

2021 Annual Groundwater Monitoring and Corrective Action Report

Lon D. Wright Power Plant

Fossil Fuel Combustion Ash (FFCA)
Monofill

City of Fremont Department of Utilities
400 E Military Avenue
Fremont, Nebraska 68025

SCS ENGINEERS

File No. 27219045.02 | January 31, 2022

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Omaha, NE 68144
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1.0 INTRODUCTION

This 2021 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the “Coal Combustion Residuals (CCR) Final Rule” published by the United States Environmental Protection Agency (USEPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (USEPA, 2015), and subsequent revisions. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e) and the Assessment Monitoring Program described in 40 CFR 257.95. The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2021 Annual Groundwater Monitoring and Corrective Action Report for the 11.36-acre CCR FFCA monofill at the Lon D. Wright Power Plant, which is owned by the City of Fremont Department of Utilities (FDU).

This report covers the period of groundwater monitoring from January 1, 2021 through December 31, 2021.

1.1 §257.90(E)(6) SUMMARY

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

1.1.1 §257.90(e)(6)(i) Initial Monitoring Program

At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;

At the start of the current annual reporting period, (January 1, 2021), the CCR Landfill was operating under an assessment monitoring program in compliance with §257.95.

1.1.2 §257.90(e)(6)(ii) Final Monitoring Program

At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;

At the end of the current annual reporting period, (December 31, 2021), the CCR Landfill was operating under an assessment monitoring program in compliance with §257.95.

1.1.3 §257.90(e)(6)(iii) Statistically Significant Increases

If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to §257.94(e):

- (A) *Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and,*

Constituent	Monitoring Well with SSI	
	First Quarter (March) Event	Third Quarter (August) Event
Boron	MW-2, MW-5, MW-8	MW-8
Calcium	MW-1, MW-2, MW-3, MW-5, MW-7, MW-8	MW-1, MW-2, MW-3, MW-4R, MW-5, MW-7, MW-8
Chloride	MW-1, MW-3, MW-6, MW-7, MW-8	MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, MW-8
Fluoride	MW-1, MW-2, MW-4R, MW-5,	MW-2, MW-5,
pH	MW-3, MW-8,	MW-3,
Sulfate	MW-1, MW-2, MW-3, MW-5, MW-8,	MW-3,
Total Dissolved Solids (TDS)	MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, MW-8	MW-2, MW-3, MW-7, MW-8

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

Eight background groundwater monitoring events were completed from October 2016 through September 2017 under the detection monitoring program. Statistical analysis of the analytical results from the eight background groundwater monitoring events resulted in all seven downgradient wells having statistically significant increases (SSIs) in concentration above the background concentration data at MW-4R. The SSI determinations completed in 2017 resulted in the transition from the detection monitoring program into the assessment monitoring program in February 2018.

1.1.4 §257.90(e)(6)(iv) Statistically Significant Levels

If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to §257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

Not applicable as no Appendix IV detects statistically exceeded the groundwater protection standard.

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

Not applicable as corrective measures are not required.

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

Not applicable as corrective measures are not required.

(D) *Provide the date when the assessment of corrective measures was completed for the CCR unit.*

Not applicable as corrective measures are not required.

1.1.5 §257.90(e)(6)(v) Selection of Remedy

Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection; and

Not applicable as corrective measures are not required.

1.1.6 §257.90(e)(6)(vi) Remedial Activities

Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

Not applicable as corrective measures are not required.

2.0 §257.90(E) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

2.1 §257.90(E)(1) SITE MAP

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

A site vicinity map with an aerial image showing the property boundary of the Lon D. Wright Power Plant is provided as **Figure 1**. A site map with an aerial image showing the FFCA monofill and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as **Figure 2**.

2.2 §257.90(E)(2) MONITORING SYSTEM CHANGES

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

No new monitoring wells were installed and no wells were decommissioned as part of the groundwater monitoring program for the FFCA monofill in 2021. The groundwater monitoring system currently consists of eight monitoring wells (1 upgradient and 7 downgradient). Monitoring wells MW-1 through MW-5 were installed in 1996 to intercept the shallow groundwater table beneath the FFCA monofill. Monitoring wells MW-6 through MW-8 were installed in 2016 to increase the interception potential of predominant down- and cross-gradient flow migration pathways and to demonstrate compliance with 40 CFR 257.91. Background monitoring well MW-4 was replaced with MW-4R in 2016 due to the poor integrity of the monitoring well.

2.3 §257.90(E)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Two groundwater samples were collected from each CCR monitoring well for the semi-annual assessment monitoring events. Samples from the first sampling event on March 25, 2021 and the second sampling event on August 24, 2021 were analyzed for both Appendix III and Appendix IV constituents. A summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs is included in **Table 1**. The Groundwater Monitoring Program Reports for the first and second sampling events submitted to the Nebraska Department of Environment and Energy (NDEE), which include the analytical reports, groundwater contour maps, field data sheets and statistical summaries, are provided in **Appendices A1** and **A2**.

2.4 §257.90(E)(4) MONITORING TRANSITION NARRATIVE

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);

As required by 40 CFR 257.90(b), eight background groundwater monitoring events were completed from October 2016 through September 2017 under the detection monitoring program. Statistical analysis of the analytical results from the eight background groundwater monitoring events resulted in all seven downgradient wells having statistically significant increases (SSIs) in concentration above the background concentration data at MW-4R. The SSI determinations completed in 2017 resulted in the transition from the detection monitoring program into the assessment monitoring program in February 2018. The site remained in the assessment monitoring program throughout 2021.

2.5 §257.90(E)(5) OTHER REQUIREMENTS

Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

Additional potentially applicable requirements for the annual report, and the location of the requirement within the Rule, are provided in the following sections.

2.5.1 §257.90(e) General Requirements

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

Status of Groundwater Monitoring and Corrective Action Program. The groundwater monitoring and corrective action program is currently in assessment monitoring.

Summary of Key Actions Completed. The facility conducted groundwater monitoring in accordance with assessment monitoring protocols and established groundwater protection standards.

Description of Any Problems Encountered. No problems were encountered involving the two groundwater monitoring events.

Discussion of Actions to Resolve the Problems. See above. No problems were encountered involving the two groundwater monitoring events.

Projection of Key Activities for the Upcoming Year (2022):

Perform two semiannual assessment monitoring events in the first and third quarters of 2022.

Perform statistical evaluation and determination of any statistically significant increases for both semiannual assessment monitoring events.

2.5.2 §257.94(d) Alternative Detection Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. No alternative detection monitoring frequency has been proposed. The facility is currently in assessment monitoring.

2.5.3 §257.94(e)(2) Alternative Source Demonstration for Detection Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. No alternative source demonstration for detection monitoring was completed in 2021.

2.5.4 §257.95(c) Alternative Assessment Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. No alternative assessment monitoring frequency has been proposed.

2.5.5 §257.95(d)(3) Assessment Monitoring Results and Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Assessment Monitoring Results and Standards for the two assessment monitoring events can be found in the submitted Groundwater Monitoring Program Reports to the NDEE. These reports, which include the analytical reports, groundwater contour maps, field data sheets and statistical summaries, are provided in **Appendices A1** and **A2**.

2.5.6 §257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. No alternative source demonstration for assessment monitoring was completed in 2021.

2.5.7 §257.96(a) Extension of Time for Corrective Measures Assessment

The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measure due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Corrective measures assessment has not been initiated.

TABLE 1

CCR Rule Groundwater Samples Summary

Table 1
CCR Rule Groundwater Samples Summary
Lon D. Wright Power Plant FFCA Monofill
March & August 2021

Well ID	Designation	Number of Samples Collected	Sampling Dates
MW-1	Downgradient	2 (1 each event)	3.25.2021
			8.24.2021
MW-2	Downgradient	2 (1 each event)	3.25.2021
			8.24.2021
MW-3	Downgradient	2 (1 each event)	3.25.2021
			8.24.2021
MW-4R	Upgradient	2 (1 each event)	3.25.2021
			8.24.2021
MW-5	Downgradient	2 (1 each event)	3.25.2021
			8.24.2021
MW-6	Downgradient	2 (1 each event)	3.25.2021
			8.24.2021
MW-7	Downgradient	2 (1 each event)	3.25.2021
			8.24.2021
MW-8	Downgradient	2 (1 each event)	3.25.2021
			8.24.2021

Note - All monitoring wells are currently in the assessment monitoring program

FIGURE 1
Site Vicinity Map

T:\27219045.02 Data and Calculations\2021 Annual CCR GWM & CA Report\DWG NEEDS UPDATED\Annual GW CAR Figures.dwg Jan 26, 2022 - 12:04pm Layout Name: Figure 1 By: 4277zem



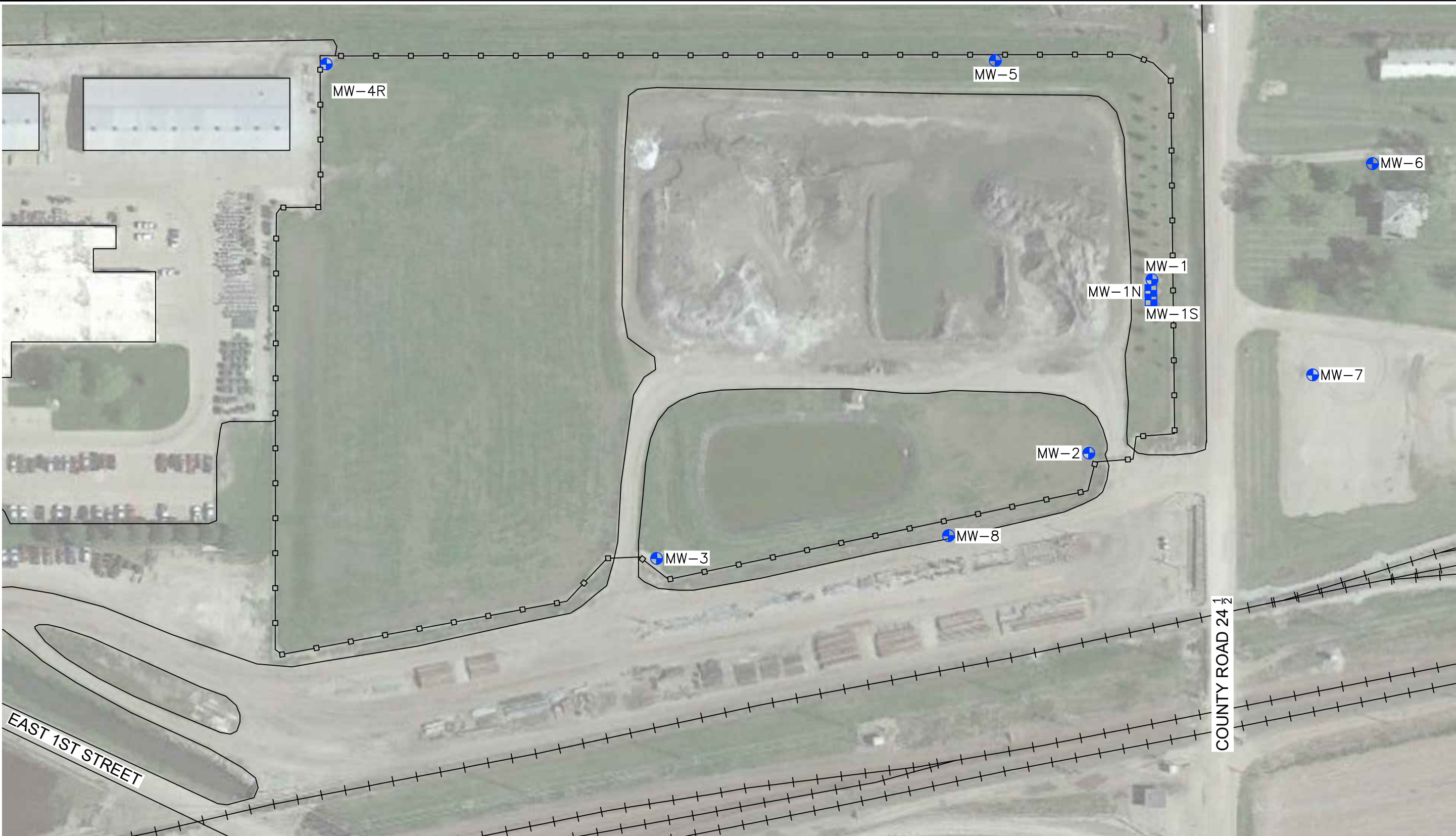
NOTE: BACKGROUND IMAGE FROM GOOGLE EARTH DATED 6/4/2018.

SCS ENGINEERS 14755 GROVER STREET CHANDLER, AZ 85224 PH: (480) 884-6202 FAX: (480) 884-6203		CLIENT FREMONT DEPARTMENT OF UTILITIES LON D. WRIGHT POWER PLANT FREMONT, NEBRASKA		SHEET TITLE SITE VICINITY MAP		REV	DATE	CHK	BY
PROJ. NO. 27219045.02	DWN. BY ZEM	CHK. BY BRS	Q/A R/W BY BRS	PROJECT TITLE ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT		1	-	-	-
TSK. BY ZEM	CHK. BY BRS	PROJ. MGR. MJM				2	-	-	-
CADD FILE: ANNUAL GW CAR FIGURES.DWG		DATE: 01/26/2022				3	-	-	-
FIGURE NO. 1						4	-	-	-

FIGURE 2

Site Map with Monitoring Wells

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- LEGEND
- RAILROAD TRACKS
 - FENCE/CCR MONOFILL BOUNDARY
 - MONITORING WELL
 - PIEZOMETER



SCS ENGINEERS 14755 GROVER STREET OMAHA, NEBRASKA 68144 PH: (402) 884-6202 FAX: (402) 884-6203		CADD FILE: ANNUAL GW CAR FIGURES.DWG		DATE: 01/26/2022		FIGURE NO. 2	
PROJ. NO. 27219045.02	DWN. BY BRS	ZEM	CJ	Q/A R/W BY CJ	PROJ. MGR MJM		
CLIENT FREMONT DEPARTMENT OF UTILITIES LON D. WRIGHT POWER PLANT FREMONT, NEBRASKA		SHEET TITLE SITE MAP		PROJECT TITLE ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT			
REV		DATE		CHK BY			
1		-		-			
2		-		-			
3		-		-			
4		-		-			
5		-		-			

APPENDIX A

Groundwater Monitoring Program Reports

A1 March 2021 Groundwater Monitoring Program Report

CITY OF
FREMONT
NEBRASKA PATHFINDERS

400 East Military Avenue, Fremont, NE 68025-5141

April 29th, 2021

Compliance Unit Supervisor
Waste Management Section
Nebraska Department of Environment and Energy
245 Fallbrook Blvd
Lincoln, NE 68509-8922

Dear Compliance Unit Supervisor

Enclosed is one copy of the Groundwater Monitoring Program Report for the Fremont Utilities **FFCA Monofill IIS 48518, Permit # NE0203777** for your review. The report is based on the requirements of the Coal Combustion Residuals Regulation for assessment monitoring and the above referenced permit. The report represents the sampling round completed on March 25, 2021. If you have any questions concerning this report please feel free to call or email.

Sincerely,



Jeff Shanahan
Plant Superintendent
Lon D Wright Power Plant
Fremont Department of Utilities
2701 E. 1st St.
Fremont, NE 68025
Phone (402) 727-2642
Fax (402) 727-2640
Jeff.shanahan@fremontne.gov

Enclosures

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1. Introduction

SAMPLE SUMMARY

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60364899001	MW-1	Water	03/25/21 09:24	03/26/21 06:40
60364899002	MW-2	Water	03/25/21 11:31	03/26/21 06:40
60364899003	MW-3	Water	03/25/21 11:07	03/26/21 06:40
60364899004	MW-4R	Water	03/25/21 08:14	03/26/21 06:40
60364899005	MW-5	Water	03/25/21 08:49	03/26/21 06:40
60364899006	MW-6	Water	03/25/21 09:53	03/26/21 06:40
60364899007	MW-7	Water	03/25/21 10:17	03/26/21 06:40
60364899008	MW-8	Water	03/25/21 10:44	03/26/21 06:40
60364899009	DUPLICATE	Water	03/25/21 23:59	03/26/21 06:40

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60364899001	MW-1	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60364899002	MW-2	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60364899003	MW-3	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60364899004	MW-4R	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60364899005	MW-5	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60364899006	MW-6	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60364899007	MW-7	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60364899008	MW-8	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60364899009	DUPLICATE	SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
		EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	4	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 9040	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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SAMPLE SUMMARY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60364900001	MW-1	Water	03/25/21 09:24	03/26/21 06:40
60364900002	MW-2	Water	03/25/21 11:31	03/26/21 06:40
60364900003	MW-3	Water	03/25/21 11:07	03/26/21 06:40
60364900004	MW-4R	Water	03/25/21 08:14	03/26/21 06:40
60364900005	MW-5	Water	03/25/21 08:49	03/26/21 06:40
60364900006	MW-6	Water	03/25/21 09:53	03/26/21 06:40
60364900007	MW-7	Water	03/25/21 10:17	03/26/21 06:40
60364900008	MW-8	Water	03/25/21 10:44	03/26/21 06:40
60364900009	DUPLICATE	Water	03/25/21 23:59	03/26/21 06:40

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60364900001	MW-1	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60364900002	MW-2	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60364900003	MW-3	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60364900004	MW-4R	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60364900005	MW-5	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60364900006	MW-6	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60364900007	MW-7	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60364900008	MW-8	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60364900009	DUPLICATE	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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2. Results

ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: MW-1		Lab ID: 60364899001	Collected: 03/25/21 09:24	Received: 03/26/21 06:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City						
Boron	146	ug/L	100	1	03/31/21 13:36	04/07/21 14:35	7440-42-8	M1
Calcium	112	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:35	7440-70-2	
Lithium	37.0	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:35	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City						
Arsenic	3.0	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:32	7440-38-2	
Barium	173	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:32	7440-39-3	
Molybdenum	7.0	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:32	7439-98-7	
Selenium	9.5	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:32	7782-49-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City						
Total Dissolved Solids	511	mg/L	10.0	1		03/30/21 13:51		
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City						
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/30/21 07:28		H6
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City						
Chloride	18.9	mg/L	1.0	1		03/31/21 22:01	16887-00-6	
Fluoride	1.3	mg/L	0.20	1		03/31/21 22:01	16984-48-8	
Sulfate	58.5	mg/L	10.0	10		03/31/21 22:17	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: MW-2		Lab ID: 60364899002		Collected: 03/25/21 11:31		Received: 03/26/21 06:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Pace Analytical Services - Kansas City									
Boron	151	ug/L	100	1	03/31/21 13:36	04/07/21 14:37	7440-42-8		
Calcium	101	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:37	7440-70-2		
Lithium	29.5	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:37	7439-93-2		
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Pace Analytical Services - Kansas City									
Arsenic	3.9	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:40	7440-38-2		
Barium	90.7	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:40	7440-39-3		
Molybdenum	15.6	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:40	7439-98-7		
Selenium	13.2	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:40	7782-49-2		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Kansas City									
Total Dissolved Solids	469	mg/L	10.0	1		03/30/21 13:52			
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Kansas City									
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/30/21 07:51		H6	
9056 IC Anions									
Analytical Method: EPA 9056									
Pace Analytical Services - Kansas City									
Chloride	11.2	mg/L	1.0	1		03/31/21 22:33	16887-00-6		
Fluoride	1.3	mg/L	0.20	1		03/31/21 22:33	16984-48-8		
Sulfate	77.2	mg/L	5.0	5		03/31/21 22:49	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: MW-3		Lab ID: 60364899003		Collected: 03/25/21 11:07		Received: 03/26/21 06:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	132	ug/L	100	1	03/31/21 13:36	04/07/21 14:44	7440-42-8		
Calcium	112	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:44	7440-70-2		
Lithium	31.0	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:44	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Arsenic	2.8	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:42	7440-38-2		
Barium	182	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:42	7440-39-3		
Molybdenum	15.4	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:42	7439-98-7		
Selenium	10.0	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:42	7782-49-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	565	mg/L	10.0	1		03/30/21 13:52			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/30/21 07:47		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	76.1	mg/L	10.0	10		03/31/21 23:20	16887-00-6		
Fluoride	0.84	mg/L	0.20	1		03/31/21 23:05	16984-48-8		
Sulfate	192	mg/L	20.0	20		04/01/21 17:01	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: MW-4R		Lab ID: 60364899004		Collected: 03/25/21 08:14		Received: 03/26/21 06:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	265	ug/L	100	1	03/31/21 13:36	04/07/21 14:46	7440-42-8		
Calcium	63.1	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:46	7440-70-2		
Lithium	14.5	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:46	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Arsenic	2.6	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:44	7440-38-2		
Barium	133	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:44	7440-39-3		
Molybdenum	12.9	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:44	7439-98-7		
Selenium	4.7	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:44	7782-49-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	308	mg/L	5.0	1		03/30/21 13:52			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	6.6	Std. Units	0.10	1		03/30/21 07:18		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	7.0	mg/L	1.0	1		03/31/21 23:36	16887-00-6		
Fluoride	1.1	mg/L	0.20	1		03/31/21 23:36	16984-48-8		
Sulfate	30.7	mg/L	5.0	5		03/31/21 23:52	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: MW-5		Lab ID: 60364899005		Collected: 03/25/21 08:49		Received: 03/26/21 06:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	258	ug/L	100	1	03/31/21 13:36	04/07/21 14:49	7440-42-8		
Calcium	108	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:49	7440-70-2		
Lithium	22.4	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:49	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Arsenic	4.0	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:46	7440-38-2		
Barium	165	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:46	7440-39-3		
Molybdenum	7.5	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:46	7439-98-7		
Selenium	7.1	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:46	7782-49-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	523	mg/L	10.0	1		03/30/21 13:52			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/30/21 07:23		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	22.6	mg/L	5.0	5		04/01/21 00:55	16887-00-6		
Fluoride	1.4	mg/L	0.20	1		04/01/21 00:08	16984-48-8		
Sulfate	81.7	mg/L	5.0	5		04/01/21 00:55	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: MW-6		Lab ID: 60364899006		Collected: 03/25/21 09:53		Received: 03/26/21 06:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	ND	ug/L	100	1	03/31/21 13:36	04/07/21 14:51	7440-42-8		
Calcium	85.7	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:51	7440-70-2		
Lithium	21.4	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:51	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Arsenic	3.1	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:47	7440-38-2		
Barium	159	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:47	7440-39-3		
Molybdenum	8.5	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:47	7439-98-7		
Selenium	8.9	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:47	7782-49-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	508	mg/L	10.0	1		03/30/21 13:52			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/30/21 07:32		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	94.3	mg/L	5.0	5		04/01/21 01:27	16887-00-6		
Fluoride	0.66	mg/L	0.20	1		04/01/21 01:11	16984-48-8		
Sulfate	35.2	mg/L	5.0	5		04/01/21 01:27	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: MW-7		Lab ID: 60364899007		Collected: 03/25/21 10:17		Received: 03/26/21 06:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	125	ug/L	100	1	03/31/21 13:36	04/07/21 14:53	7440-42-8		
Calcium	90.7	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:53	7440-70-2		
Lithium	25.6	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:53	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Arsenic	3.5	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:49	7440-38-2		
Barium	129	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:49	7440-39-3		
Molybdenum	8.0	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:49	7439-98-7		
Selenium	5.5	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:49	7782-49-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	507	mg/L	10.0	1		03/30/21 13:52			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/30/21 07:38		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	111	mg/L	10.0	10		04/01/21 17:17	16887-00-6		
Fluoride	0.85	mg/L	0.20	1		04/01/21 01:43	16984-48-8		
Sulfate	34.4	mg/L	5.0	5		04/01/21 01:59	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: MW-8		Lab ID: 60364899008		Collected: 03/25/21 10:44		Received: 03/26/21 06:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	1920	ug/L	100	1	03/31/21 13:36	04/07/21 14:56	7440-42-8		
Calcium	104	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:56	7440-70-2		
Lithium	36.1	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:56	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Arsenic	2.2	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:51	7440-38-2		
Barium	148	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:51	7440-39-3		
Molybdenum	19.8	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:51	7439-98-7		
Selenium	12.0	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:51	7782-49-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	490	mg/L	10.0	1		03/30/21 13:52			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	6.7	Std. Units	0.10	1		03/30/21 07:42		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	33.1	mg/L	5.0	5		04/01/21 02:31	16887-00-6		
Fluoride	0.75	mg/L	0.20	1		04/01/21 02:15	16984-48-8		
Sulfate	89.4	mg/L	5.0	5		04/01/21 02:31	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Sample: DUPLICATE		Lab ID: 60364899009		Collected: 03/25/21 23:59		Received: 03/26/21 06:40		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	132	ug/L	100	1	03/31/21 13:36	04/07/21 14:58	7440-42-8		
Calcium	93.6	mg/L	0.20	1	03/31/21 13:36	04/07/21 14:58	7440-70-2		
Lithium	27.3	ug/L	10.0	1	03/31/21 13:36	04/07/21 14:58	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Arsenic	3.6	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:53	7440-38-2		
Barium	133	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:53	7440-39-3		
Molybdenum	7.7	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:53	7439-98-7		
Selenium	5.9	ug/L	1.0	1	03/30/21 09:13	04/07/21 12:53	7782-49-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	518	mg/L	10.0	1		03/30/21 13:52			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	6.7	Std. Units	0.10	1		03/30/21 08:19		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	115	mg/L	10.0	10		04/01/21 17:33	16887-00-6		
Fluoride	0.85	mg/L	0.20	1		04/01/21 02:46	16984-48-8		
Sulfate	34.1	mg/L	5.0	5		04/01/21 03:02	14808-79-8		

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Sample: MW-1		Lab ID: 60364900001	Collected: 03/25/21 09:24	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	04/14/21 12:20	13982-63-3	
	EPA 903.1	0.226 ± 0.444 (0.798) C:NA T:92%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	04/15/21 12:23	15262-20-1	
	EPA 904.0	1.21 ± 0.567 (1.00) C:72% T:82%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	04/16/21 09:15	7440-14-4	
	Total Radium Calculation	1.44 ± 1.01 (1.80)					

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Sample: MW-2		Lab ID: 60364900002	Collected: 03/25/21 11:31	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.115 ± 0.451 (0.864) C:NA T:92%		pCi/L	04/14/21 12:20	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	1.12 ± 0.539 (0.960) C:72% T:85%		pCi/L	04/15/21 12:23	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	1.24 ± 0.990 (1.82)		pCi/L	04/16/21 09:15	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Sample: MW-3		Lab ID: 60364900003	Collected: 03/25/21 11:07	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	04/14/21 12:20	13982-63-3	
	EPA 903.1	0.703 ± 0.445 (0.502) C:NA T:96%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	04/15/21 12:23	15262-20-1	
	EPA 904.0	1.61 ± 0.653 (1.08) C:73% T:73%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	04/16/21 09:15	7440-14-4	
	Total Radium Calculation	2.31 ± 1.10 (1.58)					

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Sample: MW-4R		Lab ID: 60364900004	Collected: 03/25/21 08:14	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.173 ± 0.407 (0.754) C:NA T:91%		pCi/L	04/14/21 11:58	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	0.464 ± 0.440 (0.907) C:69% T:82%		pCi/L	04/15/21 12:25	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	0.637 ± 0.847 (1.66)		pCi/L	04/16/21 09:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Sample: MW-5		Lab ID: 60364900005	Collected: 03/25/21 08:49	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.120 ± 0.371 (0.718) C:NA T:91%		pCi/L	04/14/21 12:20	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	2.19 ± 0.706 (1.00) C:73% T:80%		pCi/L	04/15/21 12:23	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	2.31 ± 1.08 (1.72)		pCi/L	04/16/21 09:15	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Sample: MW-6		Lab ID: 60364900006	Collected: 03/25/21 09:53	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.560 ± 0.477 (0.670) C:NA T:87%		pCi/L	04/14/21 12:20	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	1.69 ± 0.595 (0.880) C:67% T:88%		pCi/L	04/15/21 12:23	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	2.25 ± 1.07 (1.55)		pCi/L	04/16/21 09:15	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Sample: MW-7		Lab ID: 60364900007	Collected: 03/25/21 10:17	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.660 ± 0.593 (0.900) C:NA T:94%		pCi/L	04/14/21 12:20	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	1.52 ± 0.545 (0.824) C:75% T:87%		pCi/L	04/15/21 12:23	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	2.18 ± 1.14 (1.72)		pCi/L	04/16/21 09:15	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Sample: MW-8		Lab ID: 60364900008	Collected: 03/25/21 10:44	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	04/14/21 12:20	13982-63-3	
	EPA 903.1	0.504 ± 0.527 (0.825) C:NA T:88%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	04/15/21 12:23	15262-20-1	
	EPA 904.0	2.35 ± 0.745 (1.01) C:74% T:72%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	04/16/21 09:15	7440-14-4	
	Total Radium Calculation	2.85 ± 1.27 (1.84)					

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

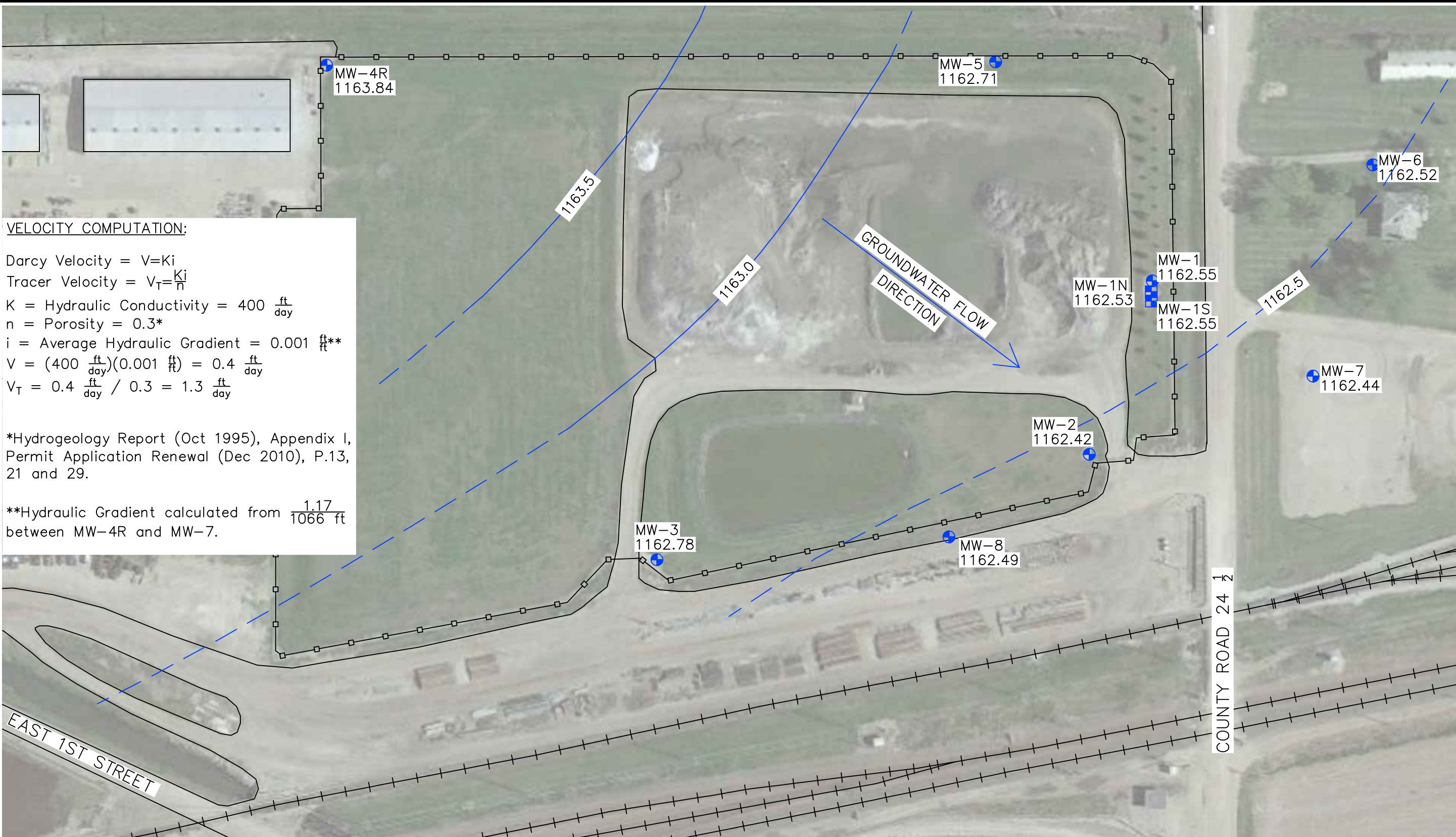
Pace Project No.: 60364900

Sample: DUPLICATE		Lab ID: 60364900009	Collected: 03/25/21 23:59	Received: 03/26/21 06:40	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	-0.0631 ± 0.539 (1.10) C:NA T:93%		pCi/L	04/14/21 12:20	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	1.98 ± 0.667 (0.984) C:75% T:81%		pCi/L	04/15/21 12:24	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	1.98 ± 1.21 (2.08)		pCi/L	04/16/21 09:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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C:\Users\4019ren\Desktop\WORKING PROJECT FILES\FDU\2021\DWG\Q1 2021 Groundwater Contours_EAA.dwg Apr 29, 2021 - 2:17pm Layout Name: 11x17 By: 4019reb



VELOCITY COMPUTATION:

Darcy Velocity = $V=Ki$
Tracer Velocity = $V_T=\frac{Ki}{n}$
 K = Hydraulic Conductivity = $400 \frac{ft}{day}$
 n = Porosity = 0.3^*
 i = Average Hydraulic Gradient = $0.001 \frac{ft}{ft}^{**}$
 $V = (400 \frac{ft}{day})(0.001 \frac{ft}{ft}) = 0.4 \frac{ft}{day}$
 $V_T = 0.4 \frac{ft}{day} / 0.3 = 1.3 \frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{1.17}{1066 ft}$ between MW-4R and MW-7.

LEGEND

+	RAILROAD TRACKS	—	ESTIMATED POTENTIOMETRIC CONTOUR
□	FENCE	—	POTENTIOMETRIC CONTOUR
●	MONITORING WELL	1162.50	FEET ABOVE MEAN SEA LEVEL
■	PIEZOMETER		

NOTES:

1. DEPTHS TO GROUNDWATER MEASURED 3/25/2021.
2. GROUNDWATER DATA FROM MW-1N AND MW-1S WERE NOT USED IN THE CALCULATION OF GROUNDWATER CONTOURS.



CK. BY	REV.	DATE	SHEET TITLE		PROJECT TITLE
			POTENTIOMETRIC CONTOUR MAP		
			CLIENT		FREMONT DEPARTMENT OF UTILITIES LON D. WRIGHT POWER PLANT FREMONT, NEBRASKA
			SCS ENGINEERS 14755 GROVER STREET OMAHA, NEBRASKA 68144 PH: (402) 984-6202 FAX: (402) 984-6203 PROJ. NO. 27219045.02 DWN. BY: MRK CHK. BY: CJ DSK. BY: KB		
			CADD FILE: 01 2021 GROUNDWATER CONTOURS_EAA.DWG		DATE: 4/21/21
			FIGURE NO. 1		

3. Field Activity Summary

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-1
 Date(s): 3/25/21

Field Team Members

Name: J. Warth Affiliation: SCS Engineers
 Name: D. Durham Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 39 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good Locks

Yes	No
☒	☐

 Casing ↓ Protective Casing

☒	☐

 Protective Casing ↓ Well

☐	☒

 Reference Mark/Identification ↓

Groundwater Level Measurements

Date/Time Measured: 3/25/21 09:13 Total Depth: 29.00 feet below TOC
 Static Water Level: 18.15 feet below TOC
 TD - SWL: 10.85 water column (ft.)

Purging Activities

Purged By: J. Warth Purge Date: 3/25/21
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 10.85 × 10 = 108.5 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 9.80 pH 7.34 ORP 217
 Sp. Cond. 0.795 Turbidity 1.7 DO 4.84
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	10%		0.2 SU		10%		Water Level (ft below TOC)
			Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	
09:18	500	200	10.46	7.13	227	0.813	4.5	4.89	18.15
09:21	1100	200	10.62	7.01	232	0.824	6.7	5.19	18.15
09:24	1700	200	10.66	6.94	234	0.827	7.2	5.28	18.15

Sampling Activities

Sampled By: J. Warth Sample Date/Time: 3/25/21 09:24
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 10.66 pH 6.94 ORP 234
 Sp. Cond. 0.827 Turbidity 7.2 DO 5.28
 Water Level 18.15 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

MW-1N WL - 18.94
MW-1S WL - 18.92

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-2
 Date(s): 3/25/21

Field Team Members

Name: J. Warth Affiliation: SCS Engineers
 Name: D. Durham Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 43 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good
 Casing ↓
 Protective Casing ↓
 Reference Mark/Identification ↓

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 10/25/21 11:19
 Total Depth: 28.00 feet below TOC
 Static Water Level: 14.54 feet below TOC
 TD - SWL: 13.46 water column (ft.)

Purging Activities

Purged By: J. Warth Purge Date: 3/25/21
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other (circle one)
 Purge Volume Calculation: 13.46 x 10 = 134.6 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 11.13 pH 7.24 ORP 203
 Sp. Cond. 0.765 Turbidity 0.0 DO 6.18
 Physical appearance of purge water: clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
11:25	500	200	10.40	7.13	207	0.765	0.0	5.32	14.54
11:28	1100	200	10.30	7.02	208	0.761	0.0	4.82	14.54
11:31	1700	200	10.17	6.98	209	0.760	0.0	4.60	14.54

Sampling Activities

Sampled By: J. Warth Sample Date/Time: 3/25/21 11:31
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 10.17 pH 6.98 ORP 209
 Sp. Cond. 0.760 Turbidity 0.0 DO 4.60
 Water Level 14.54 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____

Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-3
 Date(s): 3/25/21

Field Team Members

Name: J. Warth Affiliation: SCS Engineers
 Name: D. Durham Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 43 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good Locks

Yes	No
☒	☐

 Casing ↓ Protective Casing

☒	☐

 Protective Casing ↓ Well

☐	☒

 Reference Mark/Identification ↓

Groundwater Level Measurements

Date/Time Measured: 3/25/21 10:56 Total Depth: 28.00 feet below TOC
 Static Water Level: 15.71 feet below TOC
 TD - SWL: 12.29 water column (ft.)

Purging Activities

Purged By: J. Warth Purge Date: 3/25/21
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 12.29 x 10 = 122.9 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 11.85 pH 7.15 ORP 214
 Sp. Cond. 0.802 Turbidity 0.3 DO 4.16
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	10%			10%			Water Level (ft below TOC)
			Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	
11:01	509	200	11.96	7.02	218	0.809	0.4	4.00	15.62
11:04	1100	200	12.14	6.92	218	0.817	0.1	4.22	15.65
11:07	1700	200	12.28	6.89	216	0.826	0.0	4.31	15.69

Sampling Activities

Sampled By: J. Warth Sample Date/Time: 3/25/21 11:07
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 12.28 pH 6.89 ORP 216
 Sp. Cond. 0.826 Turbidity 0.0 DO 4.31
 Water Level 15.69 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-4R
 Date(s): 3/25/21

Field Team Members

Name: J. Warth Affiliation: SCS Engineers
 Name: D. Dunham Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 39 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good
 Casing ↓
 Protective Casing ↓
 Reference Mark/Identification ↓

Locks

	Yes	No
Protective Casing	<u>X</u>	
Well		<u>X</u>

Groundwater Level Measurements

Date/Time Measured: 3/25/21 07:49

Total Depth: 28.00 feet below TOC
 Static Water Level: 14.45 feet below TOC
 TD - SWL: 13.55 water column (ft.)

Purging Activities

Purged By: J. Warth Purge Date: 3/25/21
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other (circle one)
 Purge Volume Calculation: 13.55 x 10 = 135.5 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 11.35 pH 9.12 ORP 150
 Sp. Cond. 0.699 Turbidity 0.2 DO 6.90
 Physical appearance of purge water: clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	10%		Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
				10%	0.2 SU				
07:56	500	200	10.36	8.60	191	0.605	0.0	5.56	14.46
07:59	1100	200	10.15	8.09	202	0.539	0.0	5.85	14.46
08:02	1700	200	10.04	7.86	206	0.527	0.0	5.72	14.46
08:05	2300	200	10.00	7.62	211	0.521	0.0	5.74	14.46
08:08	2900	200	9.94	7.45	215	0.520	0.0	5.70	14.46
08:11	3500	200	9.93	7.33	218	0.518	0.0	5.77	14.46
08:14	3800	200	9.89	7.25	221	0.518	0.0	5.67	14.46

Sampling Activities

Sampled By: J. Warth Sample Date/Time: 3/25/21 08:14
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 9.89 pH 7.25 ORP 221
 Sp. Cond. 0.518 Turbidity 0.0 DO 5.67
 Water Level 14.46 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____

Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MU-5
 Date(s): 3/25/21

Field Team Members

Name: J. Warth Affiliation: SCS Engineers
 Name: D. Dunham Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 39 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good
 Casing ↓
 Protective Casing ↓
 Reference Mark/Identification ↓

Locks	Yes	No
Protective Casing	x	
Well		x

Groundwater Level Measurements

Date/Time Measured: 3/25/21 08:35
 Total Depth: 28.00 feet below TOC
 Static Water Level: 14.61 feet below TOC
 TD - SWL: 13.39 water column (ft.)

Purging Activities

Purged By: J. Warth Purge Date: 3/25/21
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 13.39 x 10 = 133.9 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 10.07 pH 7.36 ORP 208
 Sp. Cond. 0.760 Turbidity 2.2 DO 4.91
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	10%		0.2 SU		10%		Water Level (ft below TOC)
			Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	
08:43	500	200	10.49	7.14	225	0.813	7.9	4.83	14.61
08:46	1100	200	10.77	7.08	230	0.837	11.8	5.15	14.63
08:49	1700	200	10.84	7.06	232	0.846	11.3	5.24	14.68

Sampling Activities

Sampled By: J. Warth Sample Date/Time: 3/25/21 08:49
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 10.84 pH 7.06 ORP 232
 Sp. Cond. 0.846 Turbidity 11.3 DO 5.24
 Water Level 14.68 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-6
 Date(s): 3/25/21

Field Team Members

Name: J. Warth Affiliation: SCS Engineers
 Name: D. Dunham Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 41 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good Locks

Yes	No
☒	☐
☐	☒

 Casing ↓ Protective Casing ✓
 Protective Casing ↓ Well ✓
 Reference Mark/Identification ↓

Groundwater Level Measurements

Date/Time Measured: 3/25/21 09:42 Total Depth: 28.00 feet below TOC
 Static Water Level: 15.02 feet below TOC
 TD - SWL: 12.98 water column (ft.)

Purging Activities

Purged By: J. Warth Purge Date: 3/25/21
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 12.98 × 10 = 129.8 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 9.05 pH 7.01 ORP 219
 Sp. Cond. 0.921 Turbidity 2.9 DO 6.03
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	10%		10%		Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
			Temp (°C)	pH	ORP (mV)	0.2 SU				
09:47	500	200	10.61	6.90	231		0.902	2.8	4.78	14.90
09:50	1100	200	10.93	6.89	234		0.896	6.4	4.54	14.92
09:53	1700	200	11.02	6.87	236		0.896	7.6	4.49	14.92

Sampling Activities

Sampled By: J. Warth Sample Date/Time: 3/25/21 09:53
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 11.02 pH 6.87 ORP 236
 Sp. Cond. 0.896 Turbidity 7.6 DO 4.49
 Water Level 14.92 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____

Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-7
 Date(s): 3/25/21

Field Team Members

Name: J. Warth Affiliation: SCS Engineers
 Name: D. Dunham Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 43 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good Locks

Yes	No
<u>X</u>	
	<u>X</u>

 Casing ↓ Protective Casing X
 Protective Casing ↓ Well X
 Reference Mark/Identification ↓

Groundwater Level Measurements

Date/Time Measured: 3/25/21 10:07 Total Depth: 28.00 feet below TOC
 Static Water Level: 14.68 feet below TOC
 TD - SWL: 13.32 water column (ft.)

Purging Activities

Purged By: J. Warth Purge Date: 3/25/21
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 13.32 x 10 = 133.2 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 9.50 pH 7.32 ORP 213
 Sp. Cond. 0.816 Turbidity 3.6 DO 5.20
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	10%		0.2 SU		10%		Water Level (ft below TOC)
			Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	
10:11	500	200	10.67	7.08	220	0.877	1.0	4.09	14.70
10:14	1100	200	10.98	6.98	222	0.898	2.4	3.90	14.70
10:17	1700	200	11.11	6.91	224	0.903	3.4	3.82	14.70

Sampling Activities

Sampled By: J. Warth Sample Date/Time: 3/25/21 10:17
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 11.11 pH 6.91 ORP 224
 Sp. Cond. 0.903 Turbidity 3.4 DO 3.82
 Water Level 14.70 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Dup taken here @ 23:59

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-8
 Date(s): 3/25/21

Field Team Members

Name: J. Warth Affiliation: SCS Engineers
 Name: D. Dunham Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 43 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: (None) Light Heavy Sky: (Cloudy) Sunny (Partly)

Well Observations

Well Pad Good Locks

Yes	No
☒	☐
☐	☒

 Casing ↓ Protective Casing Well
 Protective Casing Well
 Reference Mark/Identification ↓

Groundwater Level Measurements

Date/Time Measured: 3/25/21 10:33 Total Depth: 28.00 feet below TOC
 Static Water Level: 14.87 feet below TOC
 TD - SWL: 13.13 water column (ft.)

Purging Activities

Purged By: J. Warth Purge Date: 3/25/21
 Purge Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 13.13 x 10 = 131.3 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 10.30 pH 7.32 ORP 217
 Sp. Cond. 0.776 Turbidity 6.7 DO 6.26
 Physical appearance of purge water: Clear

		10%		0.2 SU		10%			
Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:35	500	200	10.94	7.12	221	0.793	3.8	4.93	14.87
10:38	1100	200	11.26	6.99	224	0.797	2.4	4.30	14.87
10:41	1700	200	11.48	6.88	225	0.797	1.2	4.09	14.87
10:44	2300	200	11.51	6.82	226	0.798	1.8	4.10	14.87

Sampling Activities

Sampled By: J. Warth Sample Date/Time: 3/25/21 10:44
 Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 11.51 pH 6.82 ORP 226
 Sp. Cond. 0.798 Turbidity 1.8 DO 4.10
 Water Level 14.87 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ Date: _____

QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

QC Batch:	711886	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3010	Analysis Description:	6010 MET
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009		

METHOD BLANK:	2864852	Matrix:	Water
Associated Lab Samples:	60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	04/07/21 14:16	
Calcium	mg/L	ND	0.20	04/07/21 14:16	
Lithium	ug/L	ND	10.0	04/07/21 14:16	

LABORATORY CONTROL SAMPLE: 2864853						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	913	91	80-120	
Calcium	mg/L	10	9.6	96	80-120	
Lithium	ug/L	1000	997	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864854 2864855												
Parameter	Units	60364899001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	146	1000	1000	1070	1050	92	90	75-125	2	20	
Calcium	mg/L	112	10	10	121	118	82	58	75-125	2	20	M1
Lithium	ug/L	37.0	1000	1000	1020	1020	99	98	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

QC Batch:	711451	Analysis Method:	EPA 6020
QC Batch Method:	EPA 3010	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009		

METHOD BLANK:	2863549	Matrix:	Water
Associated Lab Samples:	60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	1.0	04/07/21 12:28	
Barium	ug/L	ND	1.0	04/07/21 12:28	
Molybdenum	ug/L	ND	1.0	04/07/21 12:28	
Selenium	ug/L	ND	1.0	04/07/21 12:28	

LABORATORY CONTROL SAMPLE: 2863550						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	40	39.8	99	80-120	
Barium	ug/L	40	39.8	100	80-120	
Molybdenum	ug/L	40	42.0	105	80-120	
Selenium	ug/L	40	38.5	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:			2863551		2863552							
Parameter	Units	60364899001	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Max	Qual
		Result	Spike	Spike								
Arsenic	ug/L	3.0	40	40	43.2	42.9	100	100	75-125	1	20	
Barium	ug/L	173	40	40	217	216	110	107	75-125	1	20	
Molybdenum	ug/L	7.0	40	40	51.0	51.1	110	110	75-125	0	20	
Selenium	ug/L	9.5	40	40	46.4	45.8	92	91	75-125	1	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

QC Batch:	711699	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009		

METHOD BLANK:	2864306	Matrix:	Water
Associated Lab Samples:	60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	03/30/21 13:48	

LABORATORY CONTROL SAMPLE:	2864307					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	999	100	80-120	

SAMPLE DUPLICATE:	2864308					
Parameter	Units	60364830001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1770	1760	1	10	

SAMPLE DUPLICATE:	2864309					
Parameter	Units	60364787011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3020	3010	0	10	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

QC Batch:	711397	Analysis Method:	EPA 9040
QC Batch Method:	EPA 9040	Analysis Description:	9040 pH
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008		

SAMPLE DUPLICATE: 2863396

Parameter	Units	60364899002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	6.9	1	10	H6

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

QC Batch: 711536

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60364899009

SAMPLE DUPLICATE: 2863735

Parameter	Units	60364899009 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.7	6.8	1	10	H6

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02
Pace Project No.: 60364899

QC Batch:	711870	Analysis Method:	EPA 9056
QC Batch Method:	EPA 9056	Analysis Description:	9056 IC Anions
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009		

METHOD BLANK: 2864810 Matrix: Water
Associated Lab Samples: 60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/31/21 16:45	
Fluoride	mg/L	ND	0.20	03/31/21 16:45	
Sulfate	mg/L	ND	1.0	03/31/21 16:45	

METHOD BLANK: 2865824 Matrix: Water
Associated Lab Samples: 60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/01/21 09:13	
Fluoride	mg/L	ND	0.20	04/01/21 09:13	
Sulfate	mg/L	ND	1.0	04/01/21 09:13	

METHOD BLANK: 2866566 Matrix: Water
Associated Lab Samples: 60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/01/21 09:11	
Fluoride	mg/L	ND	0.20	04/01/21 09:11	
Sulfate	mg/L	ND	1.0	04/01/21 09:11	

METHOD BLANK: 2866617 Matrix: Water
Associated Lab Samples: 60364899001, 60364899002, 60364899003, 60364899004, 60364899005, 60364899006, 60364899007, 60364899008, 60364899009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/02/21 08:14	
Fluoride	mg/L	ND	0.20	04/02/21 08:14	
Sulfate	mg/L	ND	1.0	04/02/21 08:14	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

LABORATORY CONTROL SAMPLE: 2864811

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	80-120	
Fluoride	mg/L	2.5	2.4	97	80-120	
Sulfate	mg/L	5	5.1	103	80-120	

LABORATORY CONTROL SAMPLE: 2865825

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	80-120	
Fluoride	mg/L	2.5	2.4	96	80-120	
Sulfate	mg/L	5	5.0	100	80-120	

LABORATORY CONTROL SAMPLE: 2866567

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	80-120	
Fluoride	mg/L	2.5	2.4	95	80-120	
Sulfate	mg/L	5	5.0	100	80-120	

LABORATORY CONTROL SAMPLE: 2866618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	80-120	
Fluoride	mg/L	2.5	2.5	102	80-120	
Sulfate	mg/L	5	5.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2864812 2864813

Parameter	Units	20194114001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	<500	2500	2500	3120	2700	110	93	80-120	14	15	
Fluoride	mg/L	<100	1250	1250	1540	1300	123	104	80-120	17	15	M1,R1
Sulfate	mg/L	9360	2500	2500	10700	9720	54	15	80-120	10	15	E,M1

SAMPLE DUPLICATE: 2864814

Parameter	Units	20194114002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	<1.0	ND		15	
Fluoride	mg/L	<0.20	ND		15	
Sulfate	mg/L	8.4	8.5	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E Analyte concentration exceeded the calibration range. The reported result is estimated.

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City of Fremont/27219045.02

Pace Project No.: 60364899

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60364899001	MW-1	EPA 3010	711886	EPA 6010	711980
60364899002	MW-2	EPA 3010	711886	EPA 6010	711980
60364899003	MW-3	EPA 3010	711886	EPA 6010	711980
60364899004	MW-4R	EPA 3010	711886	EPA 6010	711980
60364899005	MW-5	EPA 3010	711886	EPA 6010	711980
60364899006	MW-6	EPA 3010	711886	EPA 6010	711980
60364899007	MW-7	EPA 3010	711886	EPA 6010	711980
60364899008	MW-8	EPA 3010	711886	EPA 6010	711980
60364899009	DUPLICATE	EPA 3010	711886	EPA 6010	711980
60364899001	MW-1	EPA 3010	711451	EPA 6020	711677
60364899002	MW-2	EPA 3010	711451	EPA 6020	711677
60364899003	MW-3	EPA 3010	711451	EPA 6020	711677
60364899004	MW-4R	EPA 3010	711451	EPA 6020	711677
60364899005	MW-5	EPA 3010	711451	EPA 6020	711677
60364899006	MW-6	EPA 3010	711451	EPA 6020	711677
60364899007	MW-7	EPA 3010	711451	EPA 6020	711677
60364899008	MW-8	EPA 3010	711451	EPA 6020	711677
60364899009	DUPLICATE	EPA 3010	711451	EPA 6020	711677
60364899001	MW-1	SM 2540C	711699		
60364899002	MW-2	SM 2540C	711699		
60364899003	MW-3	SM 2540C	711699		
60364899004	MW-4R	SM 2540C	711699		
60364899005	MW-5	SM 2540C	711699		
60364899006	MW-6	SM 2540C	711699		
60364899007	MW-7	SM 2540C	711699		
60364899008	MW-8	SM 2540C	711699		
60364899009	DUPLICATE	SM 2540C	711699		
60364899001	MW-1	EPA 9040	711397		
60364899002	MW-2	EPA 9040	711397		
60364899003	MW-3	EPA 9040	711397		
60364899004	MW-4R	EPA 9040	711397		
60364899005	MW-5	EPA 9040	711397		
60364899006	MW-6	EPA 9040	711397		
60364899007	MW-7	EPA 9040	711397		
60364899008	MW-8	EPA 9040	711397		
60364899009	DUPLICATE	EPA 9040	711536		
60364899001	MW-1	EPA 9056	711870		
60364899002	MW-2	EPA 9056	711870		
60364899003	MW-3	EPA 9056	711870		
60364899004	MW-4R	EPA 9056	711870		
60364899005	MW-5	EPA 9056	711870		
60364899006	MW-6	EPA 9056	711870		
60364899007	MW-7	EPA 9056	711870		
60364899008	MW-8	EPA 9056	711870		
60364899009	DUPLICATE	EPA 9056	711870		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

QC Batch:	441720	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	60364900001, 60364900002, 60364900003, 60364900004, 60364900005, 60364900006, 60364900007, 60364900008, 60364900009		

METHOD BLANK: 2132297 Matrix: Water

Associated Lab Samples: 60364900001, 60364900002, 60364900003, 60364900004, 60364900005, 60364900006, 60364900007, 60364900008, 60364900009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.231 ± 0.377 (0.819) C:74% T:81%	pCi/L	04/15/21 12:25	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

QC Batch:	441719	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	60364900001, 60364900002, 60364900003, 60364900004, 60364900005, 60364900006, 60364900007, 60364900008, 60364900009		

METHOD BLANK: 2132296 Matrix: Water

Associated Lab Samples: 60364900001, 60364900002, 60364900003, 60364900004, 60364900005, 60364900006, 60364900007, 60364900008, 60364900009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.183 ± 0.221 (0.601) C:NA T:91%	pCi/L	04/14/21 11:58	

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QUALIFIERS

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City of Fremont/27219045.02

Pace Project No.: 60364900

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60364900001	MW-1	EPA 903.1	441719		
60364900002	MW-2	EPA 903.1	441719		
60364900003	MW-3	EPA 903.1	441719		
60364900004	MW-4R	EPA 903.1	441719		
60364900005	MW-5	EPA 903.1	441719		
60364900006	MW-6	EPA 903.1	441719		
60364900007	MW-7	EPA 903.1	441719		
60364900008	MW-8	EPA 903.1	441719		
60364900009	DUPLICATE	EPA 903.1	441719		
60364900001	MW-1	EPA 904.0	441720		
60364900002	MW-2	EPA 904.0	441720		
60364900003	MW-3	EPA 904.0	441720		
60364900004	MW-4R	EPA 904.0	441720		
60364900005	MW-5	EPA 904.0	441720		
60364900006	MW-6	EPA 904.0	441720		
60364900007	MW-7	EPA 904.0	441720		
60364900008	MW-8	EPA 904.0	441720		
60364900009	DUPLICATE	EPA 904.0	441720		
60364900001	MW-1	Total Radium Calculation	443615		
60364900002	MW-2	Total Radium Calculation	443615		
60364900003	MW-3	Total Radium Calculation	443615		
60364900004	MW-4R	Total Radium Calculation	443615		
60364900005	MW-5	Total Radium Calculation	443615		
60364900006	MW-6	Total Radium Calculation	443615		
60364900007	MW-7	Total Radium Calculation	443615		
60364900008	MW-8	Total Radium Calculation	443615		
60364900009	DUPLICATE	Total Radium Calculation	443625		

REPORT OF LABORATORY ANALYSIS

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4. Appendices

**Groundwater Elevation Summary
Fremont Utilities FFCA Monofill
First Quarter 2021**

Well Name	Hydraulic Location	Top of Casing Elevation	Depth to Groundwater (March 2021)	Groundwater Elevation (March 2021)
MW-1	Downgradient	1180.70	18.15	1162.55
MW-1N	Downgradient	1181.47	18.94	1162.53
MW-1S	Downgradient	1181.47	18.92	1162.55
MW-2	Downgradient	1176.96	14.54	1162.42
MW-3	Downgradient	1178.49	15.71	1162.78
MW-4R	Upgradient	1178.29	14.45	1163.84
MW-5	Downgradient	1177.32	14.61	1162.71
MW-6	Downgradient	1177.54	15.02	1162.52
MW-7	Downgradient	1177.12	14.68	1162.44
MW-8	Downgradient	1177.36	14.87	1162.49



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A		Section B		Section C		Page: of	
Required Client Information:		Required Project Information:		Invoice Information:			
Company:	SCS Engineers	Report To:	Joel Stenberg	Attention:	Joel Stenberg		
Address:	14755 Grover Street	Copy To:	Rebecca Blankenau (rblankenau@scsengineers.com)	Company Name:	SCS Engineers		
	Omaha NE 68144			Address:			
Email To:	jstenberg@scsengineers.com	Purchase Order No.:		Pace Quote Reference:			
Phone:	402-938-0320	Project Name:	City of Fremont	Pace Project Manager:	Trudy Gipson	913-563-1405	
Requested Due Date/TAT:	Standard	Project Number:	27219045.02	Pace Profile #:	9797	Line 1	
				REGULATORY AGENCY			
				☐ NPDES	☐ GROUND WATER	☐ DRINKING WATER	
				☐ UST	☐ RCRA	☐ OTHER	
				Site Location		NE	
				STATE:			

[illegible][illegible]

Page 25 of 25

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

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

Internal Transfer Chain of Custody



☒ Samples Pre-Logged into eCOC.

State Of Origin: NE
 Cert. Needed: ☐ Yes ☒ No



Workorder: 60364900 Workorder Name: City of Fremont/27219045.02

Owner Received Date: 3/26/2021 Results Requested By: 4/19/2021

Trudy Gipson
 Pace Analytical Kansas
 9608 Loiret Blvd.
 Lenexa, KS 66219
 Phone 1(913)563-1405

Pace Analytical Pittsburgh
 1638 Roseytown Road
 Suites 2,3, & 4
 Greensburg, PA 15601
 Phone (724)850-5600

Report To: Subcontract To: Requested Analysis:

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HNO3	Preserved Containers	903.1 Radium-226	904.0 Radium-228 & Total Radium	LAB USE ONLY
1	MM-1	PS	3/25/2021 09:24	60364900001	Water	2		X	X	001
2	MM-2	PS	3/25/2021 11:31	60364900002	Water	2		X	X	002
3	MM-3	PS	3/25/2021 11:07	60364900003	Water	2		X	X	003
4	MM-4R	PS	3/25/2021 08:14	60364900004	Water	2		X	X	004
5	MM-5	PS	3/25/2021 08:49	60364900005	Water	2		X	X	005
6	MM-6	PS	3/25/2021 09:53	60364900006	Water	2		X	X	006
7	MM-7	PS	3/25/2021 10:17	60364900007	Water	2		X	X	007
8	MM-8	PS	3/25/2021 10:44	60364900008	Water	2		X	X	008
9	DUPLICATE	PS	3/25/2021 23:59	60364900009	Water	2		X	X	009

Comments

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	°C	Custody Seal (Y) or N	Received on Ice (Y) or (N)	Samples Intact (Y) or N
1	Trudy Gipson	3/26/21 18:00	Trudy Gipson	3/30/21 10:30					
2									
3									

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

MO#: 30412695
 30412695



Attachment A. Compliance Statistical Analysis

Lon D. Wright Power Plant Statistical Summary of March 2021 Data

City of Fremont Department of Utilities
401 E Military Road
Fremont, Nebraska 68025

SCS ENGINEERS

27219045.02 | April 27, 2021

SCS Engineers
14755 Grover Street
Omaha, NE 68144
402 938-0327

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A.2 Intrawell Prediction Limits	
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A.4 Sen's Slope/Mann-Kendall Analysis	
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1 EVALUATION OF ANALYTICAL RESULTS

1.1 SITE-SPECIFIC STATISTICAL PROGRAM

Statistical analysis consisted of methods outlined in the Groundwater Monitoring Plan (GMP) (revised November 2019), 40 CFR Part 257, Subpart D (CCR rule) and EPA's Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance (Unified Guidance) dated March 2009 using Sanitas™ Statistical Software version 9.6.28. An intrawell statistical approach is the primary statistical method and interwell comparisons are supplementary statistical analyses used to give context to intrawell statistical results. If no intrawell statistical exceedance is noted, the additional statistical analysis is not used to make assessment monitoring determinations. Constituent/well pairs with intrawell prediction limit statistical exceedances that do not have a statistically significant increasing trend and exceed the interwell prediction limit do not show evidence of dramatic increase above background and, therefore, do not qualify for assessment monitoring. However, if one or more constituent/well pair statistically exceeds the background, using an intrawell statistical approach, but does not exceed the GWPS, using confidence intervals, then assessment monitoring procedures for the site will continue and no changes to the sampling schedule are necessary. Based on current understanding of the Federal CCR rule, when assessment monitoring is required at one well then all wells must be in assessment monitoring. This understanding does not conflict with GMP requirements.

Since the site remains in assessment monitoring, each well at the site was sampled and analyzed following assessment monitoring procedures. During the March 2021 event, samples from each well were analyzed for Appendix III constituents and Appendix IV constituents that were detected during the previous sampling event. Detected Appendix III and Appendix IV constituent results were analyzed using time series plots, intrawell prediction limit analysis, interwell prediction limit analysis, Sen's slope trend analyses, and confidence interval analysis. The statistical results have been summarized in **Table 1** at the end of this Section.

Statistical output charts and tables are included in **Attachment A**.

1.2 COMPLIANCE STATISTICAL ANALYSIS

Compliance statistical analysis was performed on data collected from the March 2021 sampling event. Pertinent statistical results are summarized in **Table 1** at the end of this Section.

1.2.1 Time Series Plots

Time series plots were prepared for Appendix III and Appendix IV constituents to show the concentration variations over time. Time series graphs are included in **Attachment A.1**.

1.2.2 Intrawell Prediction Limits

An intrawell prediction limit analysis compares the historical data of a well to its own compliance data. The historical data is used to calculate the prediction limit that is compared to the compliance data point. If a compliance data point exceeds the calculated prediction limit, then an initial exceedance is noted; however, this may not indicate a statistical significant increase (SSI). The distribution of the data was calculated by applying the Shapiro-Wilk test for normality or the Ladder of Powers (Helsel & Hirsh, 1992) for transformed data. A parametric prediction limit was constructed for data determined to have a normal or transformed normal distribution. A non-parametric

prediction limit was calculated for data not transformed normal or containing 51 percent to 90 percent non-detect results.

Intrawell prediction limits were used to statistically evaluate the detected constituents in each monitoring well using an established background dataset from October 2016 through June 2018, with the exceptions noted below.

- MW-2 sulfate: October 2016 – April 2017 and July 2017 – June 2018
- MW-4R chloride: October 2016 – June 2017 and August 2017 – June 2018
- MW-4R lead: October 2016 and January 2017 – June 2018
- MW-4R selenium: October 2016 – June 2017 and August 2017 – June 2018
- MW-6 chloride: October 2016 – September 2017 and June 2018
- MW-8 boron: October 2016 – April 2017 and August 2017 – February 2018

Intrawell prediction limit analysis results are included in **Attachment A.2** and summarized in **Table 1**.

1.2.3 Interwell Prediction Limits

An interwell prediction limit analysis compares data collected from compliance (downgradient) monitoring wells with data collected from the background (upgradient) monitoring wells. Available upgradient monitoring well data (MW-4R) was used to calculate the interwell prediction limit and was used to determine if a single data point is statistically representative of a group of data points. The distribution of the data was calculated by applying the Shapiro-Wilk test for normality, or the Ladder of Powers (Helsel & Hirsh, 1992) for transformed data. A parametric prediction limit was constructed for data determined to have a normal or transformed normal distribution. A non-parametric prediction limit was calculated for data not transformed normal or containing 51 percent to 90 percent of observations less than the laboratory reporting limit (non-detects) results. A Poisson based prediction limit was calculated for data with greater than 90 percent non-detect results.

Intrawell prediction limits were used as a supplementary statistical analysis to provide additional context and evaluation to the statistical evaluation of the detected constituents from the March 2021 sampling event data. Interwell prediction limits analysis results are included in **Attachment A.3** and summarized in **Table 1**.

1.2.4 Sen's Slope/Mann-Kendall Trend Analysis

A Sen's Slope/Mann-Kendall statistical analysis was performed on the detected constituent/well pairs using the background dataset and the March 2021 sampling event to determine trends in the concentration of these constituents. A trend is the general increase or decrease in observed values over time. A trend analysis can be used to determine the significance of an apparent trend and to estimate the magnitude of that trend. The Mann-Kendall test is nonparametric, meaning that it does not depend on an assumption of a particular underlying distribution. The test uses only the relative magnitude of data rather than actual values. Therefore, missing values are allowed, and values that are recorded as non-detects by the laboratory can still be used in the statistical analysis by assigning values equal to half their reporting limits. Sen's Slope is a simple nonparametric procedure developed to estimate the true slope. The advantage of this method over linear regression is that it is not greatly affected by gross data errors or outliers, and can be computed when data is missing or non-detect. If trends are identified, the trends should be identified as increasing or decreasing and should be checked if these trends are occurring in more than one well. Trends can result from naturally occurring changes to the groundwater, seasonal fluctuations, and disturbances from new

well installations or facility activities. Sen's Slope/Mann-Kendall analysis results are included in **Attachment A.4** and summarized in **Table 3**.

1.2.5 Confidence Interval Analysis

Confidence Interval analysis was performed on the detected constituent/well pairs from the March 2021 sampling event. Confidence interval analysis is an intrawell test used to compare the compliance data to a fixed numerical limit (compliance limit). Since the wells are in assessment monitoring, the compliance limit is represented by the groundwater protection standard (GWPS). Based on the Unified Guidance, the confidence interval is bound by an upper and lower limit which defines the most probable range where either the average or median concentration is expected. A potential statistical exceedance is indicated by confidence interval analysis when the lower limit of the confidence interval is above the compliance limit.

The GWPS for lithium and molybdenum were identified in the July 17, 2018 *Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One); Final Rule* (July 2018 EPA CCR Amendment) and were utilized as the compliance limits. The average upgradient concentrations, derived from MW-4R, were used as the compliance limit for boron and calcium since no GWPS exists for either constituent. The confidence interval analysis results are included in **Attachment A.5** and summarized in **Table 1**.

1.2.6 Statistical Summary

The statistical analysis results from the March 2021 sampling event are summarized in **Table 1** below.

Previously identified intrawell exceedances for arsenic (MW-1 and MW-3), chloride (MW-2, MW-4R, and MW-5), and barium, calcium, and selenium (MW-4R) were not identified as intrawell exceedances from the March 2021 sampling event. Intrawell exceedances were noted for boron (MW-2 and MW-5), chloride (MW-1 and MW-8), fluoride (MW-4R), molybdenum (MW-4R), and total dissolved solids (MW-8) without corresponding interwell exceedances, indicating these may not be exceedances above background. Further, none of the constituent/well pairs identified with exceedances above background (with both intrawell and interwell prediction limit exceedances) also statistically exceeded the GWPS (a confidence interval limit exceedance).

Statistical exceedances above background are still present at some wells and no Appendix IV detects statistically exceeded the GWPS. Based on current understanding of the Federal CCR rule, when assessment monitoring is required at one well then all wells must be in assessment monitoring. Therefore, the site will remain in assessment monitoring during the next scheduled sampling event.

Table 1. Statistical Summary

Well	Detected Constituents	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance ¹
MW-1	Barium [total] (ug/L)	173	No	Yes	No	No	No
	Calcium (mg/L)	112	No	Yes	No	Yes	n/a
	Chloride (mg/L)	18.9	Yes	No	Yes, +	No	No
	Fluoride (mg/L)	1.3	No	Yes	No	No	No
	Lithium (ug/L)	37	No	Yes	No	No	No
	Selenium [total] (ug/L)	9.5	No	No	Yes, -	No	No
	Sulfate (mg/L)	58.5	No	Yes	No	No	No
	Total Dissolved Solids (mg/L)	511	No	Yes	Yes, +	No	Yes
	Total Radium (pCi/L)	1.44	No	No	Yes, -	No	No
MW-2	Boron (ug/L)	151	Yes	No	Yes, +	No	n/a
	Calcium (mg/L)	101	No	No	No	Yes	n/a
	Fluoride (mg/L)	1.3	Yes	Yes	No	No	No
	Molybdenum (ug/L)	15.6	Yes	Yes	No	No	No
	Selenium [total] (ug/L)	13.2	No	Yes	No	No	No
	Sulfate (mg/L)	77.2	Yes	Yes	No	No	No
	Total Dissolved Solids (mg/L)	469	No	No	Yes, +	No	No
MW-3	Barium [total] (ug/L)	182	No	Yes	No	No	No
	Calcium (mg/L)	112	No	Yes	Yes, +	Yes	n/a
	Chloride (mg/L)	76.1	Yes	Yes	No	No	No
	Molybdenum (ug/L)	15.4	Yes	Yes	Yes, +	No	No
	pH (Std. Units)	6.8	No	No	Yes, -	No	No
	Sulfate (mg/L)	192	Yes	Yes	Yes, +	No	No
	Total Dissolved Solids (mg/L)	565	Yes	Yes	Yes, +	No	Yes
MW-4R (upgradient)	Barium [total] (ug/L)	133	No		Yes, +	No	No
	Fluoride (mg/L)	1.1	Yes		No	No	No
	Molybdenum (ug/L)	12.9	Yes		No	No	No
MW-5	Barium [total] (ug/L)	165	No	Yes	No	No	No

Well	Detected Constituents	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance ¹
	Boron (ug/L)	258	Yes	No	No	No	n/a
	Calcium (mg/L)	108	No	Yes	No	Yes	n/a
	Fluoride (mg/L)	1.4	No	Yes	No	No	No
	Selenium [total] (ug/L)	7.1	No	No	Yes, -	No	No
	Sulfate (mg/L)	81.7	Yes	Yes	No	No	No
	Total Dissolved Solids (mg/L)	523	No	Yes	No	No	Yes
MW-6	Barium [total] (ug/L)	159	No	Yes	No	No	No
	Chloride (mg/L)	94.3	Yes	Yes	No	No	No
	Total Dissolved Solids (mg/L)	508	No	Yes	No	No	Yes
MW-7	Calcium (mg/L)	90.7	No	No	No	Yes	n/a
	Chloride (mg/L)	111	Yes	Yes	Yes, +	No	No
	Total Dissolved Solids (mg/L)	507	No	Yes	Yes, +	No	Yes
MW-8	Boron (ug/L)	1920	Yes	Yes	Yes, +	No	n/a
	Calcium (mg/L)	104	Yes	Yes	No	Yes	n/a
	Chloride (mg/L)	33.1	Yes	No	Yes, +	No	No
	Lithium (ug/L)	36.1	Yes	Yes	No	No	No
	Molybdenum (ug/L)	19.8	Yes	Yes	No	No	No
	pH (Std. Units)	6.7	No	No	Yes, -	No	No
	Selenium [total] (ug/L)	12	No	Yes	No	No	No
	Sulfate (mg/L)	89.4	Yes	Yes	No	No	No
	Total Dissolved Solids (mg/L)	490	Yes	No	Yes, +	No	No

¹GWPS exceedances were established by the NDEQ Title 118 Groundwater Quality Standards or the July 2018 EPA CCR Amendment.

²No interwell statistical comparison was performed on the upgradient well MW-4R.

n/a - No GWPS has been established.

2 GENERAL COMMENTS

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3 REFERENCES

HDR, Appendix D Groundwater Monitoring Plan for Fremont Department of Utilities Fossil Fuel Combustion Ash Disposal Site, March 2016; Revised December 2018.

Layne GeoSciences, Inc. 1995. Hydrogeology of Proposed Fossil Fuel Combustion Ash Disposal Site. Prepared for Fremont Department of Utilities and HDR Engineering, Inc.

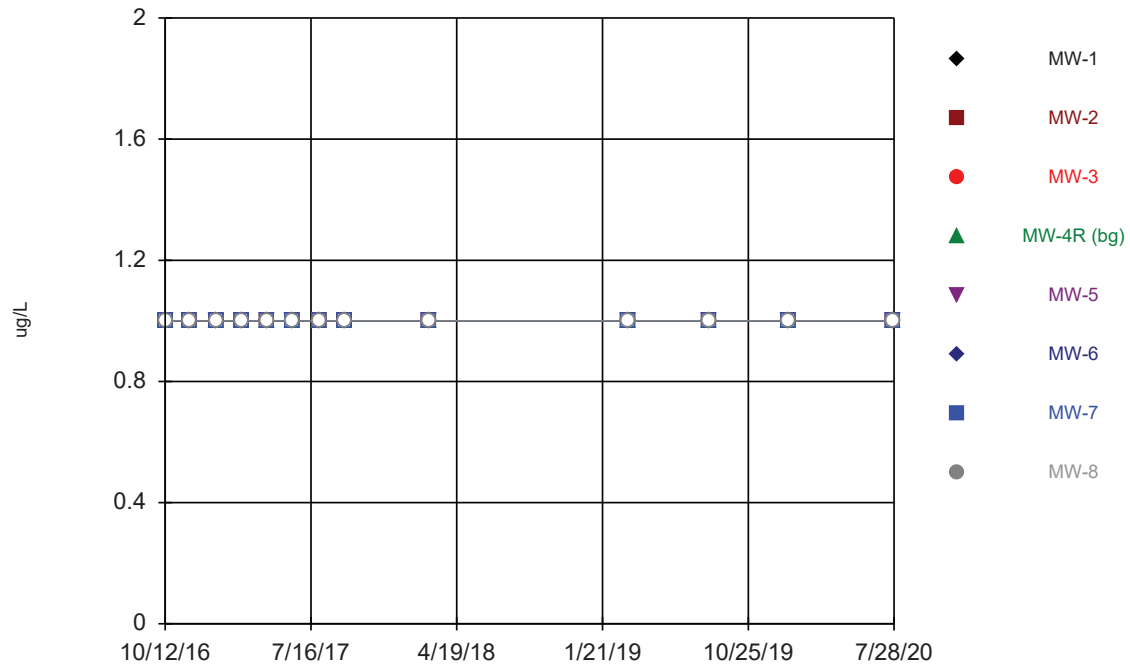
Sanitas Technologies, Sanitas Statistical Software v 9.6.28 and User Guide



Attachment A. Compliance Statistical Analysis

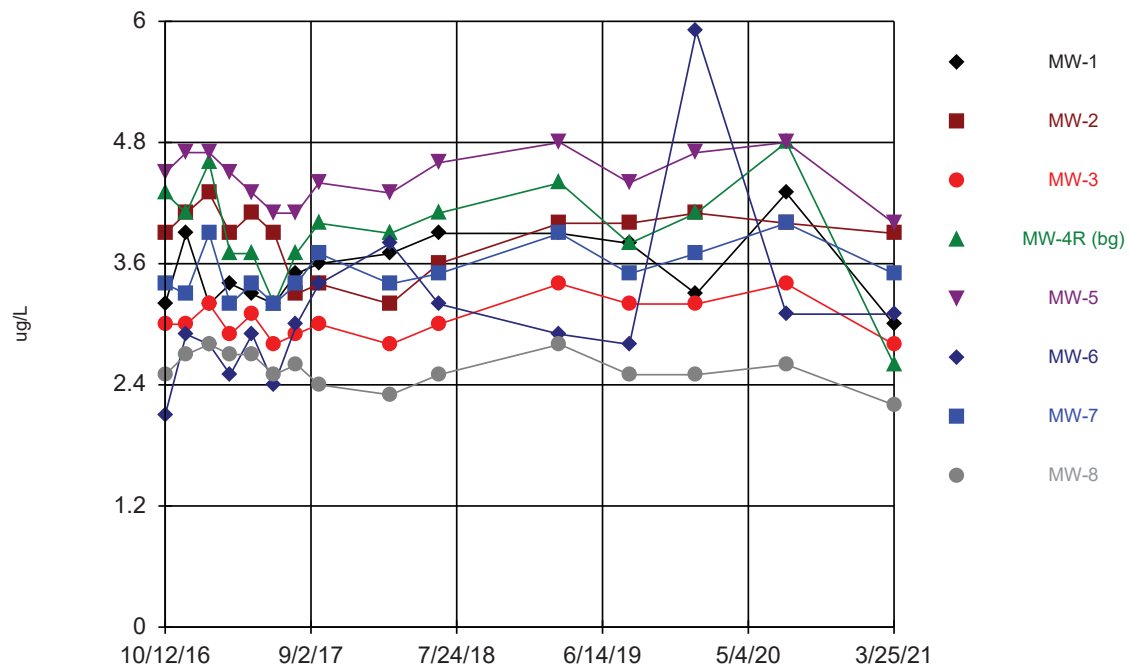
A.1 Time Series Plots

Time Series



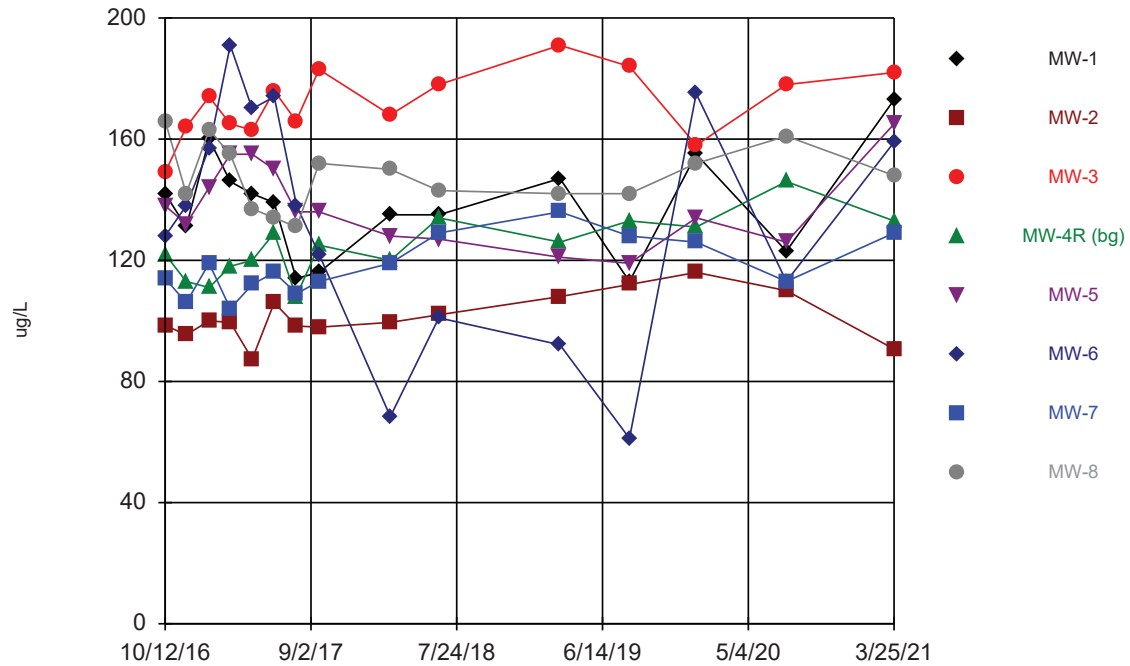
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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

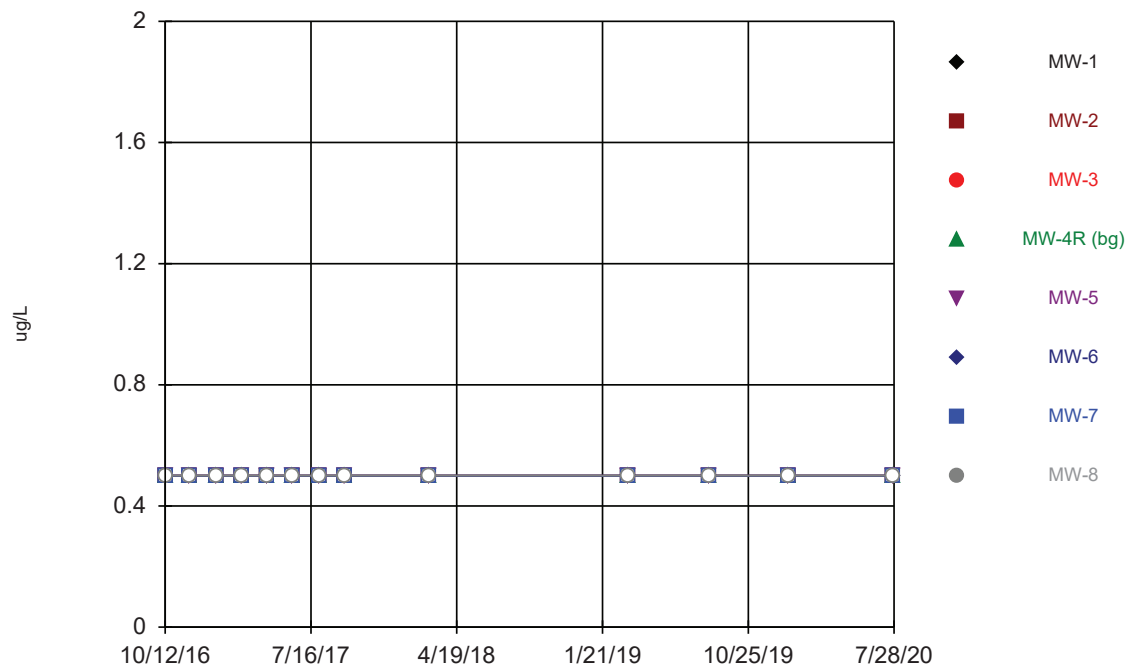
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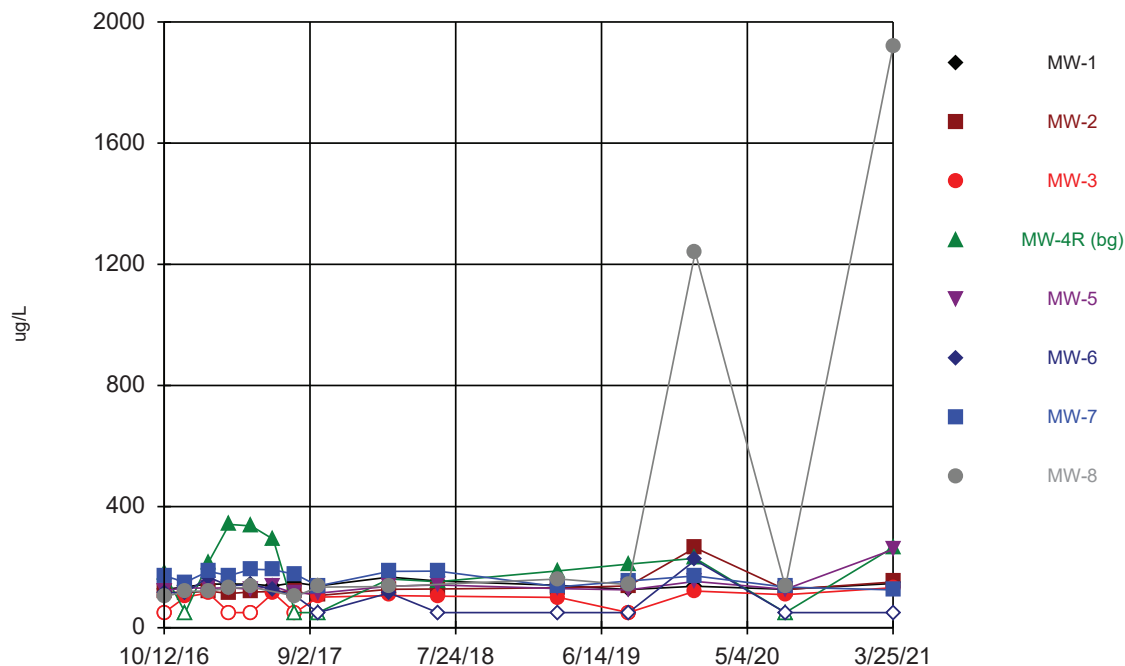
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Constituent: BERYLIUM Analysis Run 4/26/2021 1:56 PM View: Time Series

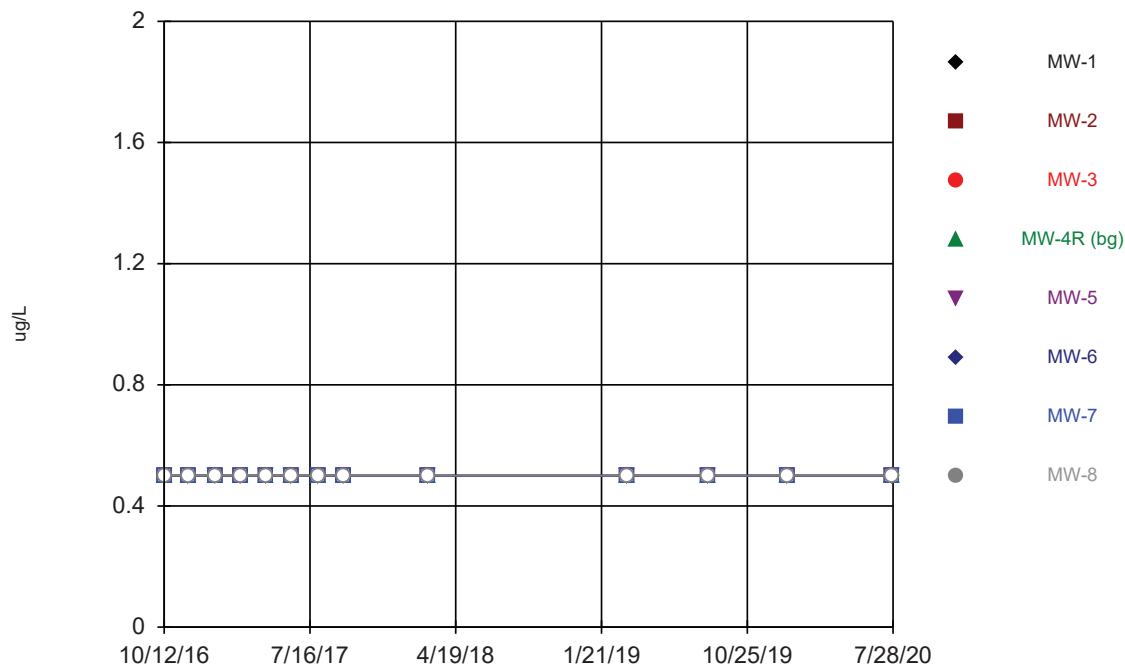
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Time Series



