	315.303	126.945	<0.001
7 Ammonia-N (mg/L)	0.790	0.245	3.218	0.002

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	42531904.750	42531904.750	10.357	0.002
Residual	49	201218081.172	4106491.452		
Total	50	243749985.922	4874999.718		

Normality Test (Shapiro-Wilk) Failed (P = 0.022)

Constant Variance Test: Passed (P = 0.059)

Power of performed test with alpha = 0.050: 0.869

Linear Regression Wednesday, November 03, 2021, 3:18:40 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39925.316 + (1.167 * 8 Ammonia-N (mg/L))

N = 50 Missing Observations = 65

R = 0.510 Rsqr = 0.260 Adj Rsqr = 0.245

Standard Error of Estimate = 1908.338

	Coefficient	Std. Error	t	P
Constant	39925.316	313.390	127.398	<0.001
8 Ammonia-N (mg/L)	1.167	0.284	4.111	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	61538522.056	61538522.056	16.898	<0.001
Residual	48	174804157.324	3641753.278		
Total	49	236342679.380	4823319.987		

Normality Test (Shapiro-Wilk) Passed (P = 0.121)

Constant Variance Test: Passed (P = 0.095)

Power of performed test with alpha = 0.050: 0.971

Linear Regression Wednesday, November 03, 2021, 3:18:47 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40904.346 - (34.007 * 11 Ammonia-N (mg/L))

N = 48 Missing Observations = 67

R = 0.163 Rsqr = 0.0265 Adj Rsqr = 0.00534

Standard Error of Estimate = 2224.472

	Coefficient	Std. Error	t	P
Constant	40904.346	518.442	78.899	<0.001
11 Ammonia-N (mg/L)	-34.007	30.387	-1.119	0.269

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	6197700.520	6197700.520	1.252	0.269
Residual	46	227620673.396	4948275.509		
Total	47	233818373.917	4974859.020		

Normality Test (Shapiro-Wilk) Failed (P = 0.017)

Constant Variance Test: Passed (P = 0.087)

Power of performed test with alpha = 0.050: 0.195

The power of the performed test (0.195) 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 Wednesday, November 03, 2021, 3:18:55 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39314.533 + (336.354 * 12 Ammonia-N (mg/L))

N = 33 Missing Observations = 82

R = 0.238 Rsqr = 0.0568 Adj Rsqr = 0.0264

Standard Error of Estimate = 2337.363

	Coefficient	Std. Error	t	P
Constant	39314.533	684.192	57.461	<0.001
12 Ammonia-N (mg/L)	336.354	246.195	1.366	0.182

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	10197376.881	10197376.881	1.867	0.182
Residual	31	169361256.088	5463266.325		
Total	32	179558632.970	5611207.280		

Normality Test (Shapiro-Wilk) Failed (P = 0.014)

Constant Variance Test: Passed (P = 0.379)

Power of performed test with alpha = 0.050: 0.265

The power of the performed test (0.265) 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 Wednesday, November 03, 2021, 3:19:02 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38816.806 + (49.317 * 5 Nitrate-N (mg/L))

N = 47 Missing Observations = 68

R = 0.839 Rsqr = 0.704 Adj Rsqr = 0.698

Standard Error of Estimate = 1309.914

	Coefficient	Std. Error	t	P
Constant	38816.806	242.775	159.888	<0.001
5 Nitrate-N (mg/L)	49.317	4.764	10.352	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	183880566.299	183880566.299	107.164	<0.001
Residual	45	77214356.638	1715874.592		
Total	46	261094922.936	5675976.586		

Normality Test (Shapiro-Wilk) Failed (P = 0.013)

Constant Variance Test: Passed (P = 0.101)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:19:10 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38352.906 + (0.641 * 6 Nitrate-N (mg/L))

N = 52 Missing Observations = 63

R = 0.865 Rsqr = 0.748 Adj Rsqr = 0.743

Standard Error of Estimate = 1170.284

	Coefficient	Std. Error	t	P
Constant	38352.906	231.649	165.565	<0.001
6 Nitrate-N (mg/L)	0.641	0.0526	12.179	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	203145413.774	203145413.774	148.329	<0.001
Residual	50	68478185.918	1369563.718		
Total	51	271623599.692	5325952.935		

Normality Test (Shapiro-Wilk) Failed (P = <0.001)

Constant Variance Test: Passed (P = 0.608)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:20:06 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39916.674 + (0.434 * 7 Nitrate-N (mg/L))

N = 52 Missing Observations = 63

R = 0.419 Rsqr = 0.176 Adj Rsqr = 0.159

Standard Error of Estimate = 2116.403

	Coefficient	**Std. Error**	**t**	**P**
Constant	39916.674	324.215	123.118	<0.001
7 Nitrate-N (mg/L)	0.434	0.133	3.262	0.002

Analysis of Variance:

	DF	**SS**	**MS**	**F**	**P**
Regression	1	47671430.163	47671430.163	10.643	0.002
Residual	50	223958148.356	4479162.967		
Total	51	271629578.519	5326070.167		

Normality Test (Shapiro-Wilk) Failed (P = 0.026)

Constant Variance Test: Failed (P = 0.005)

Power of performed test with alpha = 0.050: 0.878

Linear Regression Wednesday, November 03, 2021, 3:20:12 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39080.501 + (0.968 * 8 Nitrate-N (mg/L))

N = 51 Missing Observations = 64

R = 0.719 Rsqr = 0.518 Adj Rsqr = 0.508

Standard Error of Estimate = 1616.443

	Coefficient	Std. Error	t	P
Constant	39080.501	296.888	131.634	<0.001
8 Nitrate-N (mg/L)	0.968	0.134	7.250	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	137358462.932	137358462.932	52.570	<0.001
Residual	49	128031479.696	2612887.341		
Total	50	265389942.627	5307798.853		

Normality Test (Shapiro-Wilk) Passed (P = 0.066)

Constant Variance Test: Passed (P = 0.570)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:20:19 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 41189.038 - (29.739 * 9 Nitrate-N (mg/L))

N = 49 Missing Observations = 66

R = 0.0895 Rsqr = 0.00801 Adj Rsqr = 0.000

Standard Error of Estimate = 2366.770

	Coefficient	Std. Error	t	P
Constant	41189.038	1470.941	28.002	<0.001
9 Nitrate-N (mg/L)	-29.739	48.273	-0.616	0.541

