El Dorado Chemical Company 2018 Annual Groundwater Monitoring Report

March 15, 2018

GBMc & Associates
Strategic Environmental Services

2018 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

March 15, 2019

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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.

Charles D. Campbell, PE — Date 3/15/19
Arkansas No. 6857

3/15/19

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 ADEQ 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 ADEQ to properly evaluate the groundwater. The primary remediation activities at EDCC include operation of a groundwater recovery system and monitored natural attenuation. Trend analyses (linear regressions) for ammonia, nitrate and sulfate were completed for all groundwater wells to evaluate the effectiveness of the remediation activities.

1.1 Site Location

The 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. Site and potentiometric surface maps are located 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. ADEQ 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 ADEQ approval due to low concentrations or proving not necessary for tracking the effectiveness of the November 16, 2007 Remedial Action Plan.

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

Well	NH_4	NO_3	SO_4	PB		CR		pH
				Dissolved	Total	Dissolved	Total	
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 2018 monitoring year occurred in April for the first half and in September for the second half. Wells ECMW-4 and ECMW-21 were resampled in June of 2018. Samples, field parameters, and depth to water measurements were collected by an approved EDCC contractor. Depths to water surface and depths to the well bottom 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 while depth to water surface and depth to well bottom measurements were used to determine the volume of water in the wells. Prior to sampling, three well volumes were purged from the respective well using either a submersible or peristaltic pump to ensure samples originated from the aquifer and not influenced by the open atmosphere within the well. Samples were collected in appropriately preserved containers using bailers dedicated for each well. Sample containers were placed on ice and delivered to an ADEQ certified laboratory for analysis. Field parameters were measured at the time of sample collection with an appropriate hand held *in-situ* meter.

2.2 Groundwater Elevation Survey Results

Water levels for the potentiometric maps were collected during the June and September 2018 sampling events and are shown in Table 2.2. The potentiometric surface map for the 2018 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)	June 2018		September 2018	
		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	13.57	199.71	15.29	197.99
ECMW-2	196.25	0.00	196.25	2.36	193.89
ECMW-3	192.11	10.08	182.03	12.43	179.68
ECMW-4	194.84	10.07	184.77	10.35	184.49
ECMW-5	182.69	4.66	178.03	4.30	178.39
ECMW-6	191.87	4.48	187.39	4.31	187.56
ECMW-7	195.88	7.14	188.74	7.12	188.76
ECMW-8	197.34	7.03	190.31	7.24	190.10
ECMW-9	198.39	9.54	188.85	13.02	185.37
ECMW-10	205.75	13.65	192.10	15.47	190.28
ECMW-11	201.65	10.86	190.79	12.67	188.98
ECMW-12	184.97	6.30	178.67	6.30	178.67
ECMW-13	177.26	9.06	168.20	9.73	167.53
ECMW-14	178.48	5.21	173.27	7.53	170.95
ECMW-15	180.84	5.30	175.54	6.88	173.96
ECMW-16	180.14	4.12	176.02	6.16	173.98
ECMW-17	185.40	27.57	157.83	28.93	156.47
ECMW-18	155.46	7.92	148.54	9.24	146.22
ECMW-19	150.41	2.62	147.79	4.24	146.17
ECMW-20	192.77	28.09	164.68	29.00	163.77
ECMW-21	176.29	17.59	158.70	18.02	158.27
ECMW-22	173.55	5.44	168.11	7.46	166.09

The groundwater flow direction at the site is 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 42.52 ft and 43.93 ft for the first and second half of 2018, respectively. The distance between the monitoring wells is 4,267 ft. The resulting hydraulic gradients of 9.96×10^{-3} for the first half and 1.03×10^{-2} 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 2.2×10^{-5} cm/s for the first half of 2018 and an average linear velocity of 2.3×10^{-5} cm/s for the second half of 2018.

2.3 Groundwater Analytical Results

Field measurements and groundwater samples were collected by an approved EDCC contractor and delivered to an ADEQ certified commercial laboratory for analysis of the parameters listed in Table 2.1. Laboratory reports and groundwater sampling field records for the April, June, and September 2018 sampling event are included in Appendix B. Constituent concentration maps are located in Appendix C. Appendix D contains tabularized parameter data for each of the wells.

The analytical results are numerically similar to previous sampling events. The production area wells contained the highest concentrations of ammonia, nitrate, and

sulfate with the wells located nearest the recovery wells (ECMW-6, ECMW-7, and ECMW-8) displaying the highest concentrations for nitrogen compounds. Ammonia concentrations in the production area ranged from less than the detection limit (0.5 mg/L) to 2,310 mg/L with the three wells nearest the recovery wells (ECMW-6, ECMW-7, and ECMW-8) having concentrations ranging from three to four orders of magnitude above the detection limit. The target ammonia concentration of 0.55 mg/L, determined in the 2007 Human Health Risk Assessment Report and implemented in the Remedial Action Plan, was exceeded during one or both of the 2018 sampling events in all of the downgradient wells except ECMW-21. The target ammonia concentration has historically been exceeded in all the downgradient wells with recent exceedances in wells ECMW-17, ECMW-18, and ECMW- 22. Ammonia concentrations in all of the mid-gradient wells were less than the detection limit.

Nitrate concentrations were also highest in the wells nearest the recovery wells with concentrations ranging from 413 mg/L to 6,320 mg/L while three of the wells within the production area had concentrations reported at less than the detection limit (0.25 mg/L). Nitrate concentrations in the mid-gradient and downgradient wells ranged from less than the detection limit to a high of 10.2 mg/L measured at ECMW-17.

Sulfate concentrations were also elevated within the production area, ranging from 16.5 mg/L to 984 mg/L. Concentrations in the upgradient wells were numerically similar to the downgradient wells with upgradient wells ranging from 4.65 to 24.4 mg/L and downgradient wells ranging from 0.722 to 24.9 mg/L.

Lead and chromium concentrations were below or near the detection limit for all the wells. Chromium concentrations were measured above the detection limit of 0.0125 mg/L for upgradient wells ECMC-1 and ECMW-2 and for downgradient well ECMW-21 during the second half sampling event. Detected chromium concentrations ranged from 0.0153 to 0.0248 mg/L. Lead concentrations were measured above the detection limit of 0.0156 mg/L in ECMW-6 and ECMW-8 during both sampling events and in ECMW-1, ECMW-2, ECMW-10, and ECMW-20 during the second half sampling event. Detected lead concentrations ranged from 0.0202 to 0.0809 mg/L.

The pH measurements ranged from 3.55 su at ECMW-6 to 6.0 su at ECMW-7. The pH values of the downgradient wells were numerically similar to the upgradient wells and ranged from 4.03 su to 5.69 su.

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. Linear regression analyses were performed for ammonia, nitrate, and sulfate to determine if the data exhibited any trends and to test for statistical significance of potential trends. Linear regressions were not performed for pH, total and dissolved chromium, or total and dissolved lead. As discussed in Section 2.3, pH values were numerically similar and displayed varying degrees of fluctuation for all of the wells. Lead and chromium concentrations were mostly below the detection limit with sporadic measurements of concentrations above the detection limit in select wells including two of the upgradient wells. Table 3.1 summarizes the statistical results of the linear regression trend analysis. Statistical analysis result reports are presented in Appendix D.

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

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

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

Statistically significant increasing trends in ammonia concentration over time were observed in ECMW-6, ECMW-7, ECMW-8, and ECMW-19. 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 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 indicates that ammonia is not migrating from the production area and natural attenuation is occurring. ECMW-19 had significant increasing ammonia concentration, however, this was driven by two points that were collected in 2018 (0.752 and 1.21 mg/L). All other ammonia concentrations from ECMW-19 have been less than detect.

Statistically significant increasing trends in nitrate concentration over time were observed in ECMW-5, ECMW-6, ECMW-7, and ECMW-11. Significant decreasing trends in nitrate concentrations were observed in ECMW-1, ECMW-3, ECMW-10 and ECMW-13 through 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-7 indicate that nitrate is being drawn to the recovery wells. Monitoring well ECMW-13 is on the perimeter 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.

Statistically significant increasing trends for sulfate concentration over time were observed in ECMW-6, ECMW-10, ECMW-12, and ECMW-22. Significant decreasing trends were observed in ECMW-5, ECMW-11, ECMW-14, ECMW-16, ECMW-17, and ECMW-19. With the exception of ECMW-22, significant increasing trends in sulfate concentrations were confined to the production area wells. Monitoring ECMW-22 had a significant increasing sulfate concentration, however, there are two points driving the trend; 11.8 mg/L collected on 5/24/2016 and 12.8 mg/L collected on 9/12/2018. Significant decreasing trends in sulfate concentration for the mid-gradient wells and

ECMW-19 indicate that sulfate is not migrating from the production areas and that natural attenuation is occurring.

4.0 SUMMARY

The data reported for the EDCC groundwater wells suggest that the elevated constituent concentrations in the production area are being contained within the production area and preventing migration offsite. This is supported by significantly increasing trends in parameter concentrations in monitoring wells near the groundwater recovery wells. Significant decreasing or no trends in downgradient wells, with two exceptions as discussed in the Section 3.0, indicate that nitrogen and sulfate are not migrating from the production area and that natural attenuation is effective in reducing concentrations in these areas.

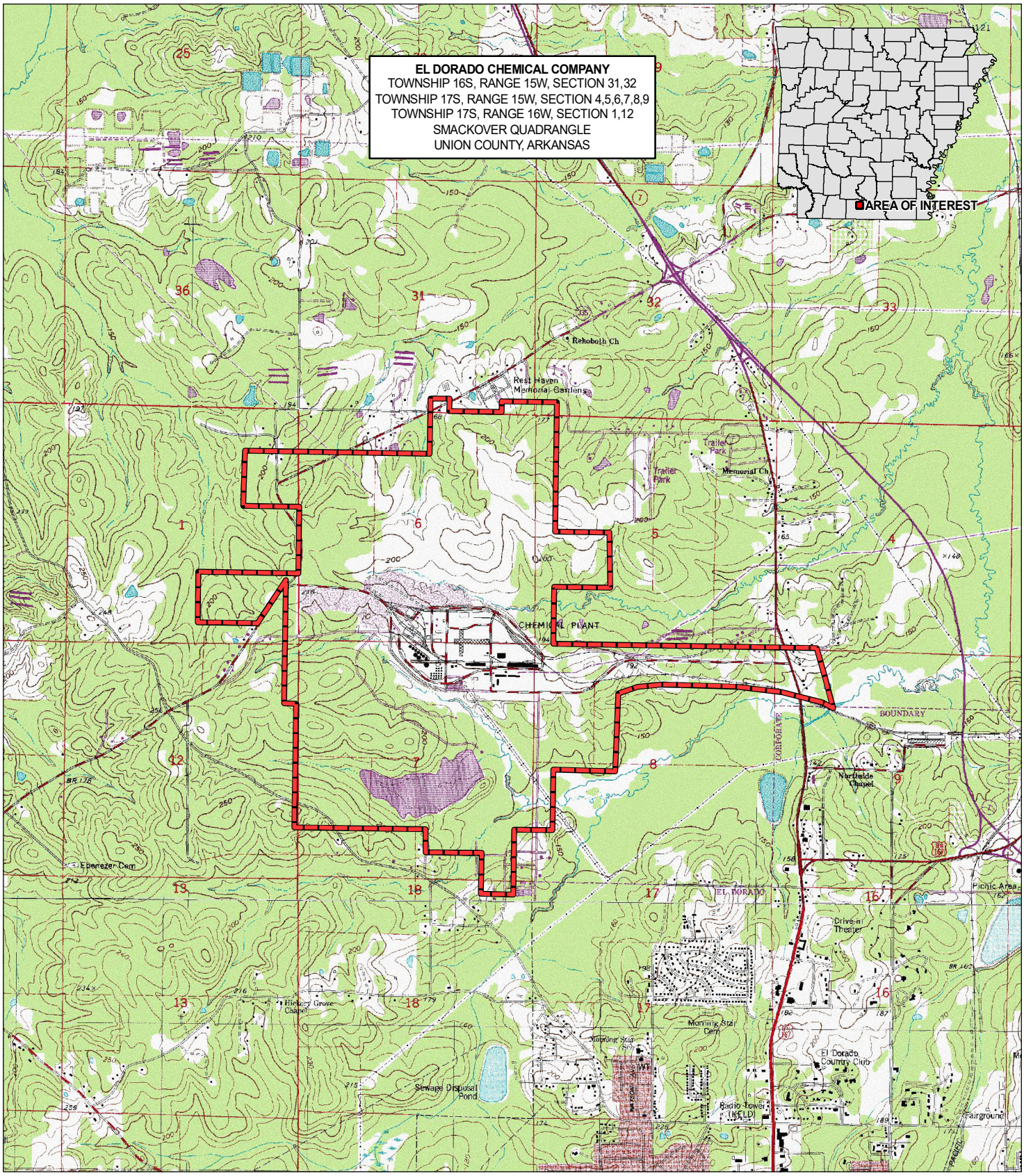
While the target ammonia concentration of 0.55 mg/L has not successfully been achieved consistently at the downgradient wells, concentrations remain relatively low in relation to concentrations in the production area. Significant decreasing trends in ammonia in ECMW-16 and in nitrate in all the mid-gradient wells indicate that overall nitrogen concentrations are decreasing in wells immediately upgradient of downgradient wells ECMW-17 and ECMW-22.

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 is recommended to assess the effectiveness of the groundwater remediation activities at EDCC.

5.0 REFERENCES CITED

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

APPENDIX A
Site Maps



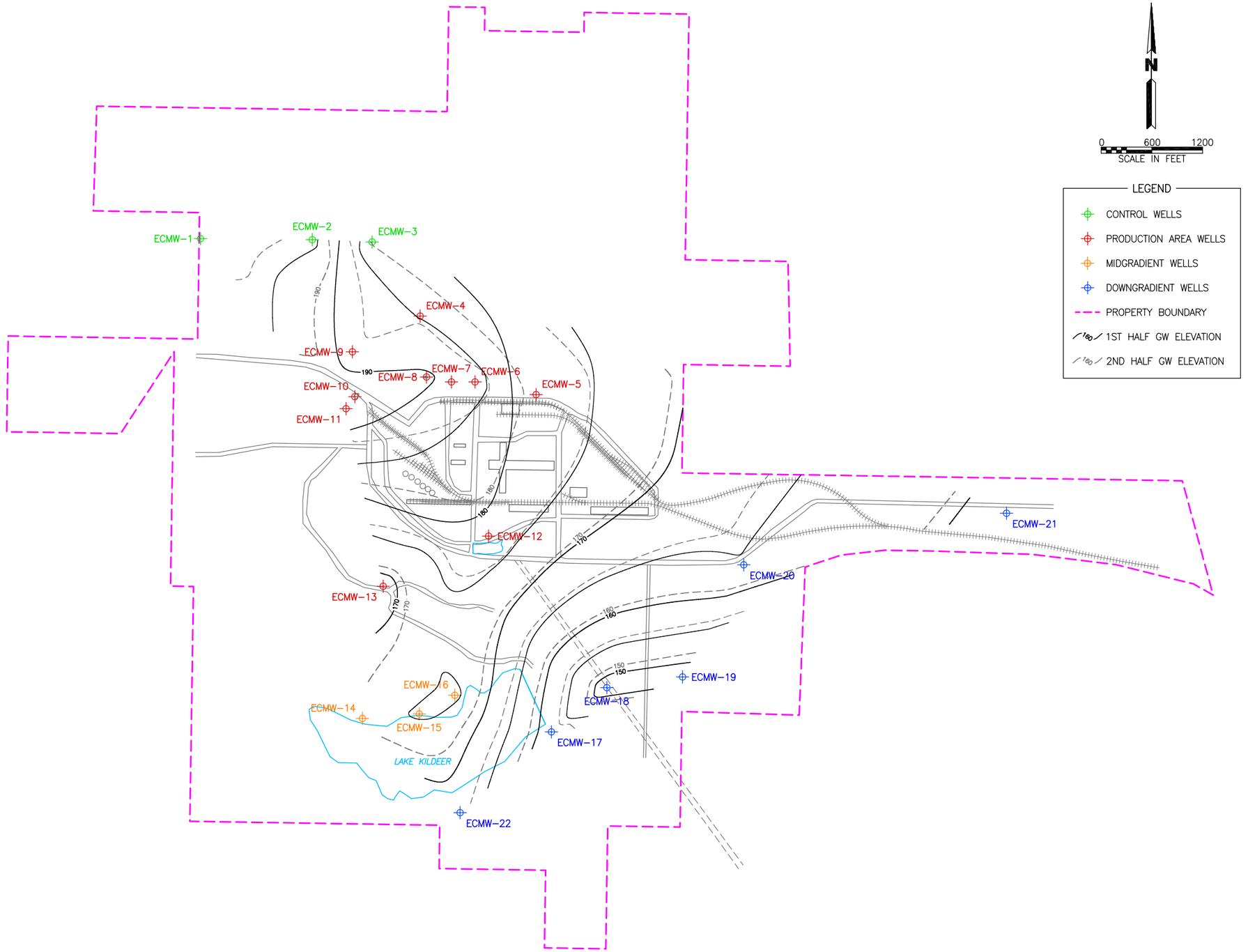
2042.000.G1

TOPOGRAPHIC LOCATION MAP

EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

Approved by:	ENJ	Project No.:	2042-99-010
Checked by:	ENJ	Date:	03/11/2019
Drawn by:	IT	Scale:	SHOWN

GBMC
STRATEGIC ENVIRONMENTAL SERVICES
219 Brown Lane
Bryant, Arkansas 72022



NO	DATE	REVISION	BY	CK.	APPR.

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

GBMc
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
SITE MAP

JOB NAME
2018 GROUND WATER ELEVATION
EL DORADO CHEMICAL COMAPNY
EL DORADO, ARKANSAS

PROJECT NO.	2042-99-010
DATE	03/13/2019
SCALE	SHOWN
REV. NO.	
DWG. NO.	

APPENDIX B
Laboratory Reports and Field Sheets

Arkansas Analytical Inc.

8100 National Dr. - Little Rock, AR 72209
501-455-3233 Fax 501-455-6118

17 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731

Project: Groundwater Sample(s)

Project Number: April 2018

SDG Number: 1804142

Enclosed are the results of analyses for samples received by the laboratory on 10-Apr-18 16:50. If you have any questions concerning this report, please feel free to contact me.

Sample Receipt Information:

Custody Seals	✔
Containers Correct	✔
COC/Labels Agree	✔
Received On Ice	✔
Temperature on Receipt	3.0°C

Sincerely,

Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

17 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 10-Apr-18 16:50

ANALYTICAL RESULTS

Lab Number: 1804142-01
Sample Name: ECMW #16
Date/Time Collected: 4/10/18 10:25
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**15.6**		4/12/18 10:13	B804164	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**8.13**		4/11/18 13:43	B804164	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 16:56	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 16:56	B804187	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 14:11	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 14:11	B804188	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		4/12/18 8:05	B804180	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804142-02
Sample Name: ECMW #15
Date/Time Collected: 4/10/18 11:10
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**12.6**		4/12/18 10:35	B804164	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**1.55**		4/11/18 14:05	B804164	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 17:00	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:00	B804187	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 14:15	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 14:15	B804188	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		4/12/18 8:05	B804180	SM 4500-NH3 B,D,C-2011

17 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 10-Apr-18 16:50

ANALYTICAL RESULTS

Lab Number: 1804142-03
Sample Name: ECMW #17
Date/Time Collected: 4/10/18 10:50
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**20.5**		4/11/18 18:12	B804164	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**10.2**		4/11/18 18:12	B804164	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 17:04	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:04	B804187	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 14:34	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 14:34	B804188	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**3.50**		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804142-04
Sample Name: ECMW #22
Date/Time Collected: 4/10/18 10:29
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**0.722**		4/11/18 15:35	B804164	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		4/11/18 15:35	B804164	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 17:08	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:08	B804187	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 14:38	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 14:38	B804188	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

17 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 10-Apr-18 16:50

ANALYTICAL RESULTS

Lab Number: 1804142-05
Sample Name: ECMW #11
Date/Time Collected: 4/10/18 11:50
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**246**		4/12/18 10:58	B804164	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**14.7**		4/11/18 15:57	B804164	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 17:12	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:12	B804187	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 14:42	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 14:42	B804188	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**6.15**		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804142-06
Sample Name: BD-1
Date/Time Collected: 4/10/18 0:00
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**236**		4/11/18 16:20	B804164	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**11.4**		4/11/18 16:20	B804164	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 17:15	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:15	B804187	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 14:46	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 14:46	B804188	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**4.52**		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

17 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 10-Apr-18 16:50

QUALITY CONTROL RESULTS

Anions -- Batch: B804164 (Water)
Prepared: 11-Apr-18 10:43 By: MB -- Analyzed: 11-Apr-18 12:58 By: MB

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Nitrate as N	<0.250 mg/L	90.0% / NA	110% / 108%		0.497%	
Sulfate as SO4	<0.500 mg/L	92.0% / NA	90.3% / 91.4%		0.261%	

Wet Chemistry -- Batch: B804180 (Water)
Prepared: 12-Apr-18 08:05 By: CNW -- Analyzed: 12-Apr-18 08:05 By: CNW

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Ammonia as N	<0.500 mg/L	109% / NA	101% / 109%		7.62%	

Dissolved Metals -- Batch: B804187 (Water)
Prepared: 16-Apr-18 14:30 By: HF -- Analyzed: 16-Apr-18 16:52 By: HF

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	100% / NA	100% / 102%		1.35%	
Lead	<0.0156 mg/L	101% / NA	99.6% / 101%		1.83%	

Total Metals -- Batch: B804188 (Water)
Prepared: 12-Apr-18 15:35 By: HF -- Analyzed: 16-Apr-18 14:00 By: HF

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	105% / NA	102% / 103%		0.713%	
Lead	<0.0156 mg/L	108% / NA	100% / 101%		1.03%	

Wet Chemistry -- Batch: B804212 (Water)
Prepared: 13-Apr-18 08:30 By: SP -- Analyzed: 13-Apr-18 08:30 By: SP

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Ammonia as N	<0.500 mg/L	102% / NA	91.9% / 101%		8.04%	

All Analysis performed according to EPA approved methodology when available :
SW 846, Revised December, 1996; EPA 600/4-79-020, Revised March, 1983; Standard Methods.
Instrument calibration and quality control samples performed at or above frequency specified in analytical method.

Reviewed by: Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

Arkansas Analytical Inc.
8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION
El Dorado Chemical Inc.	El Dorado Chemical Inc.
4500 Northwest Ave.	P.O. Box 231
El Dorado, AR 71731	El Dorado, AR 71731
Attn: Eddie Pearson	

Project Description: Groundwater Samples

Reporting Information
Telephone: 870-863-1484
Fax: 870-863-1499
Email: dsartain@edc-ark.com; epearson@edc-ark.com; lmarcella@env-mgt.com

Turnaround Time: 1 Day (100%) | 2 Day (50%) | 3 Day (25%) | 5 Day (Routine)

Preservation Codes:
1. Cool, 6 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

Sampler(s) Signature: Christina Sellers, Paul Martin
Sampler(s) Printed

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	TEST PARAMETERS: Nitrate, Sulfate	Ammonia	Cr, Pb	d Cr, d Pb	Bottle Type Code	Arkansas Analytical Work Order Number: 1804142
	4-10-18	10:25	X		4	Water	ECMW- 16	X	X	X	X		01
	4-10-18	11:10	X		4	Water	ECMW- 15	X	X	X	X		02
	4-10-18	10:50	X		4	Water	ECMW- 17	X	X	X	X		03
	4-10-18	10:29	X		4	Water	ECMW- 22 **	X	X	X	X		04
	4-10-18	11:50	X		4	Water	ECMW- 11	X	X	X	X		05
	4-10-18		X		4	Water	~~ECMW-~~ BD1 *	X	X	X	X		06
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		

Bottle Type Code: G = Glass; P = Plastic; V = Septum; A = Amber

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Paul Martin, Christina Sellers	4-10-18 12:00	Christina Wood 4/10/18 1257
	4/10/18 1800	
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
Christina Wood	4/10/18 1650	Amanda Forbush

SAMPLE CONDITION UPON RECEIPT IN LAB

1. CUSTODY SEALS:	√ Yes	___ No
2. CONTAINERS CORRECT:	___ Yes	___ No
3. COC/LABELS AGREE:	___ Yes	___ No
4. RECEIVED ON ICE:	___ Yes	___ No
5. TEMPERATURE ON RECEIPT:	3 °C	
6. TEMPERATURE GUN ID:	HHT# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

* Sample collected by Client, left off COC. - AJF 4-10-18

** = labels and preservation do not match requested analyses. Client mislabeled containers AJF 4/10/18

Revision 3
1/4/16

Arkansas Analytical Inc.