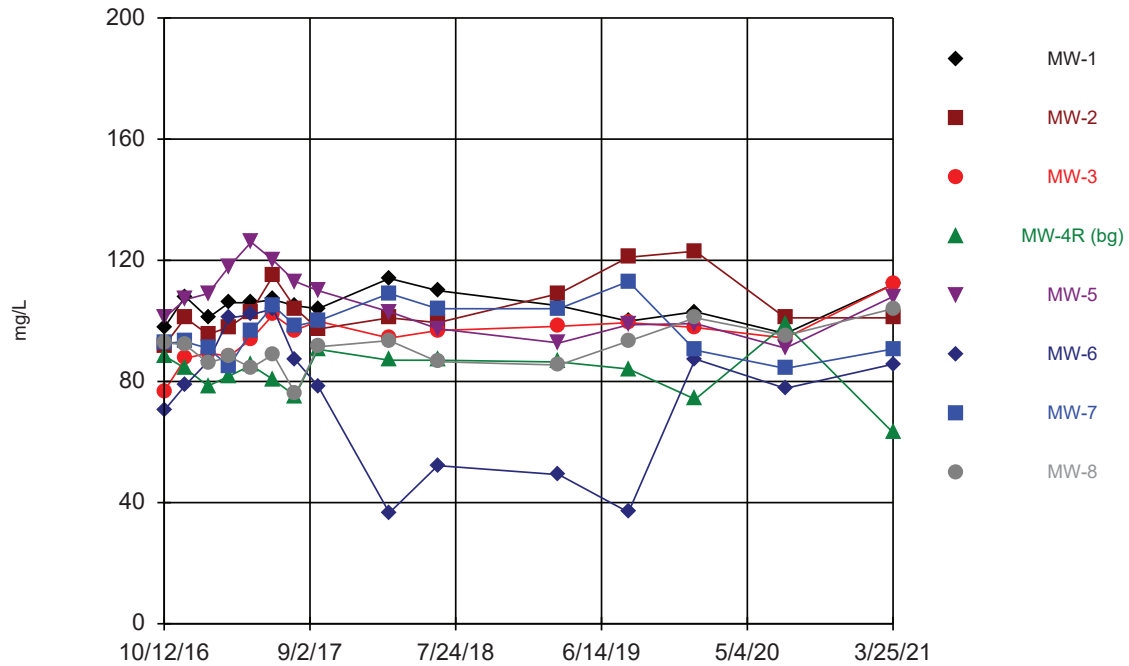
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Time Series



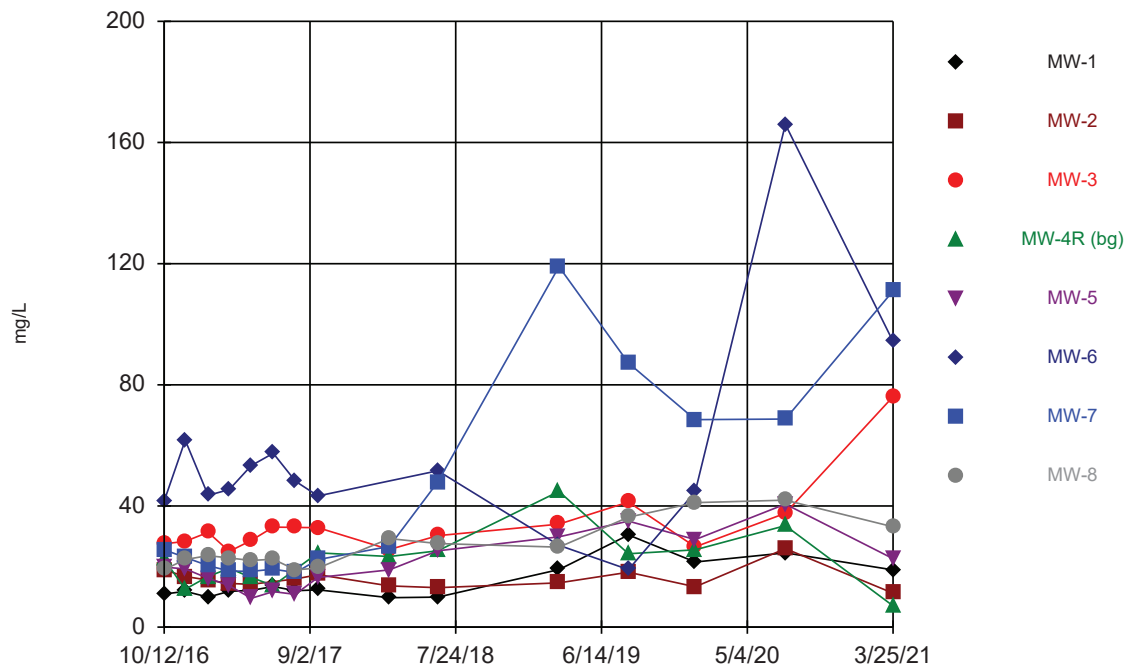
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Time Series



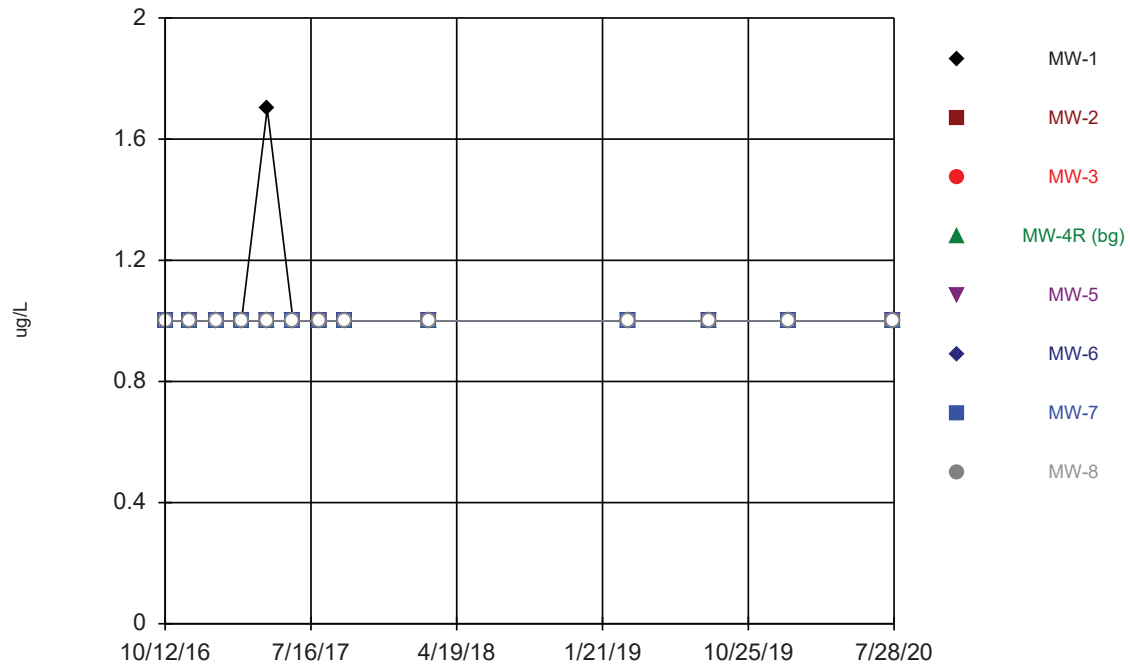
Constituent: Calcium Analysis Run 4/26/2021 1:56 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



Constituent: Chloride Analysis Run 4/26/2021 1:56 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

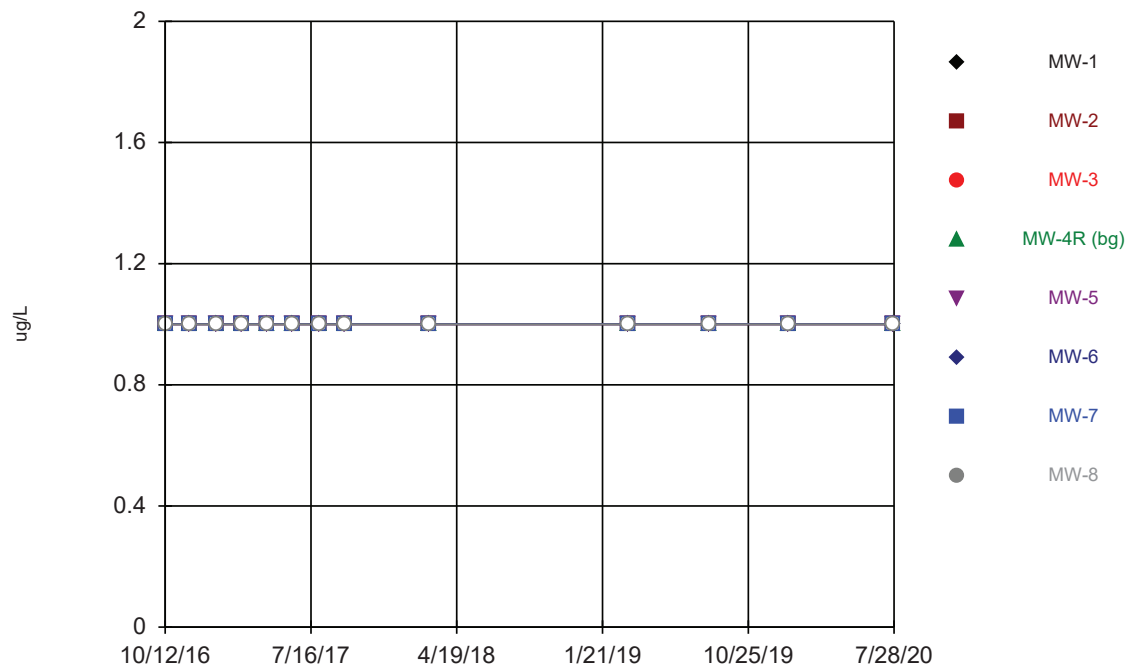
Time Series



Constituent: Chromium [total] Analysis Run 4/26/2021 1:56 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

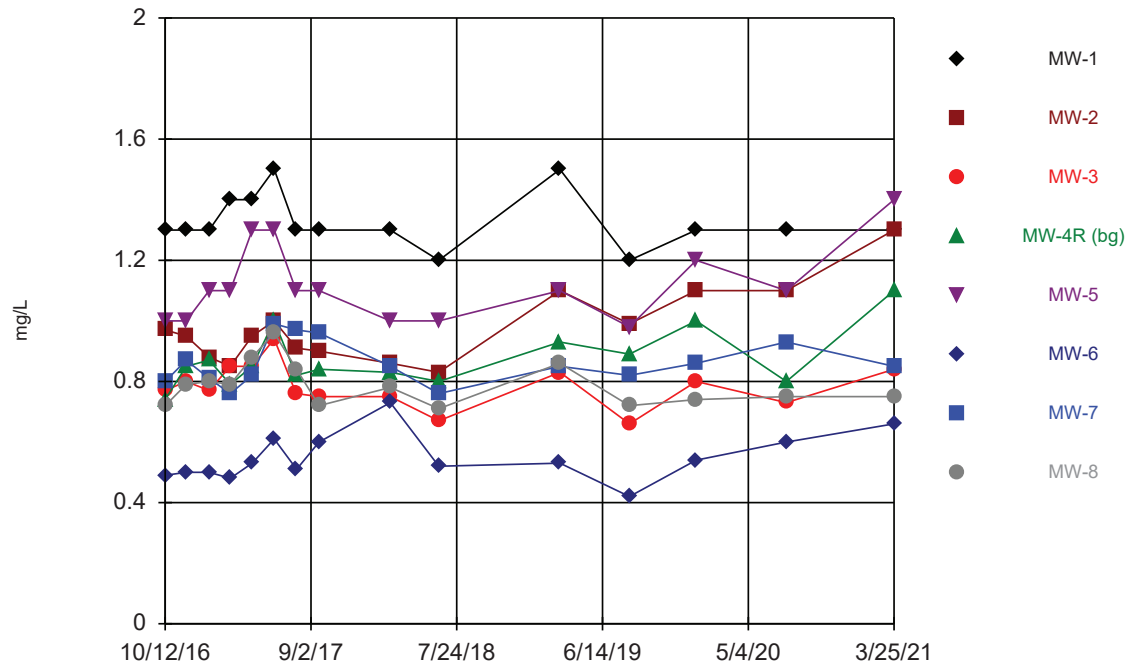
Time Series



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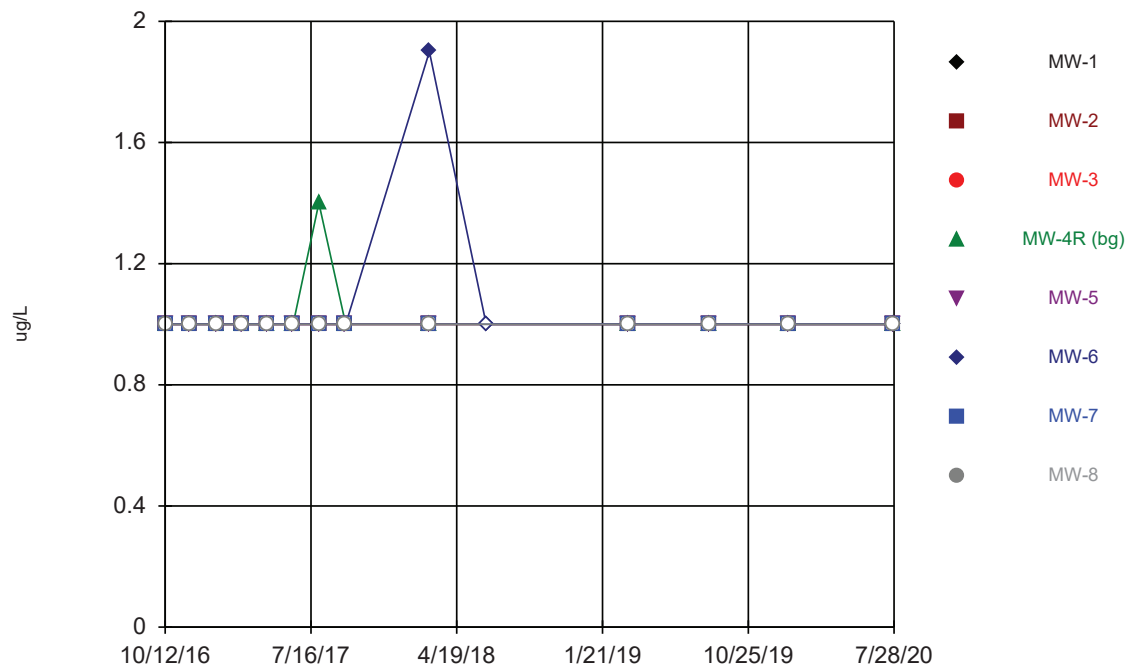
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Time Series



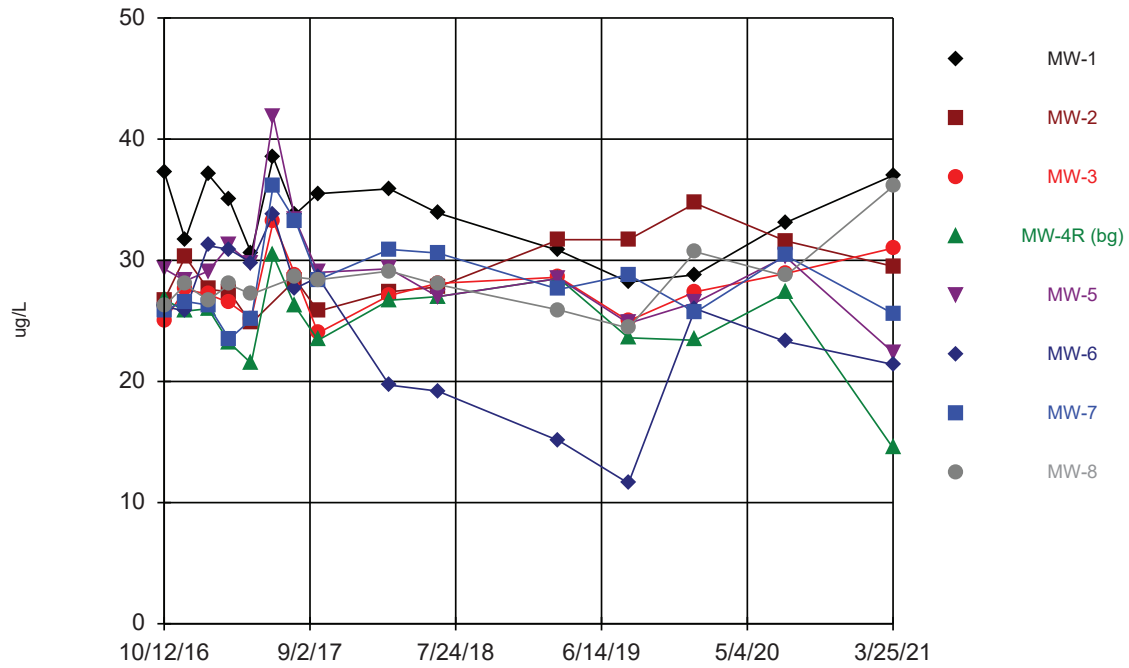
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 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



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 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

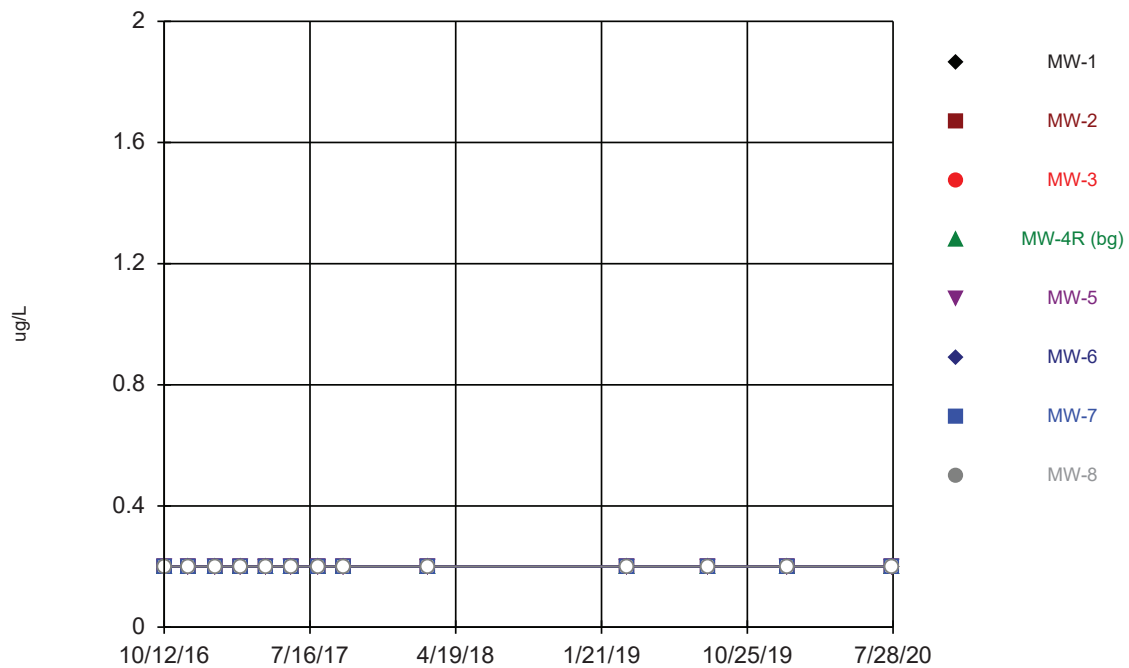
Time Series



Constituent: Lithium Analysis Run 4/26/2021 1:56 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

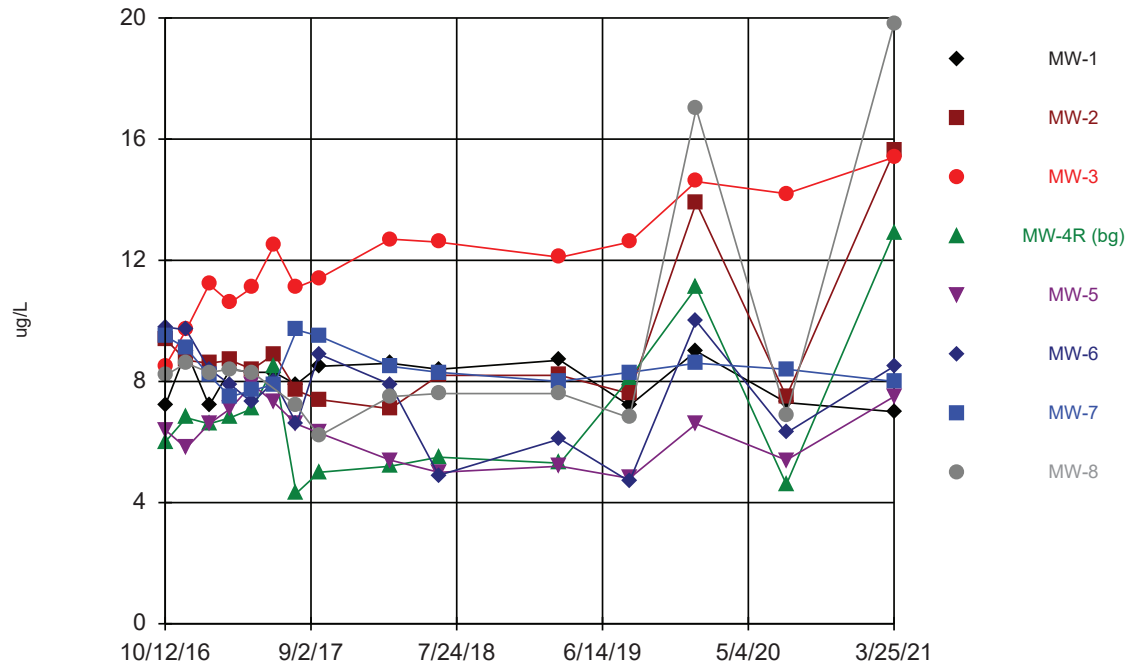
Time Series



Constituent: Mercury Analysis Run 4/26/2021 1:56 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

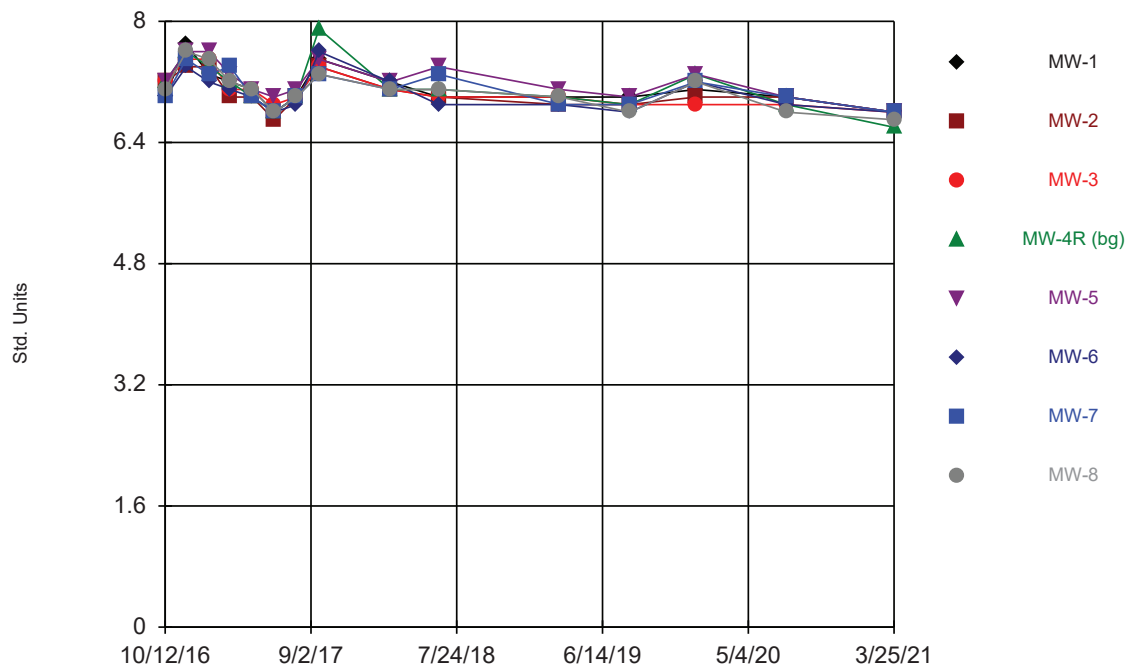
Time Series



Constituent: Molybdenum Analysis Run 4/26/2021 1:56 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

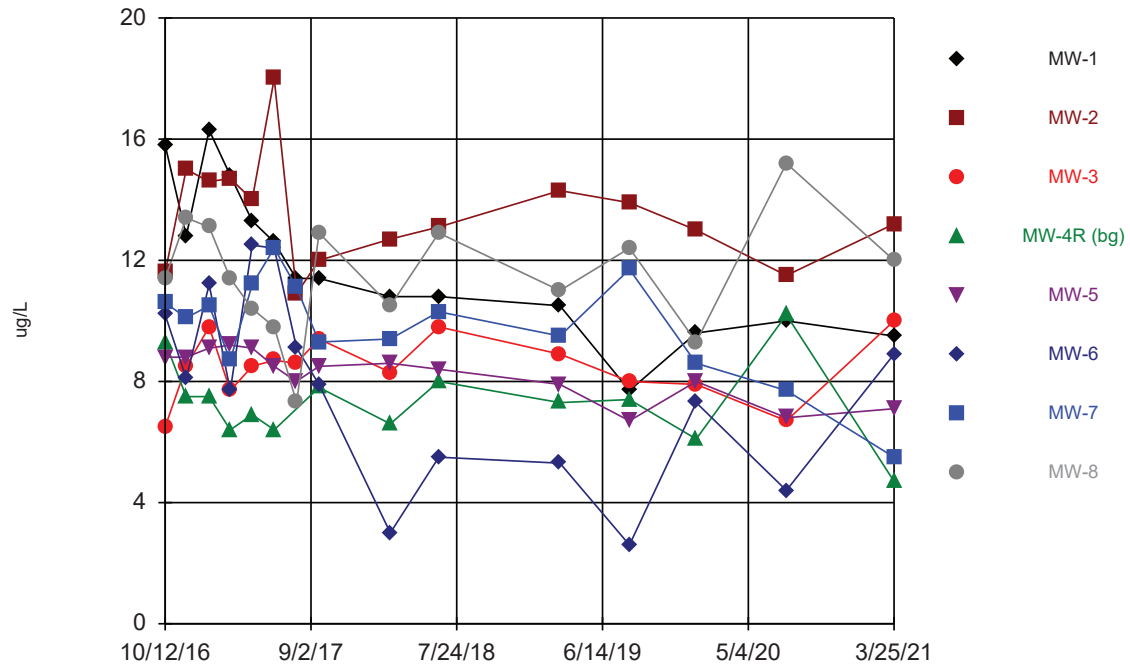
Time Series



Constituent: pH Analysis Run 4/26/2021 1:56 PM View: Time Series

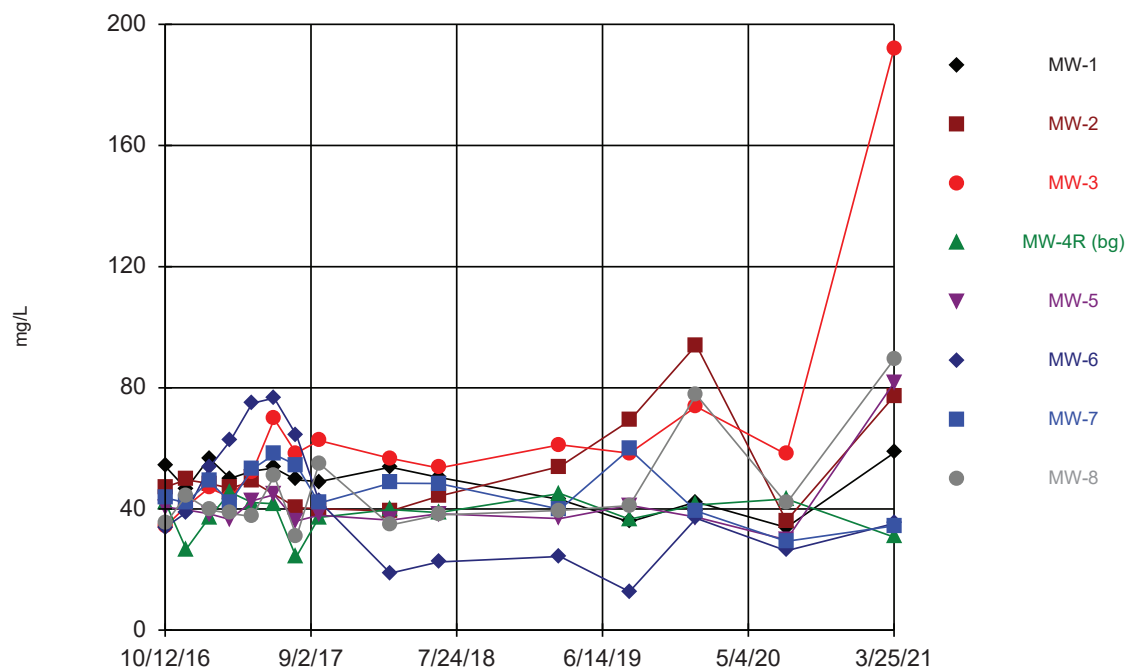
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



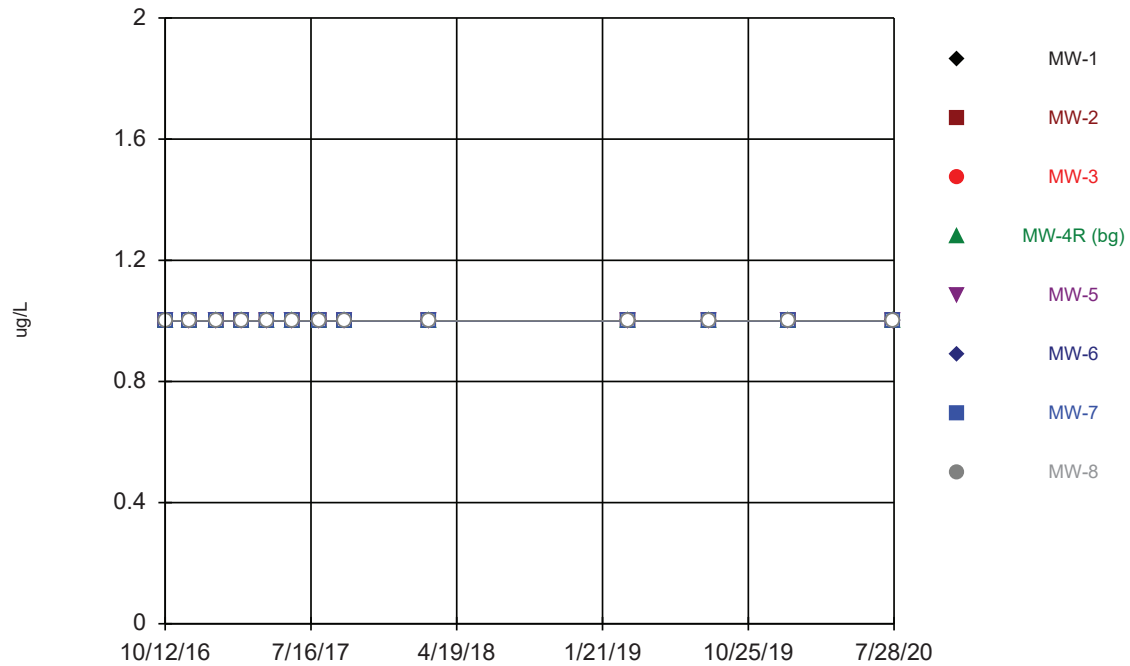
Constituent: Selenium [total] Analysis Run 4/26/2021 1:56 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



Constituent: Sulfate Analysis Run 4/26/2021 1:56 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

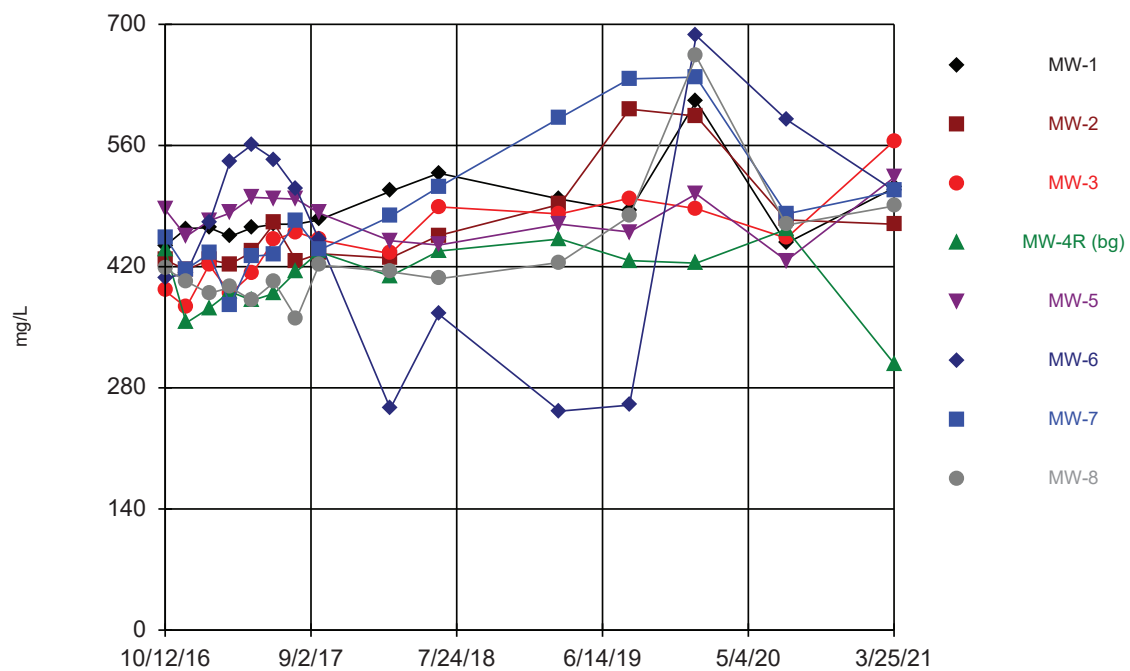
Time Series



Constituent: Thallium [total] Analysis Run 4/26/2021 1:56 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

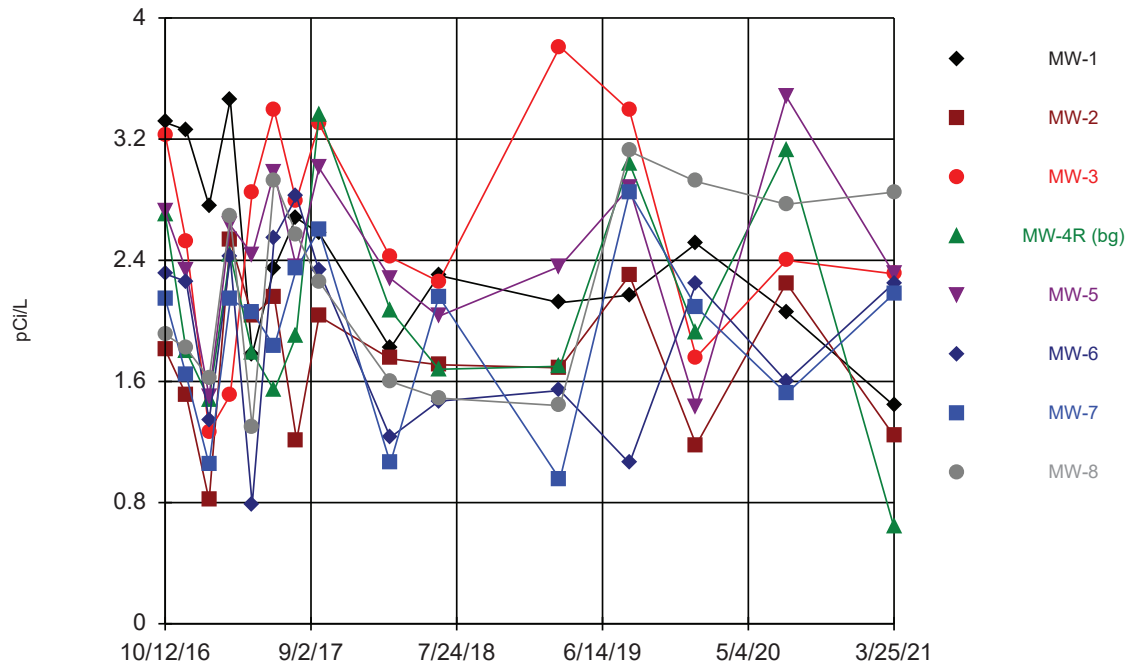
Time Series



Constituent: Total Dissolved Solids Analysis Run 4/26/2021 1:56 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



Constituent: Total Radium Analysis Run 4/26/2021 1:57 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A.2 Intrawell Prediction Limits

Intrawell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 4/26/2021, 2:10 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic [total] (ug/L)	MW-1	4.26	n/a	3/25/2021	3	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-2	4.812	n/a	3/25/2021	3.9	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-3	3.318	n/a	3/25/2021	2.8	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-4R	5.005	n/a	3/25/2021	2.6	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-5	5.033	n/a	3/25/2021	4	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-6	4.283	n/a	3/25/2021	3.1	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-7	4.044	n/a	3/25/2021	3.5	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-8	3.006	n/a	3/25/2021	2.2	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-1	173.9	n/a	3/25/2021	173	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-2	111.8	n/a	3/25/2021	90.7	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-3	195.4	n/a	3/25/2021	182	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-4R	142.4	n/a	3/25/2021	133	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-5	169.1	n/a	3/25/2021	165	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-6	240.6	n/a	3/25/2021	159	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-7	134.3	n/a	3/25/2021	129	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-8	180.5	n/a	3/25/2021	148	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-1	175.1	n/a	3/25/2021	146	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-2	138.6	n/a	3/25/2021	151	Yes	9	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-3	137.2	n/a	3/25/2021	132	No	10	40	x^3	0.000...	Param 1 of 2
Boron (ug/L)	MW-4R	539.7	n/a	3/25/2021	265	No	10	30	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-5	155.1	n/a	3/25/2021	258	Yes	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-7	225.7	n/a	3/25/2021	125	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-8	164.8	n/a	3/25/2021	1920	Yes	8	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-1	118.4	n/a	3/25/2021	112	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-2	117.9	n/a	3/25/2021	101	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-3	113.1	n/a	3/25/2021	112	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-4R	97.25	n/a	3/25/2021	63.1	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-5	135.4	n/a	3/25/2021	108	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-6	140.9	n/a	3/25/2021	85.7	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-7	117.8	n/a	3/25/2021	90.7	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-8	102.6	n/a	3/25/2021	104	Yes	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-1	14.8	n/a	3/25/2021	18.9	Yes	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-2	21.15	n/a	3/25/2021	11.2	No	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-3	37.83	n/a	3/25/2021	76.1	Yes	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-4R	33.36	n/a	3/25/2021	7	No	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-5	29.6	n/a	3/25/2021	22.6	No	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-6	70.05	n/a	3/25/2021	94.3	Yes	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-7	47.9	n/a	3/25/2021	111	Yes	10	0	n/a	0.01476	NP (normality) 1 of 2
Chloride (mg/L)	MW-8	32.29	n/a	3/25/2021	33.1	Yes	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-1	1.559	n/a	3/25/2021	1.3	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-2	1.066	n/a	3/25/2021	1.3	Yes	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-3	0.9966	n/a	3/25/2021	0.84	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-4R	1.028	n/a	3/25/2021	1.1	Yes	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-5	1.44	n/a	3/25/2021	1.4	No	10	0	x^(1/3)	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-6	0.7643	n/a	3/25/2021	0.66	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-7	1.099	n/a	3/25/2021	0.85	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-8	1.017	n/a	3/25/2021	0.75	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-1	41.87	n/a	3/25/2021	37	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-2	31.96	n/a	3/25/2021	29.5	No	9	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-3	31.62	n/a	3/25/2021	30.89	No	10	0	No	0.000...	Param 1 of 2 Deseas

Intrawell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

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<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Lithium (ug/L)	MW-4R	32.61	n/a	3/25/2021	14.5	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-5	41.9	n/a	3/25/2021	22.4	No	10	0	n/a	0.01476	NP (normality) 1 of 2
Lithium (ug/L)	MW-6	40.59	n/a	3/25/2021	21.4	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-7	39.77	n/a	3/25/2021	25.6	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-8	30.55	n/a	3/25/2021	36.1	Yes	9	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-1	9.808	n/a	3/25/2021	7	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-2	10.3	n/a	3/25/2021	15.6	Yes	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-3	14.83	n/a	3/25/2021	15.4	Yes	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-4R	9.597	n/a	3/25/2021	12.9	Yes	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-5	8.885	n/a	3/25/2021	7.5	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-6	12	n/a	3/25/2021	8.5	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-7	9.626	n/a	3/25/2021	8.54	No	10	0	No	0.000...	Param 1 of 2 Deseas
Molybdenum (ug/L)	MW-8	10.08	n/a	3/25/2021	19.8	Yes	9	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-1	7.92	6.44	3/25/2021	6.8	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-2	7.76	6.48	3/25/2021	6.8	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-3	7.779	6.581	3/25/2021	6.8	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-4R	8.13	6.33	3/25/2021	6.6	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-5	7.901	6.699	3/25/2021	6.8	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-6	7.798	6.422	3/25/2021	6.8	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-7	7.786	6.554	3/25/2021	6.8	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-8	7.834	6.526	3/25/2021	6.7	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-1	18.65	n/a	3/25/2021	9.5	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-2	19.42	n/a	3/25/2021	13.2	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-3	11.34	n/a	3/25/2021	10	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-4R	10.15	n/a	3/25/2021	4.7	No	9	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-5	9.742	n/a	3/25/2021	7.1	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-6	17.14	n/a	3/25/2021	8.9	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-7	13.35	n/a	3/25/2021	5.5	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-8	16.6	n/a	3/25/2021	12	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-1	59.98	n/a	3/25/2021	58.5	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-2	57.18	n/a	3/25/2021	77.2	Yes	9	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-3	81.59	n/a	3/25/2021	192	Yes	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-4R	56.76	n/a	3/25/2021	30.7	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-5	47.08	n/a	3/25/2021	81.7	Yes	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-6	106.5	n/a	3/25/2021	35.2	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-7	64.05	n/a	3/25/2021	34.4	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-8	61.47	n/a	3/25/2021	89.4	Yes	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	543.3	n/a	3/25/2021	511	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-2	480.2	n/a	3/25/2021	469	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-3	529	n/a	3/25/2021	565	Yes	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-4R	485.6	n/a	3/25/2021	308	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-5	534.5	n/a	3/25/2021	523	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-6	716.8	n/a	3/25/2021	508	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-7	548.4	n/a	3/25/2021	507	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-8	451.1	n/a	3/25/2021	490	Yes	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-1	4.273	n/a	3/25/2021	1.44	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-2	3.12	n/a	3/25/2021	1.24	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-3	4.566	n/a	3/25/2021	2.31	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-4R	3.725	n/a	3/25/2021	0.637	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-5	3.682	n/a	3/25/2021	2.31	No	10	0	No	0.000...	Param 1 of 2

Intrawell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

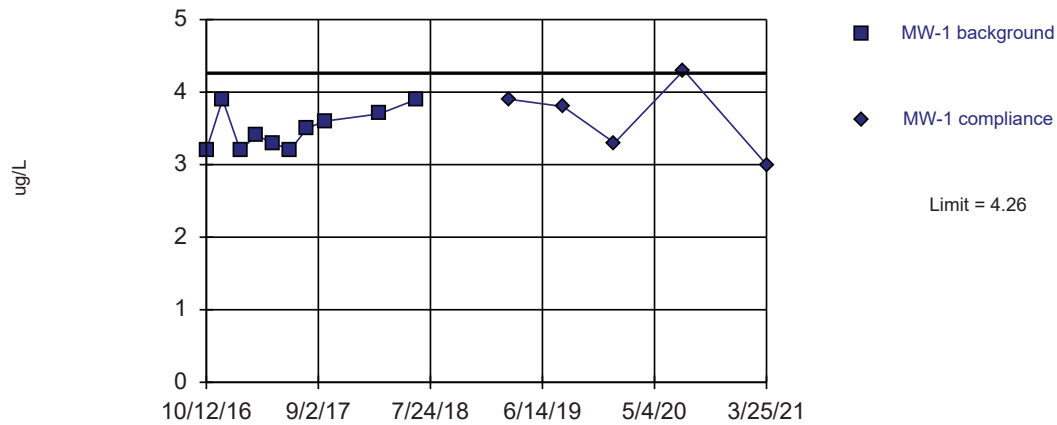
Data: Fremont Department of Utilities Groundwater

Printed 4/26/2021, 2:10 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Total Radium (pCi/L)	MW-6	3.848	n/a	3/25/2021	2.25	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-7	3.344	n/a	3/25/2021	2.18	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-8	3.579	n/a	3/25/2021	2.85	No	10	0	No	0.000...	Param 1 of 2

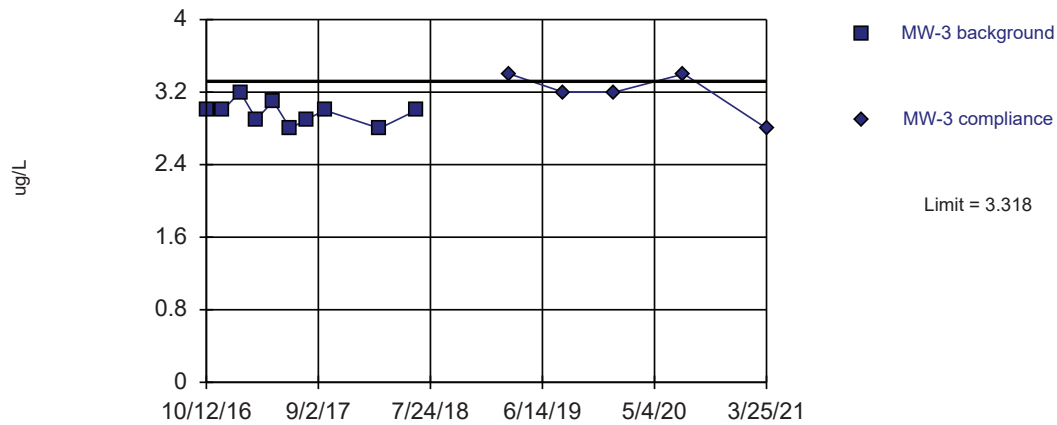
Within Limit

Prediction Limit Intrawell Parametric



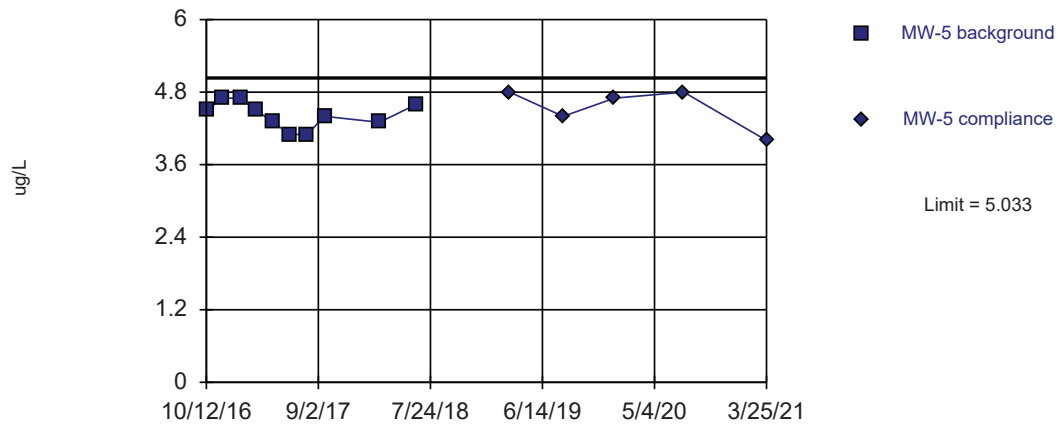
Within Limit

Prediction Limit Intrawell Parametric



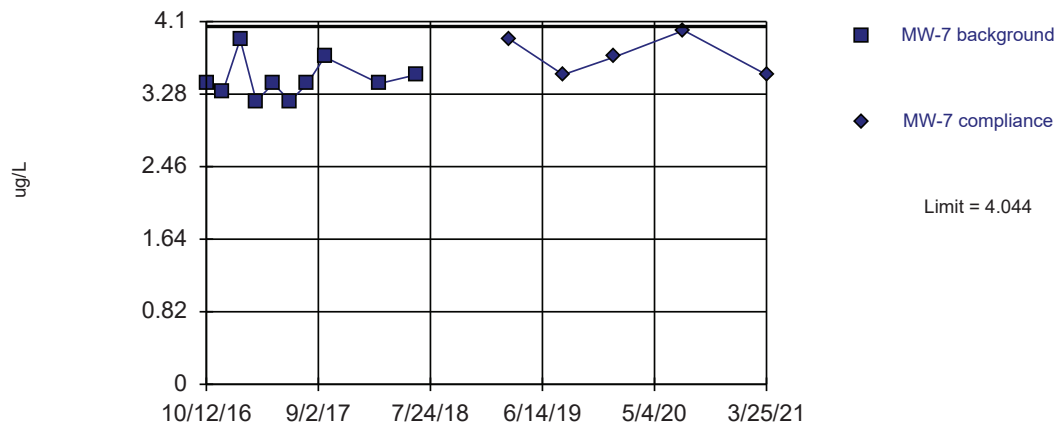
Within Limit

Prediction Limit Intrawell Parametric



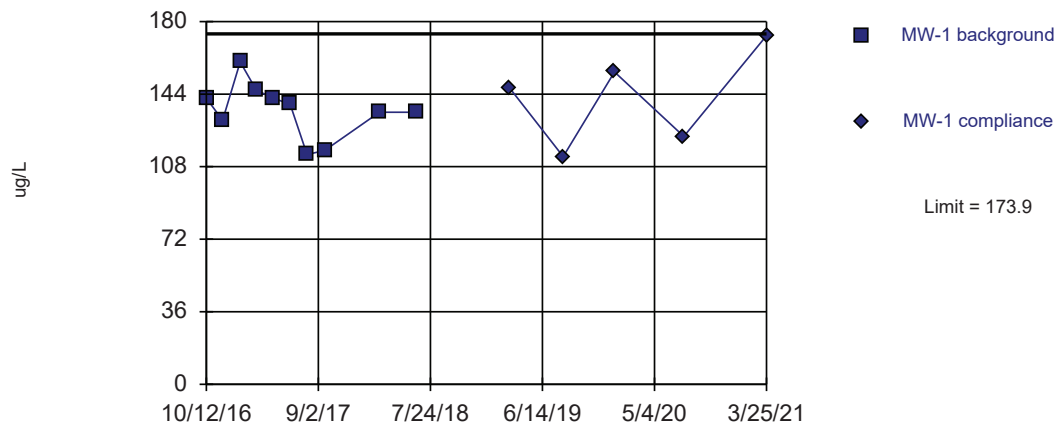
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

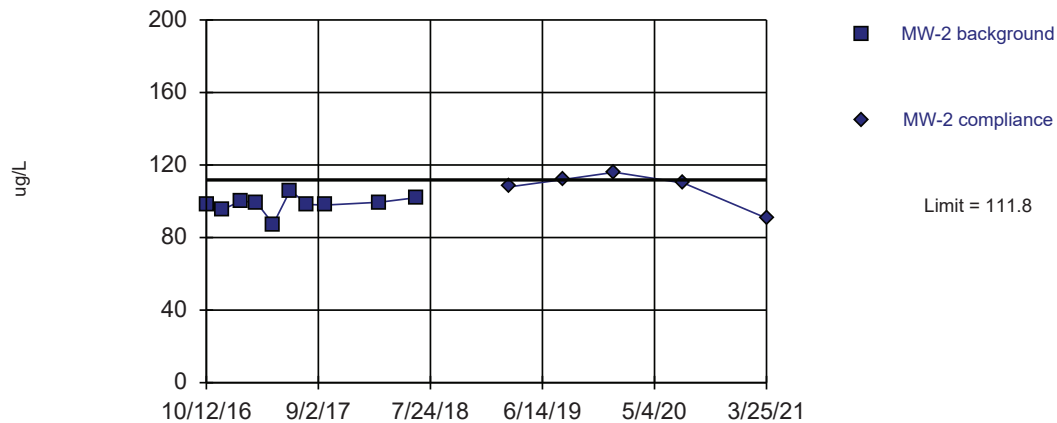


Background Data Summary: Mean=136, Std. Dev.=13.61, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9422, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 4/26/2021 2:06 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

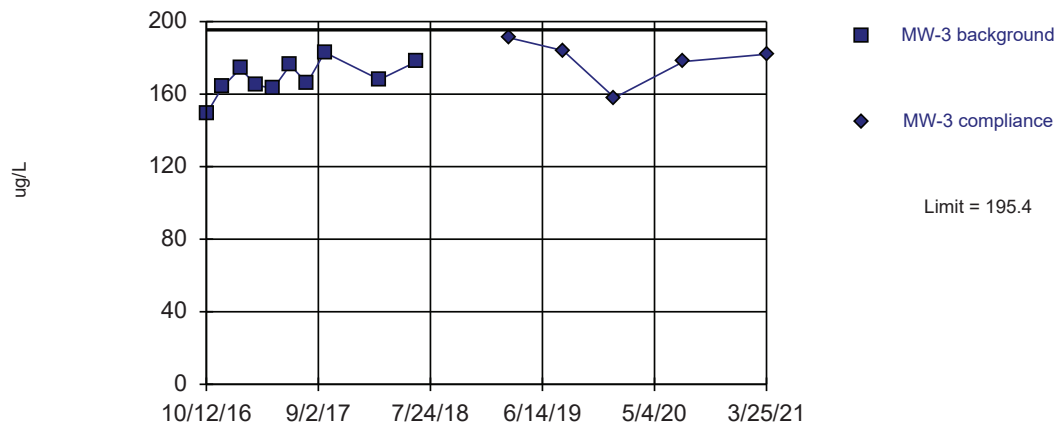


Background Data Summary: Mean=98.45, Std. Dev.=4.784, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8827, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 4/26/2021 2:06 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

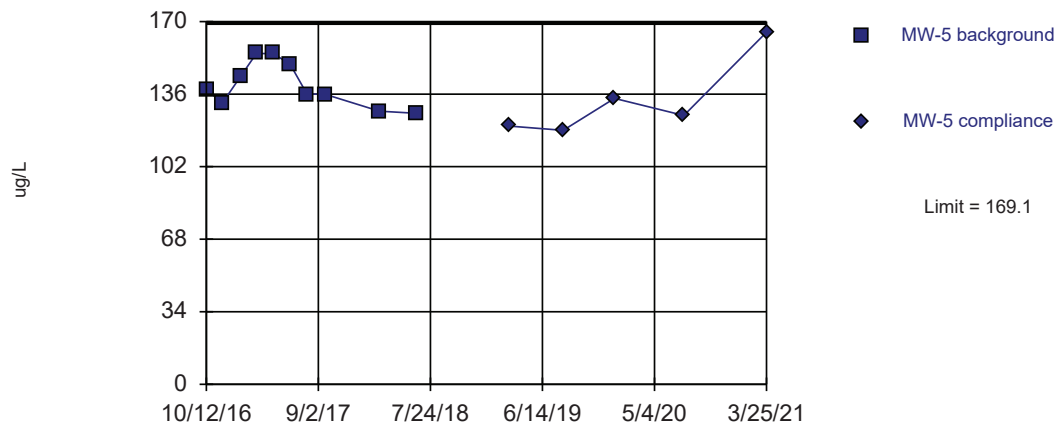
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

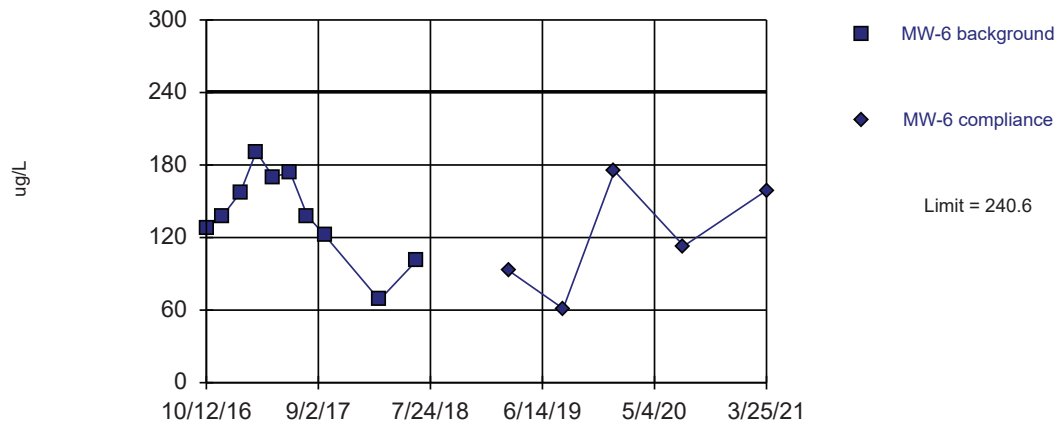


Background Data Summary: Mean=140.1, Std. Dev.=10.43, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9113, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

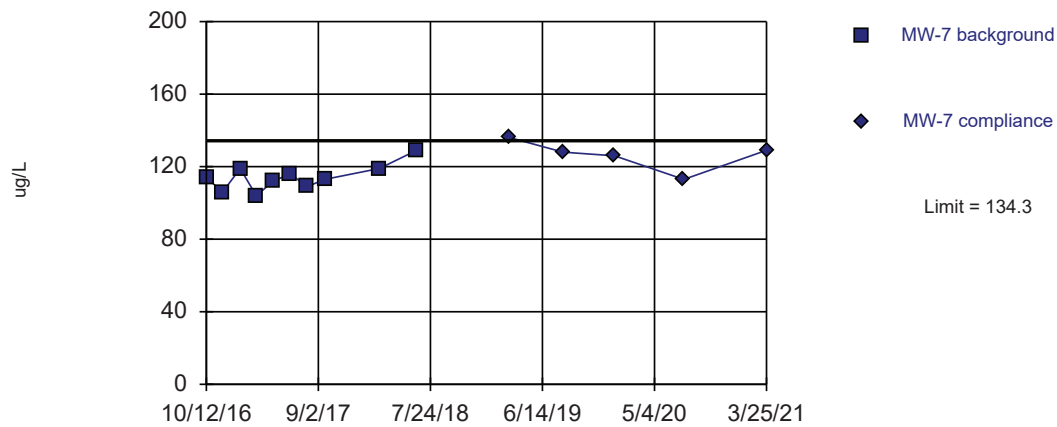


Background Data Summary: Mean=138.7, Std. Dev.=36.6, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9715, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

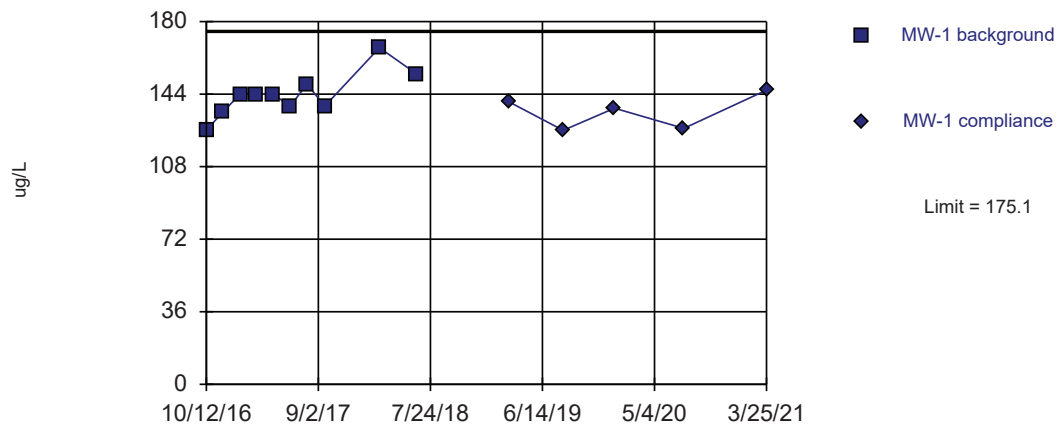
Within Limit

Prediction Limit Intrawell Parametric



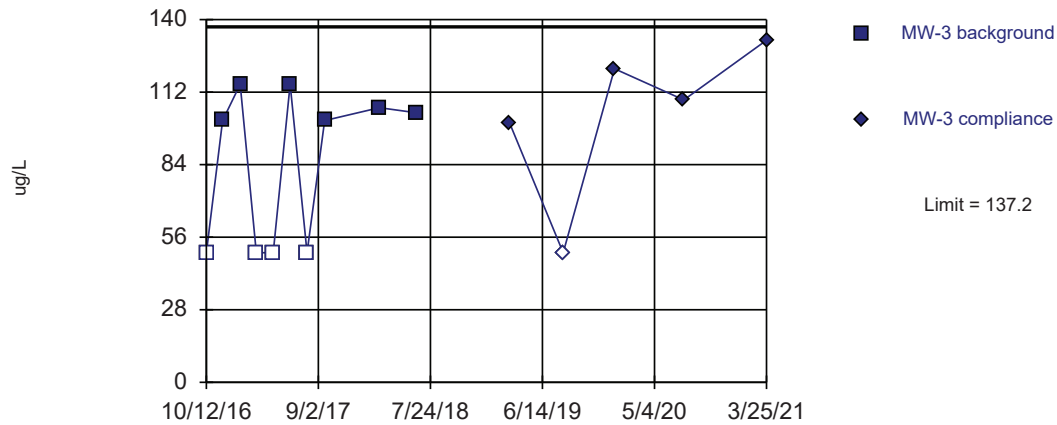
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

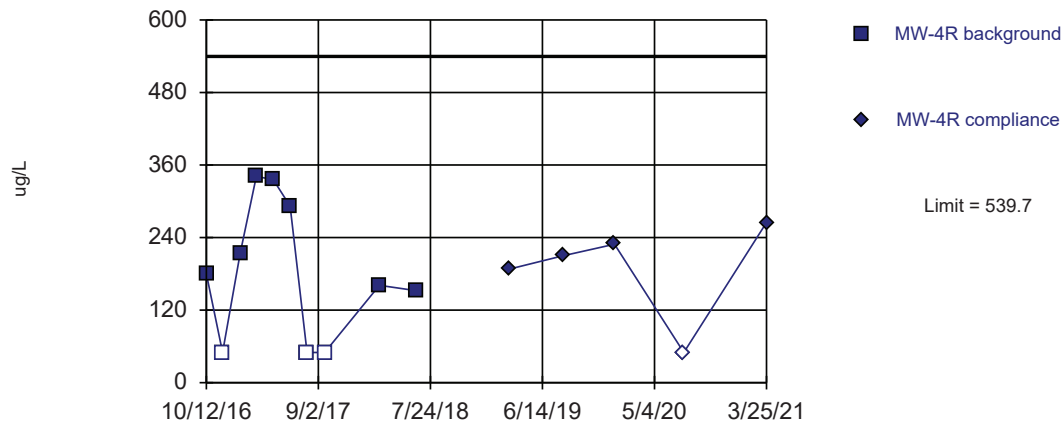


Background Data Summary (based on cube transformation) (after Aitchison's Adjustment): Mean=741823, Std. Dev.=660806, n=10, 40% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8047, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Boron Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

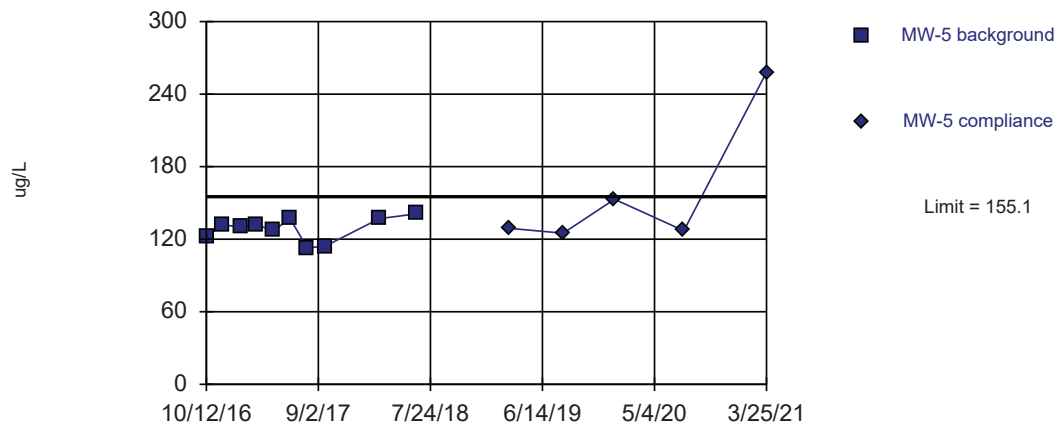


Background Data Summary (after Aitchison's Adjustment): Mean=167.6, Std. Dev.=133.7, n=10, 30% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8919, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Boron Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

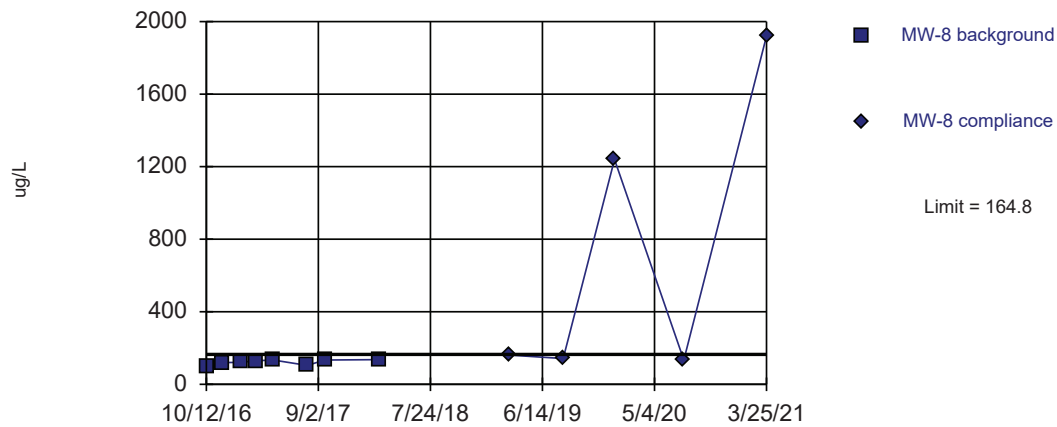
Exceeds Limit

Prediction Limit Intrawell Parametric



Exceeds Limit

Prediction Limit Intrawell Parametric

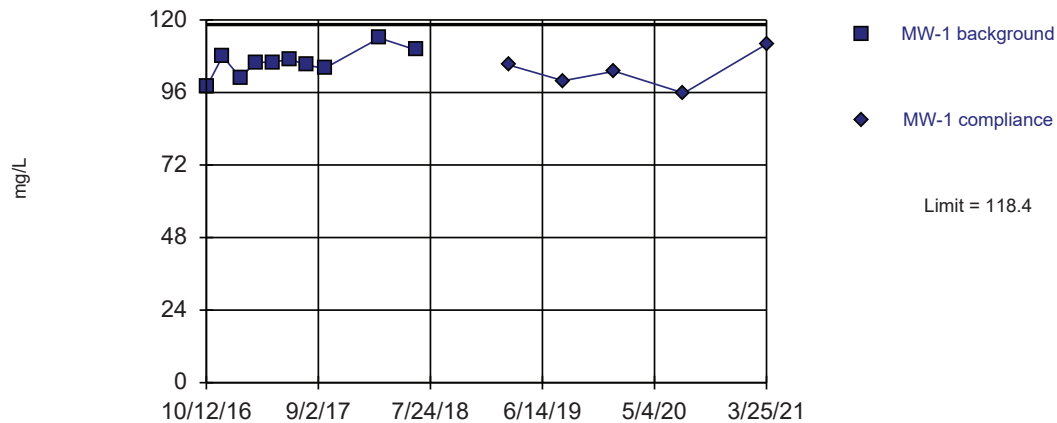


Background Data Summary: Mean=122.6, Std. Dev.=13.49, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8556, critical = 0.749. Kappa = 3.123 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Boron Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

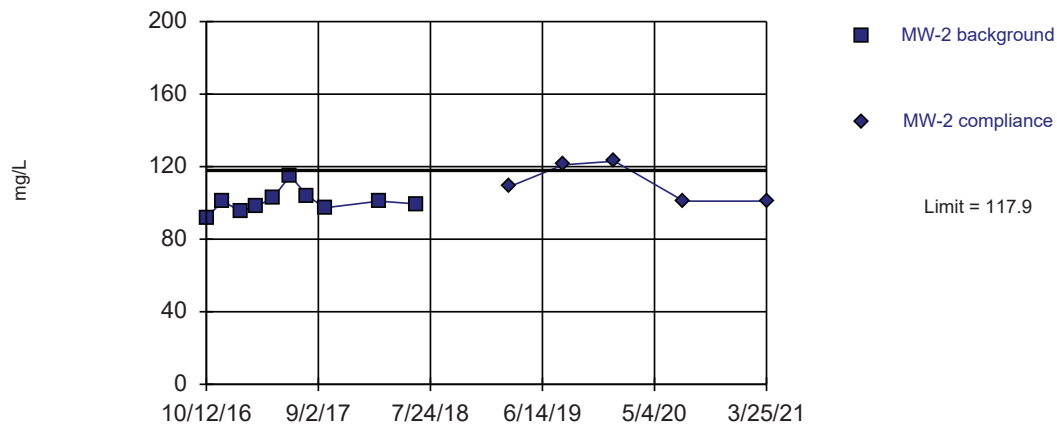


Background Data Summary: Mean=105.9, Std. Dev.=4.518, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9799, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

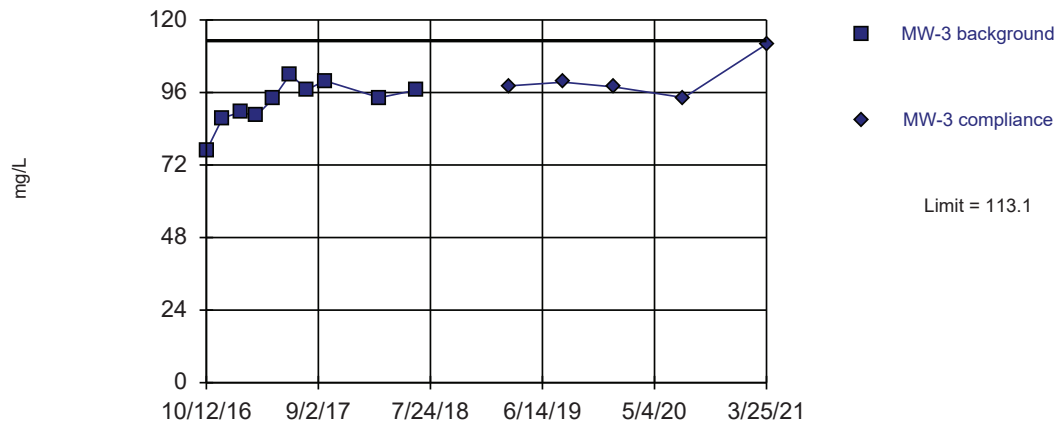


Background Data Summary: Mean=100.6, Std. Dev.=6.214, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9079, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

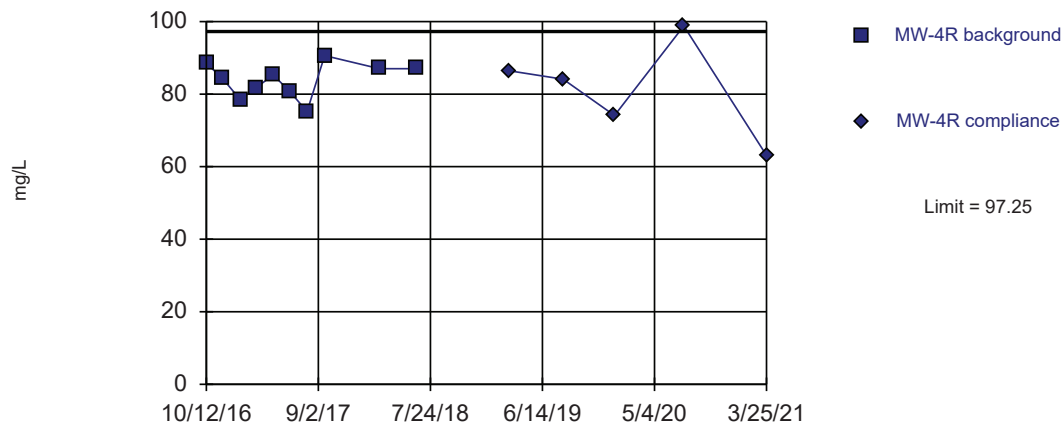


Background Data Summary: Mean=92.59, Std. Dev.=7.372, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9298, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

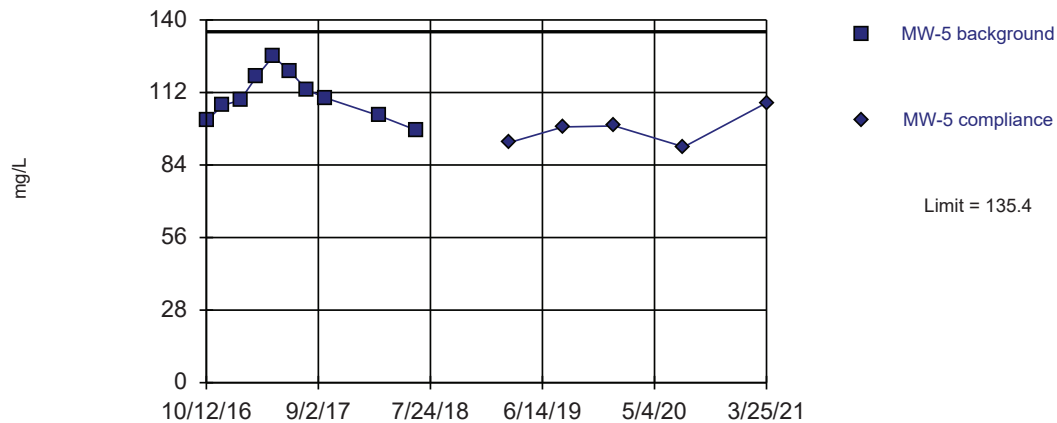


Background Data Summary: Mean=83.88, Std. Dev.=4.802, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9683, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

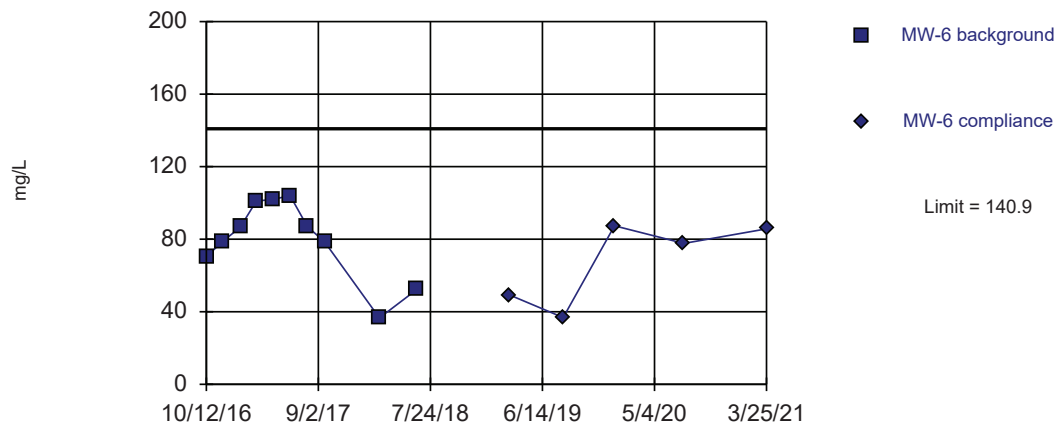


Background Data Summary: Mean=110.4, Std. Dev.=8.98, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9787, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

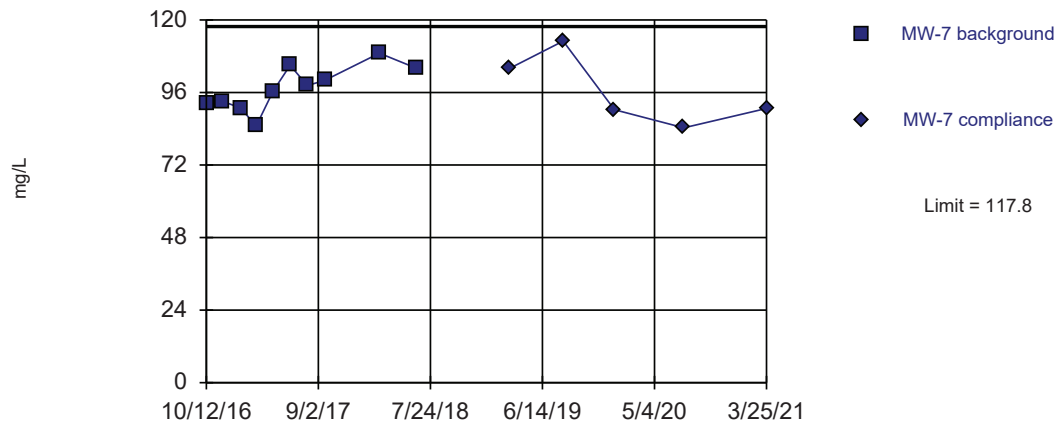


Background Data Summary: Mean=79.7, Std. Dev.=21.97, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9128, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

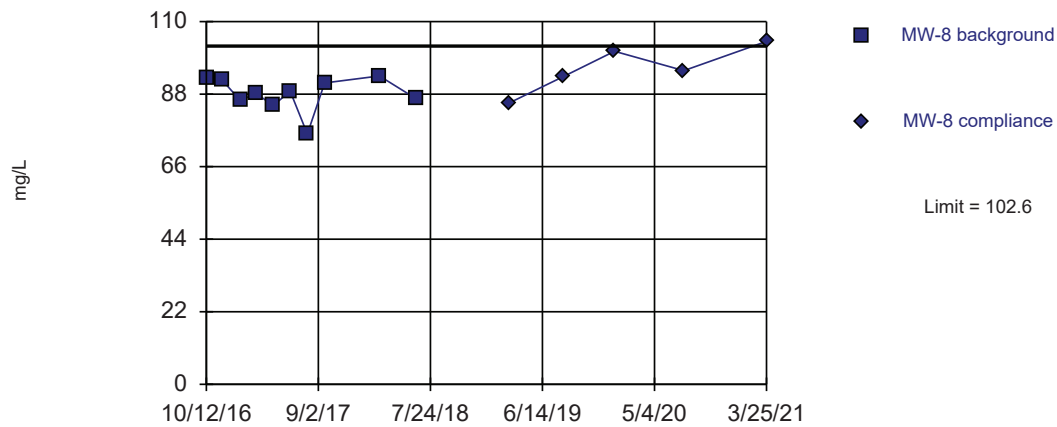


Background Data Summary: Mean=97.44, Std. Dev.=7.317, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9838, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric



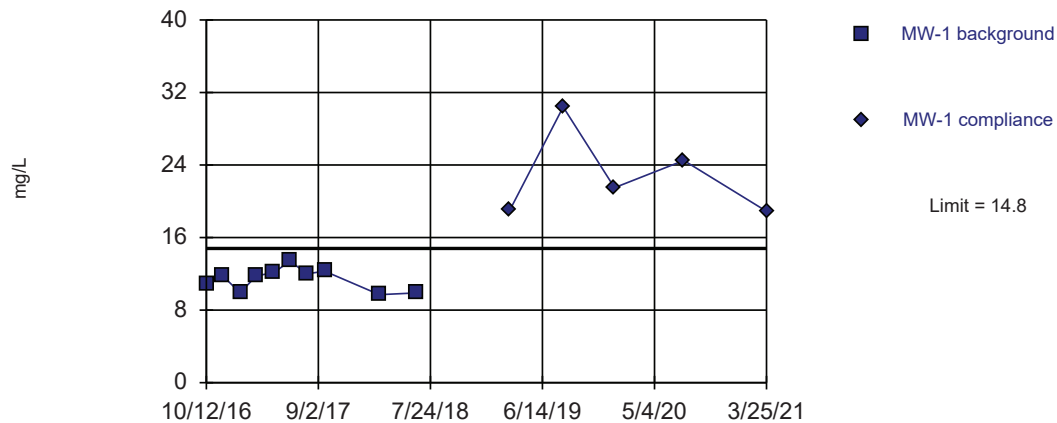
Background Data Summary: Mean=87.99, Std. Dev.=5.239, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8801, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric



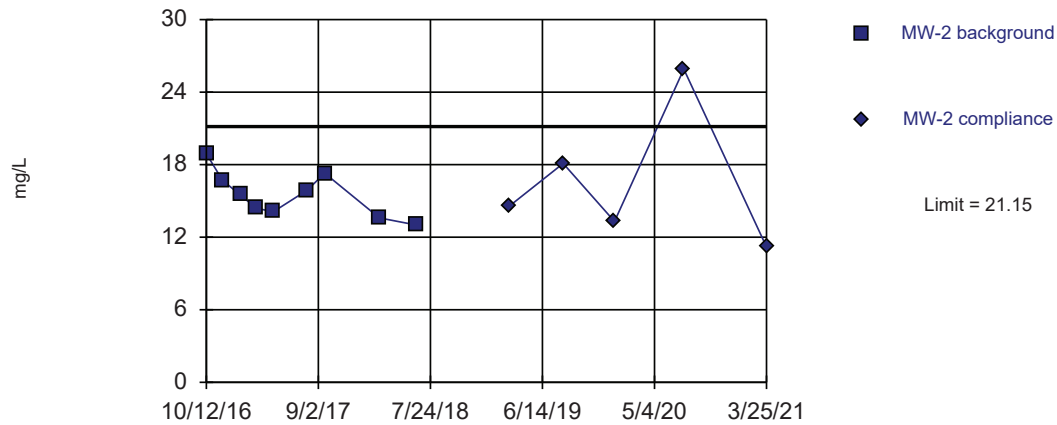
Background Data Summary: Mean=11.38, Std. Dev.=1.23, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9094, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

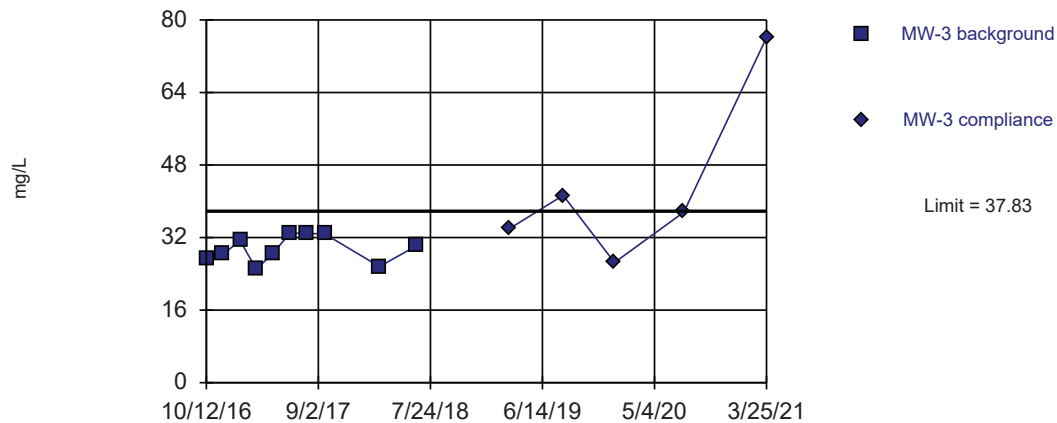


Background Data Summary: Mean=15.49, Std. Dev.=1.918, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9653, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

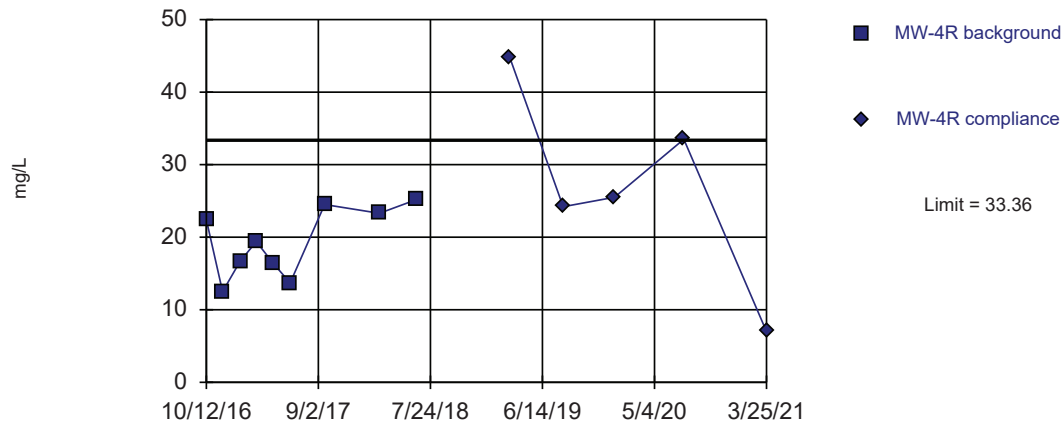


Background Data Summary: Mean=29.52, Std. Dev.=2.984, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9142, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

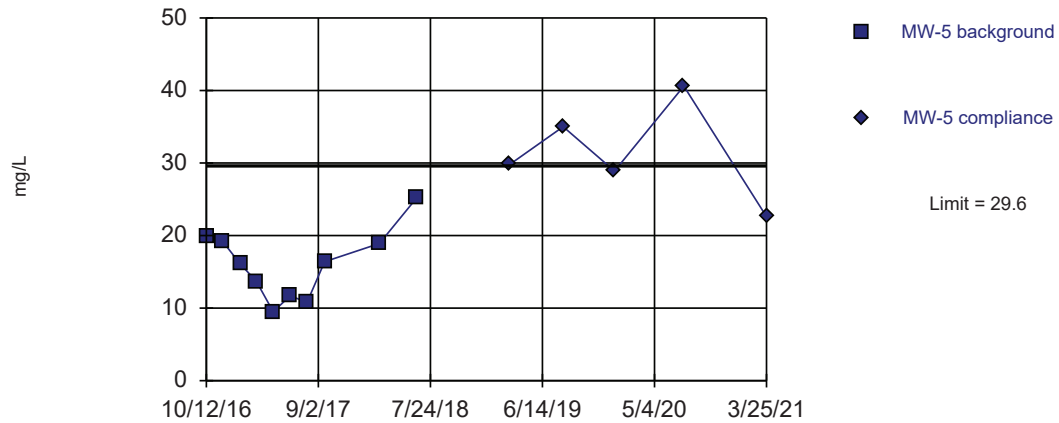


Background Data Summary: Mean=19.34, Std. Dev.=4.746, n=9. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9211, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

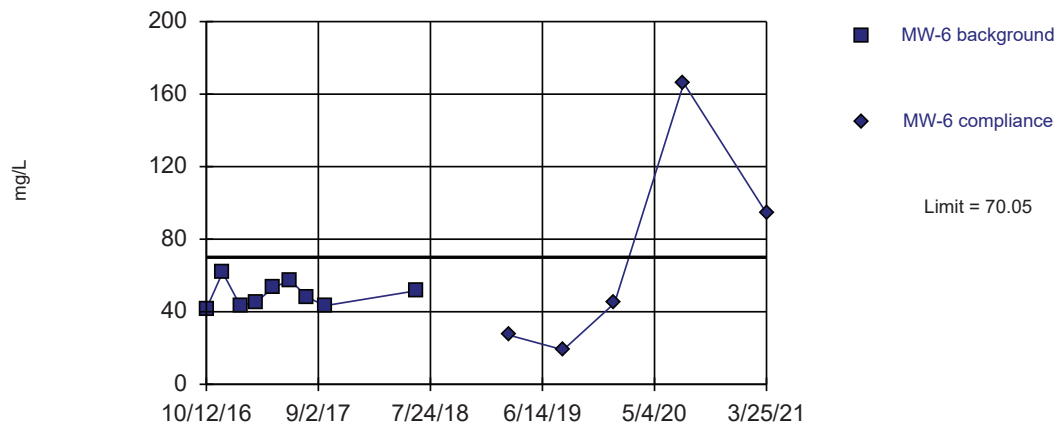


Background Data Summary: Mean=16.13, Std. Dev.=4.84, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9601, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

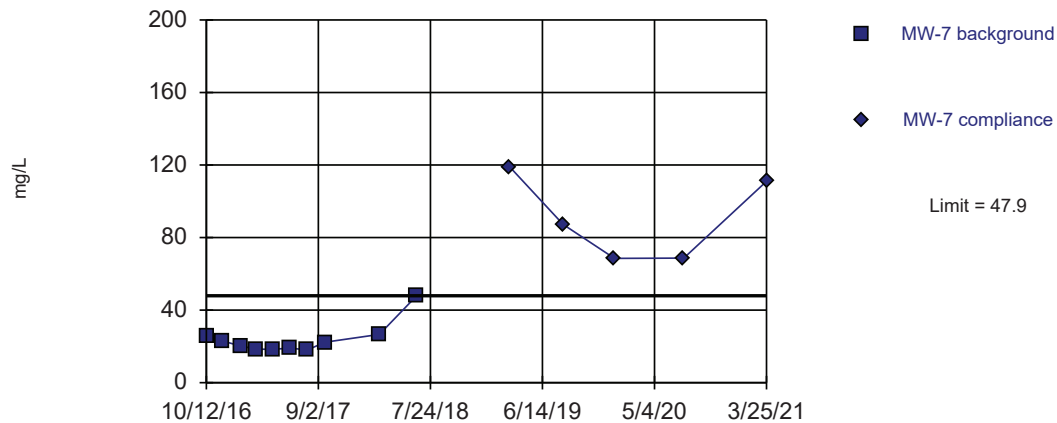


Background Data Summary: Mean=49.54, Std. Dev.=6.944, n=9. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9293, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Non-parametric

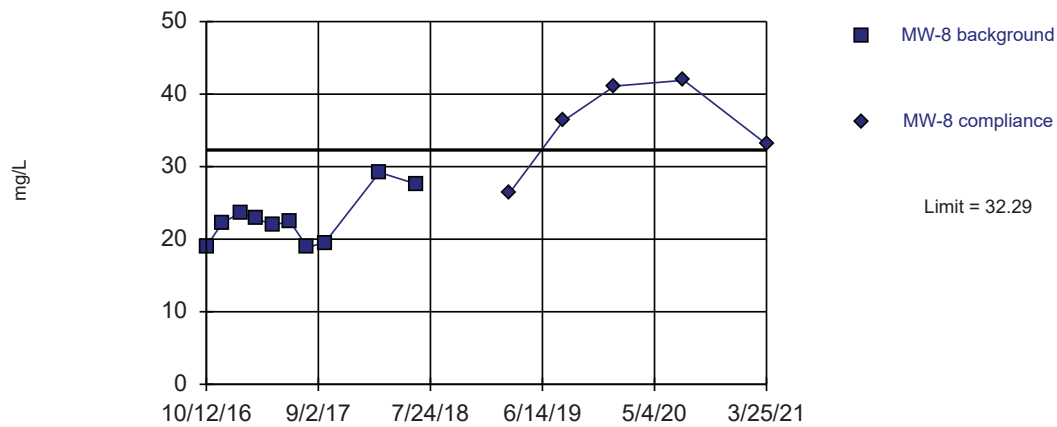


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 10 background values. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2). Seasonality was not detected with 95% confidence.