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	2125934.388	2125934.388	0.380	0.541
Residual	47	263275130.877	5601598.529		
Total	48	265401065.265	5529188.860		

Normality Test (Shapiro-Wilk) Failed (P = 0.023)

Constant Variance Test: Passed (P = 0.387)

Power of performed test with alpha = 0.050: 0.088

The power of the performed test (0.088) 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, November 11, 2021, 11:18:43 AM

Data source: Data 1 in Sigma Plot Data 2021

Date = 43610.953 - (40.786 * 10 Nitrate-N (mg/L))

N = 49 Missing Observations = 66

R = 0.754 Rsqr = 0.569 Adj Rsqr = 0.560

Standard Error of Estimate = 1559.755

	Coefficient	Std. Error	t	P
Constant	43610.953	474.813	91.849	<0.001
10 Nitrate-N (mg/L)	-40.786	5.176	-7.880	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	151058386.778	151058386.778	62.092	<0.001
Residual	47	114343234.895	2432834.785		
Total	48	265401621.673	5529200.452		

Normality Test (Shapiro-Wilk) Failed (P = 0.004)

Constant Variance Test: Passed (P = 0.099)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:20:33 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38023.617 + (131.507 * 11 Nitrate-N (mg/L))

N = 48 Missing Observations = 67

R = 0.629 Rsqr = 0.396 Adj Rsqr = 0.383

Standard Error of Estimate = 1852.708

	Coefficient	Std. Error	t	P
Constant	38023.617	500.856	75.917	<0.001
11 Nitrate-N (mg/L)	131.507	23.958	5.489	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	103419111.236	103419111.236	30.129	<0.001
Residual	46	157896251.431	3432527.205		
Total	47	261315362.667	5559901.333		

Normality Test (Shapiro-Wilk) Passed (P = 0.248)

Constant Variance Test: Passed (P = 0.427)

Power of performed test with alpha = 0.050: 0.999

Linear Regression Wednesday, November 03, 2021, 3:20:40 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 42002.471 - (93.560 * 14 Nitrate-N (mg/L))

N = 48 Missing Observations = 67

R = 0.670 Rsqr = 0.448 Adj Rsqr = 0.436

Standard Error of Estimate = 1751.390

	Coefficient	Std. Error	t	P
Constant	42002.471	382.329	109.859	<0.001
14 Nitrate-N (mg/L)	-93.560	15.300	-6.115	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	114706637.089	114706637.089	37.396	<0.001
Residual	46	141098874.724	3067366.842		
Total	47	255805511.813	5442670.464		

Normality Test (Shapiro-Wilk) Failed (P = 0.022)

Constant Variance Test: Passed (P = 0.869)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:20:47 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 41912.533 - (56.609 * 16 Nitrate-N (mg/L))

N = 49 Missing Observations = 66

R = 0.737 Rsqr = 0.543 Adj Rsqr = 0.534

Standard Error of Estimate = 1606.203

	Coefficient	Std. Error	t	P
Constant	41912.533	314.259	133.370	<0.001
16 Nitrate-N (mg/L)	-56.609	7.570	-7.478	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	144285047.260	144285047.260	55.927	<0.001
Residual	47	121254760.740	2579888.526		
Total	48	265539808.000	5532079.333		

Normality Test (Shapiro-Wilk) Failed (P = 0.007)

Constant Variance Test: Passed (P = 0.938)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, November 11, 2021, 11:18:53 AM

Data source: Data 1 in Sigma Plot Data 2021

Date = 42112.923 - (2.106 * 4 Sulfate (mg/L))

N = 45 Missing Observations = 70

R = 0.143 Rsqr = 0.0206 Adj Rsqr = 0.000

Standard Error of Estimate = 2361.932

	Coefficient	Std. Error	t	P
Constant	42112.923	1913.963	22.003	<0.001
4 Sulfate (mg/L)	-2.106	2.216	-0.950	0.347

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5037812.320	5037812.320	0.903	0.347
Residual	43	239885155.592	5578724.549		
Total	44	244922967.911	5566431.089		

Normality Test (Shapiro-Wilk) Passed (P = 0.058)

Constant Variance Test: Passed (P = 0.432)

Power of performed test with alpha = 0.050: 0.153

The power of the performed test (0.153) 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 Wednesday, November 03, 2021, 3:22:12 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 42764.593 - (9.597 * 5 Sulfate (mg/L))

N = 46 Missing Observations = 69

R = 0.891 Rsqr = 0.794 Adj Rsqr = 0.789

Standard Error of Estimate = 1099.591

	Coefficient	Std. Error	t	P
Constant	42764.593	243.215	175.830	<0.001
5 Sulfate (mg/L)	-9.597	0.737	-13.017	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	204860358.244	204860358.244	169.432	<0.001
Residual	44	53200399.082	1209099.979		
Total	45	258060757.326	5734683.496		

Normality Test (Shapiro-Wilk) Passed (P = 0.313)

Constant Variance Test: Failed (P = 0.026)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:22:22 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40303.992 + (0.261 * 7 Sulfate (mg/L))

N = 49 Missing Observations = 66

R = 0.0567 Rsqr = 0.00322 Adj Rsqr = 0.000

Standard Error of Estimate = 2366.310

	Coefficient	Std. Error	t	P
Constant	40303.992	524.637	76.823	<0.001
7 Sulfate (mg/L)	0.261	0.669	0.390	0.699

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	849732.862	849732.862	0.152	0.699
Residual	47	263172877.138	5599422.918		
Total	48	264022610.000	5500471.042		

Normality Test (Shapiro-Wilk) Passed (P = 0.087)

Constant Variance Test: Failed (P = 0.011)

Power of performed test with alpha = 0.050: 0.058

The power of the performed test (0.058) 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 Wednesday, November 03, 2021, 3:22:28 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 41731.051 - (2.195 * 8 Sulfate (mg/L))

N = 47 Missing Observations = 68

R = 0.355 Rsqr = 0.126 Adj Rsqr = 0.107

Standard Error of Estimate = 2232.772

	Coefficient	Std. Error	t	P
Constant	41731.051	559.309	74.612	<0.001
8 Sulfate (mg/L)	-2.195	0.862	-2.546	0.014