8100 National Dr. - Little Rock, AR 72209
501-455-3233 Fax 501-455-6118

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731

Project: Groundwater Sample(s)

Project Number: April 2018

SDG Number: 1804179

Enclosed are the results of analyses for samples received by the laboratory on 12-Apr-18 10:27. If you have any questions concerning this report, please feel free to contact me.

Sample Receipt Information:

Custody Seals	✔
Containers Correct	✔
COC/Labels Agree	✔
Received On Ice	✔
Temperature on Receipt	3.0°C

Sincerely,

Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 12-Apr-18 10:27

ANALYTICAL RESULTS

Lab Number: 1804179-01
Sample Name: ECMW #1
Date/Time Collected: 4/11/18 15:55
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**5.12**		4/12/18 15:19	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**1.13**		4/12/18 15:19	B804194	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 17:19	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:19	B804187	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 15:17	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 15:17	B804188	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804179-02
Sample Name: ECMW #2
Date/Time Collected: 4/11/18 16:05
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**19.4**		4/13/18 7:23	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		4/12/18 15:41	B804194	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 17:23	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:23	B804187	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/16/18 15:37	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 15:37	B804188	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 12-Apr-18 10:27

ANALYTICAL RESULTS

Lab Number: 1804179-03
Sample Name: ECMW #3
Date/Time Collected: 4/11/18 16:15
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**9.27**		4/13/18 7:46	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		4/12/18 16:04	B804194	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/16/18 17:42	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:42	B804187	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/16/18 15:40	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 15:40	B804188	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804179-04
Sample Name: ECMW #9
Date/Time Collected: 4/11/18 16:30
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**589**		4/13/18 8:08	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**26.9**		4/12/18 17:11	B804194	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/16/18 17:46	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:46	B804187	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/16/18 15:44	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 15:44	B804188	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 12-Apr-18 10:27

ANALYTICAL RESULTS

Lab Number: 1804179-05
Sample Name: ECMW #13
Date/Time Collected: 4/11/18 16:00
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**364**		4/13/18 8:31	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		4/12/18 17:34	B804194	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/16/18 17:50	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:50	B804187	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/16/18 15:48	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 15:48	B804188	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804179-06
Sample Name: ECMW #10
Date/Time Collected: 4/11/18 16:55
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**152**		4/13/18 8:53	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**43.3**		4/12/18 17:56	B804194	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/16/18 17:54	B804187	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 17:54	B804187	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/16/18 15:52	B804188	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/16/18 15:52	B804188	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		4/13/18 8:30	B804212	SM 4500-NH3 B,D,C-2011

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 12-Apr-18 10:27

QUALITY CONTROL RESULTS

Dissolved Metals -- Batch: B804187 (Water)
Prepared: 16-Apr-18 14:30 By: HF -- Analyzed: 16-Apr-18 16:52 By: HF

Analyte	BLK	LCS / LCSD			MS / MSD			Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	100%	/	NA	100%	/	102%		1.35%	
Lead	<0.0156 mg/L	101%	/	NA	99.6%	/	101%		1.83%	

Total Metals -- Batch: B804188 (Water)
Prepared: 12-Apr-18 15:35 By: HF -- Analyzed: 16-Apr-18 14:00 By: HF

Analyte	BLK	LCS / LCSD			MS / MSD			Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	105%	/	NA	102%	/	103%		0.713%	
Lead	<0.0156 mg/L	108%	/	NA	100%	/	101%		1.03%	

Anions -- Batch: B804194 (Water)
Prepared: 12-Apr-18 15:19 By: MB -- Analyzed: 12-Apr-18 20:33 By: MB

Analyte	BLK	LCS / LCSD			MS / MSD			Dup	RPD	Qualifiers
Nitrate as N	<0.250 mg/L	90.1%	/	NA	104%	/	103%		0.468%	
Sulfate as SO4	<0.500 mg/L	91.1%	/	NA	99.8%	/	99.9%		0.0241%	

Wet Chemistry -- Batch: B804212 (Water)
Prepared: 13-Apr-18 08:30 By: SP -- Analyzed: 13-Apr-18 08:30 By: SP

Analyte	BLK	LCS / LCSD			MS / MSD			Dup	RPD	Qualifiers
Ammonia as N	<0.500 mg/L	102%	/	NA	91.9%	/	101%		8.04%	

All Analysis performed according to EPA approved methodology when available :
SW 846, Revised December, 1996; EPA 600/4-79-020, Revised March, 1983; Standard Methods.
Instrument calibration and quality control samples performed at or above frequency specified in analytical method.

Reviewed by: Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

Arkansas Analytical Inc.
3100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION	Project Description	Turnaround Time
El Dorado Chemical Inc.	El Dorado Chemical Inc.	Groundwater Samples	1 Day (100%)
4500 Northwest Ave.	P.O. Box 231		2 Day (50%)
El Dorado, AR 71731	El Dorado, AR 71731	Reporting Information	3 Day (25%)
		Telephone: 870-863-1484	5 Day (Routine)
Attn: Eddie Pearson		Fax: 870-863-1499	Preservative Code:
		Email: dsartain@edc-ark.com; epearson@edc-ark.com; lmarcella@env-mgt.com	Bottle Type:

Preservation Codes:
1. Cool, 6 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

TEST PARAMETERS

Preservative Code:	1	1,2	1,3	1						Bottle Type Code
Bottle Type:	P	P	P	P						G = Glass; P = Plastic; V = Septum; A = Amber
	Nitrate, Sulfate	Ammonia	Cr, Pb	d Cr, d Pb						

Sampler(s) Signature: Paul Martin, Christina Sellers
Sampler(s) Printed: PAUL MARTIN, Christina Sellers

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION									Arkansas Analytical Work Order Number: 18041179 - AF
	4-11-18	15:55	X		4	Water	ECMW- 1	X	X	X	X					01
	4-11-18	16:05	X		4	Water	ECMW- 2	X	X	X	X					02
	4-11-18	16:15	X		4	Water	ECMW- 3	X	X	X	X					03
	4-11-18	16:30	X		4	Water	ECMW- 9	X	X	X	X					04
	4-11-18	16:00	X		4	Water	ECMW- 13	X	X	X	X					05
	4-11-18	16:55	X		4	Water	ECMW- 10	X	X	X	X					06
			X		4	Water	ECMW-	X	X	X	X					
			X		4	Water	ECMW-	X	X	X	X					
			X		4	Water	ECMW-	X	X	X	X					
			X		4	Water	ECMW-	X	X	X	X					

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Christina Sellers Paul Martin	4/11/18 17:30 4/11/18 17:30	Fed Ex
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
fedex	4.12.18 1027	Amanda Jobarsh

SAMPLE CONDITION UPON RECEIPT IN LAB

1. CUSTODY SEALS:	✓ Yes	___ No
2. CONTAINERS CORRECT:	✓ Yes	___ No
3. COC/LABELS AGREE:	✓ Yes	___ No
4. RECEIVED ON ICE:	✓ Yes	___ No
5. TEMPERATURE ON RECEIPT:	3 °C	
6. TEMPERATURE GUN ID:	HHT# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

Arkansas Analytical Inc.

8100 National Dr. - Little Rock, AR 72209
501-455-3233 Fax 501-455-6118

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731

Project: Groundwater Sample(s)

Project Number: April 2018

SDG Number: 1804204

Enclosed are the results of analyses for samples received by the laboratory on 13-Apr-18 12:29. If you have any questions concerning this report, please feel free to contact me.

Sample Receipt Information:

Custody Seals	✔
Containers Correct	✔
COC/Labels Agree	✔
Received On Ice	✔
Temperature on Receipt	6.0°C

Sincerely,

Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 13-Apr-18 12:29

CASE NARRATIVE

Sample Delivery Group – 1804204

One *OR* more of the qualifiers described below may appear in this report. Qualifiers in RED apply to this SDG (Sample Delivery Group).

SAMPLE RECEIPT QUALIFIERS:

Qualifier	Description
ET	Samples received above required temperature.
ET	Samples received above required temperature. Although collected and received the same day, no ice was present to indicate the cooling preservation was attempted.
E2	Result qualified as it was received and analyzed outside of holding time. Analysis is considered a "Field" analysis.
E2	Result qualified as it was received and/or analyzed outside of holding time.
E3	Result qualified as it was received in the incorrect container and/or preservation.

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 13-Apr-18 12:29

ANALYTICAL RESULTS

Lab Number: 1804204-01
Sample Name: ECMW-8
Date/Time Collected: 4/12/18 16:30
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**128**		4/13/18 13:11	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**2890**		4/13/18 13:11	B804194	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 19:23	B804288	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	**0.0676**		4/18/18 19:23	B804288	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 17:47	B804289	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0689**		4/18/18 17:47	B804289	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**626**		4/17/18 8:24	B804255	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804204-02
Sample Name: ECMW-7
Date/Time Collected: 4/12/18 16:45
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**983**		4/13/18 13:32	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**542**		4/13/18 13:32	B804194	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 19:27	B804288	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 19:27	B804288	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 17:51	B804289	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 17:51	B804289	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**2310**		4/17/18 8:24	B804255	SM 4500-NH3 B,D,C-2011

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 13-Apr-18 12:29

ANALYTICAL RESULTS

Lab Number: 1804204-03
Sample Name: ECMW-5
Date/Time Collected: 4/12/18 17:10
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**64.9**		4/13/18 13:54	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**56.5**		4/13/18 13:54	B804194	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 19:31	B804288	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 19:31	B804288	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 17:55	B804289	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 17:55	B804289	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**3.28**		4/17/18 8:24	B804255	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804204-04
Sample Name: ECMW-6
Date/Time Collected: 4/12/18 17:25
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**45.2**		4/16/18 12:40	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**5580**		4/13/18 14:15	B804194	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 19:34	B804288	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	**0.0655**		4/18/18 19:34	B804288	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 18:14	B804289	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0650**		4/18/18 18:14	B804289	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**1530**		4/17/18 8:24	B804255	SM 4500-NH3 B,D,C-2011

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 13-Apr-18 12:29

ANALYTICAL RESULTS

Lab Number: 1804204-05
Sample Name: ECMW-18
Date/Time Collected: 4/12/18 18:05
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**1.58**		4/13/18 15:20	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		4/13/18 15:20	B804194	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/18/18 19:38	B804288	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 19:38	B804288	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/18/18 18:18	B804289	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 18:18	B804289	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**1.38**		4/17/18 8:24	B804255	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804204-06
Sample Name: ECMW-19
Date/Time Collected: 4/12/18 18:45
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**3.64**		4/13/18 15:41	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		4/13/18 15:41	B804194	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/18/18 19:42	B804288	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 19:42	B804288	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		4/18/18 18:21	B804289	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 18:21	B804289	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**0.752**		4/17/18 8:24	B804255	SM 4500-NH3 B,D,C-2011

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 13-Apr-18 12:29

ANALYTICAL RESULTS

Lab Number: 1804204-07
Sample Name: ECMW-20
Date/Time Collected: 4/12/18 19:40
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**13.1**		4/16/18 13:44	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**5.44**		4/13/18 16:03	B804194	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 20:01	B804288	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		4/18/18 20:01	B804288	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 18:25	B804289	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0202**		4/18/18 18:25	B804289	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**1.62**		4/17/18 8:24	B804255	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1804204-08
Sample Name: ECMW-BD2
Date/Time Collected: 4/12/18 1:00
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**44.0**		4/13/18 16:24	B804194	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**5810**	E2	4/16/18 12:19	B804194	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 20:05	B804288	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	**0.0654**		4/18/18 20:05	B804288	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		4/18/18 18:29	B804289	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0664**		4/18/18 18:29	B804289	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**1040**		4/17/18 8:24	B804255	SM 4500-NH3 B,D,C-2011

19 April 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: April 2018
Date Received: 13-Apr-18 12:29

QUALITY CONTROL RESULTS

Anions -- Batch: B804194 (Water)
Prepared: 12-Apr-18 15:19 By: MB -- Analyzed: 12-Apr-18 20:33 By: MB

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Nitrate as N	<0.250 mg/L	90.1% / NA	104% / 103%		0.468%	
Sulfate as SO4	<0.500 mg/L	91.1% / NA	99.8% / 99.9%		0.0241%	

Wet Chemistry -- Batch: B804255 (Water)
Prepared: 17-Apr-18 08:24 By: SP -- Analyzed: 17-Apr-18 08:24 By: SP

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Ammonia as N	<0.500 mg/L	101% / NA	85.3% / 83.8%		1.77%	

Dissolved Metals -- Batch: B804288 (Water)
Prepared: 18-Apr-18 13:50 By: HF -- Analyzed: 18-Apr-18 19:11 By: HF

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	107% / NA	107% / 105%		2.42%	
Lead	<0.0156 mg/L	109% / NA	107% / 105%		2.24%	

Total Metals -- Batch: B804289 (Water)
Prepared: 18-Apr-18 14:50 By: HF -- Analyzed: 18-Apr-18 16:46 By: HF

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0122 mg/L	109% / NA	105% / 105%		0.173%	
Lead	<0.0153 mg/L	111% / NA	106% / 107%		0.737%	

QUALIFIER(S)

*E2: Estimated Result; Analyzed Outside of Holding Time

All Analysis performed according to EPA approved methodology when available:
SW 846, Revised December, 1996; EPA 600/4-79-020, Revised March, 1983; Standard Methods.
Instrument calibration and quality control samples performed at or above frequency specified in analytical method.

Reviewed by: Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

Arkansas Analytical Inc.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION
El Dorado Chemical Inc.	El Dorado Chemical Inc.
4500 Northwest Ave.	P.O. Box 231
El Dorado, AR 71731	El Dorado, AR 71731
Attn: Eddie Pearson	

Project Description: Groundwater Samples

Reporting Information
Telephone: 870-863-1484
Fax: 870-863-1499
Email: dsartain@edc-ark.com; epearson@edc-ark.com; lmarcella@env-mgt.com

Turnaround Time: 1 Day (100%) / 2 Day (50%) / 3 Day (25%) / 5 Day (Routine)

Preservation Codes:
1. Cool, 6 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

Sampler(s) Signature: Christina Sellers
Sampler(s) Printed: Christina Sellers

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	Nitrate, Sulfate	Ammonia	Cr, Pb	d Cr, d Pb	Arkansas Analytical Work Order Number:
	4/12/18	1630	X		4	Water	ECMW- 8	X	X	X	X	1804204
	4/12/18	1645	X		4	Water	ECMW- 7	X	X	X	X	01
	4/12/18	1710	X		4	Water	ECMW- 5	X	X	X	X	02
	4/12/18	1725	X		4	Water	ECMW- 6	X	X	X	X	03
	4/12/18	1805	X		4	Water	ECMW- 18	X	X	X	X	04
	4/12/18	1845	X		4	Water	ECMW- 19	X	X	X	X	05
	4/12/18	1940	X		4	Water	ECMW- 20	X	X	X	X	06
	4/12/18	0100	X		4	Water	ECMW- 1302	X	X	X	X	07
			X		4	Water	ECMW-	X	X	X	X	08
			X		4	Water	ECMW-	X	X	X	X	

TEST PARAMETERS

Preservative Code:	1	1,2	1,3	1						Bottle Type Code
Bottle Type:	P	P	P	P						G = Glass; P = Plastic; V = Septum; A = Amber

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Christina Sellers	4/13/18 0900	
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
	4/13/18 1229	Sydney James

SAMPLE CONDITION UPON RECEIPT IN LAB

1. CUSTODY SEALS:	✓ Yes	No
2. CONTAINERS CORRECT:	Yes	No
3. COC/LABELS AGREE:	Yes	No
4. RECEIVED ON ICE:	Yes	No
5. TEMPERATURE ON RECEIPT:	6 °C	
6. TEMPERATURE GUN ID:	HHT# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

Arkansas Analytical Inc.

8100 National Dr. - Little Rock, AR 72209
501-455-3233 Fax 501-455-6118

13 June 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731

Project: Groundwater Sample(s)

Project Number: June 2018

SDG Number: 1806088

Enclosed are the results of analyses for samples received by the laboratory on 07-Jun-18 10:30. If you have any questions concerning this report, please feel free to contact me.

Sample Receipt Information:

Custody Seals	✔
Containers Correct	✔
COC/Labels Agree	✔
Received On Ice	✔
Temperature on Receipt	4.0°C

Sincerely,

Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

13 June 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: June 2018
Date Received: 07-Jun-18 10:30

ANALYTICAL RESULTS

Lab Number: 1806088-01
Sample Name: ECMW-4
Date/Time Collected: 6/6/18 10:31
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**984**		6/8/18 14:00	B806101	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		6/7/18 19:55	B806101	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		6/12/18 17:25	B806176	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 17:25	B806176	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		6/12/18 19:24	B806178	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 19:24	B806178	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		6/11/18 7:45	B806145	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1806088-02
Sample Name: ECMW-12
Date/Time Collected: 6/6/18 10:15
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**16.5**		6/8/18 14:18	B806101	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		6/7/18 20:13	B806101	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		6/12/18 17:29	B806176	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 17:29	B806176	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		6/12/18 19:28	B806178	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 19:28	B806178	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**1.05**		6/11/18 7:45	B806145	SM 4500-NH3 B,D,C-2011

13 June 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: June 2018
Date Received: 07-Jun-18 10:30

ANALYTICAL RESULTS

Lab Number: 1806088-03
Sample Name: ECMW-14
Date/Time Collected: 6/6/18 9:45
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**136**		6/8/18 14:37	B806101	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**5.98**		6/7/18 20:32	B806101	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		6/12/18 17:33	B806176	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 17:33	B806176	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		6/12/18 19:47	B806178	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 19:47	B806178	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		6/11/18 7:45	B806145	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1806088-04
Sample Name: ECMW-21
Date/Time Collected: 6/6/18 10:55
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**3.95**		6/7/18 20:50	B806101	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**2.45**		6/7/18 20:50	B806101	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		6/12/18 17:36	B806176	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 17:36	B806176	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		6/12/18 19:51	B806178	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 19:51	B806178	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		6/11/18 7:45	B806145	SM 4500-NH3 B,D,C-2011

13 June 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: June 2018
Date Received: 07-Jun-18 10:30

ANALYTICAL RESULTS

Lab Number:	**1806088-05**
Sample Name:	**BD-0**
Date/Time Collected:	**6/6/18 7:00**
Sample Matrix:	**Water**

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**984**		6/8/18 14:55	B806101	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		6/7/18 15:19	B806101	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		6/12/18 17:40	B806176	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 17:40	B806176	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		6/12/18 19:54	B806178	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		6/12/18 19:54	B806178	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		6/11/18 7:45	B806145	SM 4500-NH3 B,D,C-2011

13 June 2018

Eddie Pearson
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: June 2018
Date Received: 07-Jun-18 10:30

QUALITY CONTROL RESULTS

Anions -- Batch: B806101 (Water)
Prepared: 07-Jun-18 13:27 By: MB -- Analyzed: 08-Jun-18 10:18 By: MB

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Nitrate as N	<0.250 mg/L	92.9% / NA	102% / 103%		0.244%	
Sulfate as SO4	<0.500 mg/L	100% / NA	100% / 97.8%		1.17%	

Wet Chemistry -- Batch: B806145 (Water)
Prepared: 11-Jun-18 07:37 By: EP -- Analyzed: 11-Jun-18 07:45 By: EP

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Ammonia as N	<0.500 mg/L	75.4% / NA	74.0% / 71.9%		2.86%	

Dissolved Metals -- Batch: B806176 (Water)
Prepared: 12-Jun-18 14:00 By: HF -- Analyzed: 12-Jun-18 17:21 By: HF

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	108% / NA	105% / 104%		0.693%	
Lead	<0.0156 mg/L	106% / NA	94.6% / 93.4%		1.31%	

Total Metals -- Batch: B806178 (Water)
Prepared: 12-Jun-18 15:10 By: HF -- Analyzed: 12-Jun-18 18:22 By: HF

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0120 mg/L	106% / NA	104% / 102%		1.41%	
Lead	<0.0150 mg/L	104% / NA	97.6% / 96.2%		1.38%	

All Analysis performed according to EPA approved methodology when available:
SW 846, Revised December, 1996; EPA 600/4-79-020, Revised March, 1983; Standard Methods.
Instrument calibration and quality control samples performed at or above frequency specified in analytical method.