Constituent: Chloride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

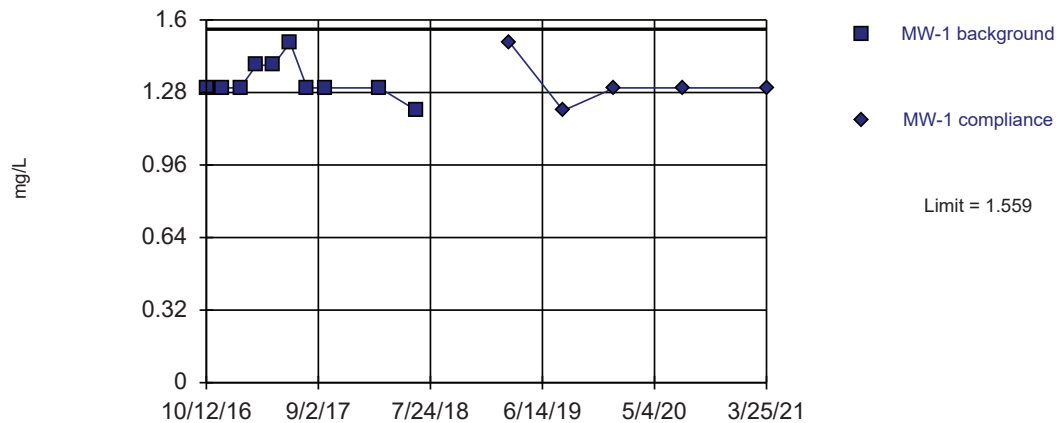


Background Data Summary: Mean=22.73, Std. Dev.=3.435, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.89, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

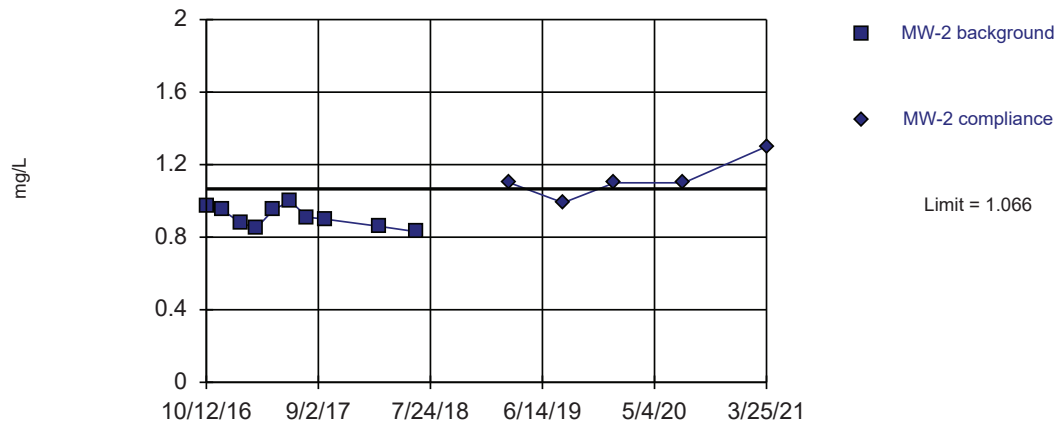


Background Data Summary: Mean=1.33, Std. Dev.=0.08233, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8409, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Fluoride Analysis Run 4/26/2021 2:07 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

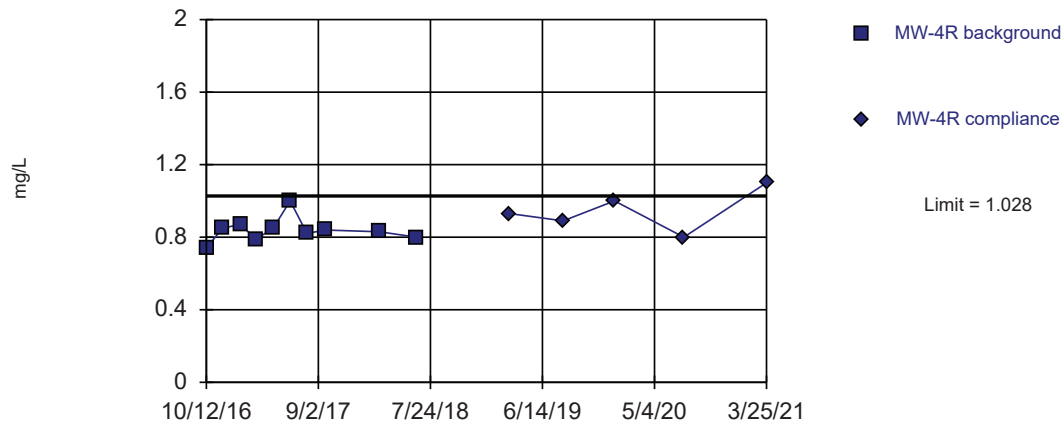
Exceeds Limit

Prediction Limit Intrawell Parametric



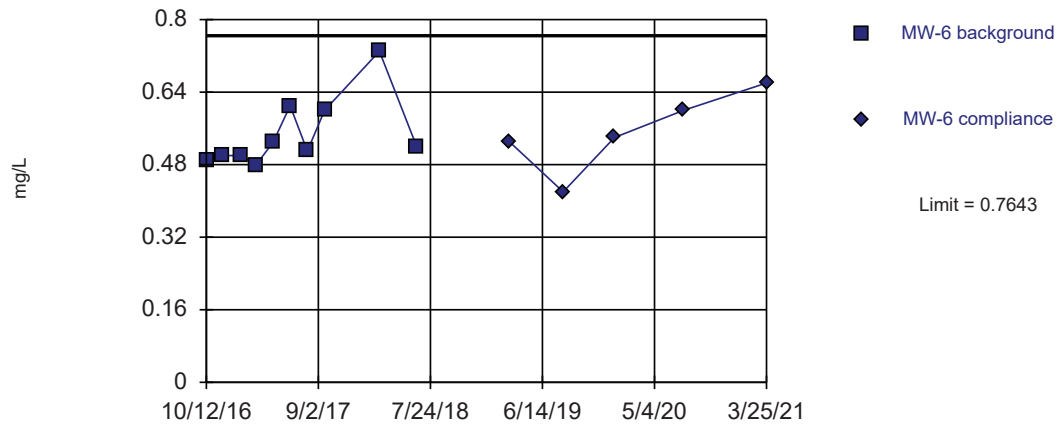
Exceeds Limit

Prediction Limit Intrawell Parametric



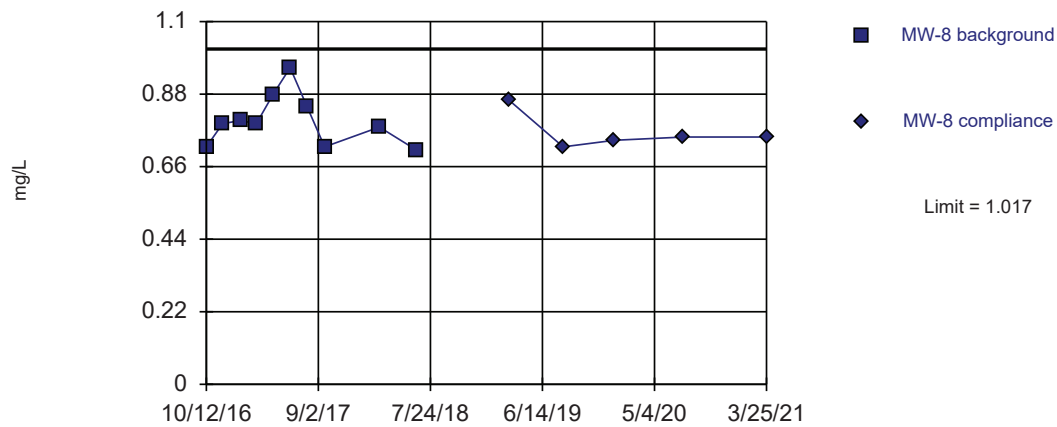
Within Limit

Prediction Limit Intrawell Parametric



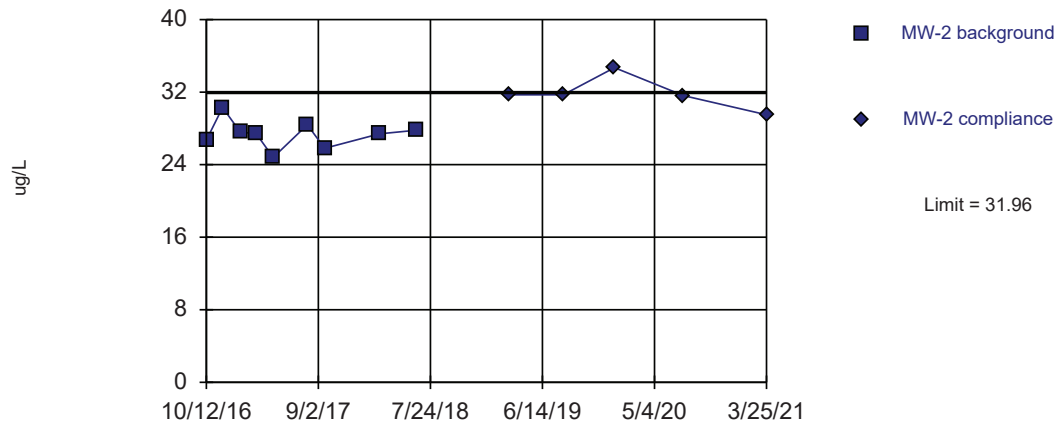
Within Limit

Prediction Limit Intrawell Parametric



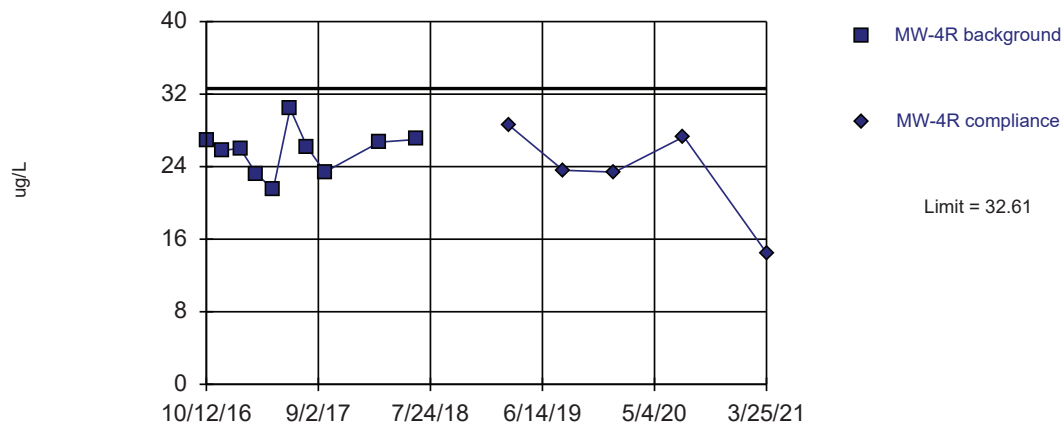
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

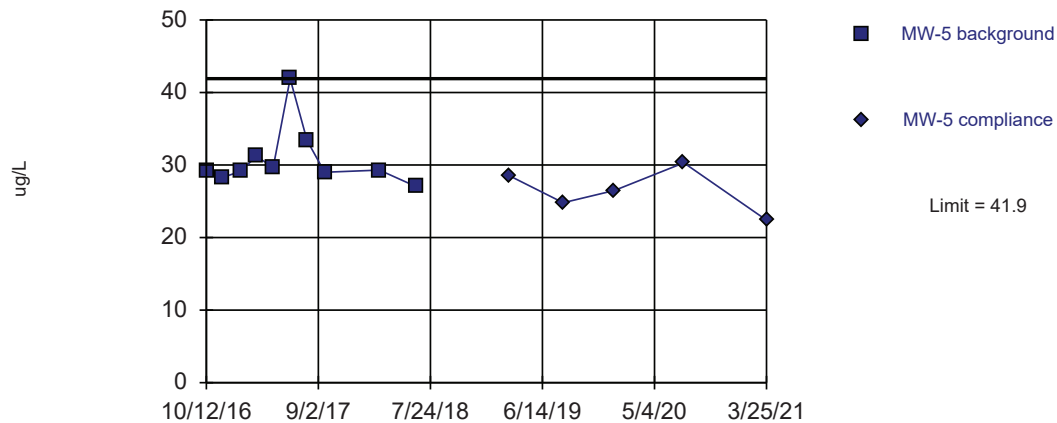


Background Data Summary: Mean=25.7, Std. Dev.=2.484, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9349, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Lithium Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Non-parametric

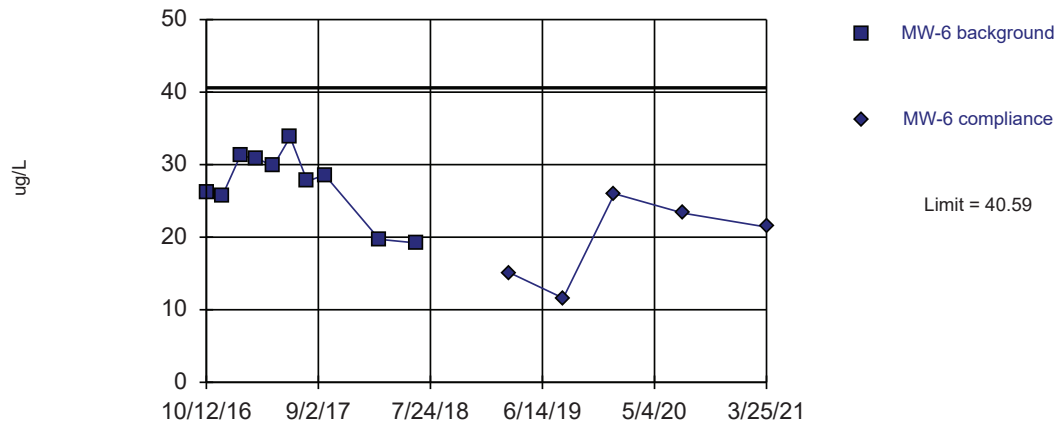


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 10 background values. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2). Seasonality was not detected with 95% confidence.

Constituent: Lithium Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

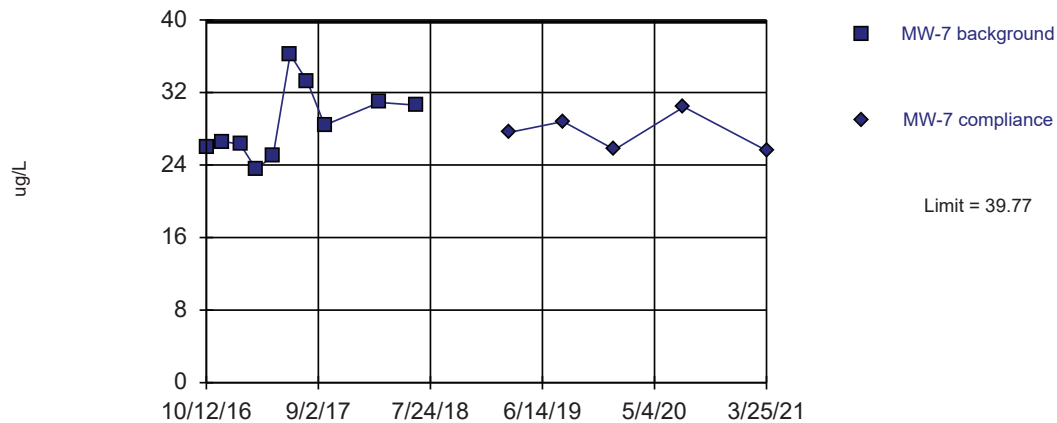


Background Data Summary: Mean=27.29, Std. Dev.=4.777, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9183, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Lithium Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

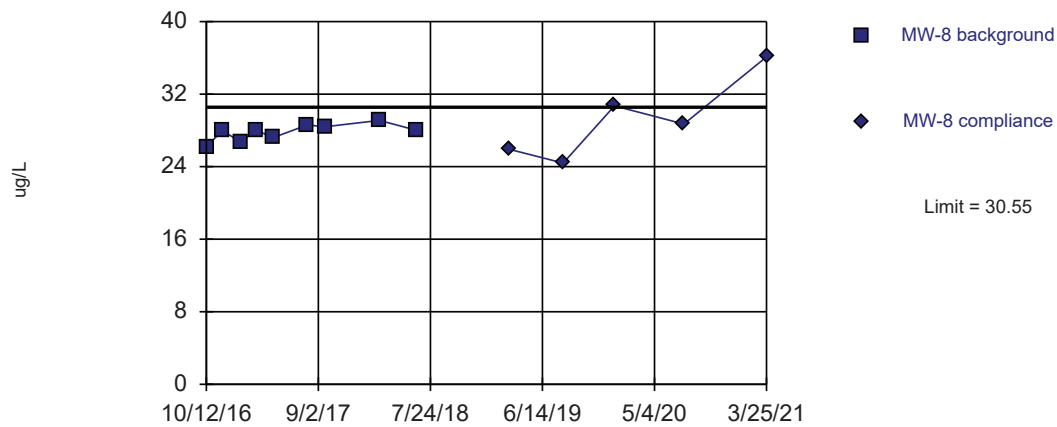


Background Data Summary: Mean=28.67, Std. Dev.=3.987, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9444, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Lithium Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

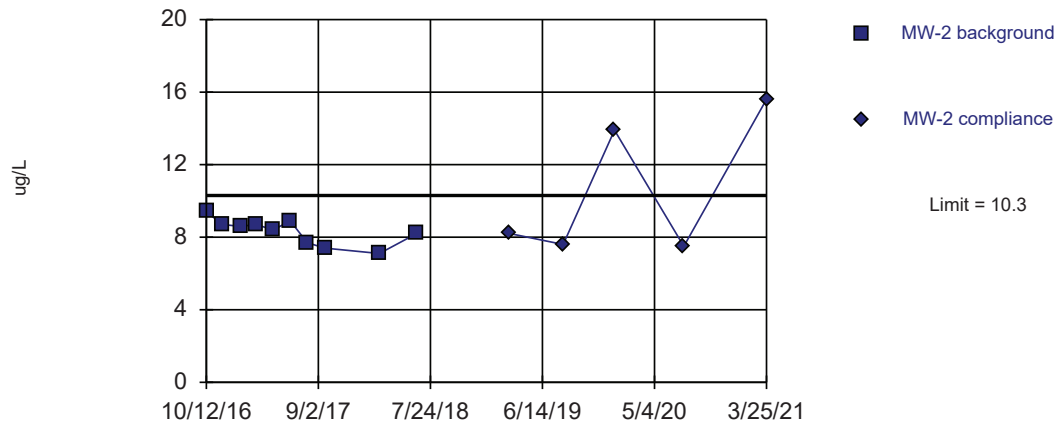
Exceeds Limit

Prediction Limit Intrawell Parametric



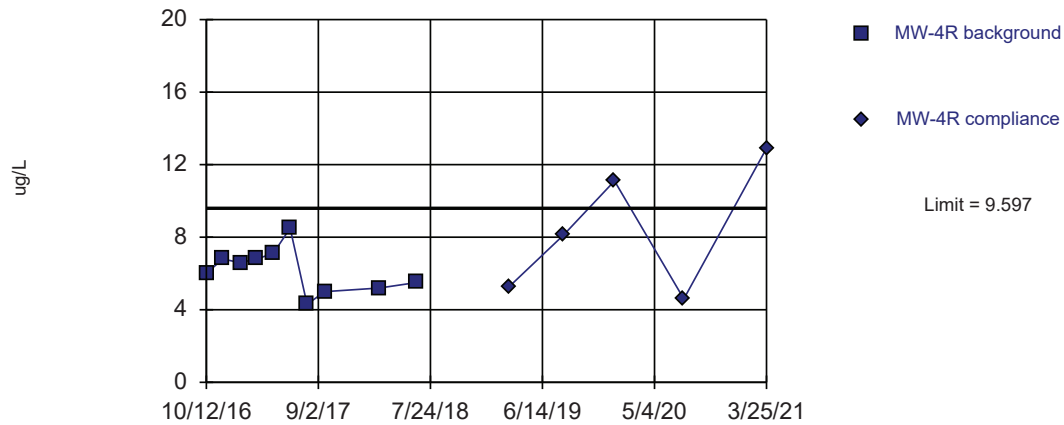
Exceeds Limit

Prediction Limit Intrawell Parametric



Exceeds Limit

Prediction Limit Intrawell Parametric

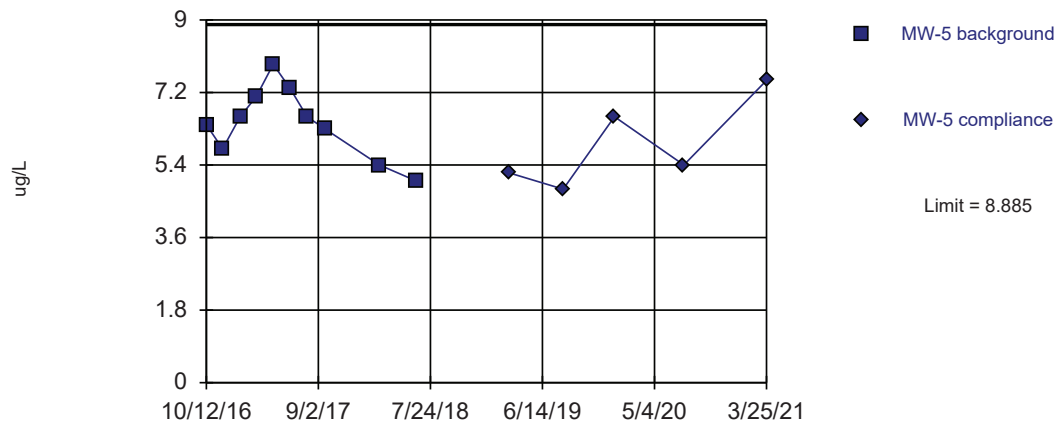


Background Data Summary: Mean=6.18, Std. Dev.=1.227, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9705, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Molybdenum Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

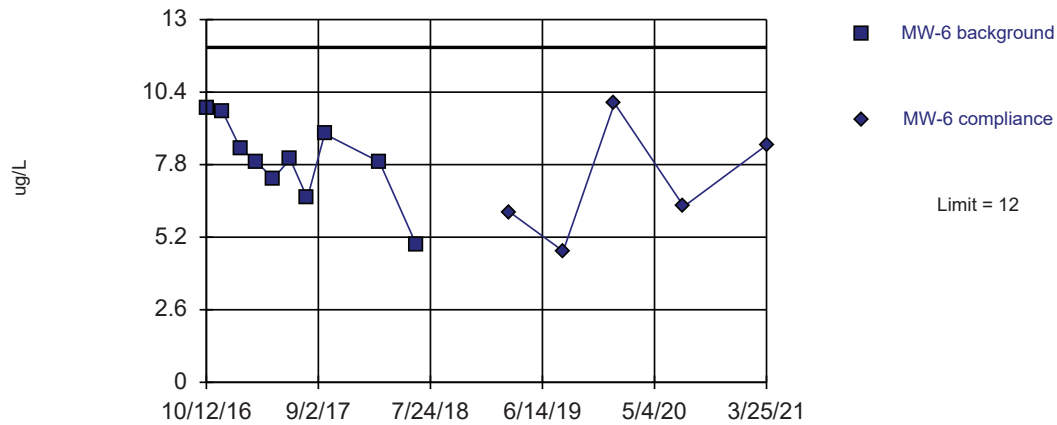


Background Data Summary: Mean=6.44, Std. Dev.=0.8784, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.983, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Molybdenum Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

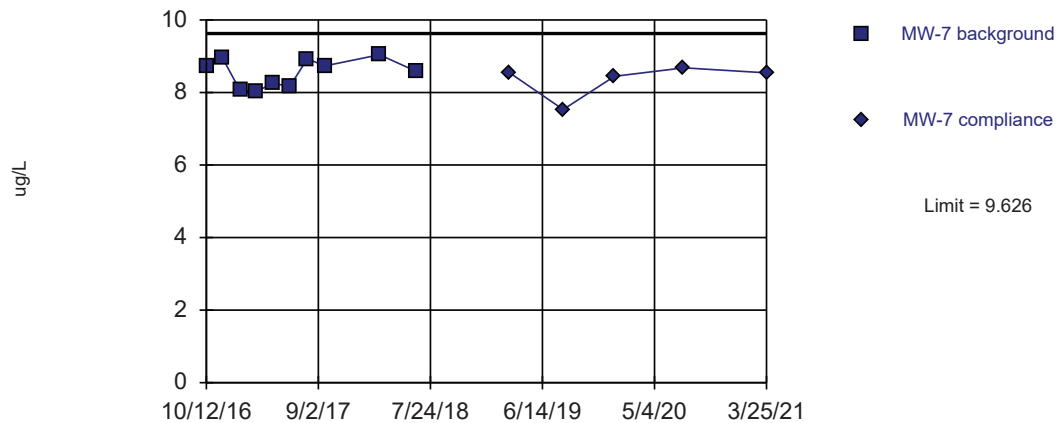


Background Data Summary: Mean=7.94, Std. Dev.=1.458, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9391, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Molybdenum Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

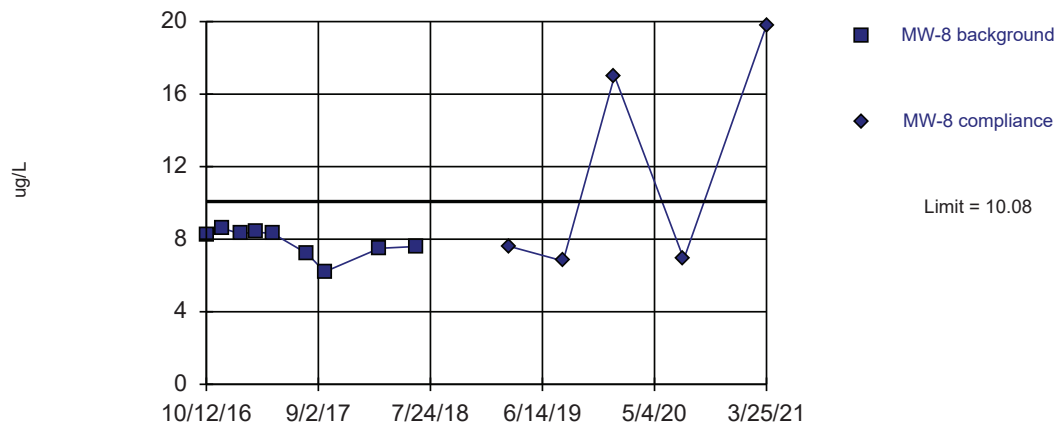


Background Data Summary: Mean=8.546, Std. Dev.=0.3879, n=10. Seasonality was detected with 95% confidence and data were deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8883, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Molybdenum Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

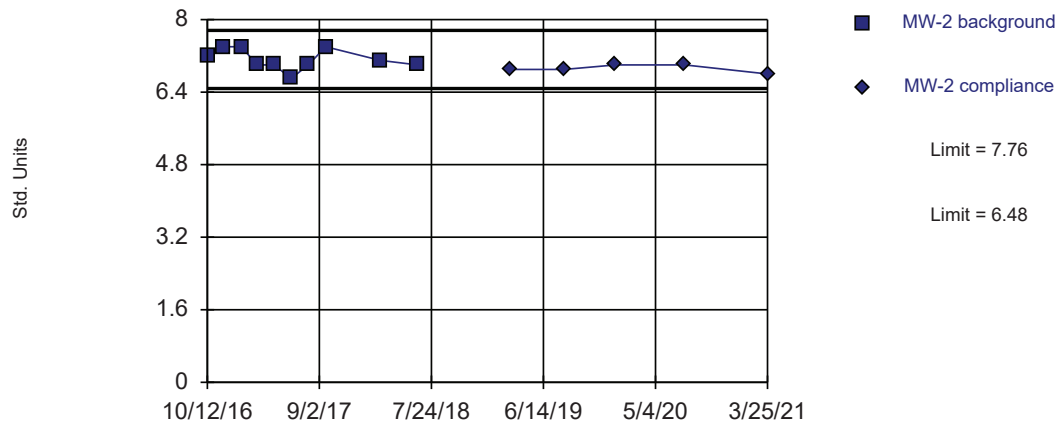
Exceeds Limit

Prediction Limit Intrawell Parametric



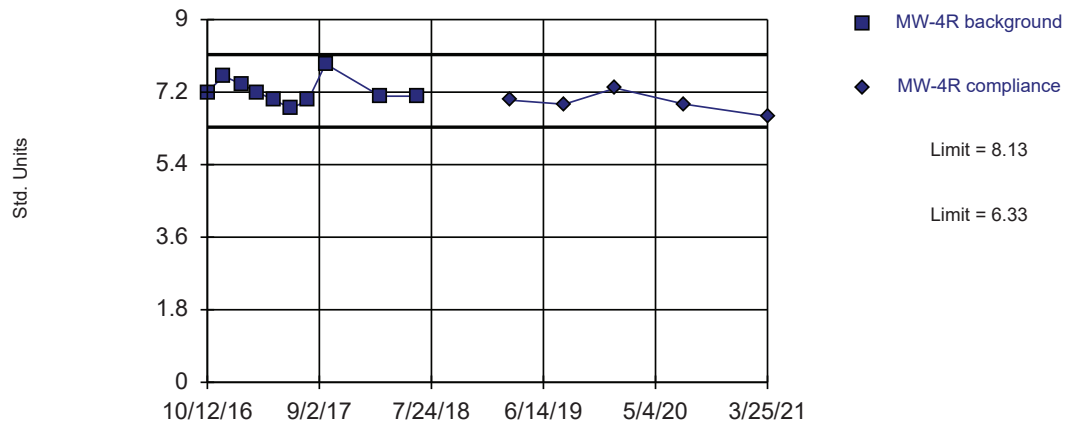
Within Limits

Prediction Limit Intrawell Parametric



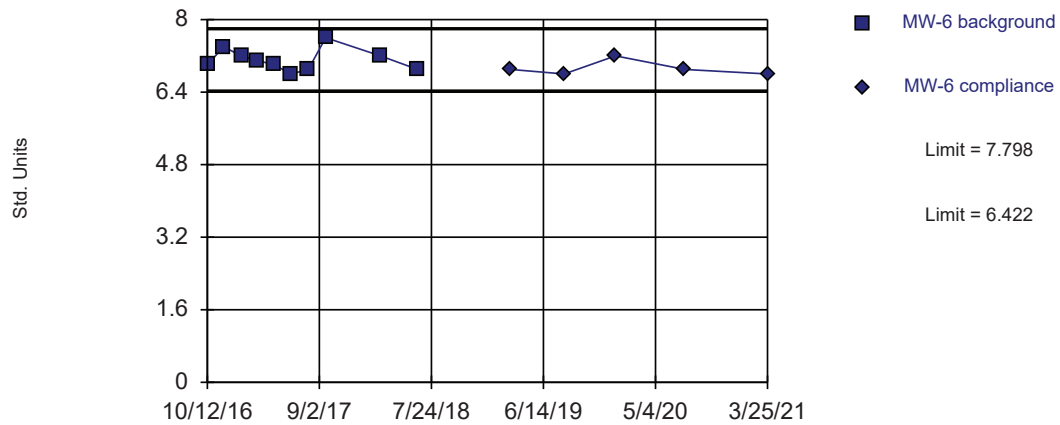
Within Limits

Prediction Limit Intrawell Parametric



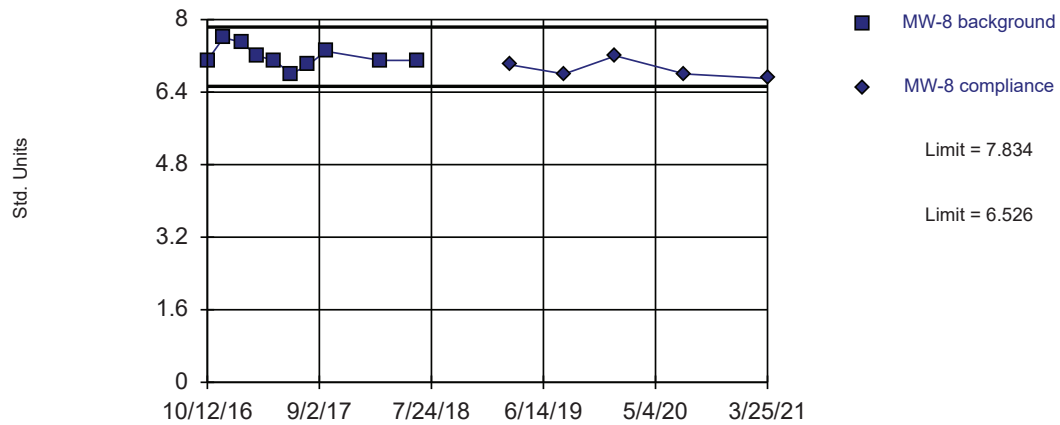
Within Limits

Prediction Limit Intrawell Parametric



Within Limits

Prediction Limit Intrawell Parametric



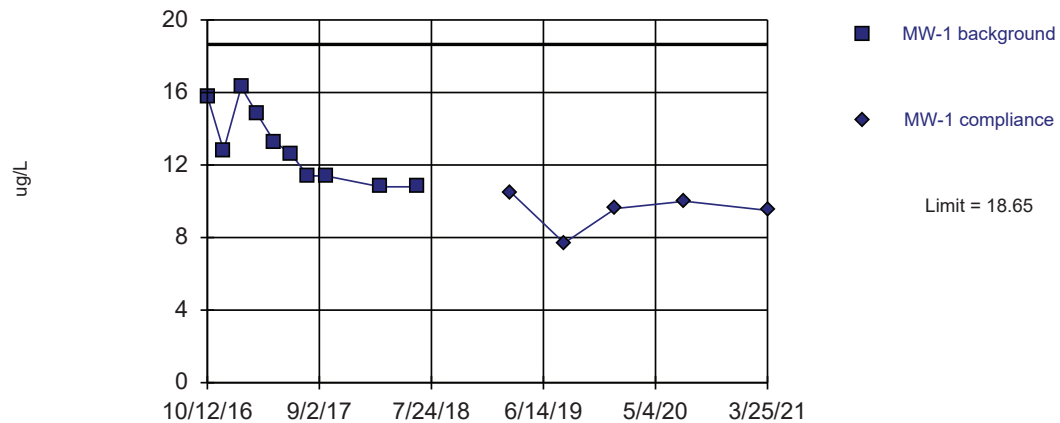
Background Data Summary: Mean=7.18, Std. Dev.=0.2348, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9288, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: pH Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



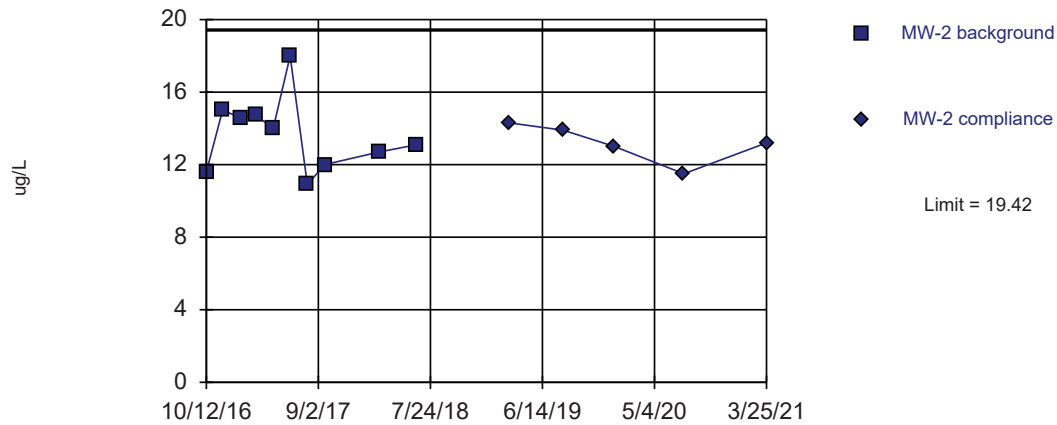
Background Data Summary: Mean=13, Std. Dev.=2.029, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8985, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



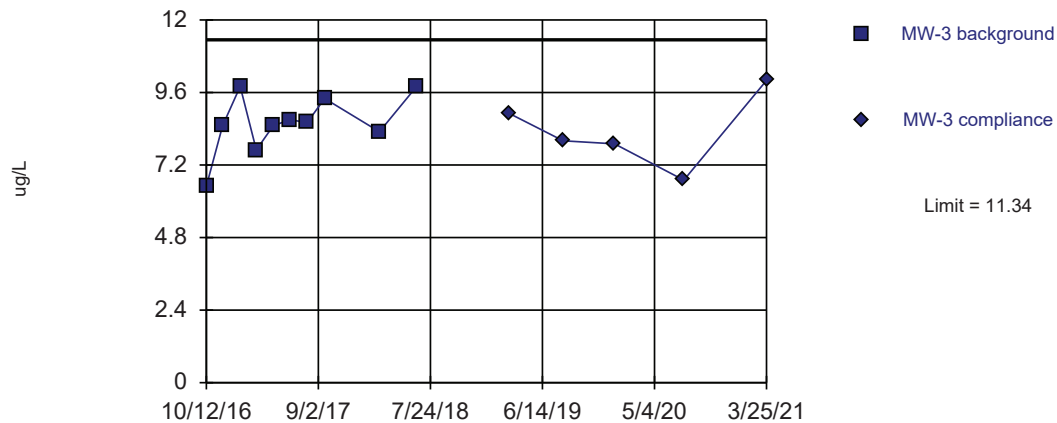
Background Data Summary: Mean=13.66, Std. Dev.=2.07, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9461, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



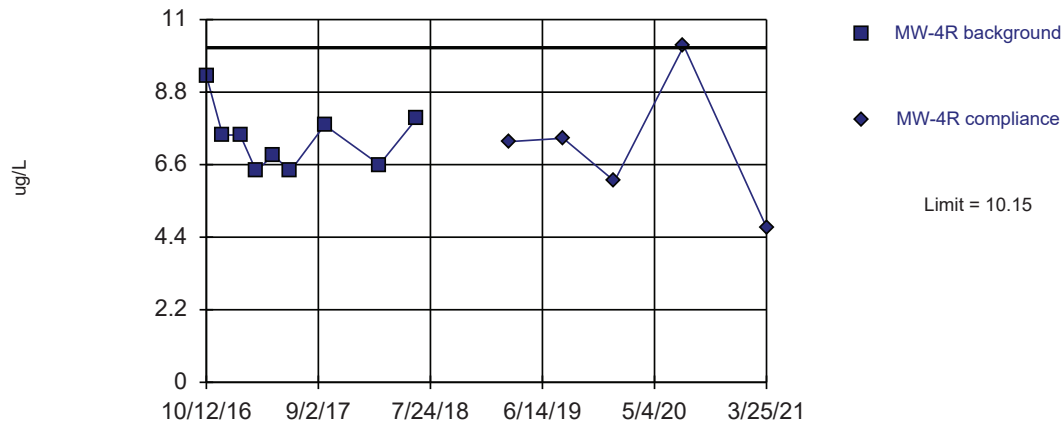
Background Data Summary: Mean=8.58, Std. Dev.=0.992, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9165, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



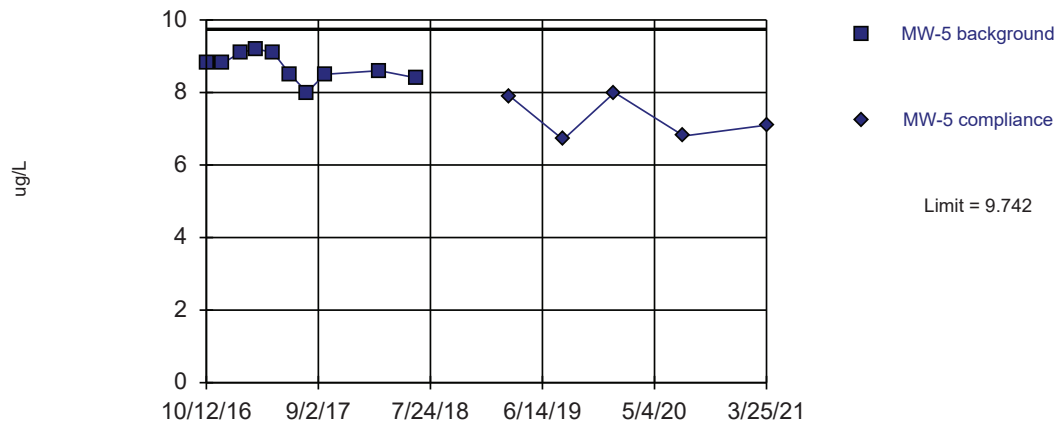
Background Data Summary: Mean=7.378, Std. Dev.=0.9378, n=9. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.903, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



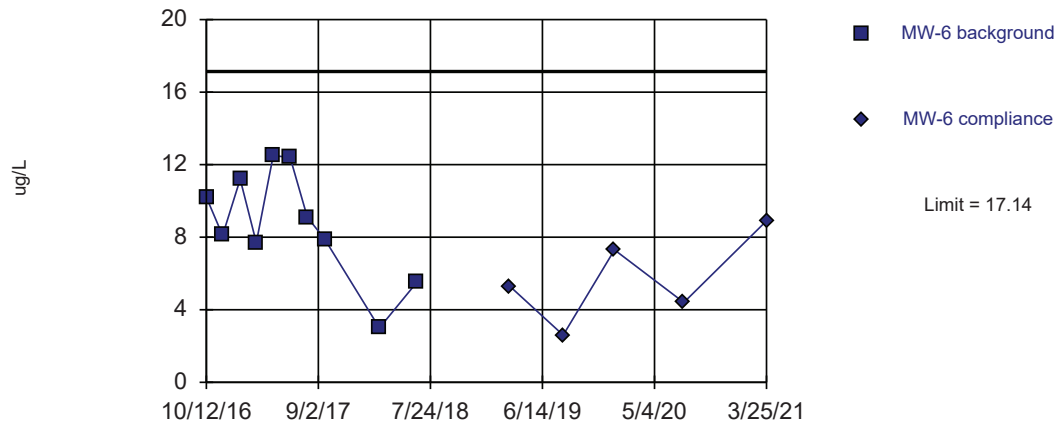
Background Data Summary: Mean=8.7, Std. Dev.=0.3742, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9468, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



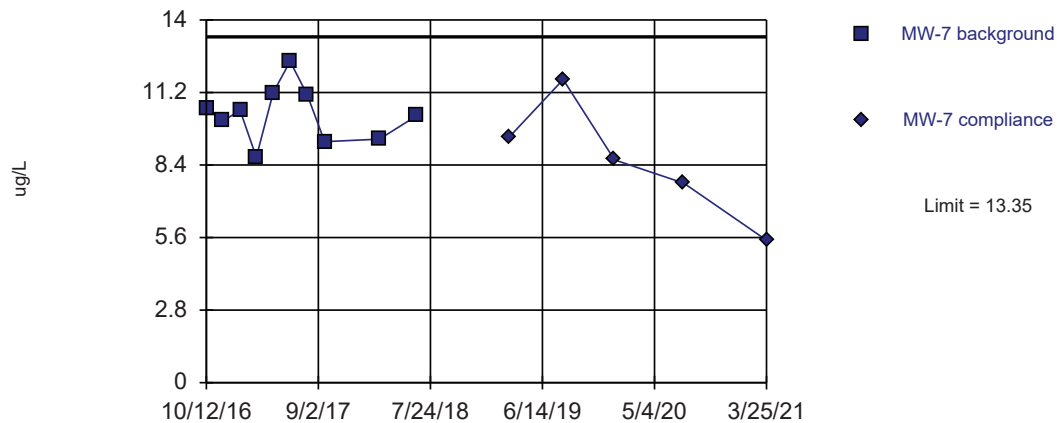
Background Data Summary: Mean=8.76, Std. Dev.=3.009, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.949, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



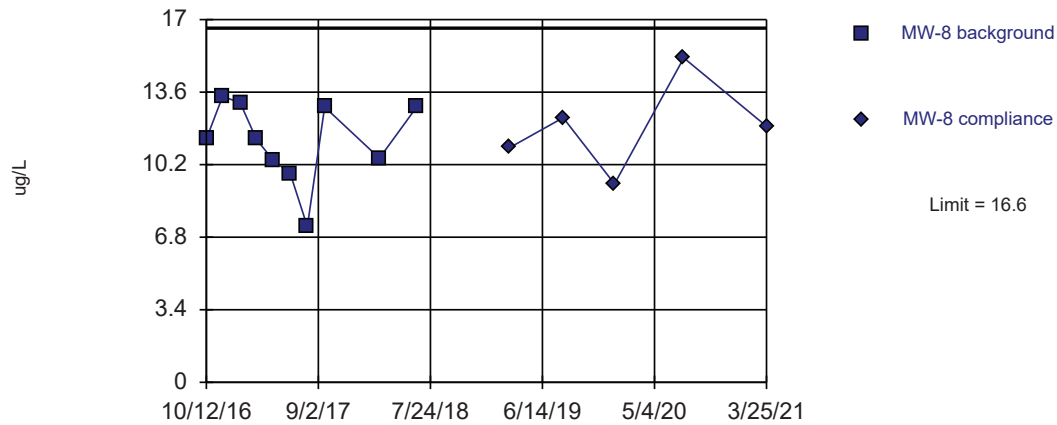
Background Data Summary: Mean=10.36, Std. Dev.=1.073, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9769, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



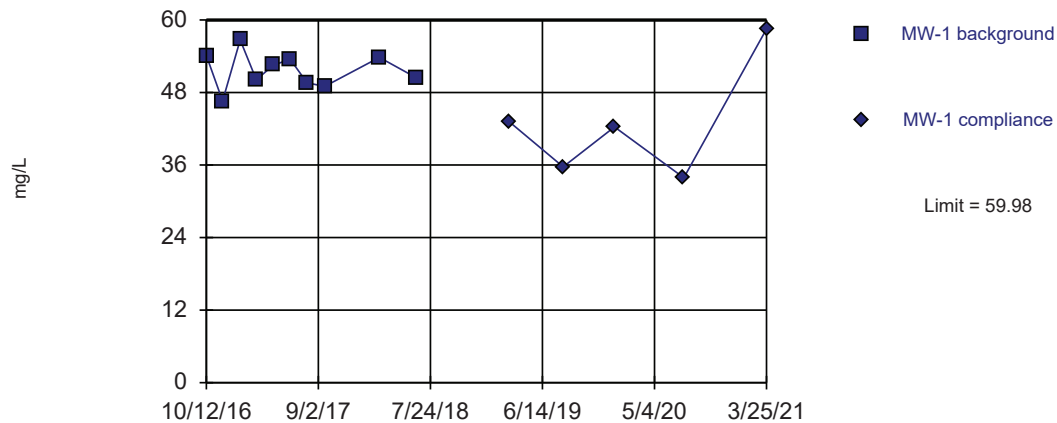
Background Data Summary: Mean=11.31, Std. Dev.=1.9, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9028, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



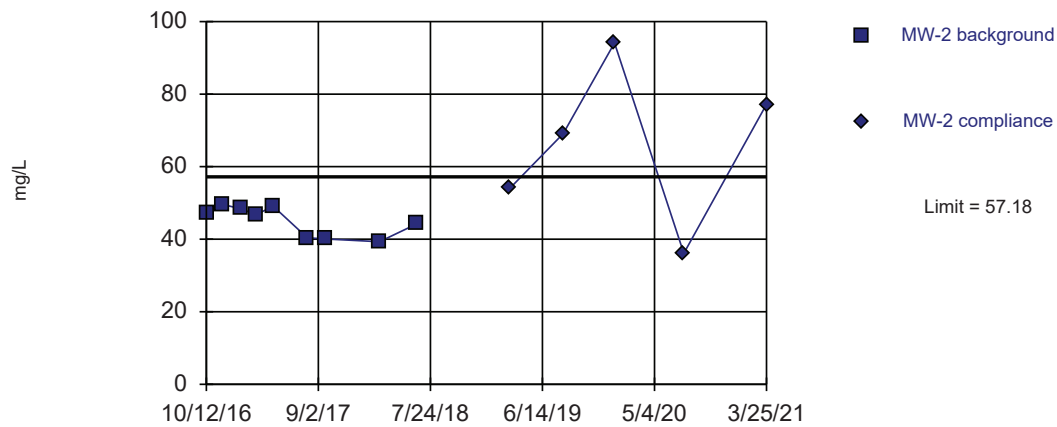
Background Data Summary: Mean=51.63, Std. Dev.=2.999, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9727, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

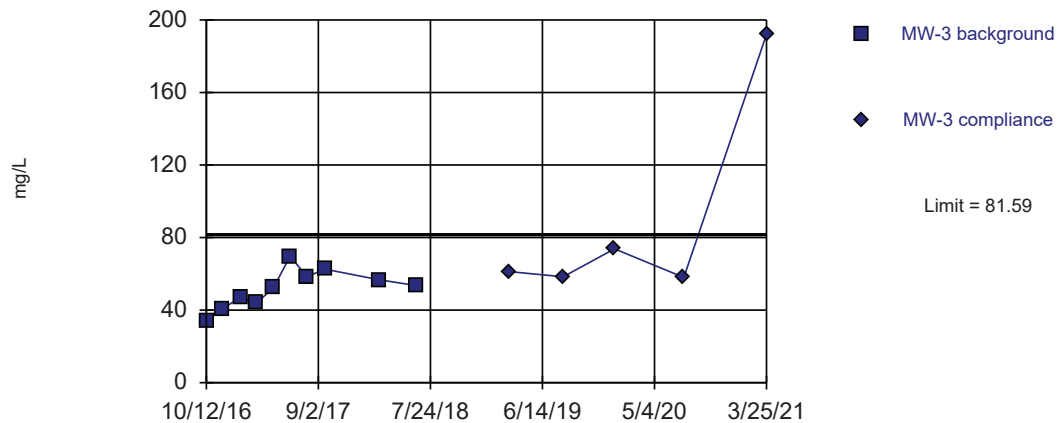


Background Data Summary: Mean=45.01, Std. Dev.=4.122, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.866, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

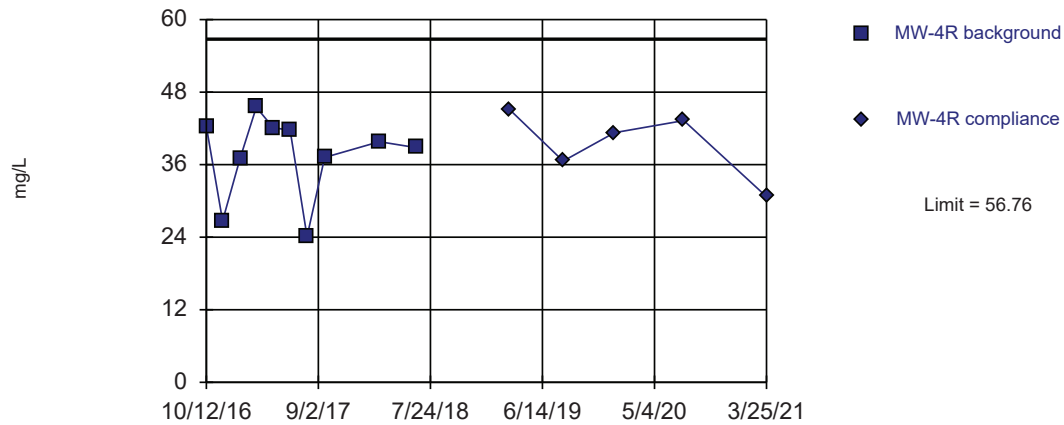


Background Data Summary: Mean=51.88, Std. Dev.=10.67, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9935, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 4/26/2021 2:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

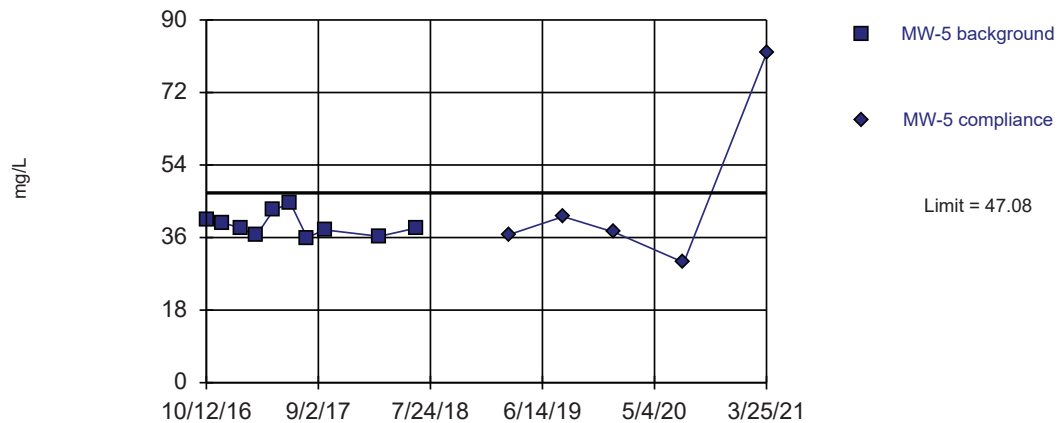


Background Data Summary: Mean=37.53, Std. Dev.=6.906, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8478, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

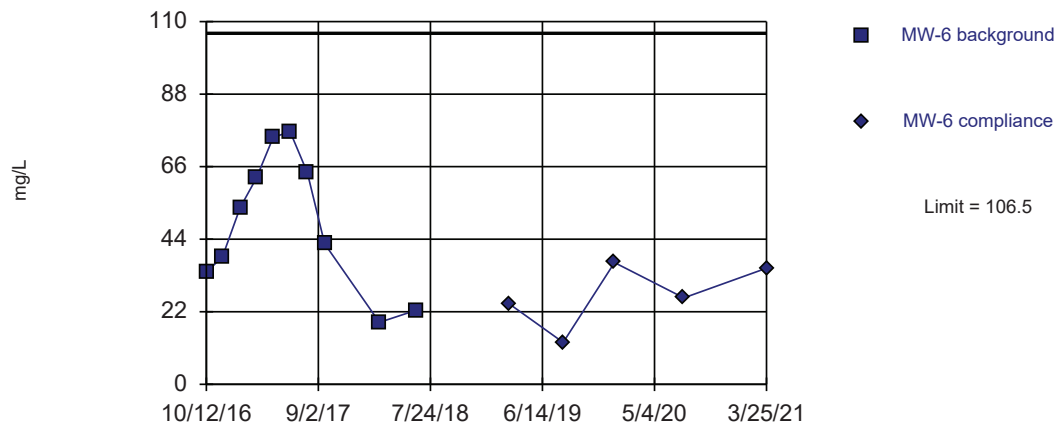


Background Data Summary: Mean=39.12, Std. Dev.=2.859, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9135, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

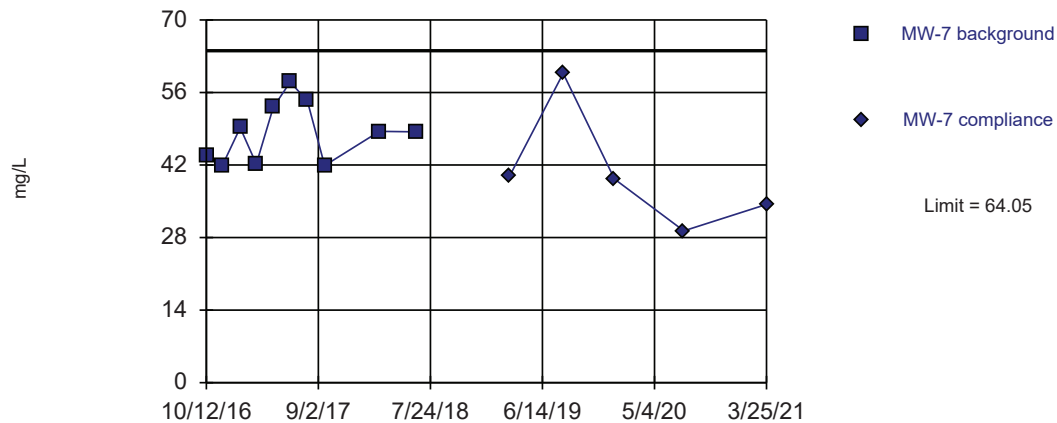


Background Data Summary: Mean=48.84, Std. Dev.=20.69, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9417, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

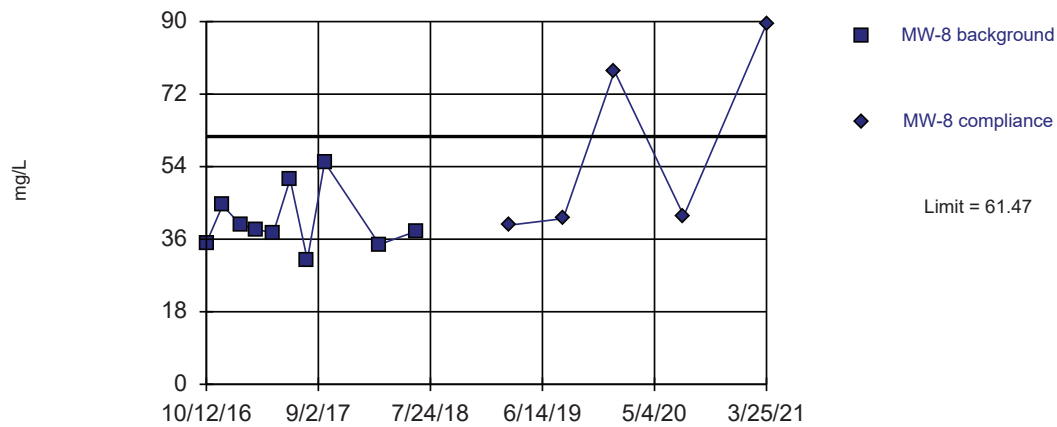


Background Data Summary: Mean=48.14, Std. Dev.=5.715, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9073, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

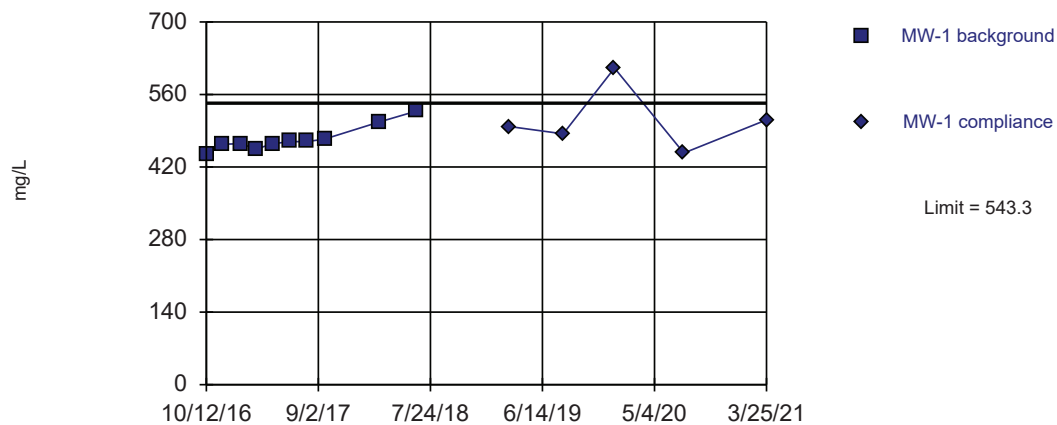


Background Data Summary: Mean=40.48, Std. Dev.=7.538, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9039, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

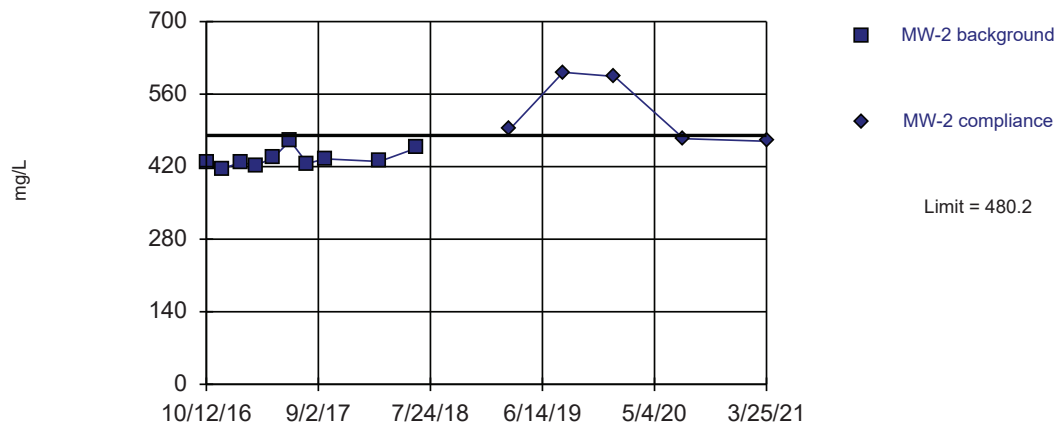


Background Data Summary: Mean=474, Std. Dev.=24.9, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8317, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Dissolved Solids Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

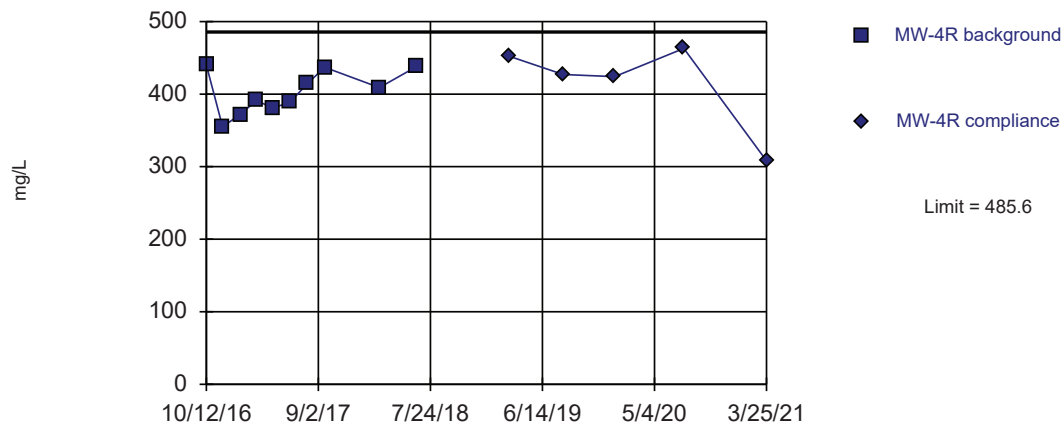
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric



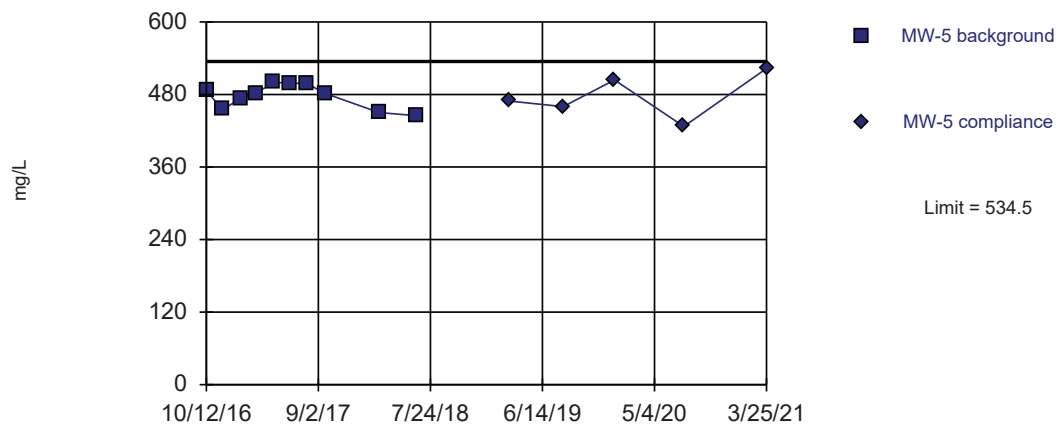
Background Data Summary: Mean=402.6, Std. Dev.=29.8, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.931, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Dissolved Solids Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



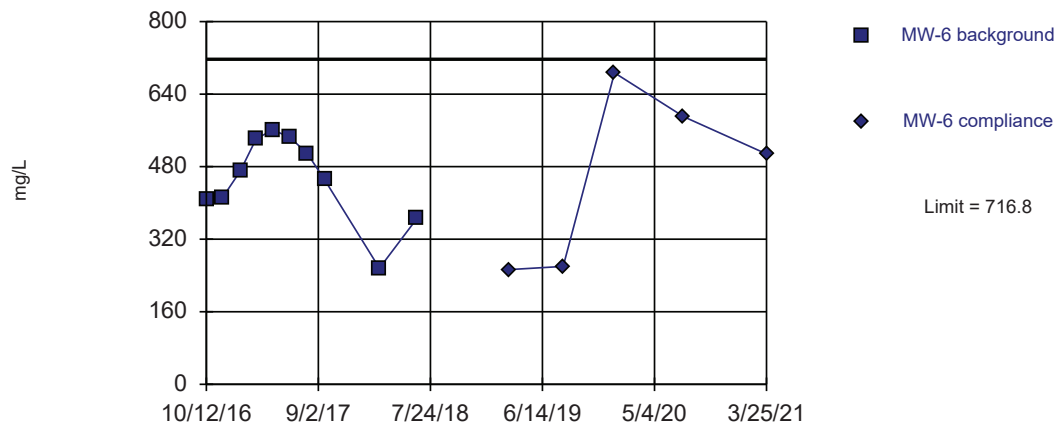
Background Data Summary: Mean=477, Std. Dev.=20.65, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8913, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Dissolved Solids Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



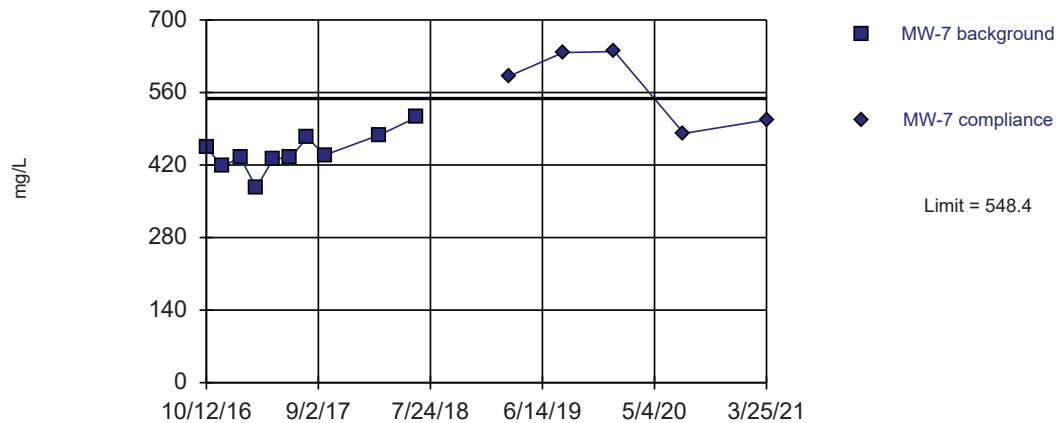
Background Data Summary: Mean=451.7, Std. Dev.=95.24, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Dissolved Solids Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



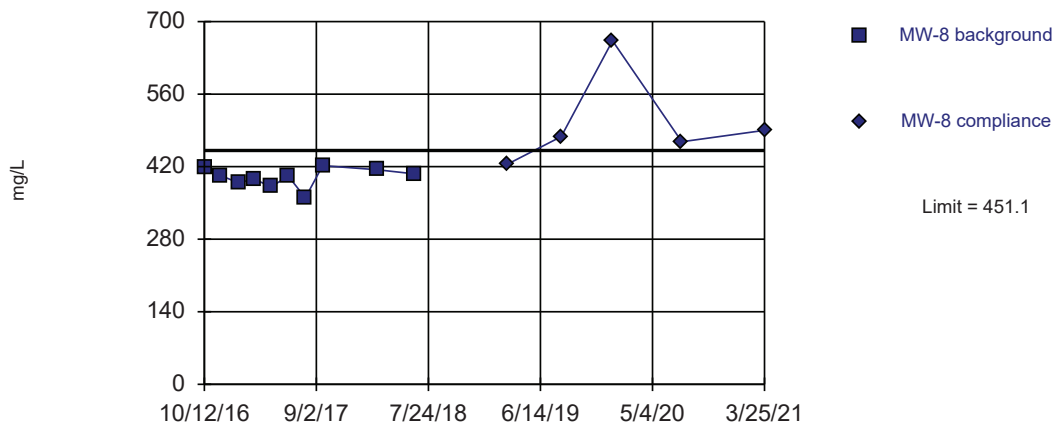
Background Data Summary: Mean=445, Std. Dev.=37.14, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9661, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Dissolved Solids Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

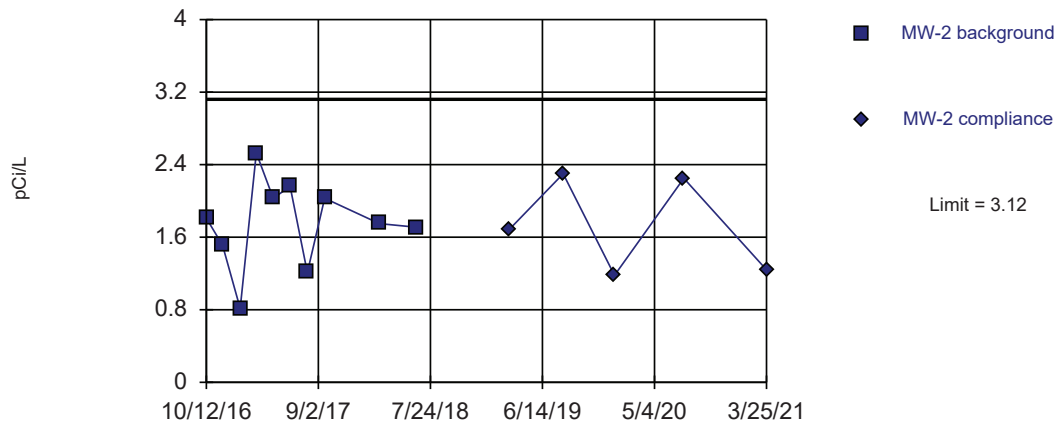
Exceeds Limit

Prediction Limit Intrawell Parametric



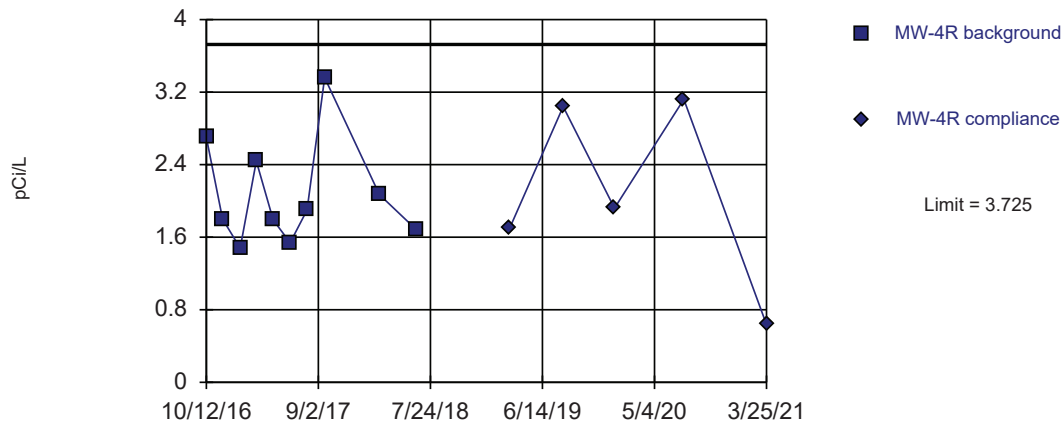
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

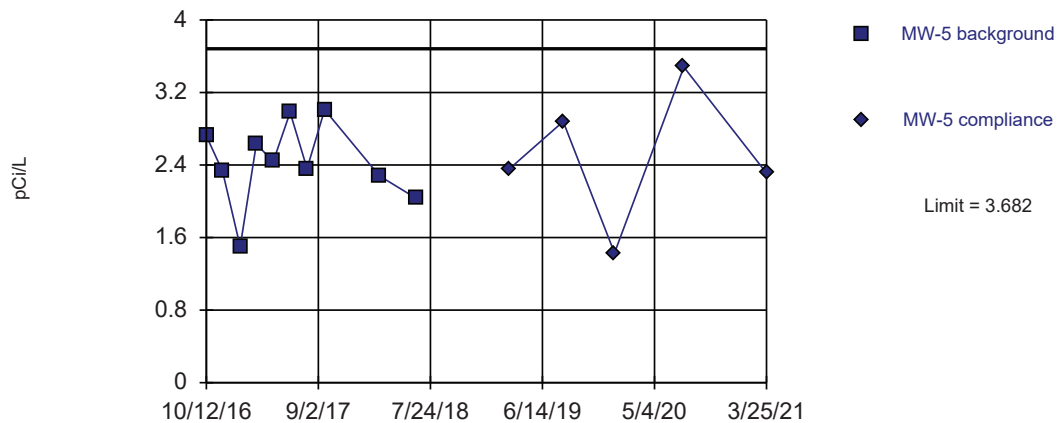


Background Data Summary: Mean=2.076, Std. Dev.=0.5924, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8741, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

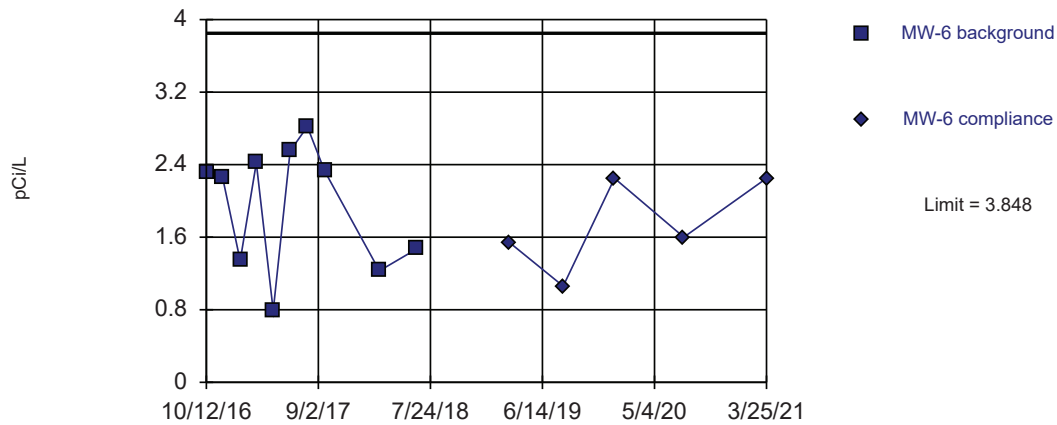


Background Data Summary: Mean=2.428, Std. Dev.=0.4504, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.945, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

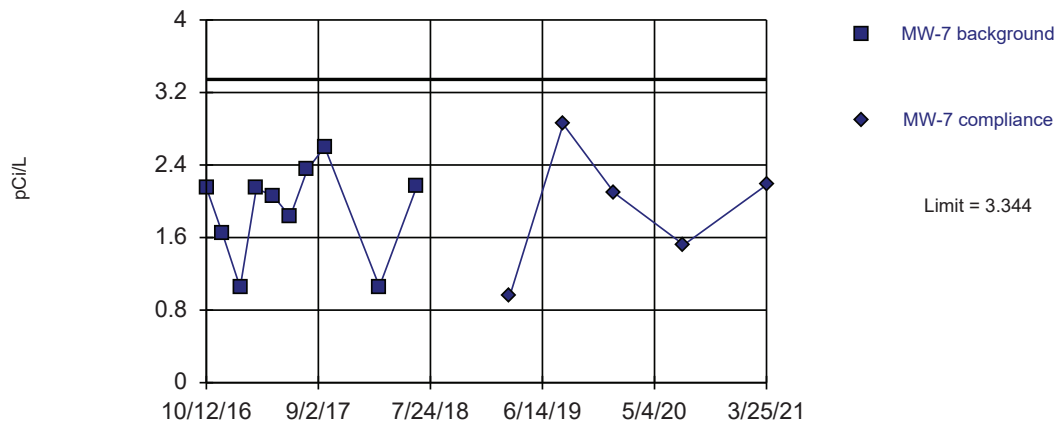


Background Data Summary: Mean=1.952, Std. Dev.=0.6812, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8997, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

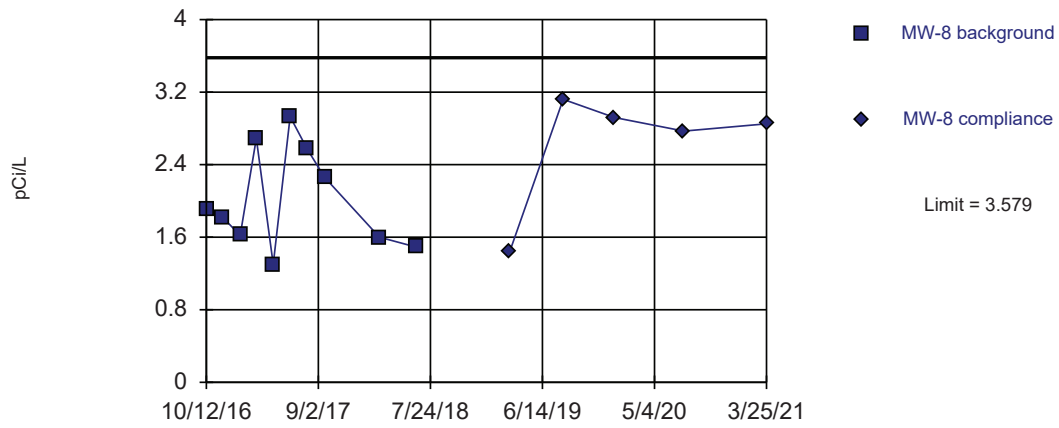


Background Data Summary: Mean=1.904, Std. Dev.=0.5171, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8953, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



Background Data Summary: Mean=2.019, Std. Dev.=0.5602, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.929, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 4/26/2021 2:09 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A.3 Interwell Prediction Limits

Interwell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 4/26/2021, 2:29 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic [total] (ug/L)	MW-1	5.251	n/a	3/25/2021	3	No	15	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-2	5.251	n/a	3/25/2021	3.9	No	15	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-3	5.251	n/a	3/25/2021	2.8	No	15	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-5	5.251	n/a	3/25/2021	4	No	15	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-6	5.251	n/a	3/25/2021	3.1	No	15	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-7	5.251	n/a	3/25/2021	3.5	No	15	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-8	5.251	n/a	3/25/2021	2.2	No	15	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-1	149.2	n/a	3/25/2021	173	Yes	15	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-2	149.2	n/a	3/25/2021	90.7	No	15	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-3	149.2	n/a	3/25/2021	182	Yes	15	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-5	149.2	n/a	3/25/2021	165	Yes	15	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-6	149.2	n/a	3/25/2021	159	Yes	15	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-7	149.2	n/a	3/25/2021	129	No	15	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-8	149.2	n/a	3/25/2021	148	No	15	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-1	464.1	n/a	3/25/2021	146	No	15	26.67	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-2	464.1	n/a	3/25/2021	151	No	15	26.67	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-3	464.1	n/a	3/25/2021	132	No	15	26.67	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-5	464.1	n/a	3/25/2021	258	No	15	26.67	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-7	464.1	n/a	3/25/2021	125	No	15	26.67	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-8	464.1	n/a	3/25/2021	1920	Yes	15	26.67	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-1	103	n/a	3/25/2021	112	Yes	15	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-2	103	n/a	3/25/2021	101	No	15	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-3	103	n/a	3/25/2021	112	Yes	15	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-5	103	n/a	3/25/2021	108	Yes	15	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-6	103	n/a	3/25/2021	85.7	No	15	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-7	103	n/a	3/25/2021	90.7	No	15	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-8	103	n/a	3/25/2021	104	Yes	15	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-1	45.25	n/a	3/25/2021	18.9	No	14	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-2	45.25	n/a	3/25/2021	11.2	No	14	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-3	45.25	n/a	3/25/2021	76.1	Yes	14	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-5	45.25	n/a	3/25/2021	22.6	No	14	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-6	45.25	n/a	3/25/2021	94.3	Yes	14	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-7	45.25	n/a	3/25/2021	111	Yes	14	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-8	45.25	n/a	3/25/2021	33.1	No	14	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-1	1.107	n/a	3/25/2021	1.3	Yes	15	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-2	1.107	n/a	3/25/2021	1.3	Yes	15	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-3	1.107	n/a	3/25/2021	0.84	No	15	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-5	1.107	n/a	3/25/2021	1.4	Yes	15	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-6	1.107	n/a	3/25/2021	0.66	No	15	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-7	1.107	n/a	3/25/2021	0.85	No	15	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-8	1.107	n/a	3/25/2021	0.75	No	15	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-1	33.95	n/a	3/25/2021	37	Yes	15	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-2	33.95	n/a	3/25/2021	29.5	No	15	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-3	33.95	n/a	3/25/2021	31	No	15	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-5	33.95	n/a	3/25/2021	22.4	No	15	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-6	33.95	n/a	3/25/2021	21.4	No	15	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-7	33.95	n/a	3/25/2021	25.6	No	15	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-8	33.95	n/a	3/25/2021	36.1	Yes	15	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-1	12.78	n/a	3/25/2021	7	No	15	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-2	12.78	n/a	3/25/2021	15.6	Yes	15	0	No	0.000...	Param 1 of 2

Interwell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

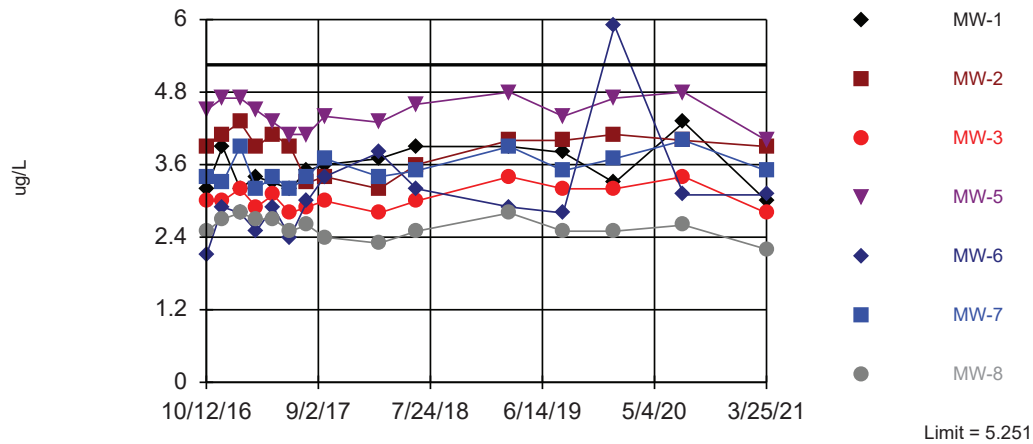
Data: Fremont Department of Utilities Groundwater

Printed 4/26/2021, 2:29 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Molybdenum (ug/L)	MW-3	12.78	n/a	3/25/2021	15.4	Yes	15	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-5	12.78	n/a	3/25/2021	7.5	No	15	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-6	12.78	n/a	3/25/2021	8.5	No	15	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-7	12.78	n/a	3/25/2021	8	No	15	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-8	12.78	n/a	3/25/2021	19.8	Yes	15	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-1	7.92	6.346	3/25/2021	6.8	No	15	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-2	7.92	6.346	3/25/2021	6.8	No	15	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-3	7.92	6.346	3/25/2021	6.8	No	15	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-5	7.92	6.346	3/25/2021	6.8	No	15	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-6	7.92	6.346	3/25/2021	6.8	No	15	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-7	7.92	6.346	3/25/2021	6.8	No	15	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-8	7.92	6.346	3/25/2021	6.7	No	15	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-1	10.64	n/a	3/25/2021	9.5	No	14	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-2	10.64	n/a	3/25/2021	13.2	Yes	14	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-3	10.64	n/a	3/25/2021	10	No	14	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-5	10.64	n/a	3/25/2021	7.1	No	14	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-6	10.64	n/a	3/25/2021	8.9	No	14	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-7	10.64	n/a	3/25/2021	5.5	No	14	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-8	10.64	n/a	3/25/2021	12	Yes	14	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-1	53.71	n/a	3/25/2021	58.5	Yes	15	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-2	53.71	n/a	3/25/2021	77.2	Yes	15	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-3	53.71	n/a	3/25/2021	192	Yes	15	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-5	53.71	n/a	3/25/2021	81.7	Yes	15	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-6	53.71	n/a	3/25/2021	35.2	No	15	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-7	53.71	n/a	3/25/2021	34.4	No	15	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-8	53.71	n/a	3/25/2021	89.4	Yes	15	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	506.8	n/a	3/25/2021	511	Yes	15	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-2	506.8	n/a	3/25/2021	469	No	15	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-3	506.8	n/a	3/25/2021	565	Yes	15	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-5	506.8	n/a	3/25/2021	523	Yes	15	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-6	506.8	n/a	3/25/2021	508	Yes	15	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-7	506.8	n/a	3/25/2021	507	Yes	15	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-8	506.8	n/a	3/25/2021	490	No	15	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-1	3.844	n/a	3/25/2021	1.44	No	15	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-2	3.844	n/a	3/25/2021	1.24	No	15	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-3	3.844	n/a	3/25/2021	2.31	No	15	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-5	3.844	n/a	3/25/2021	2.31	No	15	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-6	3.844	n/a	3/25/2021	2.25	No	15	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-7	3.844	n/a	3/25/2021	2.18	No	15	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-8	3.844	n/a	3/25/2021	2.85	No	15	0	No	0.000...	Param 1 of 2

Within Limit

Prediction Limit Interwell Parametric

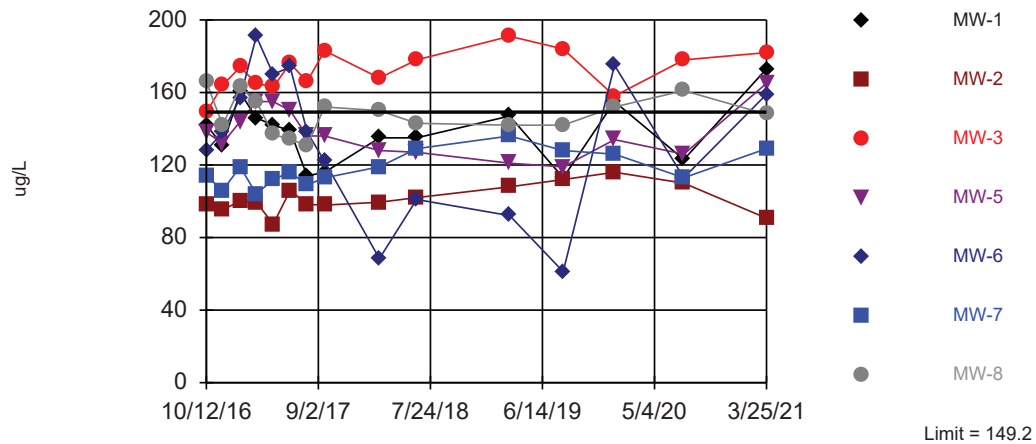


Background Data Summary: Mean=3.933, Std. Dev.=0.5434, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9412, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Arsenic [total] Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-1, MW-3, MW-5, MW-6

Prediction Limit Interwell Parametric

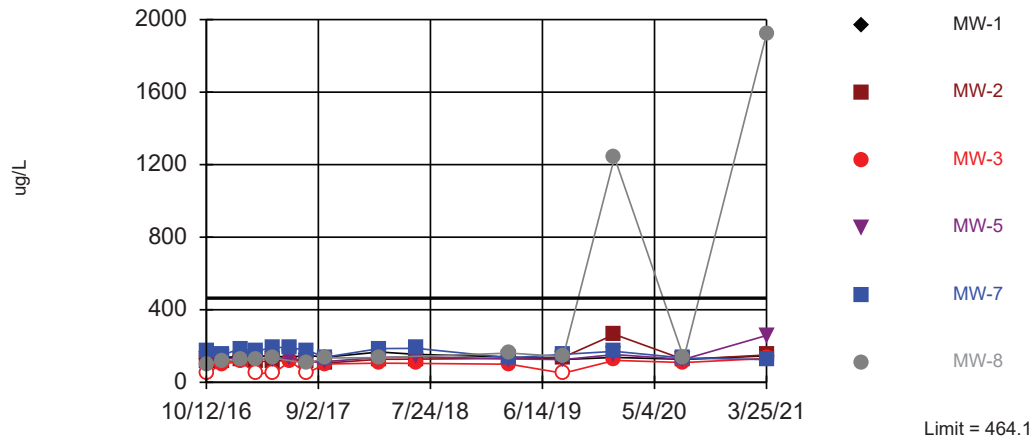


Background Data Summary: Mean=124.6, Std. Dev.=10.13, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9748, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Barium [total] Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-8

Prediction Limit Interwell Parametric

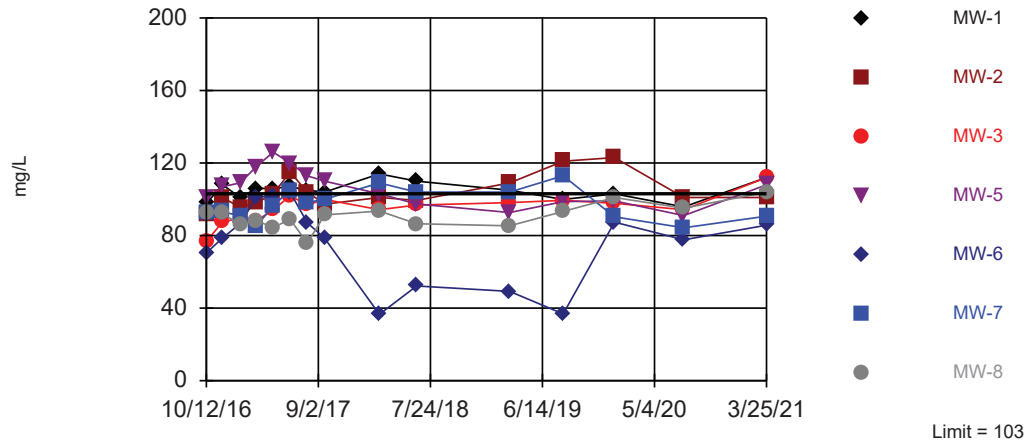


Background Data Summary (after Aitchison's Adjustment): Mean=171.2, Std. Dev.=120.8, n=15, 26.67% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9142, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 6 points to limit.