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	32325169.960	32325169.960	6.484	0.014
Residual	45	224337155.317	4985270.118		
Total	46	256662325.277	5579615.767		

Normality Test (Shapiro-Wilk) Failed (P = 0.027)

Constant Variance Test: Failed (P = <0.001)

Power of performed test with alpha = 0.050: 0.692

Linear Regression Wednesday, November 03, 2021, 3:22:36 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 36628.709 + (6.735 * 9 Sulfate (mg/L))

N = 46 Missing Observations = 69

R = 0.191 Rsqr = 0.0364 Adj Rsqr = 0.0145

Standard Error of Estimate = 2378.609

	Coefficient	Std. Error	t	P
Constant	36628.709	2950.761	12.413	<0.001
9 Sulfate (mg/L)	6.735	5.227	1.288	0.204

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	9392199.003	9392199.003	1.660	0.204
Residual	44	248942295.953	5657779.453		
Total	45	258334494.957	5740766.555		

Normality Test (Shapiro-Wilk) Passed (P = 0.056)

Constant Variance Test: Failed (P = 0.008)

Power of performed test with alpha = 0.050: 0.244

The power of the performed test (0.244) 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 Wednesday, November 03, 2021, 3:22:44 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39442.000 + (7.695 * 10 Sulfate (mg/L))

N = 46 Missing Observations = 69

R = 0.106 Rsqr = 0.0112 Adj Rsqr = 0.000

Standard Error of Estimate = 2409.487

	Coefficient	Std. Error	t	P
Constant	39442.000	1408.909	27.995	<0.001
10 Sulfate (mg/L)	7.695	10.910	0.705	0.484

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	2887822.211	2887822.211	0.497	0.484
Residual	44	255447615.094	5805627.616		
Total	45	258335437.304	5740787.496		

Normality Test (Shapiro-Wilk) Passed (P = 0.116)

Constant Variance Test: Failed (P = <0.001)

Power of performed test with alpha = 0.050: 0.103

The power of the performed test (0.103) 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 Wednesday, November 03, 2021, 3:22:50 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 42734.622 - (10.132 * 11 Sulfate (mg/L))

N = 45 Missing Observations = 70

R = 0.540 Rsqr = 0.291 Adj Rsqr = 0.275

Standard Error of Estimate = 2045.212

	Coefficient	Std. Error	t	P
Constant	42734.622	623.045	68.590	<0.001
11 Sulfate (mg/L)	-10.132	2.409	-4.206	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	73980853.202	73980853.202	17.687	<0.001
Residual	43	179864403.998	4182893.116		
Total	44	253845257.200	5769210.391		

Normality Test (Shapiro-Wilk) Failed (P = 0.004)

Constant Variance Test: Passed (P = 0.387)

Power of performed test with alpha = 0.050: 0.975

Linear Regression Wednesday, November 03, 2021, 3:22:58 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 42763.632 - (6.908 * 13 Sulfate (mg/L))

N = 30 Missing Observations = 85

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 Wednesday, November 03, 2021, 3:23:57 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 43768.334 - (21.709 * 14 Sulfate (mg/L))

N = 45 Missing Observations = 70

R = 0.578 Rsqr = 0.334 Adj Rsqr = 0.318

Standard Error of Estimate = 1965.114

	Coefficient	Std. Error	t	P
Constant	43768.334	793.825	55.136	<0.001
14 Sulfate (mg/L)	-21.709	4.676	-4.643	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	83231208.797	83231208.797	21.553	<0.001
Residual	43	166051944.848	3861673.136		
Total	44	249283153.644	5665526.219		

Normality Test (Shapiro-Wilk) Failed (P = 0.014)

Constant Variance Test: Passed (P = 0.710)

Power of performed test with alpha = 0.050: 0.990

Linear Regression Wednesday, November 03, 2021, 3:24:05 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 43678.021 - (788.446 * 4 pH (s.u.))

N = 47 Missing Observations = 68

R = 0.343 Rsqr = 0.118 Adj Rsqr = 0.0981

Standard Error of Estimate = 2099.484

	Coefficient	Std. Error	t	P
Constant	43678.021	1396.672	31.273	<0.001
4 pH (s.u.)	-788.446	321.864	-2.450	0.018

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	26449908.728	26449908.728	6.001	0.018
Residual	45	198352545.187	4407834.337		
Total	46	224802453.915	4887009.868		

Normality Test (Shapiro-Wilk) Failed (P = 0.005)

Constant Variance Test: Passed (P = 0.726)

Power of performed test with alpha = 0.050: 0.660

Linear Regression Wednesday, November 03, 2021, 3:24:12 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 46908.680 - (1469.890 * 6 pH (s.u.))

N = 50 Missing Observations = 65

R = 0.589 Rsqr = 0.347 Adj Rsqr = 0.334

Standard Error of Estimate = 1820.233

	Coefficient	Std. Error	t	P
Constant	46908.680	1300.784	36.062	<0.001
6 pH (s.u.)	-1469.890	290.804	-5.055	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	84649327.576	84649327.576	25.549	<0.001
Residual	48	159035940.424	3313248.759		
Total	49	243685268.000	4973168.735		

Normality Test (Shapiro-Wilk) Passed (P = 0.550)

Constant Variance Test: Passed (P = 0.327)

Power of performed test with alpha = 0.050: 0.996

Linear Regression Wednesday, November 03, 2021, 3:24:23 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 37926.402 + (543.437 * 7 pH (s.u.))

N = 50 Missing Observations = 65

R = 0.274 Rsqr = 0.0750 Adj Rsqr = 0.0558

Standard Error of Estimate = 2167.010

	Coefficient	Std. Error	t	P
Constant	37926.402	1321.867	28.692	<0.001
7 pH (s.u.)	543.437	275.390	1.973	0.054

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	18286230.462	18286230.462	3.894	0.054
Residual	48	225404820.918	4695933.769		
Total	49	243691051.380	4973286.763		

Normality Test (Shapiro-Wilk) Passed (P = 0.234)

Constant Variance Test: Failed (P = 0.012)

Power of performed test with alpha = 0.050: 0.487

The power of the performed test (0.487) 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 Wednesday, November 03, 2021, 3:24:29 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 45553.934 - (1215.092 * 8 pH (s.u.))