Reviewed by: Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

Arkansas Analytical Inc.
8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION

El Dorado Chemical, Inc (Billing)
4500 Northwest Ave (PO Box 231)
El Dorado, AR 71731

Attn: Les Morgan/Eddie Pearson
cc: Laurie Marcella

Project Description: Groundwater Samples

Reporting Information

Telephone: 870-863-1484
Fax: 870-863
Email: cbartain@eldo-ark.com

Turnaround Time

1 Day (100%)
2 Day (50%)
3 Day (25%)
5 Day (Routine)

Preservation Codes:

1. Cool, 4 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

Sampler(s) Signature: Christina Sellers

Sampler(s) Printed: Christina Sellers

epearson@eldo-ark.com, lmorgan@eldo-ark.com, lmarcella@env-mgt.com

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	TEST PARAMETERS: Nitrate, Sulfate	Ammonia	Cr, Pb	dCr, dPb	Bottle Type Code: Arkansas Analytical Work Order Number: 1806088
	6/6/18	10:31					MW-4	X	X	X	X	01
	6/6/18	1015					MW-13	X	X	X	X	02
	6/6/18	0945					MW-14	X	X	X	X	03
	6/6/18	1055					MW-21	X	X	X	X	04
	6/6/18	0700					BD-01	X	X	X	X	05

Bottle Type: P P P P

Bottle Type Code: G = Glass; P = Plastic; V = Septum; A = Amber

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Christina Sellers	6/6/18 11:15	L. Morgan
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
L. Morgan	6-7-18 0800	Edward Pearson

SAMPLE CONDITION UPON RECEIPT IN LAB

1. CUSTODY SEALS: ✓ Yes ___ No
2. CONTAINERS CORRECT: ✓ Yes ___ No
3. COC/LABELS AGREE: ✓ Yes ___ No
4. RECEIVED ON ICE: ✓ Yes ___ No
5. TEMPERATURE ON RECEIPT: 4 °C
6. TEMPERATURE GUN ID: HHT# 2

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

Edward Pearson 6.7.18 1030
Tammy Riddle 6/7/1030

Revision 3
1/4/16

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 1

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date 4/11/18 Method of Evacuation Mini Monsoon

Evacuation Time 0929

Top of casing to water level ft 8.29 Gallons per well volume gal 9.14

Top of casing to bottom ft 22.35 Total gallons evacuated gal 30

Sampling Date/Time 4/11/18 10:15 Method of Sampling BAILER

Resampled 4/11/18 15:55

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	15.1	4.21	69.1		
1	16.0	4.38	56.0		
2	15.9	4.34	48.8		
3	16.3	4.36	47.3		

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, Sunny, Cool, light breeze

Sample characteristics: Clear, no odor

Containers and preservatives: 3x250 mL Plastic (Unpres, HNO_3, H_2SO_4)
1x125 mL Plastic Unpres

Comments and observations:

Certification: Christa Sellers

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 2**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date 4-11-18 Method of Evacuation MINI MONSOON

Evacuation Time 10:40

Top of casing to water level ft 0.0 Gallons per well volume gal 13.2

Top of casing to bottom ft 20.4 Total gallons evacuated gal 30.0

Sampling Date/Time 4-11-18 11:20 Method of Sampling BAILER

RESAMPLE : 4-11-18 16:05

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	15.8	5.25	265.5		
1	15.7	5.37	259.3		
2	16.3	5.43	277.1	* DRY @ 30 GAL.	
3					

GENERAL INFORMATION

Weather conditions at time of sampling: SUNNY, CLEAR, 66° F, WIND ESE 2 MPH

Sample characteristics: TANNISH BROWN / CLOUDY

Containers and preservatives: NITRATE, SULFATE (125 ml UP) AMMONIA (250 ml P) Cr PD (250 ml P) dCr PD (250 ml UP)

Comments and observations: WELL CASING NEEDS DRAIN HOLE

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 3**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	4-11-18	Method of Evacuation	Mini Monsoon
Evacuation Time	11:40		
Top of casing to water level	ft 8.35	Gallons per well volume	gal 12.3
Top of casing to bottom	ft 27.3	Total gallons evacuated	gal 26.0
Sampling Date/Time	4-11-18 16:15	Method of Sampling	Bailer

SAMPLE DATA

Temperature[°C]	pH	Conductivity[µS]	
16.4	5.23	215.5	
16.9	5.59	208.4	
18.1	5.73	210.9	* WELL DRY @ 26 GAL

GENERAL INFORMATION

Weather conditions at time of sampling: SUNNY / CLEAR 70°F WIND E 3 MPH

Sample characteristics: Clear, no odor

Containers and preservatives: 3 x 250 mL (Unpres, HNO_3, H_2SO_4) Plastic, 1 x 125 mL Plastic Unpres

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 4

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date 4/12/18 Method of Evacuation Mini Monsoon

Evacuation Time 1532

Top of casing to water level ft 8.60 Gallons per well volume gal 8.92

Top of casing to bottom ft 22.33 Total gallons evacuated gal 12

Sampling Date/Time 4/12/18 → N/A Method of Sampling Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	22.7	3.89	6990		
1	20.1	3.77	6490		
3	20.1	3.92	7210 * Dry after 3gal		
3					

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, sunny, cool, light breeze

Sample characteristics:

Containers and preservatives: Not sampled; dropped bailer into well after purging; attempted to fish bailer out of well, but unable to recover

Comments and observations: bailer @ time to sample; attempted to use peristaltic pump but was unable to fish tubing passed bailer to get any recovery via pump. Decided to collect the rest of the samples instead of spending more time working on this well.

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 4

Sampling Personnel C Sellers, P Martin

MONITORING WELL INFORMATION

Evacuation Date	6/5/18	Method of Evacuation	Mini Monsoon
Evacuation Time	1750		
Top of casing to water level ft	10.07	Gallons per well volume gal	7.96
Top of casing to bottom ft	22.32	Total gallons evacuated gal	13gal
Sampling Date/Time	6/6/18 10:31	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	22.7	3.86	6700		
1	20.5	3.85	7280		
2	22.3	3.94	7560	DTY@ 13gal	
3					

GENERAL INFORMATION

Weather conditions at time of sampling: Sunny, hot, clear, light humidity

Sample characteristics: Clear, no visible suspended solids, no noticable odor

Containers and preservatives: 3 x 250 mL (unpres, H_2SO_4, HNO_3) plastic, 1 x 125mL plastic, unpres

Comments and observations: 3pt YSI cal b/f purge, dry after 13gal purged, BDO collected here

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 5

Sampling Personnel C. Sellers

MONITORING WELL INFORMATION

Evacuation Date	4/12/18	Method of Evacuation	Mini Monsoon
Evacuation Time	1211		
Top of casing to water level ft	4.04	Gallons per well volume gal	9.00
Top of casing to bottom ft	17.89	Total gallons evacuated gal	27
Sampling Date/Time	4/12/18 1710	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	19.9	5.81	782		
1	21.1	4.97	753		
2	20.5	4.88	753		
3	19.9	4.68	735		

GENERAL INFORMATION

Weather conditions at time of sampling: Bright, sunny, warm, light breeze

Sample characteristics: Clear, no odor

Containers and preservatives: 3x 250 mL Plastic (Unpres, HNO_3, H_2SO_4)
1x 125 mL Plastic, Unpres

Comments and observations: Ant bed on well pad

Certification: Chris Sellers

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 6

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date 4/12/18 Method of Evacuation Mini Monsoon

Evacuation Time 1345

Top of casing to water level ft 4.34 Gallons per well volume gal 11.6

Top of casing to bottom ft 22.23 Total gallons evacuated gal 36

Sampling Date/Time 4/12/18 1725 Method of Sampling Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	20.5	3.55	61300		
1	21.1	3.45	57300		
2	22.2	3.38	56350		
3	23.1	3.56	57600		

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, sunny, cool, light breeze

Sample characteristics:

Containers and preservatives: 3 x 250mL plastic (Unpres, H_2SO_4, HNO_3)
1 x 125mL plastic Unpres

Comments and observations: BD2 collected here

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 7

Sampling Personnel

MONITORING WELL INFORMATION

Evacuation Date	4/12/18	Method of Evacuation	Mini Monsoon
Evacuation Time	1120		
Top of casing to water level ft	6.84	Gallons per well volume gal	11.73
Top of casing to bottom ft	24.89	Total gallons evacuated gal	36
Sampling Date/Time	4/12/18 1645	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	19.5	6.04	29050		
1	20.4	5.75	31720		
2	20.3	5.63	31780		
3	20.5	5.77	31810		

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, sunny, cool, light breeze

Sample characteristics:

Containers and preservatives: 3 x 250 mL plastic (Unpres, H_2SO_4, HNO_3)
1 x 125 mL Unpres plastic

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 8

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date	4/13/18	Method of Evacuation	Mini Monsoon
Evacuation Time	0805		
Top of casing to water level	ft 6.83	Gallons per well volume	gal 15.13
Top of casing to bottom	ft 30.11	Total gallons evacuated	gal 46
Sampling Date/Time	4/13/18 1630	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	17.1	4.77	33320		
1	24.6	3.72	37290		
2	20.3	3.60	40330		
3	19.4	3.64	35040		

GENERAL INFORMATION

Weather conditions at time of sampling: Bright, sunny, warm, slight breeze

Sample characteristics: Clear, no odor

Containers and preservatives: 3 x 250 mL Plastic (Unpres, HNO_3, H_2SO_4)
1 x 125 mL Plastic Unpres

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 9

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date	4/11/18	Method of Evacuation	Mini Monsoon
Evacuation Time	11:07		
Top of casing to water level ft	8.65	Gallons per well volume gal	14.01
Top of casing to bottom ft	30.20	Total gallons evacuated gal	42
Sampling Date/Time	4/11/18 16:30	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	18.8	4.91	3248		
1	23.3	5.35	3316		
2	24.1	5.48	3230		
3	24.1	5.48	3216		

GENERAL INFORMATION

Weather conditions at time of sampling: Bright, clear, sunny, warm, light breeze

Sample characteristics: Clear, no odor

Containers and preservatives: 3 x 250 mL Plastic (Unpres, HNO_3, H_2SO_4)
1 x 125 mL Plastic Unpres

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 10

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date	4/10/18	Method of Evacuation	Mini Monsoon
Evacuation Time	1807		
Top of casing to water level	ft 13.49	Gallons per well volume	gal 6.11
Top of casing to bottom	ft 22.89	Total gallons evacuated	gal 10
Sampling Date/Time	4/11/18	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	19.6	4.32	835		
1	19.3	3.88	824		
1.6	19.5	3.88	821 *Dry after 4 Gal (10 Gal tot)		

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, Sunny, Cool, light breeze

Sample characteristics:

Containers and preservatives: 3x250 mL plastic (Unprs, HNO_3, H_2SO_4)
1x125 mL plastic Unprs

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 11**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	4-10-18	Method of Evacuation	MINI MONSOON
Evacuation Time	11:30		
Top of casing to water level	ft 10.21	Gallons per well volume	gal 6.4
Top of casing to bottom	ft 20.09	Total gallons evacuated	gal 13
Sampling Date/Time	4-10-18 11:50	Method of Sampling	BAILER

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	18.7	5.41	632		
1	18.0	5.39	642		
2	18.1	5.37	705	*DRY	
3					

GENERAL INFORMATION

Weather conditions at time of sampling: CLEAR/SUNNY, 64°F, WIND NW 2MPH

Sample characteristics: Clear, no odor

Containers and preservatives: Nitrate, Sulfate (125 ml UP) Ammonia (250 ml P) Cr Pb (250 ml P) & Cr. Pb (250 ml UP)

Comments and observations: * BD1 collected

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 12

Sampling Personnel C Sellers, P Martin

MONITORING WELL INFORMATION

Evacuation Date 6/5/18 Method of Evacuation Mini Monsoon

Evacuation Time 1840

Top of casing to water level ft 6.30 Gallons per well volume gal 8.98

Top of casing to bottom ft 30.12 Total gallons evacuated gal 19.5

Sampling Date/Time 6/6/18 10:15 Method of Sampling Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	22.8	5.28	785		
1	23.6	5.59	660		
2	22.2	5.65	738		
3	22.3	5.86	709		

GENERAL INFORMATION

Weather conditions at time of sampling: Hot, sunny, & clear

Sample characteristics: Cloudy, reddish brown, no discernable odor

Containers and preservatives: 3x 250mL (Unpres, H_2SO_4, HNO_3) plastic
1x 125 Unpres, plastic

Comments and observations: DRY @ 19.5 gal

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 13

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date	4/10/18	Method of Evacuation	Mini Monsoon
Evacuation Time	17:08		
Top of casing to water level ft	5.34	Gallons per well volume gal	9.49
Top of casing to bottom ft	19.94	Total gallons evacuated gal	14.25
Sampling Date/Time	4/11/18 16:00	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	17.7	4.33	740		
1	17.2	4.20	987	*DRY @ 6gal	
1.5	17.1	4.57	1732	*(1.5 WV)	
2					
3					

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, sunny, warm, light breeze

Sample characteristics: Clear, no odor

Containers and preservatives: 3x 250 mL Plastic (Unpres, HNO_3, H_2SO_4)
1 x 125 mL Plastic Unpres

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 14

Sampling Personnel C. Sellers, P Martin

MONITORING WELL INFORMATION

Evacuation Date 6/6/18 Method of Evacuation Mini Monsoon

Evacuation Time 0917

Top of casing to water level ft 5.21 Gallons per well volume gal 8.61

Top of casing to bottom ft 18.47 Total gallons evacuated gal 26

Sampling Date/Time 6/6/18 9:45 Method of Sampling Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	24.8	4.58	306		
1	22.9	4.96	489.5		
2	21.9	4.81	544		
3	21.8	4.91	551		

GENERAL INFORMATION

Weather conditions at time of sampling: Bright, sunny, hot, clear

Sample characteristics: Clear, slight suspended solids, no noticable odor

Containers and preservatives: 3x 250 mL (Unprs, H_2SO_4, HNO_3) plastic, 1x 125mL Unprs plastic

Comments and observations: 2 pt YSI cal b/f purge

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-15**

Sampling Personnel C Sellers/P Martin

MONITORING WELL INFORMATION

Evacuation Date	4/10/18	Method of Evacuation	Mini Monsoon
Evacuation Time	10:34		
Top of casing to water level	ft 3.23	Gallons per well volume	gal 9.1
Top of casing to bottom	ft 17.33	Total gallons evacuated	gal 22 (PUMPED DRY)
Sampling Date/Time	4-10-18 11:10	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	17.6	5.63	74.2		
1	17.0	5.65	71.0		
2	17.5	5.67	69.0		
3					

GENERAL INFORMATION

Weather conditions at time of sampling: CLEAR/SUNNY, 61° F, WIND E 4 MPH

Sample characteristics: CLEAR

Containers and preservatives: Nitrate, Sulfate (125 mL UP) Amonia (250 mL P) Cr. Pb (250 mL P) & Cr. Pb (250 mL UP)

Comments and observations: ANTS COVERING TOP OF RISER, 10:54 WELL VOLUME PUMPED DRY.

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 16**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	4-10-18	Method of Evacuation	MINI MONSOON
Evacuation Time	09:48		
Top of casing to water level ft	2.70	Gallons per well volume gal	10.9
Top of casing to bottom ft	19.51	Total gallons evacuated gal	35
Sampling Date/Time	4-10-18 10:25	Method of Sampling	BAILER

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	17.5	4.14	151.2		
1	15.9	5.83	151.9		
2	16.3	5.79	144.4		
3	16.3	5.75	150.7		

GENERAL INFORMATION

Weather conditions at time of sampling: CLEAR, 56°F, WIND E 1MPH

Sample characteristics: CLEAR

Containers and preservatives: Nitrate, Sulfate (125 mL UP) Ammonia (250 mL P) Cr. Pb (250 mL P) & Cr. Pb (250 mL UP)

Comments and observations: N/A

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 17

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date	4/9/18	Method of Evacuation	Mini Monsoon
Evacuation Time	1533		
Top of casing to water level	ft 26.68	Gallons per well volume	gal 5.4
Top of casing to bottom	ft 34.97	Total gallons evacuated	gal 16.5
Sampling Date/Time	4/10/18 10:50	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	19.4	5.58	184.6		
1	19.1	4.34	219.0		
2	18.2	4.17	249.3		
3	20.1	4.32	227.4		

GENERAL INFORMATION

Weather conditions at time of sampling: Bright, sunny, warm, slight breeze

Sample characteristics: Clear, no odor

Containers and preservatives: 3x 250 mL Plastic (Unpres, HNO_3, H_2SO_4)
1x 125 mL Plastic Unpres

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-18**

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date	4/12/18	Method of Evacuation	Mini Monsoon
Evacuation Time	1540		
Top of casing to water level	ft 5.19	Gallons per well volume	gal 7.88
Top of casing to bottom	ft 17.31	Total gallons evacuated	gal 24
Sampling Date/Time	4/12/18 1805	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	22.1	4.95	235.7		
1	19.1	5.57	69.8		
2	17.5	5.33	76.1		
3	18.0	5.28	61.7		

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, Sunny, cool, light breeze

Sample characteristics: Cloudy w/organics, light grey & very turbid

Containers and preservatives: 3x 250 mL (Unpres, HNO_3, H_2SO_4) plastic
1x 125 mL plastic unpres

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 19

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date	4/11/18	Method of Evacuation	Mini Monsoon
Evacuation Time	16:11		
Top of casing to water level	ft 0.25	Gallons per well volume	gal 9.44
Top of casing to bottom	ft 59.23	Total gallons evacuated	gal 28
Sampling Date/Time	4/12/18 1845	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	21.2	5.35	108.6		
1	20.8	5.54	90.8		
2	19.4	5.51	89.2		
3	18.7	5.51	89.8		

GENERAL INFORMATION

Weather conditions at time of sampling: Bright, sunny, warm, light breeze

Sample characteristics: Cloudy, no odor, some organics

Containers and preservatives: 3 x 250 mL Plastic (Unprs, HNO_3, H_2SO_4)
1 x 125 mL Plastic, unprs

Comments and observations: Well casing needs drain holes

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 210

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date 4/12/18 Method of Evacuation Mini Monsoon

Evacuation Time ~~1840~~ 1910

Top of casing to water level ft 27.25 Gallons per well volume gal 4.36

Top of casing to bottom ft 54.55 Total gallons evacuated gal

Sampling Date/Time 4/12/18 19:40 Method of Sampling Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	22.3	3.12	105.7		
1	20.6	5.28	121.1		
2					
3					

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, sunny, cool, light breeze

Sample characteristics:

Containers and preservatives: 3x250 mL plastic (Unpres, HNO_3, H_2SO_4)
1x125 mL plastic, unpres

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 21

Sampling Personnel

MONITORING WELL INFORMATION

Evacuation Date	4/12/18	Method of Evacuation	Peristaltic
Evacuation Time	1935		
Top of casing to water level	ft 16.94	Gallons per well volume	gal 1.12
Top of casing to bottom	ft 31.50	Total gallons evacuated	gal 0.2
Sampling Date/Time	N/A	Method of Sampling	N/A

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	19.3	4.62	72.4	*Dry after ~0.1-0.2gal	

GENERAL INFORMATION

Weather conditions at time of sampling: Clear, sunny, cool, light breeze

Sample characteristics:

Containers and preservatives: N/A - Not enough water for sample

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 21

Sampling Personnel C Sellers, P Martin

MONITORING WELL INFORMATION

Evacuation Date	6/5/18	Method of Evacuation	Peristaltic
Evacuation Time	1918		
Top of casing to water level ft	17.73	Gallons per well volume gal	0.95
Top of casing to bottom ft	30.08	Total gallons evacuated gal	0.5
Sampling Date/Time	6/6/18 10:55	Method of Sampling	Peristaltic

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	21.3	4.32	71.2		
1	20.9	4.49	63.8	Dry @ 0.5 gal	
2					

GENERAL INFORMATION

Weather conditions at time of sampling: Hot, sunny, clear, light breeze

Sample characteristics: Clear, no odor

Containers and preservatives: 3 x 250 mL (Unpres, H_2SO_4, HNO_3) plastic, 1 x 125 Unpres plastic

Comments and observations: Dry @ 0.5 gal

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 22

Sampling Personnel CSellers

MONITORING WELL INFORMATION

Evacuation Date	4/9/18	Method of Evacuation	Mini Monsoon
Evacuation Time	10:43		
Top of casing to water level ft	3.43	Gallons per well volume gal	12.13
Top of casing to bottom ft	79.28	Total gallons evacuated gal	36.5
Sampling Date/Time	4/10/18 10:29	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	17.9	5.73	177.6		
1	22.7	5.84	177.1		
2	20.2	5.39	174.7		
3	21.9	5.61	176.2		

GENERAL INFORMATION

Weather conditions at time of sampling: Bright, sunny, warm, light breeze

Sample characteristics: Clear, no odor

Containers and preservatives: 3 x 250 mL Plastic (Unpres, HNO_3, H_2SO_4)
1 x 125mL Plastic Unpres

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

Monitor Well	Date: 6/6/18	
	Time	DTW
ECMW-1	1812	13.57
ECMW-2	1802	0
ECMW-3	1755	10.08
ECMW-4	1750	10.07
ECMW-5	1827	4.66
ECMW-6	1832	4.48
ECMW-7	1836	7.14
ECMW-8	1855	7.03
ECMW-9	1857	9.54
ECMW-10	1906	13.65
ECMW-11	1918	10.86
ECMW-12	1840	6.30
ECMW-13	1547	9.06
ECMW-14	0917	5.21
ECMW-15	1533	5.30
ECMW-16	1527	4.13
ECMW-17	1513	~~5.30~~ 27.57
ECMW-18	1642	7.92
ECMW-19	1708	2.62
ECMW-20	1753	28.09
ECMW-21	1736	17.59
ECMW-22	1506	5.44

Arkansas Analytical Inc.

8100 National Dr. - Little Rock, AR 72209
501-455-3233 Fax 501-455-6118

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731

Project: Groundwater Sample(s)

Project Number: September 2018

SDG Number: 1809148

Enclosed are the results of analyses for samples received by the laboratory on 13-Sep-18 11:15. If you have any questions concerning this report, please feel free to contact me.

Sample Receipt Information:

Custody Seals	✔
Containers Correct	✔
COC/Labels Agree	✔
Received On Ice	✔
Temperature on Receipt	4.0°C

Sincerely,

Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 13-Sep-18 11:15

CASE NARRATIVE

Sample Delivery Group – 1809148

One *OR* more of the qualifiers described below may appear in this report. Qualifiers in RED apply to this SDG (Sample Delivery Group).

QUALITY CONTROL QUALIFIERS:

Qualifier	Description
E20	Sample used as "parent" for the associated analytical batch.
%D3/S-01	Surrogate failed to recover within acceptance criteria (%D3/S-01).
E1	Results associated with this surrogate were qualified as "estimated" (E1).
B	Present in the Associated Blank
B1	Present in Blank, but Not In the Sample.
%D2 / E5	Laboratory Control Spike (LCS) and/or Laboratory Control Spike Duplicate (LCSD) failed to recover with acceptance criteria (%D2). Associated results were qualified as "estimated" (E5).
%D1	Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) failed acceptance criteria.
MBA	Failed criteria due the high concentration of analyte in the parent sample.
MBI	Failed criteria due an interference in the parent sample.
%D3	Quality Control Surrogate failed acceptance criteria.
NREC	Quality Control Surrogate failed.

SAMPLE RECEIPT QUALIFIERS:

Qualifier	Description
ET	Samples received above required temperature.
ET	Samples received above required temperature. Although collected and received the same day, no ice was present to indicate the cooling preservation was attempted.
E2	Result qualified as it was received and analyzed outside of holding time. Analysis is considered a "Field" analysis.
E2	Result qualified as it was received and/or analyzed outside of holding time.
E3	Result qualified as it was received in the incorrect container and/or preservation.