Constituent: Boron Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-1, MW-3, MW-5, MW-8

Prediction Limit Interwell Parametric

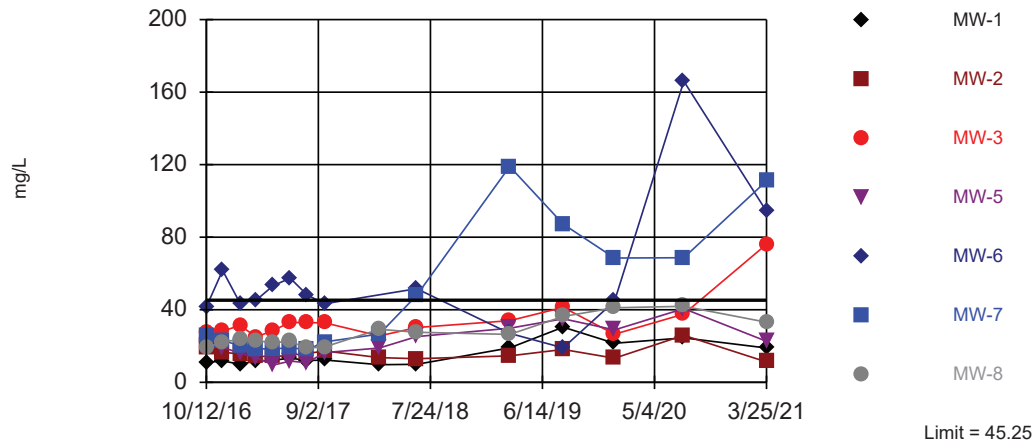


Background Data Summary: Mean=83.02, Std. Dev.=8.25, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9494, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Calcium Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-3, MW-6, MW-7

Prediction Limit Interwell Parametric

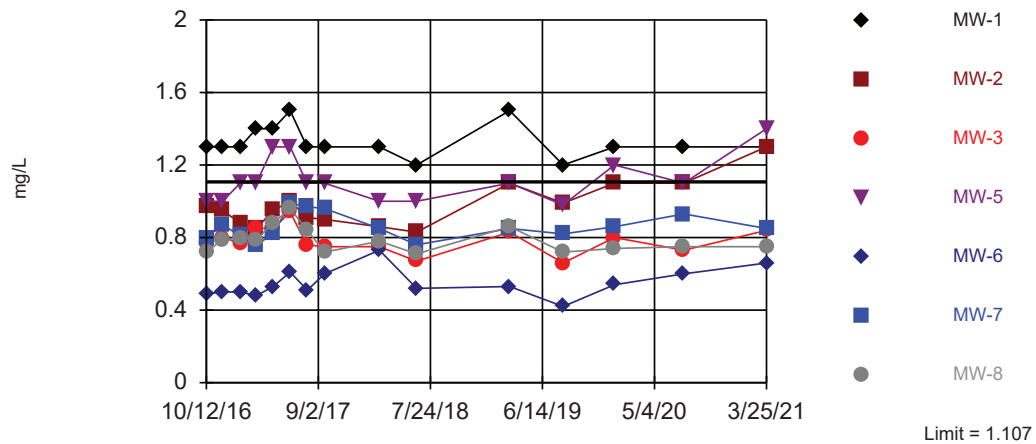


Background Data Summary: Mean=22.08, Std. Dev.=9.355, n=14. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9365, critical = 0.825. Kappa = 2.477 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Chloride Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-1, MW-2, MW-5

Prediction Limit Interwell Parametric

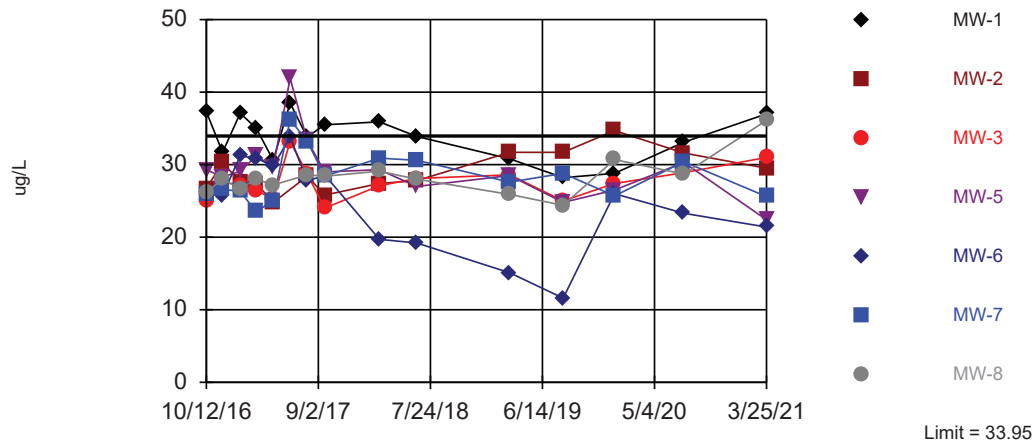


Background Data Summary: Mean=0.874, Std. Dev.=0.09612, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9072, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Fluoride Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-1, MW-8

Prediction Limit Interwell Parametric

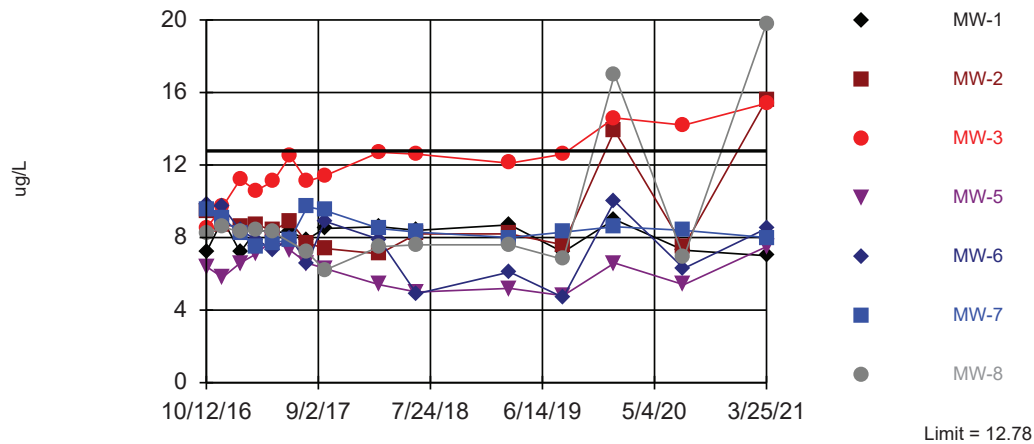


Background Data Summary: Mean=24.95, Std. Dev.=3.71, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8705, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Lithium Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-2, MW-3, MW-8

Prediction Limit Interwell Parametric

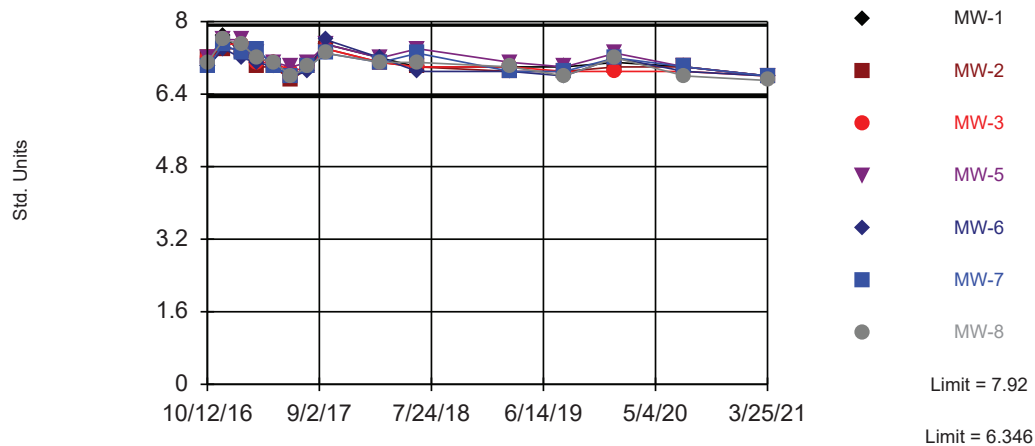


Background Data Summary: Mean=6.92, Std. Dev.=2.415, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8616, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Molybdenum Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limits

Prediction Limit Interwell Parametric

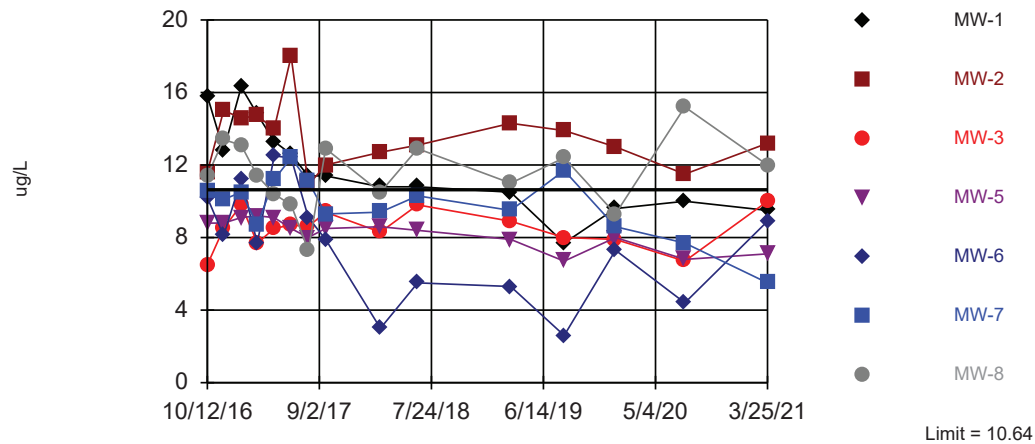


Background Data Summary: Mean=7.133, Std. Dev.=0.3244, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9496, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0003989. Comparing 7 points to limit.

Constituent: pH Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-2, MW-8

Prediction Limit Interwell Parametric

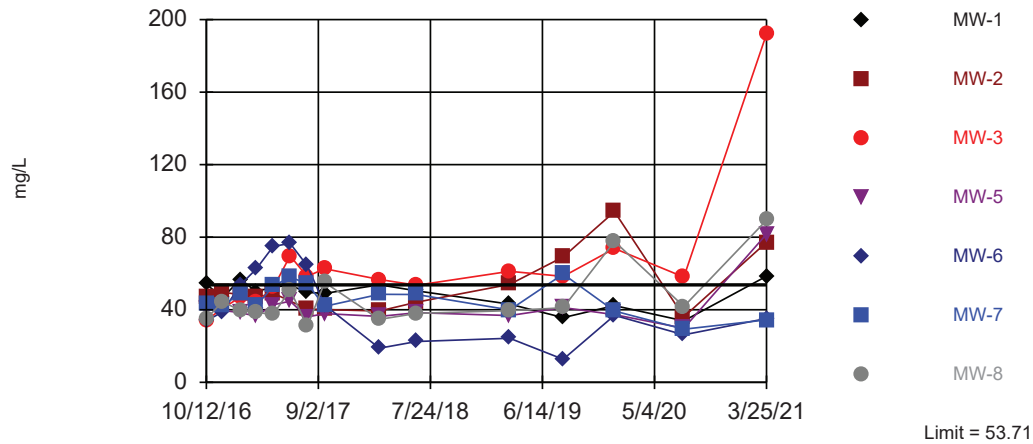


Background Data Summary: Mean=7.293, Std. Dev.=1.35, n=14. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.953, critical = 0.825. Kappa = 2.477 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Selenium [total] Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-1, MW-2, MW-3, MW-5,
MW-8

Prediction Limit Interwell Parametric

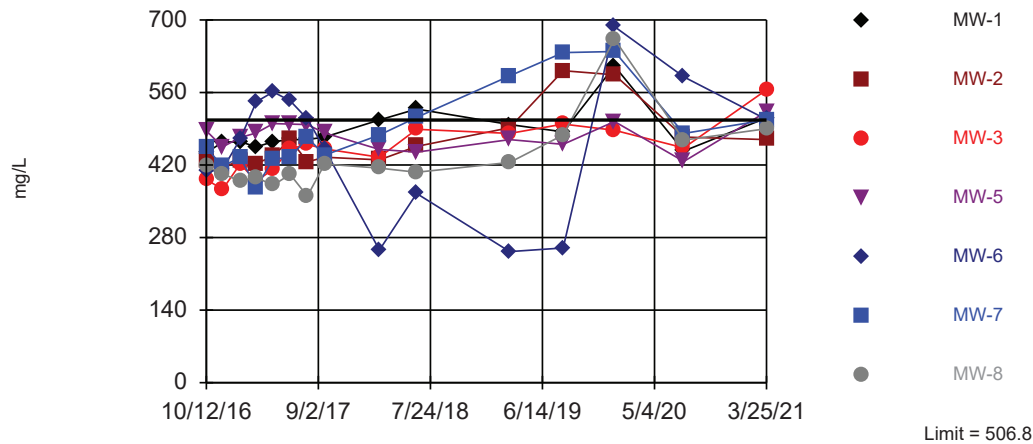


Background Data Summary: Mean=38.15, Std. Dev.=6.413, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8792, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Sulfate Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-1, MW-3, MW-5, MW-6,
MW-7

Prediction Limit Interwell Parametric

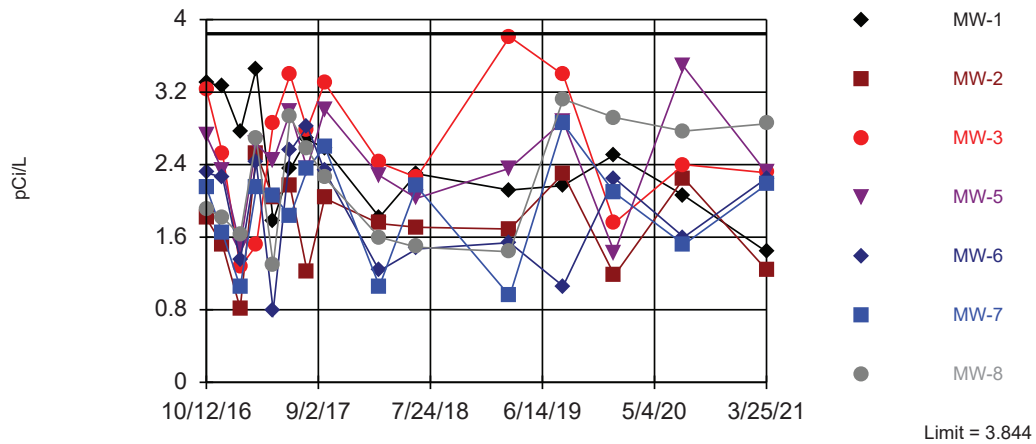


Background Data Summary: Mean=406.7, Std. Dev.=41.26, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9423, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Total Dissolved Solids Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Interwell Parametric



Background Data Summary: Mean=2.078, Std. Dev.=0.7277, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9402, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Total Radium Analysis Run 4/26/2021 2:28 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A.4 Sen's Slope/Mann-Kendall Analysis

Trend Test

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

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<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic [total] (ug/L)	MW-1	0.1931	28	48	No	15	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-2	0	-7	-48	No	15	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-3	0.03687	15	48	No	15	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-4R (bg)	0	1	48	No	15	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-5	0	1	48	No	15	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-6	0.1986	44	48	No	15	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-7	0.08022	43	48	No	15	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-8	-0.0642	-32	-48	No	15	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-1	-0.4913	-3	-48	No	15	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-2	3.768	38	48	No	15	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-3	4.381	48	48	No	15	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-4R (bg)	5.652	59	48	Yes	15	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-5	-4.803	-35	-48	No	15	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-6	-12.03	-22	-48	No	15	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-7	4.555	46	48	No	15	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-8	-0.8588	-9	-48	No	15	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-1	0.2635	6	48	No	15	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-2	7.449	53	44	Yes	14	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-3	4.49	33	48	No	15	33.33	n/a	n/a	0.02	NP
Boron (ug/L)	MW-4R (bg)	0	1	48	No	15	26.67	n/a	n/a	0.02	NP
Boron (ug/L)	MW-5	5.835	26	48	No	15	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-7	-7.758	-37	-48	No	15	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-8	19.03	57	39	Yes	13	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-1	-0.4285	-3	-48	No	15	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2	3.109	41	48	No	15	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3	4.135	56	48	Yes	15	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4R (bg)	-0.8111	-10	-48	No	15	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	-4.012	-37	-48	No	15	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	-3.773	-17	-48	No	15	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7	3.544	12	48	No	15	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-8	2.483	35	48	No	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-1	3.114	51	48	Yes	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2	-0.8083	-23	-44	No	14	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3	2.873	47	48	No	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4R (bg)	3.153	33	44	No	14	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	5.34	45	48	No	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	1.809	7	44	No	14	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7	15.42	51	48	Yes	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-8	4.913	59	48	Yes	15	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-1	0	-14	-48	No	15	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2	0.04747	33	48	No	15	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3	-0.01134	-23	-48	No	15	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4R (bg)	0.0409	30	48	No	15	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	0	15	48	No	15	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.01872	42	48	No	15	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7	0.009561	14	48	No	15	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-8	-0.01022	-16	-48	No	15	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-1	-1.042	-27	-48	No	15	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-2	1.236	37	44	No	14	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-3	0.6134	28	48	No	15	0	n/a	n/a	0.02	NP

Trend Test

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

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<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Lithium (ug/L)	MW-4R (bg)	-0.07271	-2	-48	No	15	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-5	-1.18	-36	-48	No	15	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-6	-2.94	-47	-48	No	15	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-7	0.2212	5	48	No	15	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-8	0.8732	32	44	No	14	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-1	0	1	48	No	15	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-2	-0.2852	-21	-48	No	15	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-3	1.228	81	48	Yes	15	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-4R (bg)	0.5331	14	48	No	15	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-5	-0.2715	-21	-48	No	15	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-6	-0.9107	-34	-48	No	15	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-7	-0.04781	-6	-48	No	15	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-8	-0.2489	-9	-44	No	14	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-1	-0.07192	-37	-48	No	15	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-2	-0.0548	-42	-48	No	15	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-3	-0.08774	-68	-48	Yes	15	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-4R (bg)	-0.102	-43	-48	No	15	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-5	-0.09656	-44	-48	No	15	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-6	-0.05984	-36	-48	No	15	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-7	-0.0548	-34	-48	No	15	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-8	-0.1233	-50	-48	Yes	15	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-1	-1.529	-87	-48	Yes	15	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-2	-0.3346	-21	-48	No	15	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-3	0.07192	9	48	No	15	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-4R (bg)	-0.2676	-17	-44	No	14	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-5	-0.4675	-67	-48	Yes	15	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-6	-1.37	-45	-48	No	15	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-7	-0.7027	-37	-48	No	15	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-8	-0.1659	-5	-48	No	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-1	-3.476	-35	-48	No	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2	2.82	9	44	No	14	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3	9.041	62	48	Yes	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4R (bg)	-0.1986	-5	-48	No	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	-0.7449	-12	-48	No	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-6.733	-27	-48	No	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7	-1.915	-31	-48	No	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-8	2.662	35	48	No	15	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-1	15.4	61	48	Yes	15	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2	16.75	60	48	Yes	15	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-3	36.6	72	48	Yes	15	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-4R (bg)	17.48	33	48	No	15	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-4.257	-6	-48	No	15	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	7.449	3	48	No	15	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7	48.93	67	48	Yes	15	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-8	22.35	55	48	Yes	15	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-1	-0.3155	-57	-48	Yes	15	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-2	-0.04363	-6	-48	No	15	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-3	-0.00...	-2	-48	No	15	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-4R (bg)	0.02704	3	48	No	15	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-5	-0.01369	-4	-48	No	15	0	n/a	n/a	0.02	NP

Trend Test

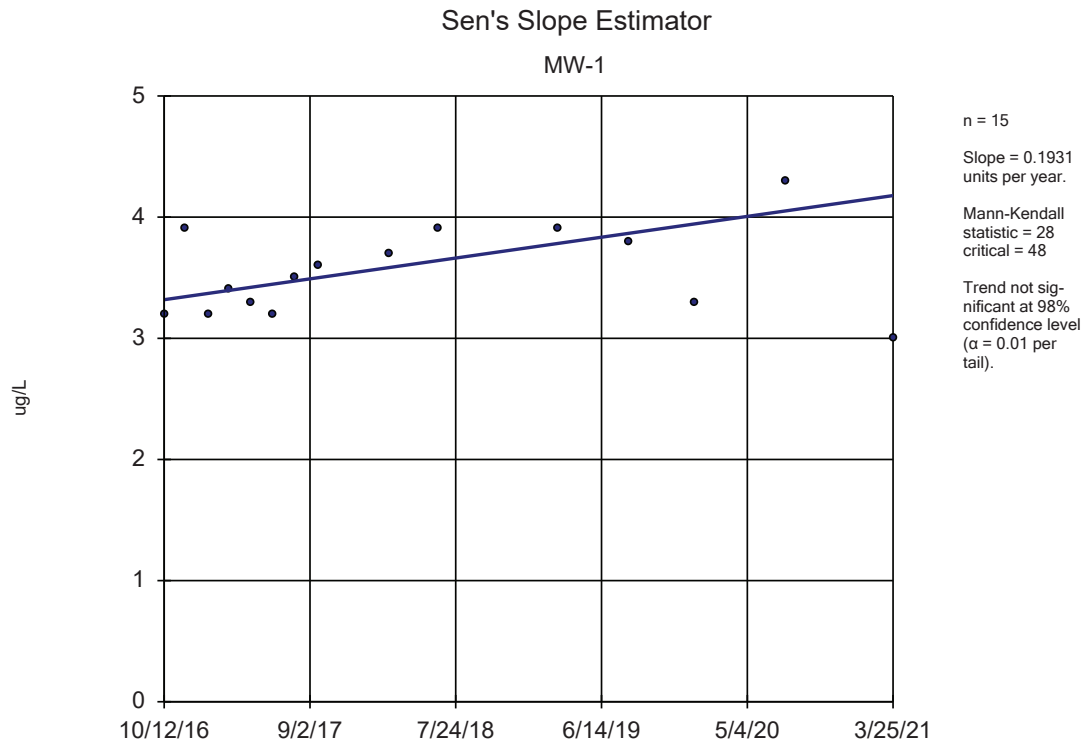
Fremont Dept. of Utilities

Client: SCS Engineers

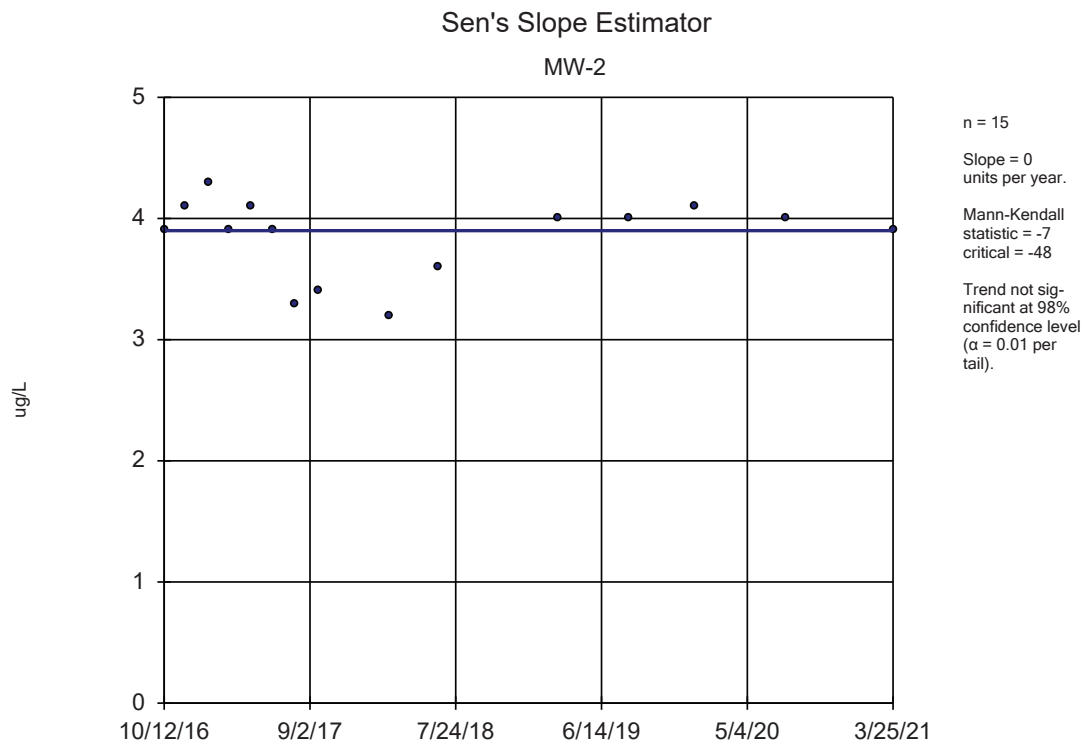
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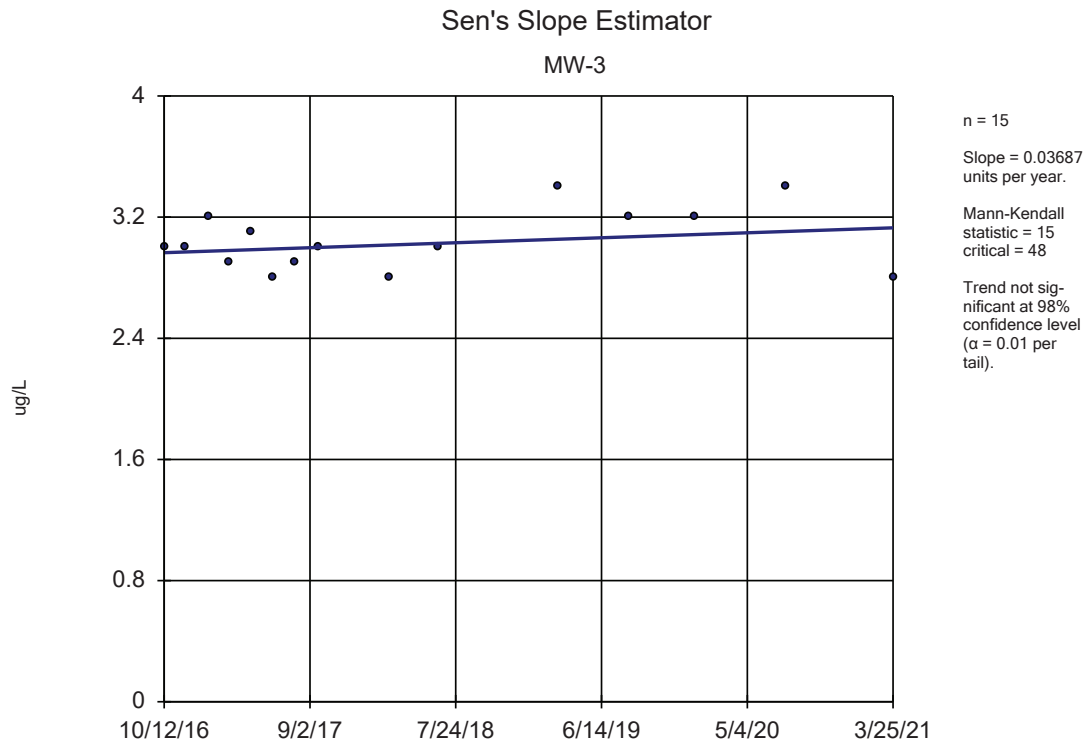
<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Total Radium (pCi/L)	MW-6	-0.03472	-12	-48	No	15	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-7	0.01106	11	48	No	15	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-8	0.1434	17	48	No	15	0	n/a	n/a	0.02	NP



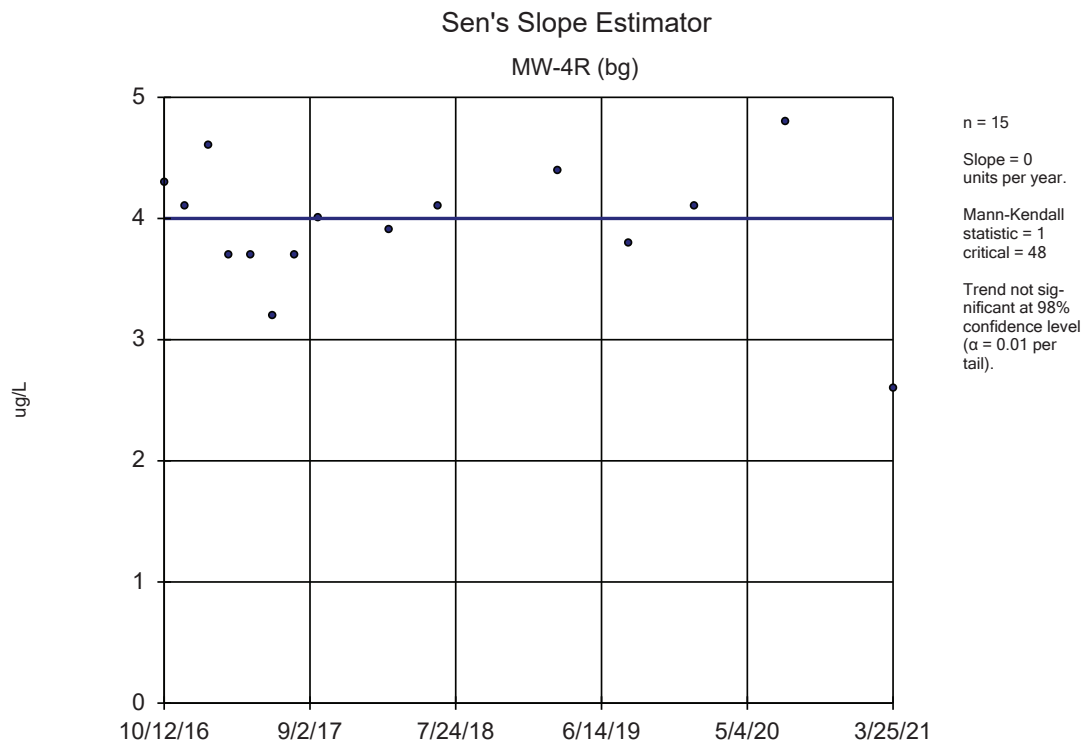
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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



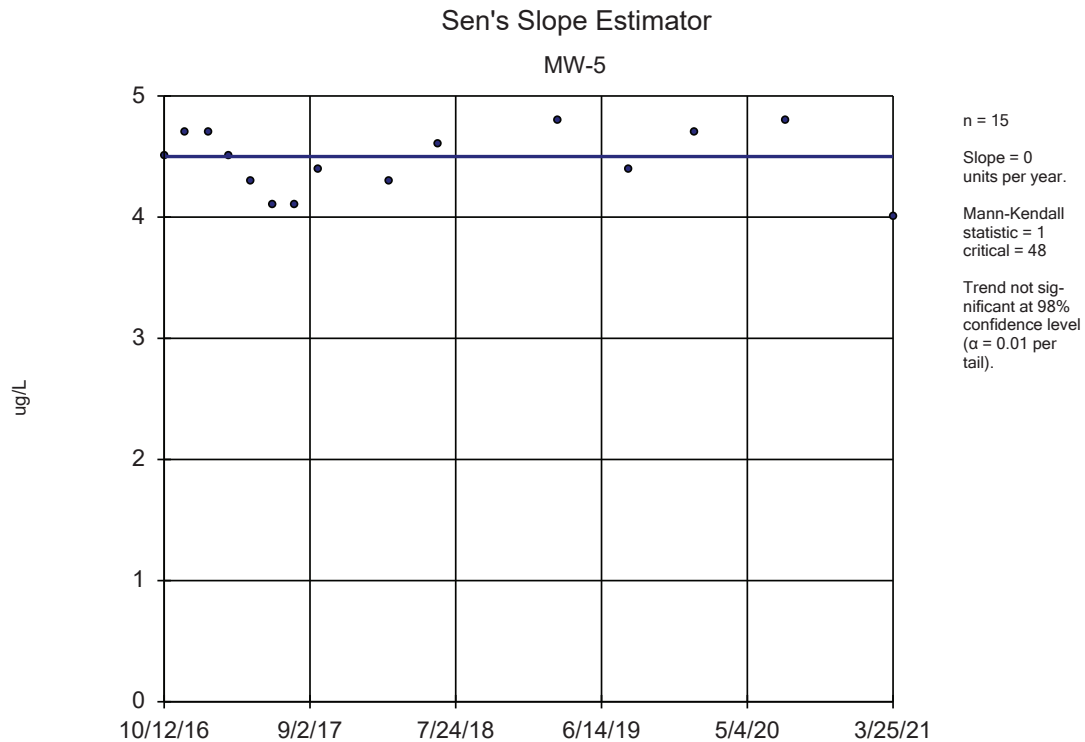
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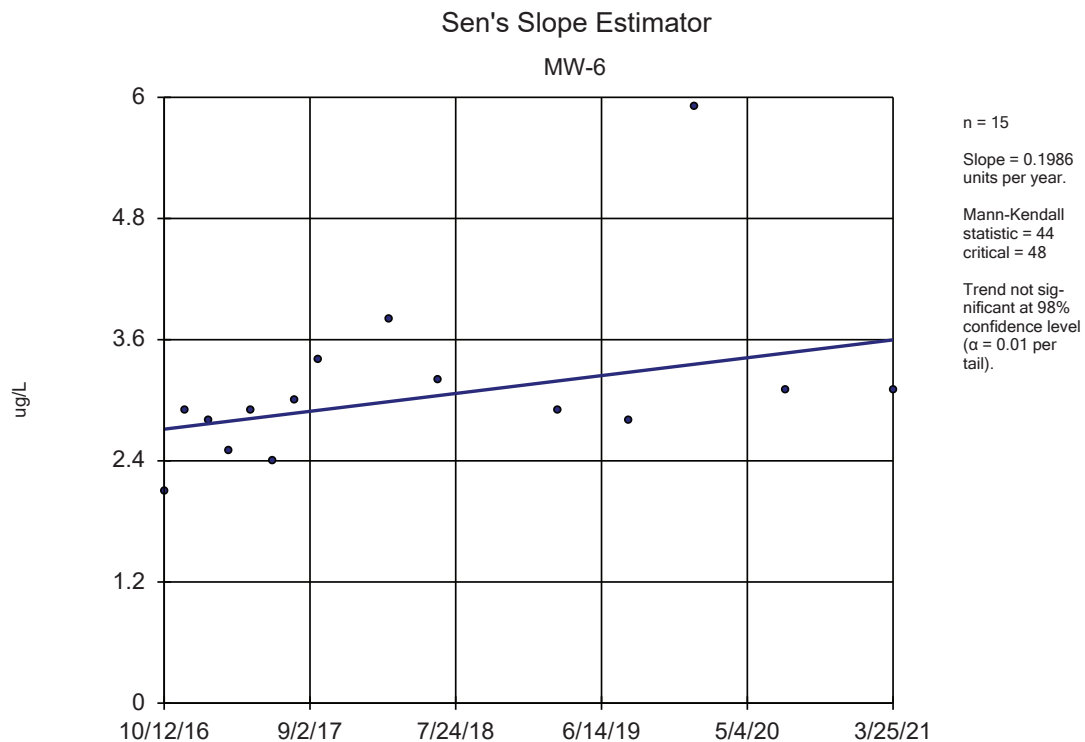
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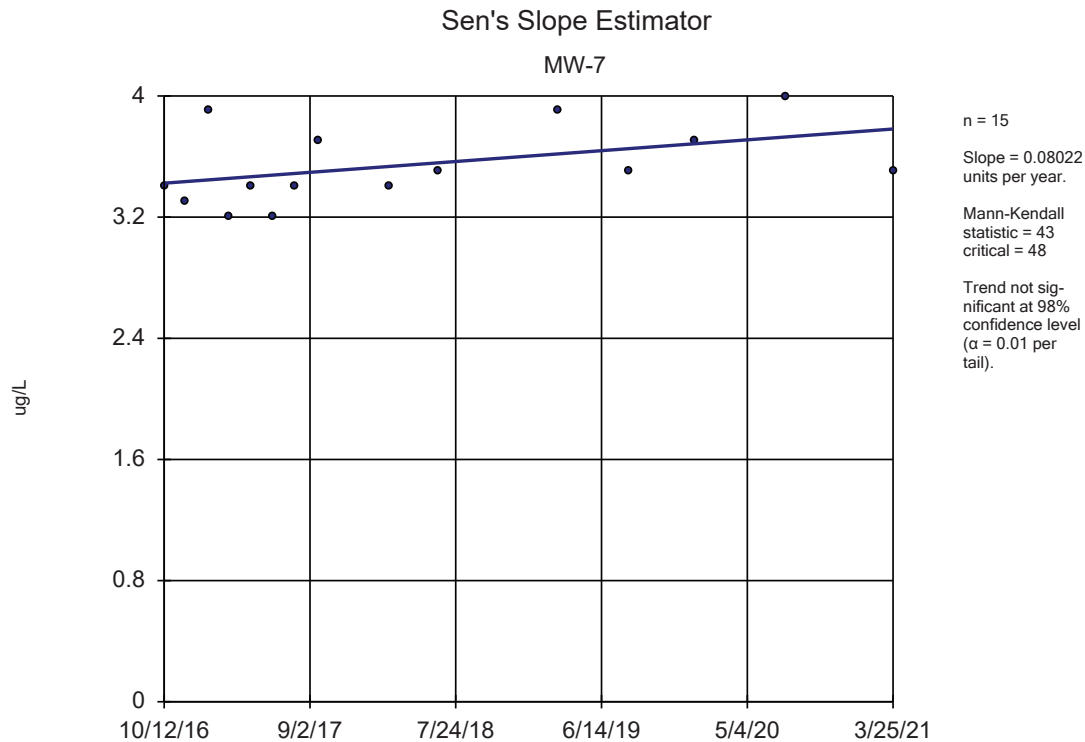
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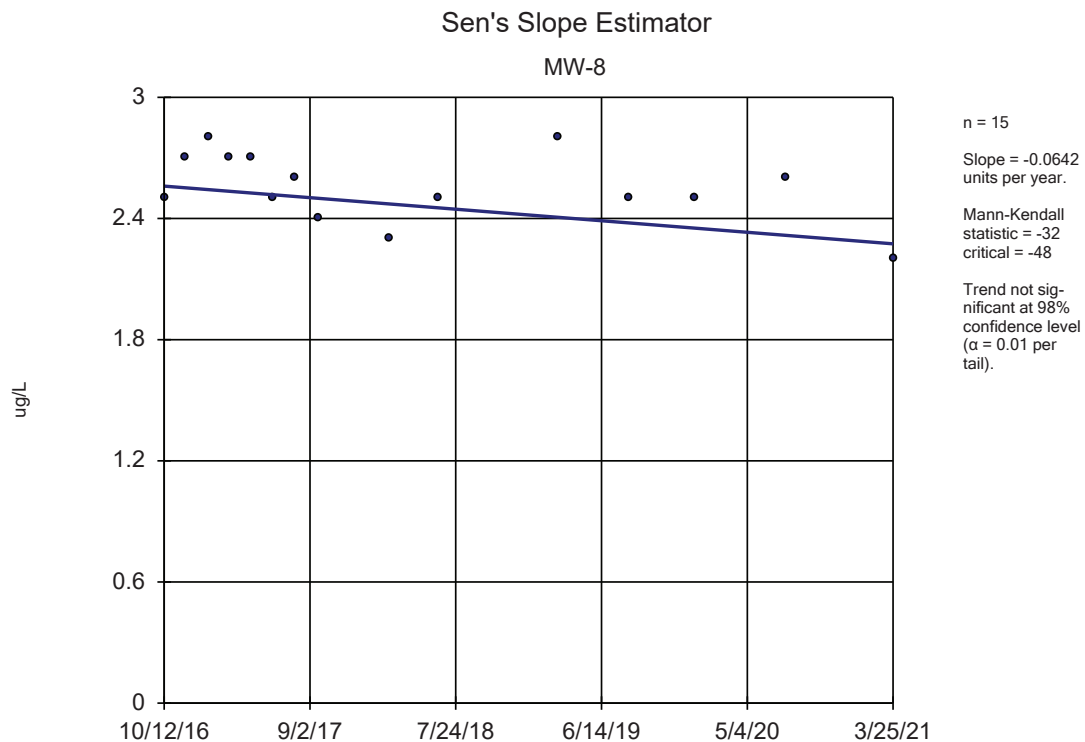
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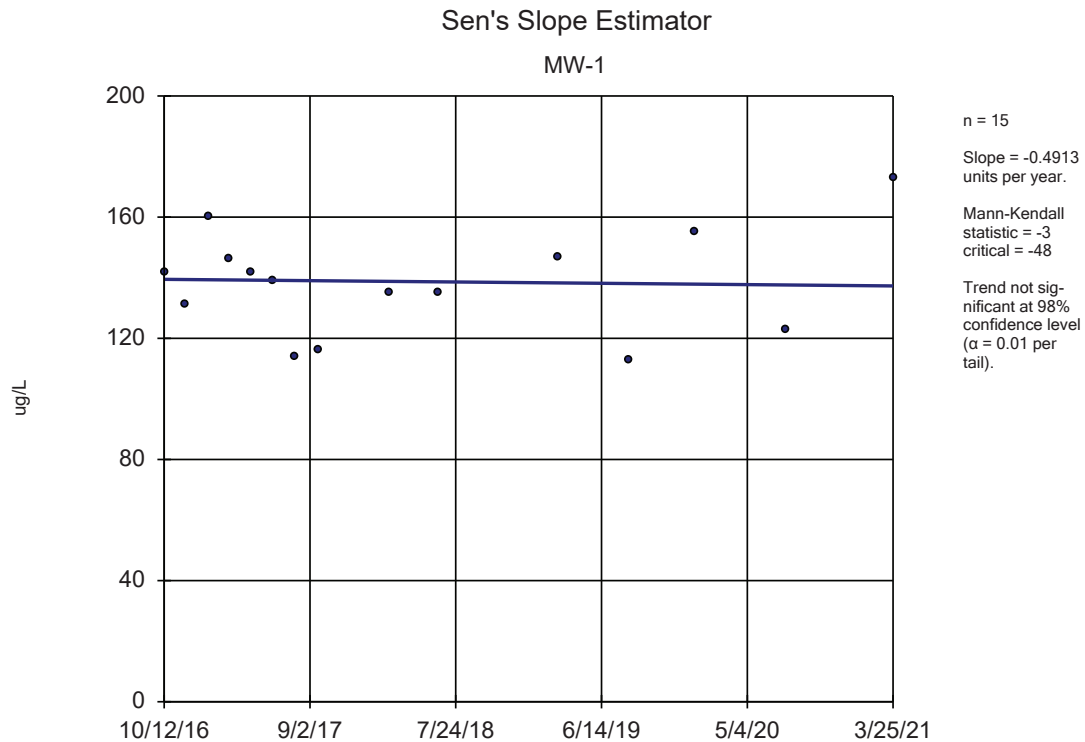
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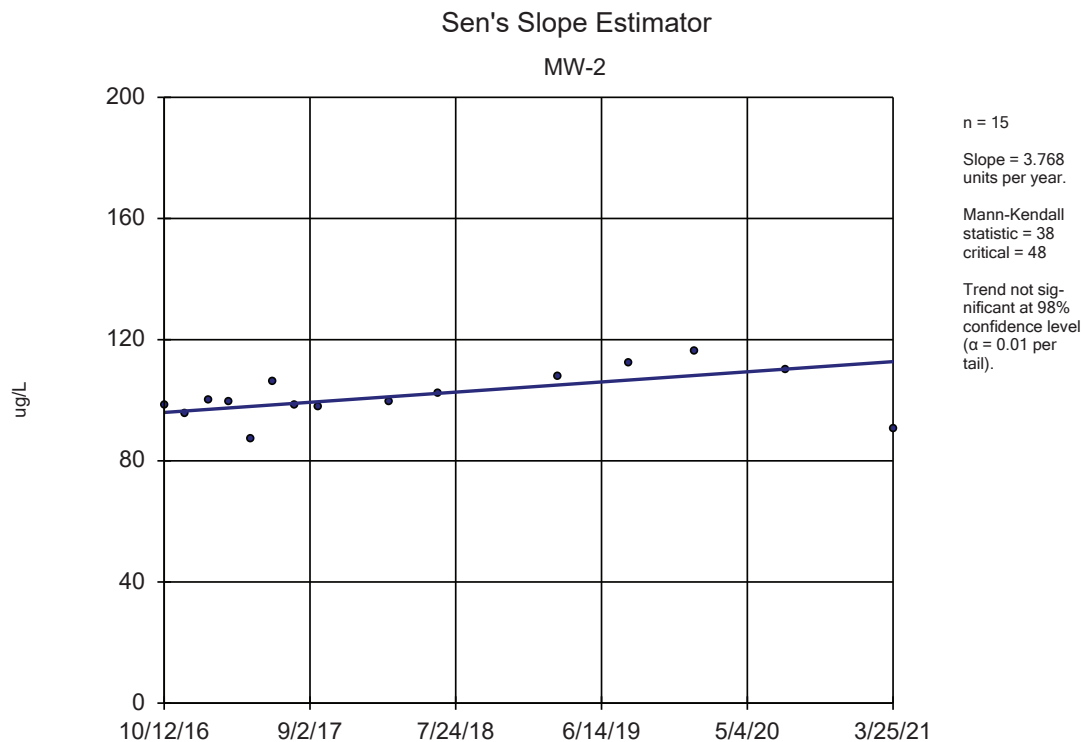
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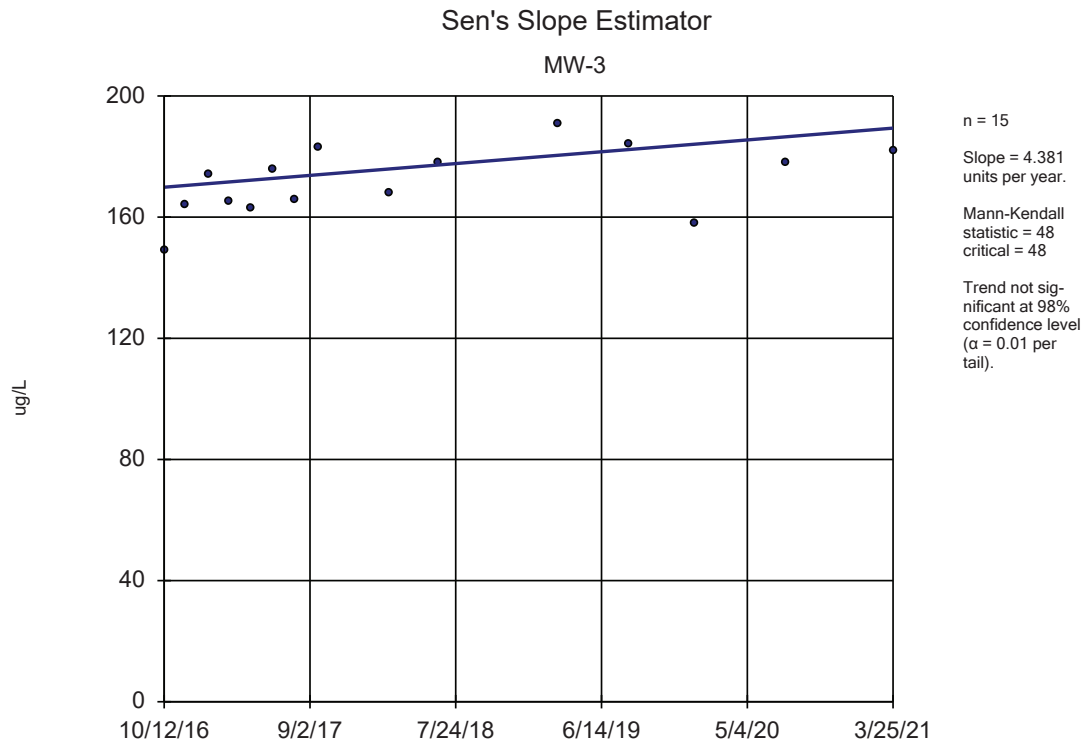
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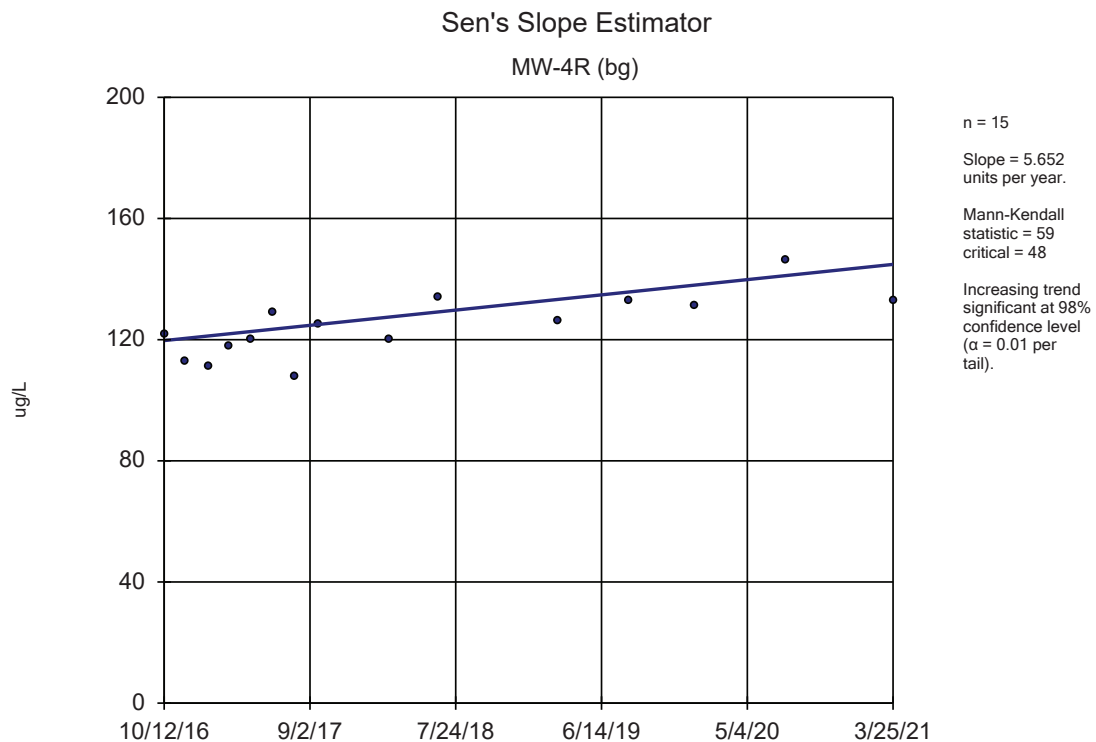
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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



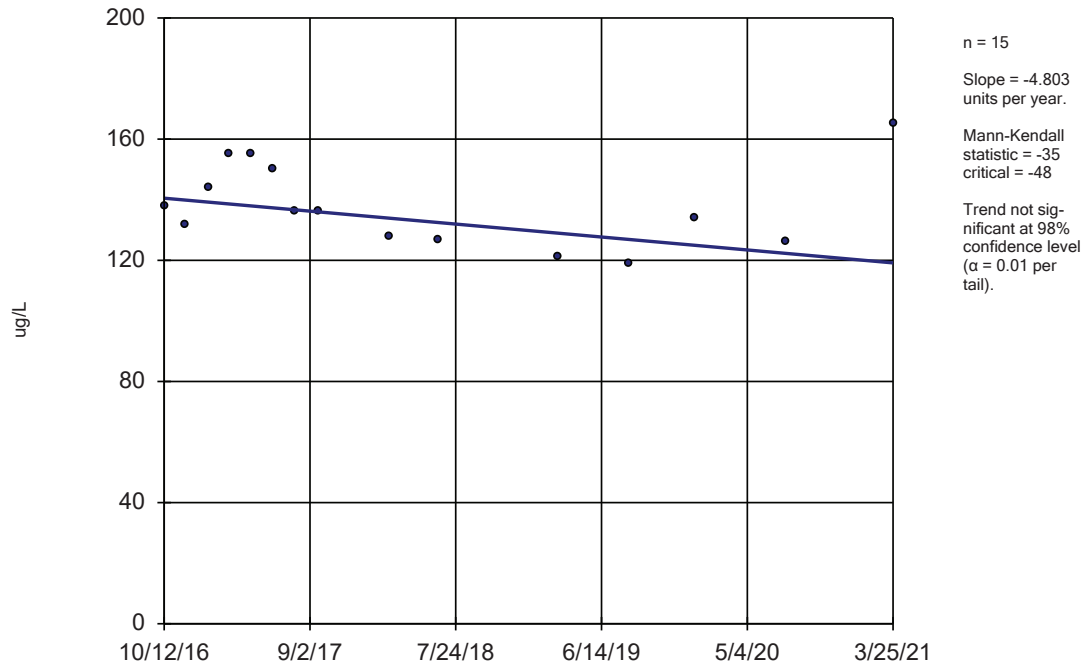
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Constituent: Barium [total] Analysis Run 4/26/2021 2:12 PM View: Appendix III & IV detects
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Sen's Slope Estimator

MW-5

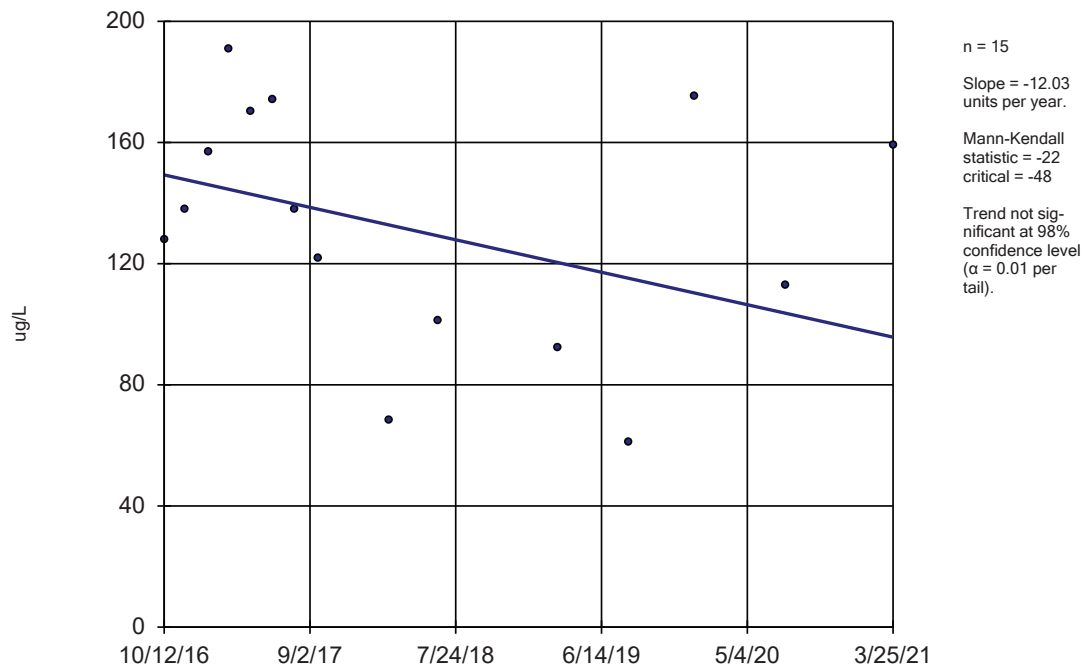


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

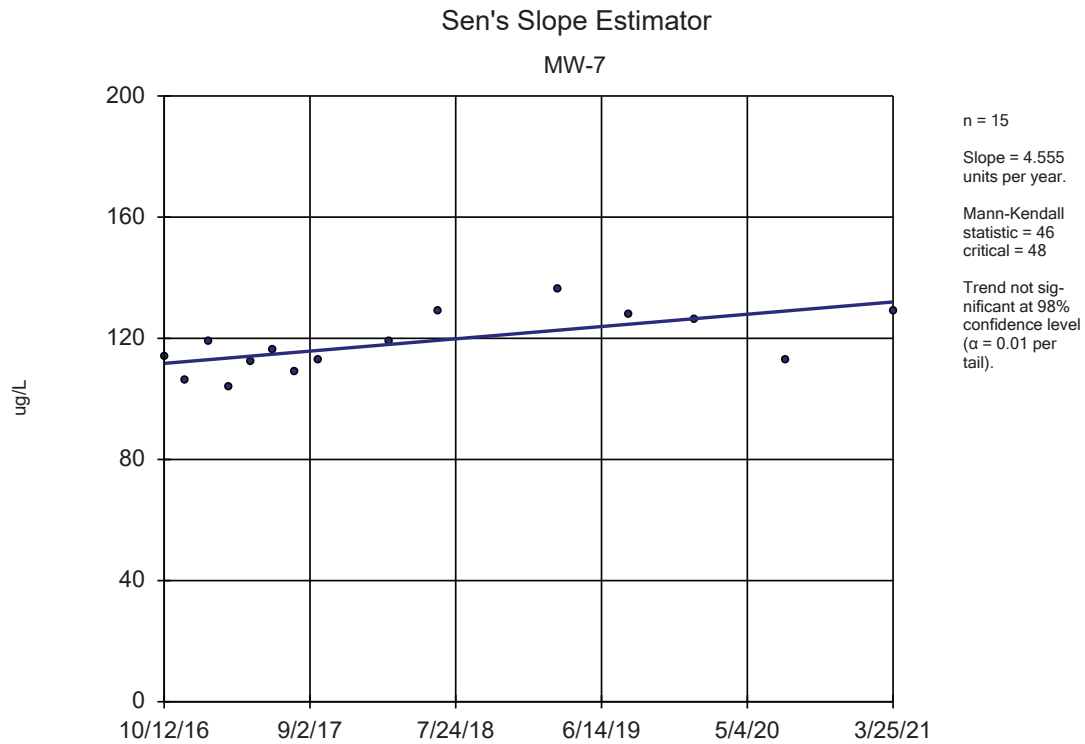
Sen's Slope Estimator

MW-6

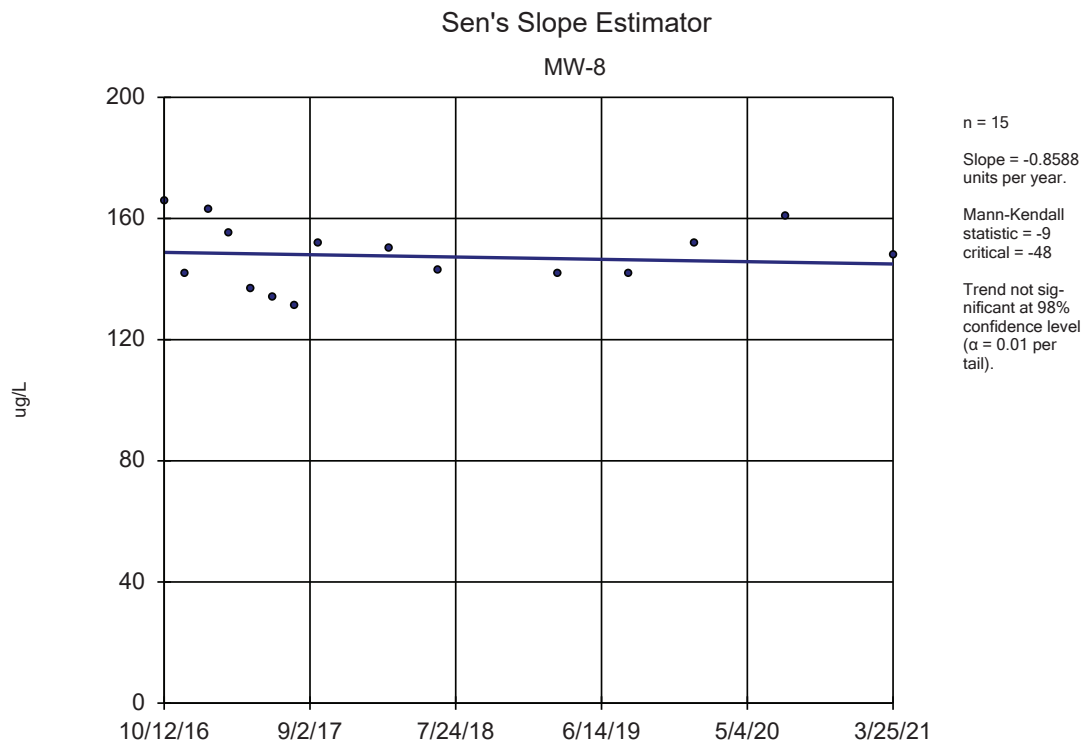


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



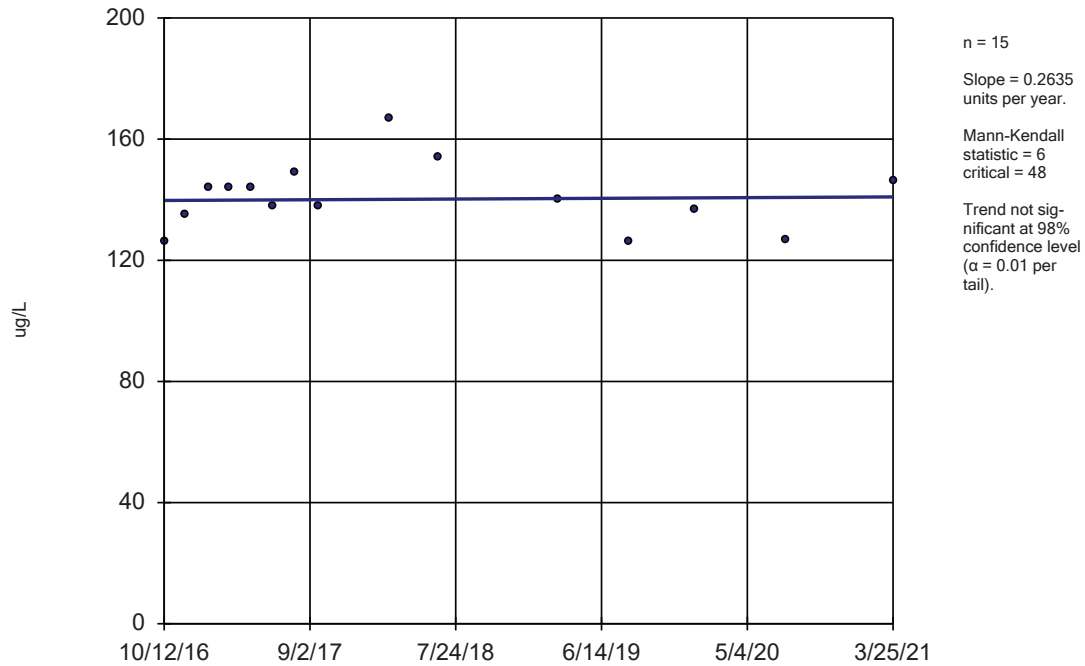
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 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Barium [total] Analysis Run 4/26/2021 2:12 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-1

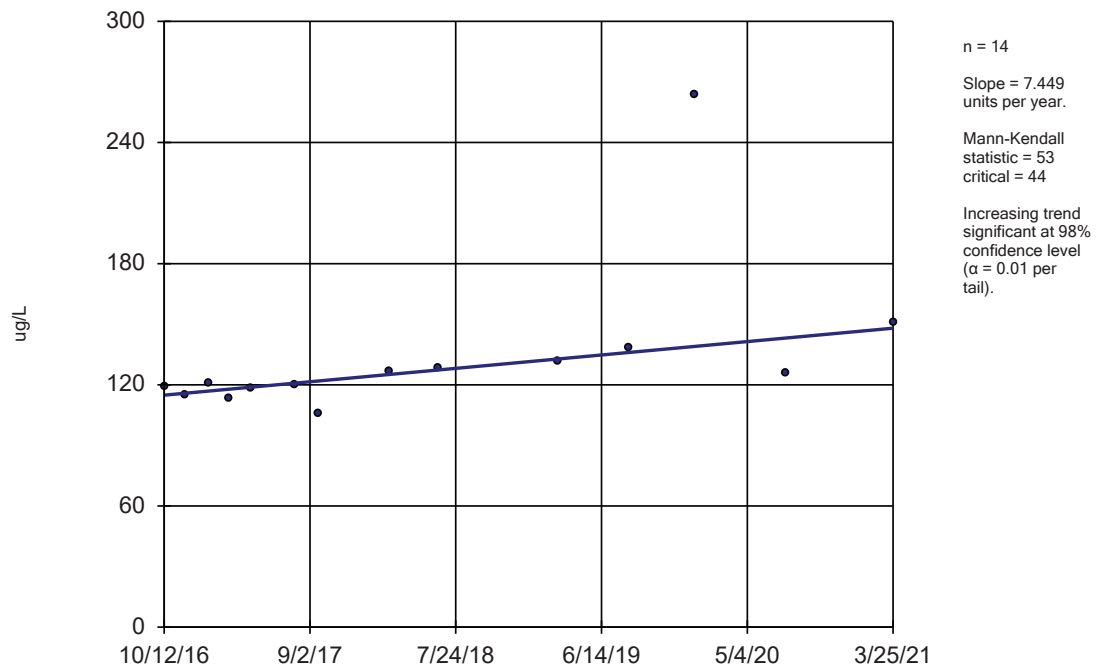


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

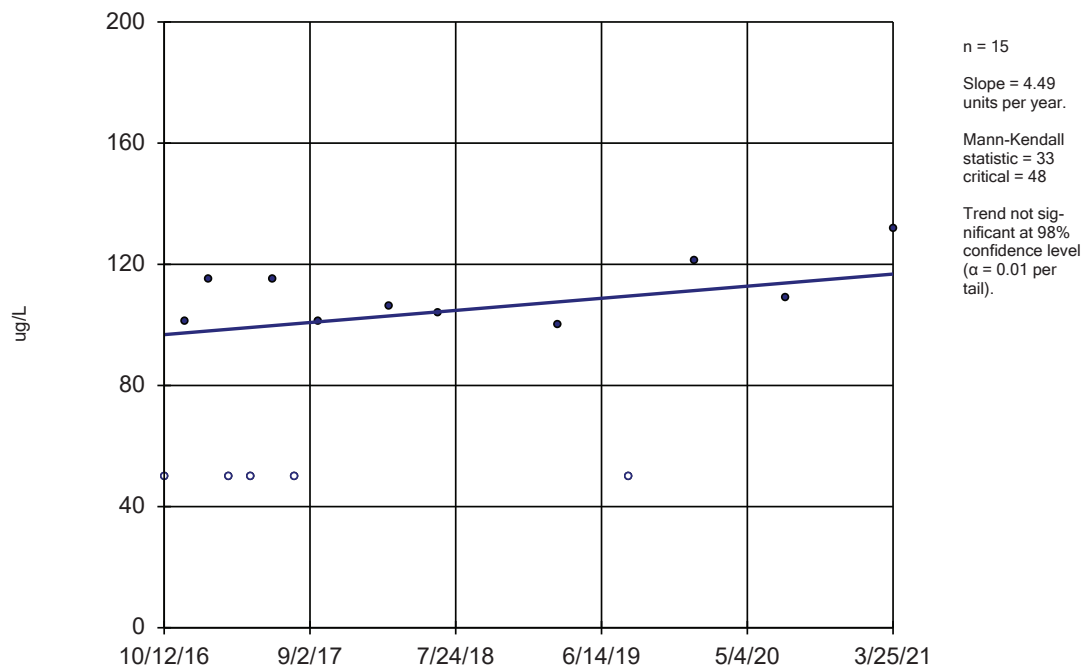


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

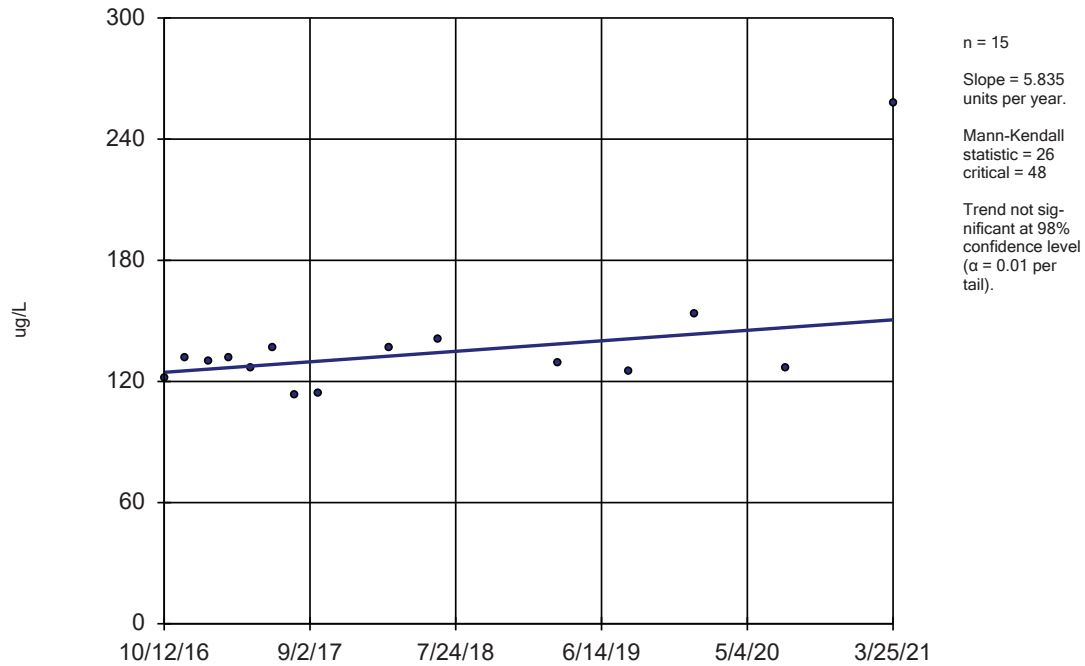
Sen's Slope Estimator

MW-3



Sen's Slope Estimator

MW-5

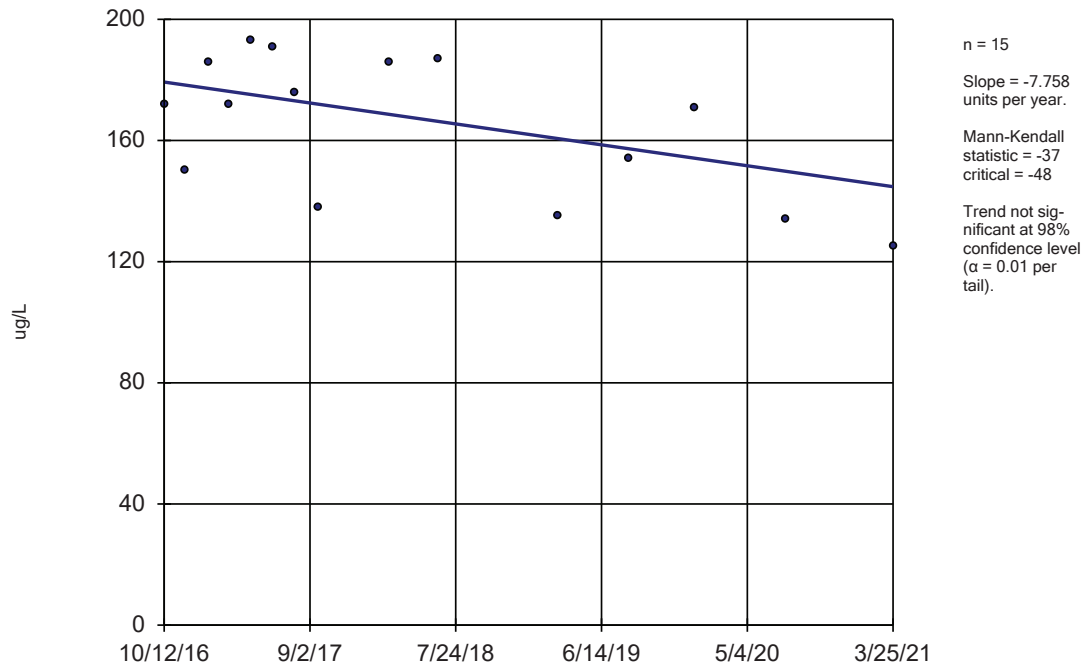


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-7

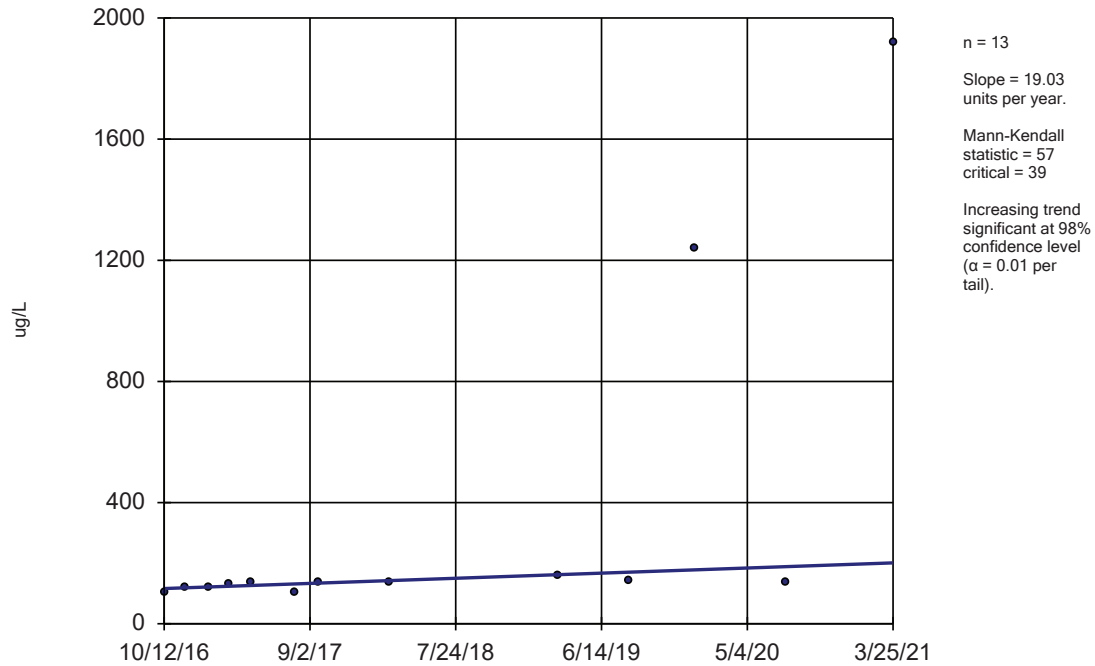


Constituent: Boron Analysis Run 4/26/2021 2:12 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

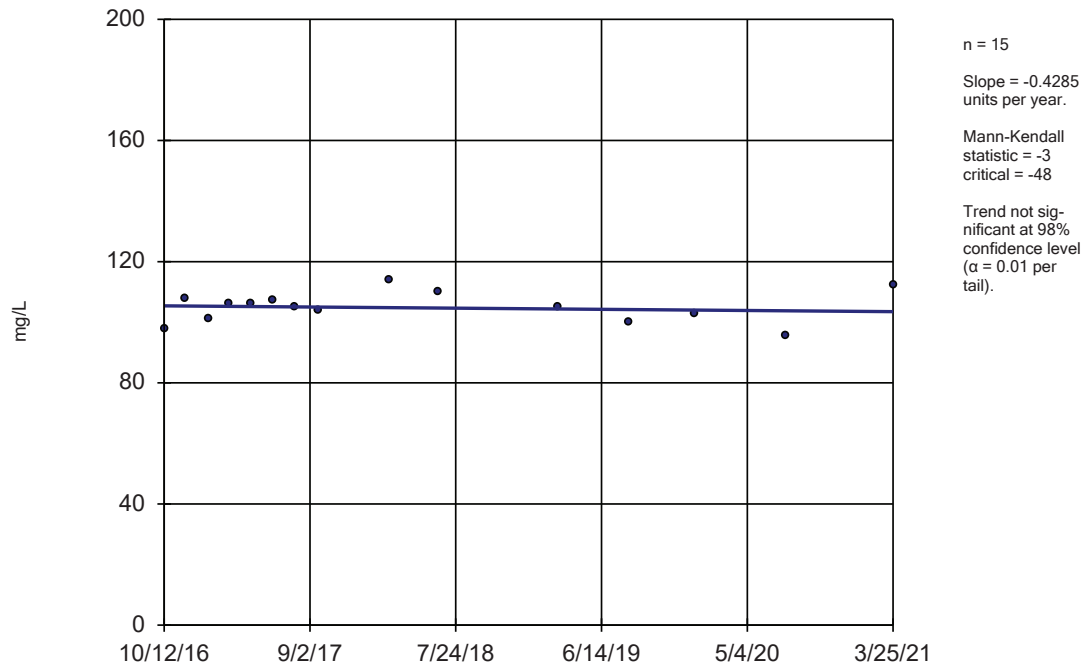
MW-8



Constituent: Boron Analysis Run 4/26/2021 2:12 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

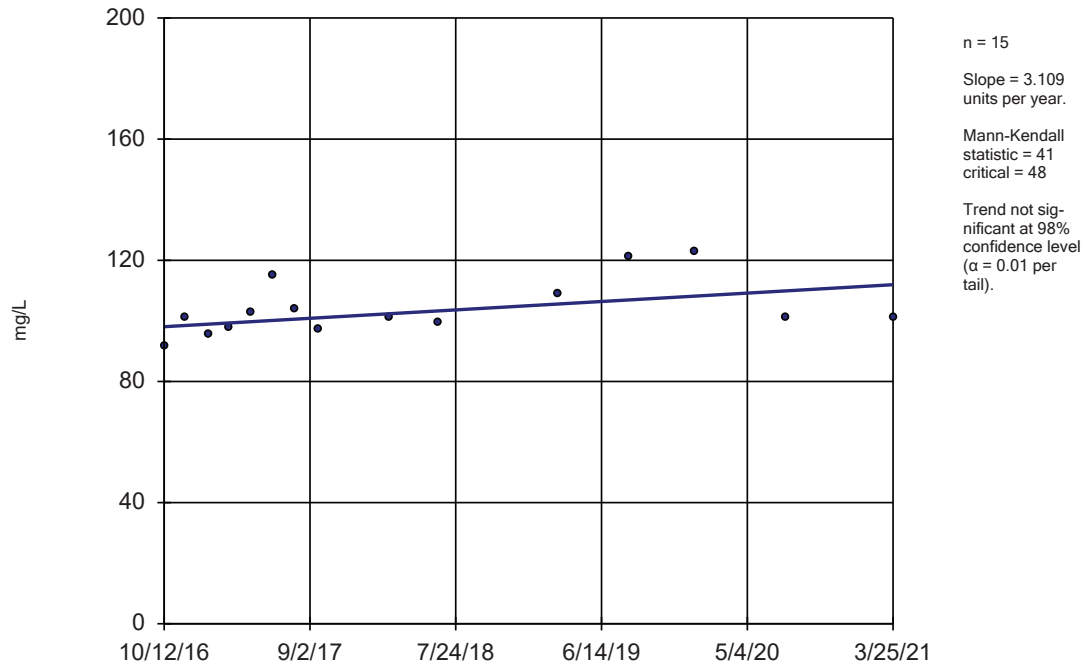
MW-1



Constituent: Calcium Analysis Run 4/26/2021 2:12 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

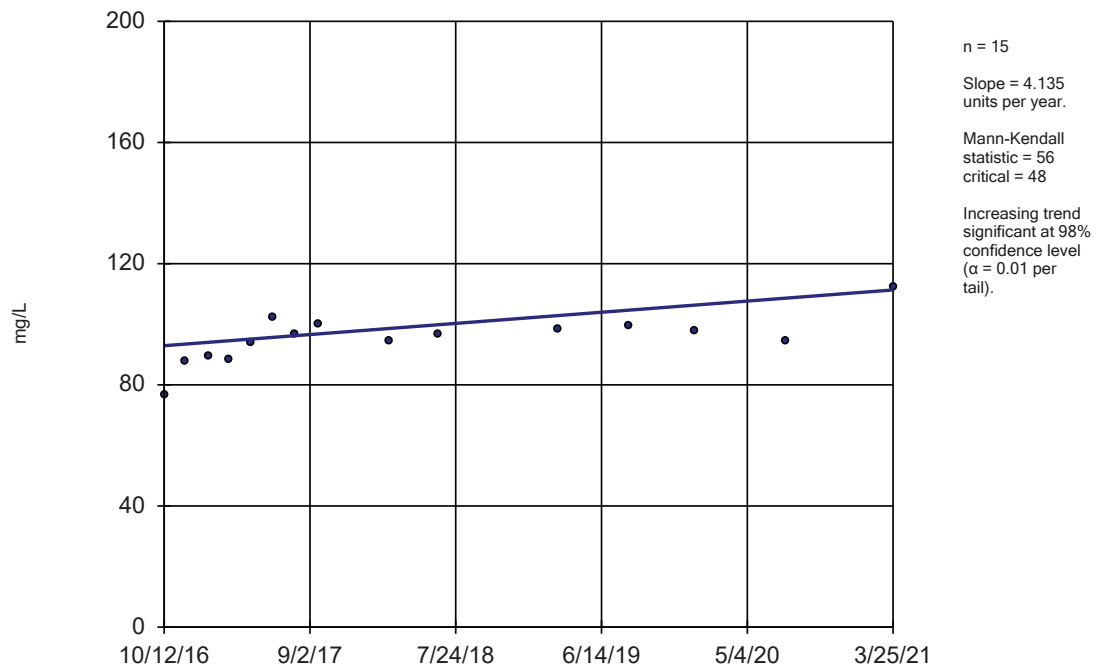


Constituent: Calcium Analysis Run 4/26/2021 2:12 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