N = 49 Missing Observations = 66

R = 0.431 Rsqr = 0.185 Adj Rsqr = 0.168

Standard Error of Estimate = 2023.891

	Coefficient	Std. Error	t	P
Constant	45553.934	1549.069	29.407	<0.001
8 pH (s.u.)	-1215.092	371.571	-3.270	0.002

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	43803551.519	43803551.519	10.694	0.002
Residual	47	192518314.032	4096134.341		
Total	48	236321865.551	4923372.199		

Normality Test (Shapiro-Wilk) Failed (P = 0.008)

Constant Variance Test: Passed (P = 0.830)

Power of performed test with alpha = 0.050: 0.878

Linear Regression Wednesday, November 03, 2021, 3:24:37 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 44845.345 - (975.057 * 10 pH (s.u.))

N = 49 Missing Observations = 66

R = 0.298 Rsqr = 0.0890 Adj Rsqr = 0.0696

Standard Error of Estimate = 2149.275

	Coefficient	**Std. Error**	**t**	**P**
Constant	44845.345	2095.011	21.406	<0.001
10 pH (s.u.)	-975.057	455.144	-2.142	0.037

Analysis of Variance:

	DF	**SS**	**MS**	**F**	**P**
Regression	1	21200525.230	21200525.230	4.589	0.037
Residual	47	217110907.872	4619381.019		
Total	48	238311433.102	4964821.523		

Normality Test (Shapiro-Wilk) Failed (P = 0.010)

Constant Variance Test: Passed (P = 0.818)

Power of performed test with alpha = 0.050: 0.550

Linear Regression Wednesday, November 03, 2021, 3:24:45 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 46647.701 - (1379.611 * 11 pH (s.u.))

N = 49 Missing Observations = 66

R = 0.431 Rsqr = 0.185 Adj Rsqr = 0.168

Standard Error of Estimate = 2031.096

	Coefficient	Std. Error	t	P
Constant	46647.701	1930.131	24.168	<0.001
11 pH (s.u.)	-1379.611	421.806	-3.271	0.002

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	44131598.378	44131598.378	10.698	0.002
Residual	47	193891497.867	4125351.018		
Total	48	238023096.245	4958814.505		

Normality Test (Shapiro-Wilk) Passed (P = 0.102)

Constant Variance Test: Passed (P = 0.747)

Power of performed test with alpha = 0.050: 0.878

Linear Regression Wednesday, November 03, 2021, 3:24:52 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 44826.947 - (913.214 * 15 pH (s.u.))

N = 47 Missing Observations = 68

R = 0.320 Rsqr = 0.102 Adj Rsqr = 0.0825

Standard Error of Estimate = 2177.186

	Coefficient	Std. Error	t	P
Constant	44826.947	1976.752	22.677	<0.001
15 pH (s.u.)	-913.214	403.026	-2.266	0.028

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	24337135.297	24337135.297	5.134	0.028
Residual	45	213306263.682	4740139.193		
Total	46	237643398.979	5166160.847		

Normality Test (Shapiro-Wilk) Failed (P = 0.005)

Constant Variance Test: Passed (P = 0.516)

Power of performed test with alpha = 0.050: 0.595

Linear Regression Wednesday, November 03, 2021, 3:25:50 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 45718.782 - (1122.073 * 16 pH (s.u.))

N = 48 Missing Observations = 67

R = 0.388 Rsqr = 0.151 Adj Rsqr = 0.132

Standard Error of Estimate = 2097.475

	Coefficient	Std. Error	t	P
Constant	45718.782	1881.789	24.295	<0.001
16 pH (s.u.)	-1122.073	392.884	-2.856	0.006

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	35884543.890	35884543.890	8.157	0.006
Residual	46	202372527.777	4399402.778		
Total	47	238257071.667	5069299.397		

Normality Test (Shapiro-Wilk) Passed (P = 0.058)

Constant Variance Test: Passed (P = 0.154)

Power of performed test with alpha = 0.050: 0.784

Linear Regression Wednesday, November 03, 2021, 3:25:58 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 44506.852 - (870.393 * 17 pH (s.u.))

N = 49 Missing Observations = 66

R = 0.389 Rsqr = 0.151 Adj Rsqr = 0.133

Standard Error of Estimate = 2075.266

	Coefficient	Std. Error	t	P
Constant	44506.852	1448.563	30.725	<0.001
17 pH (s.u.)	-870.393	300.897	-2.893	0.006

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	36036501.953	36036501.953	8.367	0.006
Residual	47	202416203.149	4306727.727		
Total	48	238452705.102	4967764.690		

Normality Test (Shapiro-Wilk) Passed (P = 0.084)

Constant Variance Test: Passed (P = 0.120)

Power of performed test with alpha = 0.050: 0.795

Linear Regression Wednesday, November 03, 2021, 3:26:06 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39019.652 + (0.130 * 4 Specific Conductance (uS))

N = 38 Missing Observations = 77

R = 0.155 Rsqr = 0.0239 Adj Rsqr = 0.000

Standard Error of Estimate = 2098.922

	Coefficient	Std. Error	t	P
Constant	39019.652	886.768	44.002	<0.001
4 Specific Conductance (uS)	0.130	0.139	0.938	0.354

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	3879879.818	3879879.818	0.881	0.354
Residual	36	158597118.077	4405475.502		
Total	37	162476997.895	4391270.213		

Normality Test (Shapiro-Wilk) Failed (P = 0.010)

Constant Variance Test: Passed (P = 0.065)

Power of performed test with alpha = 0.050: 0.150

The power of the performed test (0.150) 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 Wednesday, November 03, 2021, 3:26:14 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39005.295 + (1.169 * 5 Specific Conductance (uS))

N = 40 Missing Observations = 75

R = 0.207 Rsqr = 0.0429 Adj Rsqr = 0.0177

Standard Error of Estimate = 2129.419

	Coefficient	Std. Error	t	P
Constant	39005.295	763.163	51.110	<0.001
5 Specific Conductance (uS)	1.169	0.896	1.305	0.200

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	7718601.889	7718601.889	1.702	0.200
Residual	38	172308089.211	4534423.400		
Total	39	180026691.100	4616069.003		

Normality Test (Shapiro-Wilk) Failed (P = 0.021)

Constant Variance Test: Failed (P = <0.001)