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 13-Sep-18 11:15

ANALYTICAL RESULTS

Lab Number: 1809148-01
Sample Name: ECMW-22
Date/Time Collected: 9/12/18 10:20
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**12.8**		9/17/18 17:11	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**1.79**		9/13/18 19:23	B809187	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 17:33	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 17:33	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/19/18 14:44	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/19/18 14:44	B809225	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**0.583**		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809148-02
Sample Name: ECMW-17
Date/Time Collected: 9/12/18 16:20
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**24.9**		9/13/18 19:44	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**6.95**		9/13/18 19:44	B809187	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 17:37	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 17:37	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/19/18 14:48	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/19/18 14:48	B809225	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**1.61**		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 13-Sep-18 11:15

ANALYTICAL RESULTS

Lab Number: 1809148-03
Sample Name: ECMW-14
Date/Time Collected: 9/12/18 16:29
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**143**		9/17/18 17:32	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**4.80**		9/13/18 20:45	B809187	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 17:41	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 17:41	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/19/18 15:03	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/19/18 15:03	B809225	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500	E20	9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809148-04
Sample Name: ECMW-15
Date/Time Collected: 9/12/18 16:36
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**15.6**		9/17/18 17:52	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**2.21**		9/13/18 21:06	B809187	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 17:45	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 17:45	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/19/18 15:07	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/19/18 15:07	B809225	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 13-Sep-18 11:15

ANALYTICAL RESULTS

Lab Number: **1809148-05**
Sample Name: **ECMW-16**
Date/Time Collected: **9/12/18 16:43**
Sample Matrix: **Water**

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**9.85**		9/13/18 21:26	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**8.46**		9/13/18 21:26	B809187	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 17:48	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 17:48	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/19/18 15:48	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/19/18 15:48	B809225	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: **1809148-06**
Sample Name: **ECMW-13**
Date/Time Collected: **9/12/18 16:52**
Sample Matrix: **Water**

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**496**		9/17/18 18:13	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		9/13/18 21:47	B809187	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 17:52	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 17:52	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/19/18 15:52	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/19/18 15:52	B809225	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 13-Sep-18 11:15

ANALYTICAL RESULTS

Lab Number: 1809148-07
Sample Name: ECMW-1
Date/Time Collected: 9/12/18 17:10
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**4.65**		9/13/18 22:07	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**0.450**		9/13/18 22:07	B809187	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 17:56	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 17:56	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	**0.0248**		9/19/18 15:56	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0713**		9/19/18 15:56	B809225	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809148-08
Sample Name: ECMW-2
Date/Time Collected: 9/12/18 17:14
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**24.4**		9/17/18 18:33	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		9/13/18 22:28	B809187	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 18:00	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:00	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	**0.0153**		9/19/18 16:00	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0347**		9/19/18 16:00	B809225	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 13-Sep-18 11:15

ANALYTICAL RESULTS

Lab Number: 1809148-09
Sample Name: ECMW-3
Date/Time Collected: 9/12/18 17:03
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**19.1**		9/17/18 18:54	B809187	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		9/13/18 22:48	B809187	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 18:19	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:19	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/19/18 16:19	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/19/18 16:19	B809225	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809148-10
Sample Name: ECMW-4
Date/Time Collected: 9/12/18 17:07
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**979**		9/17/18 19:14	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		9/13/18 23:09	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 18:23	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:23	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/19/18 16:23	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0160**		9/19/18 16:23	B809225	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 13-Sep-18 11:15

ANALYTICAL RESULTS

Lab Number: 1809148-11
Sample Name: ECMW-9
Date/Time Collected: 9/12/18 17:18
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**675**		9/17/18 19:35	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**27.6**		9/13/18 23:29	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 18:27	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:27	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/19/18 16:27	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/19/18 16:27	B809225	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809148-12
Sample Name: ECMW-6
Date/Time Collected: 9/12/18 8:10
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**60.6**		9/17/18 19:55	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**6320**		9/13/18 23:50	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 18:31	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	**0.0773**		9/20/18 18:31	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/19/18 16:31	B809225	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0809**		9/19/18 16:31	B809225	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**737**		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 13-Sep-18 11:15

ANALYTICAL RESULTS

Lab Number: **1809148-13**
Sample Name: **BD-1**
Date/Time Collected: **9/12/18 0:00**
Sample Matrix: **Water**

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**143**		9/17/18 22:39	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**6870**	E2	9/17/18 22:39	B809188	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 18:34	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	**0.0773**		9/20/18 18:34	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 15:04	B809238	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0795**		9/20/18 15:04	B809238	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**1300**		9/20/18 8:13	B809248	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)
Project Number: September 2018
Date Received: 13-Sep-18 11:15

QUALITY CONTROL RESULTS

Anions -- Batch: B809187 (Water)
Prepared: 14-Sep-18 08:08 By: MB -- Analyzed: 14-Sep-18 10:41 By: MB

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Nitrate as N	<0.250 mg/L	98.5% / NA	103% / 103%		0.00%	
Sulfate as SO4	<0.500 mg/L	105% / NA	106% / 105%		0.433%	

Anions -- Batch: B809188 (Water)
Prepared: 14-Sep-18 08:39 By: MB -- Analyzed: 14-Sep-18 12:44 By: MB

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Nitrate as N	<0.250 mg/L	98.8% / NA	106% / 107%		0.178%	
Sulfate as SO4	<0.500 mg/L	106% / NA	105% / 105%		0.493%	

Dissolved Metals -- Batch: B809224 (Water)
Prepared: 18-Sep-18 10:00 By: TA -- Analyzed: 20-Sep-18 17:29 By: ST

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	113% / NA	112% / 112%		0.374%	
Lead	<0.0156 mg/L	114% / NA	109% / 109%		0.155%	

Total Metals -- Batch: B809225 (Water)
Prepared: 17-Sep-18 15:05 By: ST -- Analyzed: 19-Sep-18 15:44 By: ST

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	111% / NA	110% / 102%		7.39%	
Lead	<0.0156 mg/L	113% / NA	107% / 99.9%		7.32%	

Total Metals -- Batch: B809238 (Water)
Prepared: 18-Sep-18 11:00 By: TA -- Analyzed: 20-Sep-18 15:00 By: ST

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	108% / NA	102% / 100%		1.99%	
Lead	<0.0156 mg/L	110% / NA	95.7% / 93.5%		1.96%	

Wet Chemistry -- Batch: B809248 (Water)
Prepared: 19-Sep-18 08:13 By: CNW -- Analyzed: 20-Sep-18 08:13 By: CNW

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Ammonia as N	<0.500 mg/L	95.5% / NA	120% / 130%		7.27%	%D1

QUALIFIER(S)

*%D1: Matrix Spike and/or Matrix Spike Duplicate Percent Recovery Does Not Meet Laboratory Acceptance Criteria
*E2: Estimated Result; Analyzed Outside of Holding Time
*E20: Estimated Result Due to Matrix Spike and/or Matrix Spike Duplicate Failure; This sample was used as the "parent sample" in MS/MSD prep.

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)
Project Number: September 2018
Date Received: 13-Sep-18 11:15

All Analysis performed according to EPA approved methodology when available :
SW 846, Revised December, 1996; EPA 600/4-79-020, Revised March, 1983; Standard Methods.
Instrument calibration and quality control samples performed at or above frequency specified in analytical method.

Reviewed by: Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

Arkansas Analytical Inc.
8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION	Project Description	Turnaround Time
El Dorado Chemical Inc.	El Dorado Chemical Inc.	Groundwater Samples	1 Day (100%)
4500 Northwest Ave.	P.O. Box 231		2 Day (50%)
El Dorado, AR 71731	El Dorado, AR 71731	**Reporting Information**	3 Day (25%)
		Telephone: 870-863-1484	5 Day (Routine)
Attn: Les Morgan		Fax: 870-863-1499	Preservative Code:
		Email: dsartain@edc-ark.com; lmorgan@edc-ark.com; lmarcella@env-mgt.com	Bottle Type:

Preservation Codes:
1. Cool, 6 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

Sampler(s) Signature: Paul Martin

Sampler(s) Printed: Paul Martin

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	Nitrate, Sulfate	Ammonia	Cr, Pb	d Cr, d Pb	Arkansas Analytical Work Order Number:
							TEST PARAMETERS	1	1,2	1,3	1	Bottle Type Code
								P	P	P	P	G = Glass; P = Plastic; V = Septum; A = Amber
	9/12/18	10:20	X		4	Water	ECMW- 22	X	X	X	X	1809148-01
	9/12/18	16:20	X		4	Water	ECMW- 17	X	X	X	X	02
	9/12/18	16:29	X		4	Water	ECMW- 14	X	X	X	X	03
	9/12/18	16:36	X		4	Water	ECMW- 15	X	X	X	X	04
	9/12/18	16:43	X		4	Water	ECMW- 16	X	X	X	X	05
	9/12/18	16:50	X		4	Water	ECMW- 13	X	X	X	X	06
	9/12/18	17:10	X		4	Water	ECMW- 1	X	X	X	X	07
	9/12/18	17:14	X		4	Water	ECMW- 2	X	X	X	X	08
	9/12/18	17:03	X		4	Water	ECMW- 3	X	X	X	X	09
	9/12/18	17:07	X		4	Water	ECMW- 4	X	X	X	X	10

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Paul Martin	7-13-18 08:05	9-13-18 0838
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
	9-13-18 1115	Tammy Riddle

SAMPLE CONDITION UPON RECEIPT IN LAB

1. CUSTODY SEALS:	✓ Yes	No
2. CONTAINERS CORRECT:	Yes	No
3. COC/LABELS AGREE:	Yes	No
4. RECEIVED ON ICE:	Yes	No
5. TEMPERATURE ON RECEIPT:	4 °C	
6. TEMPERATURE GUN ID:	HHT# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

Arkansas Analytical Inc.

8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION	Project Description	Turnaround Time
El Dorado Chemical Inc.	El Dorado Chemical Inc.	Groundwater Samples	1 Day (100%)
4500 Northwest Ave.	P.O. Box 231		2 Day (50%)
El Dorado, AR 71731	El Dorado, AR 71731	Reporting Information	3 Day (25%)
		Telephone: 870-863-1484	5 Day (Routine)
Attn: Les Morgan		Fax: 870-863-1499	Preservative Code:
		Email: dsartain@edc-ark.com; lmorgan@edc-ark.com; lmarcella@env-mgt.com	Bottle Type:

Preservation Codes:

1. Cool, 6 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

Sampler(s) Signature: Paul Martin

Sampler(s) Printed: Paul Martin

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	Nitrate, Sulfate	Ammonia	Cr, Pb	d Cr, d Pb						TEST PARAMETERS	Bottle Type Code: G = Glass; P = Plastic; V = Septum; A = Amber	Arkansas Analytical Work Order Number: 1809148-
								1	1,2	1,3	1								
								P	P	P	P								
	9/12/18	17:18	X		4	Water	ECMW- 9	X	X	X	X							11	
	9/12/18	18:10	X		4	Water	ECMW- 6	X	X	X	X							12	
	9/12/18	00:00	X		4	Water	ECMW- BD-1	X	X	X	X							13	
			X		4	Water	ECMW-	X	X	X	X								
			X		4	Water	ECMW-	X	X	X	X								
			X		4	Water	ECMW-	X	X	X	X								
			X		4	Water	ECMW-	X	X	X	X								
			X		4	Water	ECMW-	X	X	X	X								
			X		4	Water	ECMW-	X	X	X	X								
			X		4	Water	ECMW-	X	X	X	X								

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Paul Martin	7-13-18 08:05	9-13-18
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
	9-13-18 1115	Jammy Riddle

SAMPLE CONDITION UPON RECEIPT IN LAB

1. CUSTODY SEALS:	✓ Yes	___ No
2. CONTAINERS CORRECT:		Yes ___ No
3. COC/LABELS AGREE:		Yes ___ No
4. RECEIVED ON ICE:		Yes ___ No
5. TEMPERATURE ON RECEIPT:	4 °C	
6. TEMPERATURE GUN ID:	HHT# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

Arkansas Analytical Inc.

8100 National Dr. - Little Rock, AR 72209
501-455-3233 Fax 501-455-6118

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731

Project: Groundwater Sample(s)

Project Number: September 2018

SDG Number: 1809178

Enclosed are the results of analyses for samples received by the laboratory on 14-Sep-18 11:16. If you have any questions concerning this report, please feel free to contact me.

Sample Receipt Information:

Custody Seals	✔
Containers Correct	✔
COC/Labels Agree	✔
Received On Ice	✔
Temperature on Receipt	4.0°C

Sincerely,

Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 14-Sep-18 11:16

ANALYTICAL RESULTS

Lab Number: 1809178-01
Sample Name: ECMW-5
Date/Time Collected: 9/13/18 15:08
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**53.2**		9/14/18 15:44	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**74.1**		9/14/18 15:44	B809188	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 18:38	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:38	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 16:13	B809238	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:38	B809238	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809178-02
Sample Name: ECMW-7
Date/Time Collected: 9/13/18 15:15
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**222**		9/14/18 15:23	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**413**		9/14/18 15:23	B809188	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 18:42	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:42	B809224	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 18:42	B809238	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 16:32	B809238	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	**231**		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 14-Sep-18 11:16

ANALYTICAL RESULTS

Lab Number: 1809178-03
Sample Name: ECMW-8
Date/Time Collected: 9/13/18 15:22
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**145**		9/14/18 16:04	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**2790**		9/14/18 16:04	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 18:46	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	**0.0636**		9/20/18 18:46	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 16:36	B809238	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 16:36	B809238	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**556**		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809178-04
Sample Name: ECMW-10
Date/Time Collected: 9/13/18 15:33
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**181**		9/17/18 20:57	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**47.4**		9/14/18 16:25	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 18:50	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:50	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 16:40	B809238	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	**0.0654**		9/20/18 16:40	B809238	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**1.15**		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 14-Sep-18 11:16

ANALYTICAL RESULTS

Lab Number: 1809178-05
Sample Name: ECMW-11
Date/Time Collected: 9/13/18 15:42
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**202**		9/17/18 21:17	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**29.9**		9/14/18 16:45	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 18:54	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 18:54	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 16:43	B809238	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 16:43	B809238	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**4.76**		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809178-06
Sample Name: ECMW-12
Date/Time Collected: 9/13/18 16:00
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**34.6**		9/17/18 21:38	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**1.33**		9/14/18 17:05	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 19:13	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 19:13	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 16:47	B809238	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 19:13	B809238	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**1.74**		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 14-Sep-18 11:16

ANALYTICAL RESULTS

Lab Number: 1809178-07
Sample Name: ECMW-18
Date/Time Collected: 9/13/18 16:16
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**1.72**		9/14/18 17:26	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	< 0.250		9/14/18 17:26	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 19:17	B809224	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 19:17	B809224	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 20:37	B809257	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 20:37	B809257	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	< 0.500		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809178-08
Sample Name: ECMW-19
Date/Time Collected: 9/13/18 16:25
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**2.79**		9/14/18 18:27	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**5.27**		9/14/18 18:27	B809188	EPA 300.0, 2.1-1993
Dissolved Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 20:41	B809237	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 19:40	B809237	EPA 200.7, Rev. 4.4 (1994)
Total Metals	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Chromium	mg/L	< 0.0125		9/20/18 20:41	B809257	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 20:41	B809257	EPA 200.7, Rev 4.4 (1994)
Wet Chemistry	**Units**	**Result**	**Qualifier(s)**	**Date/Time Analyzed**	**Batch**	**Method**
Ammonia as N	mg/L	**1.21**		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 14-Sep-18 11:16

ANALYTICAL RESULTS

Lab Number: 1809178-09
Sample Name: ECMW-20
Date/Time Collected: 9/13/18 16:38
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**17.4**		9/17/18 21:58	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**0.568**		9/14/18 18:48	B809188	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 21:00	B809237	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 19:43	B809237	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 21:00	B809257	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 21:00	B809257	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

ANALYTICAL RESULTS

Lab Number: 1809178-10
Sample Name: ECMW-21
Date/Time Collected: 9/13/18 16:45
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**4.85**		9/14/18 19:08	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**2.51**		9/14/18 19:08	B809188	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	**0.0174**		9/20/18 21:04	B809237	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 19:47	B809237	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	**0.0174**		9/20/18 21:04	B809257	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 21:04	B809257	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)

Project Number: September 2018
Date Received: 14-Sep-18 11:16

ANALYTICAL RESULTS

Lab Number: 1809178-11
Sample Name: BD-02
Date/Time Collected: 9/13/18 0:00
Sample Matrix: Water

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Sulfate as SO4	mg/L	**169**		9/14/18 20:09	B809188	EPA 300.0, 2.1-1993
Nitrate as N	mg/L	**47.1**		9/14/18 20:09	B809188	EPA 300.0, 2.1-1993

Dissolved Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 21:08	B809237	EPA 200.7, Rev. 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 20:06	B809237	EPA 200.7, Rev. 4.4 (1994)

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chromium	mg/L	< 0.0125		9/20/18 21:08	B809257	EPA 200.7, Rev 4.4 (1994)
Lead	mg/L	< 0.0156		9/20/18 21:08	B809257	EPA 200.7, Rev 4.4 (1994)

Wet Chemistry	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Ammonia as N	mg/L	< 0.500		9/20/18 13:20	B809289	SM 4500-NH3 B,D,C-2011

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)
Project Number: September 2018
Date Received: 14-Sep-18 11:16

QUALITY CONTROL RESULTS

Anions -- Batch: B809188 (Water)
Prepared: 14-Sep-18 08:39 By: MB -- Analyzed: 14-Sep-18 12:44 By: MB

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Nitrate as N	<0.250 mg/L	98.8% / NA	106% / 107%		0.178%	
Sulfate as SO4	<0.500 mg/L	106% / NA	105% / 105%		0.493%	

Dissolved Metals -- Batch: B809224 (Water)
Prepared: 18-Sep-18 10:00 By: TA -- Analyzed: 20-Sep-18 17:29 By: ST

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	113% / NA	112% / 112%		0.374%	
Lead	<0.0156 mg/L	114% / NA	109% / 109%		0.155%	

Dissolved Metals -- Batch: B809237 (Water)
Prepared: 18-Sep-18 10:30 By: TA -- Analyzed: 20-Sep-18 19:36 By: ST

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	115% / NA	116% / 115%		0.418%	
Lead	<0.0156 mg/L	115% / NA	114% / 113%		0.836%	

Total Metals -- Batch: B809238 (Water)
Prepared: 18-Sep-18 11:00 By: TA -- Analyzed: 20-Sep-18 15:00 By: ST

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	108% / NA	102% / 100%		1.99%	
Lead	<0.0156 mg/L	110% / NA	95.7% / 93.5%		1.96%	

Total Metals -- Batch: B809257 (Water)
Prepared: 20-Sep-18 14:15 By: TA -- Analyzed: 20-Sep-18 20:33 By: ST

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Chromium	<0.0125 mg/L	111% / NA	110% / 107%		2.06%	
Lead	<0.0156 mg/L	112% / NA	107% / 105%		1.94%	

Wet Chemistry -- Batch: B809289 (Water)
Prepared: 20-Sep-18 13:20 By: EP -- Analyzed: 20-Sep-18 13:20 By: EP

Analyte	BLK	LCS / LCSD	MS / MSD	Dup	RPD	Qualifiers
Ammonia as N	<0.500 mg/L	105% / NA	101% / 101%		0.343%	

21 September 2018

Les Morgan
El Dorado Chemical Inc.
P.O.Box 231
El Dorado, AR 71731
Project: Groundwater Sample(s)
Project Number: September 2018
Date Received: 14-Sep-18 11:16

All Analysis performed according to EPA approved methodology when available :
SW 846, Revised December, 1996; EPA 600/4-79-020, Revised March, 1983; Standard Methods.
Instrument calibration and quality control samples performed at or above frequency specified in analytical method.

Reviewed by: Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

Arkansas Analytical Inc.
8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION	Project Description	Turnaround Time	Preservation Codes:
El Dorado Chemical Inc.	El Dorado Chemical Inc.	Groundwater Samples	1 Day (100%)	1. Cool, 6 Degrees Centigrade / 4. Thiosulfate for Dechlorination
4500 Northwest Ave.	P.O. Box 231		2 Day (50%)	2. Sulfuric Acid (H_2SO_4), pH < 2 / 5. Hydrochloric Acid(HCl)
El Dorado, AR 71731	El Dorado, AR 71731	Reporting Information	3 Day (25%)	3. Nitric Acid (HNO_3), pH < 2 / 6. Sodium Hydroxide (NaOH), pH > 12
		Telephone: 870-863-1484	5 Day (Routine)	TEST PARAMETERS
Attn: Les Morgan		Fax: 870-863-1499	Preservative Code:	1 / 1,2 / 1,3 / 1
		Email: dsartain@edc-ark.com; lmorgan@edc-ark.com; lmarcella@env-mgt.com	Bottle Type:	P / P / P / P

Bottle Type Code: G = Glass; P = Plastic; V = Septum; A = Amber

Sampler(s) Signature: Paul MartA

Sampler(s) Printed: PAUL MARTIN

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	Nitrate, Sulfate	Ammonia	Cr, Pb	d Cr, d Pb	Arkansas Analytical Work Order Number: 1809178-
ECMW-5	9-13-18	15:08	X		4	Water	ECMW- 5	X	X	X	X	01
ECMW-7	9-13-18	15:15	X		4	Water	ECMW- 7	X	X	X	X	02
ECMW-8	9-13-18	15:22	X		4	Water	ECMW- 8	X	X	X	X	03
ECMW-10	9-13-18	15:33	X		4	Water	ECMW- 10	X	X	X	X	04
ECMW-11	9-13-18	15:42	X		4	Water	ECMW- 11	X	X	X	X	05
ECMW-12	9-13-18	16:00	X		4	Water	ECMW- 12	X	X	X	X	06
ECMW-18	9-13-18	16:16	X		4	Water	ECMW- 18	X	X	X	X	07
ECMW-19	9-13-18	16:25	X		4	Water	ECMW- 19	X	X	X	X	08
ECMW-20	9-13-18	16:38	X		4	Water	ECMW- 20	X	X	X	X	09
ECMW-21	9-13-18	16:45	X		4	Water	ECMW- 21	X	X	X	X	10

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)	SAMPLE CONDITION UPON RECEIPT IN LAB	REMARKS / SAMPLE COMMENTS
Paul MartA	9-14-18 08:02	9-14-18 0803	1. CUSTODY SEALS: ✓ Yes ___ No	
			2. CONTAINERS CORRECT: ___ Yes ___ No	
			3. COC/LABELS AGREE: ___ Yes ___ No	
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)	4 RECEIVED ON ICE: ___ Yes ___ No	
9-14-18 1115	9.14.18 1116	Danny Riddle	5. TEMPERATURE ON RECEIPT: 4 °C	
			6. TEMPERATURE GUN ID: HHT# 2	
			FOR COMPLETION BY LAB ONLY	

Arkansas Analytical Inc.