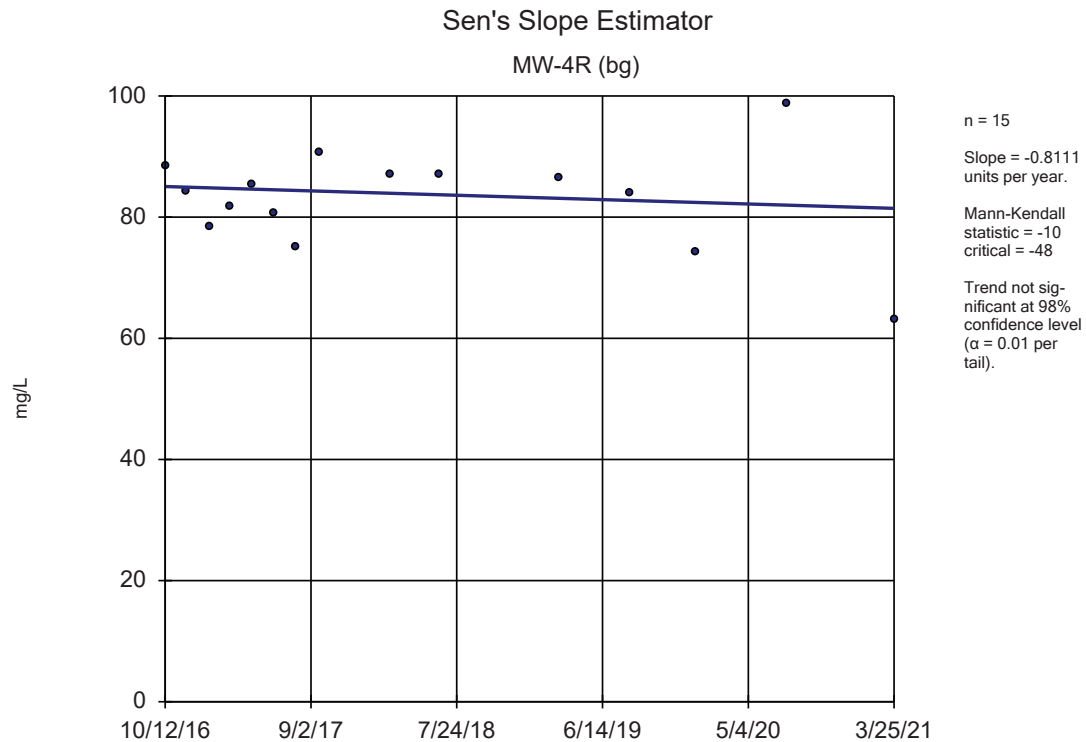
Sen's Slope Estimator

MW-3

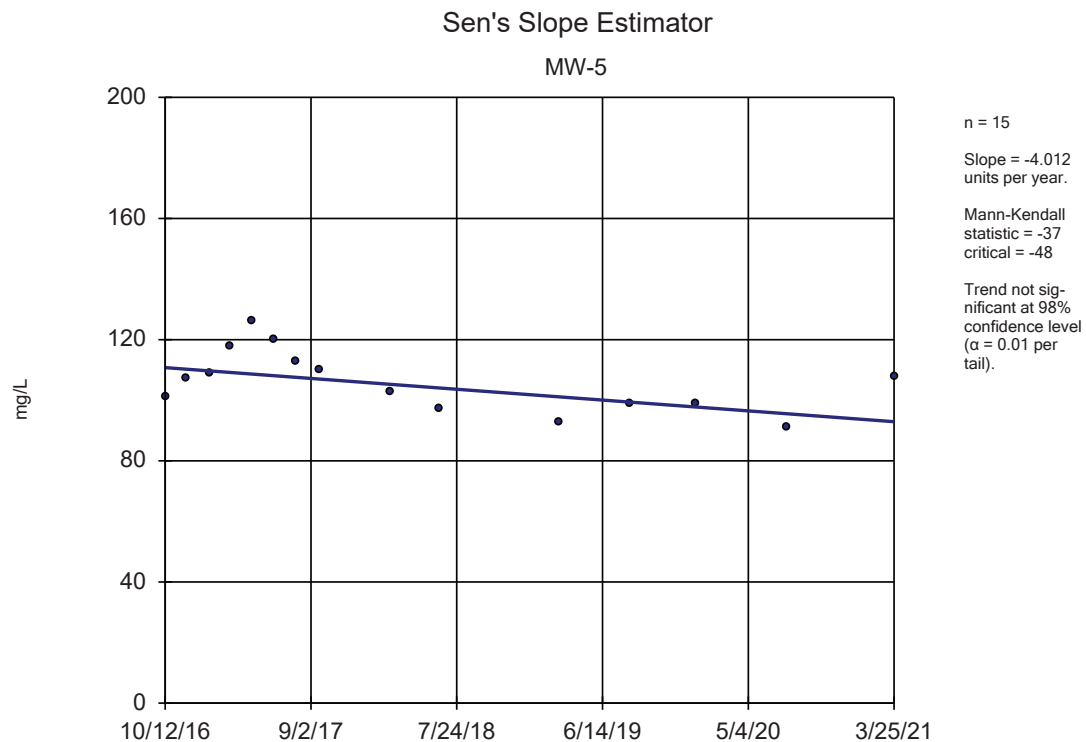


Constituent: Calcium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

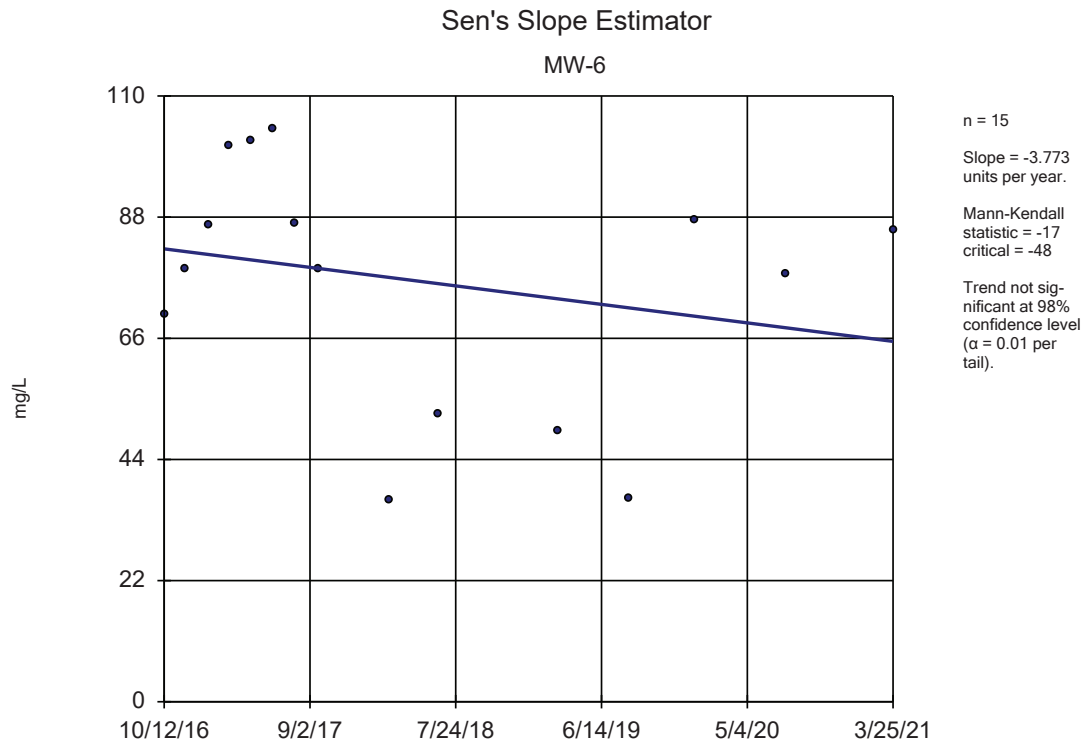
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



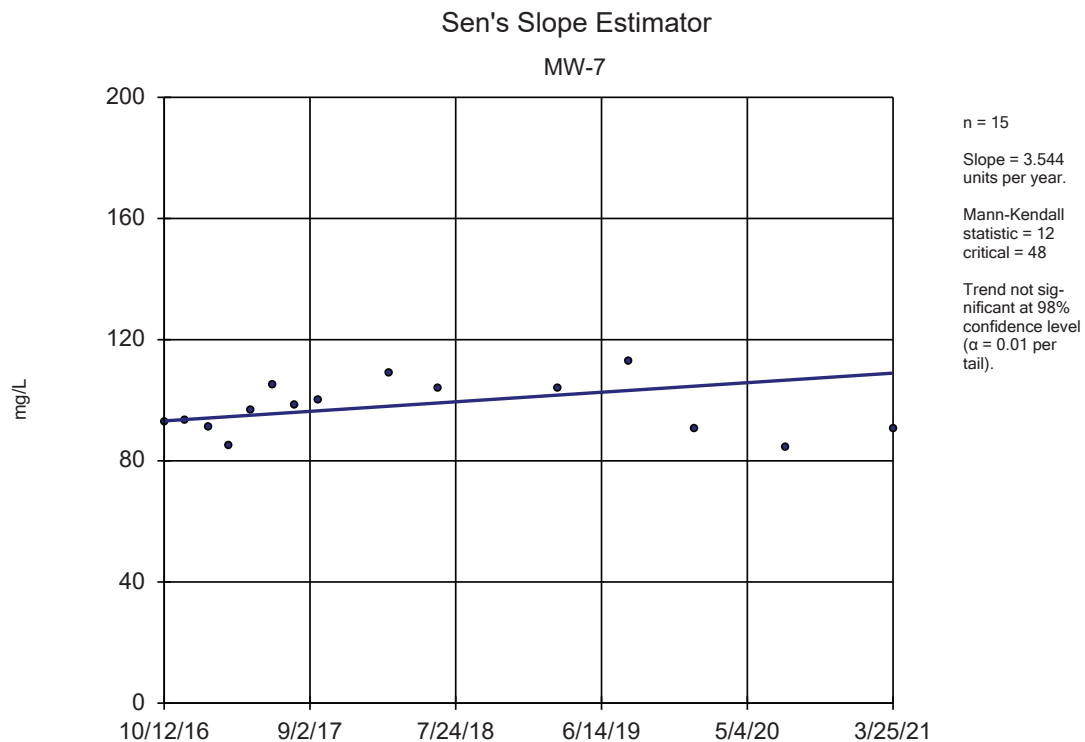
Constituent: Calcium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



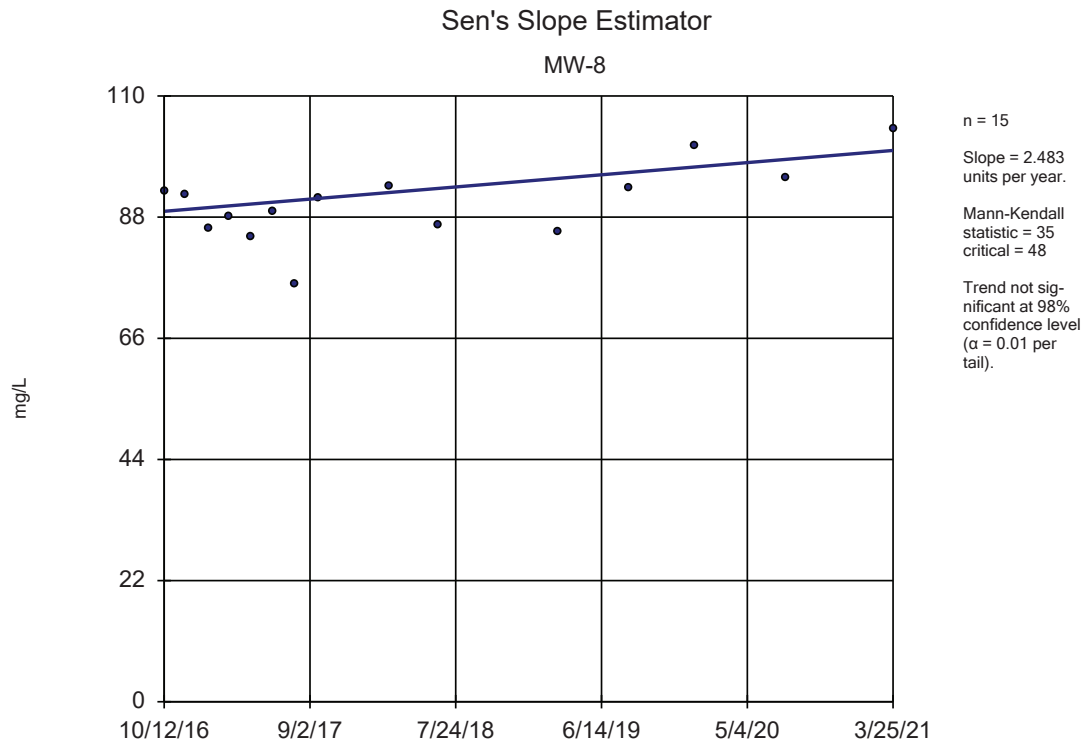
Constituent: Calcium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



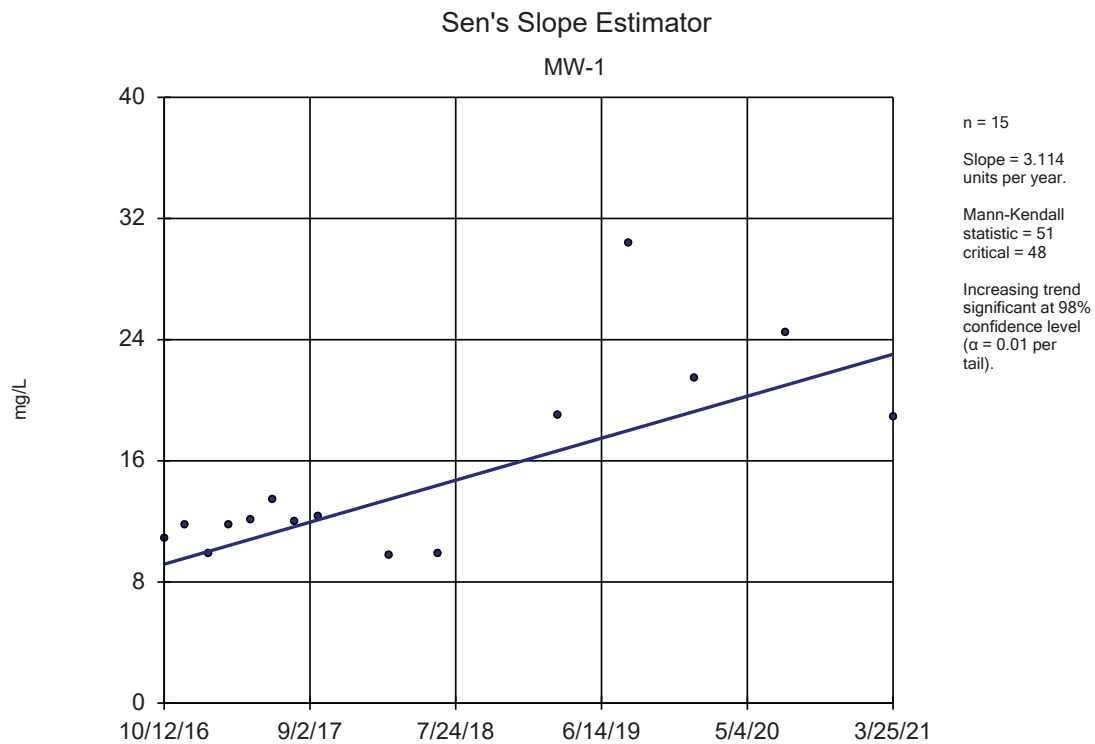
Constituent: Calcium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Calcium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



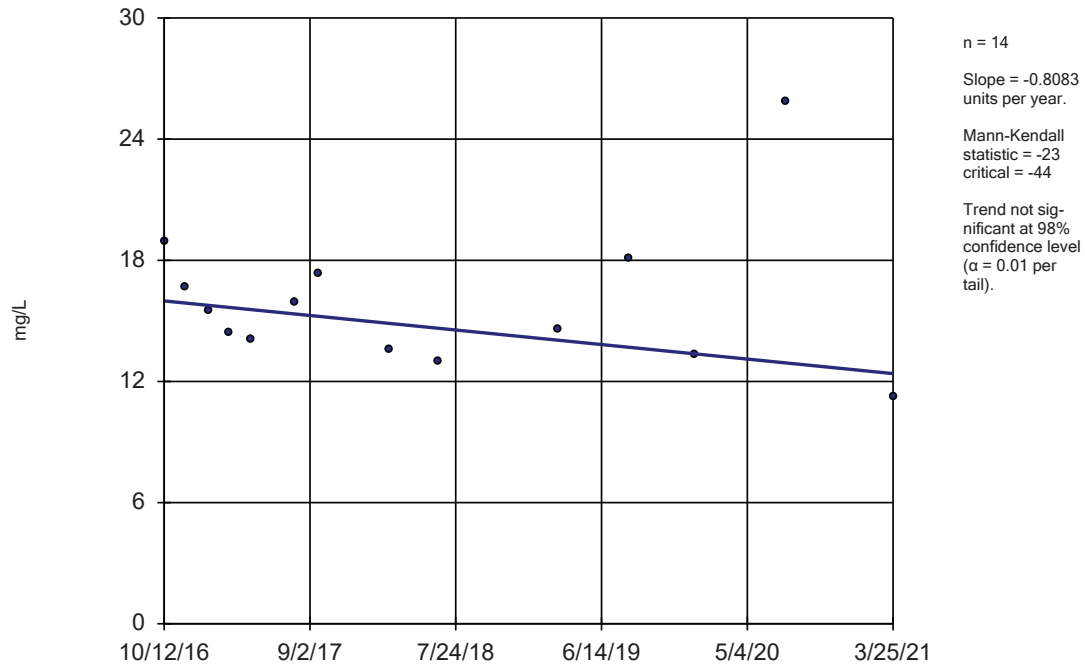
Constituent: Calcium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Chloride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

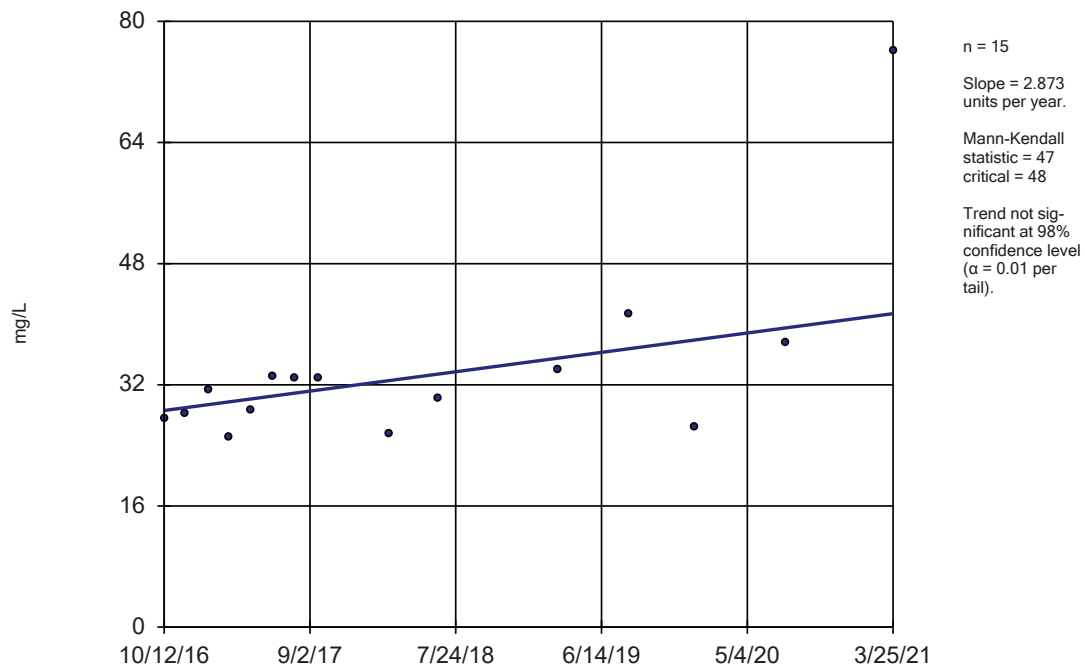


Constituent: Chloride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

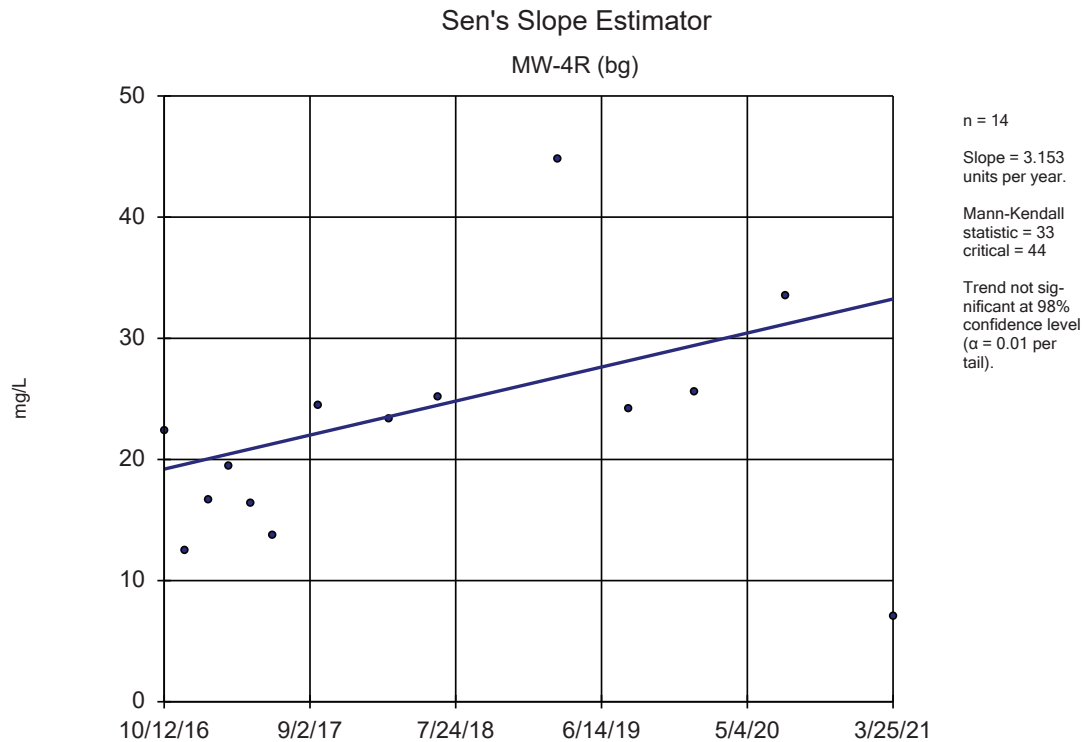
Sen's Slope Estimator

MW-3

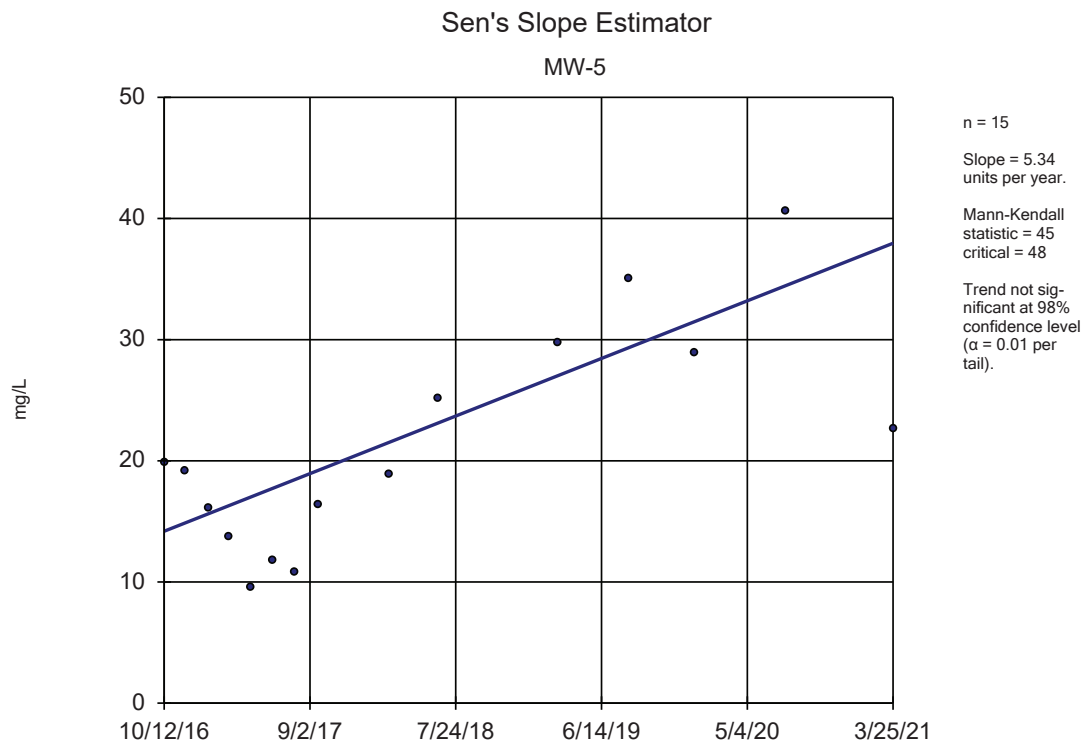


Constituent: Chloride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



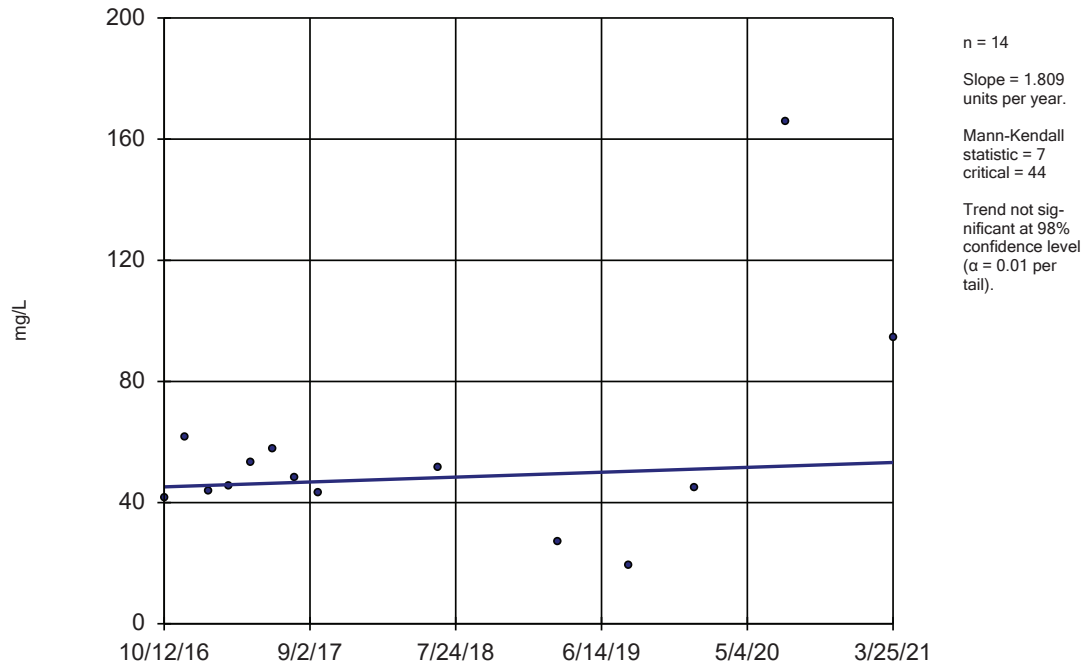
Constituent: Chloride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Chloride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6

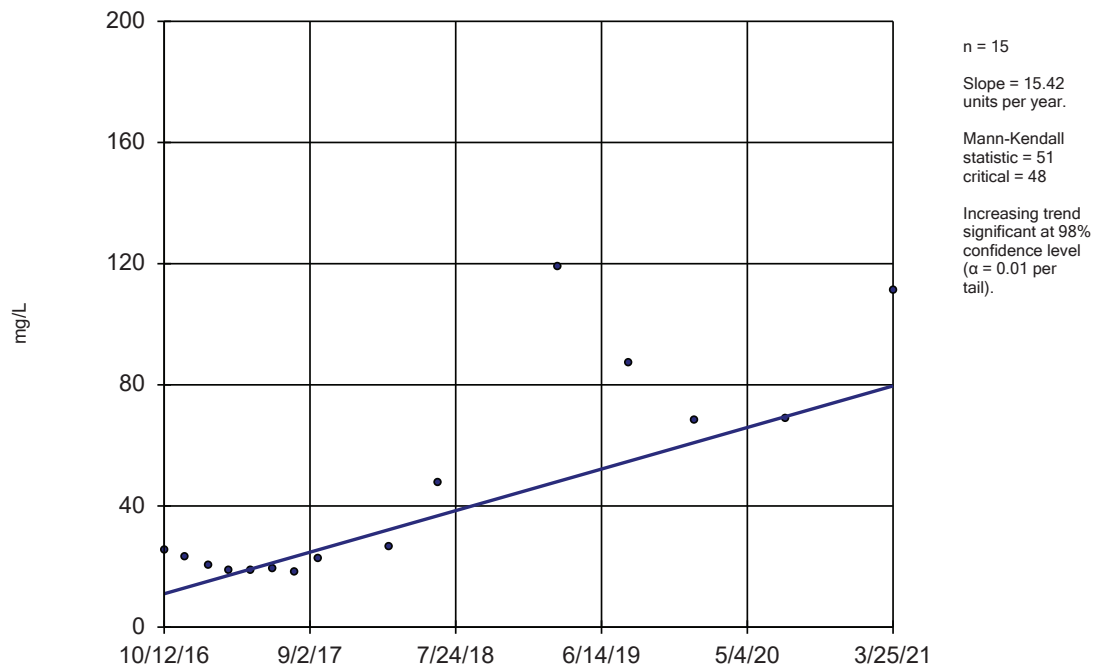


Constituent: Chloride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-7

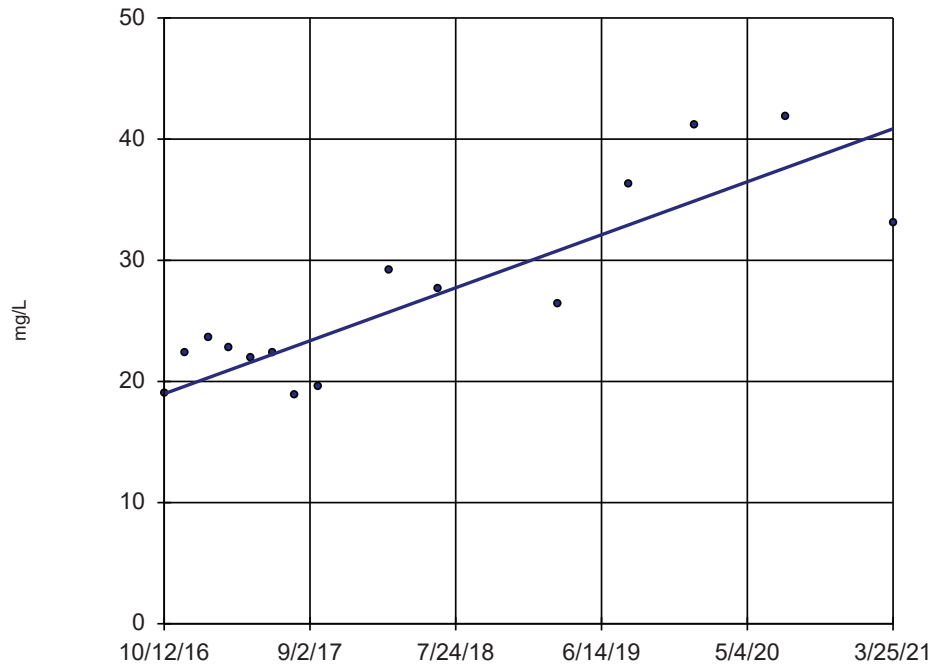


Constituent: Chloride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-8



n = 15

Slope = 4.913
units per year.

Mann-Kendall
statistic = 59
critical = 48

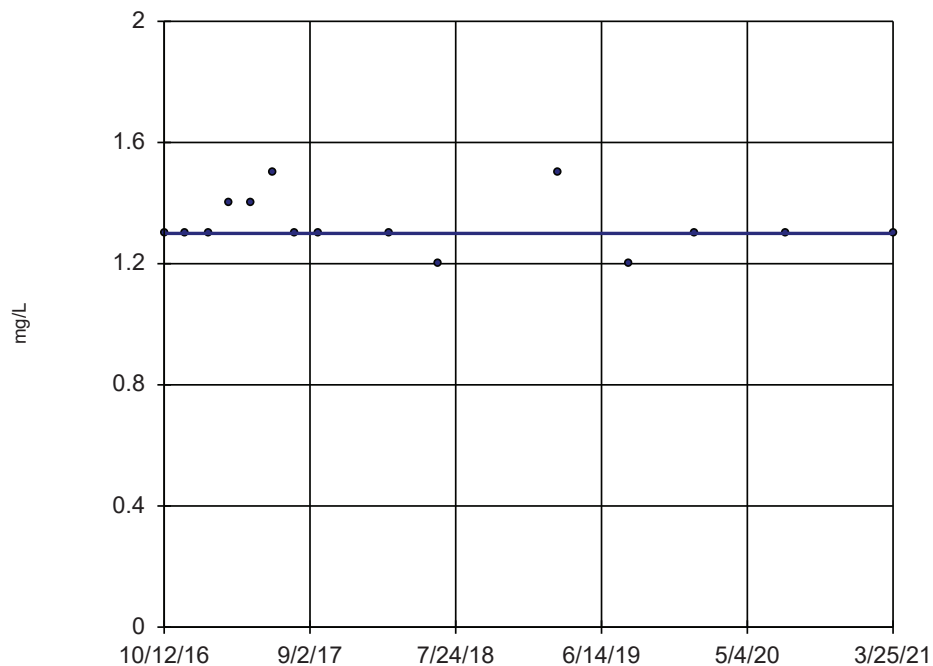
Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Chloride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-1



n = 15

Slope = 0
units per year.

Mann-Kendall
statistic = -14
critical = -48

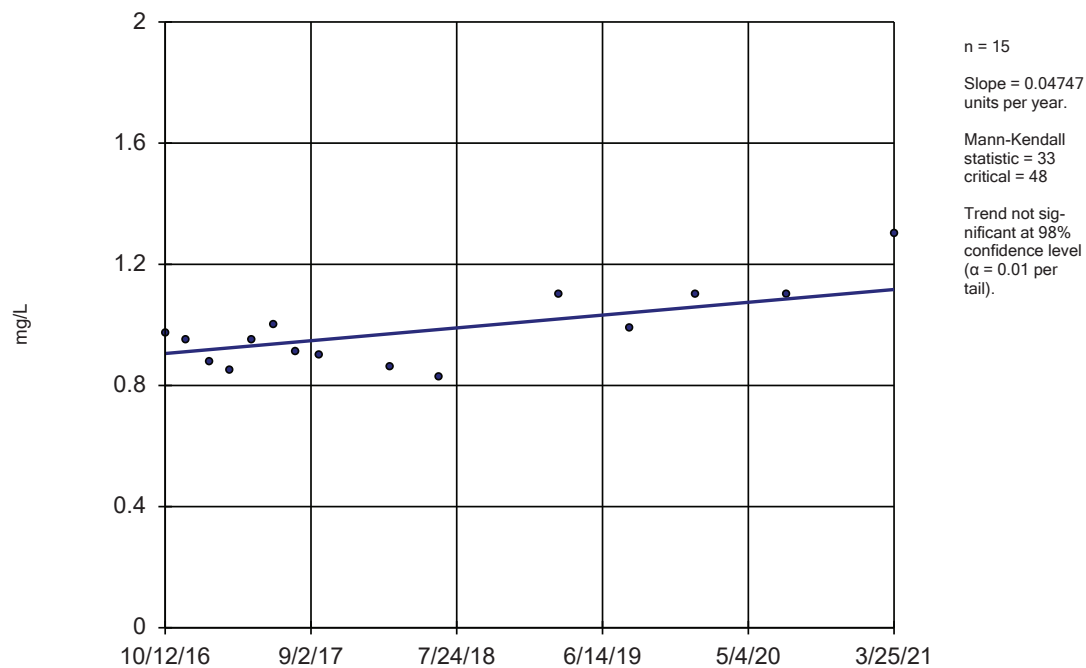
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Fluoride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

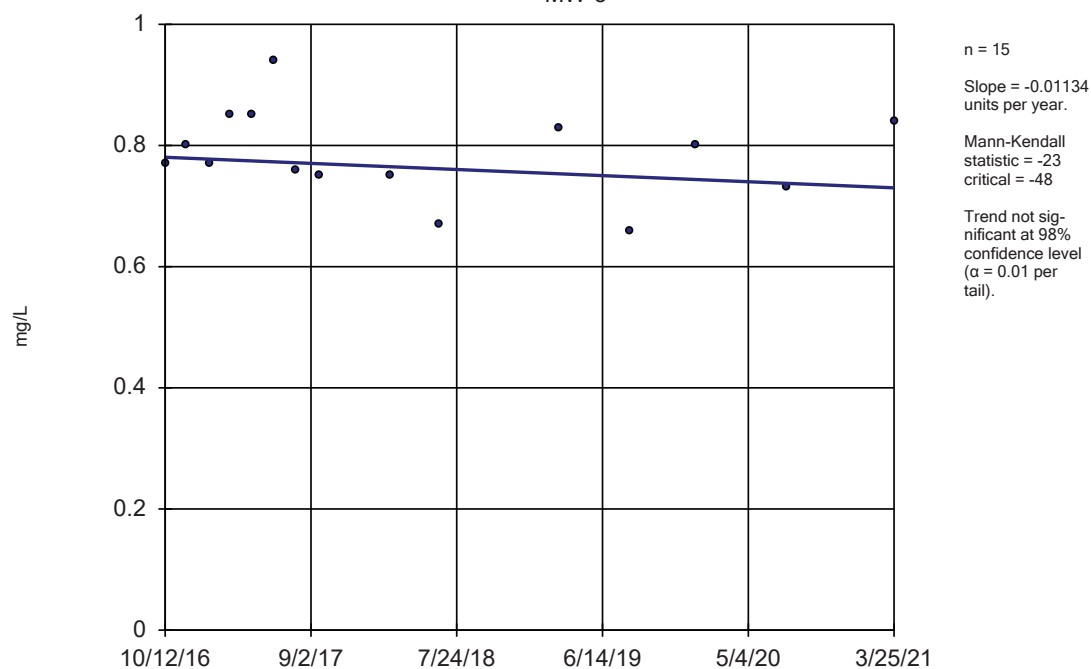


Constituent: Fluoride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-3

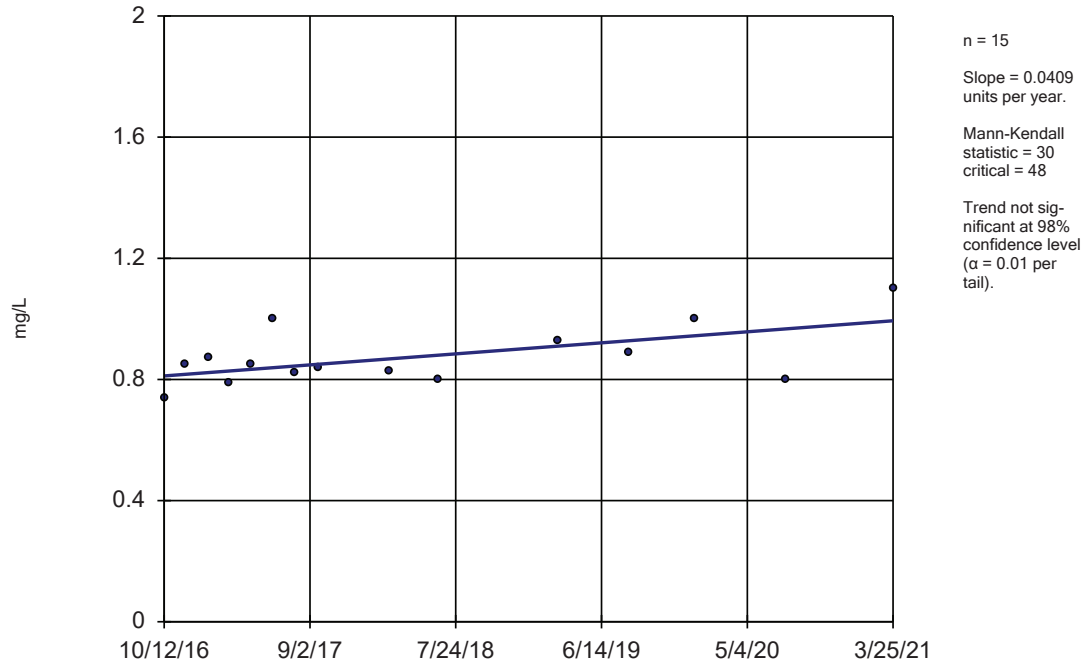


Constituent: Fluoride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-4R (bg)

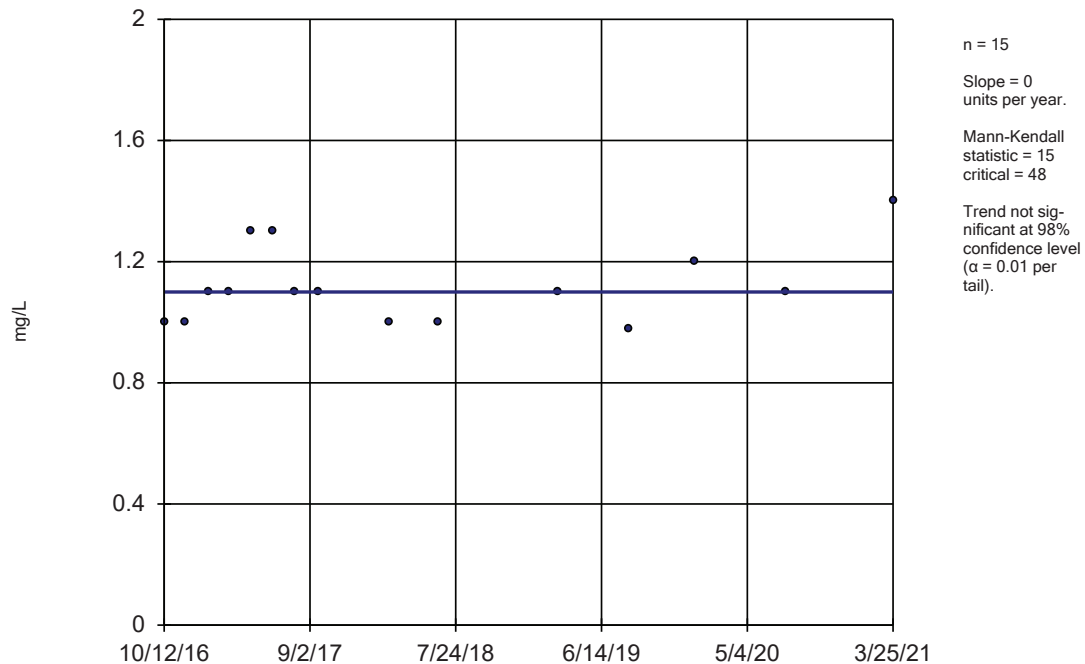


Constituent: Fluoride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-5

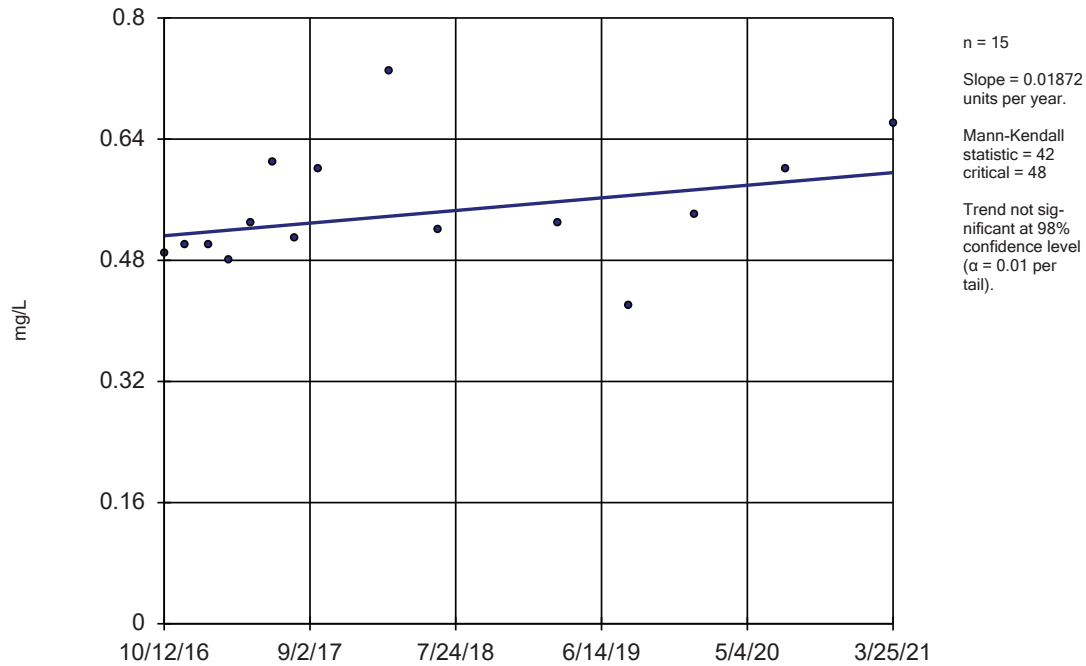


Constituent: Fluoride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6

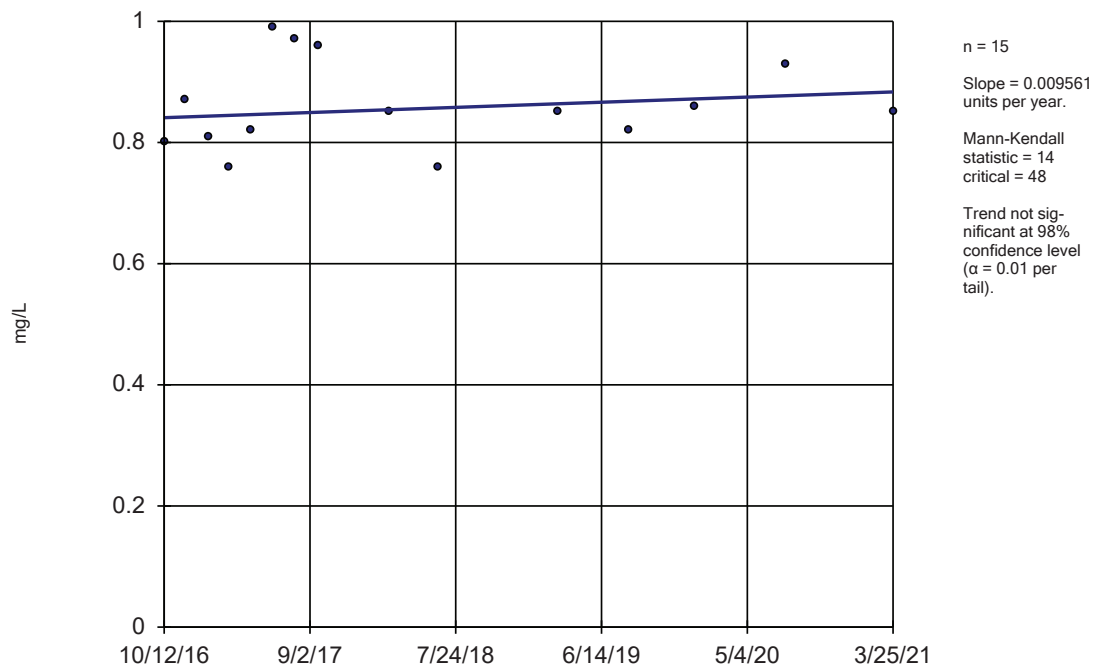


Constituent: Fluoride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

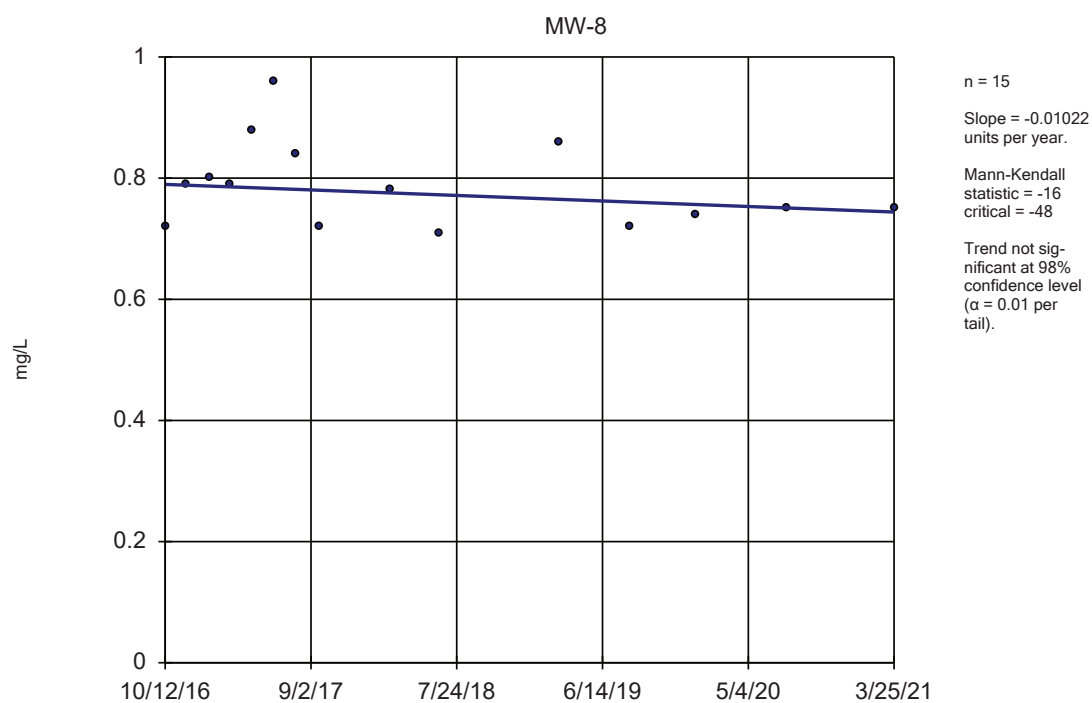
MW-7



Constituent: Fluoride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

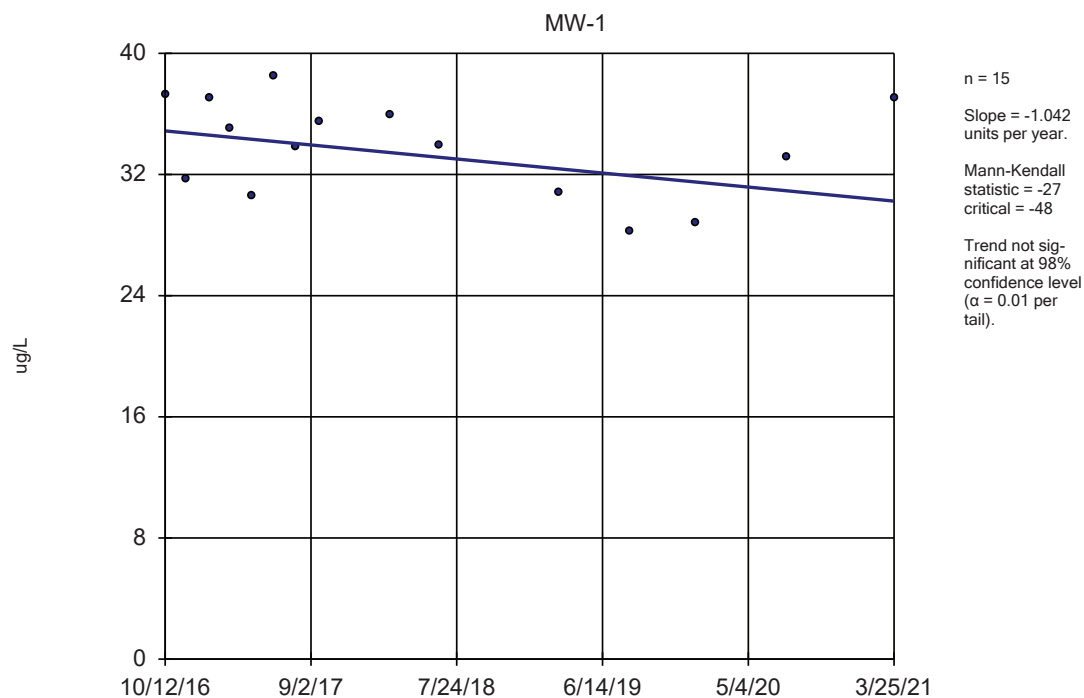
Sen's Slope Estimator



Constituent: Fluoride Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

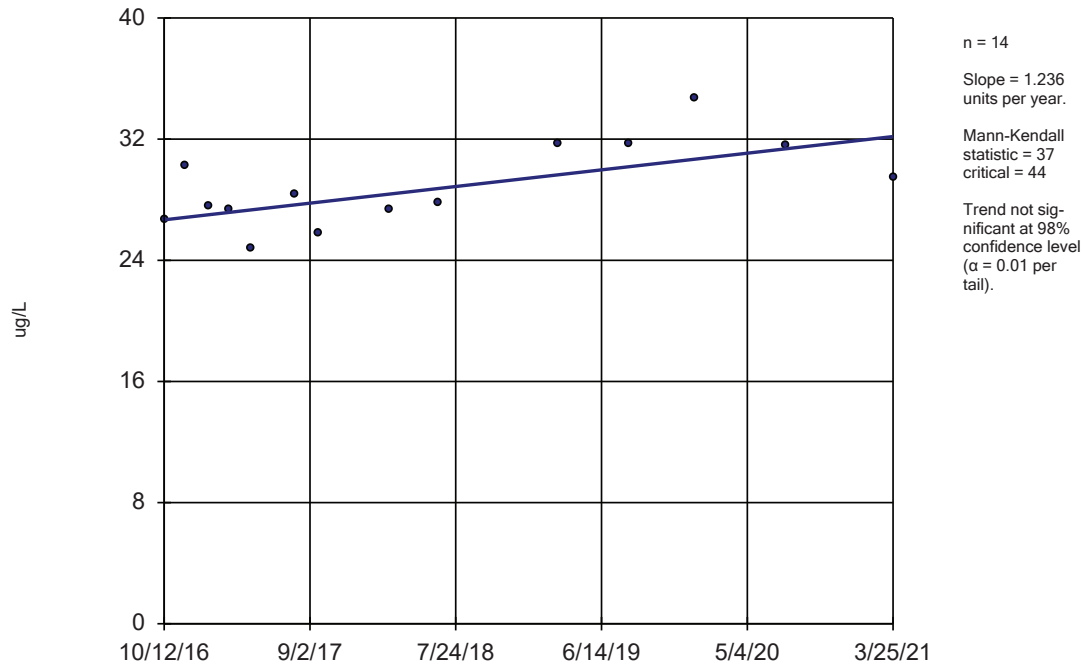


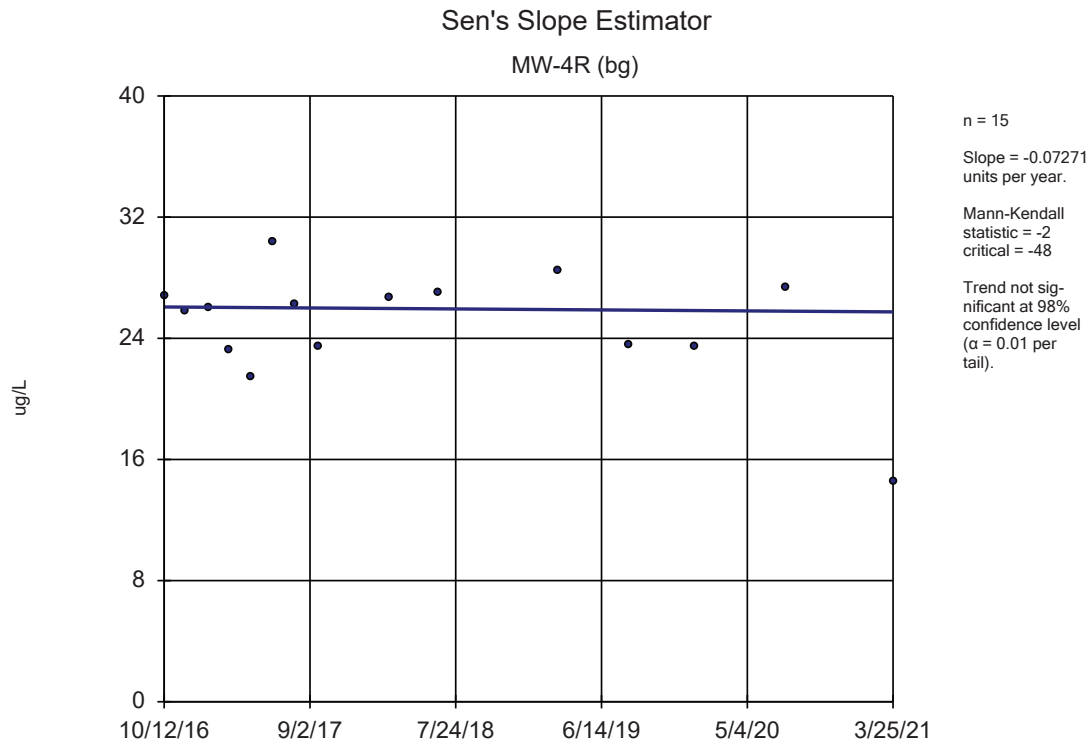
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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

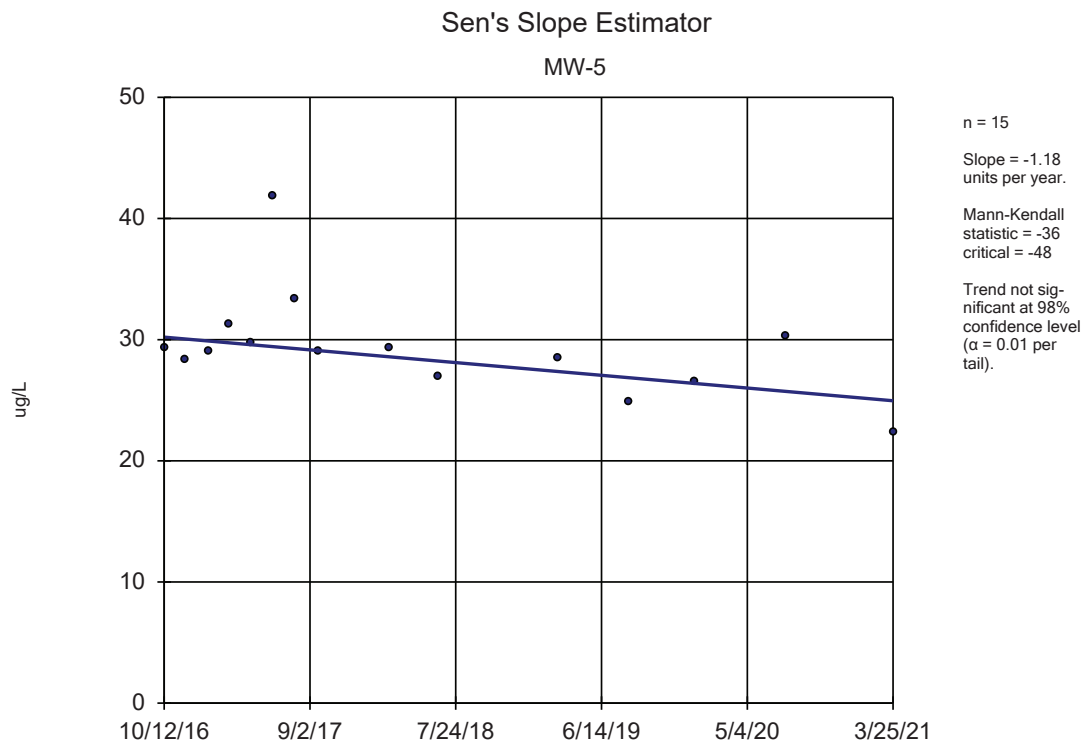
Sen's Slope Estimator

MW-2





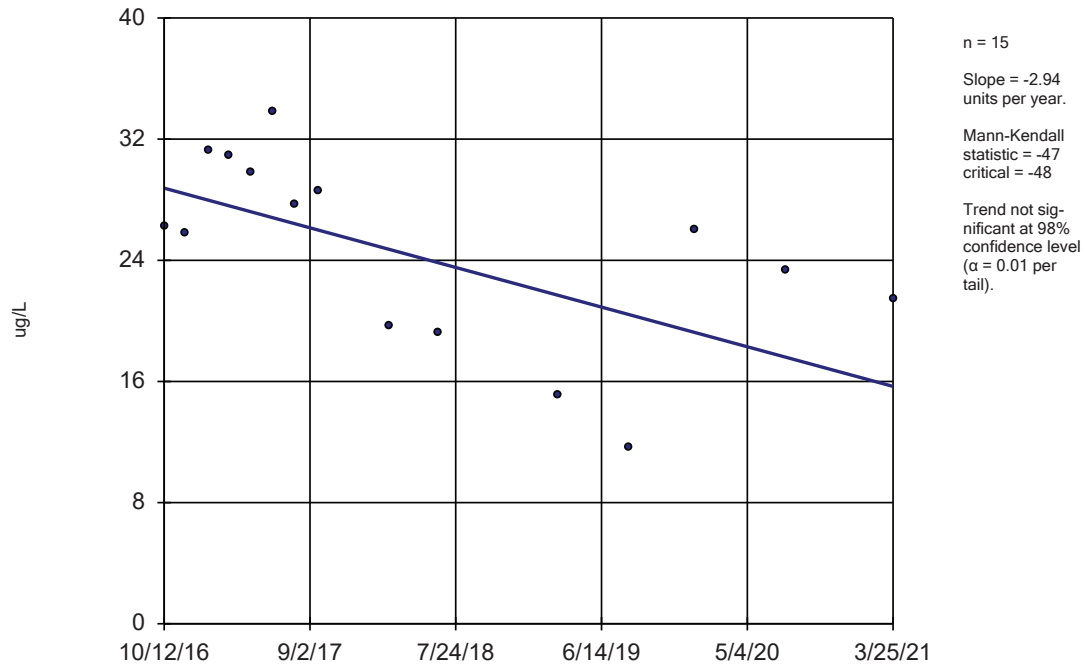
Constituent: Lithium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Lithium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6

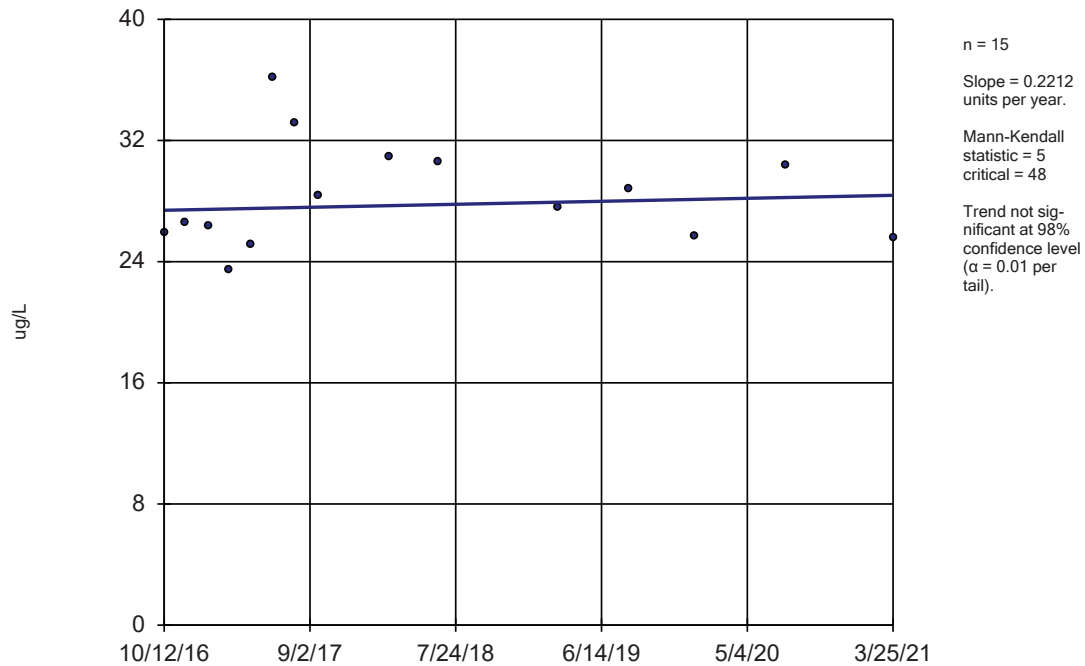


Constituent: Lithium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-7

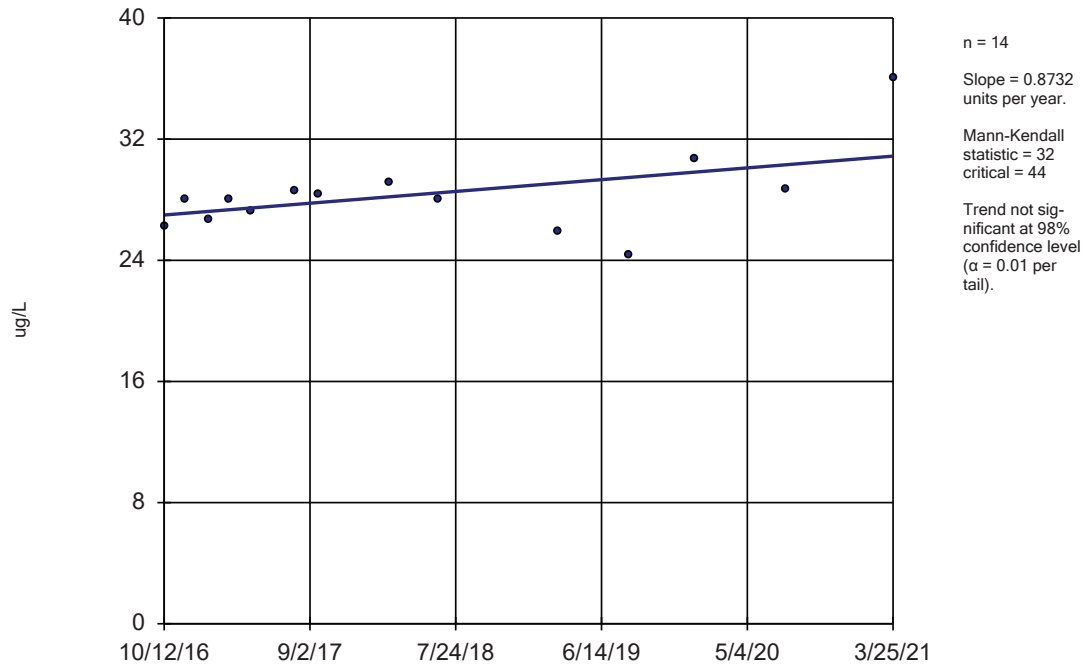


Constituent: Lithium Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

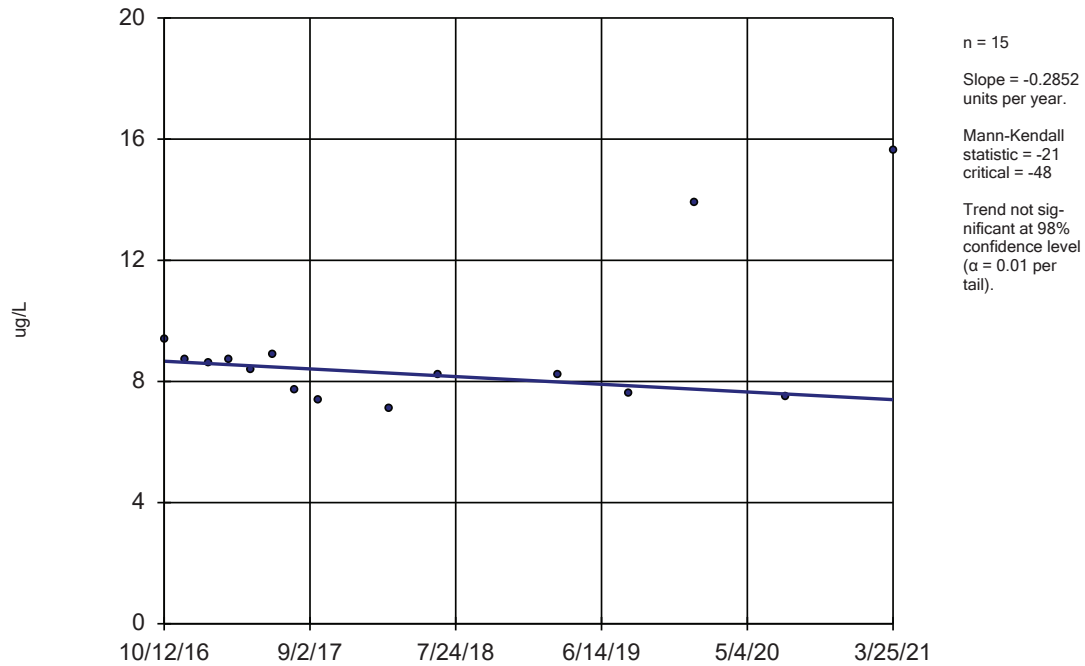
Sen's Slope Estimator

MW-8



Sen's Slope Estimator

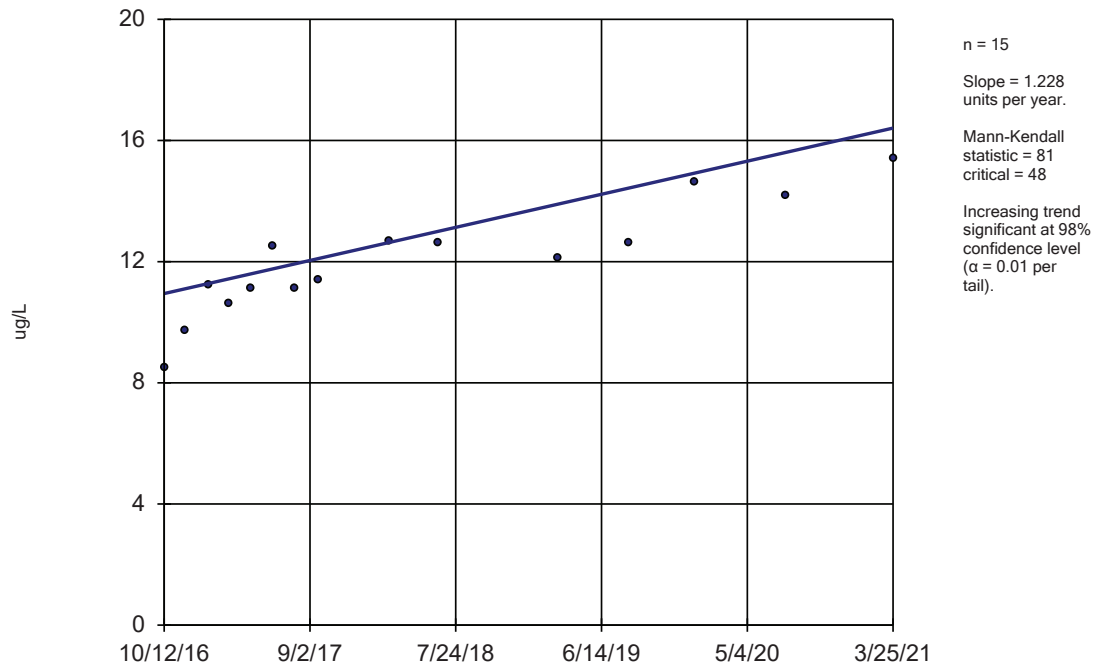
MW-2



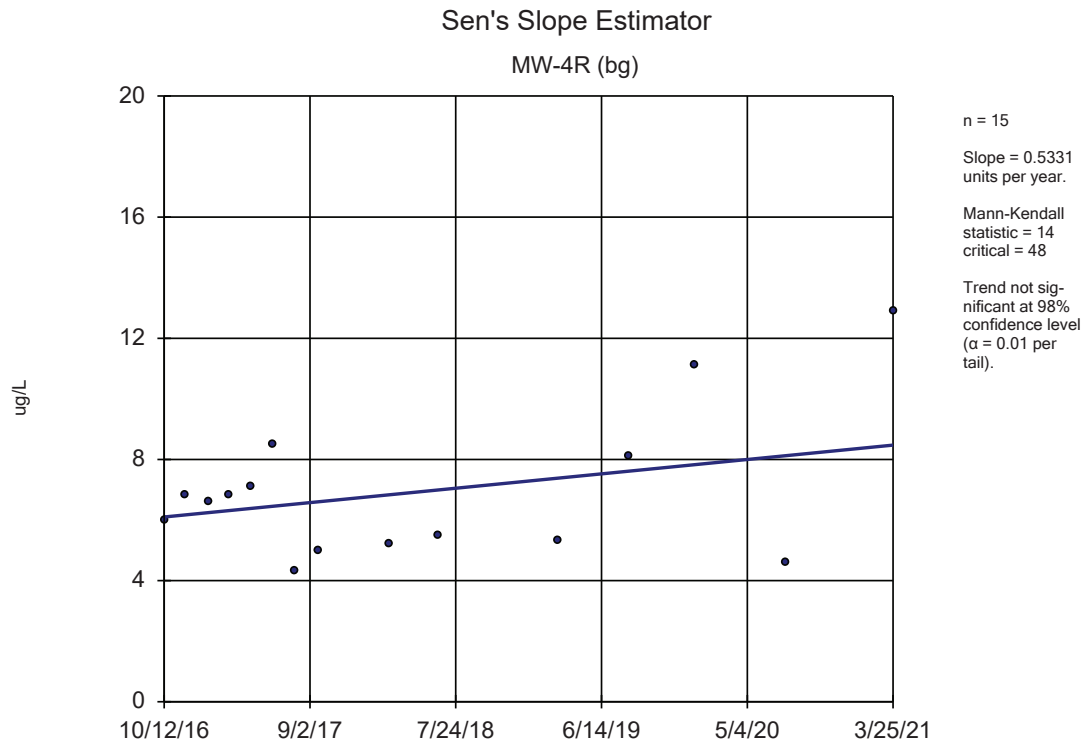
Constituent: Molybdenum Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

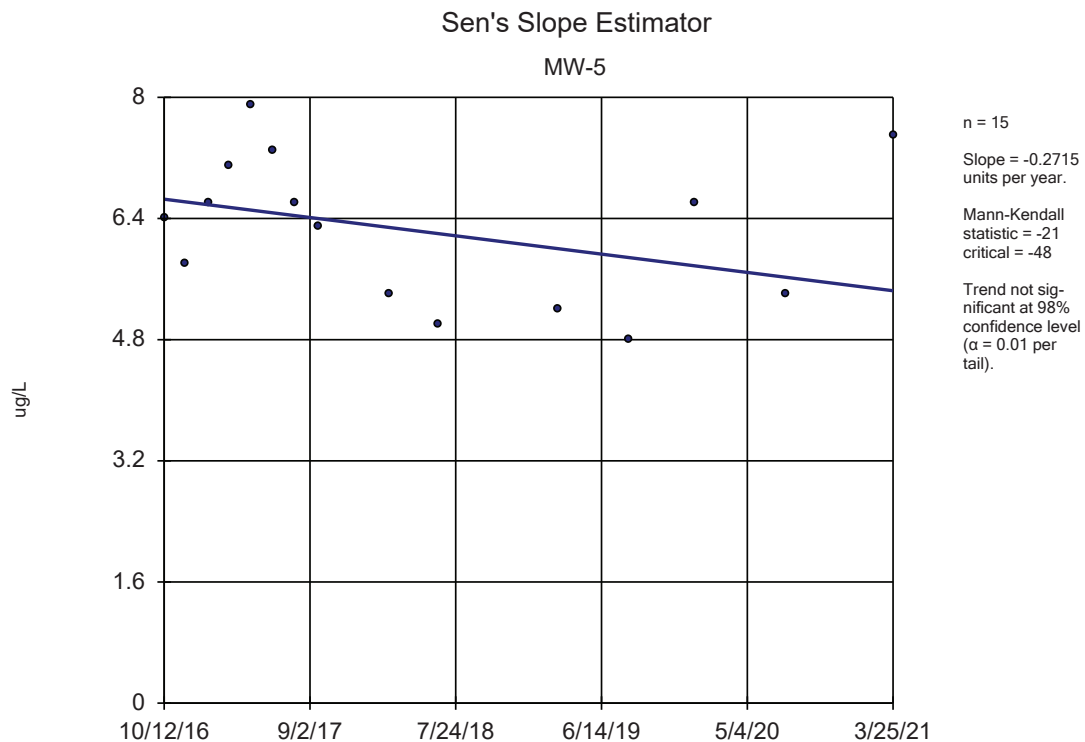
MW-3



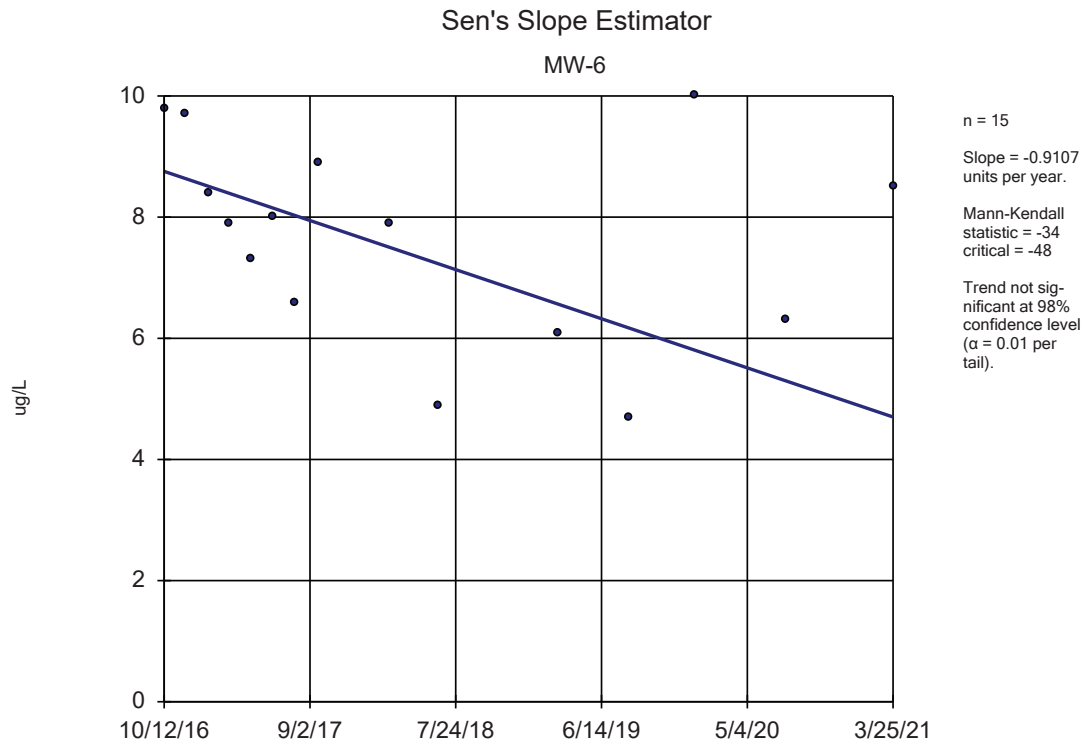
Constituent: Molybdenum Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



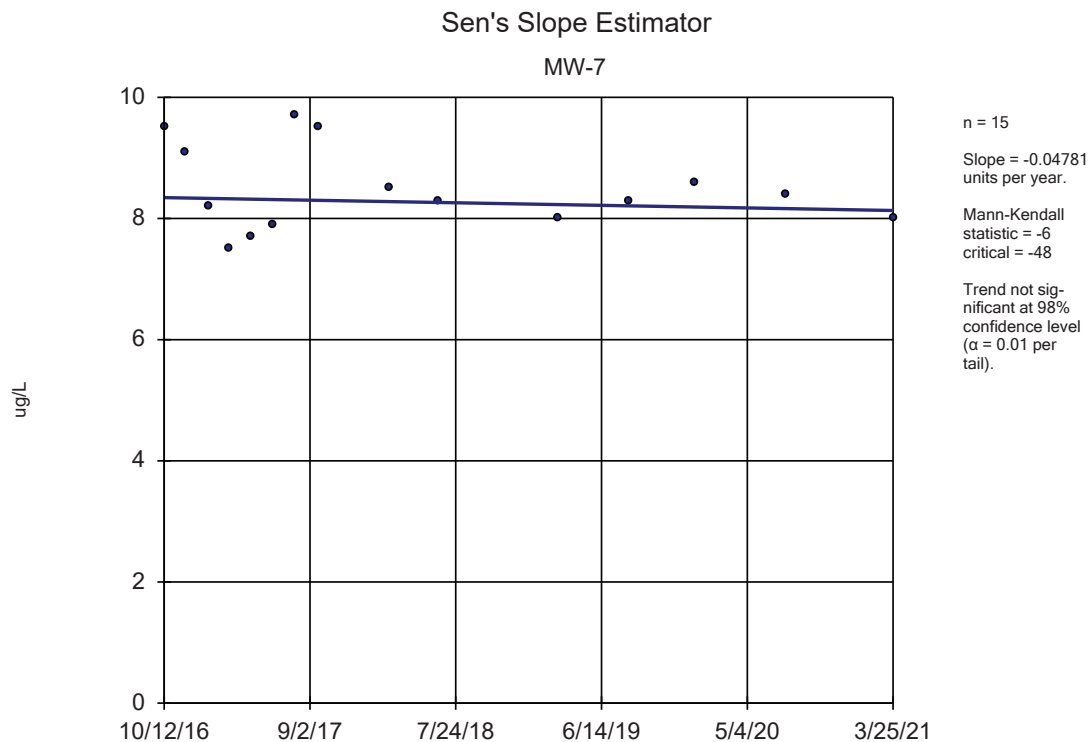
Constituent: Molybdenum Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Molybdenum Analysis Run 4/26/2021 2:13 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



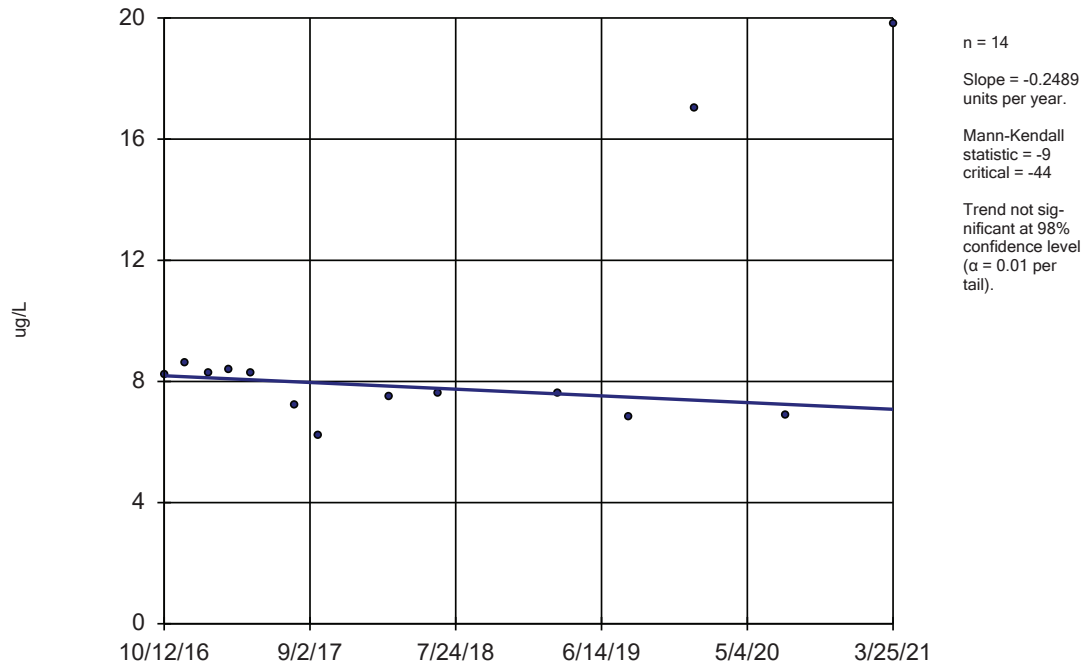
Constituent: Molybdenum Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Molybdenum Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-8