Power of performed test with alpha = 0.050: 0.248

The power of the performed test (0.248) 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 Wednesday, November 03, 2021, 3:26:22 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38721.818 + (0.0557 * 6 Specific Conductance (uS))

N = 39 Missing Observations = 76

R = 0.823 Rsqr = 0.677 Adj Rsqr = 0.668

Standard Error of Estimate = 1245.078

	Coefficient	Std. Error	t	P
Constant	38721.818	237.963	162.722	<0.001
6 Specific Conductance (uS)	0.0557	0.00632	8.808	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	120280469.349	120280469.349	77.589	<0.001
Residual	37	57358151.727	1550220.317		
Total	38	177638621.077	4674700.555		

Normality Test (Shapiro-Wilk) Failed (P = 0.012)

Constant Variance Test: Passed (P = 0.370)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:26:32 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 37994.022 + (0.169 * 7 Specific Conductance (uS))

N = 39 Missing Observations = 76

R = 0.771 Rsqr = 0.594 Adj Rsqr = 0.583

Standard Error of Estimate = 1396.619

	Coefficient	Std. Error	t	P
Constant	37994.022	339.029	112.067	<0.001
7 Specific Conductance (uS)	0.169	0.0230	7.364	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	105779192.070	105779192.070	54.231	<0.001
Residual	37	72170125.623	1950543.936		
Total	38	177949317.692	4682876.781		

Normality Test (Shapiro-Wilk) Failed (P = <0.001)

Constant Variance Test: Passed (P = 0.423)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:26:40 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38208.807 + (0.106 * 8 Specific Conductance (uS))

N = 37 Missing Observations = 78

R = 0.825 Rsqr = 0.680 Adj Rsqr = 0.671

Standard Error of Estimate = 1246.695

	Coefficient	Std. Error	t	P
Constant	38208.807	286.209	133.500	<0.001
8 Specific Conductance (uS)	0.106	0.0123	8.622	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	115545749.558	115545749.558	74.342	<0.001
Residual	35	54398711.739	1554248.907		
Total	36	169944461.297	4720679.480		

Normality Test (Shapiro-Wilk) Passed (P = 0.068)

Constant Variance Test: Passed (P = 0.144)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:26:51 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40021.574 - (0.0415 * 9 Specific Conductance (uS))

N = 39 Missing Observations = 76

R = 0.131 Rsqr = 0.0171 Adj Rsqr = 0.000

Standard Error of Estimate = 2188.397

	Coefficient	Std. Error	t	P
Constant	40021.574	383.981	104.228	<0.001
9 Specific Conductance (uS)	-0.0415	0.0518	-0.801	0.428

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	3075574.741	3075574.741	0.642	0.428
Residual	37	177196010.182	4789081.356		
Total	38	180271584.923	4743989.077		

Normality Test (Shapiro-Wilk) Failed (P = 0.003)

Constant Variance Test: Passed (P = 0.302)

Power of performed test with alpha = 0.050: 0.121

The power of the performed test (0.121) 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 Wednesday, November 03, 2021, 3:27:54 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 42335.434 - (2.597 * 10 Specific Conductance (uS))

N = 40 Missing Observations = 75

R = 0.328 Rsqr = 0.107 Adj Rsqr = 0.0839

Standard Error of Estimate = 2057.659

	Coefficient	Std. Error	t	P
Constant	42335.434	1185.531	35.710	<0.001
10 Specific Conductance (uS)	-2.597	1.214	-2.139	0.039

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	19363256.419	19363256.419	4.573	0.039
Residual	38	160890523.556	4233961.146		
Total	39	180253779.975	4621891.794		

Normality Test (Shapiro-Wilk) Failed (P = <0.001)

Constant Variance Test: Passed (P = 0.214)

Power of performed test with alpha = 0.050: 0.544

Linear Regression Wednesday, November 03, 2021, 3:28:02 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40166.387 - (0.337 * 11 Specific Conductance (uS))

N = 40 Missing Observations = 75

R = 0.0345 Rsqr = 0.00119 Adj Rsqr = 0.000

Standard Error of Estimate = 2175.225

	Coefficient	Std. Error	t	P
Constant	40166.387	1306.269	30.749	<0.001
11 Specific Conductance (uS)	-0.337	1.588	-0.213	0.833

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	213740.019	213740.019	0.0452	0.833
Residual	38	179800985.881	4731604.892		
Total	39	180014725.900	4615762.203		

Normality Test (Shapiro-Wilk) Failed (P = 0.002)

Constant Variance Test: Passed (P = 0.131)

Power of performed test with alpha = 0.050: 0.040

The power of the performed test (0.040) 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 Wednesday, November 03, 2021, 3:28:11 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 36693.250 + (5.060 * 12 Specific Conductance (uS))

N = 37 Missing Observations = 78

R = 0.404 Rsqr = 0.163 Adj Rsqr = 0.139

Standard Error of Estimate = 2027.077

	Coefficient	Std. Error	t	P
Constant	36693.250	1287.524	28.499	<0.001
12 Specific Conductance (uS)	5.060	1.937	2.613	0.013

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	28046038.715	28046038.715	6.825	0.013
Residual	35	143816393.718	4109039.821		
Total	36	171862432.432	4773956.456		

Normality Test (Shapiro-Wilk) Failed (P = 0.041)

Constant Variance Test: Passed (P = 0.286)

Power of performed test with alpha = 0.050: 0.705

Linear Regression Wednesday, November 03, 2021, 3:28:39 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40081.834 - (0.223 * 13 Specific Conductance (uS))

N = 38 Missing Observations = 77

R = 0.0413 Rsqr = 0.00170 Adj Rsqr = 0.000

Standard Error of Estimate = 2230.214

	Coefficient	Std. Error	t	P
Constant	40081.834	930.303	43.085	<0.001
13 Specific Conductance (uS)	-0.223	0.899	-0.248	0.806

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	305430.011	305430.011	0.0614	0.806
Residual	36	179058723.383	4973853.427		
Total	37	179364153.395	4847679.821		

Normality Test (Shapiro-Wilk) Failed (P = 0.002)

Constant Variance Test: Passed (P = 0.835)

Power of performed test with alpha = 0.050: 0.043

The power of the performed test (0.043) 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 Wednesday, November 03, 2021, 3:28:48 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40681.161 - (1.225 * 14 Specific Conductance (uS))