8100 National Dr.
Little Rock, AR 72209
PHONE: 501-455-3233
FAX: 501-455-6118

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION	BILLING INFORMATION
El Dorado Chemical Inc.	El Dorado Chemical Inc.
4500 Northwest Ave.	P.O. Box 231
El Dorado, AR 71731	El Dorado, AR 71731
Attn: Les Morgan	

Project Description: Groundwater Samples

Reporting Information
Telephone: 870-863-1484
Fax: 870-863-1499
Email: dsartain@edc-ark.com; lmorgan@edc-ark.com; lmarcella@env-mgt.com

Turnaround Time: 1 Day (100%) / 2 Day (50%) / 3 Day (25%) / 5 Day (Routine)

Preservation Codes:
1. Cool, 6 Degrees Centigrade
2. Sulfuric Acid (H_2SO_4), pH < 2
3. Nitric Acid (HNO_3), pH < 2
4. Thiosulfate for Dechlorination
5. Hydrochloric Acid(HCl)
6. Sodium Hydroxide (NaOH), pH > 12

Sampler(s) Signature: Paul Martin
Sampler(s) Printed: PAUL MARTIN

Field Number	SAMPLE COLLECTION Date/s	Time/s	Grab	Comp	Number of Bottles	Sample Matrix	SAMPLE IDENTIFICATION/ DESCRIPTION	TEST PARAMETERS: Nitrate, Sulfate	Ammonia	Cr, Pb	d Cr, d Pb	Bottle Type Code	Arkansas Analytical Work Order Number:
							Preservative Code:	1	1,2	1,3	1		
							Bottle Type:	P	P	P	P	G = Glass; P = Plastic; V = Septum; A = Amber	
ECMW-BD-2	9-13-18	00:00	X		4	Water	ECMW- BD-2	X	X	X	X		1809178-
			X		4	Water	ECMW-	X	X	X	X		11
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		
			X		4	Water	ECMW-	X	X	X	X		

1. Relinquished by: (Signature)	Date/Time	2. Received by: (Signature)
Paul Martin	9-14-18 08:02	9-14-18 0802
3. Relinquished by: (Signature)	Date/Time	4. Received by lab: (Signature)
9-14-18 1115	9.14.18 1116	Jammy Riddle

SAMPLE CONDITION UPON RECEIPT IN LAB

1. CUSTODY SEALS:	✓ Yes	___ No
2. CONTAINERS CORRECT:	___ Yes	___ No
3. COC/LABELS AGREE:	___ Yes	___ No
4. RECEIVED ON ICE:	___ Yes	___ No
5. TEMPERATURE ON RECEIPT:	4 °C	
6. TEMPERATURE GUN ID:	HHT# 2	

FOR COMPLETION BY LAB ONLY

REMARKS / SAMPLE COMMENTS

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 1**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-12-18	Method of Evacuation	MINI MONSOON
Evacuation Time	13:37		
Top of casing to water level ft	15.29	Gallons per well volume gal	4.67
Top of casing to bottom ft	22.48	Total gallons evacuated gal	8.5 (pumped dry)
Sampling Date/Time	9-12-18 17:10	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	20.5	4.85	57.0 uS	0 gal	
1	20.1	4.47	52.1 uS	4.67 gal	
2				9.34 gal	
3				14.01 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations: Pumped dry @ 8.5 gal

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 2

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-12-18	Method of Evacuation	MINI MONSOON
Evacuation Time	14:02		
Top of casing to water level ft	2.36	Gallons per well volume gal	11.81
Top of casing to bottom ft	20.53	Total gallons evacuated gal	26.0 (pumped dry)
Sampling Date/Time	9-12-18 17:14	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	23.7	5.51	268.9 uS	0 gal.	
1	21.9	5.57	271.8 uS	11.81 gal.	
2	20.3	5.35	284.6 uS	23.62 gal	
3				35.43 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations: pumped dry @ 26 gal

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-3**

Sampling Personnel

MONITORING WELL INFORMATION

Evacuation Date	9/12/18	Method of Evacuation	MM
Evacuation Time	1336		
Top of casing to water level ft	12.43	Gallons per well volume gal	9.67
Top of casing to bottom ft	27.3	Total gallons evacuated gal	7.5 gal
Sampling Date/Time		Method of Sampling	

SAMPLE DATA

Temperature[°C]	pH	Conductivity[µS]	
0 24.6	5.39	219.7	Clear, light, hazy hello
1 21.8	4.96	236.6	
21.6	5.69	289.2	Dry @ 7½ gal tot

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 4**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-12-18	Method of Evacuation	MINI MONSOON
Evacuation Time	14:42		
Top of casing to water level ft	10.35	Gallons per well volume gal	7.85
Top of casing to bottom ft	22.43	Total gallons evacuated gal	16.0 (pumped dry)
Sampling Date/Time	9-12-18 17:07	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	24.4	4.15	6.07 uS	0 gal.	
1	23.2	3.82	6.40 uS	7.85 gal	
2	22.4	3.84	7.36 uS	15.70 gal	
3				23.55 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations: Pumped dry @ 16 gal

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 5**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-13-18	Method of Evacuation	MINI MONSOON
Evacuation Time	08:47		
Top of casing to water level	ft 4.30	Gallons per well volume	gal 8.89
Top of casing to bottom	ft 17.98	Total gallons evacuated	gal 27.0
Sampling Date/Time	9-13-18 15:08	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	23.7	4.24	728 uS	0 gal	
1	22.7	4.46	789 uS	8.89 gal	
2	21.7	4.42	826 uS	17.78 gal	
3	21.0	4.43	846 uS	26.67 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 6

Sampling Personnel Christina Sellers

MONITORING WELL INFORMATION

Evacuation Date	9-12-18	Method of Evacuation	MINI MONSOON
Evacuation Time	17:50		
Top of casing to water level ft	4.31	Gallons per well volume gal	11.65
Top of casing to bottom ft	22.28	Total gallons evacuated gal	35.5
Sampling Date/Time	9-12-18 18:10	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	24.5	3.89	53.0 mS	0 gal	
1	22.6	3.84	57.3 mS	11.65 gal	
2	22.1	3.68	54.9 mS	23.3 gal	
3	22.4	3.04	55.0 mS	34.95 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations: ECMW-BD-1 Collected

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 7**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-13-18	Method of Evacuation	MINI MONSOON
Evacuation Time	09:22		
Top of casing to water level	ft 7.12	Gallons per well volume	gal 11.71
Top of casing to bottom	ft 25.13	Total gallons evacuated	gal 36.0
Sampling Date/Time	9-13-18 15:15	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	20.9	6.44	91.3 mS	0 gal	
1	21.0	6.20	33.71 mS	11.71 gal	
2	20.9	6.05	33.60 mS	23.42 gal	
3	20.9	6.00	33.91 mS	35.13 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 8**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-13-18	Method of Evacuation	MINI MONSOON
Evacuation Time	10:00		
Top of casing to water level ft	7.24	Gallons per well volume gal	14.91
Top of casing to bottom ft	30.18	Total gallons evacuated gal	45.0
Sampling Date/Time	9-13-18 15:22	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	24.3	4.38	22.05 mS	0 gal	
1	20.1	4.01	40.97 mS	14.91 gal	
2	19.8	3.96	42.82 mS	29.82 gal	
3	19.7	3.95	43.02 mS	44.73 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 9

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-12-18	Method of Evacuation	MINI MONSOON
Evacuation Time	15:11		
Top of casing to water level	ft 13.02	Gallons per well volume	gal 11.25
Top of casing to bottom	ft 30.33	Total gallons evacuated	gal 34.5
Sampling Date/Time	9-12-18 17:18	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	21.9	4.93	2447 uS	0 gal	
1	20.7	5.29	2389 uS	11.25 gal	
2	20.9	5.39	2355 uS	22.5 gal	
3	20.4	5.43	2351 uS	33.75 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 10**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-13-18	Method of Evacuation	MINI MONSOON
Evacuation Time	10:52		
Top of casing to water level	ft 15.47	Gallons per well volume	gal 4.85
Top of casing to bottom	ft 22.93	Total gallons evacuated	gal 10.0 (pumped dry)
Sampling Date/Time	9-13-18 15:33	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	22.7	5.12	1141 uS	0 gal	
1	22.7	4.58	825 uS	4.85 gal	
2	22.0	4.45	812 uS	9.7 gal	
3				14.55 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations: Pumped dry @ 10 gal
BD-2 collected

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 11**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-13-18	Method of Evacuation	MINI MONSOON
Evacuation Time	11:20		
Top of casing to water level ft	12.67	Gallons per well volume gal	4.90
Top of casing to bottom ft	20.21	Total gallons evacuated gal	15.0
Sampling Date/Time	9-13-18 15:42	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	23.8	4.30	687 uS	0 gal	
1	23.4	4.23	757 uS	4.90 gal	
2	22.9	4.34	856 uS	9.80 gal	
3	22.5	4.34	912 uS	14.70 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 12

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-13-18	Method of Evacuation	MINI MONSOON
Evacuation Time	11:48		
Top of casing to water level ft	6.3	Gallons per well volume gal	9.07
Top of casing to bottom ft	20.25	Total gallons evacuated gal	20 (pumped dry)
Sampling Date/Time	9-13-18 16:00	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	26.2	5.60	420.5 uS	0 gal	
1	24.5	5.52	607.0 uS	9.07 gal	
2	23.0	5.66	754.0 uS	18.14 gal	
3				27.21 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations: Pumped dry @ 20 gal

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 13

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-11-18	Method of Evacuation	MINI MONSOON
Evacuation Time	18:22		
Top of casing to water level ft	9.73	Gallons per well volume gal	6.77
Top of casing to bottom ft	20.14	Total gallons evacuated gal	10.0 (pumped Dry)
Sampling Date/Time	9-12-18 16:57	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	22.8	4.66	540.0uS	0 gal	
1	22.2	4.56	667.0 uS	6.77 gal	
2				13.54 gal	
3				20.31 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations: well pumped dry at 10 gal.

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 14

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-11-18	Method of Evacuation	MINI MONSOON
Evacuation Time	17:43		
Top of casing to water level	ft 7.53	Gallons per well volume	gal 7.16
Top of casing to bottom	ft 18.55	Total gallons evacuated	gal 22.5
Sampling Date/Time	9-12-18 16:29	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	26.0	4.48	457.7 uS	0 gal	
1	24.7	4.68	550.0 uS	7.16 gal	
2	23.8	4.73	561.0 uS	14.32 gal	
3	23.4	4.71	562.0 uS	21.48 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 15**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-11-18	Method of Evacuation	MINI MONSOON
Evacuation Time	15:45		
Top of casing to water level ft	6.88'	Gallons per well volume gal	6.86
Top of casing to bottom ft	17.44'	Total gallons evacuated gal	16.0 (pumped Dry)
Sampling Date/Time	9-12-18 16:36	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	24.8	5.39	82.7 uS	0 gal	
1	24.3	5.01	79.5 uS	6.86 gal	
2	22.6	4.87	81.8 uS	13.72 gal	
3				20.58 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations: 15:00 CAL EC300A (2766 uS)
15:08 CAL pH100A (pH 7.00 & pH 4.00)
16:05 WELL PUMPED DRY

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW- 16**

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-11-18	Method of Evacuation	MINI MONSOON
Evacuation Time	16:28		
Top of casing to water level ft	6.16'	Gallons per well volume gal	8.72
Top of casing to bottom ft	19.57'	Total gallons evacuated gal	27.0
Sampling Date/Time	9-12-18 16:43	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	24.5	4.75	~~[illegible] uS~~ 144.2 uS	0 gal	
1	23.3	4.29	148.3 uS	8.72 gal	
2	23.1	4.32	147.0 uS	17.44 gal	
3	23.0	4.22	146.7 uS	26.16 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 17

Sampling Personnel PAUL MARTIN

MONITORING WELL INFORMATION

Evacuation Date	9-11-18	Method of Evacuation	MINI MONSOON
Evacuation Time	17:07		
Top of casing to water level	ft 28.93	Gallons per well volume	gal 4.07
Top of casing to bottom	ft 35.19	Total gallons evacuated	gal 13.0
Sampling Date/Time	9-12-18 16:20	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	19.2	4.16	202.8 uS	0 gal	
1	19.3	3.99	205.7 uS	4.07 gal	
2	19.3	4.01	204.8 uS	8.14 gal	
3	19.2	4.03	211.1 uS	12.21 gal	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-18**

Sampling Personnel CSS

MONITORING WELL INFORMATION

Evacuation Date	9/13/18	Method of Evacuation	Mini Monsoon
Evacuation Time	9:52		
Top of casing to water level ft	9.24	Gallons per well volume gal	5.45
Top of casing to bottom ft	17.3	Total gallons evacuated gal	
Sampling Date/Time	9-13-18 16:16	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]	
0	21.4	4.12	2675	Cloudy, opaque/lt brown
1	21.8	4.19	107.6	"
2	22.3		101.8	Dry @ 11 gal
3				

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 19

Sampling Personnel

MONITORING WELL INFORMATION

Evacuation Date	9/13/18	Method of Evacuation	mini Monsoon
Evacuation Time	10:50		
Top of casing to water level ft	4.24	Gallons per well volume gal	13.25
Top of casing to bottom ft	59.44	Total gallons evacuated gal	
Sampling Date/Time	9-13-18 16:25	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]	
0	19.4	5.62	79.8	Clear, some SS
1	19.7	5.60	84.3	
2	19.6	5.39	82.2	
3	19.7	5.07	82.0	

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 20

Sampling Personnel

MONITORING WELL INFORMATION

Evacuation Date	9/13/18	Method of Evacuation	
Evacuation Time	11:40		
Top of casing to water level ft	29.00	Gallons per well volume gal	5.85
Top of casing to bottom ft	53.38	Total gallons evacuated gal	
Sampling Date/Time	9-13-18 16:38	Method of Sampling	Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	20.8	5.10	82.1	lt brown cloudy	
1	20.5	4.79	328.6	Dry after 3.5gal (tot)	
2					
3					

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

Comments and observations:

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-21**

Sampling Personnel _____

MONITORING WELL INFORMATION

Evacuation Date	9/13/18	Method of Evacuation	
Evacuation Time	12:20		
Top of casing to water level ft	18.02	Gallons per well volume gal	0.96
Top of casing to bottom ft	30.43	Total gallons evacuated gal	
Sampling Date/Time	9-13-18 16:45	Method of Sampling	~~P: Pump~~ Bailer

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]		
0	22.3	5.76	60.7	lt brown Cloudy w/SS	, Dry@0.5gal
1					
2					
3					

GENERAL INFORMATION

Weather conditions at time of sampling: _____

Sample characteristics: _____

_____

Containers and preservatives: _____

_____

Comments and observations: _____

_____

Certification:

_____

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

GROUNDWATER SAMPLING DATA FORM

FIELD LOG

Site **El Dorado Chemical Company** Well No. **ECMW-** 32

Sampling Personnel C Sellers

MONITORING WELL INFORMATION

Evacuation Date 9/11/18 Method of Evacuation Mini Monsoon

Evacuation Time 10:34

Top of casing to water level ft 7.46 Gallons per well volume gal 15.47

Top of casing to bottom ft 79.38 Total gallons evacuated gal

Sampling Date/Time Method of Sampling

SAMPLE DATA

	Temperature[°C]	pH	Conductivity[µS]	
0	21.86	5.51	1820 µS	Started off Cloudy white/tan
1	21.4	5.64	156.1 µS	clear, low SS
2	20.6	5.70	178.2 µS	"
3	20.4	5.69	178.2 µS	"

GENERAL INFORMATION

Weather conditions at time of sampling:

Sample characteristics:

Containers and preservatives:

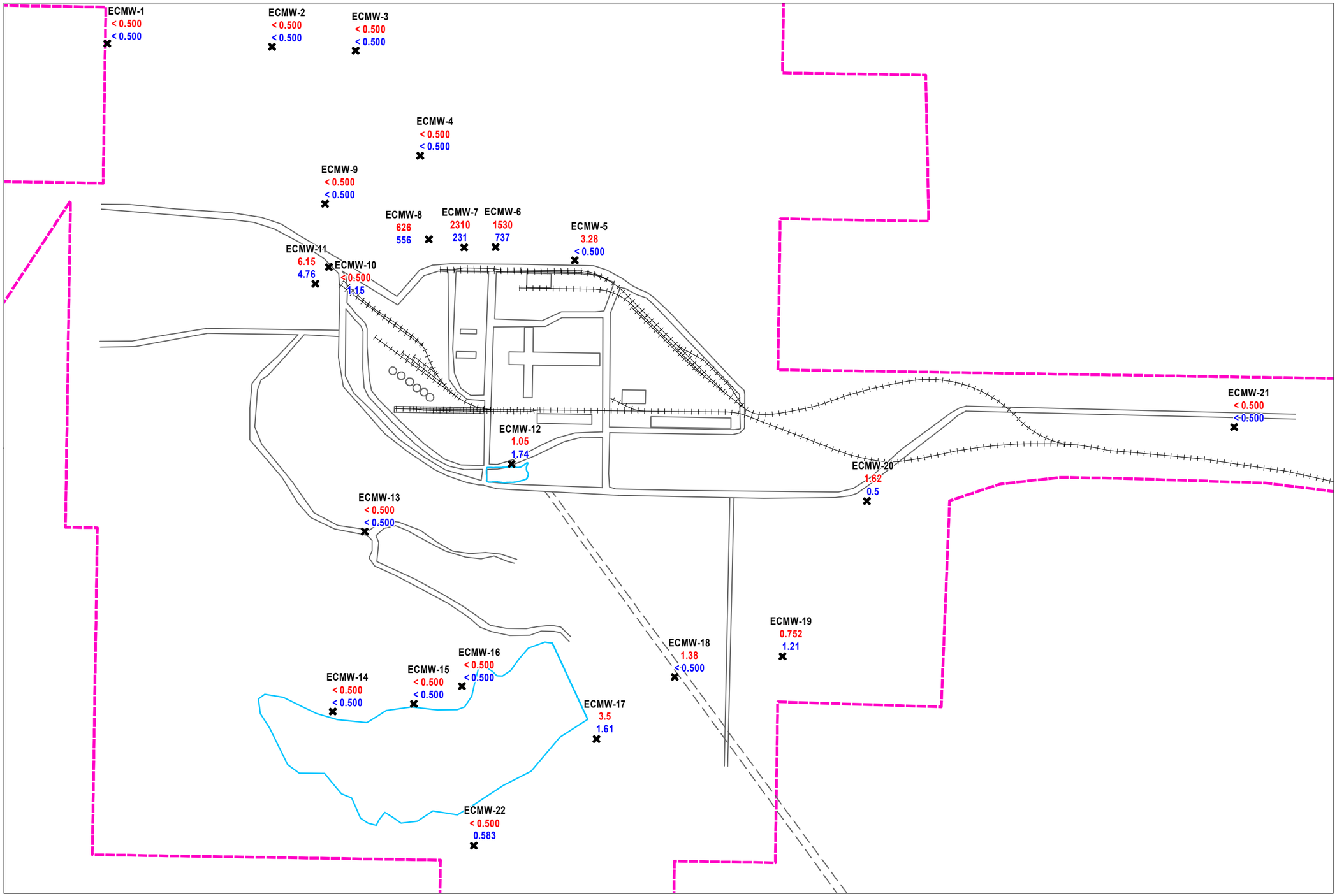
Comments and observations: Calibrate YSI 63, 3pt

Certification:

Well Casing Volumes [gal/ft]			
1 1/4"=0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2"=0.10	2 1/2"=0.24	3 1/2"=0.50	6"=1.46

APPENDIX C

Constituent Concentration Map



NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY	ENJ
CHECKED BY	ENJ
APPR. BY	BJP
DRAWN BY	ALB

GBMc
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
2018 GROUNDWATER WELL
AMMONIA-N CONCENTRATION

JOB NAME
2018
GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO.	2042-99-010
DATE	03/14/2019
SCALE	SHOWN
REV. NO	
DWG. NO.	

ECMW-1
< 0.0125
< 0.0125

ECMW-2
< 0.0125
< 0.0125

ECMW-3
< 0.0125
< 0.0125

ECMW-4
< 0.0125
< 0.0125

ECMW-9
< 0.0125
< 0.0125

ECMW-8
< 0.0125
< 0.0125

ECMW-7
< 0.0125
< 0.0125

ECMW-6
< 0.0125
< 0.0125

ECMW-5
< 0.0125
< 0.0125

ECMW-10
< 0.0125
< 0.0125

ECMW-11
< 0.0125
< 0.0125

ECMW-12
< 0.0125
< 0.0125

ECMW-21
< 0.0125
0.0174

ECMW-20
< 0.0125
< 0.0125

ECMW-13
< 0.0125
< 0.0125

ECMW-19
< 0.0125
< 0.0125

ECMW-18
< 0.0125
< 0.0125

ECMW-16
< 0.0125
< 0.0125

ECMW-15
< 0.0125
< 0.0125

ECMW-14
< 0.0125
< 0.0125

ECMW-17
< 0.0125
< 0.0125

ECMW-22
< 0.0125
< 0.0125

N
W E
S

1,000
FEET

Chromium (Dissolved) Concentration

✖ Groundwater Well

First Half 2018 Concentration (mg/L)

Second Half 2018 Concentration (mg/L)

NO	DATE	REVISION	BY	CK.	APPR.

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APPR. BY BJP
DRAWN BY ALB

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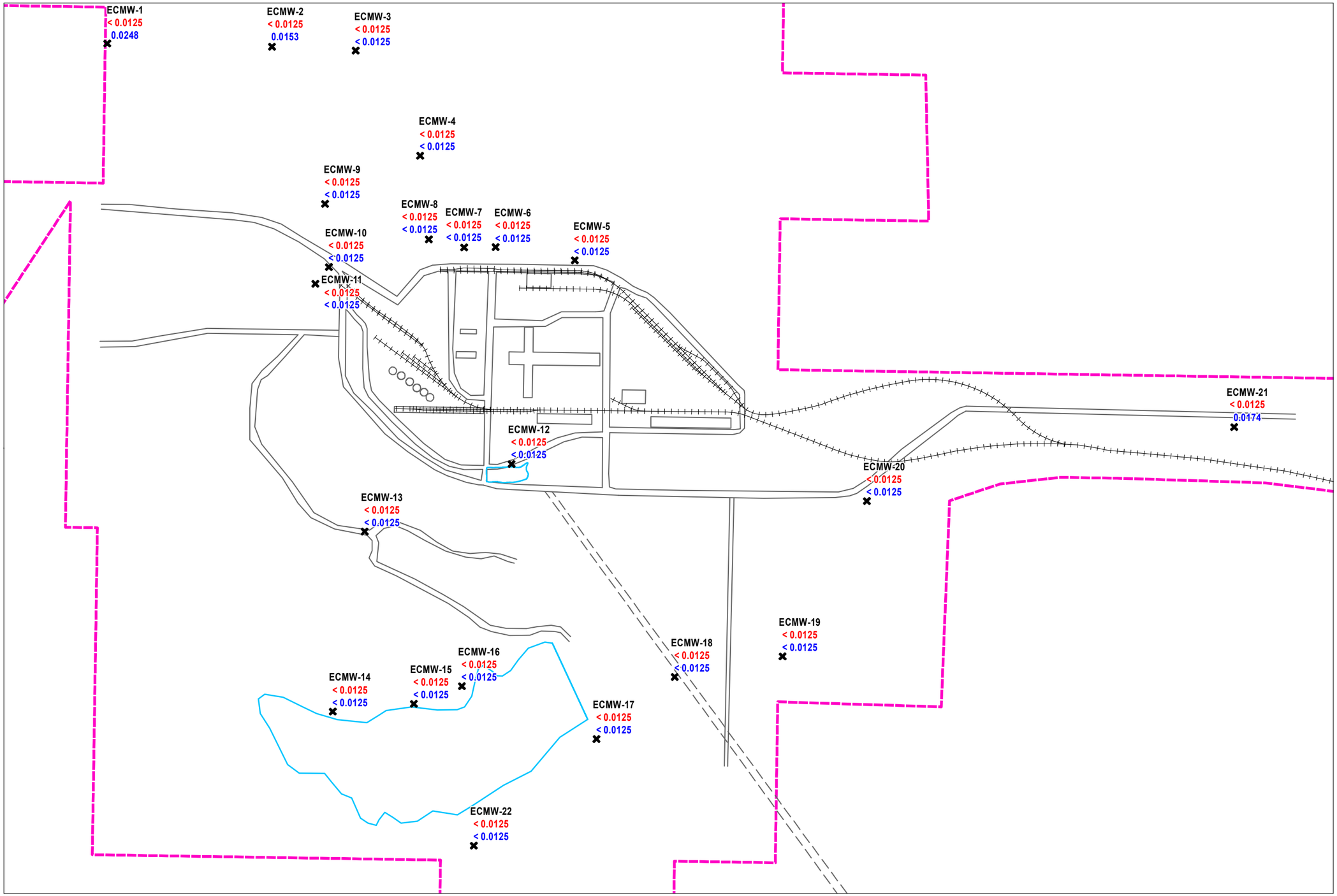
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
2018 GROUNDWATER WELL
CHROMIUM (DISSOLVED) CONCENTRATION

JOB NAME
2018
GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 03/14/2019
SCALE SHOWN
REV. NO
DWG. NO.