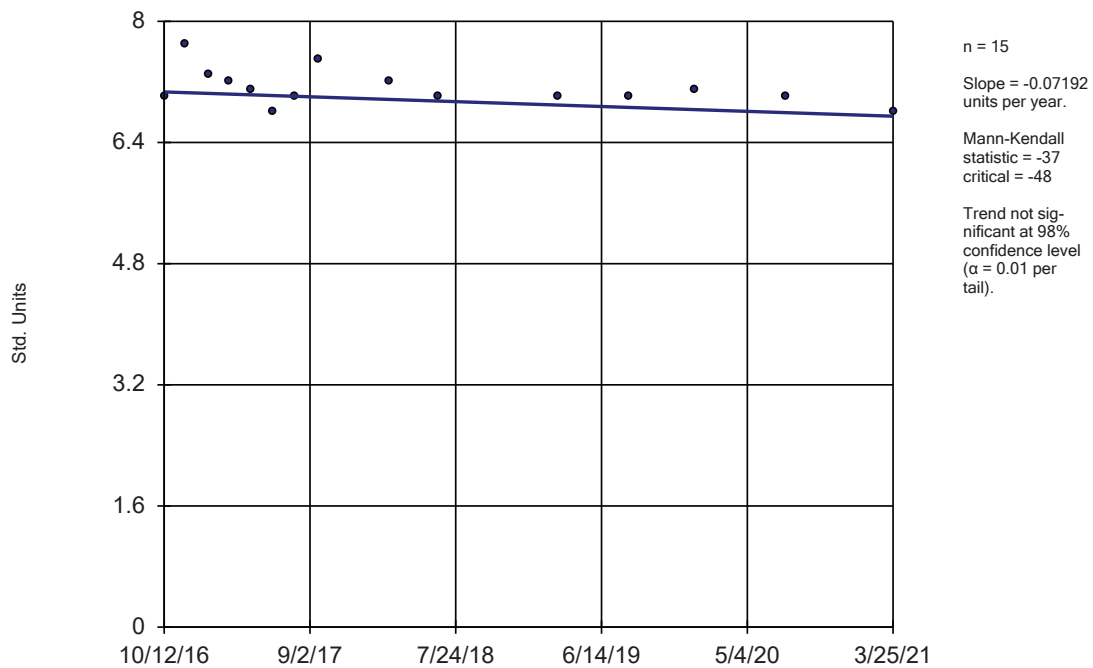


Constituent: Molybdenum Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-1

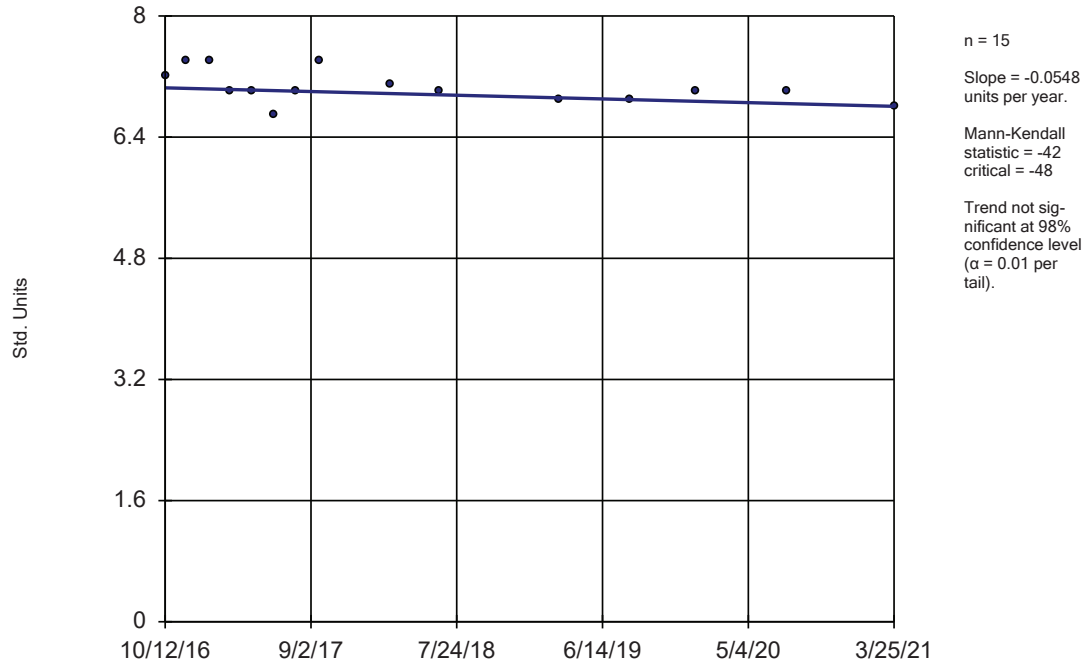


Constituent: pH Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

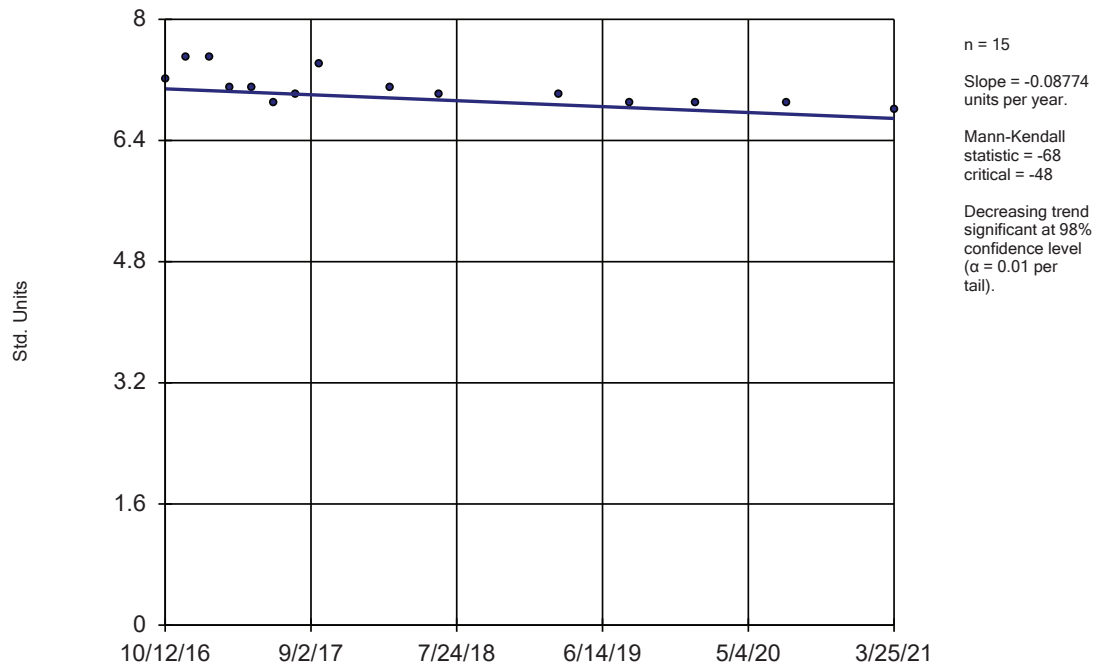


Constituent: pH Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

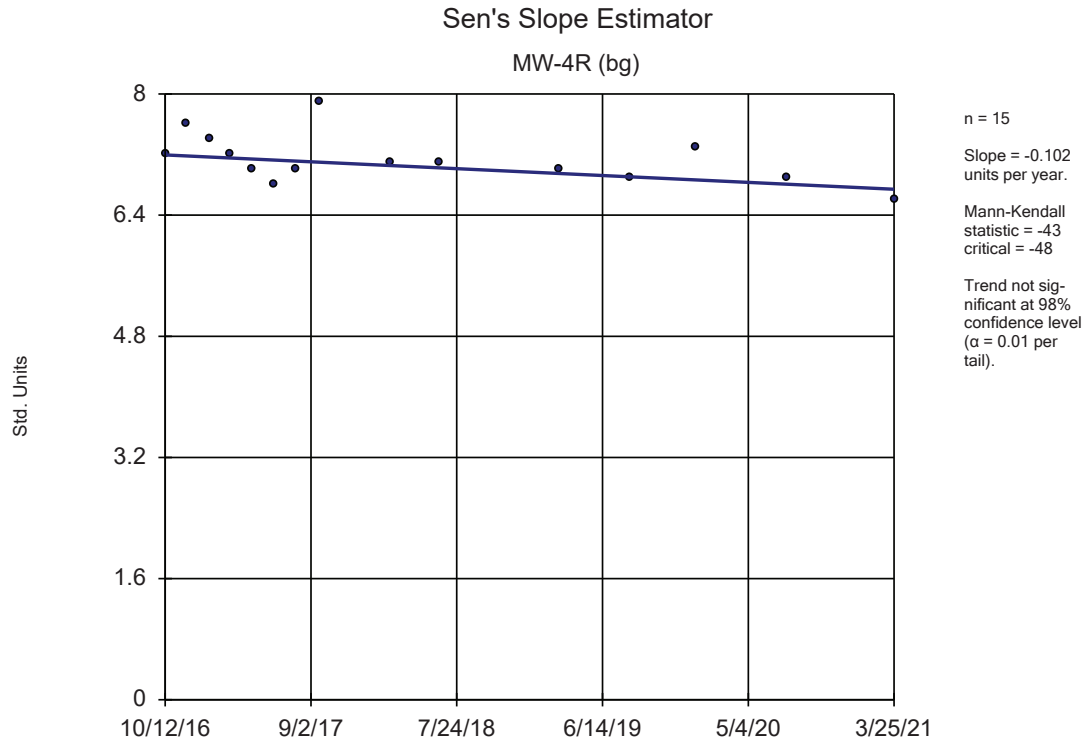
Sen's Slope Estimator

MW-3

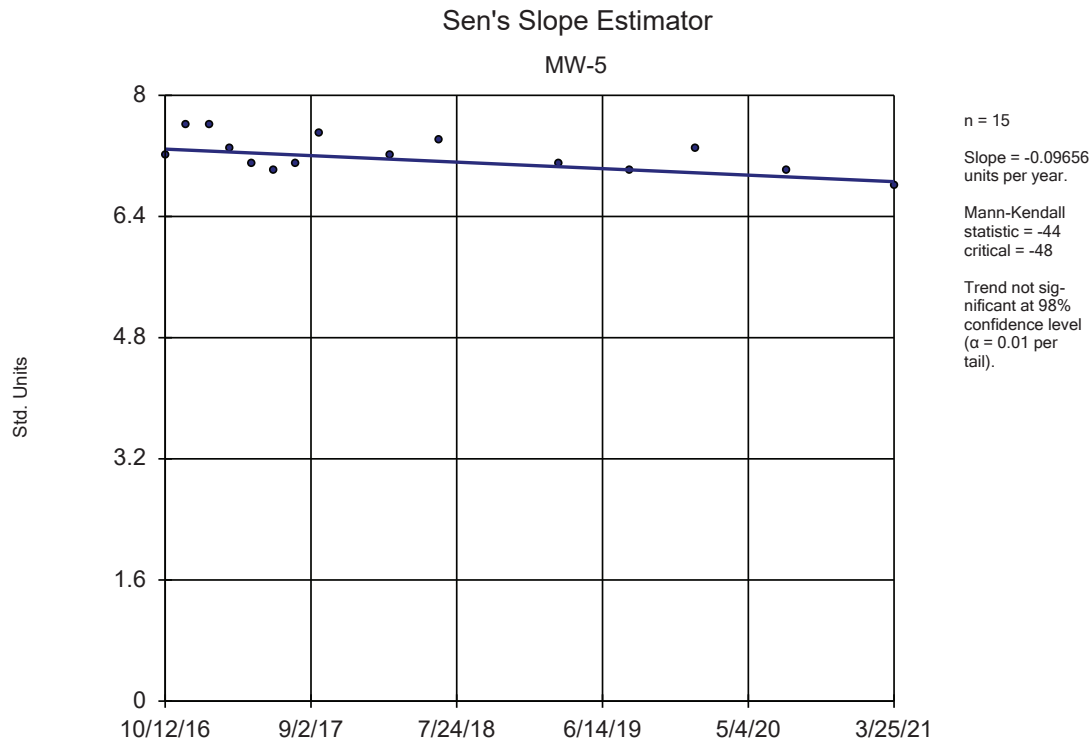


Constituent: pH Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



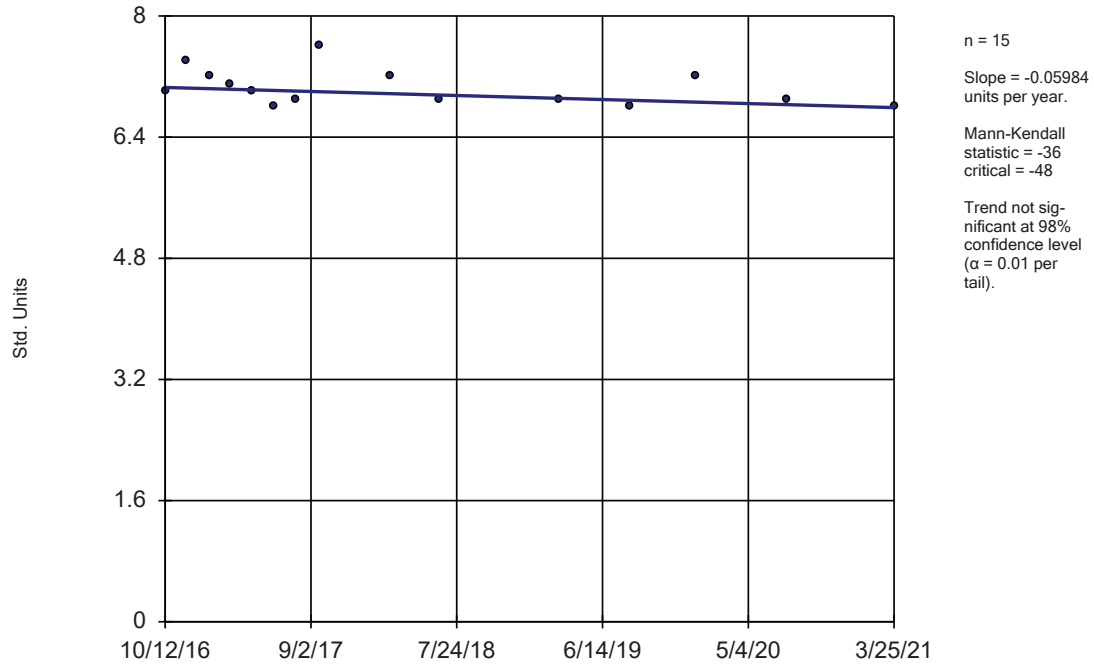
Constituent: pH Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: pH Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6

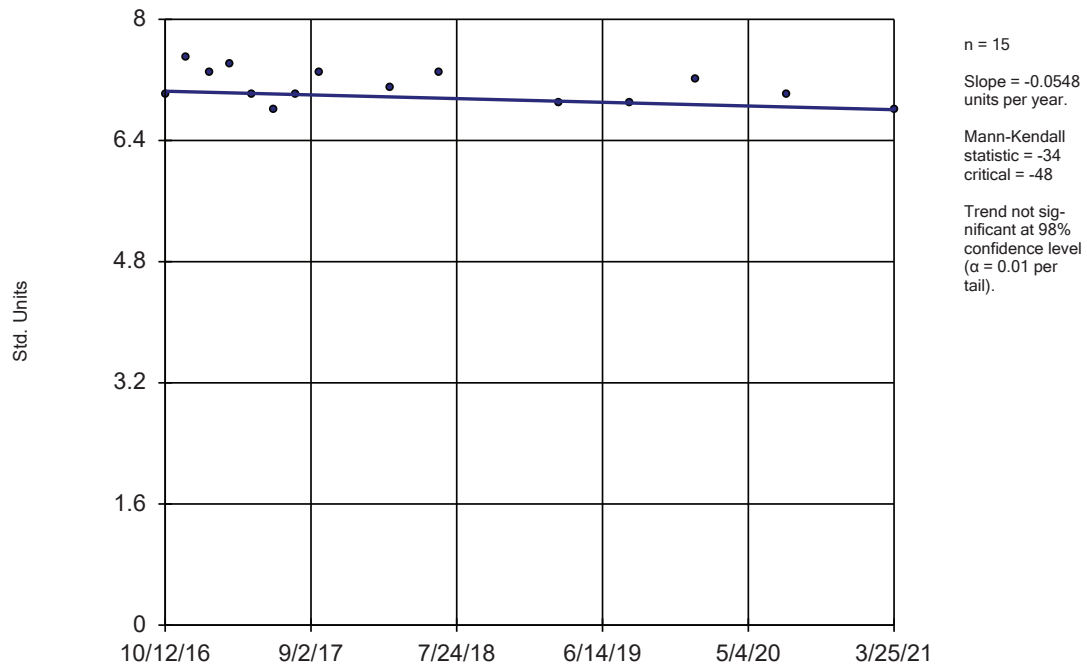


Constituent: pH Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

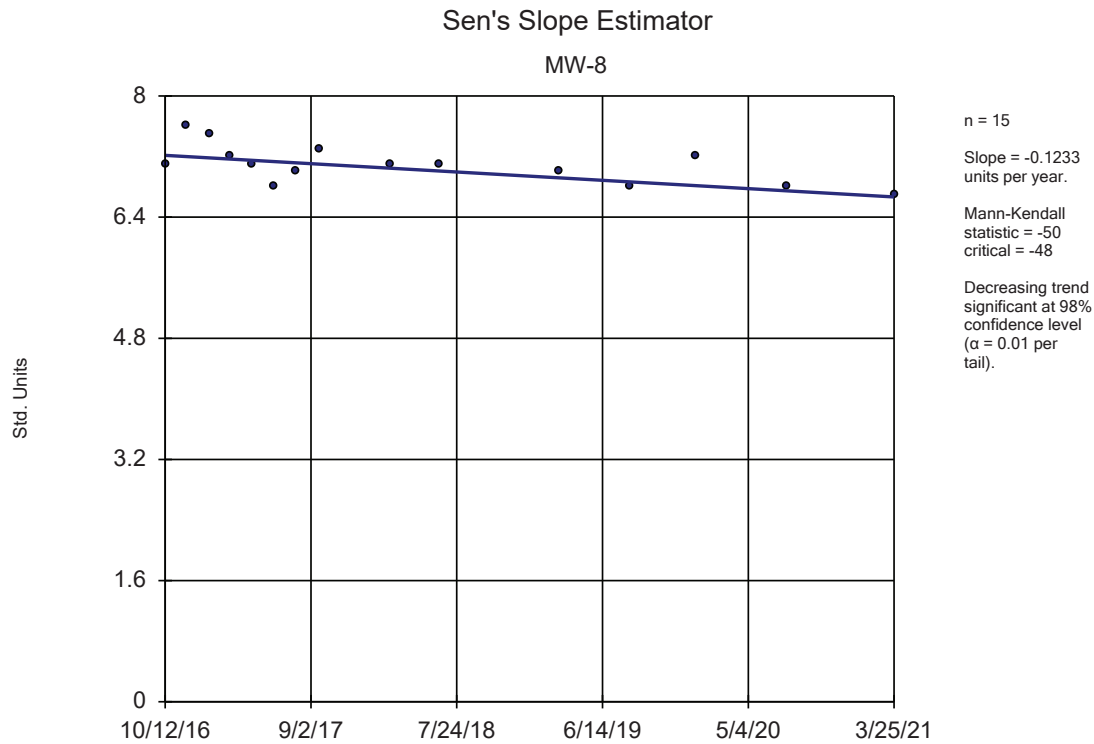
Sen's Slope Estimator

MW-7

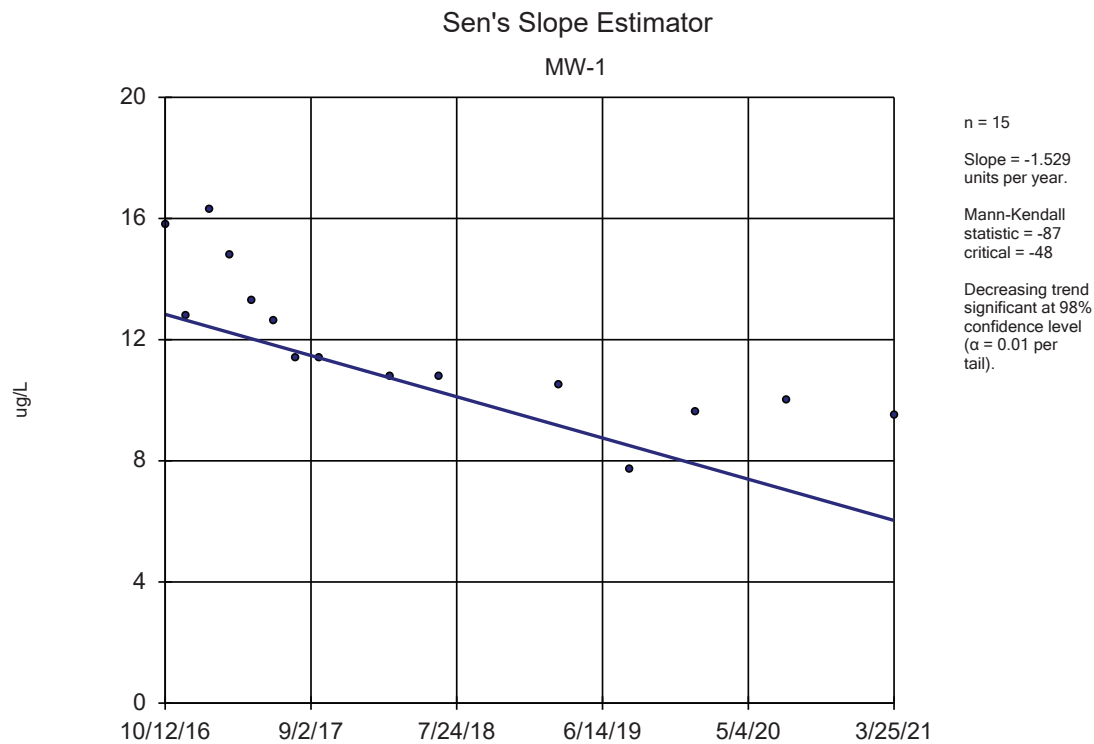


Constituent: pH Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



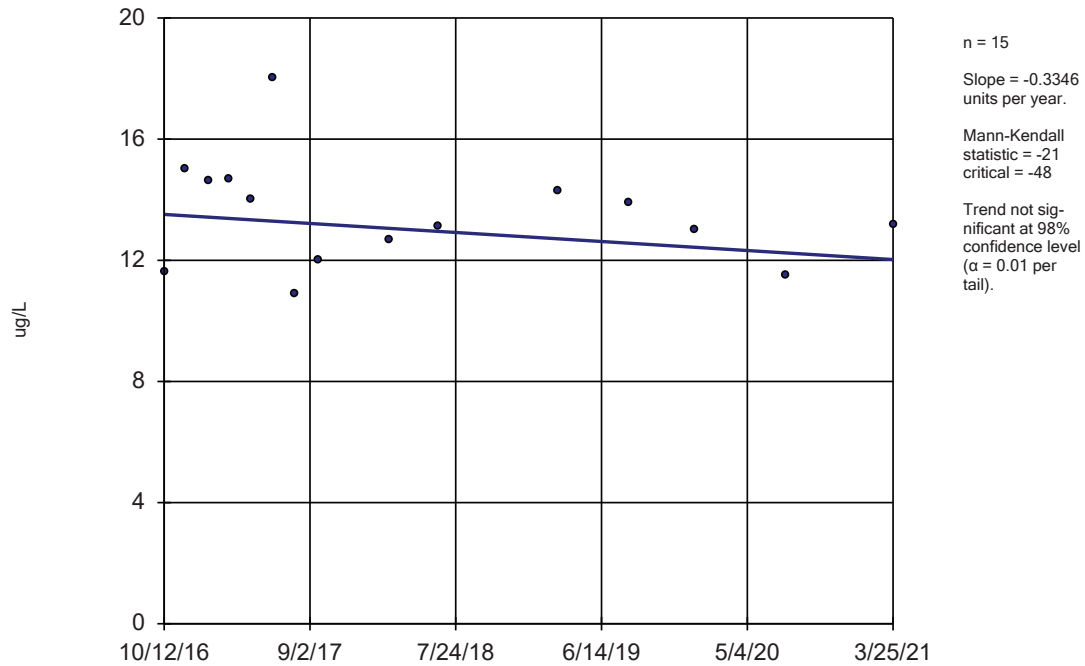
Constituent: pH Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Selenium [total] Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

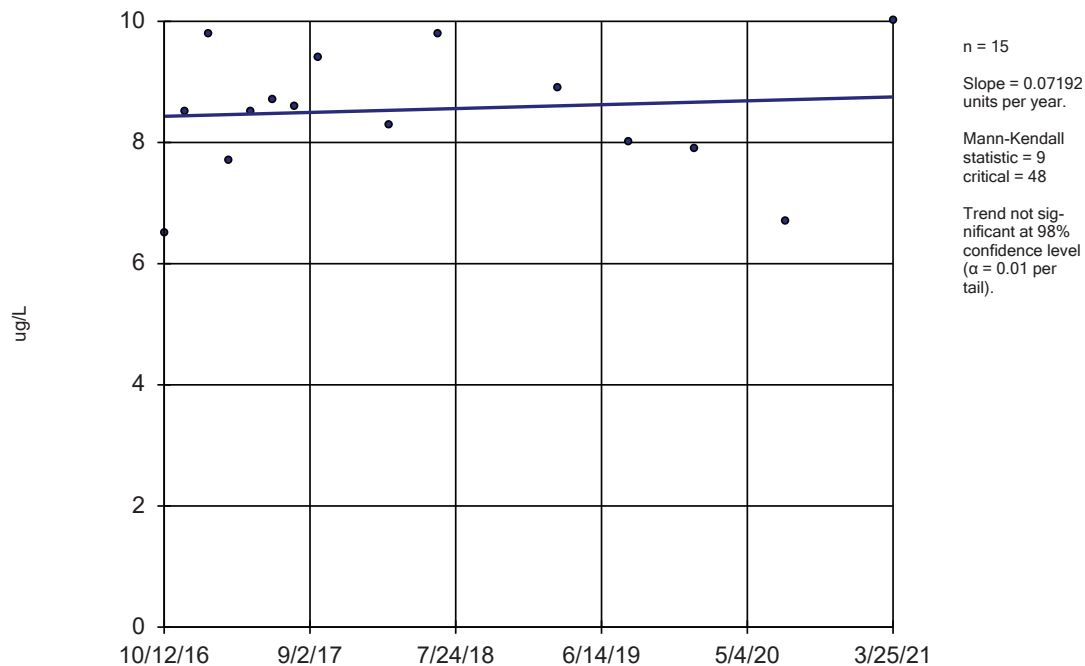


Constituent: Selenium [total] Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

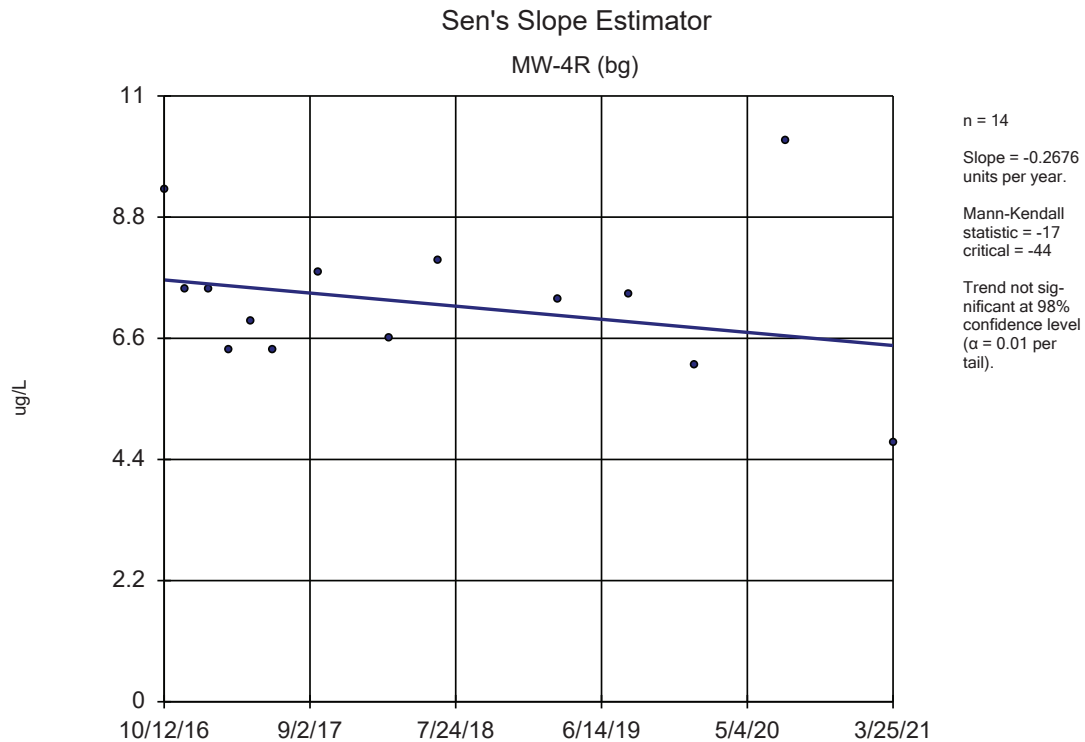
Sen's Slope Estimator

MW-3

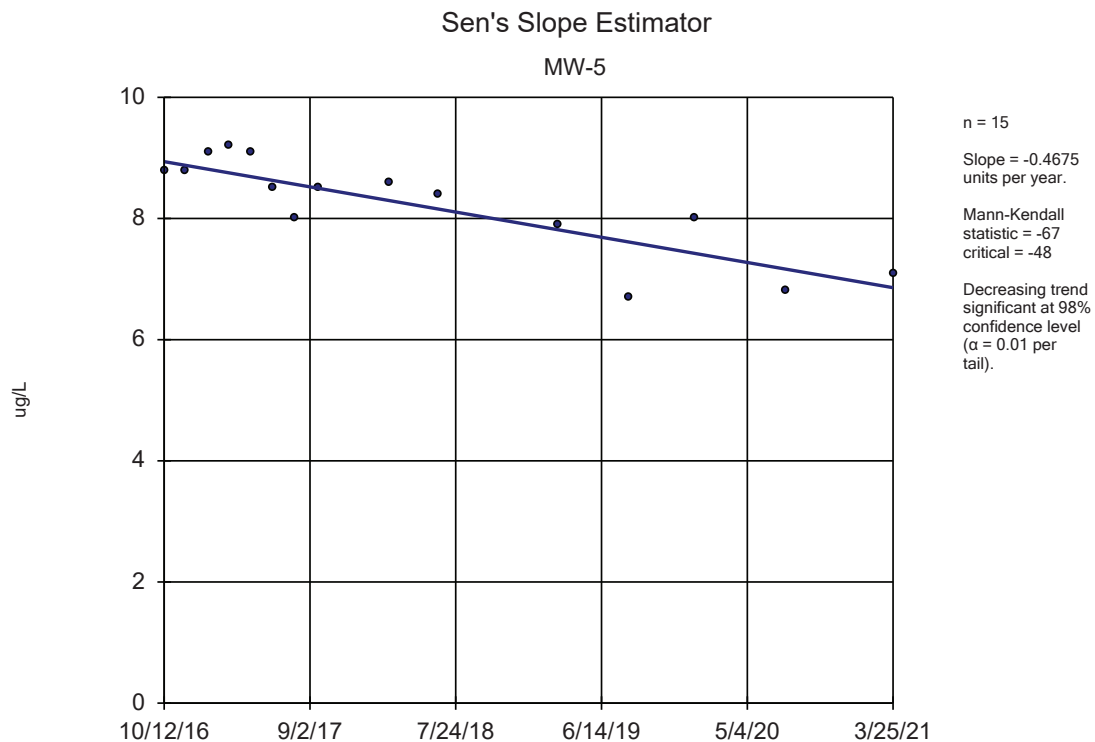


Constituent: Selenium [total] Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



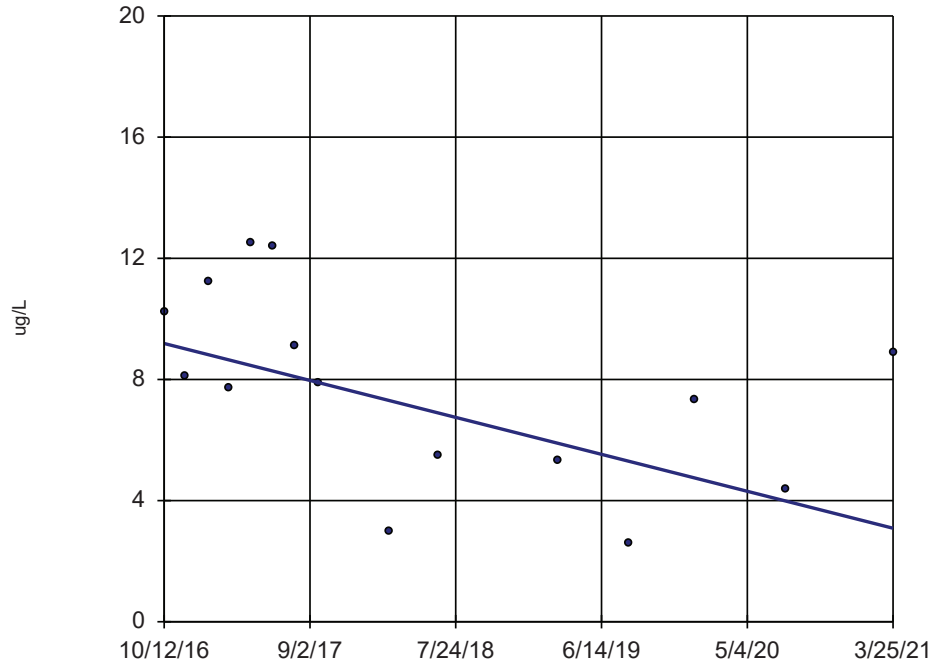
Constituent: Selenium [total] Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Selenium [total] Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6



n = 15

Slope = -1.37
units per year.

Mann-Kendall
statistic = -45
critical = -48

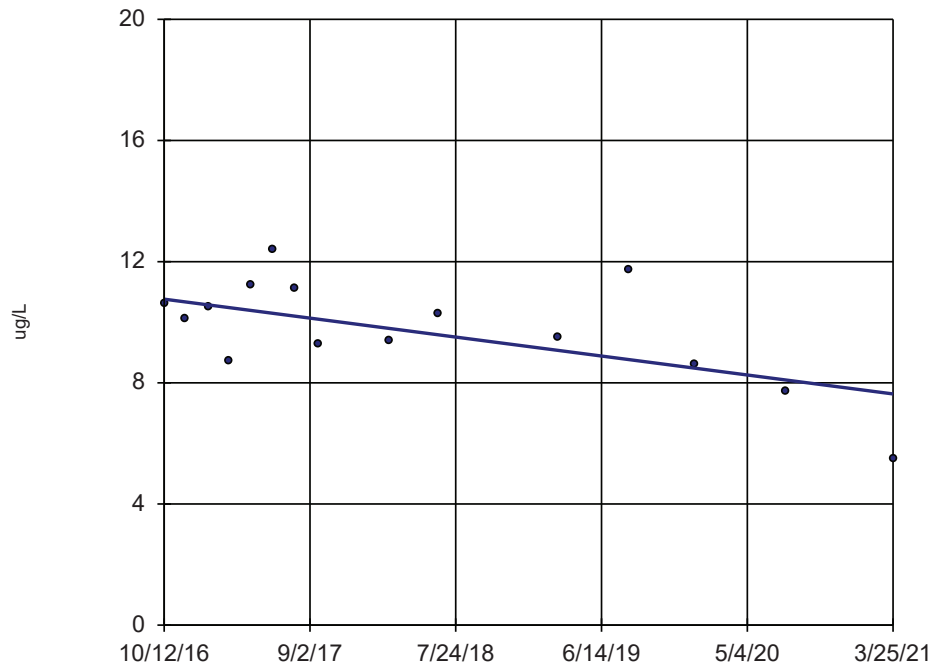
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Selenum [total] Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-7



n = 15

Slope = -0.7027
units per year.

Mann-Kendall
statistic = -37
critical = -48

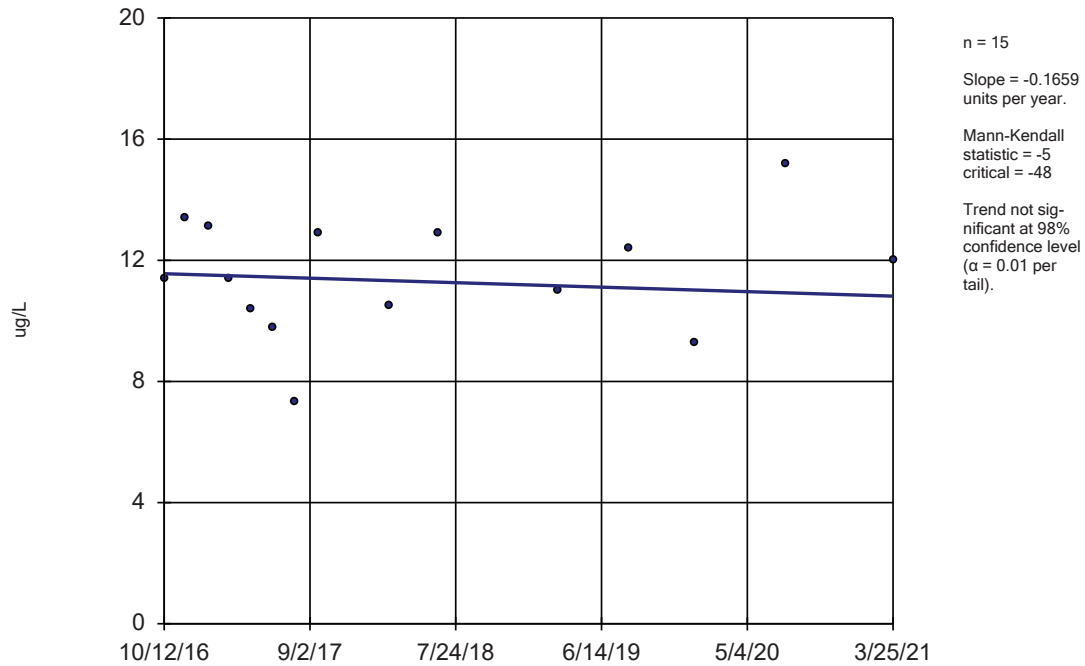
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Selenum [total] Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-8

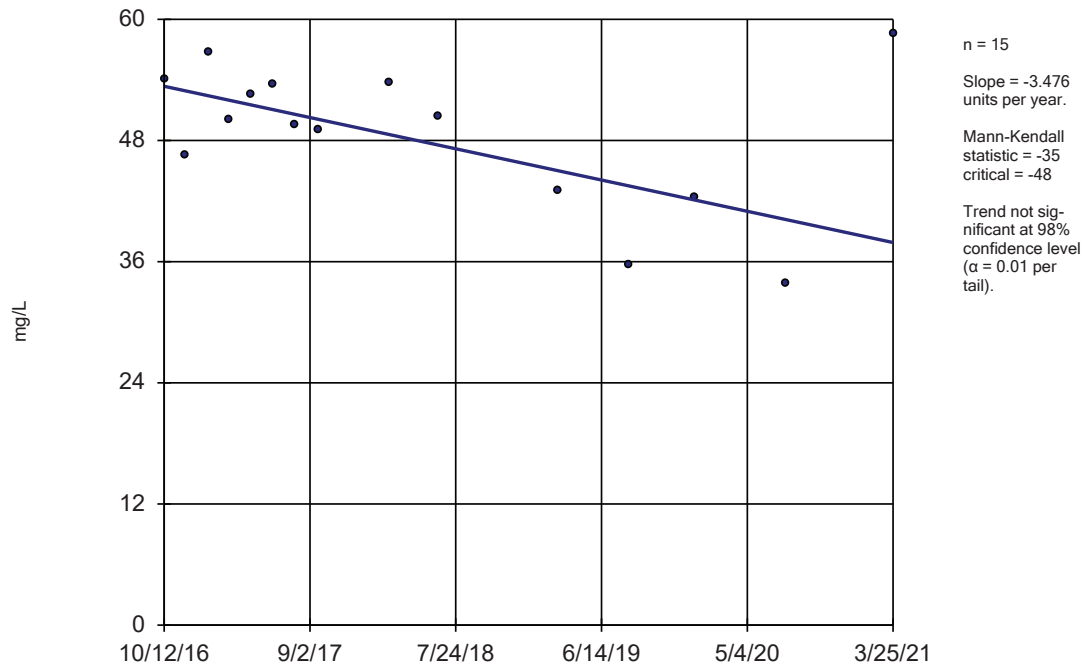


Constituent: Selenium [total] Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-1

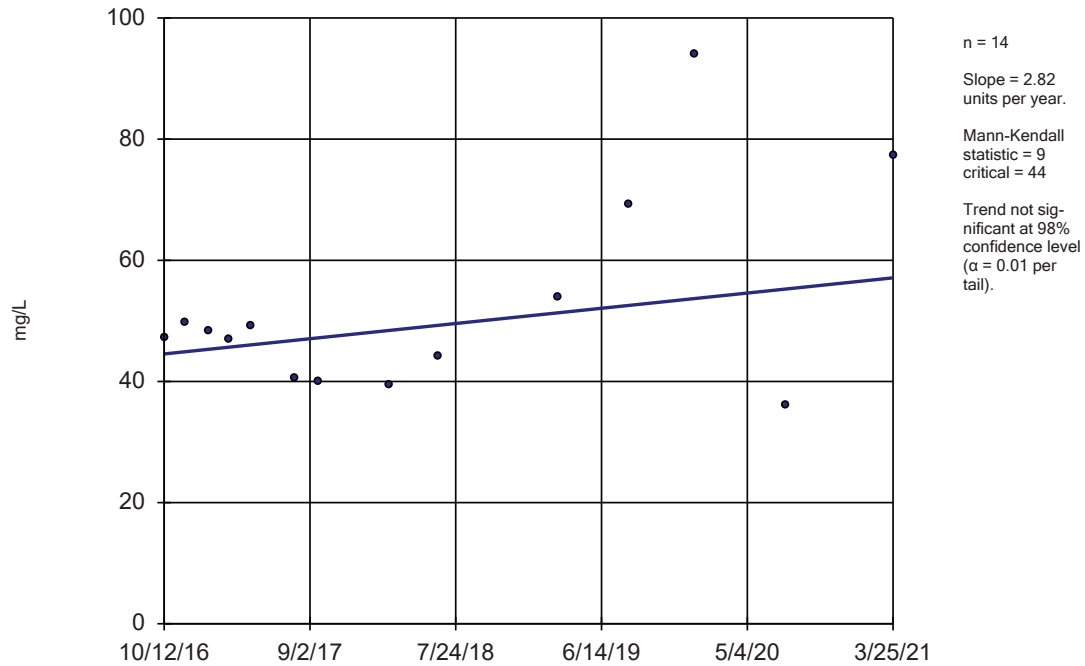


Constituent: Sulfate Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

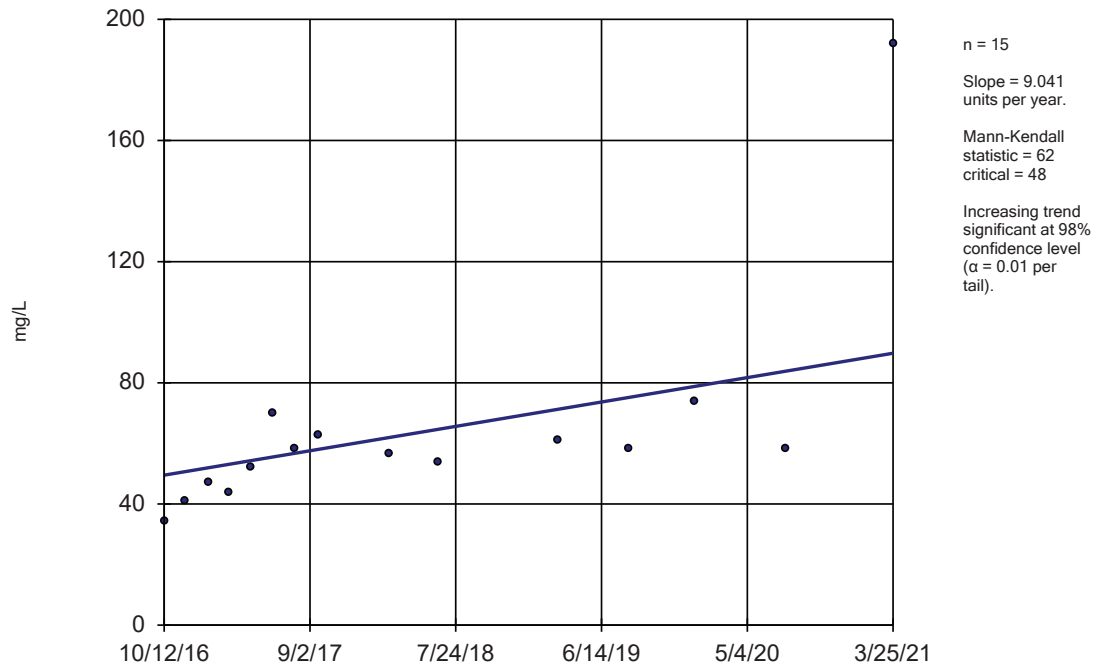


Constituent: Sulfate Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

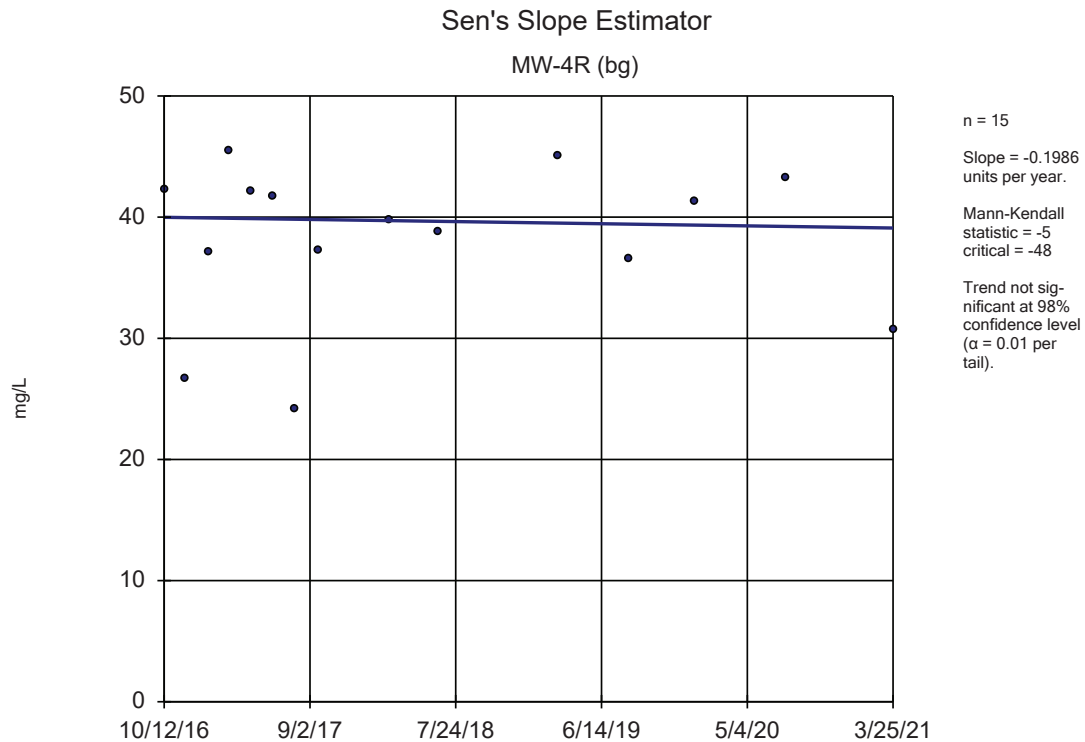
Sen's Slope Estimator

MW-3

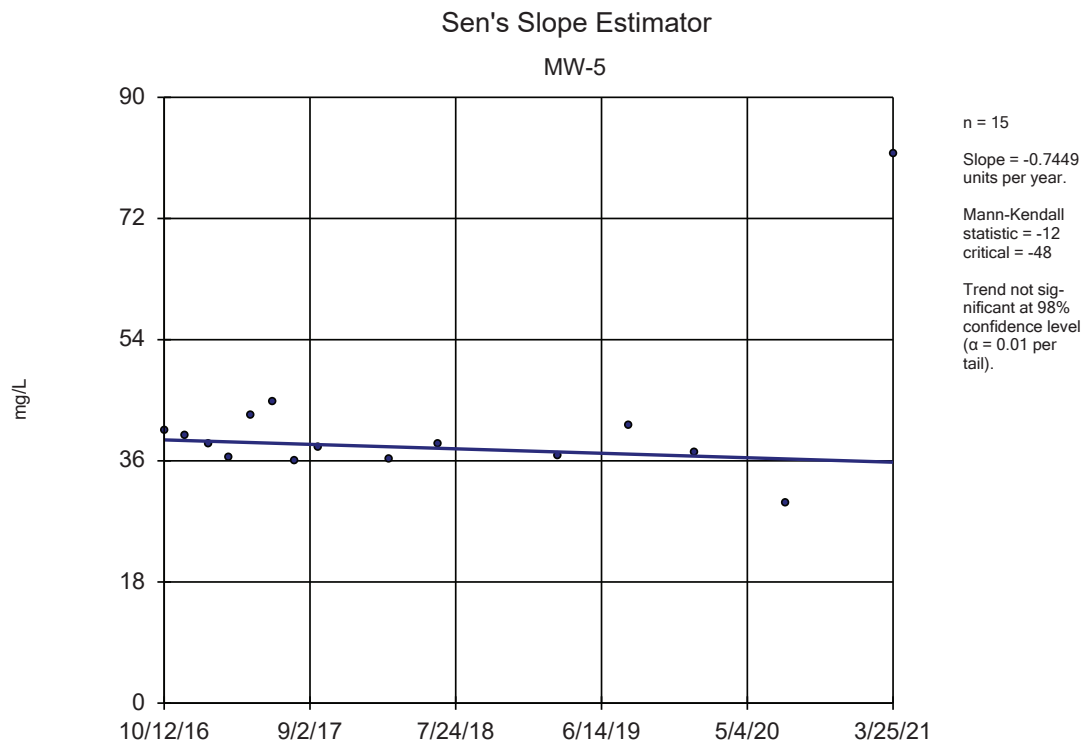


Constituent: Sulfate Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



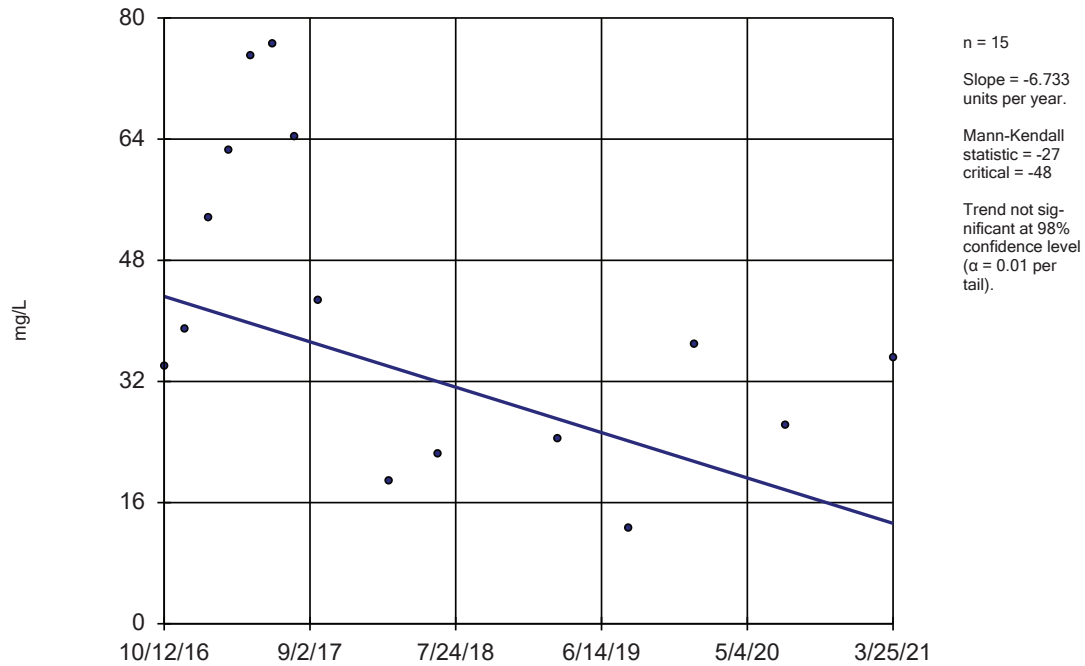
Constituent: Sulfate Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Sulfate Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6

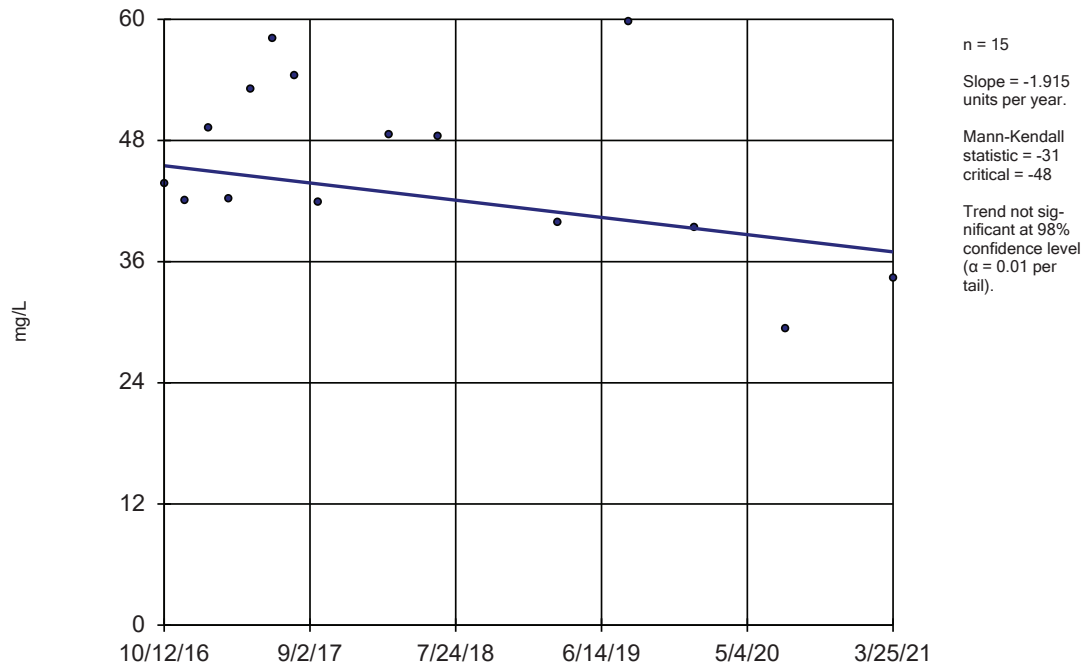


Constituent: Sulfate Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-7

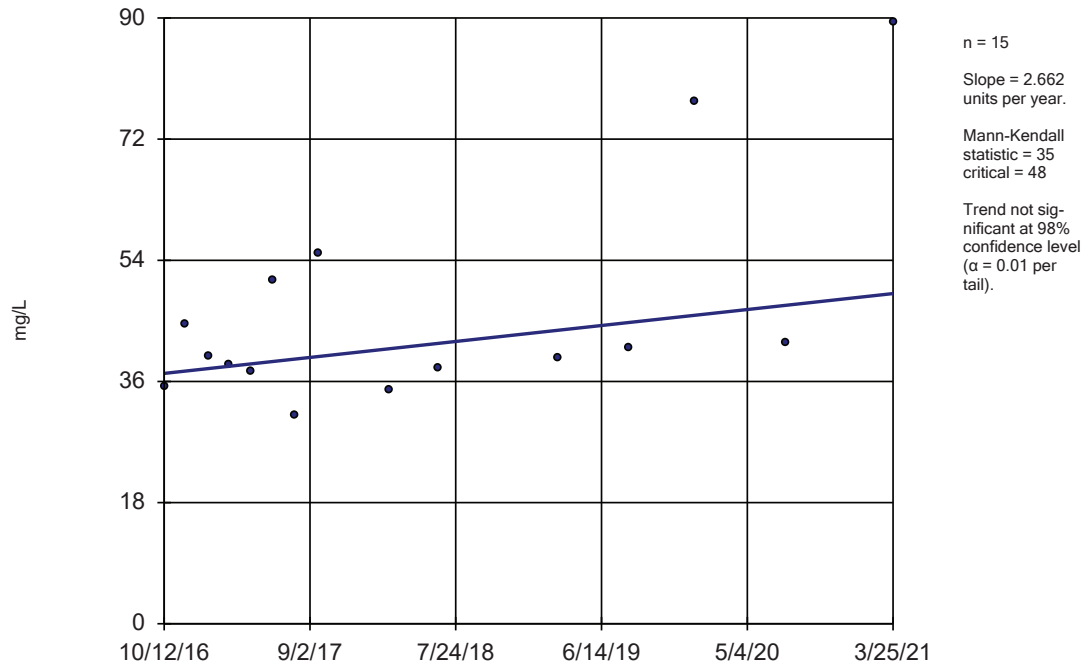


Constituent: Sulfate Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-8

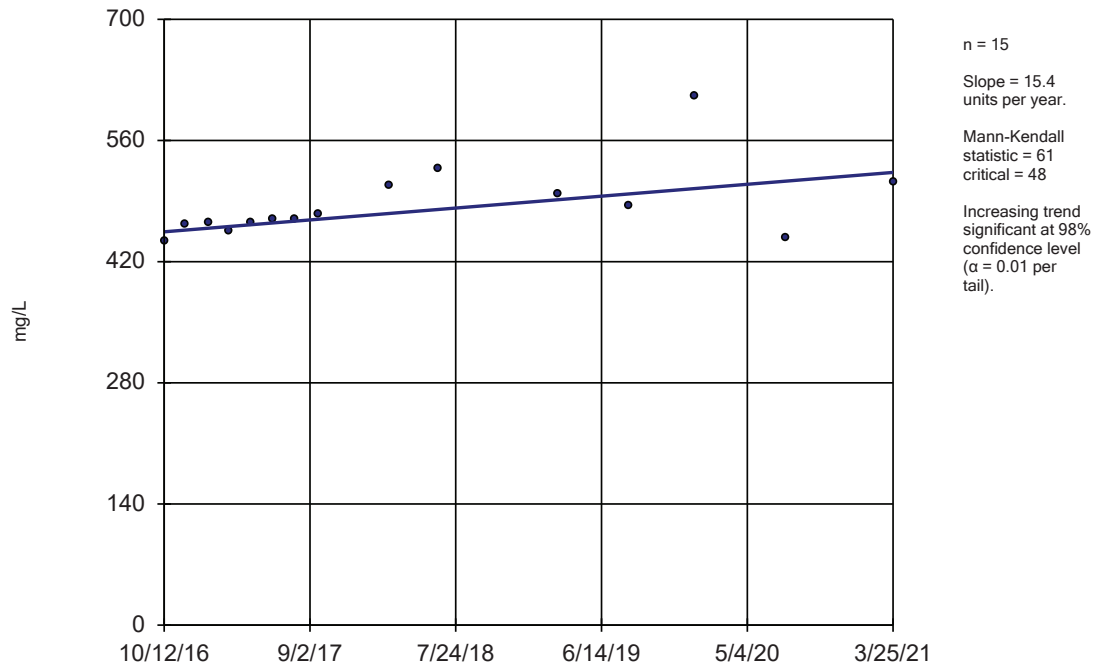


Constituent: Sulfate Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

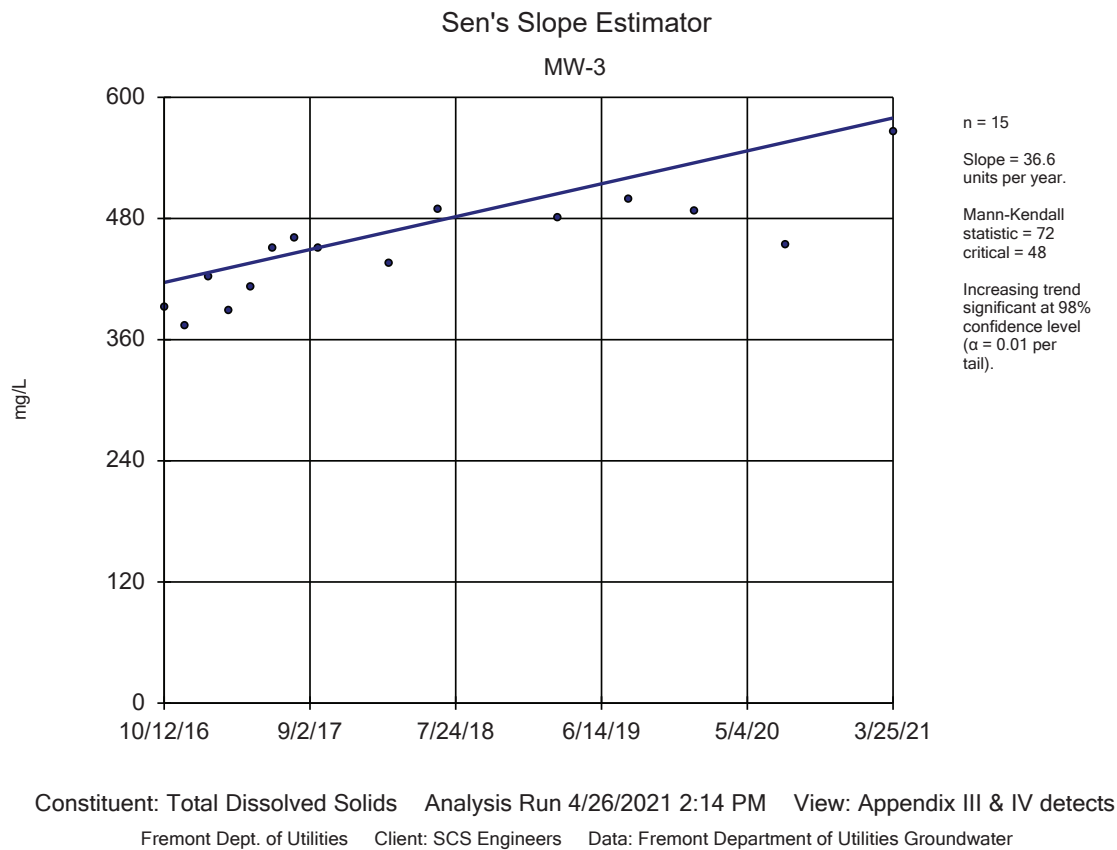
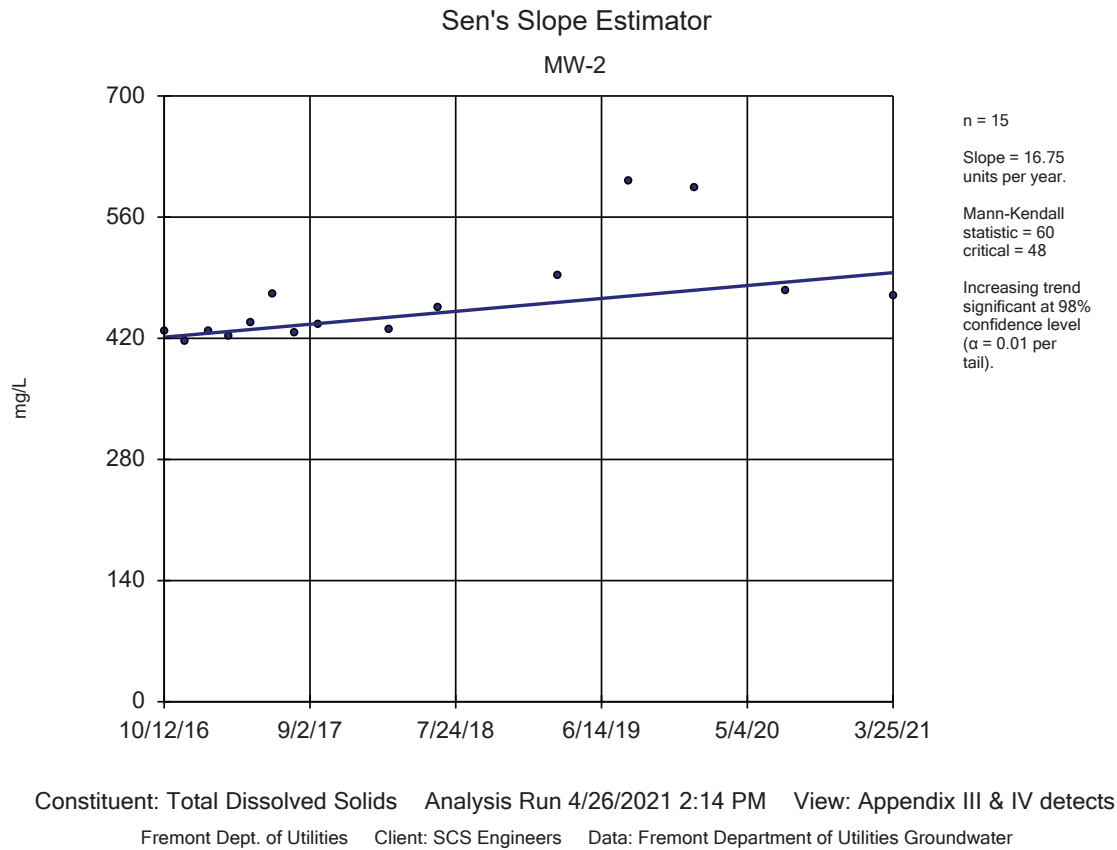
Sen's Slope Estimator

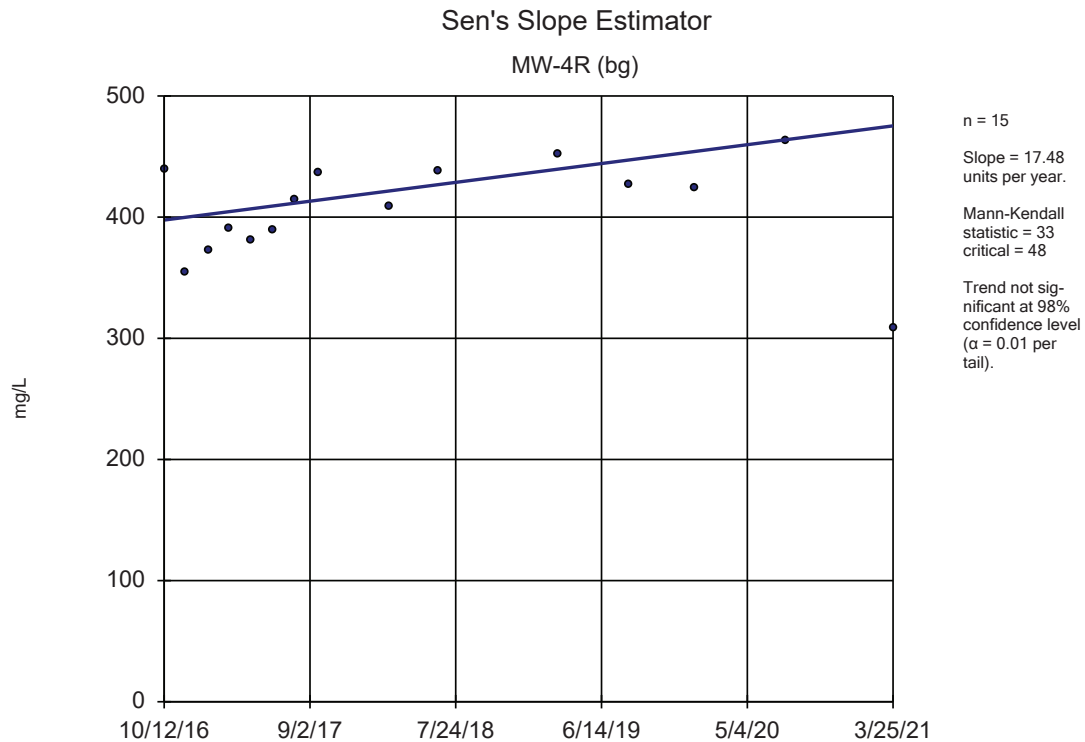
MW-1

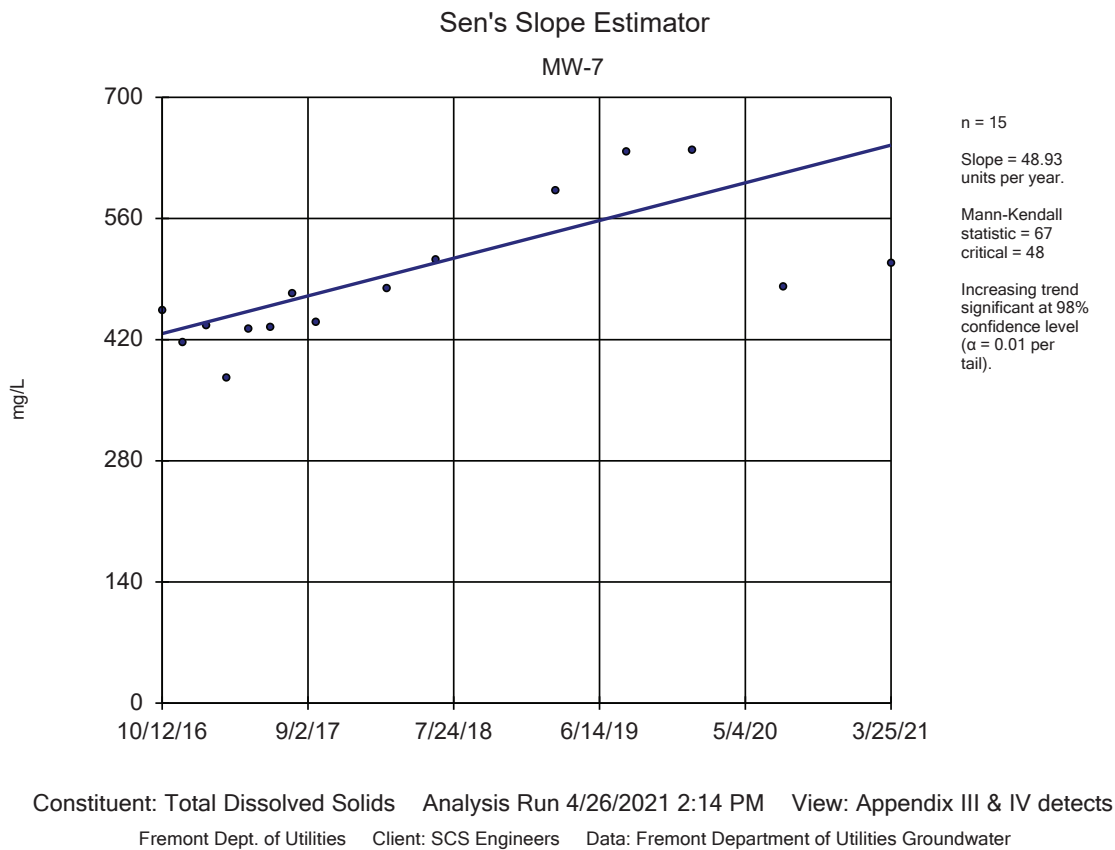
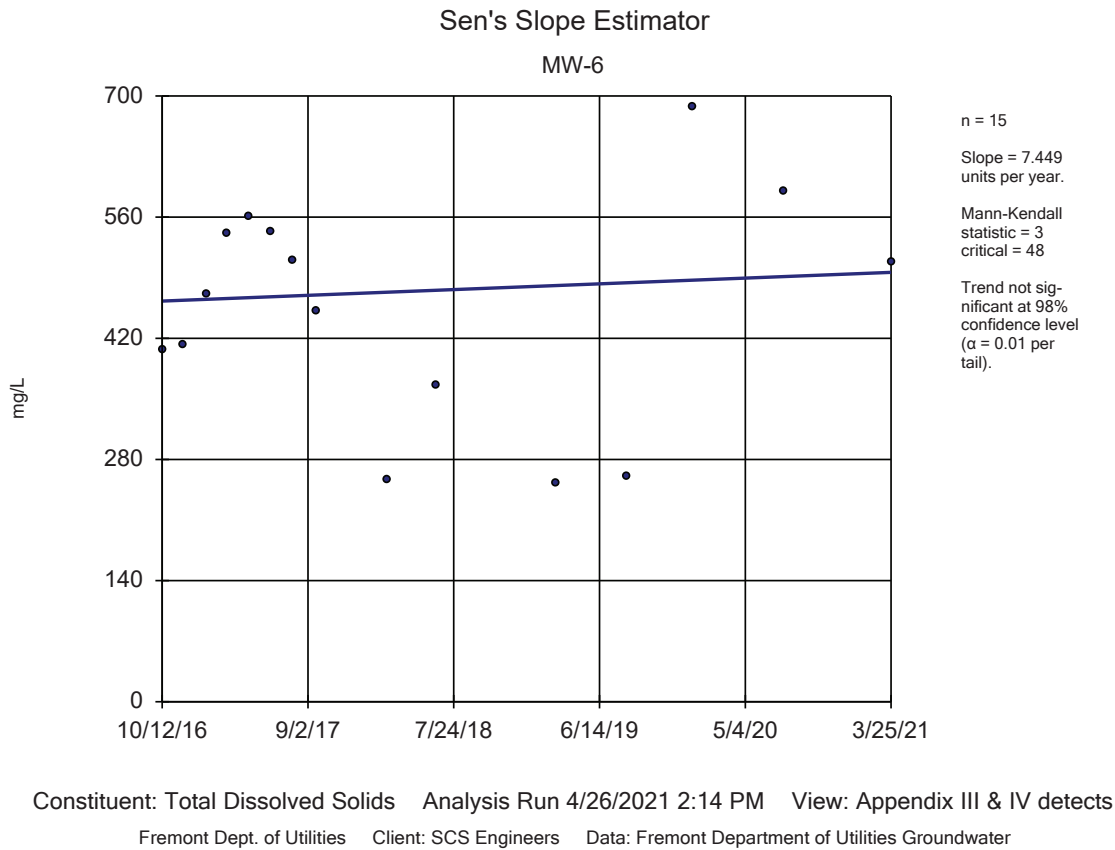


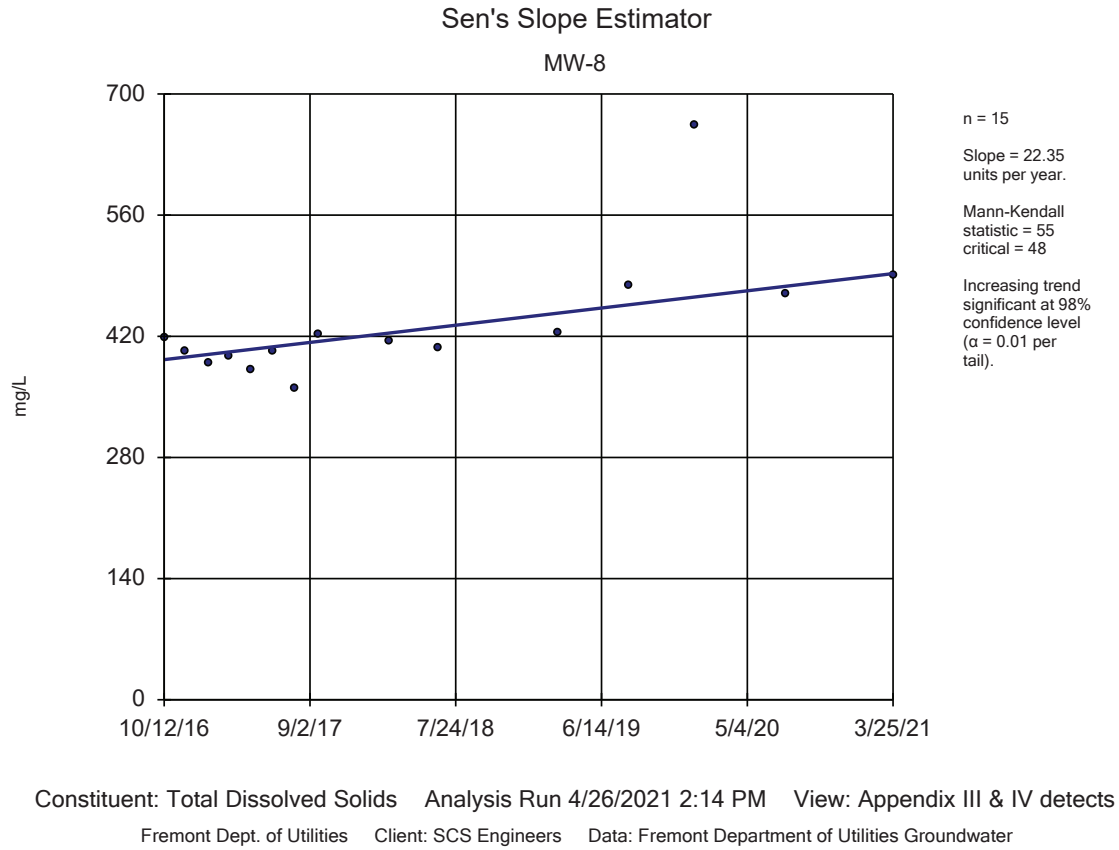
Constituent: Total Dissolved Solids Analysis Run 4/26/2021 2:14 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



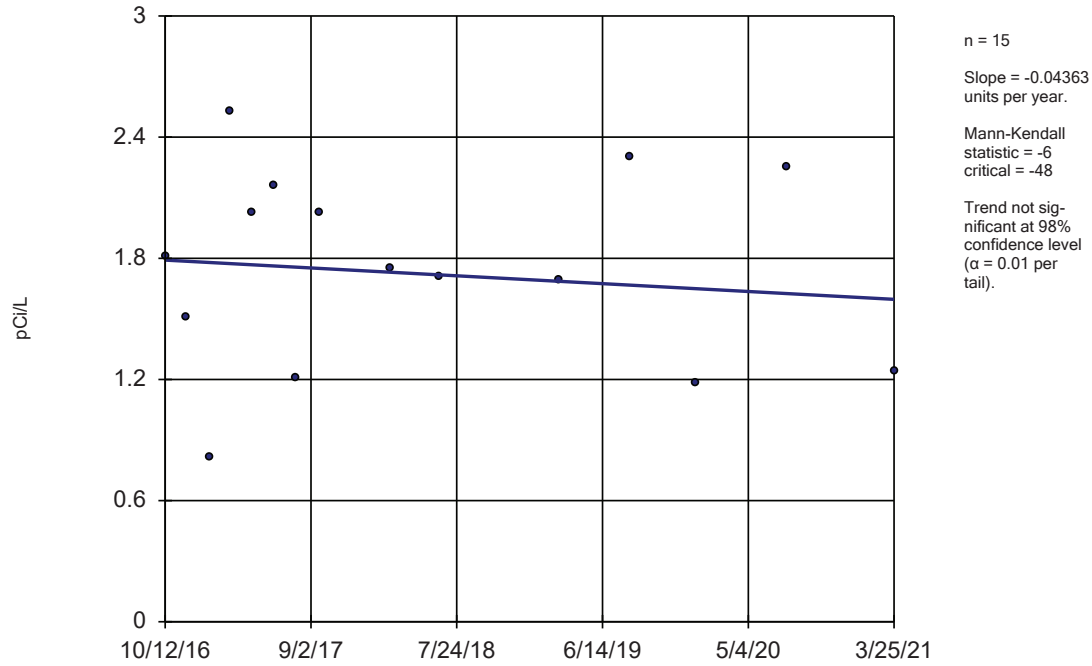






Sen's Slope Estimator

MW-2

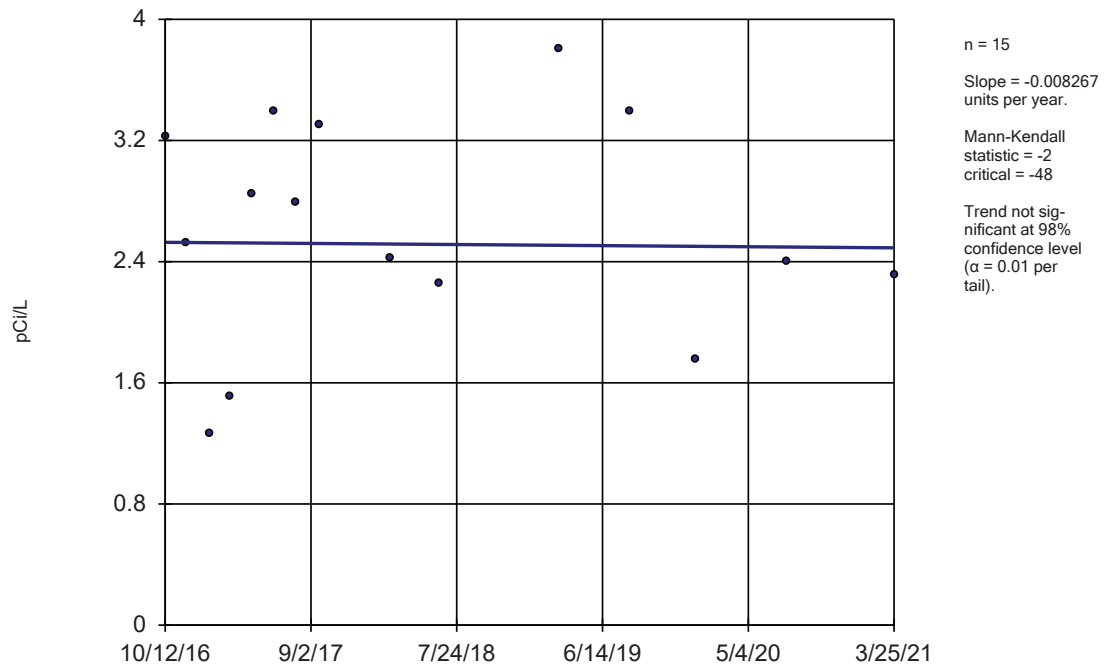


Constituent: Total Radium Analysis Run 4/26/2021 2:15 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

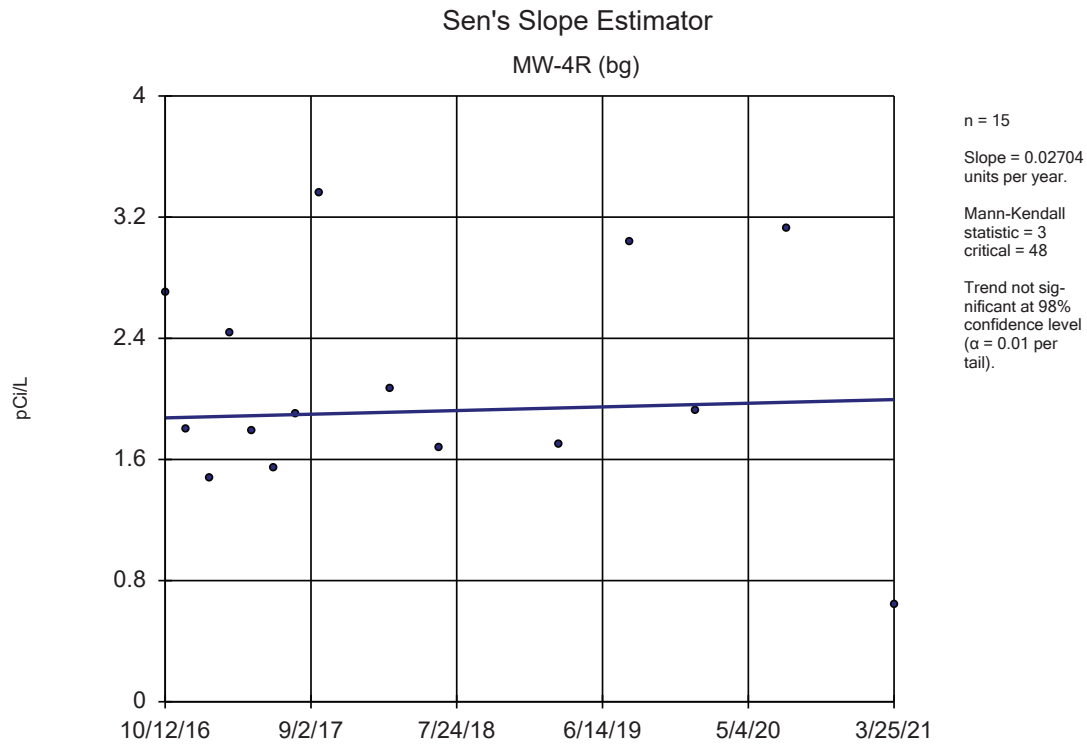
Sen's Slope Estimator

MW-3

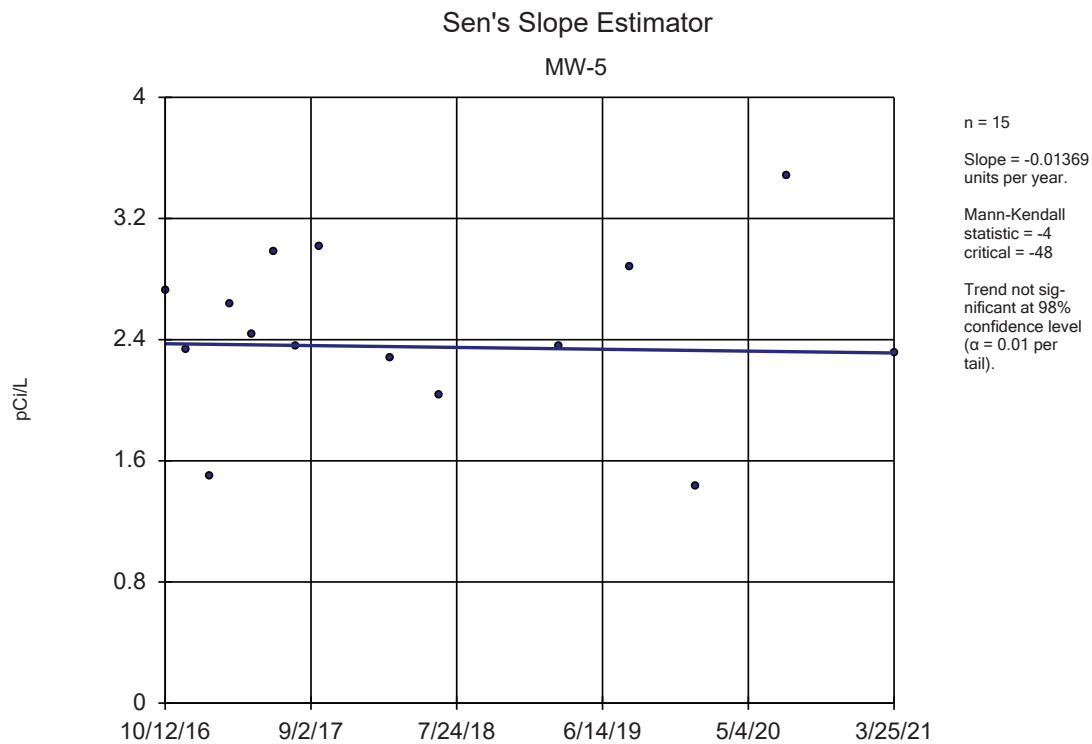


Constituent: Total Radium Analysis Run 4/26/2021 2:15 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



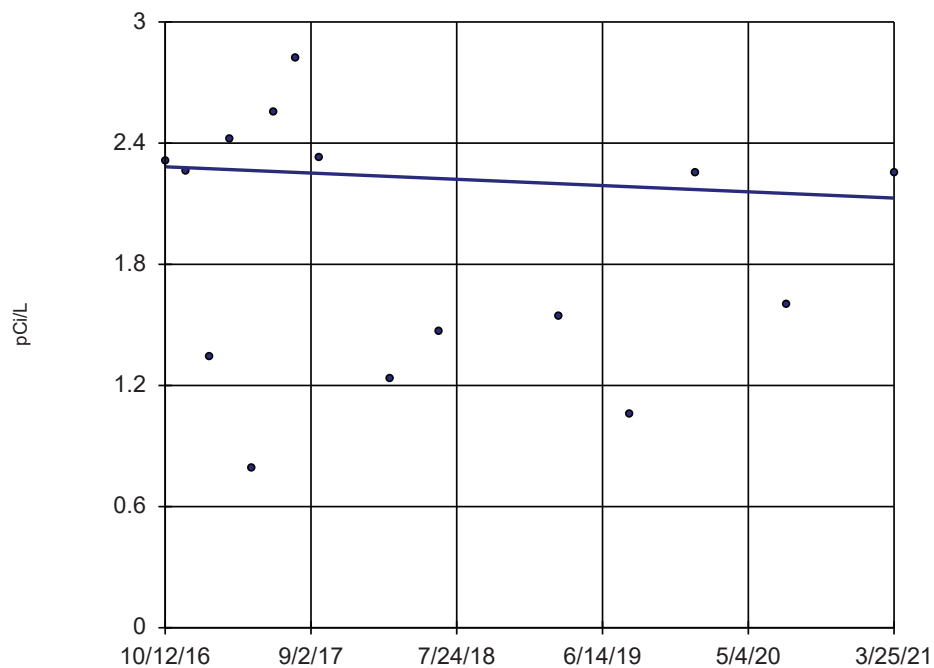
Constituent: Total Radium Analysis Run 4/26/2021 2:15 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Total Radium Analysis Run 4/26/2021 2:15 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6



n = 15

Slope = -0.03472
units per year.

Mann-Kendall
statistic = -12
critical = -48

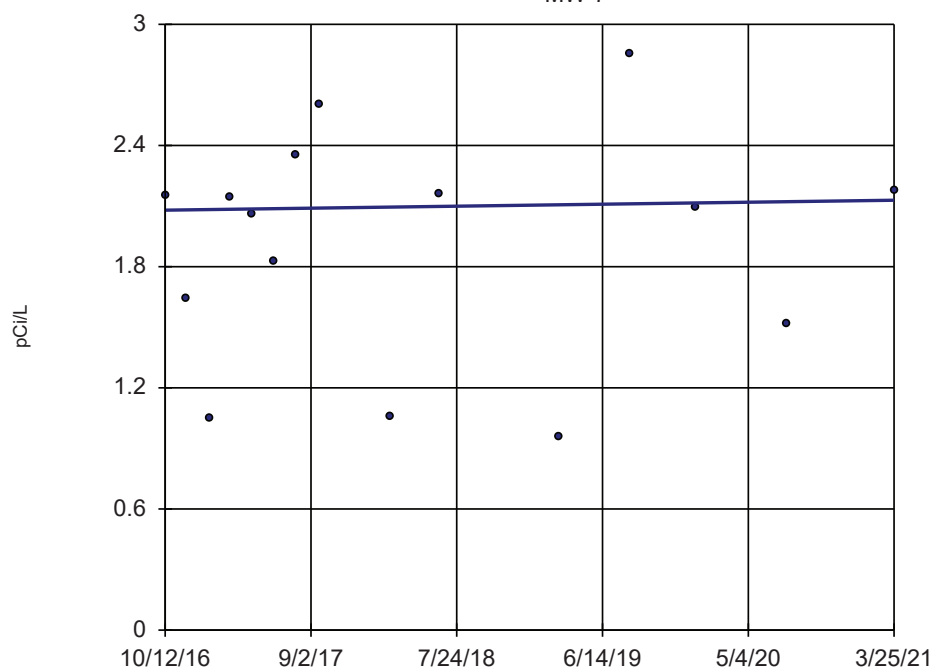
Trend not significant at 98% confidence level ($\alpha = 0.01$ per tail).

Constituent: Total Radium Analysis Run 4/26/2021 2:15 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-7



$n = 15$

Slope = 0.01106
units per year.

Mann-Kendall
statistic = 11
critical = 48

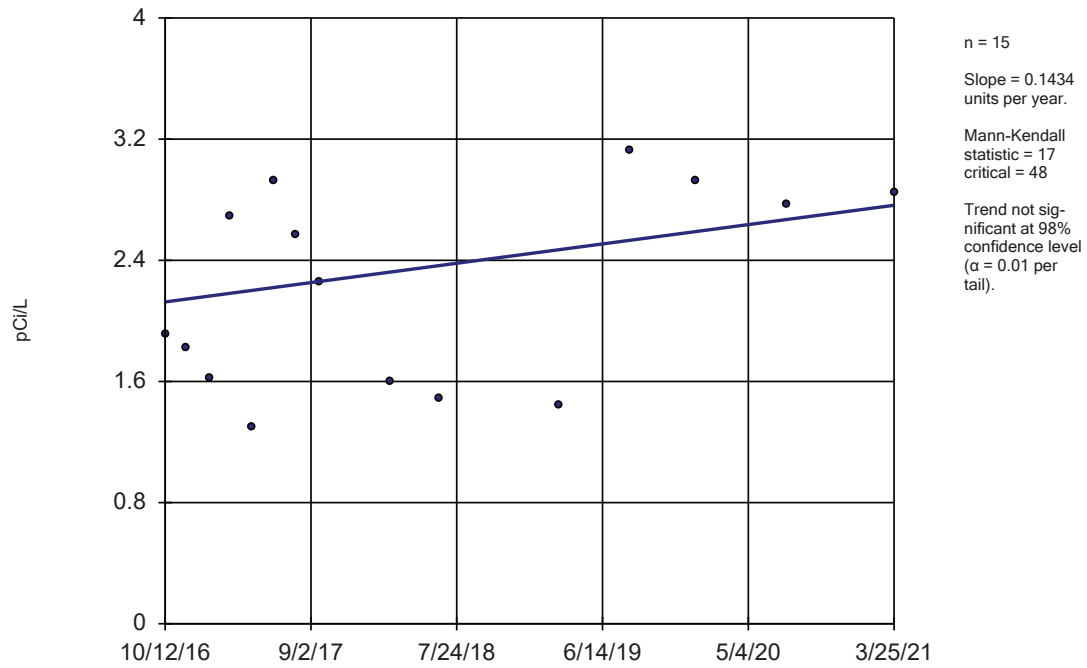
Trend not significant at 98% confidence level ($\alpha = 0.01$ per tail).