N = 37 Missing Observations = 78

R = 0.157 Rsqr = 0.0248 Adj Rsqr = 0.000

Standard Error of Estimate = 2135.213

	Coefficient	Std. Error	t	P
Constant	40681.161	944.598	43.067	<0.001
14 Specific Conductance (uS)	-1.225	1.299	-0.944	0.352

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	4058769.776	4058769.776	0.890	0.352
Residual	35	159569637.521	4559132.501		
Total	36	163628407.297	4545233.536		

Normality Test (Shapiro-Wilk) Failed (P = 0.014)

Constant Variance Test: Passed (P = 0.191)

Power of performed test with alpha = 0.050: 0.151

The power of the performed test (0.151) 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 Wednesday, November 03, 2021, 3:28:56 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38865.183 + (406.985 * 4 Total Manganese (mg/L))

N = 7 Missing Observations = 108

R = 0.430 Rsqr = 0.185 Adj Rsqr = 0.0222

Standard Error of Estimate = 533.243

	Coefficient	Std. Error	t	P
Constant	38865.183	789.329	49.238	<0.001
4 Total Manganese (mg/L)	406.985	381.855	1.066	0.335

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	323006.003	323006.003	1.136	0.335
Residual	5	1421739.711	284347.942		
Total	6	1744745.714	290790.952		

Normality Test (Shapiro-Wilk) Passed (P = 0.089)

Constant Variance Test: Passed (P = 0.968)

Power of performed test with alpha = 0.050: 0.149

The power of the performed test (0.149) 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 Wednesday, November 03, 2021, 3:29:09 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40877.102 - (765.453 * 5 Total Manganese (mg/L))

N = 7 Missing Observations = 108

R = 0.976 Rsqr = 0.952 Adj Rsqr = 0.942

Standard Error of Estimate = 129.699

	Coefficient	Std. Error	t	P
Constant	40877.102	130.083	314.239	<0.001
5 Total Manganese (mg/L)	-765.453	77.027	-9.937	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1661202.400	1661202.400	98.753	<0.001
Residual	5	84109.028	16821.806		
Total	6	1745311.429	290885.238		

Normality Test (Shapiro-Wilk) Passed (P = 0.158)

Constant Variance Test: Passed (P = 0.781)

Power of performed test with alpha = 0.050: 0.993

Linear Regression Wednesday, November 03, 2021, 3:29:17 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39565.228 + (54.137 * 6 Total Manganese (mg/L))

N = 8 Missing Observations = 107

R = 0.105 Rsqr = 0.0111 Adj Rsqr = 0.000

Standard Error of Estimate = 521.025

	Coefficient	Std. Error	t	P
Constant	39565.228	537.257	73.643	<0.001
6 Total Manganese (mg/L)	54.137	208.334	0.260	0.804

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	18330.920	18330.920	0.0675	0.804
Residual	6	1628804.955	271467.493		
Total	7	1647135.875	235305.125		

Normality Test (Shapiro-Wilk) Passed (P = 0.978)

Constant Variance Test: Passed (P = 0.662)

Power of performed test with alpha = 0.050: 0.042

The power of the performed test (0.042) 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 Wednesday, November 03, 2021, 3:32:31 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39878.070 - (924.070 * 7 Total Manganese (mg/L))

N = 8 Missing Observations = 107

R = 0.181 Rsqr = 0.0328 Adj Rsqr = 0.000

Standard Error of Estimate = 515.287

	Coefficient	Std. Error	t	P
Constant	39878.070	442.124	90.197	<0.001
7 Total Manganese (mg/L)	-924.070	2048.794	-0.451	0.668

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	54014.565	54014.565	0.203	0.668
Residual	6	1593121.310	265520.218		
Total	7	1647135.875	235305.125		

Normality Test (Shapiro-Wilk) Passed (P = 0.697)

Constant Variance Test: Failed (P = 0.021)

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 Wednesday, November 03, 2021, 3:32:41 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38232.080 + (2658.992 * 8 Total Manganese (mg/L))

N = 7 Missing Observations = 108

R = 0.660 Rsqr = 0.435 Adj Rsqr = 0.322

Standard Error of Estimate = 443.915

	Coefficient	Std. Error	t	P
Constant	38232.080	755.693	50.592	<0.001
8 Total Manganese (mg/L)	2658.992	1354.470	1.963	0.107

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	759442.771	759442.771	3.854	0.107
Residual	5	985302.944	197060.589		
Total	6	1744745.714	290790.952		

Normality Test (Shapiro-Wilk) Passed (P = 0.509)

Constant Variance Test: Passed (P = 0.602)

Power of performed test with alpha = 0.050: 0.354

The power of the performed test (0.354) 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 Wednesday, November 03, 2021, 3:32:51 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 42342.594 - (8302.831 * 9 Total Manganese (mg/L))

N = 7 Missing Observations = 108

R = 0.353 Rsqr = 0.124 Adj Rsqr = 0.000

Standard Error of Estimate = 552.752

	Coefficient	Std. Error	t	P
Constant	42342.594	3167.468	13.368	<0.001
9 Total Manganese (mg/L)	-8302.831	9850.397	-0.843	0.438

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	217072.771	217072.771	0.710	0.438
Residual	5	1527672.943	305534.589		
Total	6	1744745.714	290790.952		

Normality Test (Shapiro-Wilk) Passed (P = 0.588)

Constant Variance Test: Passed (P = 0.491)

Power of performed test with alpha = 0.050: 0.111

The power of the performed test (0.111) 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 Wednesday, November 03, 2021, 3:33:02 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38669.948 + (4775.769 * 12 Total Manganese (mg/L))

N = 7 Missing Observations = 108

R = 0.460 Rsqr = 0.212 Adj Rsqr = 0.0543

Standard Error of Estimate = 524.693

	Coefficient	Std. Error	t	P
Constant	38669.948	892.521	43.327	<0.001
12 Total Manganese (mg/L)	4775.769	4118.638	1.160	0.299

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	370160.295	370160.295	1.345	0.299
Residual	5	1376513.705	275302.741		
Total	6	1746674.000	291112.333		

Normality Test (Shapiro-Wilk) Passed (P = 0.389)

Constant Variance Test: Passed (P = 0.297)