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DESIGNED BY ENJ
CHECKED BY ENJ
APPR. BY BJP
DRAWN BY ALB

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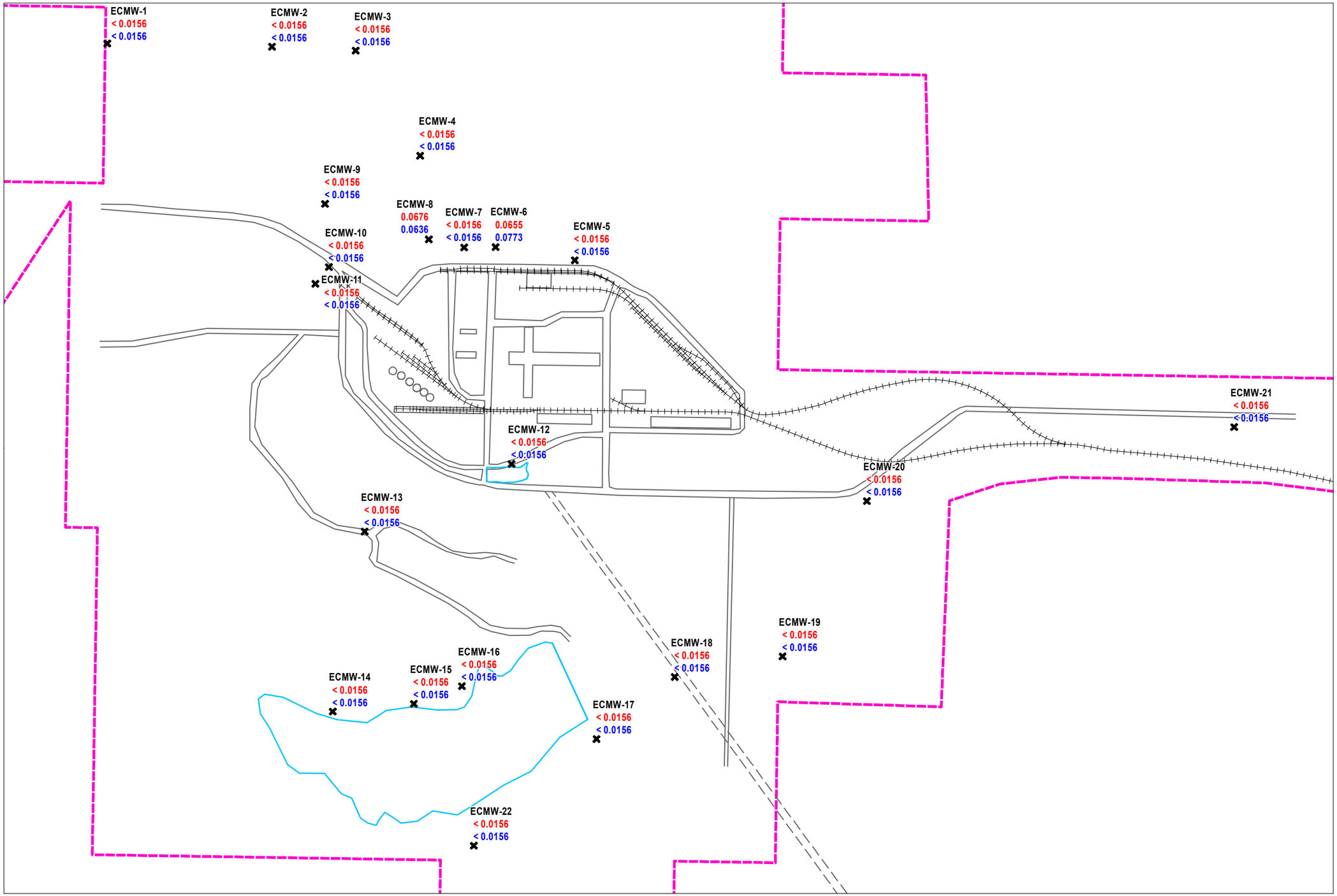
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
2018 GROUNDWATER WELL
CHROMIUM (TOTAL) CONCENTRATION

JOB NAME
2018
GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 03/14/2019
SCALE SHOWN
REV. NO
DWG. NO.



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CHECKED BY	ENJ
APPR. BY	BJP
DRAWN BY	ALB

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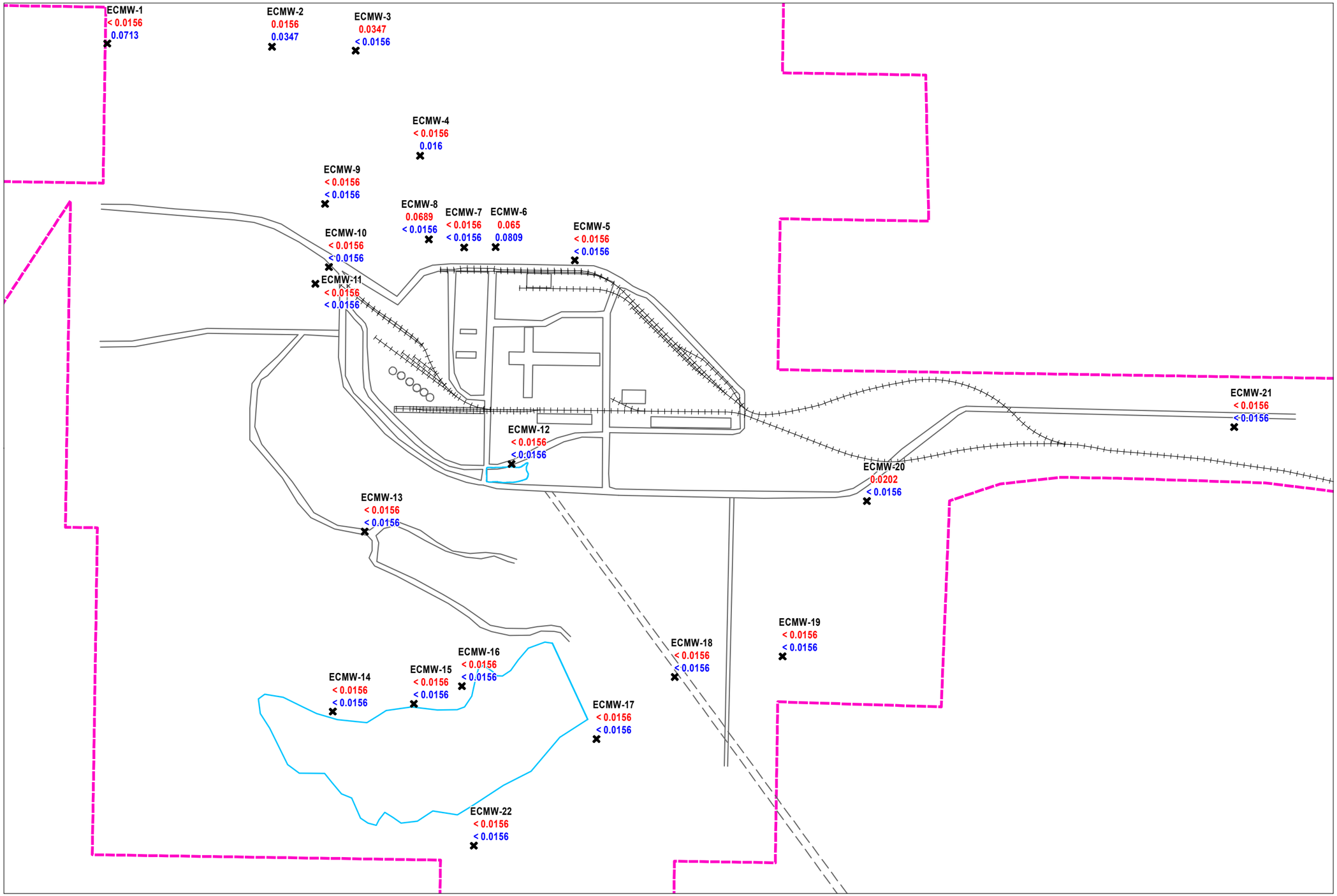
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
2018 GROUNDWATER WELL
LEAD (DISSOLVED) CONCENTRATION

JOB NAME
2018
GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO.	2042-99-010
DATE	03/14/2019
SCALE	SHOWN
REV. NO	
DWG. NO.	



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CHECKED BY ENJ
APPR. BY BJP
DRAWN BY ALB

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Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
2018 GROUNDWATER WELL
LEAD (TOTAL) CONCENTRATION

JOB NAME
2018
GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 03/14/2019
SCALE SHOWN
REV. NO
DWG. NO.

ECMW-1
1.13
0.45

ECMW-2
< 0.250
< 0.250

ECMW-3
< 0.250
< 0.250

ECMW-4
< 0.250
< 0.250

ECMW-9
26.9
27.6

ECMW-8
2890
2790

ECMW-7
542
413

ECMW-6
5580
6320

ECMW-5
56.5
74.1

ECMW-11
14.7
29.9

ECMW-10
43.3
47.4

ECMW-12
< 0.250
1.33

ECMW-21
2.45
2.51

ECMW-20
5.44
0.568

ECMW-13
< 0.250
< 0.250

ECMW-19
< 0.250
5.27

ECMW-18
< 0.250
< 0.250

ECMW-16
8.13
8.46

ECMW-15
1.55
2.21

ECMW-14
5.98
4.8

ECMW-17
10.2
6.95

ECMW-22
< 0.250
1.79

N
W E
S

1,000
FEET

Area of Interest

Nitrate-N Concentration

Groundwater Well

First Half 2018 Concentration (mg/L)

Second Half 2018 Concentration (mg/L)

NO	DATE	REVISION	BY	CK.	APPR.

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APPR. BY	BJP
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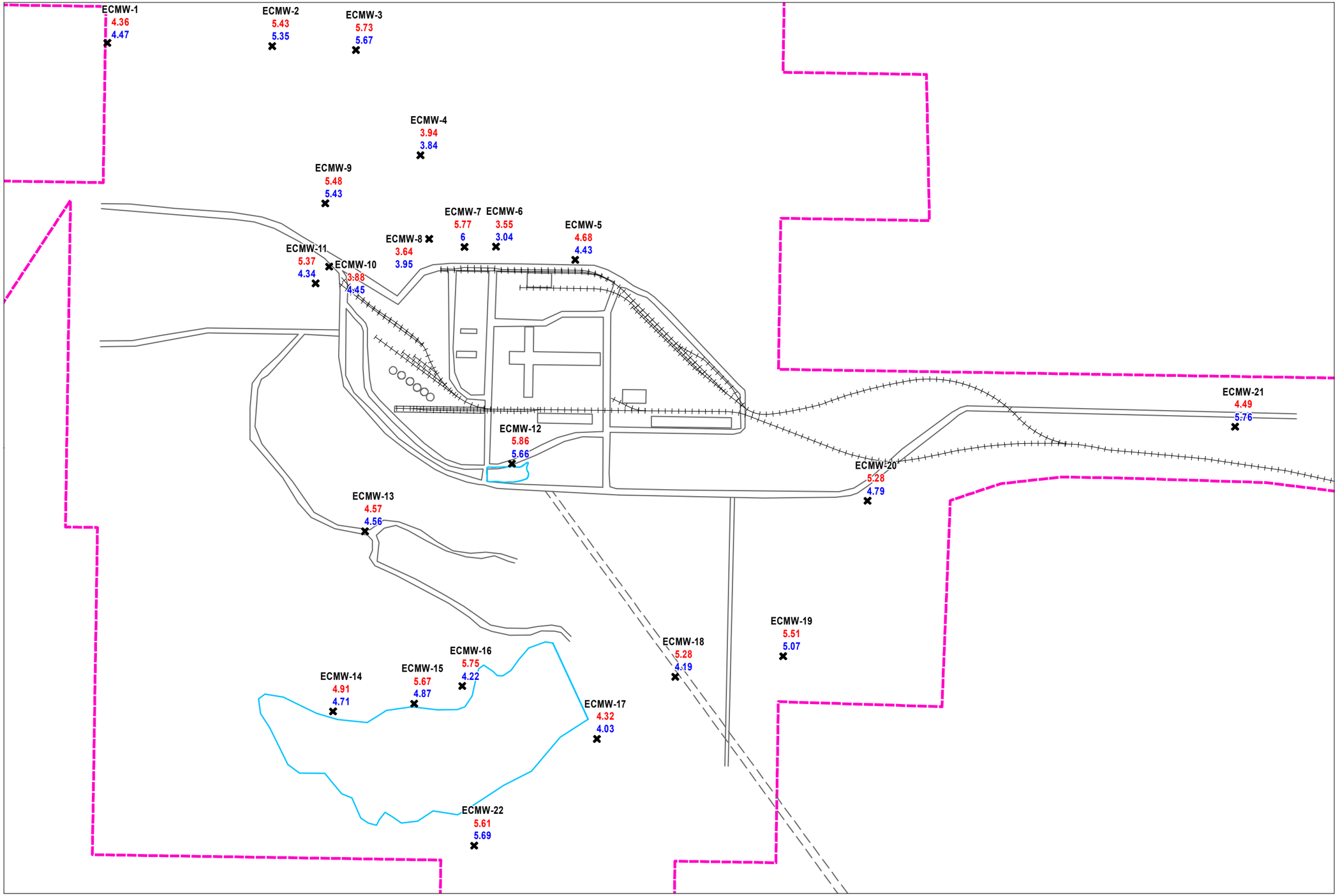
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
2018 GROUNDWATER WELL
NITRATE-N CONCENTRATION

JOB NAME
2018
GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO.	2042-99-010
DATE	03/14/2019
SCALE	SHOWN
REV. NO	
DWG. NO.	



NO	DATE	REVISION	BY	CK.	APPR.

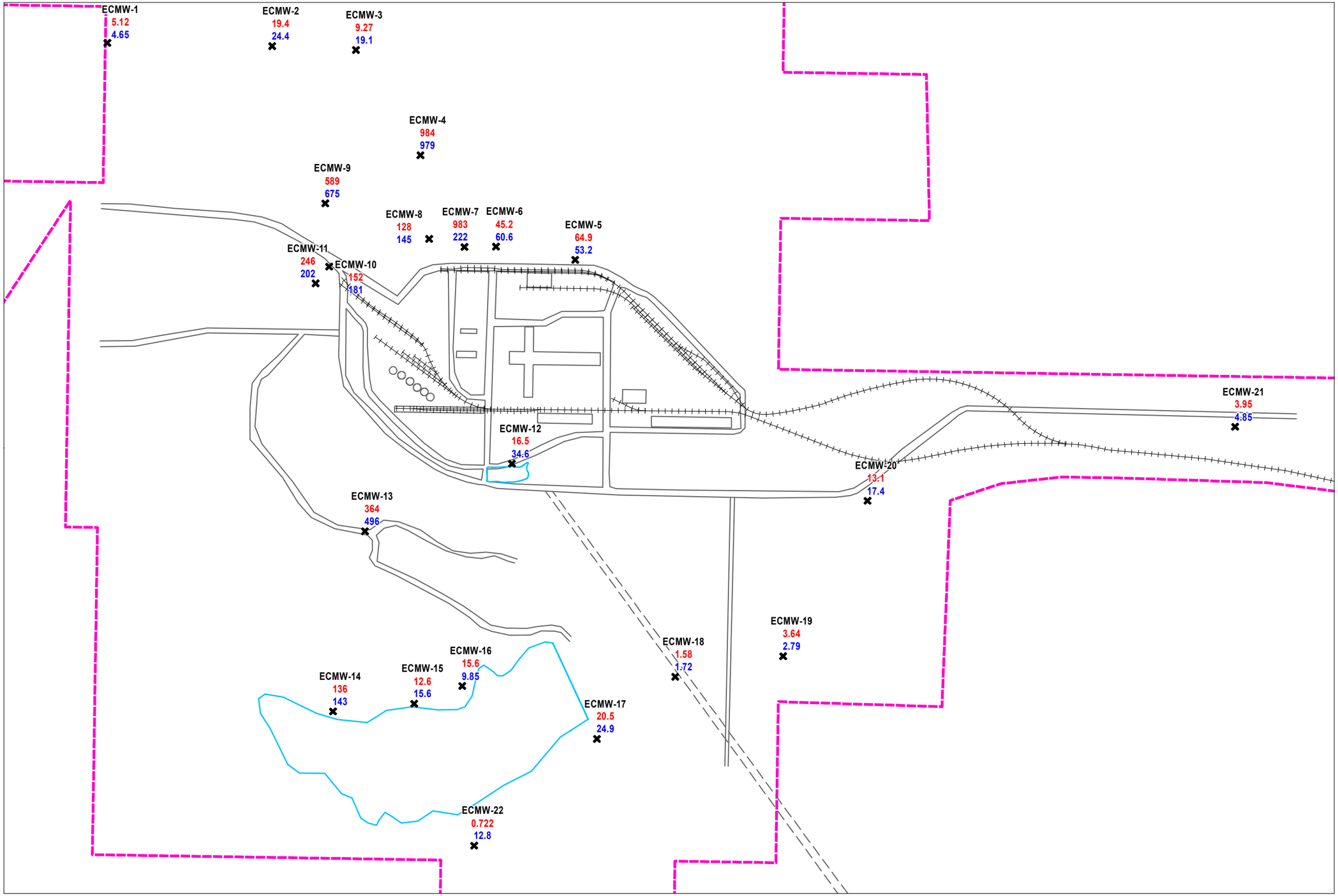
DESIGNED BY ENJ
CHECKED BY ENJ
APPR. BY BJP
DRAWN BY ALB

GBMc
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
2018 GROUNDWATER WELL PH

JOB NAME
2018 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 03/14/2019
SCALE SHOWN
REV. NO
DWG. NO.



NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY ENJ
CHECKED BY ENJ
APPR. BY BJP
DRAWN BY ALB

GBMc
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
2018 GROUNDWATER WELL SULFATE CONCENTRATION

JOB NAME
2018 GROUNDWATER REPORT
EL DORADO CHEMICAL COMPANY
UNION COUNTY, ARKANSAS

PROJECT NO. 2042-99-010
DATE 03/14/2019
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

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

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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

Statistical Analysis

Linear Regression Analysis

Ammonia ECMW 1 – ECMW 22

Linear Regression Thursday, March 14, 2019, 1:53:26 PM

Data source: Data 1 in Data

Date = 2459017.877 - (8676.598 * 1 Ammonia-N (mg/L))

N = 27 Missing Observations = 67

R = 0.250 Rsqr = 0.0623 Adj Rsqr = 0.0248

Standard Error of Estimate = 2007.895

	Coefficient	Std. Error	t	P
Constant	2459017.877	3520.667	698.452	<0.001
1 Ammonia-N (mg/L)	-8676.598	6734.405	-1.288	0.209

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	6692410.908	6692410.908	1.660	0.209
Residual	25	100791076.278	4031643.051		
Total	26	107483487.185	4133980.276		

Normality Test (Shapiro-Wilk) Failed (P = 0.039)

Constant Variance Test: Failed (P = 0.002)

Power of performed test with alpha = 0.050: 0.238

The power of the performed test (0.238) 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, March 14, 2019, 1:53:36 PM

Data source: Data 1 in Data

Date = 2452901.762 + (2960.603 * 2 Ammonia-N (mg/L))

N = 27 Missing Observations = 67

R = 0.254 Rsqr = 0.0645 Adj Rsqr = 0.0271

Standard Error of Estimate = 2005.481

	Coefficient	Std. Error	t	P
Constant	2452901.762	1283.608	1910.943	<0.001
2 Ammonia-N (mg/L)	2960.603	2254.683	1.313	0.201

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	6934676.886	6934676.886	1.724	0.201
Residual	25	100548810.299	4021952.412		
Total	26	107483487.185	4133980.276		

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

Constant Variance Test: Passed (P = 0.104)

Power of performed test with alpha = 0.050: 0.246

The power of the performed test (0.246) 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, March 14, 2019, 1:53:56 PM

Data source: Data 1 in Data

Date = 2455623.099 - (2151.122 * 3 Ammonia-N (mg/L))

N = 27 Missing Observations = 67

R = 0.0977 Rsqr = 0.00955 Adj Rsqr = 0.000

Standard Error of Estimate = 2063.588

	Coefficient	Std. Error	t	P
Constant	2455623.099	2302.906	1066.315	<0.001
3 Ammonia-N (mg/L)	-2151.122	4381.038	-0.491	0.628

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1026649.168	1026649.168	0.241	0.628
Residual	25	106459920.462	4258396.818		
Total	26	107486569.630	4134098.832		

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

Constant Variance Test: Failed (P = 0.003)

Power of performed test with alpha = 0.050: 0.069

The power of the performed test (0.069) 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, March 14, 2019, 1:54:13 PM

Data source: Data 1 in Data

Date = 2454463.923 + (721.964 * 4 Ammonia-N (mg/L))

N = 39 Missing Observations = 55

R = 0.233 Rsqr = 0.0541 Adj Rsqr = 0.0286

Standard Error of Estimate = 1945.166

	Coefficient	Std. Error	t	P
Constant	2454463.923	489.947	5009.652	<0.001
4 Ammonia-N (mg/L)	721.964	496.118	1.455	0.154

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	8012633.125	8012633.125	2.118	0.154
Residual	37	139995836.773	3783671.264		
Total	38	148008469.897	3894959.734		

Normality Test (Shapiro-Wilk) Failed (P = 0.029)

Constant Variance Test: Passed (P = 0.557)

Power of performed test with alpha = 0.050: 0.295

The power of the performed test (0.295) 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, March 14, 2019, 1:54:23 PM

Data source: Data 1 in Data

Date = 2454661.067 + (373.487 * 5 Ammonia-N (mg/L))

N = 39 Missing Observations = 55

R = 0.297 Rsqr = 0.0883 Adj Rsqr = 0.0637

Standard Error of Estimate = 1907.382

	Coefficient	Std. Error	t	P
Constant	2454661.067	357.558	6865.079	<0.001
5 Ammonia-N (mg/L)	373.487	197.239	1.894	0.066

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	13044921.170	13044921.170	3.586	0.066
Residual	37	134609958.420	3638106.984		
Total	38	147654879.590	3885654.726		

Normality Test (Shapiro-Wilk) Failed (P = 0.025)

Constant Variance Test: Passed (P = 0.219)

Power of performed test with alpha = 0.050: 0.452

The power of the performed test (0.452) 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, March 14, 2019, 1:54:30 PM

Data source: Data 1 in Data

Date = 2454025.941 + (1.854 * 6 Ammonia-N (mg/L))

N = 45 Missing Observations = 49

R = 0.772 Rsqr = 0.596 Adj Rsqr = 0.587

Standard Error of Estimate = 1228.509

	Coefficient	Std. Error	t	P
Constant	2454025.941	221.841	11062.087	<0.001
6 Ammonia-N (mg/L)	1.854	0.233	7.965	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	95756034.338	95756034.338	63.447	<0.001
Residual	43	64897050.862	1509233.741		
Total	44	160653085.200	3651206.482		

Normality Test (Shapiro-Wilk) Passed (P = 0.165)

Constant Variance Test: Passed (P = 0.772)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, March 14, 2019, 1:54:59 PM

Data source: Data 1 in Data

Date = 2454729.167 + (0.660 * 7 Ammonia-N (mg/L))

N = 45 Missing Observations = 49

R = 0.380 Rsqr = 0.144 Adj Rsqr = 0.124

Standard Error of Estimate = 1787.986

	Coefficient	Std. Error	t	P
Constant	2454729.167	288.029	8522.508	<0.001
7 Ammonia-N (mg/L)	0.660	0.245	2.694	0.010

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	23193306.910	23193306.910	7.255	0.010
Residual	43	137466480.868	3196894.904		
Total	44	160659787.778	3651358.813		

Normality Test (Shapiro-Wilk) Failed (P = 0.019)

Constant Variance Test: Passed (P = 0.208)

Power of performed test with alpha = 0.050: 0.736

Linear Regression Thursday, March 14, 2019, 1:55:37 PM

Data source: Data 1 in Data

Date = 2454522.964 + (1.701 * 8 Ammonia-N (mg/L))

N = 44 Missing Observations = 50

R = 0.488 Rsqr = 0.238 Adj Rsqr = 0.220

Standard Error of Estimate = 1694.165

	Coefficient	Std. Error	t	P
Constant	2454522.964	306.871	7998.556	<0.001
8 Ammonia-N (mg/L)	1.701	0.469	3.624	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	37690495.705	37690495.705	13.132	<0.001
Residual	42	120548128.932	2870193.546		
Total	43	158238624.636	3679968.015		

Normality Test (Shapiro-Wilk) Passed (P = 0.083)

Constant Variance Test: Failed (P = 0.002)

Power of performed test with alpha = 0.050: 0.927

Linear Regression Thursday, March 14, 2019, 1:55:46 PM

Data source: Data 1 in Data

Date = 2454950.616 + (28.796 * 9 Ammonia-N (mg/L))