Constituent: Total Radium Analysis Run 4/26/2021 2:15 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-8



Constituent: Total Radium Analysis Run 4/26/2021 2:15 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A.5 Confidence Interval Analysis

Confidence Interval

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 4/26/2021, 2:27 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic [total] (ug/L)	MW-1	3.792	3.301	10	No	15	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-2	4.065	3.628	10	No	15	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-3	3.182	2.911	10	No	15	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-4R (bg)	4.302	3.565	10	No	15	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-5	4.637	4.283	10	No	15	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-6	3.551	2.591	10	No	15	0	ln(x)	0.01	Param.
Arsenic [total] (ug/L)	MW-7	3.705	3.362	10	No	15	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-8	2.67	2.436	10	No	15	0	No	0.01	Param.
Barium [total] (ug/L)	MW-1	149.7	126.4	200	No	15	0	No	0.01	Param.
Barium [total] (ug/L)	MW-2	106.7	96.13	200	No	15	0	No	0.01	Param.
Barium [total] (ug/L)	MW-3	179.6	164.3	200	No	15	0	No	0.01	Param.
Barium [total] (ug/L)	MW-4R (bg)	131.5	117.7	200	No	15	0	No	0.01	Param.
Barium [total] (ug/L)	MW-5	146.9	128.6	200	No	15	0	No	0.01	Param.
Barium [total] (ug/L)	MW-6	159.4	105.6	200	No	15	0	No	0.01	Param.
Barium [total] (ug/L)	MW-7	124.6	111.8	200	No	15	0	No	0.01	Param.
Barium [total] (ug/L)	MW-8	155	140.8	200	No	15	0	No	0.01	Param.
Boron (ug/L)	MW-1	148.4	133.6	197.9	No	15	0	No	0.01	Param.
Boron (ug/L)	MW-2	138	115	197.9	No	14	0	No	0.01	NP (normality)
Boron (ug/L)	MW-3	112.9	99.43	197.9	No	15	33.33	x^2	0.01	Param.
Boron (ug/L)	MW-4R (bg)	252.2	143.5	197.9	No	15	26.67	No	0.01	Param.
Boron (ug/L)	MW-5	141	122	197.9	No	15	0	No	0.01	NP (normality)
Boron (ug/L)	MW-7	180.5	148.9	197.9	No	15	0	No	0.01	Param.
Boron (ug/L)	MW-8	1240	104	197.9	No	13	0	No	0.01	NP (normality)
Calcium (mg/L)	MW-1	108.4	101.5	83.02	Yes	15	0	No	0.01	Param.
Calcium (mg/L)	MW-2	110.2	97.91	83.02	Yes	15	0	No	0.01	Param.
Calcium (mg/L)	MW-3	100.5	89.82	83.02	Yes	15	0	No	0.01	Param.
Calcium (mg/L)	MW-4R (bg)	88.61	77.43	83.02	No	15	0	No	0.01	Param.
Calcium (mg/L)	MW-5	113.1	99.41	83.02	Yes	15	0	No	0.01	Param.
Calcium (mg/L)	MW-6	90.7	60.48	83.02	No	15	0	No	0.01	Param.
Calcium (mg/L)	MW-7	102.9	91.29	83.02	Yes	15	0	No	0.01	Param.
Calcium (mg/L)	MW-8	95.22	85.94	83.02	Yes	15	0	No	0.01	Param.
Chloride (mg/L)	MW-1	18.8	11.09	250	No	15	0	sqrt(x)	0.01	Param.
Chloride (mg/L)	MW-2	18.43	13.36	250	No	14	0	No	0.01	Param.
Chloride (mg/L)	MW-3	37.6	26.5	250	No	15	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-4R (bg)	28.71	15.45	250	No	14	0	No	0.01	Param.
Chloride (mg/L)	MW-5	27.41	15.02	250	No	15	0	No	0.01	Param.
Chloride (mg/L)	MW-6	76.04	34.32	250	No	14	0	sqrt(x)	0.01	Param.
Chloride (mg/L)	MW-7	87.2	18.5	250	No	15	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-8	32.3	21.85	250	No	15	0	No	0.01	Param.
Fluoride (mg/L)	MW-1	1.4	1.2	4	No	15	0	No	0.01	NP (normality)
Fluoride (mg/L)	MW-2	1.065	0.8938	4	No	15	0	No	0.01	Param.
Fluoride (mg/L)	MW-3	0.8337	0.7356	4	No	15	0	No	0.01	Param.
Fluoride (mg/L)	MW-4R (bg)	0.9391	0.8089	4	No	15	0	No	0.01	Param.
Fluoride (mg/L)	MW-5	1.205	1.032	4	No	15	0	No	0.01	Param.
Fluoride (mg/L)	MW-6	0.6014	0.4946	4	No	15	0	No	0.01	Param.
Fluoride (mg/L)	MW-7	0.9091	0.8109	4	No	15	0	No	0.01	Param.
Fluoride (mg/L)	MW-8	0.8357	0.739	4	No	15	0	No	0.01	Param.
Lithium (ug/L)	MW-1	35.99	31.63	40	No	15	0	No	0.01	Param.
Lithium (ug/L)	MW-2	30.9	27.01	40	No	14	0	No	0.01	Param.
Lithium (ug/L)	MW-3	29.21	25.94	40	No	15	0	No	0.01	Param.

Confidence Interval

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/26/2021, 2:27 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Lithium (ug/L)	MW-4R (bg)	27.47	22.44	40	No	15	0	No	0.01	Param.
Lithium (ug/L)	MW-5	32.32	26.44	40	No	15	0	No	0.01	Param.
Lithium (ug/L)	MW-6	28.94	20.44	40	No	15	0	No	0.01	Param.
Lithium (ug/L)	MW-7	30.64	26	40	No	15	0	No	0.01	Param.
Lithium (ug/L)	MW-8	30.22	26.35	40	No	14	0	No	0.01	Param.
Molybdenum (ug/L)	MW-1	8.544	7.589	100	No	15	0	No	0.01	Param.
Molybdenum (ug/L)	MW-2	9.4	7.5	100	No	15	0	No	0.01	NP (normality)
Molybdenum (ug/L)	MW-3	13.26	10.78	100	No	15	0	No	0.01	Param.
Molybdenum (ug/L)	MW-4R (bg)	8.557	5.283	100	No	15	0	No	0.01	Param.
Molybdenum (ug/L)	MW-5	6.911	5.609	100	No	15	0	No	0.01	Param.
Molybdenum (ug/L)	MW-6	8.8	6.533	100	No	15	0	No	0.01	Param.
Molybdenum (ug/L)	MW-7	8.941	8.019	100	No	15	0	No	0.01	Param.
Molybdenum (ug/L)	MW-8	8.6	6.9	100	No	14	0	No	0.01	NP (normality)
pH (Std. Units)	MW-1	7.299	6.928	8.5	No	15	0	No	0.005	Param.
pH (Std. Units)	MW-2	7.217	6.889	8.5	No	15	0	No	0.005	Param.
pH (Std. Units)	MW-3	7.258	6.915	8.5	No	15	0	No	0.005	Param.
pH (Std. Units)	MW-4R (bg)	7.383	6.884	8.5	No	15	0	No	0.005	Param.
pH (Std. Units)	MW-5	7.394	7.032	8.5	No	15	0	No	0.005	Param.
pH (Std. Units)	MW-6	7.228	6.866	8.5	No	15	0	No	0.005	Param.
pH (Std. Units)	MW-7	7.269	6.931	8.5	No	15	0	No	0.005	Param.
pH (Std. Units)	MW-8	7.283	6.89	8.5	No	15	0	No	0.005	Param.
Selenium [total] (ug/L)	MW-1	13.47	10.17	50	No	15	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-2	14.7	12.3	50	No	15	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-3	9.192	7.781	50	No	15	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-4R (bg)	8.249	6.336	50	No	14	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-5	8.785	7.681	50	No	15	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-6	9.859	5.621	50	No	15	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-7	10.94	8.606	50	No	15	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-8	12.85	10.22	50	No	15	0	No	0.01	Param.
Sulfate (mg/L)	MW-1	53.52	43.78	250	No	15	0	No	0.01	Param.
Sulfate (mg/L)	MW-2	62.78	41.35	250	No	14	0	sqrt(x)	0.01	Param.
Sulfate (mg/L)	MW-3	69.7	43.9	250	No	15	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-4R (bg)	42.5	33.81	250	No	15	0	No	0.01	Param.
Sulfate (mg/L)	MW-5	42.7	36.3	250	No	15	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-6	55.39	27.77	250	No	15	0	No	0.01	Param.
Sulfate (mg/L)	MW-7	51.39	39.81	250	No	15	0	No	0.01	Param.
Sulfate (mg/L)	MW-8	54.01	36.18	250	No	15	0	ln(x)	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1	512	458.5	500	No	15	0	ln(x)	0.01	Param.
Total Dissolved Solids (mg/L)	MW-2	492	426	500	No	15	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-3	484.5	416.7	500	No	15	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-4R (bg)	434.6	378.7	500	No	15	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-5	494.6	459.2	500	No	15	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-6	542.2	366.5	500	No	15	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-7	540.5	433.6	500	No	15	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-8	478	389	500	No	15	0	No	0.01	NP (normality)
Total Radium (pCi/L)	MW-1	2.838	2.042	5	No	15	0	No	0.01	Param.
Total Radium (pCi/L)	MW-2	2.077	1.418	5	No	15	0	No	0.01	Param.
Total Radium (pCi/L)	MW-3	3.114	2.114	5	No	15	0	No	0.01	Param.
Total Radium (pCi/L)	MW-4R (bg)	2.572	1.585	5	No	15	0	No	0.01	Param.
Total Radium (pCi/L)	MW-5	2.818	2.081	5	No	15	0	No	0.01	Param.

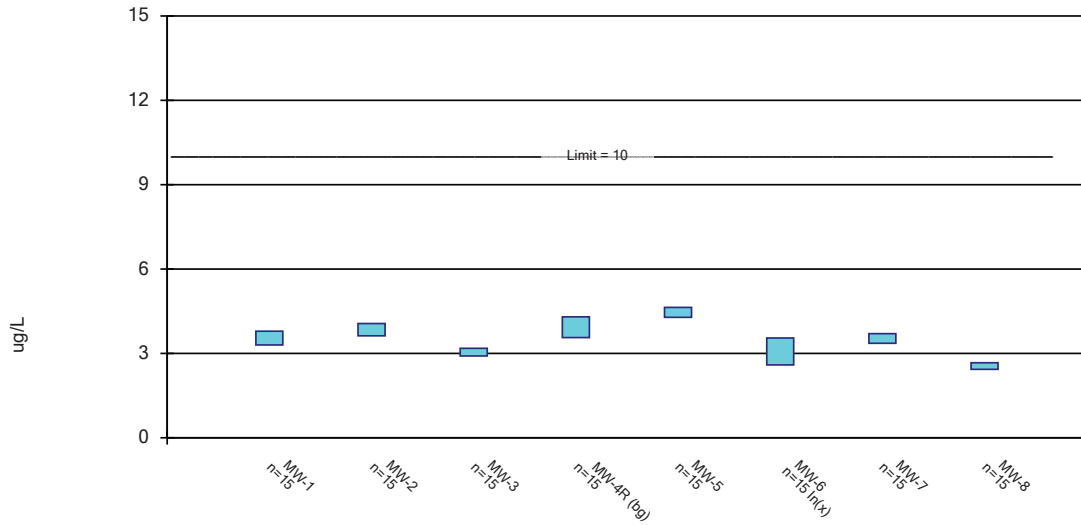
Confidence Interval

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/26/2021, 2:27 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Total Radium (pCi/L)	MW-6	2.301	1.462	5	No	15	0	No	0.01	Param.
Total Radium (pCi/L)	MW-7	2.291	1.526	5	No	15	0	No	0.01	Param.
Total Radium (pCi/L)	MW-8	2.657	1.782	5	No	15	0	No	0.01	Param.

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

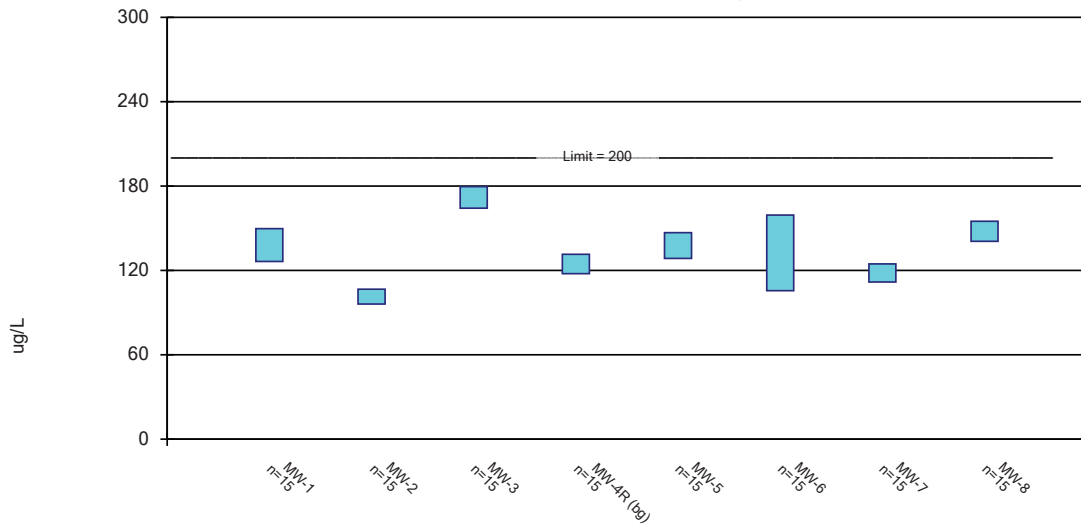


Constituent: Arsenic [total] Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

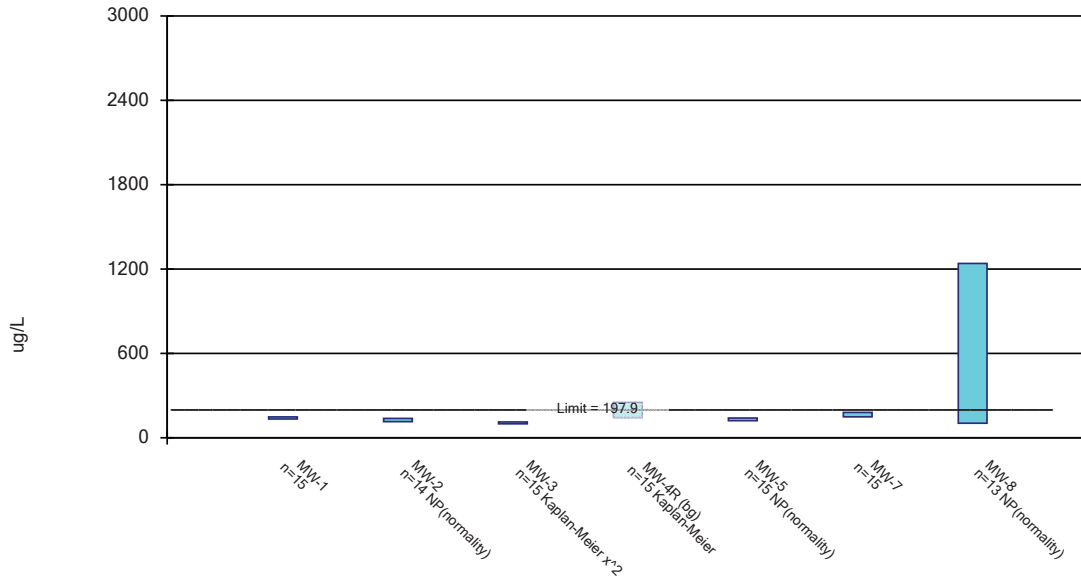


Constituent: Barium [total] Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

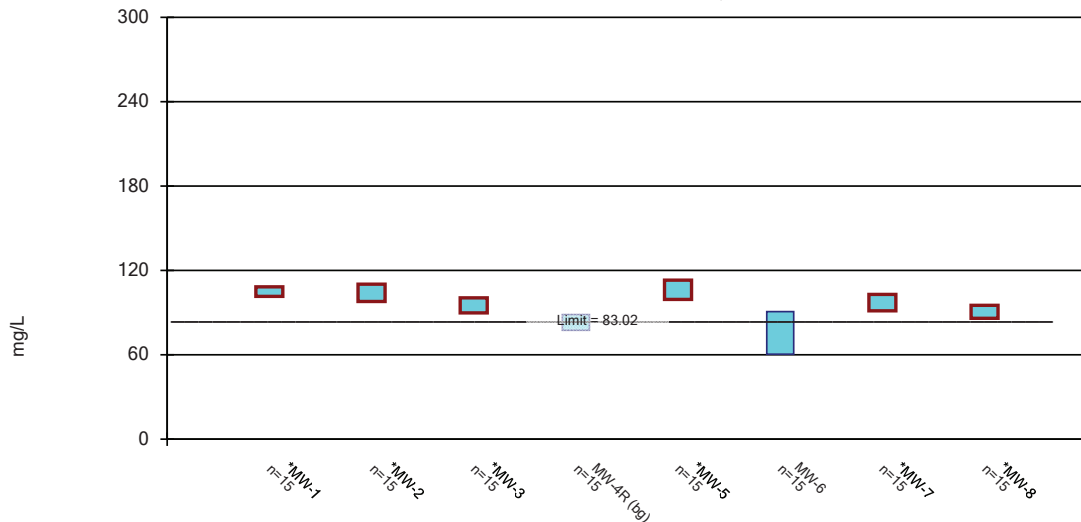


Constituent: Boron Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

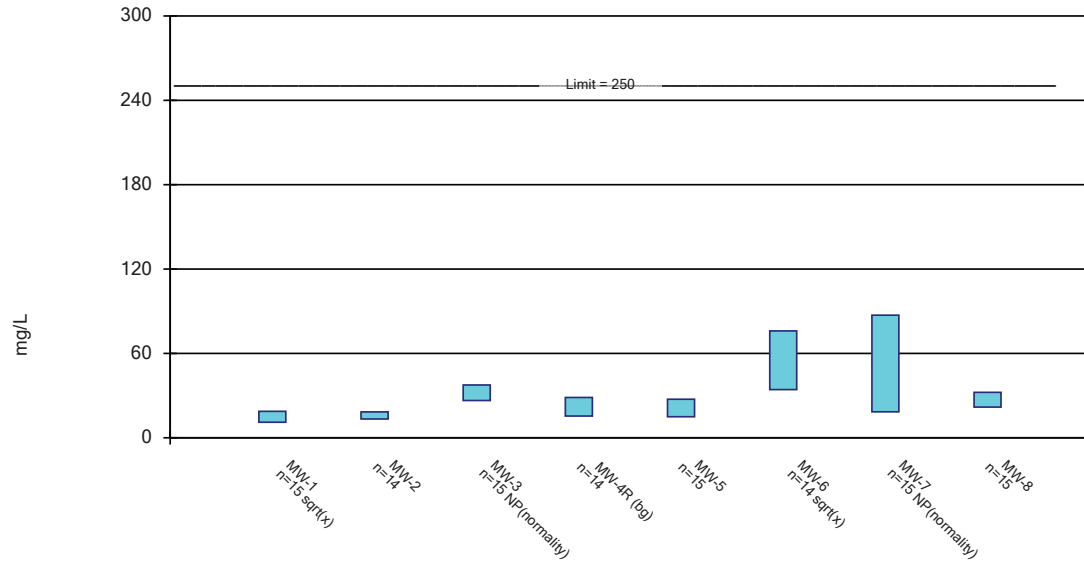


Constituent: Calcium Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

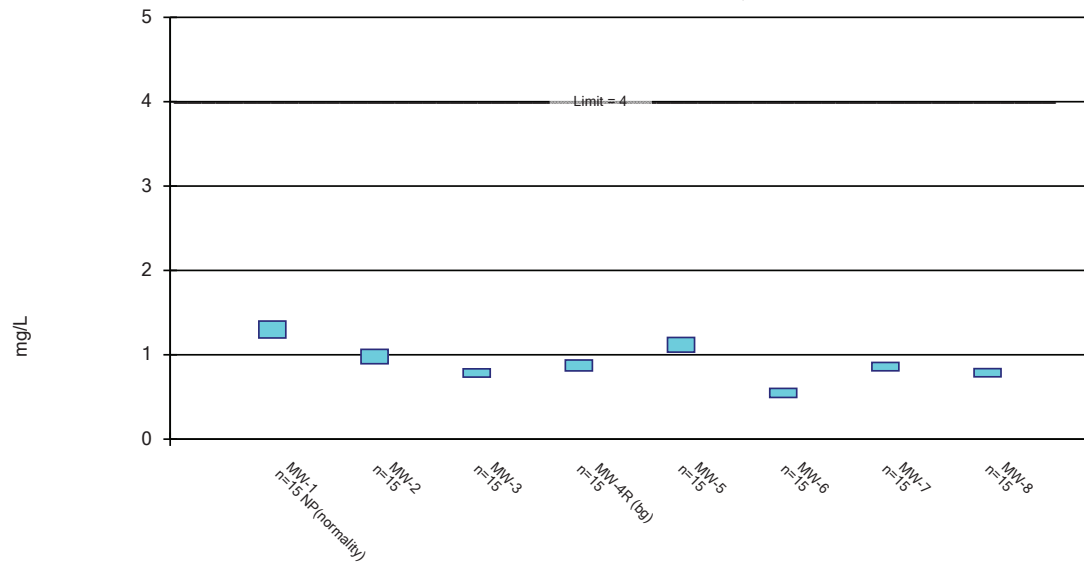


Constituent: Chloride Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

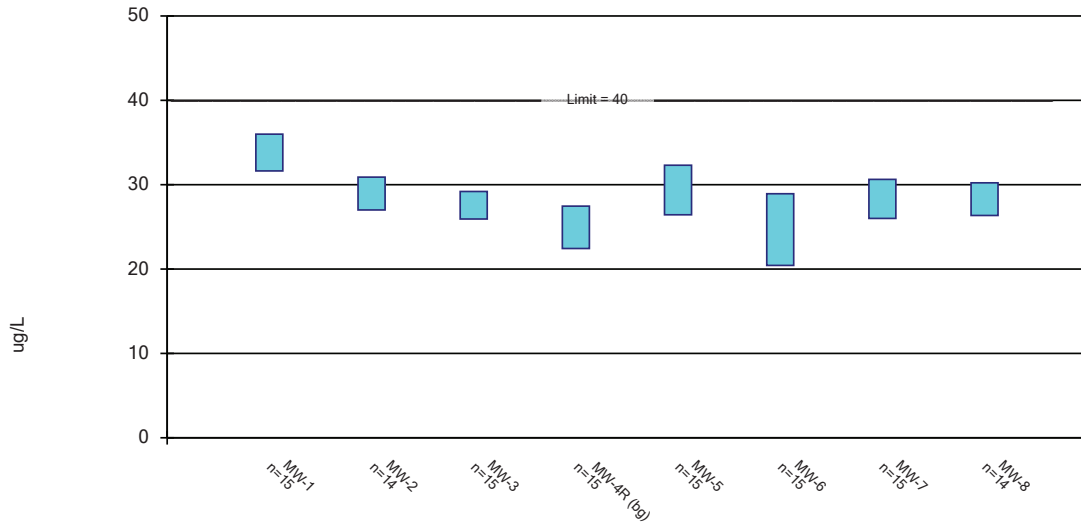


Constituent: Fluoride Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

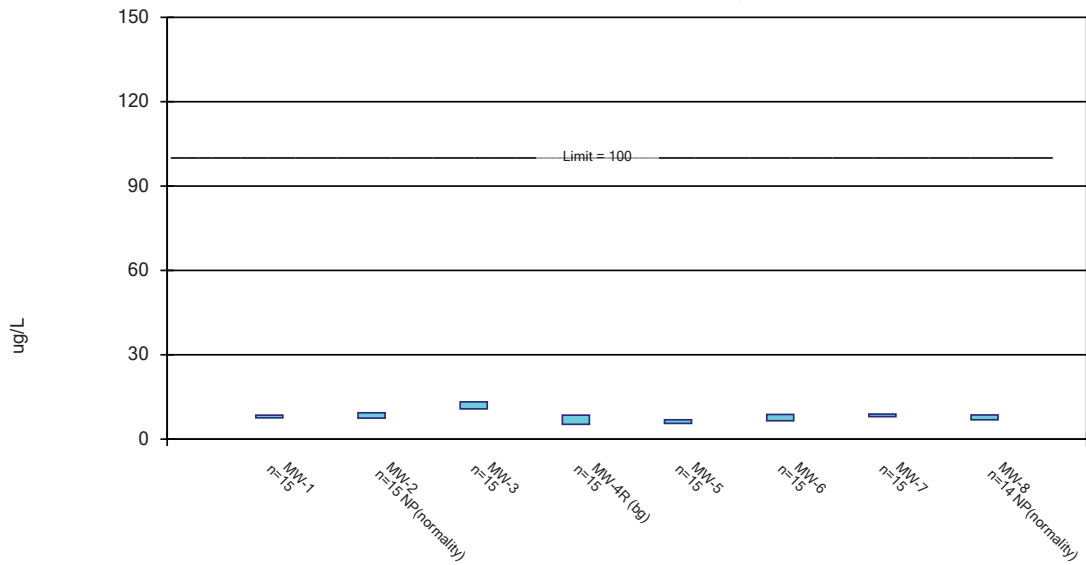


Constituent: Lithium Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

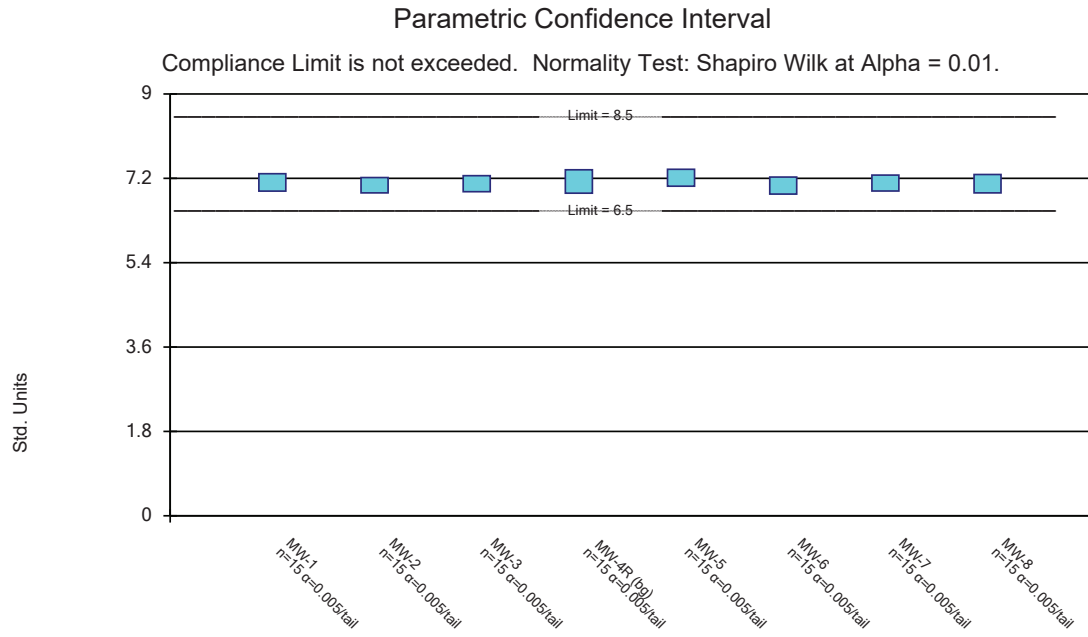
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

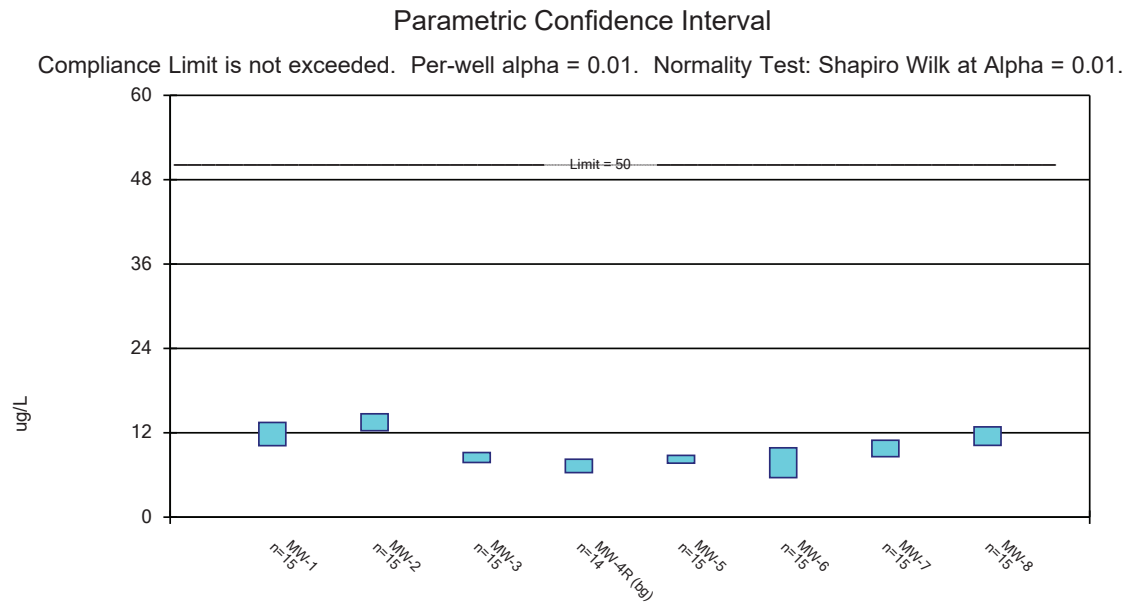


Constituent: Molybdenum Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



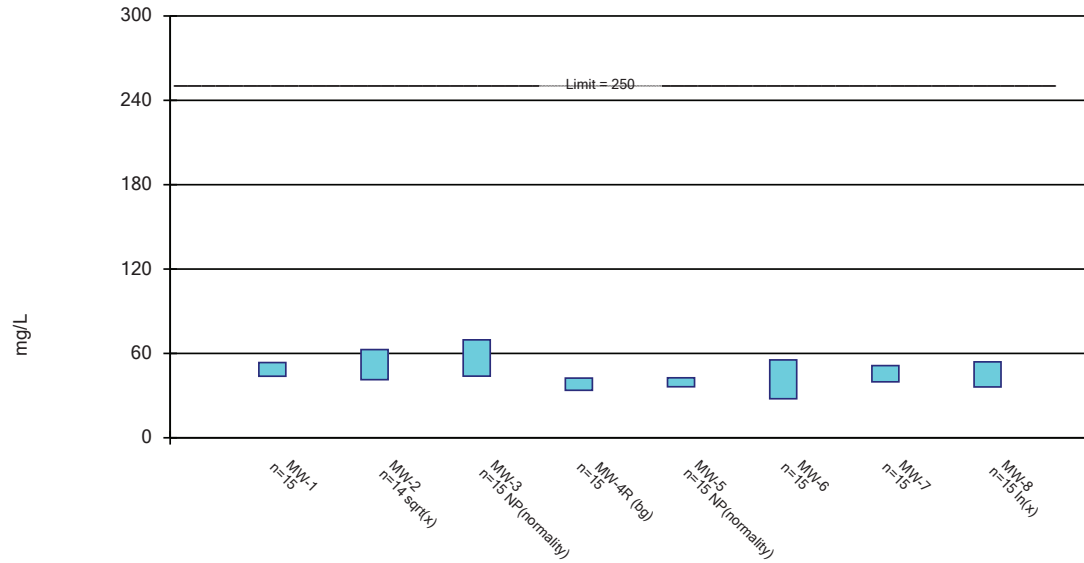
Constituent: pH Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Selenium [total] Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

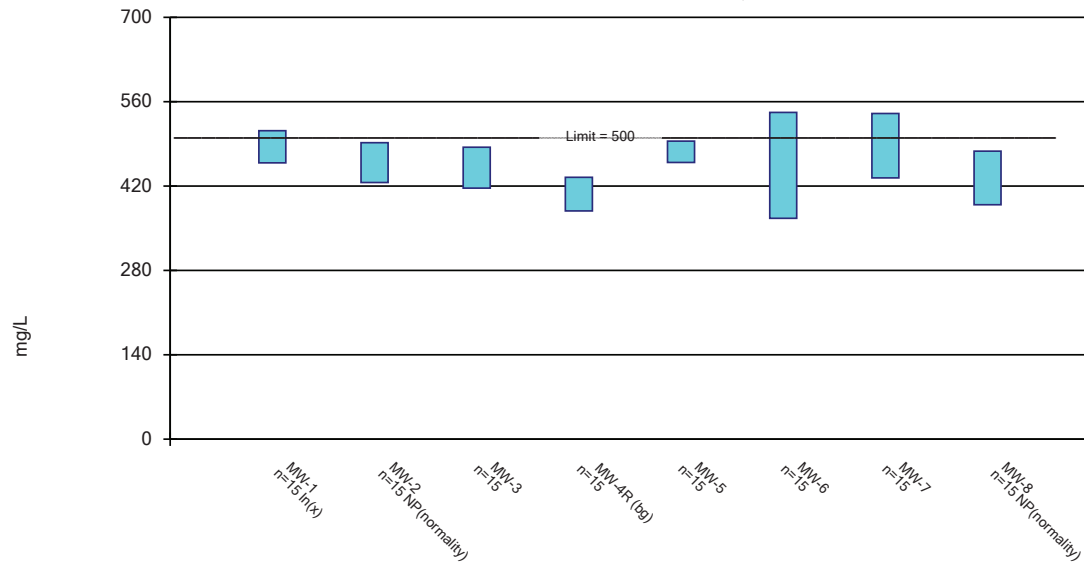


Constituent: Sulfate Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

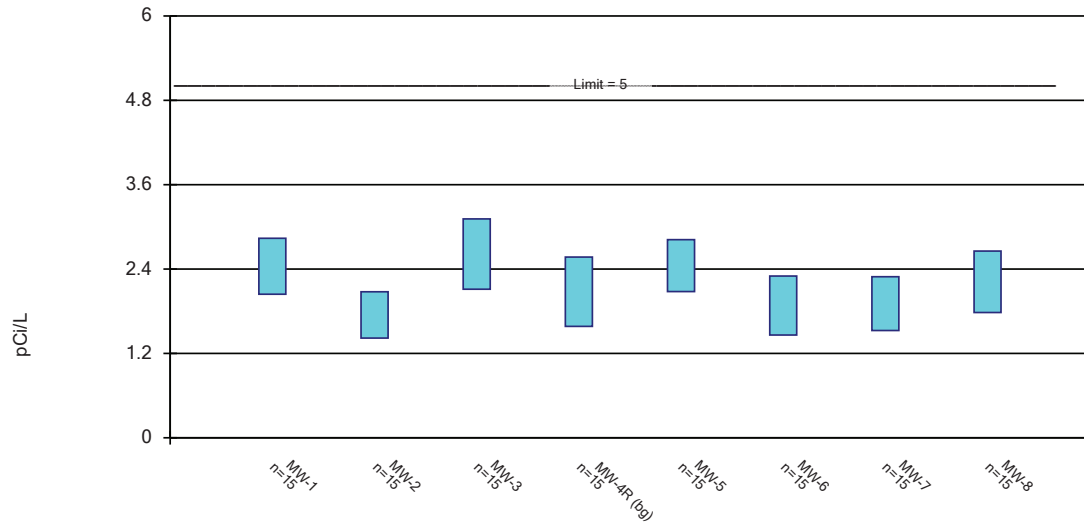


Constituent: Total Dissolved Solids Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Total Radium Analysis Run 4/26/2021 2:26 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A2 August 2021 Groundwater Monitoring Program Report

CITY OF
FREMONT
NEBRASKA PATHFINDERS

400 East Military Avenue, Fremont, NE 68025-5141

October 25, 2021

Compliance Unit Supervisor
Waste Management Section
Nebraska Department of Environment and Energy
245 Fallbrook Blvd
Lincoln, NE 68509-8922

Dear Compliance Unit Supervisor

Enclosed is one copy of the Groundwater Monitoring Program Report for the Fremont Utilities **FFCA Monofill IIS 48518, Permit # NE0203777** for your review. The report is based on the requirements of the Coal Combustion Residuals Regulation for assessment monitoring and the above referenced permit. The report represents the sampling round completed on August 24, 2021. If you have any questions concerning this report please feel free to call or email.

Sincerely,



Jeff Shanahan
Plant Superintendent
Lon D Wright Power Plant
Fremont Department of Utilities
2701 E. 1st St.
Fremont, NE 68025
Phone (402) 727-2642
Fax (402) 727-2640
Jeff.shanahan@fremontne.gov

Enclosures

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1. Introduction

SAMPLE SUMMARY

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60378628001	MW-1	Water	08/24/21 10:26	08/25/21 06:18
60378628002	MW-2	Water	08/24/21 12:59	08/25/21 06:18
60378628003	MW-3	Water	08/24/21 12:34	08/25/21 06:18
60378628004	MW-4R	Water	08/24/21 09:14	08/25/21 06:18
60378628005	MW-5	Water	08/24/21 09:45	08/25/21 06:18
60378628006	MW-6	Water	08/24/21 11:04	08/25/21 06:18
60378628007	MW-7	Water	08/24/21 11:40	08/25/21 06:18
60378628008	MW-8	Water	08/24/21 12:05	08/25/21 06:18
60378628009	DUPLICATE	Water	08/24/21 23:59	08/25/21 06:18

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60378628001	MW-1	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60378628002	MW-2	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60378628003	MW-3	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60378628004	MW-4R	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60378628005	MW-5	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60378628006	MW-6	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60378628007	MW-7	EPA 6010	JLH	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60378628008	MW-8	EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
		EPA 9056	ALH	3	PASI-K
		EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
60378628009	DUPLICATE	EPA 9056	ALH	3	PASI-K
		EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	KB	1	PASI-K
		EPA 9056	ALH	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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SAMPLE SUMMARY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60378630001	MW-1	Water	08/24/21 10:26	08/25/21 06:18
60378630002	MW-2	Water	08/24/21 12:59	08/25/21 06:18
60378630003	MW-3	Water	08/24/21 12:34	08/25/21 06:18
60378630004	MW-4R	Water	08/24/21 09:14	08/25/21 06:18
60378630005	MW-5	Water	08/24/21 09:45	08/25/21 06:18
60378630006	MW-6	Water	08/24/21 11:04	08/25/21 06:18
60378630007	MW-7	Water	08/24/21 11:40	08/25/21 06:18
60378630008	MW-8	Water	08/24/21 12:05	08/25/21 06:18
60378630009	DUPLICATE	Water	08/24/21 23:59	08/25/21 06:18

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60378630001	MW-1	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60378630002	MW-2	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60378630003	MW-3	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60378630004	MW-4R	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60378630005	MW-5	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60378630006	MW-6	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60378630007	MW-7	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60378630008	MW-8	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60378630009	DUPLICATE	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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2. Results

ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: MW-1		Lab ID: 60378628001		Collected: 08/24/21 10:26		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Pace Analytical Services - Kansas City									
Boron	117	ug/L	100	1	08/30/21 13:12	09/01/21 20:37	7440-42-8		
Calcium	101	mg/L	0.20	1	08/30/21 13:12	09/01/21 20:37	7440-70-2		
Lithium	28.8	ug/L	10.0	1	08/30/21 13:12	09/01/21 20:37	7439-93-2		
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Pace Analytical Services - Kansas City									
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7440-36-0		
Arsenic	4.7	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7440-38-2		
Barium	126	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:13	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:13	7440-43-9		
Chromium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7439-92-1		
Molybdenum	6.8	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7439-98-7		
Selenium	6.7	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:13	7440-28-0		
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Pace Analytical Services - Kansas City									
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 09:37	7439-97-6		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Kansas City									
Total Dissolved Solids	443	mg/L	10.0	1		08/31/21 05:43			
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Kansas City									
pH at 25 Degrees C	7.3	Std. Units	0.10	1		09/07/21 11:07		H6	
9056 IC Anions									
Analytical Method: EPA 9056									
Pace Analytical Services - Kansas City									
Chloride	35.8	mg/L	2.0	2		08/31/21 17:18	16887-00-6		
Fluoride	0.96	mg/L	0.20	1		08/31/21 17:07	16984-48-8		
Sulfate	33.0	mg/L	2.0	2		08/31/21 17:18	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: MW-2		Lab ID: 60378628002		Collected: 08/24/21 12:59		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	118	ug/L	100	1	08/30/21 13:12	09/01/21 20:45	7440-42-8		
Calcium	102	mg/L	0.20	1	08/30/21 13:12	09/01/21 20:45	7440-70-2		
Lithium	27.9	ug/L	10.0	1	08/30/21 13:12	09/01/21 20:45	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7440-36-0		
Arsenic	4.1	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7440-38-2		
Barium	105	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:28	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:28	7440-43-9		
Chromium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7439-92-1		
Molybdenum	7.6	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7439-98-7		
Selenium	7.3	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:28	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 09:44	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	431	mg/L	10.0	1		08/31/21 05:44			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		09/01/21 12:35		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	26.8	mg/L	2.0	2		08/31/21 18:01	16887-00-6		
Fluoride	1.3	mg/L	0.20	1		09/01/21 12:46	16984-48-8		
Sulfate	32.3	mg/L	2.0	2		08/31/21 18:01	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: MW-3		Lab ID: 60378628003		Collected: 08/24/21 12:34		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	107	ug/L	100	1	08/30/21 13:12	09/01/21 20:47	7440-42-8		
Calcium	106	mg/L	0.20	1	08/30/21 13:12	09/01/21 20:47	7440-70-2		
Lithium	32.8	ug/L	10.0	1	08/30/21 13:12	09/01/21 20:47	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7440-36-0		
Arsenic	3.7	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7440-38-2		
Barium	194	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:31	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:31	7440-43-9		
Chromium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7439-92-1		
Molybdenum	13.4	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7439-98-7		
Selenium	9.4	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:31	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 09:46	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	479	mg/L	10.0	1		08/31/21 05:44			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		09/01/21 12:29		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	50.0	mg/L	5.0	5		08/31/21 18:34	16887-00-6		
Fluoride	0.74	mg/L	0.20	1		08/31/21 18:23	16984-48-8		
Sulfate	49.8	mg/L	5.0	5		08/31/21 18:34	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: MW-4R		Lab ID: 60378628004		Collected: 08/24/21 09:14		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	ND	ug/L	100	1	08/30/21 13:12	09/01/21 20:50	7440-42-8		
Calcium	109	mg/L	0.20	1	08/30/21 13:12	09/01/21 20:50	7440-70-2		
Lithium	28.2	ug/L	10.0	1	08/30/21 13:12	09/01/21 20:50	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7440-36-0		
Arsenic	5.5	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7440-38-2		
Barium	134	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:34	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:34	7440-43-9		
Chromium	1.9	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7439-92-1		
Molybdenum	5.1	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7439-98-7		
Selenium	10.4	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:34	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 09:48	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	472	mg/L	10.0	1		08/31/21 05:44			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		09/07/21 11:00		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	32.9	mg/L	5.0	5		08/31/21 19:07	16887-00-6		
Fluoride	0.86	mg/L	0.20	1		08/31/21 18:56	16984-48-8		
Sulfate	39.9	mg/L	5.0	5		08/31/21 19:07	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: MW-5		Lab ID: 60378628005		Collected: 08/24/21 09:45		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	128	ug/L	100	1	08/30/21 13:12	09/01/21 20:52	7440-42-8		
Calcium	110	mg/L	0.20	1	08/30/21 13:12	09/01/21 20:52	7440-70-2		
Lithium	26.9	ug/L	10.0	1	08/30/21 13:12	09/01/21 20:52	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7440-36-0		
Arsenic	4.6	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7440-38-2		
Barium	137	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:36	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:36	7440-43-9		
Chromium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7439-92-1		
Molybdenum	4.8	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7439-98-7		
Selenium	5.3	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:36	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 09:51	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	499	mg/L	10.0	1		08/31/21 05:44			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	7.4	Std. Units	0.10	1		09/07/21 11:03		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	41.6	mg/L	5.0	5		08/31/21 19:29	16887-00-6		
Fluoride	1.1	mg/L	0.20	1		08/31/21 19:18	16984-48-8		
Sulfate	36.5	mg/L	5.0	5		08/31/21 19:29	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: MW-6		Lab ID: 60378628006		Collected: 08/24/21 11:04		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	ND	ug/L	100	1	08/30/21 13:12	09/01/21 20:55	7440-42-8		
Calcium	40.1	mg/L	0.20	1	08/30/21 13:12	09/01/21 20:55	7440-70-2		
Lithium	11.7	ug/L	10.0	1	08/30/21 13:12	09/01/21 20:55	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7440-36-0		
Arsenic	3.6	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7440-38-2		
Barium	64.8	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:39	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:39	7440-43-9		
Chromium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7439-92-1		
Molybdenum	7.1	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7439-98-7		
Selenium	2.2	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:39	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 09:53	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	142	mg/L	5.0	1		08/31/21 05:45			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	6.8	Std. Units	0.10	1		09/01/21 12:12		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	48.7	mg/L	5.0	5		08/31/21 20:13	16887-00-6		
Fluoride	0.65	mg/L	0.20	1		08/31/21 19:40	16984-48-8		
Sulfate	19.7	mg/L	1.0	1		08/31/21 19:40	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: MW-7		Lab ID: 60378628007		Collected: 08/24/21 11:40		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	ND	ug/L	100	1	08/30/21 13:12	09/01/21 21:05	7440-42-8		
Calcium	100	mg/L	0.20	1	08/30/21 13:12	09/01/21 21:05	7440-70-2		
Lithium	27.3	ug/L	10.0	1	08/30/21 13:12	09/01/21 21:05	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7440-36-0		
Arsenic	4.0	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7440-38-2		
Barium	133	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:41	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:41	7440-43-9		
Chromium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7439-92-1		
Molybdenum	8.4	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7439-98-7		
Selenium	9.3	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:41	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 10:00	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	551	mg/L	10.0	1		08/31/21 05:45			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		09/01/21 12:22		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	101	mg/L	10.0	10		09/01/21 12:57	16887-00-6		
Fluoride	0.96	mg/L	0.20	1		08/31/21 20:24	16984-48-8		
Sulfate	33.7	mg/L	5.0	5		08/31/21 20:35	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: MW-8		Lab ID: 60378628008		Collected: 08/24/21 12:05		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	142	ug/L	100	1	08/30/21 13:12	09/01/21 21:08	7440-42-8		
Calcium	110	mg/L	0.20	1	08/30/21 13:12	09/01/21 21:08	7440-70-2		
Lithium	25.6	ug/L	10.0	1	08/30/21 13:12	09/01/21 21:08	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7440-36-0		
Arsenic	2.7	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7440-38-2		
Barium	172	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:44	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:44	7440-43-9		
Chromium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7439-92-1		
Molybdenum	7.0	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7439-98-7		
Selenium	10.1	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:44	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 10:02	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	459	mg/L	10.0	1		08/31/21 05:45			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	7.1	Std. Units	0.10	1		09/01/21 12:26		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	30.6	mg/L	5.0	5		08/31/21 20:57	16887-00-6		
Fluoride	0.77	mg/L	0.20	1		08/31/21 20:46	16984-48-8		
Sulfate	32.6	mg/L	5.0	5		08/31/21 20:57	14808-79-8		

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Sample: DUPLICATE		Lab ID: 60378628009		Collected: 08/24/21 23:59		Received: 08/25/21 06:18		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Boron	ND	ug/L	100	1	08/30/21 13:12	09/01/21 21:10	7440-42-8		
Calcium	40.8	mg/L	0.20	1	08/30/21 13:12	09/01/21 21:10	7440-70-2		
Lithium	12.2	ug/L	10.0	1	08/30/21 13:12	09/01/21 21:10	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7440-36-0		
Arsenic	3.6	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7440-38-2		
Barium	64.2	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7440-39-3		
Beryllium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:47	7440-41-7		
Cadmium	ND	ug/L	0.50	1	08/30/21 09:15	08/31/21 14:47	7440-43-9		
Chromium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7440-47-3		
Cobalt	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7440-48-4		
Lead	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7439-92-1		
Molybdenum	6.3	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7439-98-7		
Selenium	2.1	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7782-49-2		
Thallium	ND	ug/L	1.0	1	08/30/21 09:15	08/31/21 14:47	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	08/30/21 12:31	08/31/21 10:04	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City							
Total Dissolved Solids	284	mg/L	5.0	1		08/31/21 05:45			
9040 pH		Analytical Method: EPA 9040 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	7.1	Std. Units	0.10	1		09/01/21 12:42		H6	
9056 IC Anions		Analytical Method: EPA 9056 Pace Analytical Services - Kansas City							
Chloride	50.3	mg/L	5.0	5		09/01/21 13:30	16887-00-6		
Fluoride	0.65	mg/L	0.20	1		08/31/21 21:08	16984-48-8		
Sulfate	19.6	mg/L	1.0	1		08/31/21 21:08	14808-79-8		

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Sample: MW-1		Lab ID: 60378630001	Collected: 08/24/21 10:26	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	09/21/21 15:32	13982-63-3	
	EPA 903.1	0.145 ± 0.404 (0.783) C:NA T:92%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	09/21/21 14:31	15262-20-1	
	EPA 904.0	0.638 ± 0.395 (0.748) C:80% T:92%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	09/22/21 16:12	7440-14-4	
	Total Radium Calculation	0.783 ± 0.799 (1.53)					

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Sample: MW-2		Lab ID: 60378630002	Collected: 08/24/21 12:59	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.572 ± 0.535 (0.758) C:NA T:91%		pCi/L	09/21/21 15:46	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	1.47 ± 0.518 (0.751) C:81% T:89%		pCi/L	09/21/21 14:32	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	2.04 ± 1.05 (1.51)		pCi/L	09/22/21 16:12	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Sample: MW-3		Lab ID: 60378630003	Collected: 08/24/21 12:34	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	09/21/21 15:32	13982-63-3	
	EPA 903.1	0.630 ± 0.536 (0.753) C:NA T:93%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	09/21/21 14:32	15262-20-1	
	EPA 904.0	1.52 ± 0.519 (0.729) C:77% T:92%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	09/22/21 16:12	7440-14-4	
	Total Radium Calculation	2.15 ± 1.06 (1.48)					

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Sample: MW-4R		Lab ID: 60378630004	Collected: 08/24/21 09:14	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	09/21/21 15:32	13982-63-3	
	EPA 903.1	0.693 ± 0.549 (0.746) C:NA T:92%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	09/21/21 14:30	15262-20-1	
	EPA 904.0	1.65 ± 0.557 (0.781) C:80% T:89%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	09/22/21 16:12	7440-14-4	
	Total Radium Calculation	2.34 ± 1.11 (1.53)					

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Sample: MW-5		Lab ID: 60378630005	Collected: 08/24/21 09:45	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.445 ± 0.486 (0.764) C:NA T:93%		pCi/L	09/21/21 15:32	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	1.63 ± 0.558 (0.824) C:83% T:92%		pCi/L	09/21/21 14:31	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	2.08 ± 1.04 (1.59)		pCi/L	09/22/21 16:12	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Sample: MW-6		Lab ID: 60378630006	Collected: 08/24/21 11:04	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	09/21/21 15:32	13982-63-3	
	EPA 903.1	0.000 ± 0.335 (0.751) C:NA T:94%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	09/21/21 14:31	15262-20-1	
	EPA 904.0	0.213 ± 0.409 (0.898) C:77% T:88%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	09/22/21 16:12	7440-14-4	
	Total Radium Calculation	0.213 ± 0.744 (1.65)					

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Sample: MW-7		Lab ID: 60378630007	Collected: 08/24/21 11:40	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	09/21/21 15:32	13982-63-3	
	EPA 903.1	0.382 ± 0.435 (0.686) C:NA T:94%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	09/21/21 14:31	15262-20-1	
	EPA 904.0	1.45 ± 0.529 (0.780) C:77% T:86%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	09/22/21 16:12	7440-14-4	
	Total Radium Calculation	1.83 ± 0.964 (1.47)					

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Sample: MW-8		Lab ID: 60378630008	Collected: 08/24/21 12:05	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg			pCi/L	09/21/21 15:32	13982-63-3	
	EPA 903.1	0.667 ± 0.568 (0.798) C:NA T:91%					
Radium-228	Pace Analytical Services - Greensburg			pCi/L	09/21/21 14:32	15262-20-1	
	EPA 904.0	1.64 ± 0.545 (0.739) C:76% T:87%					
Total Radium	Pace Analytical Services - Greensburg			pCi/L	09/22/21 16:12	7440-14-4	
	Total Radium Calculation	2.31 ± 1.11 (1.54)					

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

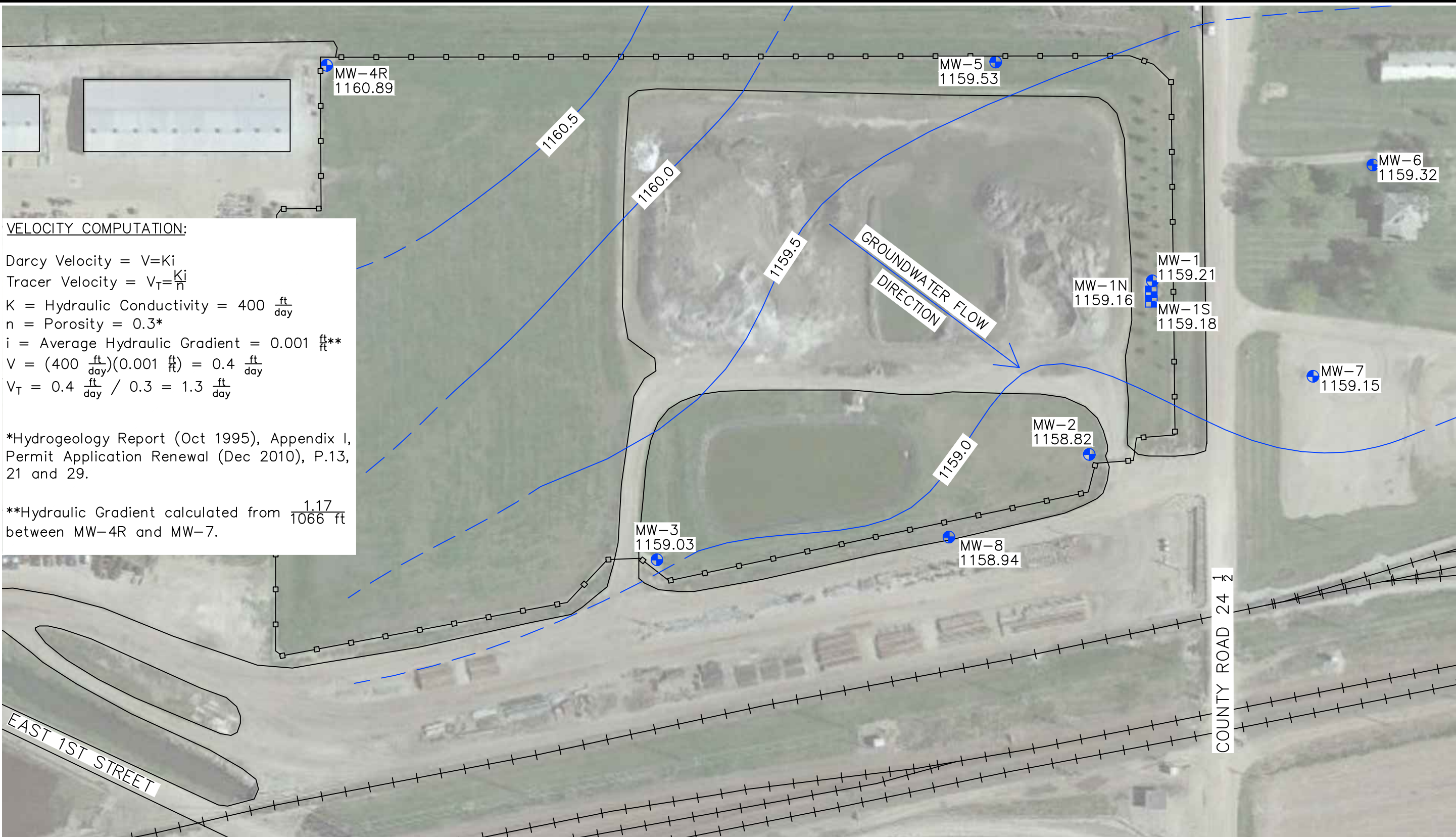
Pace Project No.: 60378630

Sample: DUPLICATE		Lab ID: 60378630009	Collected: 08/24/21 23:59	Received: 08/25/21 06:18	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	Pace Analytical Services - Greensburg						
	EPA 903.1	0.000 ± 0.325 (0.729) C:NA T:97%		pCi/L	09/21/21 15:46	13982-63-3	
Radium-228	Pace Analytical Services - Greensburg						
	EPA 904.0	0.341 ± 0.339 (0.698) C:83% T:88%		pCi/L	09/21/21 14:32	15262-20-1	
Total Radium	Pace Analytical Services - Greensburg						
	Total Radium Calculation	0.341 ± 0.664 (1.43)		pCi/L	09/22/21 16:12	7440-14-4	

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T:\27219045.02 Data and Calculations\3Q2021\DWG\03 2021 Groundwater Contours.dwg Oct 13, 2021 - 7:55am Layout Name: 11x17 By: 5075eww



VELOCITY COMPUTATION:

Darcy Velocity = $V=Ki$
Tracer Velocity = $V_T=\frac{Ki}{n}$
 K = Hydraulic Conductivity = $400 \frac{ft}{day}$
 n = Porosity = 0.3^*
 i = Average Hydraulic Gradient = $0.001 \frac{ft}{ft}^{**}$
 $V = (400 \frac{ft}{day})(0.001 \frac{ft}{ft}) = 0.4 \frac{ft}{day}$
 $V_T = 0.4 \frac{ft}{day} / 0.3 = 1.3 \frac{ft}{day}$

*Hydrogeology Report (Oct 1995), Appendix I, Permit Application Renewal (Dec 2010), P.13, 21 and 29.

**Hydraulic Gradient calculated from $\frac{1.17}{1066 ft}$ between MW-4R and MW-7.

- LEGEND**
- | | | | |
|---|-----------------|---------|----------------------------------|
| + | RAILROAD TRACKS | — | ESTIMATED POTENTIOMETRIC CONTOUR |
| □ | FENCE | — | POTENTIOMETRIC CONTOUR |
| ● | MONITORING WELL | 1162.50 | FEET ABOVE MEAN SEA LEVEL |
| ■ | PIEZOMETER | | |

- NOTES:**
1. DEPTHS TO GROUNDWATER MEASURED 8/24/2021.
 2. GROUNDWATER DATA FROM MW-1N AND MW-1S WERE NOT USED IN THE CALCULATION OF GROUNDWATER CONTOURS.



CHK BY		REV	DATE	SHEET TITLE	PROJECT TITLE
				POTENTIOMETRIC CONTOUR MAP	SEMIANNUAL GROUNDWATER SAMPLING
CLIENT					
FREMONT DEPARTMENT OF UTILITIES LON D. WRIGHT POWER PLANT FREMONT, NEBRASKA					
SCS ENGINEERS 14755 GROVER STREET OMAHA, NEBRASKA 68144 PH: (402) 884-6232 FAX: (402) 884-6203					
PROJ. NO.	DWN. BY	CHK. BY	Q/A	REV. BY	PROJ. MGR.
27219045.02	KB	CJ		CJ	DD
CADD FILE: 03 2021 GROUNDWATER CONTOURS.DWG					
DATE: 10/12/21					
FIGURE NO. 1					

3. Field Activity Summary

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-1
 Date(s): 8/24/2021

Field Team Members

Name: D. Durham Affiliation: SCS Engineers
 Name: B. Novak Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 82 °F (Mean) Wind Direction: N ☒ E ☒ W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy ☒ Sunny Partly

Well Observations

Well Pad Good Locks

Yes	No
☒	☐

 Casing ↓ Protective Casing

☒	☐

 Protective Casing ↓ Well

☒	☐

 Reference Mark/Identification ↓

Groundwater Level Measurements

Date/Time Measured: 8/24 10:12 Total Depth: 29.09 feet below TOC
 Static Water Level: 21.49 feet below TOC
 TD - SWL: 7.51 water column (ft.)

Purging Activities

Purged By: B. Novak Purge Date: 8/24
 Purge Method: Bailer ☒ Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 7.51 x 10 = 75.1 Min Purge Volume: 100 mL
 Initial Parameter Readings: Temp (°C) 22.58 pH 7.34 ORP 127
 Sp. Cond. 0.811 Turbidity 0 DO 3.75
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:20	400	200	22.04	7.27	131	0.820	0	3.53	21.49
10:23	1000	200	21.82	7.20	135	0.822	0	3.34	21.49
10:26	1600	200	21.93	7.16	138	0.818	0	3.25	21.49

Sampling Activities

Sampled By: B. Novak Sample Date/Time: 8/24 10:26
 Sample Method: Bailer ☒ Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 21.93 pH 7.16 ORP 138
 Sp. Cond. 0.818 Turbidity 0 DO 3.25
 Water Level 21.49 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

WL For IS - 22.29
 WL For IN - 22.31

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MU-2
 Date(s): 8/24/2021

Field Team Members

Name: D. Durham Affiliation: SCS Engineers
 Name: B. Novak Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 91 °F (Mean) Wind Direction: N ☒ E ☒ W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good Locks

Yes	No
☒	☒

 Casing Good Protective Casing

Yes	No
☒	☒

 Reference Mark/Identification Good Well

Yes	No
☒	☒

Groundwater Level Measurements

Date/Time Measured: 8/24 12:49 Total Depth: 28.00 feet below TOC
 Static Water Level: 18.14 feet below TOC
 TD - SWL: 9.86 water column (ft.)

Purging Activities

Purged By: B. Novak Purge Date: 8/24
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other (circle one)
 Purge Volume Calculation: 9.86 x 10 = 98.6 Min Purge Volume: 100 mL
 Initial Parameter Readings: Temp (°C) 17.63 pH 7.29 ORP 135
 Sp. Cond. 0.781 Turbidity 0 DO 7.09
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:53	400	200	15.95	7.22	130	0.790	0	5.84	18.14
12:56	1000	200	15.25	7.17	135	0.791	0	5.11	18.14
12:59	1600	200	14.95	7.14	137	0.789	0	4.39	18.14

Sampling Activities

Sampled By: B. Novak Sample Date/Time: 8/24 12:59
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 14.95 pH 7.14 ORP 137
 Sp. Cond. 0.789 Turbidity 0 DO 4.39
 Water Level 18.14 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-3
 Date(s): 8/24/2021

Field Team Members

Name: B. Durham Affiliation: SCS Engineers
 Name: B. Novak Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 90 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good Locks

Yes	No
☒	☐

 Casing Good Protective Casing

☒	☐

 Protective Casing Well

☒	☐

 Reference Mark/Identification Good

Groundwater Level Measurements

Date/Time Measured: 8/24 12:20 Total Depth: 28.00 feet below TOC
 Static Water Level: 19.46 feet below TOC
 TD - SWL: 8.54 water column (ft.)

Purging Activities

Purged By: B. Novak Purge Date: 8/24
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other (circle one)
 Purge Volume Calculation: 8.54 x 10 = 85.4 Min Purge Volume: 100 mL
 Initial Parameter Readings: Temp (°C) 24.85 pH 7.11 ORP 133
 Sp. Cond. 0.749 Turbidity 0 DO 3.18
 Physical appearance of purge water: Clear
 10% 0.2 SU 10%

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
12:25	400	200	24.44	7.03	137	0.740	0	2.75	19.46
12:28	1000	200	19.61	6.99	140	0.809	0	3.44	19.46
12:31	1600	200	18.49	6.96	142	0.825	0	3.59	19.46
12:34	2200	200	17.89	6.94	143	0.830	0	3.72	19.46

Sampling Activities

Sampled By: B. Novak Sample Date/Time: 8/24 12:34
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 17.89 pH 6.94 ORP 143
 Sp. Cond. 0.830 Turbidity 0 DO 3.72
 Water Level 19.46 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-4R
 Date(s): 8/24/21

Field Team Members

Name: D. Durham Affiliation: SCS Engineers
 Name: B. Novak Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 79 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good
 Casing ↓
 Protective Casing ↓
 Reference Mark/Identification ↓

Locks	Yes	No
Protective Casing	✓	
Well		x

Groundwater Level Measurements

Date/Time Measured: 8/24/21 08:57
 Total Depth: 28.00 feet below TOC
 Static Water Level: 17.40 feet below TOC
 TD - SWL: 19.60 water column (ft.)

Purging Activities

Purged By: B. Novak Purge Date: 8/24/21
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 10.60 x 10 = 106.0 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 16.19 pH 7.53 ORP 111
 Sp. Cond. 0.718 Turbidity 0 DO 3.91
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
09:08	700	200	16.53	7.39	126	0.810	0	2.50	17.39
09:11	1300	200	15.31	7.33	132	0.849	0	3.59	17.40
09:14	1900	200	15.11	7.27	135	0.858	0	3.30	17.40

Sampling Activities

Sampled By: B. Novak Sample Date/Time: 8/24 09:14
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 15.11 pH 7.27 ORP 135
 Sp. Cond. 0.858 Turbidity 0 DO 3.30
 Water Level 17.40 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-5
 Date(s): 8/24/2021

Field Team Members

Name: B. Dunham Affiliation: SCS Engineers
 Name: B. Novak Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 81 °F (Mean) Wind Direction: N ☒ S ☒ E ☐ W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy ☒ Sunny Partly

Well Observations

Well Pad Good
 Casing
 Protective Casing
 Reference Mark/Identification

Locks
 Protective Casing ☒ Yes ☐ No
 Well ☐ Yes ☒ No

Groundwater Level Measurements

Date/Time Measured: 8/24 09:32
 Total Depth: 28.00 feet below TOC
 Static Water Level: 17.79 feet below TOC
 TD - SWL: 10.21 water column (ft.)

Purging Activities

Purged By: B. Novak Purge Date:
 Purge Method: Bailer ☐ Dedicated Pump ☒ Non-Dedicated Pump ☐ Peristaltic Pump ☐ (circle one)
 Well Diameter: 1-inch ☐ 2-inch ☐ 3-inch ☒ 4-inch ☐ Other ☐ (circle one)
 Purge Volume Calculation: 10.21 x 10 = 102.1 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 18.60 pH 7.34 ORP 130
 Sp. Cond. 0.827 Turbidity 0 DO 3.26
 Physical appearance of purge water: Clear
 10% 0.2 SU 10%

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
09:39	600	200	18.11	7.29	135	0.826	0	3.76	17.79
09:42	1200	200	17.25	7.27	138	0.830	0	10.67	17.79
09:45	1800	200	17.08	7.25	139	0.822	0	8.49	17.79

Sampling Activities

Sampled By: B. Novak Sample Date/Time: 8/24 09:45
 Sample Method: Bailer ☐ Dedicated Pump ☒ Non-Dedicated Pump ☐ Peristaltic Pump ☐ (circle one)
 Sample Parameters: Temp (°C) 17.08 pH 7.25 ORP 139
 Sp. Cond. 0.822 Turbidity 0 DO 8.49
 Water Level 17.79 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: MW-6
 Date(s): 8/24/2021

Field Team Members

Name: D. Durham Affiliation: SCS Engineers
 Name: B. Novak Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 84 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Good Locks

Yes	No
☒	☐

 Casing ↓ Protective Casing

Yes	No
☐	☐

 Protective Casing ↓ Well

Yes	No
☐	☐

 Reference Mark/Identification ↓

Groundwater Level Measurements

Date/Time Measured: 8/24 10:48 Total Depth: 28.00 feet below TOC
 Static Water Level: 18.22 feet below TOC
 TD - SWL: 9.78 water column (ft.)

Purging Activities

Purged By: B. Novak Purge Date: 8/24
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other _____ (circle one)
 Purge Volume Calculation: 9.78 x 10 = 97.8 Min Purge Volume: 100 mL
 Initial Parameter Readings: Temp (°C) 23.54 pH 7.13 ORP 126
 Sp. Cond. 0.776 Turbidity 0 DO 7.98
 Physical appearance of purge water: clear

10%			0.2 SU			10%			
Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (ml/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
10:52	200	200	24.11	7.19	128	0.623	0	10.05	18.22
10:55	900	200	22.58	7.21	130	0.515	0	8.58	18.22
10:59	1500	200	19.85	7.18	132	0.506	0	9.31	18.22
11:01	2100	200	20.35	7.15	134	0.482	0	8.37	18.22
11:04	2700	200	20.49	7.13	135	0.476	0	8.35	18.22

Sampling Activities

Sampled By: B. Novak Sample Date/Time: 8/24 11:04
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 20.49 pH 7.13 ORP 135
 Sp. Cond. 0.476 Turbidity 0 DO 8.35
 Water Level 18.22 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Dup taken here at 23:59

Electronic Form Completed By: _____

Date: _____

Field Data Sheet

Project Name: FDU GW Sampling
 Project Location: Fremont, NE
 Project Number: 27219045.02

Monitoring Point: AW-7
 Date(s): 8/24/2021

Field Team Members

Name: D. Durham Affiliation: SCS Engineers
 Name: B. Novak Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 86 °F (Mean) Wind Direction: N S E W (circle two if needed)
 Precipitation: None Light Heavy Sky: Cloudy Sunny Partly

Well Observations

Well Pad Gopd Locks

Yes	No
☒	☐

 Casing

☐	☐

 Protective Casing

☐	☐

 Reference Mark/Identification

☐	☐

Groundwater Level Measurements

Date/Time Measured: 8/24 11:27 Total Depth: 28.00 feet below TOC
 Static Water Level: 17.97 feet below TOC
 TD - SWL: 10.03 water column (ft.)

Purging Activities

Purged By: B. Novak Purge Date: 8/24
 Purge Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Well Diameter: 1-inch 2-inch 3-inch 4-inch Other (circle one)
 Purge Volume Calculation: 10.03 x 10 = 100.3 Min Purge Volume: 150 mL
 Initial Parameter Readings: Temp (°C) 21.43 pH 7.07 ORP 135
 Sp. Cond. 0.909 Turbidity 7.9 DO 8.19
 Physical appearance of purge water: Clear

Purge Time	Cumulative Purge Vol. (mL)	Purge Rate (mL/m)	Temp (°C)	pH	ORP (mV)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Water Level (ft below TOC)
11:34	400	200	17.54	7.01	139	0.968	0	5.44	17.77
11:37	1000	200	16.09	6.98	141	1.02	0	3.95	17.97
11:40	1600	200	15.14	6.97	142	1.03	0	3.95	17.97

Sampling Activities

Sampled By: B. Novak Sample Date/Time: 8/24 11:40
 Sample Method: Bailer Dedicated Pump Non-Dedicated Pump Peristaltic Pump (circle one)
 Sample Parameters: Temp (°C) 15.14 pH 6.97 ORP 142
 Sp. Cond. 1.03 Turbidity 0 DO 3.96
 Water Level 17.97 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)

Electronic Form Completed By: _____ Date: _____

QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

QC Batch:	740774	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009		

METHOD BLANK:	2968766	Matrix:	Water
Associated Lab Samples:	60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/31/21 09:32	

LABORATORY CONTROL SAMPLE: 2968767						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:					2968768	2968769							
Parameter	Units	60378628001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Mercury	ug/L	ND	5	5	5.0	4.9	98	97	75-125	1	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

QC Batch:	740773	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3010	Analysis Description:	6010 MET
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009		

METHOD BLANK:	2968762	Matrix:	Water
Associated Lab Samples:	60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	09/01/21 20:17	
Calcium	mg/L	ND	0.20	09/01/21 20:17	
Lithium	ug/L	ND	10.0	09/01/21 20:17	

LABORATORY CONTROL SAMPLE:	2968763					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	941	94	80-120	
Calcium	mg/L	10	10.2	102	80-120	
Lithium	ug/L	1000	980	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:	2968764			2968765								
Parameter	Units	60378628001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	117	1000	1000	1080	1100	96	98	75-125	1	20	
Calcium	mg/L	101	10	10	109	110	78	95	75-125	2	20	
Lithium	ug/L	28.8	1000	1000	1010	1020	98	100	75-125	1	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02
Pace Project No.: 60378628

QC Batch:	740677	Analysis Method:	EPA 6020
QC Batch Method:	EPA 3010	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009		

METHOD BLANK: 2968436 Matrix: Water
Associated Lab Samples: 60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	08/31/21 14:05	
Arsenic	ug/L	ND	1.0	08/31/21 14:05	
Barium	ug/L	ND	1.0	08/31/21 14:05	
Beryllium	ug/L	ND	0.50	08/31/21 14:05	
Cadmium	ug/L	ND	0.50	08/31/21 14:05	
Chromium	ug/L	ND	1.0	08/31/21 14:05	
Cobalt	ug/L	ND	1.0	08/31/21 14:05	
Lead	ug/L	ND	1.0	08/31/21 14:05	
Molybdenum	ug/L	ND	1.0	08/31/21 14:05	
Selenium	ug/L	ND	1.0	08/31/21 14:05	
Thallium	ug/L	ND	1.0	08/31/21 14:05	

LABORATORY CONTROL SAMPLE: 2968437

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.5	99	80-120	
Arsenic	ug/L	40	42.1	105	80-120	
Barium	ug/L	40	39.0	98	80-120	
Beryllium	ug/L	40	44.3	111	80-120	
Cadmium	ug/L	40	41.3	103	80-120	
Chromium	ug/L	40	40.7	102	80-120	
Cobalt	ug/L	40	40.0	100	80-120	
Lead	ug/L	40	37.3	93	80-120	
Molybdenum	ug/L	40	41.1	103	80-120	
Selenium	ug/L	40	41.9	105	80-120	
Thallium	ug/L	40	37.5	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2968438 2968439

Parameter	Units	60378628001		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.								
Antimony	ug/L	ND	40	40	40	40.4	40.6	100	100	75-125	1	20	
Arsenic	ug/L	4.7	40	40	40	47.2	47.9	106	108	75-125	1	20	
Barium	ug/L	126	40	40	40	167	164	101	95	75-125	1	20	
Beryllium	ug/L	ND	40	40	40	43.6	42.5	109	106	75-125	3	20	
Cadmium	ug/L	ND	40	40	40	41.1	41.0	103	102	75-125	0	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2968438 2968439												
Parameter	Units	60378628001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	ug/L	ND	40	40	41.5	41.9	102	103	75-125	1	20	
Cobalt	ug/L	ND	40	40	38.9	39.5	97	98	75-125	1	20	
Lead	ug/L	ND	40	40	39.3	39.7	98	99	75-125	1	20	
Molybdenum	ug/L	6.8	40	40	49.9	50.9	108	110	75-125	2	20	
Selenium	ug/L	6.7	40	40	47.3	47.2	101	101	75-125	0	20	
Thallium	ug/L	ND	40	40	39.6	39.8	99	99	75-125	1	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

QC Batch:	740913	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009		

METHOD BLANK:	2969176	Matrix:	Water
Associated Lab Samples:	60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	08/31/21 05:43	

LABORATORY CONTROL SAMPLE: 2969177						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	999	100	80-120	

SAMPLE DUPLICATE: 2969178

Parameter	Units	60378375001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	407	398	2	10	

SAMPLE DUPLICATE: 2969179						
		60378634001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Total Dissolved Solids	mg/L	1460	1470	1	10	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

QC Batch: 740824

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60378628002, 60378628003, 60378628006, 60378628007, 60378628008, 60378628009

SAMPLE DUPLICATE: 2968872

Parameter	Units	60378628006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	7.1	5	10	H6

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

QC Batch:	741882	Analysis Method:	EPA 9040
QC Batch Method:	EPA 9040	Analysis Description:	9040 pH
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60378628001, 60378628004, 60378628005

SAMPLE DUPLICATE: 2972915

Parameter	Units	60377479001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	10	H6

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02
Pace Project No.: 60378628

QC Batch:	741103	Analysis Method:	EPA 9056
QC Batch Method:	EPA 9056	Analysis Description:	9056 IC Anions
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009		

METHOD BLANK: 2969966 Matrix: Water
Associated Lab Samples: 60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/31/21 15:50	
Fluoride	mg/L	ND	0.20	08/31/21 15:50	
Sulfate	mg/L	ND	1.0	08/31/21 15:50	

METHOD BLANK: 2971611 Matrix: Water
Associated Lab Samples: 60378628001, 60378628002, 60378628003, 60378628004, 60378628005, 60378628006, 60378628007, 60378628008, 60378628009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	09/01/21 08:09	
Fluoride	mg/L	ND	0.20	09/01/21 08:09	
Sulfate	mg/L	ND	1.0	09/01/21 08:09	

LABORATORY CONTROL SAMPLE: 2969967

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	80-120	
Fluoride	mg/L	2.5	2.4	97	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

LABORATORY CONTROL SAMPLE: 2971612

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Fluoride	mg/L	2.5	2.4	97	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2969968 2969969

Parameter	Units	20218381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	62.6	10	10	71.7	71.6	91	90	80-120	0	15	
Fluoride	mg/L	<0.40	5	5	4.2	4.4	85	88	80-120	4	15	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2969968 2969969												
Parameter	Units	20218381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	4670	2500	2500	7420	7710	110	122	80-120	4	15	M1

SAMPLE DUPLICATE: 2969970

Parameter	Units	20218381002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	10900	12800	16	15	D6
Fluoride	mg/L	<0.20	ND		15	
Sulfate	mg/L	279	322	14	15	

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QUALIFIERS

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60378628001	MW-1	EPA 3010	740773	EPA 6010	740831
60378628002	MW-2	EPA 3010	740773	EPA 6010	740831
60378628003	MW-3	EPA 3010	740773	EPA 6010	740831
60378628004	MW-4R	EPA 3010	740773	EPA 6010	740831
60378628005	MW-5	EPA 3010	740773	EPA 6010	740831
60378628006	MW-6	EPA 3010	740773	EPA 6010	740831
60378628007	MW-7	EPA 3010	740773	EPA 6010	740831
60378628008	MW-8	EPA 3010	740773	EPA 6010	740831
60378628009	DUPLICATE	EPA 3010	740773	EPA 6010	740831
60378628001	MW-1	EPA 3010	740677	EPA 6020	740743
60378628002	MW-2	EPA 3010	740677	EPA 6020	740743
60378628003	MW-3	EPA 3010	740677	EPA 6020	740743
60378628004	MW-4R	EPA 3010	740677	EPA 6020	740743
60378628005	MW-5	EPA 3010	740677	EPA 6020	740743
60378628006	MW-6	EPA 3010	740677	EPA 6020	740743
60378628007	MW-7	EPA 3010	740677	EPA 6020	740743
60378628008	MW-8	EPA 3010	740677	EPA 6020	740743
60378628009	DUPLICATE	EPA 3010	740677	EPA 6020	740743
60378628001	MW-1	EPA 7470	740774	EPA 7470	740797
60378628002	MW-2	EPA 7470	740774	EPA 7470	740797
60378628003	MW-3	EPA 7470	740774	EPA 7470	740797
60378628004	MW-4R	EPA 7470	740774	EPA 7470	740797
60378628005	MW-5	EPA 7470	740774	EPA 7470	740797
60378628006	MW-6	EPA 7470	740774	EPA 7470	740797
60378628007	MW-7	EPA 7470	740774	EPA 7470	740797
60378628008	MW-8	EPA 7470	740774	EPA 7470	740797
60378628009	DUPLICATE	EPA 7470	740774	EPA 7470	740797
60378628001	MW-1	SM 2540C	740913		
60378628002	MW-2	SM 2540C	740913		
60378628003	MW-3	SM 2540C	740913		
60378628004	MW-4R	SM 2540C	740913		
60378628005	MW-5	SM 2540C	740913		
60378628006	MW-6	SM 2540C	740913		
60378628007	MW-7	SM 2540C	740913		
60378628008	MW-8	SM 2540C	740913		
60378628009	DUPLICATE	SM 2540C	740913		
60378628001	MW-1	EPA 9040	741882		
60378628002	MW-2	EPA 9040	740824		
60378628003	MW-3	EPA 9040	740824		
60378628004	MW-4R	EPA 9040	741882		
60378628005	MW-5	EPA 9040	741882		
60378628006	MW-6	EPA 9040	740824		
60378628007	MW-7	EPA 9040	740824		
60378628008	MW-8	EPA 9040	740824		
60378628009	DUPLICATE	EPA 9040	740824		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City of Fremont/27219045.02

Pace Project No.: 60378628

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60378628001	MW-1	EPA 9056	741103		
60378628002	MW-2	EPA 9056	741103		
60378628003	MW-3	EPA 9056	741103		
60378628004	MW-4R	EPA 9056	741103		
60378628005	MW-5	EPA 9056	741103		
60378628006	MW-6	EPA 9056	741103		
60378628007	MW-7	EPA 9056	741103		
60378628008	MW-8	EPA 9056	741103		
60378628009	DUPLICATE	EPA 9056	741103		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

QC Batch:	463258	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	60378630001, 60378630002, 60378630003, 60378630004, 60378630005, 60378630006, 60378630007, 60378630008, 60378630009		

METHOD BLANK:	2236611	Matrix:	Water

Associated Lab Samples: 60378630001, 60378630002, 60378630003, 60378630004, 60378630005, 60378630006, 60378630007, 60378630008, 60378630009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0965 ± 0.339 (0.767) C:79% T:84%	pCi/L	09/21/21 14:41	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

QC Batch:	463257	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg
Associated Lab Samples:	60378630001, 60378630002, 60378630003, 60378630004, 60378630005, 60378630006, 60378630007, 60378630008, 60378630009		

METHOD BLANK:	2236609	Matrix:	Water

Associated Lab Samples: 60378630001, 60378630002, 60378630003, 60378630004, 60378630005, 60378630006, 60378630007, 60378630008, 60378630009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.400 ± 0.406 (0.614) C:NA T:90%	pCi/L	09/21/21 15:32	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

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

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City of Fremont/27219045.01

Pace Project No.: 60378630

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60378630001	MW-1	EPA 903.1	463257		
60378630002	MW-2	EPA 903.1	463257		
60378630003	MW-3	EPA 903.1	463257		
60378630004	MW-4R	EPA 903.1	463257		
60378630005	MW-5	EPA 903.1	463257		
60378630006	MW-6	EPA 903.1	463257		
60378630007	MW-7	EPA 903.1	463257		
60378630008	MW-8	EPA 903.1	463257		
60378630009	DUPLICATE	EPA 903.1	463257		
60378630001	MW-1	EPA 904.0	463258		
60378630002	MW-2	EPA 904.0	463258		
60378630003	MW-3	EPA 904.0	463258		
60378630004	MW-4R	EPA 904.0	463258		
60378630005	MW-5	EPA 904.0	463258		
60378630006	MW-6	EPA 904.0	463258		
60378630007	MW-7	EPA 904.0	463258		
60378630008	MW-8	EPA 904.0	463258		
60378630009	DUPLICATE	EPA 904.0	463258		
60378630001	MW-1	Total Radium Calculation	465162		
60378630002	MW-2	Total Radium Calculation	465162		
60378630003	MW-3	Total Radium Calculation	465162		
60378630004	MW-4R	Total Radium Calculation	465162		
60378630005	MW-5	Total Radium Calculation	465162		
60378630006	MW-6	Total Radium Calculation	465162		
60378630007	MW-7	Total Radium Calculation	465162		
60378630008	MW-8	Total Radium Calculation	465162		
60378630009	DUPLICATE	Total Radium Calculation	465162		

REPORT OF LABORATORY ANALYSIS

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4. Appendices

**Groundwater Elevation Summary
Fremont Utilities FFCA Monofill
Third Quarter 2021**

Well Name	Hydraulic Location	Top of Casing Elevation	Depth to Groundwater (August 2021)	Groundwater Elevation (August 2021)
MW-1	Downgradient	1180.70	21.49	1159.21
MW-1N	Downgradient	1181.47	22.31	1159.16
MW-1S	Downgradient	1181.47	22.29	1159.18
MW-2	Downgradient	1176.96	18.14	1158.82
MW-3	Downgradient	1178.49	19.46	1159.03
MW-4R	Upgradient	1178.29	17.40	1160.89
MW-5	Downgradient	1177.32	17.79	1159.53
MW-6	Downgradient	1177.54	18.22	1159.32
MW-7	Downgradient	1177.12	17.97	1159.15
MW-8	Downgradient	1177.36	18.42	1158.94

CHAIN-OF-CUSTODY / Analytical Request Document

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



Section A Required Client Information: Company: SCS Engineers Address: 14755 Grover Street Omaha NE 68144 Email To: jstenberg@scsengineers.com Phone: 402-938-0320 Fax: Requested Due Date/TAT: Standard		Section B Required Project Information: Report To: Joel Stenberg Copy To: Rebecca Blankenau (rblankenau@scsengineers.com) Address: Purchase Order No.: Project Name: City of Fremont Project Number: 27219045.02		Section C Invoice Information: Attention: Joel Stenberg Company Name: SCS Engineers Address: Pace Quote Reference: Pace Project Manager: Trudy Gipson 913-563-1405 Pace Profile #: 9797 Line 1	
Regulatory Agency ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER		Site Location STATE: NE			

Page: 1 of 2

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCT P SOILS/SL OIL WIPE AIR OTHER TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives Unpreserved H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	Analysis Test ↓ 3010 Total Metals: B-Ca-Li 3020 Total Metals * 9056 Chloride-Fluoride-Sulfate 2540C TDS 9040 PH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB						
1	MW-1		WT	G	DATE	TIME		3	1	2		
2	MW-2		WT	G	8/24	10:26		3	1	2		
3	MW-3		WT	G	8/24	12:59		3	1	2		
4	MW-4R		WT	G	8/24	12:34		3	1	2		
5	MW-5		WT	G	8/24	09:14		3	1	2		
6	MW-6		WT	G	8/24	09:45		3	1	2		
7	MW-7		WT	G	8/24	11:04		3	1	2		
8	MW-8		WT	G	8/24	11:40		3	1	2		
9	DUPLICATE		WT	G	8/24	12:05		3	1	2		
10			WT	G	8/24	23:59		3	1	2		
11												
12												

ADDITIONAL COMMENTS Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219 * As-Ba-Mo-Se 56-BE-CO-CR-CO-Pb-Hg-Tl		RELINQUISHED BY / AFFILIATION DATE 8/24/15		ACCEPTED BY / AFFILIATION DATE 8/25/15		SAMPLE CONDITIONS Temp in °C Received on Custody Sealed Cooler (Y/N) Samples Intact (Y/N)	



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

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Joel Stenberg	Attention:	Joel Stenberg
Address:	14755 Grover Street	Copy To:	Rebecca Blankenau (rblankenau@scsengineers.com)	Company Name:	SCS Engineers
	Omaha NE 68144			Address:	
Email To:	jstenberg@scsengineers.com		Purchase Order No.:	Pace Quote Reference:	
Phone:	402-938-0320		Project Name:	Pace Project Manager:	Trudy Gipson 913-563-1405
	Fax:		Project Number:	Pace Profile #:	9797 Line 2
Requested Due Date/TAT:		Standard		Site Location STATE:	
				REGULATORY AGENCY NPDES UST RCRA	

[illegible]

Page 19 of 21

Internal Transfer Chain of Custody



☒ Samples Pre-Logged into eCOC.