Power of performed test with alpha = 0.050: 0.167

The power of the performed test (0.167) 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 Wednesday, November 03, 2021, 3:33:11 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38446.983 + (485.761 * 13 Total Manganese (mg/L))

N = 7 Missing Observations = 108

R = 0.687 Rsqr = 0.472 Adj Rsqr = 0.367

Standard Error of Estimate = 429.225

	Coefficient	Std. Error	t	P
Constant	38446.983	604.639	63.587	<0.001
13 Total Manganese (mg/L)	485.761	229.577	2.116	0.088

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	824821.570	824821.570	4.477	0.088
Residual	5	921170.144	184234.029		
Total	6	1745991.714	290998.619		

Normality Test (Shapiro-Wilk) Passed (P = 0.544)

Constant Variance Test: Passed (P = 0.545)

Power of performed test with alpha = 0.050: 0.392

The power of the performed test (0.392) 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 Wednesday, November 03, 2021, 3:33:20 PM

Data source: Data 1 in Sigma Plot Data 2021

The regression produces a perfect fit

Date = 33043.000 + (1944.444 * 6 Dissolved Manganese (mg/L))

Linear Regression Wednesday, November 03, 2021, 3:33:43 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 41557.314 - (56.313 * 10 Temperature (°C))

N = 33 Missing Observations = 82

R = 0.0558 Rsqr = 0.00312 Adj Rsqr = 0.000

Standard Error of Estimate = 2056.166

	Coefficient	Std. Error	t	P
Constant	41557.314	3725.830	11.154	<0.001
10 Temperature (°C)	-56.313	180.915	-0.311	0.758

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	409628.745	409628.745	0.0969	0.758
Residual	31	131062331.134	4227817.133		
Total	32	131471959.879	4108498.746		

Normality Test (Shapiro-Wilk) Failed (P = 0.008)

Constant Variance Test: Passed (P = 0.742)

Power of performed test with alpha = 0.050: 0.049

The power of the performed test (0.049) 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 Wednesday, November 03, 2021, 3:33:51 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 43485.259 - (148.613 * 12 Temperature (°C))

N = 31 Missing Observations = 84

R = 0.190 Rsqr = 0.0361 Adj Rsqr = 0.00283

Standard Error of Estimate = 2086.803

	Coefficient	Std. Error	t	P
Constant	43485.259	2983.546	14.575	<0.001
12 Temperature (°C)	-148.613	142.662	-1.042	0.306

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	4725657.028	4725657.028	1.085	0.306
Residual	29	126287656.456	4354746.774		
Total	30	131013313.484	4367110.449		

Normality Test (Shapiro-Wilk) Passed (P = 0.097)

Constant Variance Test: Passed (P = 0.127)

Power of performed test with alpha = 0.050: 0.173

The power of the performed test (0.173) 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 Wednesday, November 03, 2021, 3:34:54 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38860.690 + (4.288 * 12 Total Alkalinity (mg/L))

N = 12 Missing Observations = 103

R = 0.375 Rsqr = 0.140 Adj Rsqr = 0.0544

Standard Error of Estimate = 639.547

	Coefficient	Std. Error	t	P
Constant	38860.690	651.471	59.651	<0.001
12 Total Alkalinity (mg/L)	4.288	3.356	1.278	0.230

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	667676.673	667676.673	1.632	0.230
Residual	10	4090204.243	409020.424		
Total	11	4757880.917	432534.629		

Normality Test (Shapiro-Wilk) Passed (P = 0.421)

Constant Variance Test: Passed (P = 0.273)

Power of performed test with alpha = 0.050: 0.218

The power of the performed test (0.218) 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 Wednesday, November 03, 2021, 3:35:01 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38365.679 - (0.0928 * 4 Total Dissolved Solids (mg/L)

N = 15 Missing Observations = 100

R = 0.0753 Rsqr = 0.00567 Adj Rsqr = 0.000

Standard Error of Estimate = 446.851

	Coefficient	Std. Error	t	P
Constant	38365.679	1725.493	22.235	<0.001
4 Total Dissolved Solids (mg/L	-0.0928	0.341	-0.272	0.790

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	14814.606	14814.606	0.0742	0.790
Residual	13	2595782.327	199675.564		
Total	14	2610596.933	186471.210		

Normality Test (Shapiro-Wilk) Passed (P = 0.187)

Constant Variance Test: Failed (P = 0.012)

Power of performed test with alpha = 0.050: 0.045

The power of the performed test (0.045) 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 Wednesday, November 03, 2021, 3:35:09 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 36932.680 + (0.205 * 6 Total Dissolved Solids (mg/L)

N = 15 Missing Observations = 100

R = 0.918 Rsqr = 0.842 Adj Rsqr = 0.830

Standard Error of Estimate = 178.216

	Coefficient	Std. Error	t	P
Constant	36932.680	124.696	296.183	<0.001
6 Total Dissolved Solids (mg/L	0.205	0.0246	8.318	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	2197703.713	2197703.713	69.195	<0.001
Residual	13	412893.221	31761.017		
Total	14	2610596.933	186471.210		

Normality Test (Shapiro-Wilk) Passed (P = 0.378)

Constant Variance Test: Passed (P = 0.104)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Wednesday, November 03, 2021, 3:35:17 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 36484.050 + (1.036 * 7 Total Dissolved Solids (mg/L)

N = 15 Missing Observations = 100

R = 0.516 Rsqr = 0.266 Adj Rsqr = 0.210

Standard Error of Estimate = 383.806

	Coefficient	Std. Error	t	P
Constant	36484.050	657.599	55.481	<0.001
7 Total Dissolved Solids (mg/L	1.036	0.477	2.173	0.049

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	695610.119	695610.119	4.722	0.049
Residual	13	1914986.814	147306.678		
Total	14	2610596.933	186471.210		

Normality Test (Shapiro-Wilk) Passed (P = 0.962)

Constant Variance Test: Failed (P = 0.033)

Power of performed test with alpha = 0.050: 0.507

Linear Regression Wednesday, November 03, 2021, 3:35:25 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38923.382 - (0.298 * 8 Total Dissolved Solids (mg/L)