N = 39 Missing Observations = 55

R = 0.0573 Rsqr = 0.00328 Adj Rsqr = 0.000

Standard Error of Estimate = 1995.979

	Coefficient	Std. Error	t	P
Constant	2454950.616	364.498	6735.154	<0.001
9 Ammonia-N (mg/L)	28.796	82.549	0.349	0.729

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	484794.862	484794.862	0.122	0.729
Residual	37	147405432.574	3983930.610		
Total	38	147890227.436	3891848.090		

Normality Test (Shapiro-Wilk) Failed (P = 0.028)

Constant Variance Test: Passed (P = 0.616)

Power of performed test with alpha = 0.050: 0.053

The power of the performed test (0.053) 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, March 14, 2019, 1:56:00 PM

Data source: Data 1 in Data

Date = 2454981.893 + (27.936 * 10 Ammonia-N (mg/L))

N = 40 Missing Observations = 54

R = 0.0283 Rsqr = 0.000804 Adj Rsqr = 0.000

Standard Error of Estimate = 1972.072

	Coefficient	Std. Error	t	P
Constant	2454981.893	353.884	6937.245	<0.001
10 Ammonia-N (mg/L)	27.936	159.800	0.175	0.862

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	118857.468	118857.468	0.0306	0.862
Residual	38	147784529.632	3889066.569		
Total	39	147903387.100	3792394.541		

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

Constant Variance Test: Passed (P = 0.383)

Power of performed test with alpha = 0.050: 0.037

The power of the performed test (0.037) 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, March 14, 2019, 1:56:48 PM

Data source: Data 1 in Data

Date = 2455091.793 - (8.786 * 11 Ammonia-N (mg/L))

N = 42 Missing Observations = 52

R = 0.0505 Rsqr = 0.00255 Adj Rsqr = 0.000

Standard Error of Estimate = 1928.215

	Coefficient	Std. Error	t	P
Constant	2455091.793	489.625	5014.229	<0.001
11 Ammonia-N (mg/L)	-8.786	27.472	-0.320	0.751

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	380300.483	380300.483	0.102	0.751
Residual	40	148720549.803	3718013.745		
Total	41	149100850.286	3636606.105		

Normality Test (Shapiro-Wilk) Failed (P = 0.030)

Constant Variance Test: Passed (P = 0.065)

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 Thursday, March 14, 2019, 1:56:58 PM

Data source: Data 1 in Data

Date = 2454204.839 + (155.093 * 12 Ammonia-N (mg/L))

N = 29 Missing Observations = 65

R = 0.0796 Rsqr = 0.00634 Adj Rsqr = 0.000

Standard Error of Estimate = 1955.291

	Coefficient	Std. Error	t	P
Constant	2454204.839	848.847	2891.220	<0.001
12 Ammonia-N (mg/L)	155.093	373.777	0.415	0.681

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	658236.272	658236.272	0.172	0.681
Residual	27	103225438.487	3823164.388		
Total	28	103883674.759	3710131.241		

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

Constant Variance Test: Passed (P = 0.082)

Power of performed test with alpha = 0.050: 0.060

The power of the performed test (0.060) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

Linear Regression Thursday, March 14, 2019, 1:57:10 PM

Data source: Data 1 in Data

Date = 2455911.534 - (2643.115 * 13 Ammonia-N (mg/L))

N = 27 Missing Observations = 67

R = 0.195 Rsqr = 0.0380 Adj Rsqr = 0.000

Standard Error of Estimate = 2033.482

	Coefficient	Std. Error	t	P
Constant	2455911.534	1463.260	1678.384	<0.001
13 Ammonia-N (mg/L)	-2643.115	2658.439	-0.994	0.330

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	4087517.288	4087517.288	0.989	0.330
Residual	25	103376214.342	4135048.574		
Total	26	107463731.630	4133220.447		

Normality Test (Shapiro-Wilk) Failed (P = 0.011)

Constant Variance Test: Failed (P = 0.002)

Power of performed test with alpha = 0.050: 0.161

The power of the performed test (0.161) 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, March 14, 2019, 1:57:16 PM

Data source: Data 1 in Data

Date = 2455016.147 + (5.857 * 14 Ammonia-N (mg/L))

N = 39 Missing Observations = 55

R = 0.00398 Rsqr = 0.0000158 Adj Rsqr = 0.000

Standard Error of Estimate = 2005.201

	Coefficient	Std. Error	t	P
Constant	2455016.147	377.426	6504.636	<0.001
14 Ammonia-N (mg/L)	5.857	241.979	0.0242	0.981

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	2356.013	2356.013	0.000586	0.981
Residual	37	148770801.884	4020832.483		
Total	38	148773157.897	3915083.103		

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

Constant Variance Test: Failed (P = 0.022)

Power of performed test with alpha = 0.050: 0.026

The power of the performed test (0.026) 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, March 14, 2019, 1:57:23 PM

Data source: Data 1 in Data

Date = 2454876.708 - (555.506 * 15 Ammonia-N (mg/L))

N = 27 Missing Observations = 67

R = 0.184 Rsqr = 0.0339 Adj Rsqr = 0.000

Standard Error of Estimate = 2034.903

	Coefficient	Std. Error	t	P
Constant	2454876.708	552.487	4443.318	<0.001
15 Ammonia-N (mg/L)	-555.506	593.475	-0.936	0.358

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	3627927.190	3627927.190	0.876	0.358
Residual	25	103520710.662	4140828.426		
Total	26	107148637.852	4121101.456		

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

Constant Variance Test: Failed (P = 0.014)

Power of performed test with alpha = 0.050: 0.147

The power of the performed test (0.147) 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, March 14, 2019, 1:57:28 PM

Data source: Data 1 in Data

Date = 2456397.629 - (402.297 * 16 Ammonia-N (mg/L))

N = 42 Missing Observations = 52

R = 0.665 Rsqr = 0.442 Adj Rsqr = 0.428

Standard Error of Estimate = 1455.279

	Coefficient	Std. Error	t	P
Constant	2456397.629	344.292	7134.634	<0.001
16 Ammonia-N (mg/L)	-402.297	71.446	-5.631	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	67146933.401	67146933.401	31.705	<0.001
Residual	40	84713474.219	2117836.855		
Total	41	151860407.619	3703912.381		

Normality Test (Shapiro-Wilk) Passed (P = 0.940)

Constant Variance Test: Failed (P = 0.015)

Power of performed test with alpha = 0.050: 0.999

Linear Regression Thursday, March 14, 2019, 1:57:32 PM

Data source: Data 1 in Data

Date = 2454785.217 + (48.629 * 17 Ammonia-N (mg/L))

N = 43 Missing Observations = 51

R = 0.0817 Rsqr = 0.00668 Adj Rsqr = 0.000

Standard Error of Estimate = 1918.105

	Coefficient	Std. Error	t	P
Constant	2454785.217	401.363	6116.129	<0.001
17 Ammonia-N (mg/L)	48.629	92.636	0.525	0.602

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	1013865.790	1013865.790	0.276	0.602
Residual	41	150844218.955	3679127.292		
Total	42	151858084.744	3615668.684		

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

Constant Variance Test: Passed (P = 0.373)

Power of performed test with alpha = 0.050: 0.075

The power of the performed test (0.075) 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, March 14, 2019, 1:57:36 PM

Data source: Data 1 in Data

Date = 2454711.863 + (237.708 * 18 Ammonia-N (mg/L))

N = 28 Missing Observations = 66

R = 0.199 Rsqr = 0.0396 Adj Rsqr = 0.00269

Standard Error of Estimate = 2060.635

	Coefficient	Std. Error	t	P
Constant	2454711.863	437.395	5612.116	<0.001
18 Ammonia-N (mg/L)	237.708	229.501	1.036	0.310

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	4555340.394	4555340.394	1.073	0.310
Residual	26	110401605.035	4246215.578		
Total	27	114956945.429	4257664.646		

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

Constant Variance Test: Passed (P = 0.137)

Power of performed test with alpha = 0.050: 0.171

The power of the performed test (0.171) 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, March 14, 2019, 1:57:40 PM

Data source: Data 1 in Data

Date = 2452099.017 + (5325.076 * 19 Ammonia-N (mg/L))

N = 23 Missing Observations = 71

R = 0.449 Rsqr = 0.202 Adj Rsqr = 0.164

Standard Error of Estimate = 1684.593

	Coefficient	Std. Error	t	P
Constant	2452099.017	1317.068	1861.786	<0.001
19 Ammonia-N (mg/L)	5325.076	2309.393	2.306	0.031

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	15088495.716	15088495.716	5.317	0.031
Residual	21	59594943.240	2837854.440		
Total	22	74683438.957	3394701.771		

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

Constant Variance Test: Passed (P = 0.061)

Power of performed test with alpha = 0.050: 0.581

Linear Regression Thursday, March 14, 2019, 1:57:47 PM

Data source: Data 1 in Data

Date = 2455078.903 - (72.712 * 20 Ammonia-N (mg/L))

N = 23 Missing Observations = 71

R = 0.0266 Rsqr = 0.000705 Adj Rsqr = 0.000

Standard Error of Estimate = 1885.699

	Coefficient	Std. Error	t	P
Constant	2455078.903	573.202	4283.093	<0.001
20 Ammonia-N (mg/L)	-72.712	597.317	-0.122	0.904

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	52692.768	52692.768	0.0148	0.904
Residual	21	74673089.840	3555861.421		
Total	22	74725782.609	3396626.482		

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

Constant Variance Test: Passed (P = 0.176)

Power of performed test with alpha = 0.050: 0.033

The power of the performed test (0.033) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

Linear Regression Thursday, March 14, 2019, 1:57:51 PM

Data source: Data 1 in Data

Date = 2455378.867 - (524.394 * 21 Ammonia-N (mg/L))

N = 23 Missing Observations = 71

R = 0.211 Rsqr = 0.0444 Adj Rsqr = 0.000

Standard Error of Estimate = 1847.773

	Coefficient	Std. Error	t	P
Constant	2455378.867	523.702	4688.508	<0.001
21 Ammonia-N (mg/L)	-524.394	530.791	-0.988	0.334

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	3332461.241	3332461.241	0.976	0.334
Residual	21	71699572.411	3414265.353		
Total	22	75032033.652	3410546.984		

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

Constant Variance Test: Failed (P = 0.013)

Power of performed test with alpha = 0.050: 0.158

The power of the performed test (0.158) 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, March 14, 2019, 1:57:56 PM

Data source: Data 1 in Data

Date = 2453259.022 + (3185.955 * 22 Ammonia-N (mg/L))

N = 23 Missing Observations = 71

R = 0.277 Rsqr = 0.0768 Adj Rsqr = 0.0329

Standard Error of Estimate = 1811.863

	Coefficient	Std. Error	t	P
Constant	2453259.022	1388.548	1766.780	<0.001
22 Ammonia-N (mg/L)	3185.955	2409.767	1.322	0.200

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5738251.676	5738251.676	1.748	0.200
Residual	21	68939769.976	3282846.189		
Total	22	74678021.652	3394455.530		

Normality Test (Shapiro-Wilk) Passed (P = 0.053)

Constant Variance Test: Failed (P = 0.039)

Power of performed test with alpha = 0.050: 0.246

The power of the performed test (0.246) 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.

Sulfate ECMW 1 – ECMW 22

Linear Regression Thursday, March 14, 2019, 1:58:00 PM

Data source: Data 1 in Data

Date = 2452581.927 + (358.917 * 1 Sulfate (mg/L))

N = 28 Missing Observations = 66

R = 0.181 Rsqr = 0.0329 Adj Rsqr = 0.000

Standard Error of Estimate = 2162.770

	Coefficient	Std. Error	t	P
Constant	2452581.927	1928.994	1271.431	<0.001
1 Sulfate (mg/L)	358.917	381.867	0.940	0.356

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	4132222.770	4132222.770	0.883	0.356
Residual	26	121616919.337	4677573.821		
Total	27	125749142.107	4657375.634		

Normality Test (Shapiro-Wilk) Passed (P = 0.052)

Constant Variance Test: Passed (P = 0.456)

Power of performed test with alpha = 0.050: 0.148

The power of the performed test (0.148) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

Linear Regression Thursday, March 14, 2019, 1:58:07 PM

Data source: Data 1 in Data

Date = 2454177.945 + (7.988 * 2 Sulfate (mg/L))

N = 28 Missing Observations = 66

R = 0.0122 Rsqr = 0.000149 Adj Rsqr = 0.000

Standard Error of Estimate = 2199.042

	Coefficient	Std. Error	t	P
Constant	2454177.945	2853.837	859.957	<0.001
2 Sulfate (mg/L)	7.988	128.233	0.0623	0.951

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	18764.283	18764.283	0.00388	0.951
Residual	26	125730377.824	4835783.762		
Total	27	125749142.107	4657375.634		

Normality Test (Shapiro-Wilk) Failed (P = 0.038)

Constant Variance Test: Passed (P = 0.836)

Power of performed test with alpha = 0.050: 0.029

The power of the performed test (0.029) 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, March 14, 2019, 1:58:14 PM

Data source: Data 1 in Data

Date = 2455676.745 - (92.823 * 3 Sulfate (mg/L))

N = 28 Missing Observations = 66

R = 0.218 Rsqr = 0.0475 Adj Rsqr = 0.0108

Standard Error of Estimate = 2146.394

	Coefficient	Std. Error	t	P
Constant	2455676.745	1230.830	1995.139	<0.001
3 Sulfate (mg/L)	-92.823	81.539	-1.138	0.265

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5970359.112	5970359.112	1.296	0.265
Residual	26	119782176.317	4607006.781		
Total	27	125752535.429	4657501.312		

Normality Test (Shapiro-Wilk) Passed (P = 0.360)

Constant Variance Test: Passed (P = 0.283)

Power of performed test with alpha = 0.050: 0.197

The power of the performed test (0.197) 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, March 14, 2019, 1:58:17 PM

Data source: Data 1 in Data

Date = 2456181.107 - (1.510 * 4 Sulfate (mg/L))

N = 40 Missing Observations = 54

R = 0.121 Rsqr = 0.0146 Adj Rsqr = 0.000

Standard Error of Estimate = 2105.814

	Coefficient	Std. Error	t	P
Constant	2456181.107	1746.872	1406.045	<0.001
4 Sulfate (mg/L)	-1.510	2.010	-0.751	0.457

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	2502617.429	2502617.429	0.564	0.457
Residual	38	168509211.671	4434452.939		
Total	39	171011829.100	4384918.695		

Normality Test (Shapiro-Wilk) Passed (P = 0.151)

Constant Variance Test: Passed (P = 0.262)

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 Thursday, March 14, 2019, 1:58:22 PM

Data source: Data 1 in Data

Date = 2457231.728 - (8.438 * 5 Sulfate (mg/L))

N = 40 Missing Observations = 54

R = 0.895 Rsqr = 0.801 Adj Rsqr = 0.796

Standard Error of Estimate = 944.289

	Coefficient	Std. Error	t	P
Constant	2457231.728	240.814	10203.846	<0.001
5 Sulfate (mg/L)	-8.438	0.681	-12.385	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	136772650.817	136772650.817	153.387	<0.001
Residual	38	33883887.958	891681.262		
Total	39	170656538.775	4375808.687		

Normality Test (Shapiro-Wilk) Failed (P = 0.030)

Constant Variance Test: Passed (P = 0.104)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, March 14, 2019, 1:58:26 PM

Data source: Data 1 in Data

Date = 2454526.267 + (7.957 * 6 Sulfate (mg/L))

N = 43 Missing Observations = 51

R = 0.372 Rsqr = 0.138 Adj Rsqr = 0.117

Standard Error of Estimate = 1945.575

	Coefficient	Std. Error	t	P
Constant	2454526.267	347.911	7055.044	<0.001
6 Sulfate (mg/L)	7.957	3.104	2.564	0.014

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	24880718.245	24880718.245	6.573	0.014
Residual	41	155195741.383	3785261.985		
Total	42	180076459.628	4287534.753		

Normality Test (Shapiro-Wilk) Passed (P = 0.123)

Constant Variance Test: Passed (P = 0.873)

Power of performed test with alpha = 0.050: 0.695

Linear Regression Thursday, March 14, 2019, 1:58:30 PM

Data source: Data 1 in Data

Date = 2454545.472 + (0.708 * 7 Sulfate (mg/L))

N = 43 Missing Observations = 51

R = 0.184 Rsqr = 0.0337 Adj Rsqr = 0.0101

Standard Error of Estimate = 2060.176

	Coefficient	Std. Error	t	P
Constant	2454545.472	488.151	5028.253	<0.001
7 Sulfate (mg/L)	0.708	0.592	1.195	0.239

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	6065843.026	6065843.026	1.429	0.239
Residual	41	174017381.392	4244326.375		
Total	42	180083224.419	4287695.819		

Normality Test (Shapiro-Wilk) Passed (P = 0.096)

Constant Variance Test: Failed (P = 0.031)

Power of performed test with alpha = 0.050: 0.216

The power of the performed test (0.216) 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, March 14, 2019, 1:58:36 PM

Data source: Data 1 in Data

Date = 2455666.051 - (0.970 * 8 Sulfate (mg/L))

N = 41 Missing Observations = 53

R = 0.172 Rsqr = 0.0297 Adj Rsqr = 0.00485

Standard Error of Estimate = 2101.735

	Coefficient	Std. Error	t	P
Constant	2455666.051	614.802	3994.239	<0.001
8 Sulfate (mg/L)	-0.970	0.887	-1.093	0.281

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5278978.125	5278978.125	1.195	0.281
Residual	39	172274253.436	4417288.550		
Total	40	177553231.561	4438830.789		

Normality Test (Shapiro-Wilk) Passed (P = 0.184)

Constant Variance Test: Failed (P = <0.001)

Power of performed test with alpha = 0.050: 0.188

The power of the performed test (0.188) 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, March 14, 2019, 1:58:41 PM

Data source: Data 1 in Data

Date = 2455769.493 - (1.598 * 9 Sulfate (mg/L))

N = 40 Missing Observations = 54

R = 0.0495 Rsqr = 0.00245 Adj Rsqr = 0.000

Standard Error of Estimate = 2117.911

	Coefficient	Std. Error	t	P
Constant	2455769.493	2896.763	847.763	<0.001
9 Sulfate (mg/L)	-1.598	5.231	-0.306	0.762

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	418722.800	418722.800	0.0933	0.762
Residual	38	170450826.575	4485548.068		
Total	39	170869549.375	4381270.497		

Normality Test (Shapiro-Wilk) Passed (P = 0.118)

Constant Variance Test: Passed (P = 0.081)

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 Thursday, March 14, 2019, 1:58:47 PM

Data source: Data 1 in Data

Date = 2449420.243 + (41.615 * 10 Sulfate (mg/L))

N = 40 Missing Observations = 54

R = 0.593 Rsqr = 0.351 Adj Rsqr = 0.334

Standard Error of Estimate = 1708.170

	Coefficient	Std. Error	t	P
Constant	2449420.243	1236.029	1981.685	<0.001
10 Sulfate (mg/L)	41.615	9.176	4.535	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	60013931.830	60013931.830	20.568	<0.001
Residual	38	110878081.770	2917844.257		
Total	39	170892013.600	4381846.503		

Normality Test (Shapiro-Wilk) Passed (P = 0.528)

Constant Variance Test: Passed (P = 0.274)

Power of performed test with alpha = 0.050: 0.986

Linear Regression Thursday, March 14, 2019, 1:58:52 PM

Data source: Data 1 in Data

Date = 2456920.190 - (8.503 * 11 Sulfate (mg/L))

N = 39 Missing Observations = 55

R = 0.548 Rsqr = 0.300 Adj Rsqr = 0.281

Standard Error of Estimate = 1784.802

	Coefficient	Std. Error	t	P
Constant	2456920.190	575.871	4266.443	<0.001
11 Sulfate (mg/L)	-8.503	2.136	-3.981	<0.001

Analysis of Variance:

DF	SS	MS	F	P

Regression	1	50490595.833	50490595.833	15.850	<0.001
Residual	37	117864236.526	3185519.906		
Total	38	168354832.359	4430390.325		

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

Constant Variance Test: Passed (P = 0.144)

Power of performed test with alpha = 0.050: 0.958

Linear Regression Thursday, March 14, 2019, 1:58:58 PM

Data source: Data 1 in Data

Date = 2453043.401 + (94.921 * 12 Sulfate (mg/L))

N = 27 Missing Observations = 67

R = 0.402 Rsqr = 0.162 Adj Rsqr = 0.128

Standard Error of Estimate = 2016.620

	Coefficient	Std. Error	t	P
Constant	2453043.401	743.270	3300.339	<0.001
12 Sulfate (mg/L)	94.921	43.190	2.198	0.037

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	19642861.271	19642861.271	4.830	0.037
Residual	25	101668941.396	4066757.656		
Total	26	121311802.667	4665838.564		

Normality Test (Shapiro-Wilk) Passed (P = 0.873)

Constant Variance Test: Passed (P = 0.065)

Power of performed test with alpha = 0.050: 0.552

Linear Regression Thursday, March 14, 2019, 1:59:02 PM

Data source: Data 1 in Data

Date = 2456108.896 - (3.747 * 13 Sulfate (mg/L))

N = 28 Missing Observations = 66

R = 0.217 Rsqr = 0.0470 Adj Rsqr = 0.0104

Standard Error of Estimate = 2146.830

	Coefficient	Std. Error	t	P
Constant	2456108.896	1601.688	1533.450	<0.001
13 Sulfate (mg/L)	-3.747	3.309	-1.132	0.268

Analysis of Variance:

DF	SS	MS	F	P

Regression	1	5910658.573	5910658.573	1.282	0.268
Residual	26	119830854.141	4608879.005		
Total	27	125741512.714	4657093.063		

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

Constant Variance Test: Passed (P = 0.714)

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 Thursday, March 14, 2019, 1:59:08 PM

Data source: Data 1 in Data

Date = 2458116.253 - (19.808 * 14 Sulfate (mg/L))

N = 40 Missing Observations = 54

R = 0.591 Rsqr = 0.350 Adj Rsqr = 0.333

Standard Error of Estimate = 1714.836

	Coefficient	**Std. Error**	**t**	**P**
Constant	2458116.253	761.470	3228.121	<0.001
14 Sulfate (mg/L)	-19.808	4.381	-4.521	<0.001

Analysis of Variance:

	DF	**SS**	**MS**	**F**	**P**
Regression	1	60103971.310	60103971.310	20.439	<0.001
Residual	38	111745219.465	2940663.670		
Total	39	171849190.775	4406389.507		

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

Constant Variance Test: Passed (P = 0.317)

Power of performed test with alpha = 0.050: 0.985

Linear Regression Thursday, March 14, 2019, 1:59:15 PM

Data source: Data 1 in Data

Date = 2452482.414 + (156.246 * 15 Sulfate (mg/L))

N = 28 Missing Observations = 66

R = 0.211 Rsqr = 0.0445 Adj Rsqr = 0.00772

Standard Error of Estimate = 2147.143

	Coefficient	**Std. Error**	**t**	**P**
Constant	2452482.414	1751.115	1400.526	<0.001

15 Sulfate (mg/L)	156.246	142.030	1.100	0.281

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5579235.649	5579235.649	1.210	0.281
Residual	26	119865846.780	4610224.876		
Total	27	125445082.429	4646114.164		

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

Constant Variance Test: Passed (P = 0.568)

Power of performed test with alpha = 0.050: 0.187

The power of the performed test (0.187) 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, March 14, 2019, 1:59:21 PM

Data source: Data 1 in Data

Date = 2449954.989 + (426.743 * 16 Sulfate (mg/L))