N = 14 Missing Observations = 101

R = 0.832 Rsqr = 0.692 Adj Rsqr = 0.666

Standard Error of Estimate = 223.795

	Coefficient	Std. Error	t	P
Constant	38923.382	196.395	198.189	<0.001
8 Total Dissolved Solids (mg/L	-0.298	0.0575	-5.188	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1348109.459	1348109.459	26.917	<0.001
Residual	12	601012.255	50084.355		
Total	13	1949121.714	149932.440		

Normality Test (Shapiro-Wilk) Passed (P = 0.827)

Constant Variance Test: Passed (P = 0.552)

Power of performed test with alpha = 0.050: 0.977

Linear Regression Wednesday, November 03, 2021, 3:35:32 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 38811.651 - (0.581 * 9 Total Dissolved Solids (mg/L)

N = 15 Missing Observations = 100

R = 0.511 Rsqr = 0.262 Adj Rsqr = 0.205

Standard Error of Estimate = 390.056

	Coefficient	Std. Error	t	P
Constant	38811.651	439.429	88.323	<0.001
9 Total Dissolved Solids (mg/L	-0.581	0.271	-2.146	0.051

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	700373.116	700373.116	4.603	0.051
Residual	13	1977871.818	152143.986		
Total	14	2678244.933	191303.210		

Normality Test (Shapiro-Wilk) Passed (P = 0.978)

Constant Variance Test: Passed (P = 0.629)

Power of performed test with alpha = 0.050: 0.498

The power of the performed test (0.498) 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 Wednesday, November 03, 2021, 3:35:41 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40318.031 - (2.313 * 10 Total Dissolved Solids (mg/)

N = 15 Missing Observations = 100

R = 0.776 Rsqr = 0.603 Adj Rsqr = 0.572

Standard Error of Estimate = 286.086

	Coefficient	Std. Error	t	P
Constant	40318.031	550.683	73.215	<0.001
10 Total Dissolved Solids (mg/	-2.313	0.521	-4.442	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1615003.003	1615003.003	19.732	<0.001
Residual	13	1063983.930	81844.918		
Total	14	2678986.933	191356.210		

Normality Test (Shapiro-Wilk) Passed (P = 0.904)

Constant Variance Test: Passed (P = 0.944)

Power of performed test with alpha = 0.050: 0.948

Linear Regression Wednesday, November 03, 2021, 3:35:48 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40847.472 - (48.576 * 4 Total Organic Carbon (mg/L))

N = 12 Missing Observations = 103

R = 0.300 Rsqr = 0.0899 Adj Rsqr = 0.000

Standard Error of Estimate = 658.024

	Coefficient	Std. Error	t	P
Constant	40847.472	1210.945	33.732	<0.001
4 Total Organic Carbon (mg/L)	-48.576	48.864	-0.994	0.344

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	427894.166	427894.166	0.988	0.344
Residual	10	4329952.750	432995.275		
Total	11	4757846.917	432531.538		

Normality Test (Shapiro-Wilk) Passed (P = 0.385)

Constant Variance Test: Passed (P = 0.377)

Power of performed test with alpha = 0.050: 0.151

The power of the performed test (0.151) 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 Wednesday, November 03, 2021, 3:37:04 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39750.102 + (2.558 * 7 Total Organic Carbon (mg/L))

N = 14 Missing Observations = 101

R = 0.0166 Rsqr = 0.000275 Adj Rsqr = 0.000

Standard Error of Estimate = 716.390

	Coefficient	Std. Error	t	P
Constant	39750.102	637.717	62.332	<0.001
7 Total Organic Carbon (mg/L)	2.558	44.501	0.0575	0.955

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1696.062	1696.062	0.00330	0.955
Residual	12	6158570.867	513214.239		
Total	13	6160266.929	473866.687		

Normality Test (Shapiro-Wilk) Passed (P = 0.506)

Constant Variance Test: Passed (P = 0.785)

Power of performed test with alpha = 0.050: 0.028

The power of the performed test (0.028) 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 Wednesday, November 03, 2021, 3:37:12 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 41524.010 - (82.977 * 9 Total Organic Carbon (mg/L))

N = 12 Missing Observations = 103

R = 0.500 Rsqr = 0.250 Adj Rsqr = 0.176

Standard Error of Estimate = 597.237

	Coefficient	Std. Error	t	P
Constant	41524.010	1034.961	40.121	<0.001
9 Total Organic Carbon (mg/L)	-82.977	45.389	-1.828	0.097

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1192070.164	1192070.164	3.342	0.097
Residual	10	3566924.753	356692.475		
Total	11	4758994.917	432635.902		

Normality Test (Shapiro-Wilk) Passed (P = 0.751)

Constant Variance Test: Passed (P = 0.683)

Power of performed test with alpha = 0.050: 0.378

The power of the performed test (0.378) 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 Wednesday, November 03, 2021, 3:37:20 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 39317.772 + (18.815 * 12 Total Organic Carbon (mg/L))

N = 12 Missing Observations = 103

R = 0.104 Rsqr = 0.0108 Adj Rsqr = 0.000

Standard Error of Estimate = 686.025

	Coefficient	Std. Error	t	P
Constant	39317.772	1049.411	37.467	<0.001
12 Total Organic Carbon (mg/L)	18.815	56.837	0.331	0.747

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	51572.140	51572.140	0.110	0.747
Residual	10	4706308.776	470630.878		
Total	11	4757880.917	432534.629		

Normality Test (Shapiro-Wilk) Passed (P = 0.664)

Constant Variance Test: Passed (P = 0.415)

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) 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 Wednesday, November 03, 2021, 3:37:29 PM

Data source: Data 1 in Sigma Plot Data 2021

Date = 40247.184 - (38.804 * 14 Total Organic Carbon (mg/L))

N = 12 Missing Observations = 103

R = 0.418 Rsqr = 0.175 Adj Rsqr = 0.0920

Standard Error of Estimate = 635.281

	Coefficient	Std. Error	t	P
Constant	40247.184	438.731	91.735	<0.001
14 Total Organic Carbon (mg/L)	-38.804	26.684	-1.454	0.177

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	853480.335	853480.335	2.115	0.177
Residual	10	4035818.582	403581.858		
Total	11	4889298.917	444481.720		

Normality Test (Shapiro-Wilk) Passed (P = 0.760)

Constant Variance Test: Passed (P = 0.402)

Power of performed test with alpha = 0.050: 0.266

The power of the performed test (0.266) 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.

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