N = 40 Missing Observations = 54

R = 0.712 Rsqr = 0.507 Adj Rsqr = 0.494

Standard Error of Estimate = 1489.443

	Coefficient	Std. Error	t	P
Constant	2449954.989	823.775	2974.057	<0.001
16 Sulfate (mg/L)	426.743	68.263	6.251	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	86697902.493	86697902.493	39.081	<0.001
Residual	38	84300770.607	2218441.332		
Total	39	170998673.100	4384581.362		

Normality Test (Shapiro-Wilk) Passed (P = 0.182)

Constant Variance Test: Failed (P = 0.038)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, March 14, 2019, 1:59:35 PM

Data source: Data 1 in Data

Date = 2455564.760 - (21.055 * 17 Sulfate (mg/L))

N = 40 Missing Observations = 54

R = 0.308 Rsqr = 0.0947 Adj Rsqr = 0.0709

Standard Error of Estimate = 2018.361

	Coefficient	Std. Error	t	P
Constant	2455564.760	465.229	5278.190	<0.001
17 Sulfate (mg/L)	-21.055	10.561	-1.994	0.053

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	16191932.527	16191932.527	3.975	0.053
Residual	38	154803753.848	4073782.996		
Total	39	170995686.375	4384504.779		

Normality Test (Shapiro-Wilk) Failed (P = 0.009)

Constant Variance Test: Passed (P = 0.065)

Power of performed test with alpha = 0.050: 0.490

The power of the performed test (0.490) 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, March 14, 2019, 1:59:42 PM

Data source: Data 1 in Data

Date = 2455023.185 - (23.541 * 18 Sulfate (mg/L))

N = 30 Missing Observations = 64

R = 0.216 Rsqr = 0.0466 Adj Rsqr = 0.0125

Standard Error of Estimate = 2202.469

	Coefficient	Std. Error	t	P
Constant	2455023.185	433.340	5665.352	<0.001
18 Sulfate (mg/L)	-23.541	20.123	-1.170	0.252

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	6638730.418	6638730.418	1.369	0.252
Residual	28	135824378.949	4850870.677		
Total	29	142463109.367	4912521.013		

Normality Test (Shapiro-Wilk) Passed (P = 0.105)

Constant Variance Test: Passed (P = 0.153)

Power of performed test with alpha = 0.050: 0.206

The power of the performed test (0.206) 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, March 14, 2019, 1:59:47 PM

Data source: Data 1 in Data

Date = 2457728.802 - (630.737 * 19 Sulfate (mg/L))

N = 20 Missing Observations = 74

R = 0.680 Rsqr = 0.462 Adj Rsqr = 0.432

Standard Error of Estimate = 1444.692

	Coefficient	Std. Error	t	P
Constant	2457728.802	719.229	3417.172	<0.001
19 Sulfate (mg/L)	-630.737	160.449	-3.931	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	32253166.830	32253166.830	15.453	<0.001
Residual	18	37568445.370	2087135.854		
Total	19	69821612.200	3674821.695		

Normality Test (Shapiro-Wilk) Passed (P = 0.488)

Constant Variance Test: Passed (P = 0.686)

Power of performed test with alpha = 0.050: 0.927

Linear Regression Thursday, March 14, 2019, 1:59:53 PM

Data source: Data 1 in Data

Date = 2457010.487 - (161.935 * 20 Sulfate (mg/L))

N = 20 Missing Observations = 74

R = 0.310 Rsqr = 0.0959 Adj Rsqr = 0.0456

Standard Error of Estimate = 1873.115

	Coefficient	Std. Error	t	P
Constant	2457010.487	1372.362	1790.352	<0.001
20 Sulfate (mg/L)	-161.935	117.225	-1.381	0.184

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	6695302.320	6695302.320	1.908	0.184
Residual	18	63154046.230	3508558.124		
Total	19	69849348.550	3676281.503		

Normality Test (Shapiro-Wilk) Passed (P = 0.117)

Constant Variance Test: Passed (P = 0.230)

Power of performed test with alpha = 0.050: 0.261

The power of the performed test (0.261) 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, March 14, 2019, 1:59:58 PM

Data source: Data 1 in Data

Date = 2454409.473 + (150.563 * 21 Sulfate (mg/L))

N = 20 Missing Observations = 74

R = 0.314 Rsqr = 0.0984 Adj Rsqr = 0.0483

Standard Error of Estimate = 1874.558

	Coefficient	Std. Error	t	P
Constant	2454409.473	705.918	3476.902	<0.001
21 Sulfate (mg/L)	150.563	107.433	1.401	0.178

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	6901729.552	6901729.552	1.964	0.178
Residual	18	63251391.448	3513966.192		
Total	19	70153121.000	3692269.526		

Normality Test (Shapiro-Wilk) Passed (P = 0.141)

Constant Variance Test: Passed (P = 0.846)

Power of performed test with alpha = 0.050: 0.267

The power of the performed test (0.267) 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, March 14, 2019, 2:00:03 PM

Data source: Data 1 in Data

Date = 2453541.951 + (299.766 * 22 Sulfate (mg/L))

N = 20 Missing Observations = 74

R = 0.462 Rsqr = 0.214 Adj Rsqr = 0.170

Standard Error of Estimate = 1751.875

	Coefficient	Std. Error	t	P
Constant	2453541.951	839.550	2922.450	<0.001
22 Sulfate (mg/L)	299.766	135.550	2.211	0.040

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	15009687.158	15009687.158	4.891	0.040
Residual	18	55243176.642	3069065.369		
Total	19	70252863.800	3697519.147		

Normality Test (Shapiro-Wilk) Passed (P = 0.093)

Constant Variance Test: Passed (P = 0.165)

Power of performed test with alpha = 0.050: 0.541

Nitrate ECMW 1 – ECMW 22

Linear Regression Thursday, March 14, 2019, 2:00:11 PM

Data source: Data 1 in Data

Date = 2456302.170 - (993.892 * 1 Nitrate- N (mg/L))

N = 28 Missing Observations = 66

R = 0.524 Rsqr = 0.275 Adj Rsqr = 0.247

Standard Error of Estimate = 1872.635

	Coefficient	Std. Error	t	P
Constant	2456302.170	714.335	3438.586	<0.001
1 Nitrate- N (mg/L)	-993.892	316.535	-3.140	0.004

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	34573354.227	34573354.227	9.859	0.004
Residual	26	91175787.880	3506761.072		
Total	27	125749142.107	4657375.634		

Normality Test (Shapiro-Wilk) Passed (P = 0.722)

Constant Variance Test: Passed (P = 0.300)

Power of performed test with alpha = 0.050: 0.829

Linear Regression Thursday, March 14, 2019, 2:00:22 PM

Data source: Data 1 in Data

Date = 2453927.240 + (655.474 * 2 Nitrate- N (mg/L))

N = 30 Missing Observations = 64

R = 0.202 Rsqr = 0.0407 Adj Rsqr = 0.00645

Standard Error of Estimate = 2081.372

	Coefficient	Std. Error	t	P
Constant	2453927.240	519.613	4722.601	<0.001
2 Nitrate- N (mg/L)	655.474	601.346	1.090	0.285

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5147096.393	5147096.393	1.188	0.285
Residual	28	121299073.074	4332109.753		
Total	29	126446169.467	4360212.740		

Normality Test (Shapiro-Wilk) Failed (P = 0.031)

Constant Variance Test: Passed (P = 0.730)

Power of performed test with alpha = 0.050: 0.185

The power of the performed test (0.185) 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, March 14, 2019, 2:00:30 PM

Data source: Data 1 in Data

Date = 2458834.915 - (10282.726 * 3 Nitrate- N (mg/L))

N = 30 Missing Observations = 64

R = 0.549 Rsqr = 0.301 Adj Rsqr = 0.277

Standard Error of Estimate = 1776.101

	Coefficient	Std. Error	t	P
Constant	2458834.915	1340.421	1834.375	<0.001
3 Nitrate- N (mg/L)	-10282.726	2957.941	-3.476	0.002

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	38121741.538	38121741.538	12.085	0.002
Residual	28	88326949.662	3154533.916		
Total	29	126448691.200	4360299.697		

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

Constant Variance Test: Failed (P = 0.012)

Power of performed test with alpha = 0.050: 0.894

Linear Regression Thursday, March 14, 2019, 2:00:37 PM

Data source: Data 1 in Data

Date = 2455182.178 - (352.013 * 4 Nitrate- N (mg/L))

N = 42 Missing Observations = 52

R = 0.266 Rsqr = 0.0710 Adj Rsqr = 0.0478

Standard Error of Estimate = 2007.459

	Coefficient	Std. Error	t	P
Constant	2455182.178	366.883	6692.006	<0.001
4 Nitrate- N (mg/L)	-352.013	201.331	-1.748	0.088

Analysis of Variance:

DF	SS	MS	F	P

Regression	1	12319437.555	12319437.555	3.057	0.088
Residual	40	161195700.731	4029892.518		
Total	41	173515138.286	4232076.544		

Normality Test (Shapiro-Wilk) Passed (P = 0.203)

Constant Variance Test: Passed (P = 0.154)

Power of performed test with alpha = 0.050: 0.399

The power of the performed test (0.399) 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, March 14, 2019, 2:00:42 PM

Data source: Data 1 in Data

Date = 2453177.296 + (93.755 * 5 Nitrate- N (mg/L))

N = 41 Missing Observations = 53

R = 0.882 Rsqr = 0.778 Adj Rsqr = 0.773

Standard Error of Estimate = 988.981

	Coefficient	Std. Error	t	P
Constant	2453177.296	211.110	11620.365	<0.001
5 Nitrate- N (mg/L)	93.755	8.010	11.704	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	133984138.964	133984138.964	136.987	<0.001
Residual	39	38145221.524	978082.603		
Total	40	172129360.488	4303234.012		

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

Constant Variance Test: Passed (P = 0.974)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, March 14, 2019, 2:00:48 PM

Data source: Data 1 in Data

Date = 2452706.696 + (1.004 * 6 Nitrate- N (mg/L))

N = 46 Missing Observations = 48

R = 0.877 Rsqr = 0.769 Adj Rsqr = 0.764

Standard Error of Estimate = 982.135

	Coefficient	Std. Error	t	P
Constant	2452706.696	233.048	10524.448	<0.001

6 Nitrate- N (mg/L)	1.004	0.0829	12.107	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	141385766.670	141385766.670	146.576	<0.001
Residual	44	42441962.287	964590.052		
Total	45	183827728.957	4085060.643		

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

Constant Variance Test: Passed (P = 0.932)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, March 14, 2019, 2:00:57 PM

Data source: Data 1 in Data

Date = 2454643.341 + (0.319 * 7 Nitrate- N (mg/L))

N = 46 Missing Observations = 48

R = 0.365 Rsqr = 0.133 Adj Rsqr = 0.114

Standard Error of Estimate = 1902.968

	Coefficient	Std. Error	t	P
Constant	2454643.341	299.712	8190.013	<0.001
7 Nitrate- N (mg/L)	0.319	0.123	2.601	0.013

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	24498038.509	24498038.509	6.765	0.013
Residual	44	159336604.643	3621286.469		
Total	45	183834643.152	4085214.292		

Normality Test (Shapiro-Wilk) Passed (P = 0.315)

Constant Variance Test: Passed (P = 0.791)

Power of performed test with alpha = 0.050: 0.709

Linear Regression Thursday, March 14, 2019, 2:01:03 PM

Data source: Data 1 in Data

Date = 2455666.051 - (0.970 * 8 Sulfate (mg/L))

N = 41 Missing Observations = 53

R = 0.172 Rsqr = 0.0297 Adj Rsqr = 0.00485

Standard Error of Estimate = 2101.735

	Coefficient	Std. Error	t	P
Constant	2455666.051	614.802	3994.239	<0.001
8 Sulfate (mg/L)	-0.970	0.887	-1.093	0.281

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5278978.125	5278978.125	1.195	0.281
Residual	39	172274253.436	4417288.550		
Total	40	177553231.561	4438830.789		

Normality Test (Shapiro-Wilk) Passed (P = 0.184)

Constant Variance Test: Failed (P = <0.001)

Power of performed test with alpha = 0.050: 0.188

The power of the performed test (0.188) 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, March 14, 2019, 2:01:10 PM

Data source: Data 1 in Data

Date = 2454775.103 + (1.413 * 9 Nitrate- N (mg/L))

N = 43 Missing Observations = 51

R = 0.00515 Rsqr = 0.0000265 Adj Rsqr = 0.000

Standard Error of Estimate = 2059.937

	Coefficient	Std. Error	t	P
Constant	2454775.103	1325.501	1851.960	<0.001
9 Nitrate- N (mg/L)	1.413	42.855	0.0330	0.974

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	4612.186	4612.186	0.00109	0.974
Residual	41	173976880.419	4243338.547		
Total	42	173981492.605	4142416.491		

Normality Test (Shapiro-Wilk) Passed (P = 0.122)

Constant Variance Test: Passed (P = 0.238)

Power of performed test with alpha = 0.050: 0.027

The power of the performed test (0.027) 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, March 14, 2019, 2:01:15 PM

Data source: Data 1 in Data

Date = 2457933.269 - (37.589 * 10 Nitrate- N (mg/L))

N = 43 Missing Observations = 51

R = 0.852 Rsqr = 0.726 Adj Rsqr = 0.720

Standard Error of Estimate = 1077.761

	Coefficient	Std. Error	t	P
Constant	2457933.269	340.934	7209.415	<0.001
10 Nitrate- N (mg/L)	-37.589	3.604	-10.431	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	126379782.618	126379782.618	108.801	<0.001
Residual	41	47624319.847	1161568.777		
Total	42	174004102.465	4142954.821		

Normality Test (Shapiro-Wilk) Failed (P = 0.043)

Constant Variance Test: Failed (P = 0.006)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, March 14, 2019, 2:01:23 PM

Data source: Data 1 in Data

Date = 2453299.635 + (98.596 * 11 Nitrate- N (mg/L))

N = 42 Missing Observations = 52

R = 0.511 Rsqr = 0.261 Adj Rsqr = 0.242

Standard Error of Estimate = 1781.064

	Coefficient	Std. Error	t	P
Constant	2453299.635	496.215	4944.024	<0.001
11 Nitrate- N (mg/L)	98.596	26.234	3.758	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	44807395.182	44807395.182	14.125	<0.001
Residual	40	126887505.103	3172187.628		
Total	41	171694900.286	4187680.495		

Normality Test (Shapiro-Wilk) Passed (P = 0.263)

Constant Variance Test: Passed (P = 0.630)

Power of performed test with alpha = 0.050: 0.941

Linear Regression Thursday, March 14, 2019, 2:01:28 PM

Data source: Data 1 in Data

Date = 2453990.266 + (936.708 * 12 Nitrate- N (mg/L))

N = 27 Missing Observations = 67

R = 0.0868 Rsqr = 0.00753 Adj Rsqr = 0.000

Standard Error of Estimate = 2194.520

	Coefficient	Std. Error	t	P
Constant	2453990.266	1108.171	2214.451	<0.001
12 Nitrate- N (mg/L)	936.708	2150.380	0.436	0.667

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	913812.060	913812.060	0.190	0.667
Residual	25	120397990.607	4815919.624		
Total	26	121311802.667	4665838.564		

Normality Test (Shapiro-Wilk) Failed (P = 0.038)

Constant Variance Test: Passed (P = 0.246)

Power of performed test with alpha = 0.050: 0.063

The power of the performed test (0.063) is below the desired power of 0.800.
Less than desired power indicates you are less likely to detect a difference when one actually exists. Negative results should be interpreted cautiously.

Linear Regression Thursday, March 14, 2019, 2:01:33 PM

Data source: Data 1 in Data

Date = 2458322.369 - (8886.913 * 13 Nitrate- N (mg/L))

N = 28 Missing Observations = 66

R = 0.533 Rsqr = 0.284 Adj Rsqr = 0.257

Standard Error of Estimate = 1855.270

	Coefficient	Std. Error	t	P
Constant	2458322.369	1288.144	1908.422	<0.001
13 Nitrate- N (mg/L)	-8886.913	2766.543	-3.212	0.003

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	35517399.991	35517399.991	10.319	0.003
Residual	26	89492655.723	3442025.220		
Total	27	125010055.714	4630002.063		

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

Constant Variance Test: Failed (P = 0.010)

Power of performed test with alpha = 0.050: 0.844

Linear Regression Thursday, March 14, 2019, 2:01:40 PM

Data source: Data 1 in Data

Date = 2456388.507 - (75.654 * 14 Nitrate- N (mg/L))

N = 43 Missing Observations = 51

R = 0.615 Rsqr = 0.379 Adj Rsqr = 0.364

Standard Error of Estimate = 1628.329

	Coefficient	Std. Error	t	P
Constant	2456388.507	399.134	6154.301	<0.001
14 Nitrate- N (mg/L)	-75.654	15.129	-5.000	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	66297964.158	66297964.158	25.004	<0.001
Residual	41	108709657.749	2651455.067		
Total	42	175007621.907	4166848.141		

Normality Test (Shapiro-Wilk) Failed (P = 0.042)

Constant Variance Test: Passed (P = 0.541)

Power of performed test with alpha = 0.050: 0.995

Linear Regression Thursday, March 14, 2019, 2:01:51 PM

Data source: Data 1 in Data

Date = 2455812.090 - (211.769 * 15 Nitrate- N (mg/L))

N = 31 Missing Observations = 63

R = 0.717 Rsqr = 0.514 Adj Rsqr = 0.498

Standard Error of Estimate = 1453.649

	Coefficient	Std. Error	t	P
Constant	2455812.090	376.652	6520.115	<0.001
15 Nitrate- N (mg/L)	-211.769	38.200	-5.544	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	64939410.116	64939410.116	30.732	<0.001
Residual	29	61279744.594	2113094.641		
Total	30	126219154.710	4207305.157		

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

Constant Variance Test: Passed (P = 0.444)

Power of performed test with alpha = 0.050: 0.998

Linear Regression Thursday, March 14, 2019, 2:03:18 PM

Data source: Data 1 in Data

Date = 2456337.213 - (49.670 * 16 Nitrate- N (mg/L))

N = 43 Missing Observations = 51

R = 0.783 Rsqr = 0.613 Adj Rsqr = 0.604

Standard Error of Estimate = 1281.897

	Coefficient	Std. Error	t	P
Constant	2456337.213	271.646	9042.412	<0.001
16 Nitrate- N (mg/L)	-49.670	6.163	-8.059	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	106730088.254	106730088.254	64.950	<0.001
Residual	41	67373610.165	1643258.785		
Total	42	174103698.419	4145326.153		

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

Constant Variance Test: Passed (P = 0.073)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, March 14, 2019, 2:07:07 PM

Data source: Data 1 in Data

Date = 2456323.426 - (31.136 * 17 Nitrate- N (mg/L))

N = 43 Missing Observations = 51

R = 0.695 Rsqr = 0.483 Adj Rsqr = 0.471

Standard Error of Estimate = 1481.003

	Coefficient	Std. Error	t	P
Constant	2456323.426	331.860	7401.677	<0.001
17 Nitrate- N (mg/L)	-31.136	5.026	-6.195	<0.001

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	84170375.109	84170375.109	38.375	<0.001
Residual	41	89928174.752	2193370.116		
Total	42	174098549.860	4145203.568		

Normality Test (Shapiro-Wilk) Failed (P = 0.024)

Constant Variance Test: Passed (P = 0.248)

Power of performed test with alpha = 0.050: 1.000

Linear Regression Thursday, March 14, 2019, 2:07:20 PM

Data source: Data 1 in Data

Date = 2455084.383 - (20.332 * 18 Nitrate- N (mg/L))

N = 38 Missing Observations = 56

R = 0.179 Rsqr = 0.0321 Adj Rsqr = 0.00516

Standard Error of Estimate = 2068.286

	Coefficient	Std. Error	t	P
Constant	2455084.383	341.481	7189.525	<0.001
18 Nitrate- N (mg/L)	-20.332	18.622	-1.092	0.282

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	5099534.395	5099534.395	1.192	0.282
Residual	36	154001090.578	4277808.072		
Total	37	159100624.974	4300016.891		

Normality Test (Shapiro-Wilk) Passed (P = 0.239)

Constant Variance Test: Failed (P = <0.001)

Power of performed test with alpha = 0.050: 0.187

The power of the performed test (0.187) 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, March 14, 2019, 2:07:28 PM

Data source: Data 1 in Data

Date = 2454650.593 + (574.791 * 19 Nitrate- N (mg/L))

N = 23 Missing Observations = 71

R = 0.316 Rsqr = 0.0997 Adj Rsqr = 0.0568

Standard Error of Estimate = 1789.400

	Coefficient	Std. Error	t	P
Constant	2454650.593	447.027	5491.055	<0.001
19 Nitrate- N (mg/L)	574.791	377.015	1.525	0.142

Analysis of Variance:

DF	SS	MS	F	P

Regression	1	7442468.111	7442468.111	2.324	0.142
Residual	21	67240970.846	3201950.993		
Total	22	74683438.957	3394701.771		

Normality Test (Shapiro-Wilk) Failed (P = 0.015)

Constant Variance Test: Passed (P = 0.105)

Power of performed test with alpha = 0.050: 0.309

The power of the performed test (0.309) 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, March 14, 2019, 2:07:39 PM

Data source: Data 1 in Data

Date = 2454834.902 + (174.696 * 20 Nitrate- N (mg/L))

N = 23 Missing Observations = 71

R = 0.150 Rsqr = 0.0226 Adj Rsqr = 0.000

Standard Error of Estimate = 1864.943

	Coefficient	**Std. Error**	**t**	**P**
Constant	2454834.902	477.672	5139.162	<0.001
20 Nitrate- N (mg/L)	174.696	250.797	0.697	0.494

Analysis of Variance:

	DF	**SS**	**MS**	**F**	**P**
Regression	1	1687523.331	1687523.331	0.485	0.494
Residual	21	73038259.278	3478012.347		
Total	22	74725782.609	3396626.482		

Normality Test (Shapiro-Wilk) Failed (P = 0.009)

Constant Variance Test: Passed (P = 0.312)

Power of performed test with alpha = 0.050: 0.100

The power of the performed test (0.100) 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, March 14, 2019, 2:07:45 PM

Data source: Data 1 in Data

Date = 2456492.578 - (663.161 * 21 Nitrate- N (mg/L))

N = 23 Missing Observations = 71

R = 0.377 Rsqr = 0.142 Adj Rsqr = 0.101

Standard Error of Estimate = 1750.841

	Coefficient	Std. Error	t	P
Constant	2456492.578	865.952	2836.754	<0.001
21 Nitrate- N (mg/L)	-663.161	355.659	-1.865	0.076

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	10657672.775	10657672.775	3.477	0.076
Residual	21	64374360.877	3065445.756		
Total	22	75032033.652	3410546.984		

Normality Test (Shapiro-Wilk) Passed (P = 0.535)

Constant Variance Test: Passed (P = 0.357)

Power of performed test with alpha = 0.050: 0.426

The power of the performed test (0.426) 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, March 14, 2019, 2:07:52 PM

Data source: Data 1 in Data

Date = 2454248.788 + (582.425 * 22 Nitrate- N (mg/L))

N = 22 Missing Observations = 72

R = 0.335 Rsqr = 0.112 Adj Rsqr = 0.0679

Standard Error of Estimate = 1808.291

	Coefficient	Std. Error	t	P
Constant	2454248.788	644.604	3807.373	<0.001
22 Nitrate- N (mg/L)	582.425	366.269	1.590	0.127

Analysis of Variance:

	DF	SS	MS	F	P
Regression	1	8268302.760	8268302.760	2.529	0.127
Residual	20	65398345.604	3269917.280		
Total	21	73666648.364	3507935.636		

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

Constant Variance Test: Passed (P = 0.498)

Power of performed test with alpha = 0.050: 0.330

The power of the performed test (0.330) 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.