State Of Origin: NE

Cert. Needed: ☐ Yes ☒ No

Workorder: 60378630 Workorder Name: City of Fremont/27219045.01

Owner Received Date: 8/25/2021 Results Requested By: 9/17/2021

Report To: Subcontract To

Trudy Gipson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1405

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

WO#: 30438662



30438662

Preserved Containers

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HNO3	903.1 Radium-226	904.0 Radium-226 & Total Radium	LAB USE ONLY
1	MW-1	PS	8/24/2021 10:26	60378630001	Water	2	X	X	001
2	MW-2	PS	8/24/2021 12:59	60378630002	Water	2	X	X	002
3	MW-3	PS	8/24/2021 12:34	60378630003	Water	2	X	X	003
4	MW-4R	PS	8/24/2021 09:14	60378630004	Water	2	X	X	004
5	MW-5	PS	8/24/2021 09:45	60378630005	Water	2	X	X	005
6	MW-6	PS	8/24/2021 11:04	60378630006	Water	2	X	X	006
7	MW-7	PS	8/24/2021 11:40	60378630007	Water	2	X	X	007
8	MW-8	PS	8/24/2021 12:05	60378630008	Water	2	X	X	008
9	DUPLICATE	PS	8/24/2021 23:59	60378630009	Water	2	X	X	009

Comments

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Samples Intact	Y or N
1	Trudy Gipson	8/24/21 10:30	J. Adreaga	8-31-21				
2								
3								

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.



Lon D. Wright Power Plant Statistical Summary of August 2021 Data

City of Fremont Department of Utilities
401 E Military Road
Fremont, Nebraska 68025

SCS ENGINEERS

27219045.02 | October 14, 2021

SCS Engineers
14755 Grover Street
Omaha, NE 68144
402 938-0327

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A Compliance Statistical Analysis	
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A.2 Intrawell Prediction Limits	
A.3 Interwell Prediction Limits	
A.4 Sen's Slope/Mann-Kendall Analysis	
A.5 Confidence Interval Analysis	

1 EVALUATION OF ANALYTICAL RESULTS

1.1 SITE-SPECIFIC STATISTICAL PROGRAM

Statistical analysis consisted of methods outlined in the Groundwater Monitoring Plan (GMP) (revised November 2019), 40 CFR Part 257, Subpart D (CCR rule) and EPA's Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance (Unified Guidance) dated March 2009 using Sanitas™ Statistical Software version 9.6.31. An intrawell statistical approach is the primary statistical method and interwell comparisons are supplementary statistical analyses used to give context to intrawell statistical results. If no intrawell statistical exceedance is noted, the additional statistical analysis is not used to make assessment monitoring determinations. Constituent/well pairs with intrawell prediction limit statistical exceedances that do not have a statistically significant increasing trend and exceed the interwell prediction limit do not show evidence of dramatic increase above background and, therefore, do not qualify for assessment monitoring. However, if one or more constituent/well pair statistically exceeds the background, using an intrawell statistical approach, but does not exceed the GWPS, using confidence intervals, then assessment monitoring procedures for the site will continue and no changes to the sampling schedule are necessary. Based on current understanding of the Federal CCR rule, when assessment monitoring is required at one well then all wells must be in assessment monitoring. This understanding does not conflict with GMP requirements.

Since the site remains in assessment monitoring, each well at the site was sampled and analyzed following assessment monitoring procedures. During the August 2021 event, samples from each well were analyzed for Appendix III and IV constituents. Detected Appendix III and Appendix IV constituent results were analyzed using time series plots, intrawell prediction limit analysis, interwell prediction limit analysis, Sen's slope trend analyses, and confidence interval analysis. The statistical results have been summarized in **Table 1** at the end of this Section.

Statistical output charts and tables are included in **Attachment A**.

1.2 COMPLIANCE STATISTICAL ANALYSIS

Compliance statistical analysis was performed on data collected from the August 2021 sampling event. Pertinent statistical results are summarized in **Table 1** at the end of this Section.

1.2.1 Time Series Plots

Time series plots were prepared for Appendix III and Appendix IV constituents to show the concentration variations over time. Time series graphs are included in **Attachment A.1**.

1.2.2 Intrawell Prediction Limits

An intrawell prediction limit analysis compares the historical data of a well to its own compliance data. The historical data is used to calculate the prediction limit that is compared to the compliance data point. If a compliance data point exceeds the calculated prediction limit, then an initial exceedance is noted; however, this may not indicate a statistically significant increase (SSI). The distribution of the data was calculated by applying the Shapiro-Wilk test for normality or the Ladder of Powers (Helsel & Hirsh, 1992) for transformed data. A parametric prediction limit was constructed for data determined to have a normal or transformed normal distribution. A non-parametric prediction limit was calculated for data not transformed normal or containing 51 percent to 90 percent non-detect results.

Intrawell prediction limits were used to statistically evaluate the detected constituents in each monitoring well using an established background dataset from October 2016 through June 2018, with the exceptions noted below.

- MW-2 sulfate: October 2016 – April 2017 and July 2017 – June 2018
- MW-4R chloride: October 2016 – June 2017 and August 2017 – June 2018
- MW-4R lead: October 2016 and January 2017 – June 2018
- MW-4R selenium: October 2016 – June 2017 and August 2017 – June 2018
- MW-6 chloride: October 2016 – September 2017 and June 2018
- MW-8 boron: October 2016 – April 2017 and August 2017 – February 2018

Intrawell prediction limit analysis results are included in **Attachment A.2** and summarized in **Table 1**.

1.2.3 Interwell Prediction Limits

An interwell prediction limit analysis compares data collected from compliance (downgradient) monitoring wells with data collected from the background (upgradient) monitoring wells. Available upgradient monitoring well data (MW-4R) was used to calculate the interwell prediction limit and was used to determine if a single data point is statistically representative of a group of data points. The distribution of the data was calculated by applying the Shapiro-Wilk test for normality, or the Ladder of Powers (Helsel & Hirsh, 1992) for transformed data. A parametric prediction limit was constructed for data determined to have a normal or transformed normal distribution. A non-parametric prediction limit was calculated for data not transformed normal or containing 51 percent to 90 percent of observations less than the laboratory reporting limit (non-detects) results. A Poisson based prediction limit was calculated for data with greater than 90 percent non-detect results.

Intrawell prediction limits were used as a supplementary statistical analysis to provide additional context and evaluation to the statistical evaluation of the detected constituents from the August 2021 sampling event data. Interwell prediction limits analysis results are included in **Attachment A.3** and summarized in **Table 1**.

1.2.4 Sen's Slope/Mann-Kendall Trend Analysis

A Sen's Slope/Mann-Kendall statistical analysis was performed on the detected constituent/well pairs using the background dataset and the August 2021 sampling event to determine trends in the concentration of these constituents. A trend is the general increase or decrease in observed values over time. A trend analysis can be used to determine the significance of an apparent trend and to estimate the magnitude of that trend. The Mann-Kendall test is nonparametric, meaning that it does not depend on an assumption of a particular underlying distribution. The test uses only the relative magnitude of data rather than actual values. Therefore, missing values are allowed, and values that are recorded as non-detects by the laboratory can still be used in the statistical analysis by assigning values equal to half their reporting limits. Sen's Slope is a simple nonparametric procedure developed to estimate the true slope. The advantage of this method over linear regression is that it is not greatly affected by gross data errors or outliers, and can be computed when data is missing or non-detect. If trends are identified, the trends should be identified as increasing or decreasing and should be checked if these trends are occurring in more than one well. Trends can result from naturally occurring changes to the groundwater, seasonal fluctuations, and disturbances from new well installations or facility activities. Sen's Slope/Mann-Kendall analysis results are included in **Attachment A.4** and summarized in **Table 3**.

1.2.5 Confidence Interval Analysis

Confidence Interval analysis was performed on the detected constituent/well pairs from the August 2021 sampling event. Confidence interval analysis is an intrawell test used to compare the compliance data to a fixed numerical limit (compliance limit). Since the wells are in assessment monitoring, the compliance limit is represented by the groundwater protection standard (GWPS). Based on the Unified Guidance, the confidence interval is bound by an upper and lower limit which defines the most probable range where either the average or median concentration is expected. A potential statistical exceedance is indicated by confidence interval analysis when the lower limit of the confidence interval is above the compliance limit.

The GWPS for lithium and molybdenum were identified in the July 17, 2018 *Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One); Final Rule* (July 2018 EPA CCR Amendment) and were utilized as the compliance limits. The average upgradient concentrations, derived from MW-4R, were used as the compliance limit for boron and calcium since no GWPS exists for either constituent. The confidence interval analysis results are included in **Attachment A.5** and summarized in **Table 1**.

1.2.6 Statistical Summary

The statistical analysis results from the August 2021 sampling event are summarized in **Table 1** below.

Previously identified intrawell exceedances for boron (MW-2, MW-5, and MW-8), fluoride (MW-4R), lithium (MW-8), molybdenum (MW-2, MW-4R, and MW-8), and sulfate (MW-2, MW-5, and MW-8) were not identified as intrawell exceedances from the August 2021 sampling event. Previously identified exceedances above background (with both intrawell and interwell prediction limits exceedances) for boron (MW-8), lithium (MW-8), molybdenum (MW-2 and MW-8), and sulfate (MW-2, MW-5, and MW-8) were not identified as exceedances above background from the August 2021 sampling event.

Intrawell exceedances were noted for arsenic (MW-1, MW-3, and MW-4R), calcium (MW-4R), chloride (MW-1, MW-2, and MW-5), chromium (MW-4R), selenium (MW-4R), and total dissolved solids (MW-8) without corresponding interwell exceedances, indicating these may not be exceedances above background. Further, none of the constituent/well pairs identified with exceedances above background (with both intrawell and interwell prediction limit exceedances) also statistically exceeded the GWPS (a confidence interval limit exceedance), with the exception of calcium at MW-8. However, calcium at upgradient well MW-4R was identified as an intrawell exceedance and may indicate a natural change in the groundwater quality. This change in the groundwater quality may be the reason for similar exceedances identified in the downgradient wells.

Statistical exceedances above background are still present at some wells and no Appendix IV detects statistically exceeded the GWPS. Based on current understanding of the Federal CCR rule, when assessment monitoring is required at one well then all wells must be in assessment monitoring. Therefore, the site will remain in assessment monitoring during the next scheduled sampling event.

Table 1. Statistical Summary

Well	Detected Constituents	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance ¹
MW-1	Arsenic (ug/L)	4.7	Yes	No	No	No	No
	Calcium (mg/L)	101	No	No	No	Yes	n/a
	Chloride (mg/L)	35.8	Yes	No	Yes, +	No	No
	Selenium (ug/L)	6.7	No	No	Yes, -	No	No
	Total Radium (pCi/L)	0.783	No	No	Yes, -	No	No
MW-2	Calcium (mg/L)	102	No	No	No	Yes	n/a
	Chloride (mg/L)	26.8	Yes	No	No	No	No
	Fluoride (mg/L)	1.3	Yes	Yes	No	No	No
	Total Dissolved Solids (mg/L)	431	No	No	Yes, +	No	No
MW-3	Arsenic (ug/L)	3.7	Yes	No	No	No	No
	Barium (ug/L)	194	No	Yes	Yes, +	No	No
	Calcium (mg/L)	106	No	No	Yes, +	Yes	n/a
	Chloride (mg/L)	50	Yes	Yes	Yes, +	No	No
	Molybdenum (ug/L)	13.4	No	Yes	Yes, +	No	No
	pH (S.U.)	7.2	No	No	Yes, -	No	No
	Sulfate (mg/L)	49.8	No	No	Yes, +	No	No
	Total Dissolved Solids (mg/L)	479	No	No	Yes, +	No	No
MW-4R (upgradient)	Arsenic (ug/L)	5.5	Yes	Note 2	No	No	No
	Barium (ug/L)	134	No		Yes, +	No	No
	Calcium (mg/L)	109	Yes		No	No	n/a
	Chromium (ug/L)	1.9	Yes		No	No	No
	Selenium (ug/L)	10.4	Yes		No	No	No
MW-5	Calcium (mg/L)	110	No	Yes	No	Yes	n/a
	Chloride (mg/L)	41.6	Yes	No	Yes, +	No	No
	Fluoride (mg/L)	1.1	No	Yes	No	No	No
	Selenium (ug/L)	5.3	No	No	Yes, -	No	No
MW-6	Arsenic (ug/L)	3.6	No	No	Yes, +	No	No
	Chloride (mg/L)	48.7	No	Yes	No	No	No
	Lithium (ug/L)	11.7	No	No	Yes, -	No	No
	Selenium (ug/L)	2.2	No	No	Yes, -	No	No
MW-7	Arsenic (ug/L)	4.0	No	No	Yes, +	No	No
	Barium (ug/L)	133	No	No	Yes, +	No	No

Well	Detected Constituents	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance ¹
MW-7	Calcium (mg/L)	100	No	No	No	Yes	n/a
	Chloride (mg/L)	101	Yes	Yes	Yes, +	No	No
	Total Dissolved Solids (mg/L)	551	Yes	Yes	Yes, +	No	Yes
MW-8	Barium (ug/L)	172	No	Yes	Yes, +	No	No
	Boron (ug/L)	142	No	No	Yes, +	No	n/a
	Calcium (mg/L)	110	Yes	Yes	No	Yes	n/a
	Chloride (mg/L)	30.6	No	No	Yes, +	No	No
	Total Dissolved Solids (mg/L)	459	Yes	No	Yes, +	No	No

¹GWPS exceedances were established by the NDEE Title 118 Groundwater Quality Standards or the July 2018 EPA CCR Amendment.

²No interwell statistical comparison was performed on the upgradient well MW-4R.

n/a - No GWPS has been established.

2 GENERAL COMMENTS

SCS Engineers does not warrant the work of third parties supplying information used in the assimilation of this document. This document has been prepared using the level of care and skill ordinarily exercised, under similar circumstances, by environmental professionals currently practicing in this locality. No other representation, express or implied, and no warranty or guarantee is included or intended.

3 REFERENCES

HDR, Appendix D Groundwater Monitoring Plan for Fremont Department of Utilities Fossil Fuel Combustion Ash Disposal Site, March 2016; Revised December 2018.

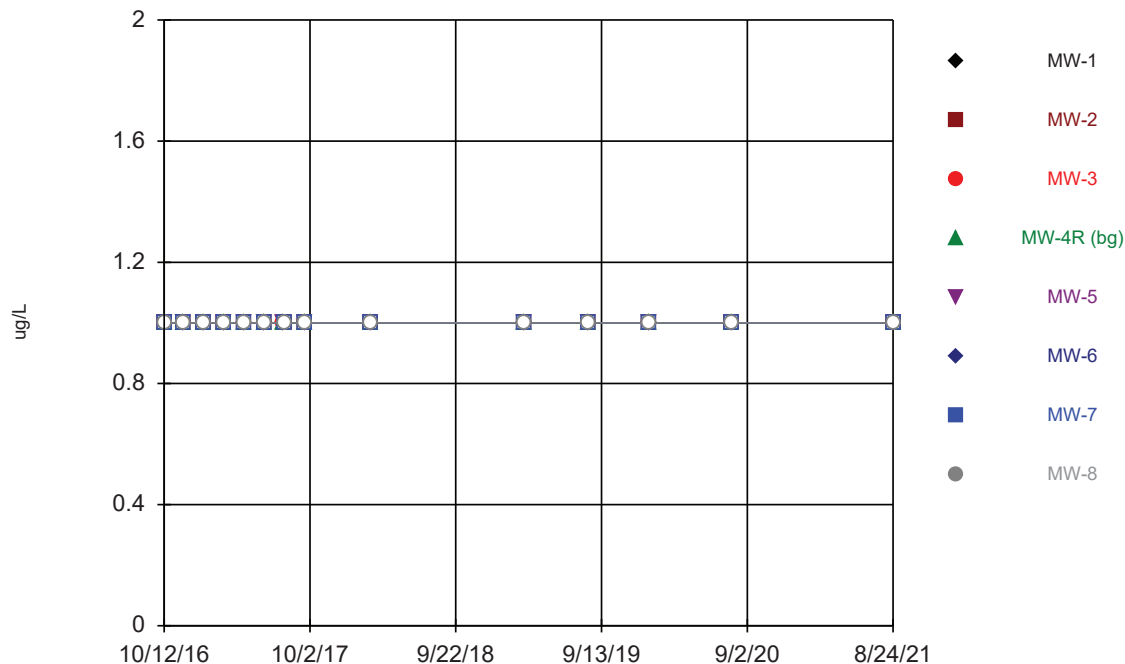
Layne GeoSciences, Inc. 1995. Hydrogeology of Proposed Fossil Fuel Combustion Ash Disposal Site. Prepared for Fremont Department of Utilities and HDR Engineering, Inc.

Sanitas Technologies, Sanitas Statistical Software v 9.6.31 and User Guide

Attachment A. Compliance Statistical Analysis

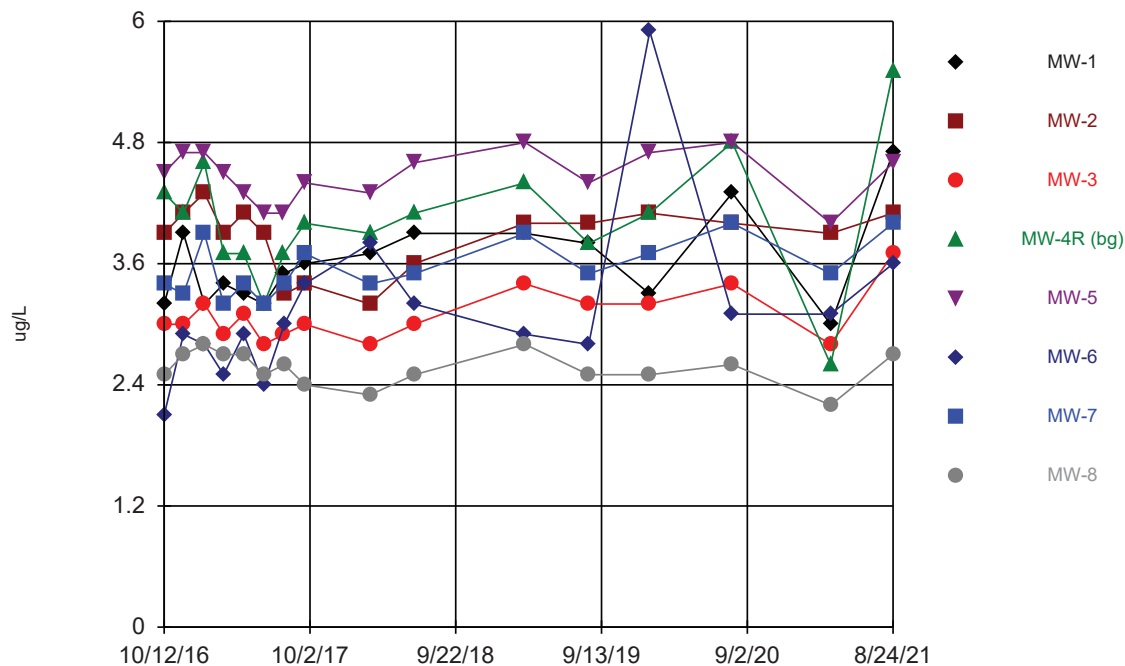
A.1 Time Series Plots

Time Series



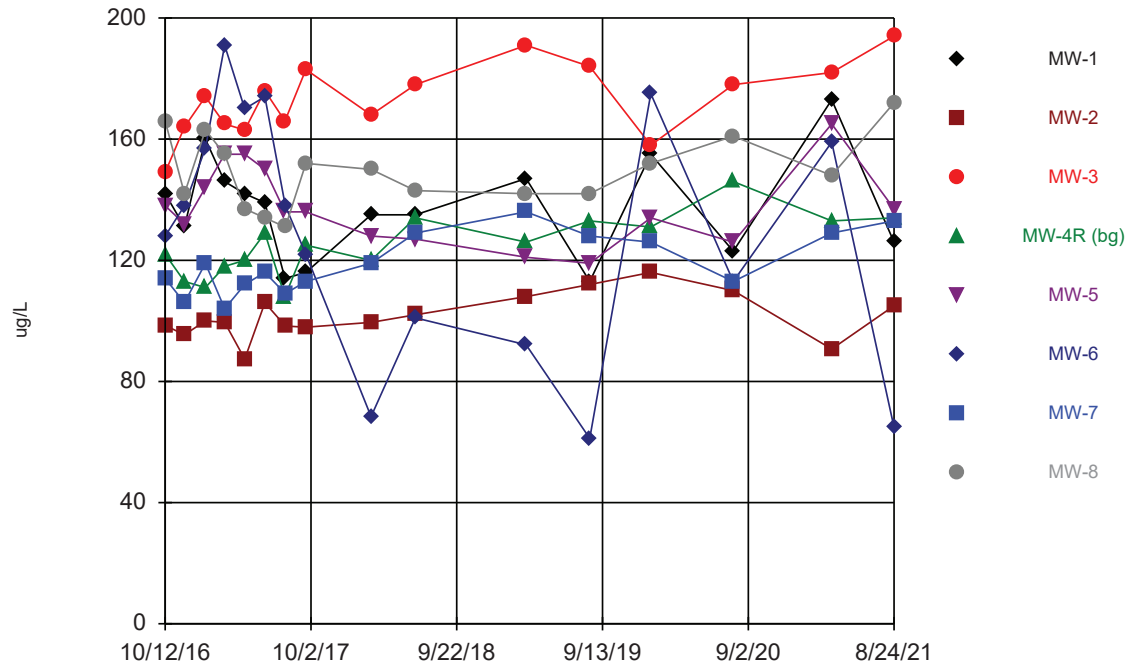
Constituent: Antimony [total] Analysis Run 9/30/2021 9:29 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



Constituent: Arsenic [total] Analysis Run 9/30/2021 9:29 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

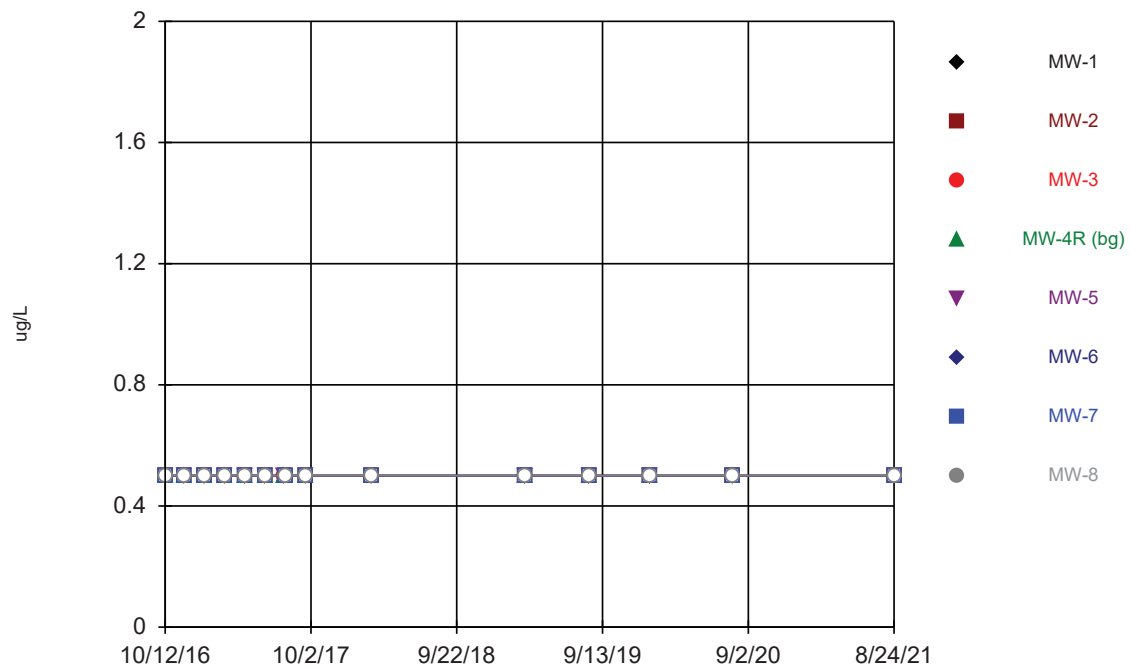
Time Series



Constituent: Barium [total] Analysis Run 9/30/2021 9:29 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

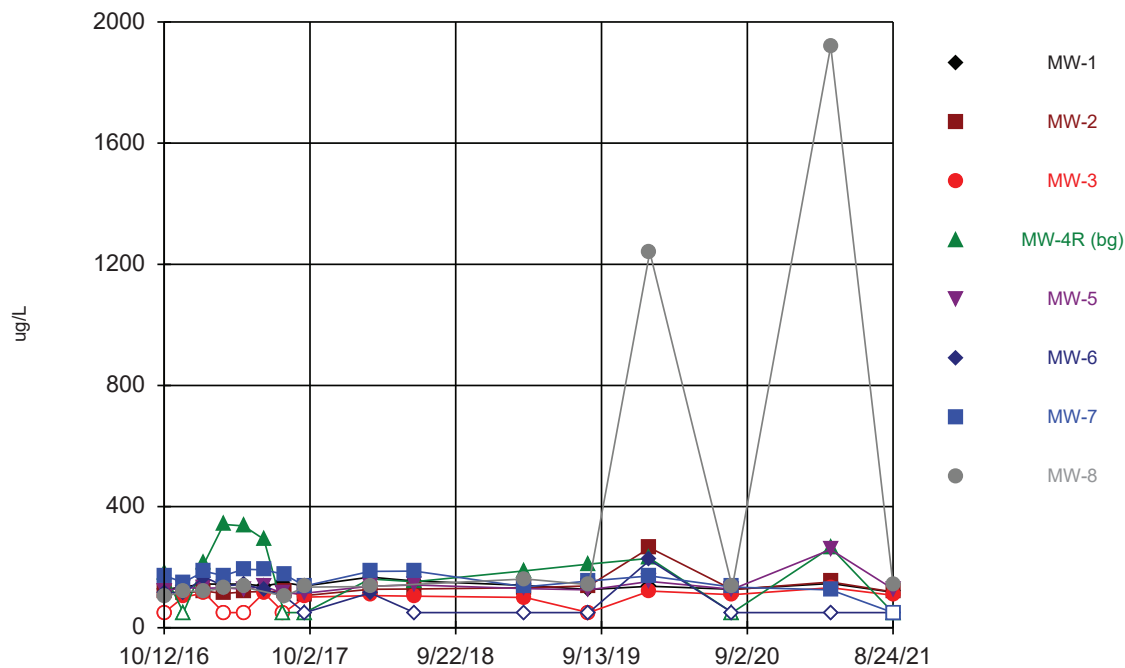
Time Series



Constituent: BERYLIUM Analysis Run 9/30/2021 9:29 PM View: Time Series

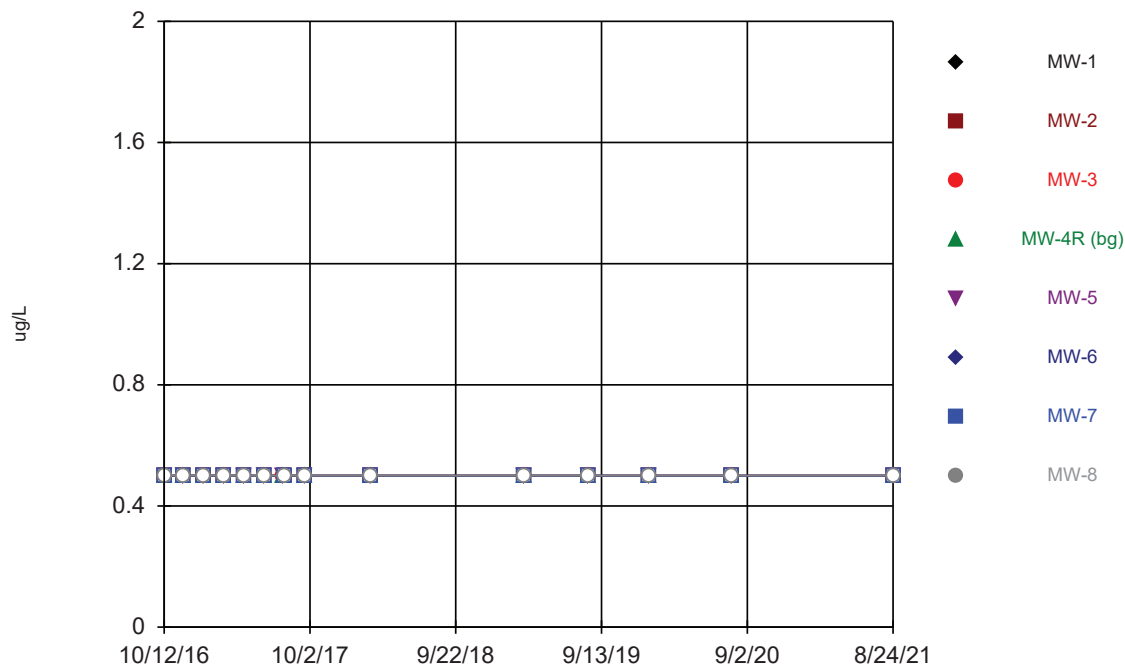
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



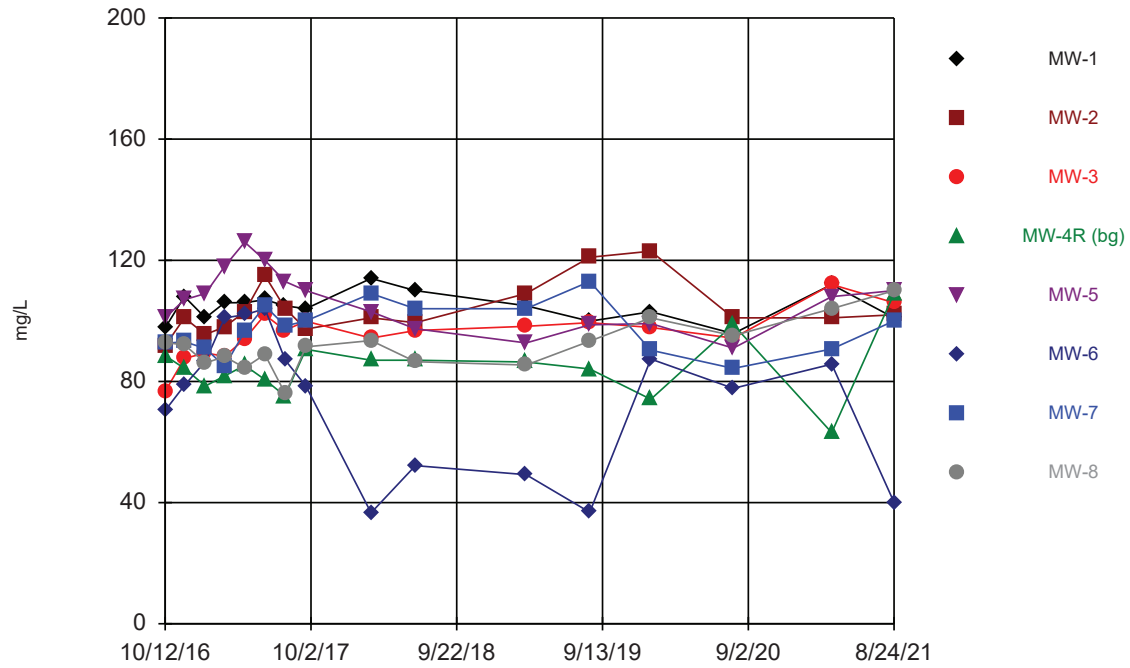
Constituent: Boron Analysis Run 9/30/2021 9:29 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



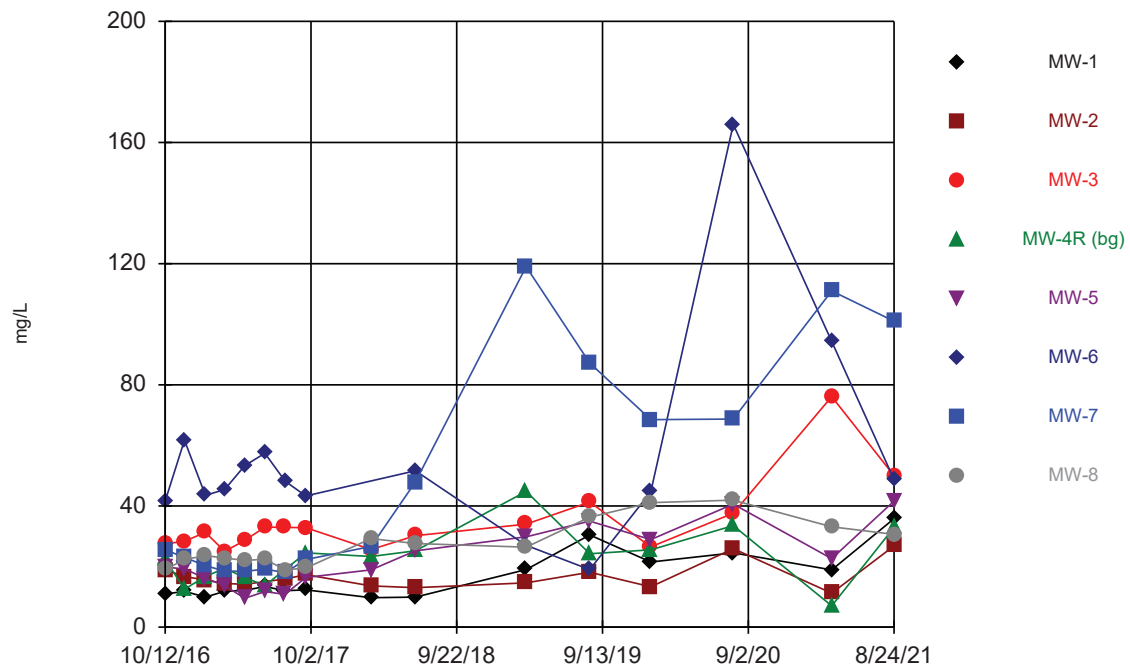
Constituent: Cadmium [total] Analysis Run 9/30/2021 9:29 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



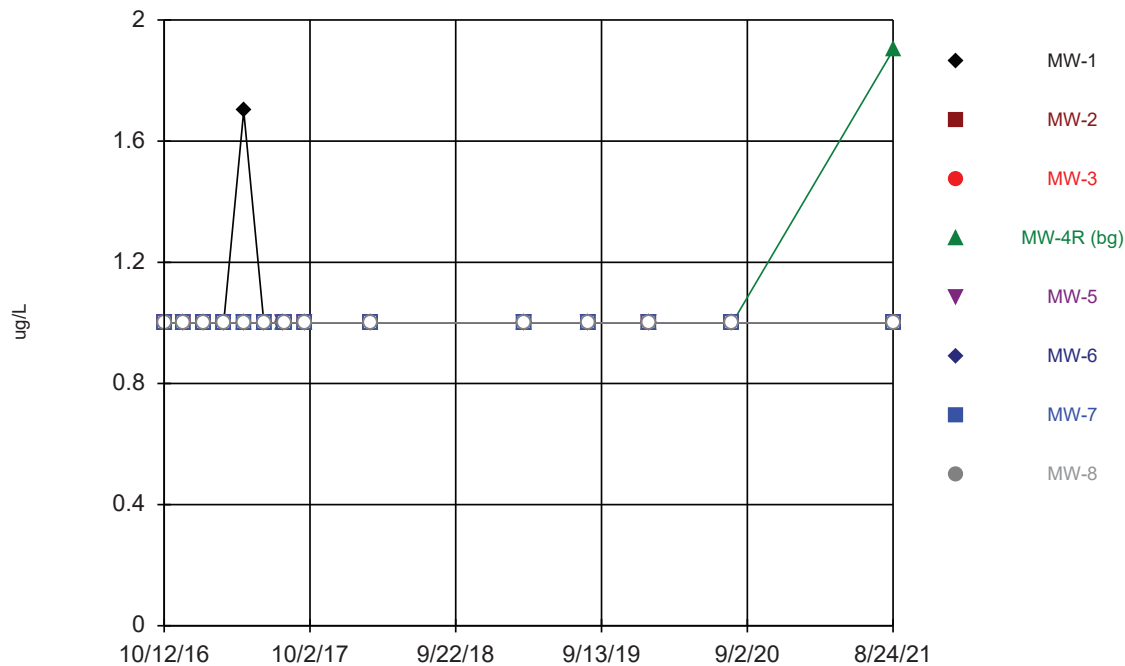
Constituent: Calcium Analysis Run 9/30/2021 9:29 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



Constituent: Chloride Analysis Run 9/30/2021 9:29 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

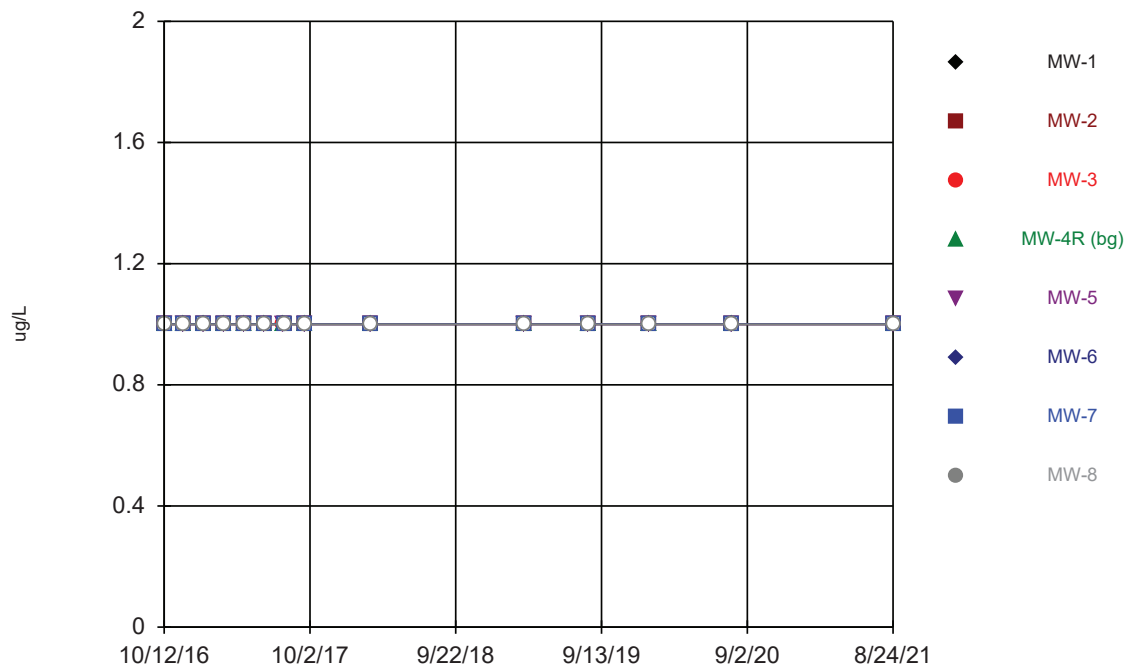
Time Series



Constituent: Chromium [total] Analysis Run 9/30/2021 9:29 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

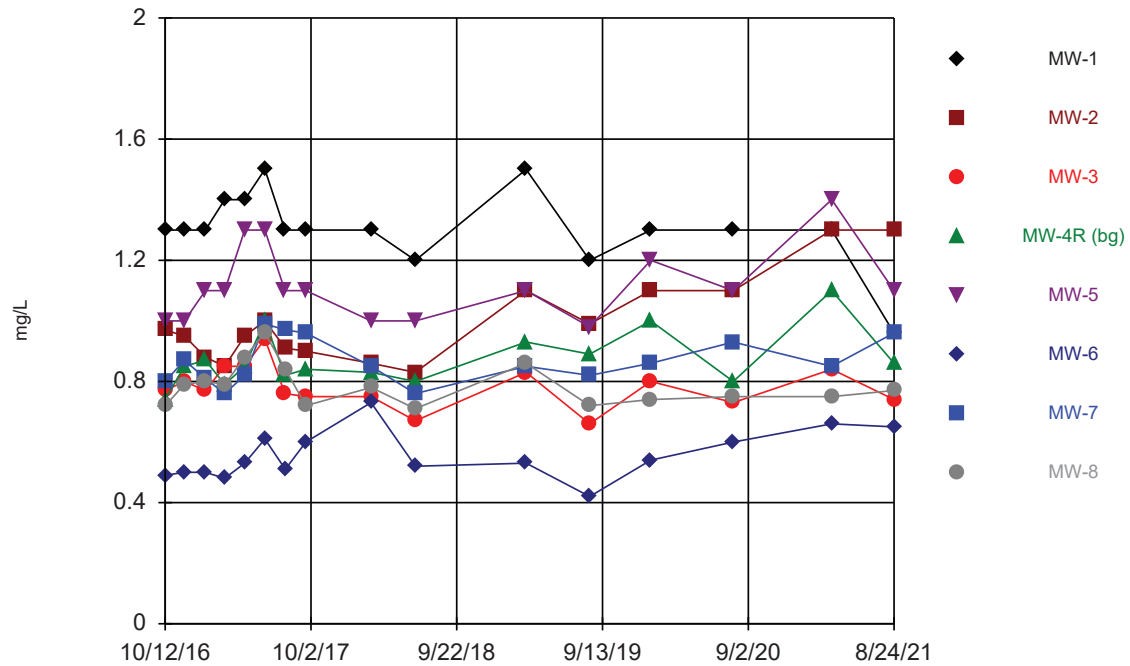
Time Series



Constituent: Cobalt [total] Analysis Run 9/30/2021 9:29 PM View: Time Series

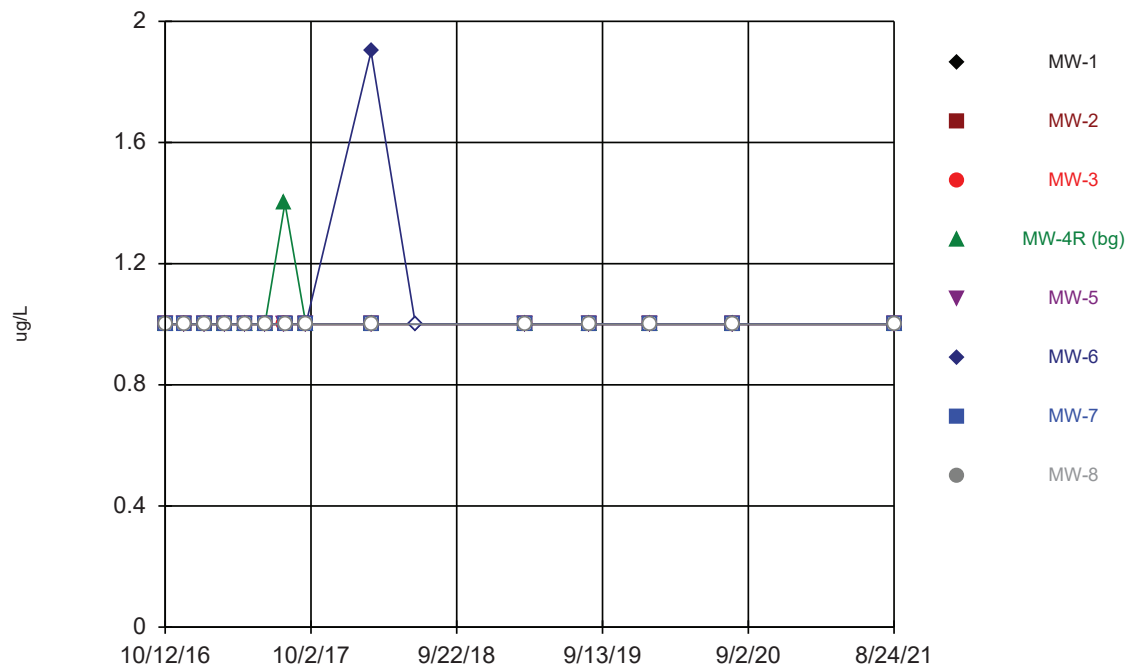
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



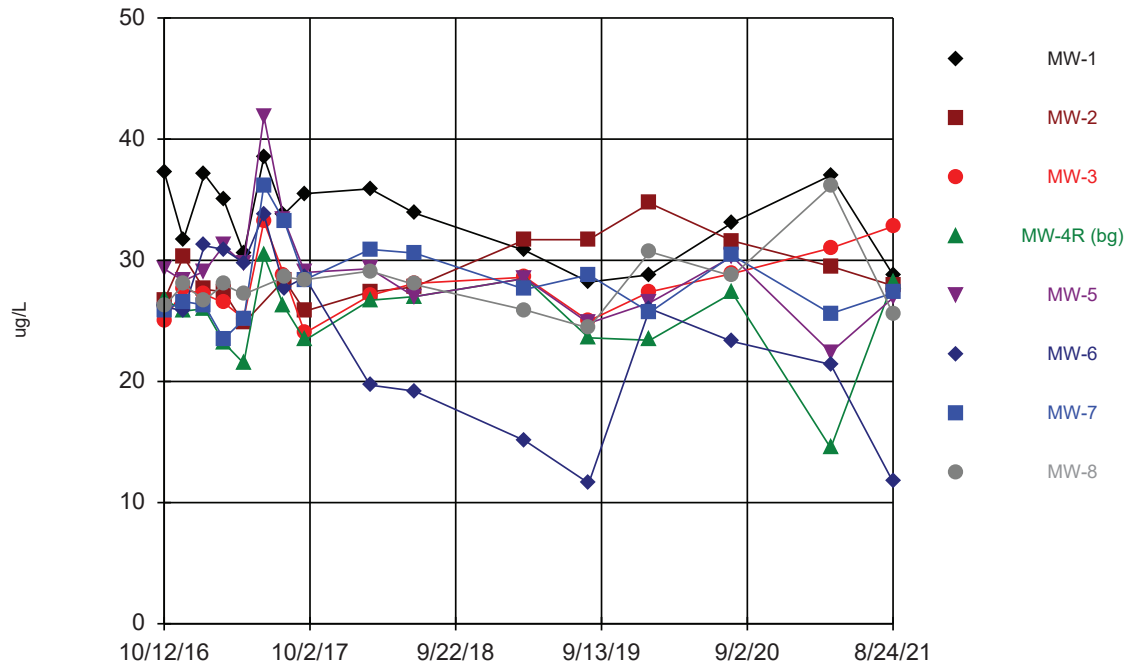
Constituent: Fluoride Analysis Run 9/30/2021 9:29 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



Constituent: Lead [total] Analysis Run 9/30/2021 9:29 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

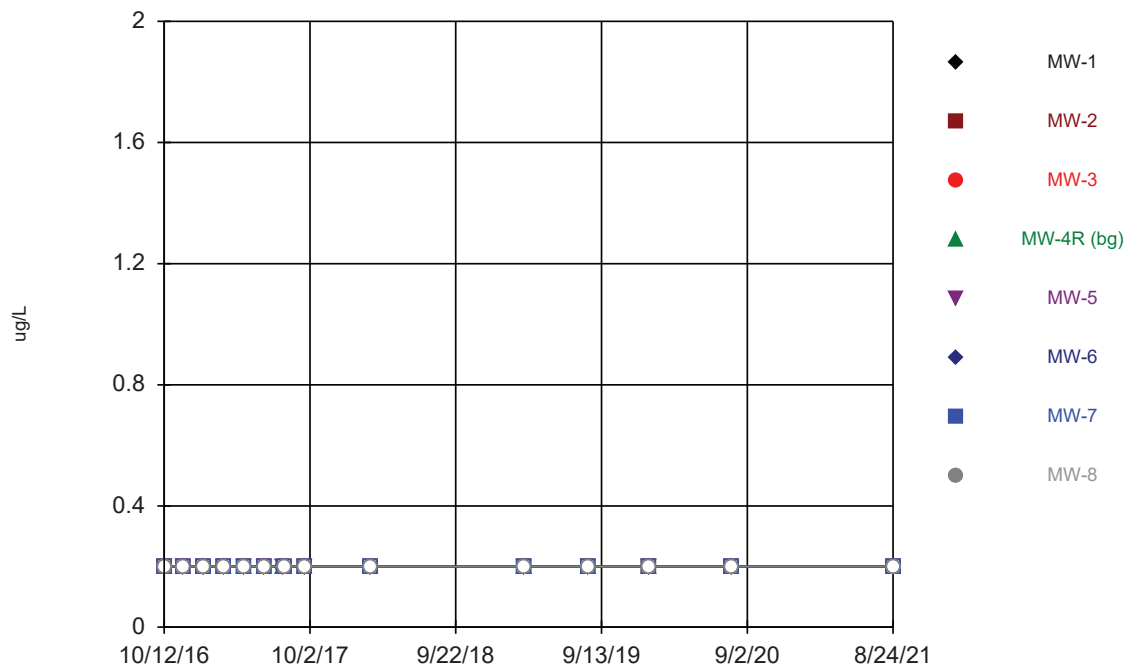
Time Series



Constituent: Lithium Analysis Run 9/30/2021 9:29 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

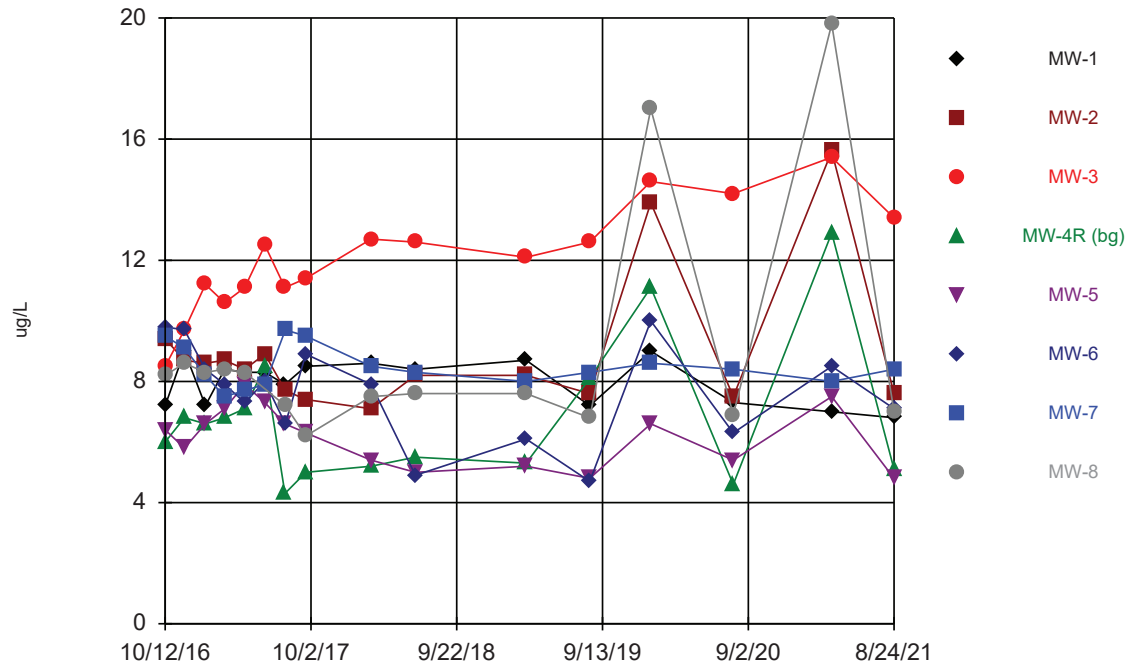
Time Series



Constituent: Mercury Analysis Run 9/30/2021 9:29 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

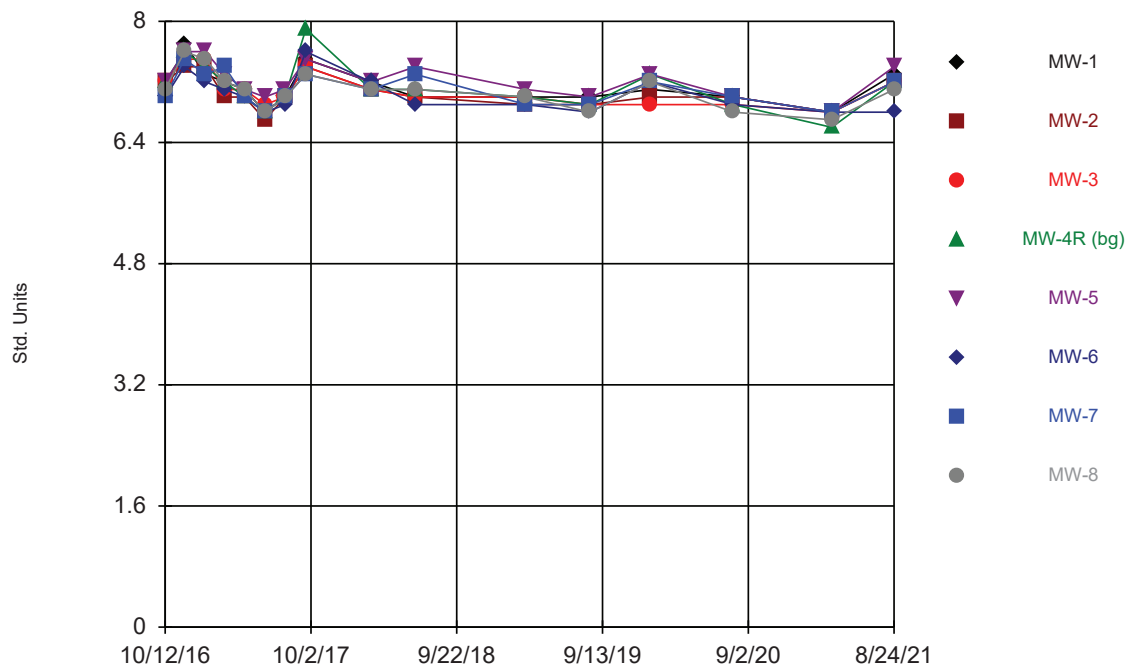
Time Series



Constituent: Molybdenum Analysis Run 9/30/2021 9:29 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

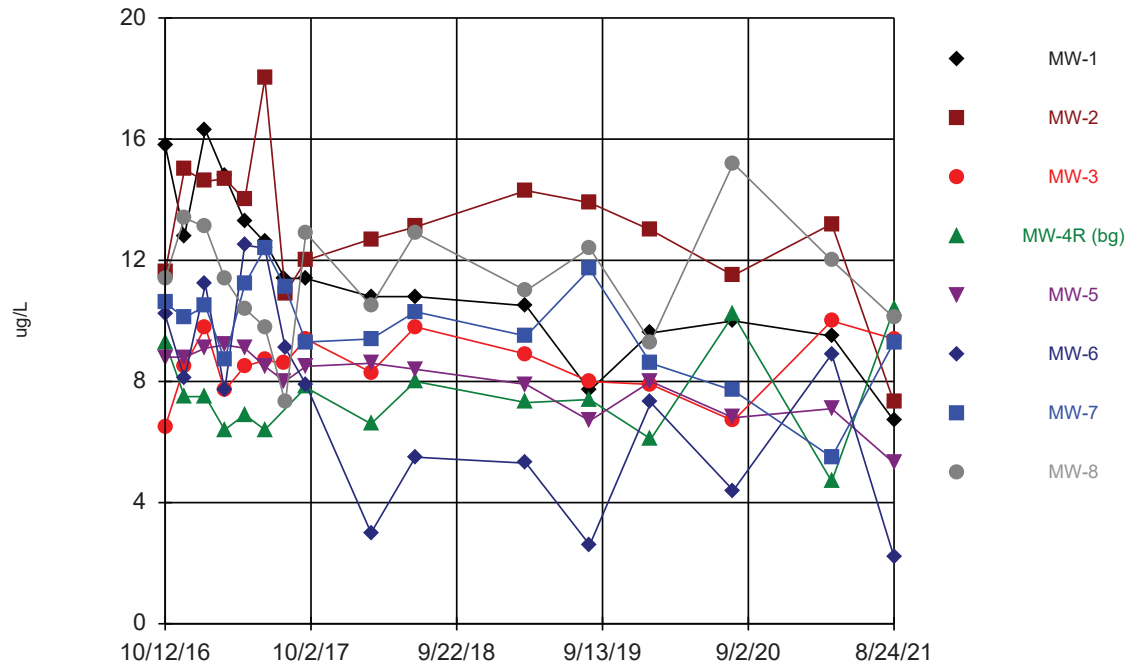
Time Series



Constituent: pH Analysis Run 9/30/2021 9:29 PM View: Time Series

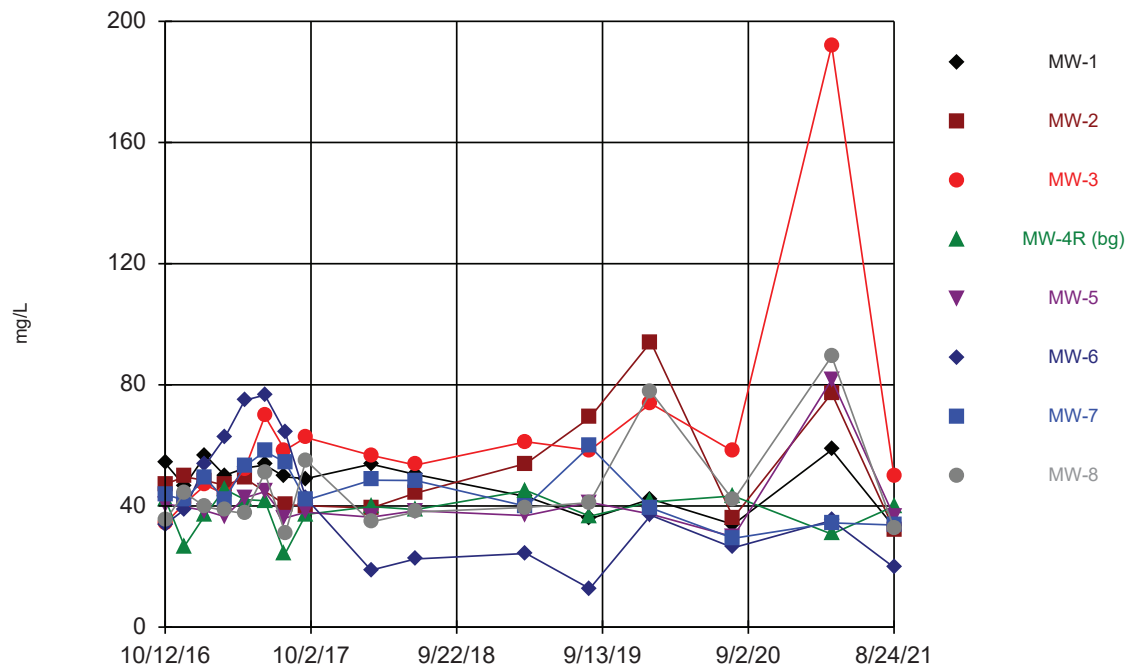
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



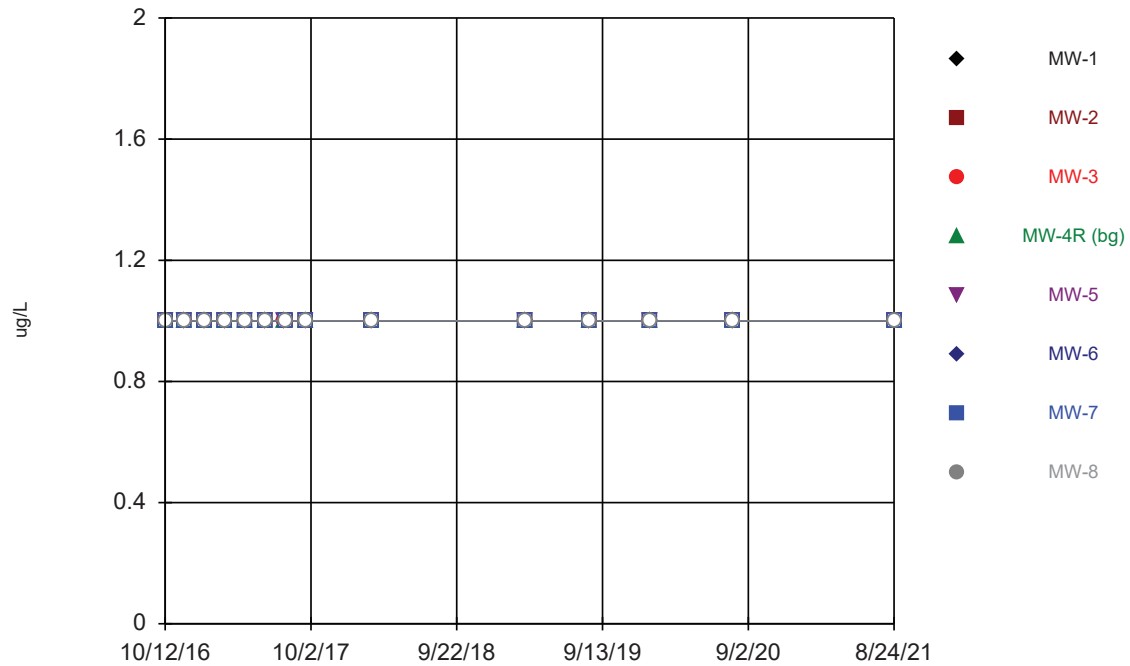
Constituent: Selenium [total] Analysis Run 9/30/2021 9:29 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



Constituent: Sulfate Analysis Run 9/30/2021 9:29 PM View: Time Series
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

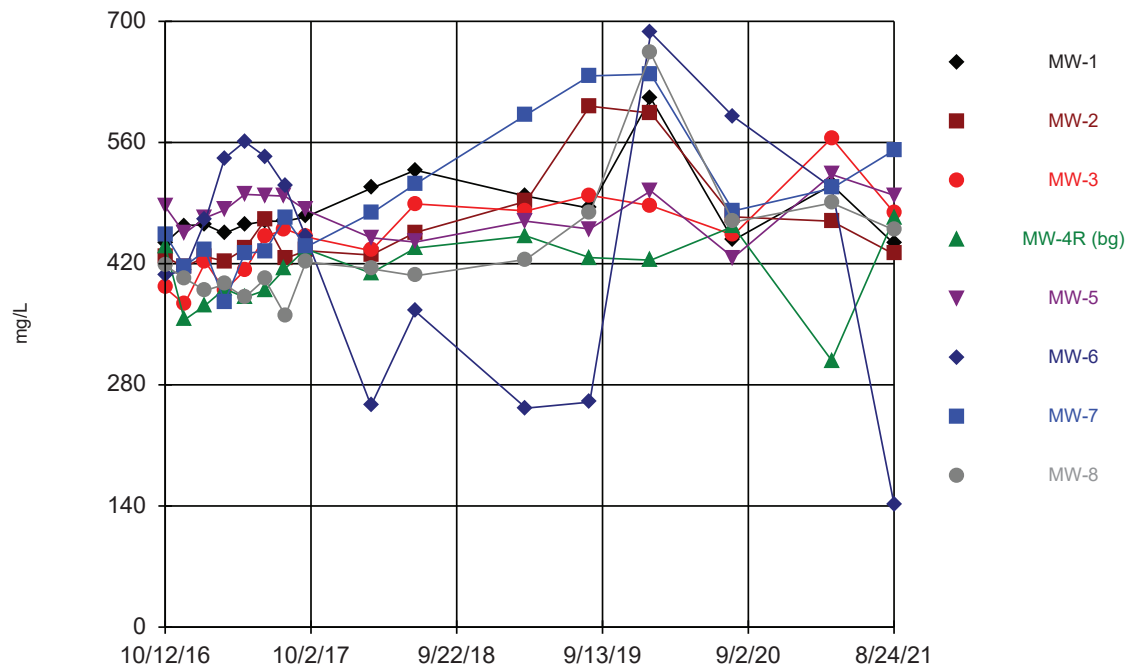
Time Series



Constituent: Thallium [total] Analysis Run 9/30/2021 9:29 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

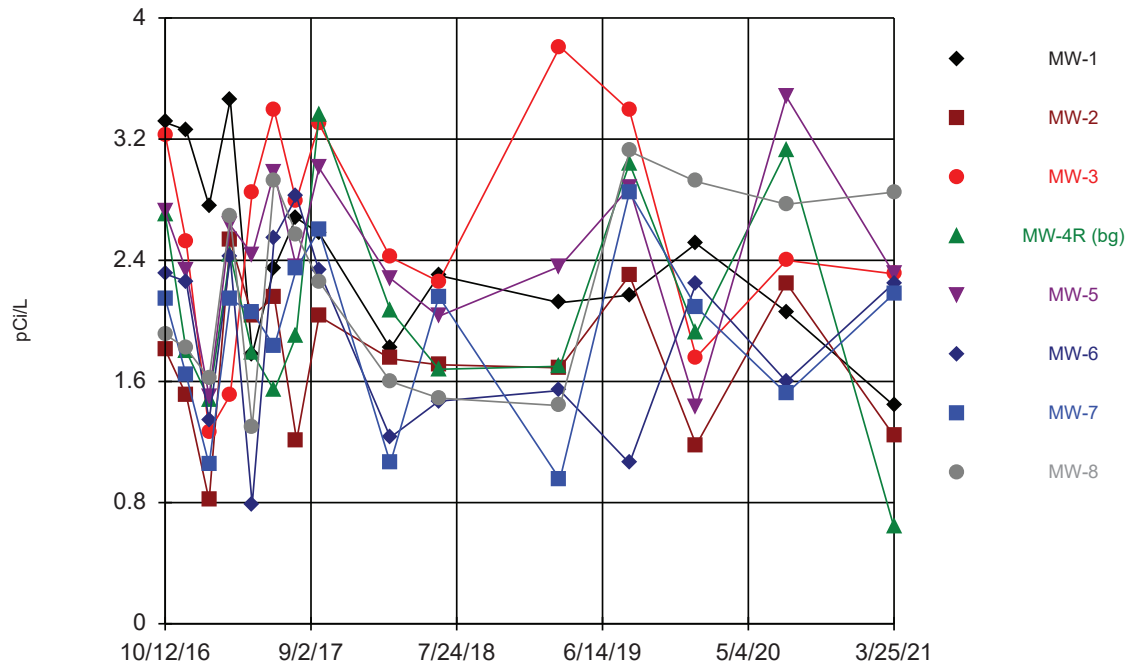
Time Series



Constituent: Total Dissolved Solids Analysis Run 9/30/2021 9:29 PM View: Time Series

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Time Series



Constituent: Total Radium Analysis Run 9/30/2021 9:29 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A.2 Intrawell Prediction Limits

Intrawell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 10/3/2021, 10:39 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic [total] (ug/L)	MW-1	4.26	n/a	8/24/2021	4.7	Yes	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-2	4.812	n/a	8/24/2021	4.1	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-3	3.318	n/a	8/24/2021	3.7	Yes	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-4R	5.005	n/a	8/24/2021	5.5	Yes	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-5	5.033	n/a	8/24/2021	4.6	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-6	4.283	n/a	8/24/2021	3.6	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-7	4.044	n/a	8/24/2021	4	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-8	3.006	n/a	8/24/2021	2.7	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-1	173.9	n/a	8/24/2021	126	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-2	111.8	n/a	8/24/2021	105	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-3	195.4	n/a	8/24/2021	194	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-4R	142.4	n/a	8/24/2021	134	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-5	169.1	n/a	8/24/2021	137	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-6	240.6	n/a	8/24/2021	64.8	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-7	134.3	n/a	8/24/2021	133	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-8	180.5	n/a	8/24/2021	172	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-1	166.5	n/a	8/24/2021	129.8	No	10	0	No	0.000...	Param 1 of 2 Deseas
Boron (ug/L)	MW-2	138.6	n/a	8/24/2021	118	No	9	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-3	137.2	n/a	8/24/2021	107	No	10	40	x^3	0.000...	Param 1 of 2
Boron (ug/L)	MW-5	155.1	n/a	8/24/2021	128	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-8	164.8	n/a	8/24/2021	142	No	8	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-1	118.4	n/a	8/24/2021	101	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-2	117.9	n/a	8/24/2021	102	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-3	113.1	n/a	8/24/2021	106	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-4R	97.25	n/a	8/24/2021	109	Yes	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-5	135.4	n/a	8/24/2021	110	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-6	140.9	n/a	8/24/2021	40.1	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-7	117.8	n/a	8/24/2021	100	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-8	102.6	n/a	8/24/2021	110	Yes	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-1	14.8	n/a	8/24/2021	35.8	Yes	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-2	21.15	n/a	8/24/2021	26.8	Yes	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-3	37.83	n/a	8/24/2021	50	Yes	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-4R	33.36	n/a	8/24/2021	32.9	No	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-5	29.6	n/a	8/24/2021	41.6	Yes	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-6	70.05	n/a	8/24/2021	48.7	No	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-7	47.9	n/a	8/24/2021	101	Yes	10	0	n/a	0.01476	NP (normality) 1 of 2
Chloride (mg/L)	MW-8	32.29	n/a	8/24/2021	30.6	No	10	0	No	0.000...	Param 1 of 2
Chromium [total] (ug/L)	MW-4R	1	n/a	8/24/2021	1.9	Yes	9	100	n/a	0.01809	NP (NDs) 1 of 2
Fluoride (mg/L)	MW-1	1.559	n/a	8/24/2021	0.96	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-2	1.066	n/a	8/24/2021	1.3	Yes	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-3	0.9966	n/a	8/24/2021	0.74	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-4R	1.028	n/a	8/24/2021	0.86	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-5	1.44	n/a	8/24/2021	1.1	No	10	0	x^(1/3)	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-6	0.7643	n/a	8/24/2021	0.65	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-7	1.099	n/a	8/24/2021	0.96	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-8	1.017	n/a	8/24/2021	0.77	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-1	41.87	n/a	8/24/2021	28.8	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-2	31.96	n/a	8/24/2021	27.9	No	9	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-3	34.4	n/a	8/24/2021	32.8	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-4R	32.61	n/a	8/24/2021	28.2	No	10	0	No	0.000...	Param 1 of 2

Intrawell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 10/3/2021, 10:39 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Lithium (ug/L)	MW-5	41.9	n/a	8/24/2021	26.9	No	10	0	n/a	0.01476	NP (normality) 1 of 2
Lithium (ug/L)	MW-6	40.59	n/a	8/24/2021	11.7	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-7	39.77	n/a	8/24/2021	27.3	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-8	30.55	n/a	8/24/2021	25.6	No	9	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-1	9.808	n/a	8/24/2021	6.8	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-2	10.3	n/a	8/24/2021	7.6	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-3	14.83	n/a	8/24/2021	13.4	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-4R	9.597	n/a	8/24/2021	5.1	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-5	8.885	n/a	8/24/2021	4.8	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-6	12	n/a	8/24/2021	7.1	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-7	10.83	n/a	8/24/2021	8.4	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-8	10.08	n/a	8/24/2021	7	No	9	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-1	7.92	6.44	8/24/2021	7.3	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-2	7.76	6.48	8/24/2021	7.2	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-3	7.779	6.581	8/24/2021	7.2	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-4R	8.13	6.33	8/24/2021	7.2	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-5	7.901	6.699	8/24/2021	7.4	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-6	7.798	6.422	8/24/2021	6.8	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-7	7.786	6.554	8/24/2021	7.2	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-8	7.834	6.526	8/24/2021	7.1	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-1	18.65	n/a	8/24/2021	6.7	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-2	19.42	n/a	8/24/2021	7.3	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-3	11.34	n/a	8/24/2021	9.4	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-4R	10.15	n/a	8/24/2021	10.4	Yes	9	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-5	9.742	n/a	8/24/2021	5.3	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-6	17.14	n/a	8/24/2021	2.2	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-7	13.35	n/a	8/24/2021	9.3	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-8	16.6	n/a	8/24/2021	10.1	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-1	59.98	n/a	8/24/2021	33	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-2	57.18	n/a	8/24/2021	32.3	No	9	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-3	81.59	n/a	8/24/2021	49.8	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-4R	56.76	n/a	8/24/2021	39.9	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-5	47.08	n/a	8/24/2021	36.5	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-6	106.5	n/a	8/24/2021	19.7	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-7	64.05	n/a	8/24/2021	33.7	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-8	61.47	n/a	8/24/2021	32.6	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	543.3	n/a	8/24/2021	443	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-2	480.2	n/a	8/24/2021	431	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-3	529	n/a	8/24/2021	479	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-4R	485.6	n/a	8/24/2021	472	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-5	534.5	n/a	8/24/2021	499	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-6	716.8	n/a	8/24/2021	142	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-7	548.4	n/a	8/24/2021	551	Yes	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-8	451.1	n/a	8/24/2021	459	Yes	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-1	4.273	n/a	8/24/2021	0.783	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-2	3.12	n/a	8/24/2021	2.04	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-3	4.566	n/a	8/24/2021	2.15	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-4R	3.725	n/a	8/24/2021	2.34	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-5	3.682	n/a	8/24/2021	2.08	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-6	3.848	n/a	8/24/2021	0.213	No	10	0	No	0.000...	Param 1 of 2

Intrawell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

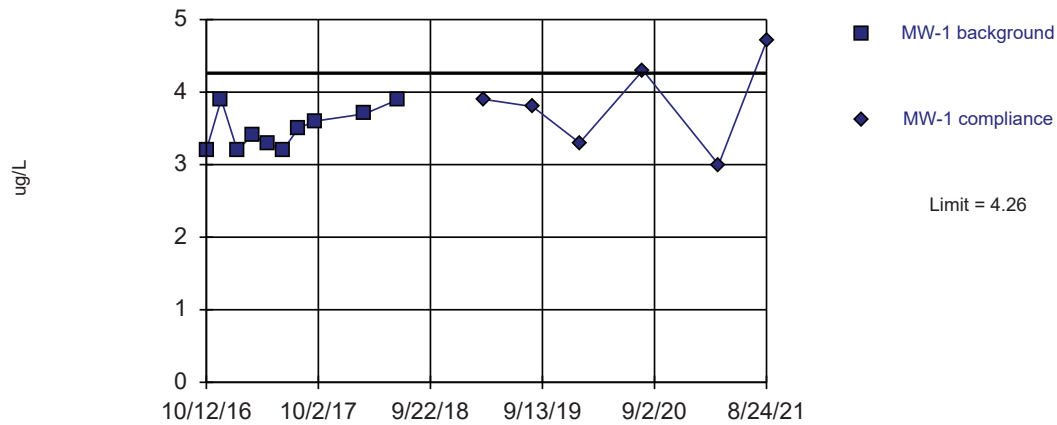
Data: Fremont Department of Utilities Groundwater

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<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Total Radium (pCi/L)	MW-7	3.344	n/a	8/24/2021	1.83	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-8	3.579	n/a	8/24/2021	2.31	No	10	0	No	0.000...	Param 1 of 2

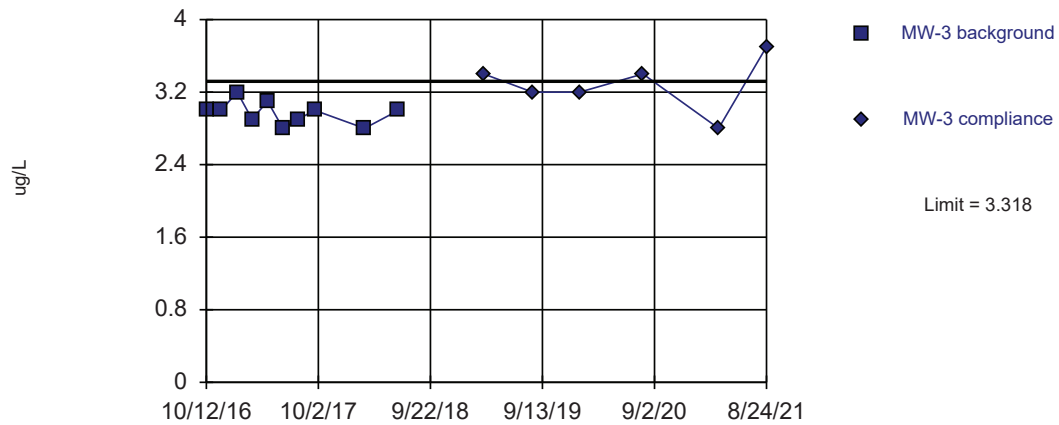
Exceeds Limit

Prediction Limit Intrawell Parametric



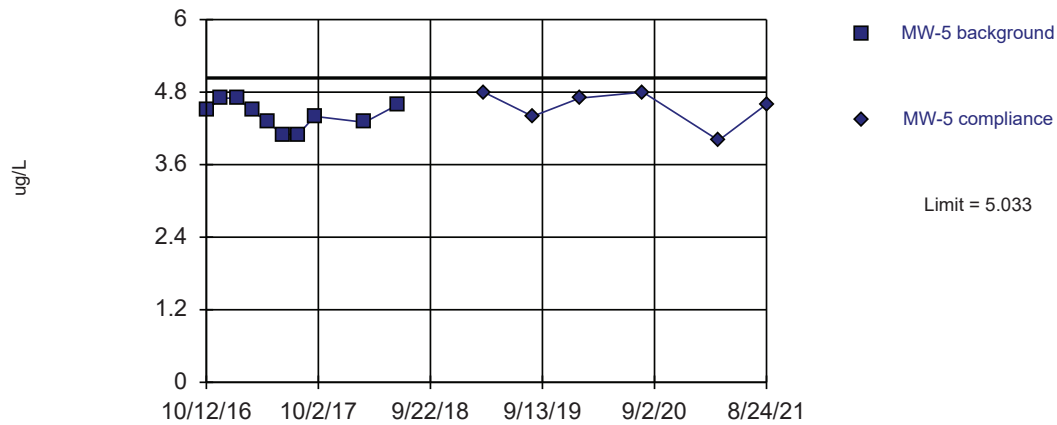
Exceeds Limit

Prediction Limit Intrawell Parametric



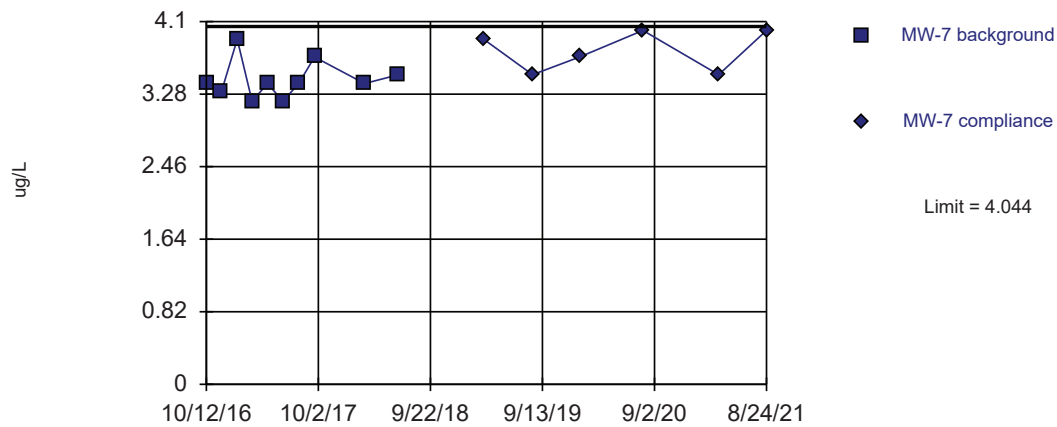
Within Limit

Prediction Limit Intrawell Parametric



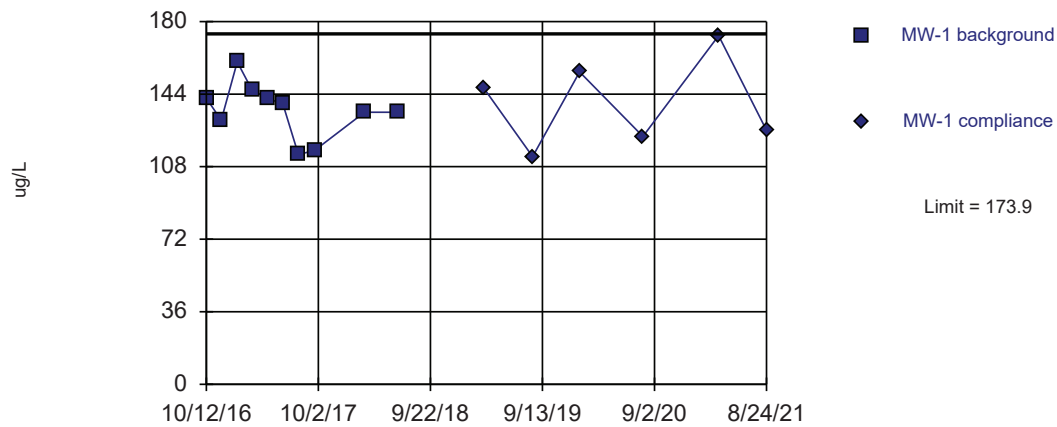
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

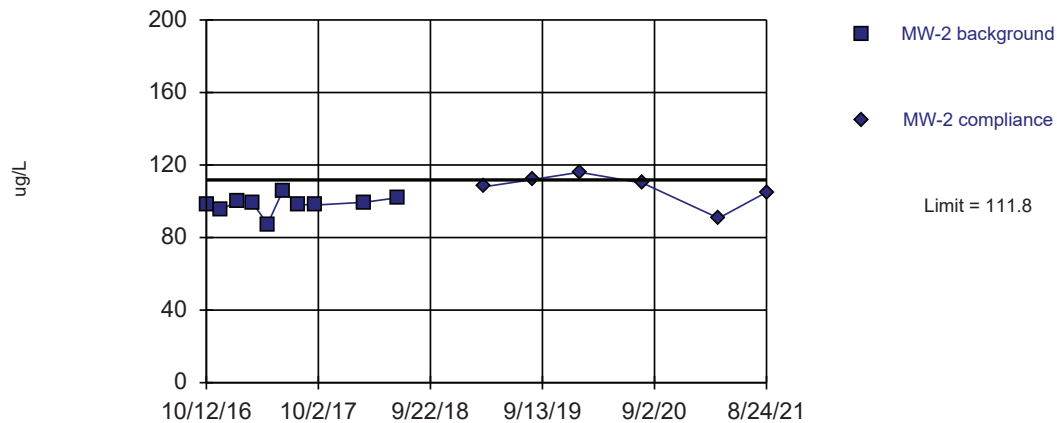


Background Data Summary: Mean=136, Std. Dev.=13.61, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9422, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 10/3/2021 10:23 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

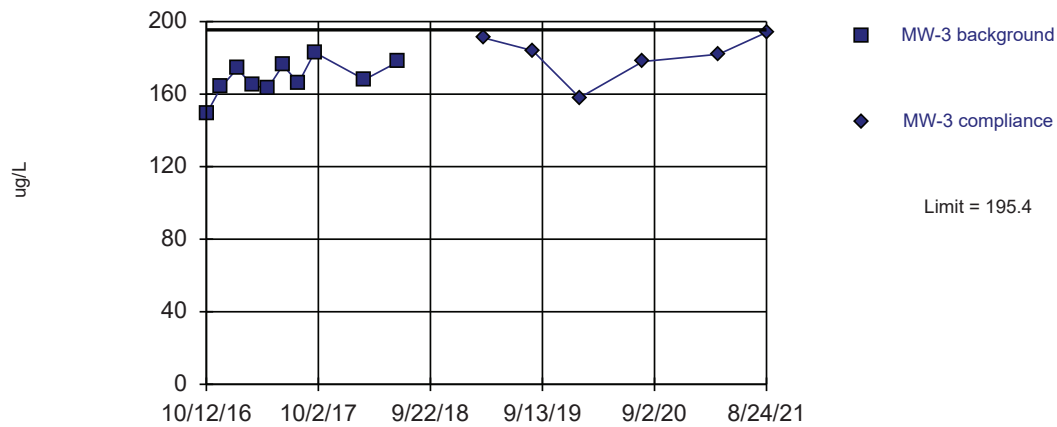


Background Data Summary: Mean=98.45, Std. Dev.=4.784, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8827, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 10/3/2021 10:23 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

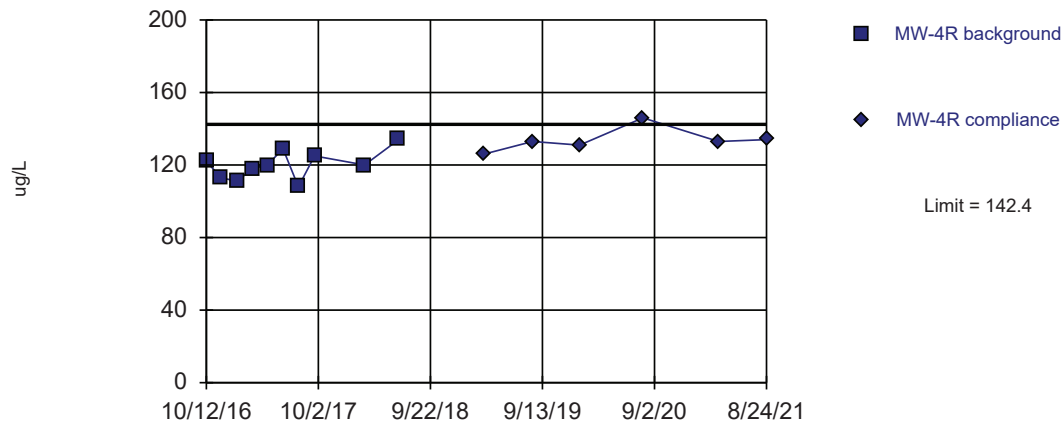


Background Data Summary: Mean=168.6, Std. Dev.=9.64, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9508, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 10/3/2021 10:23 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

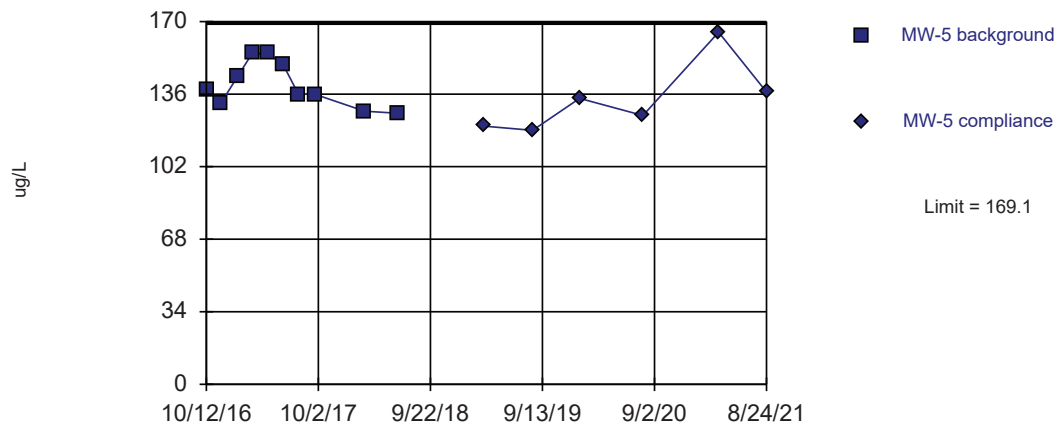


Background Data Summary: Mean=120, Std. Dev.=8.055, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9784, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 10/3/2021 10:23 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

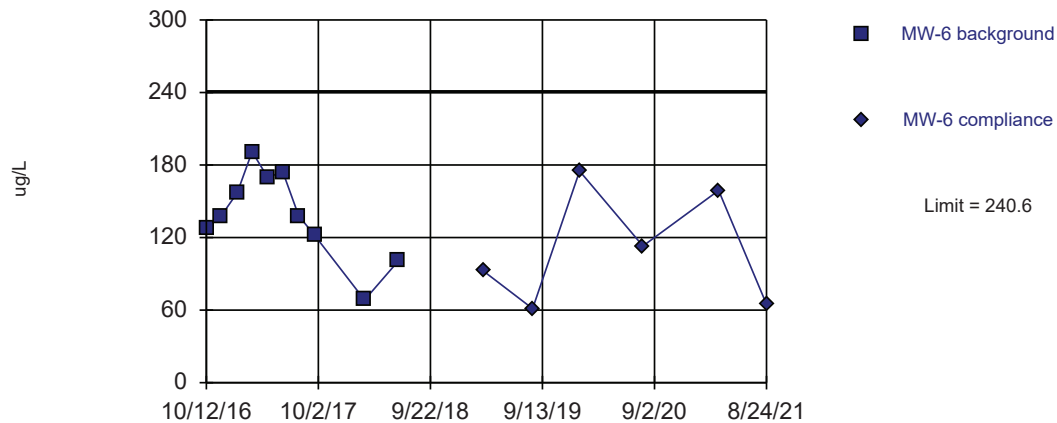


Background Data Summary: Mean=140.1, Std. Dev.=10.43, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9113, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 10/3/2021 10:23 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

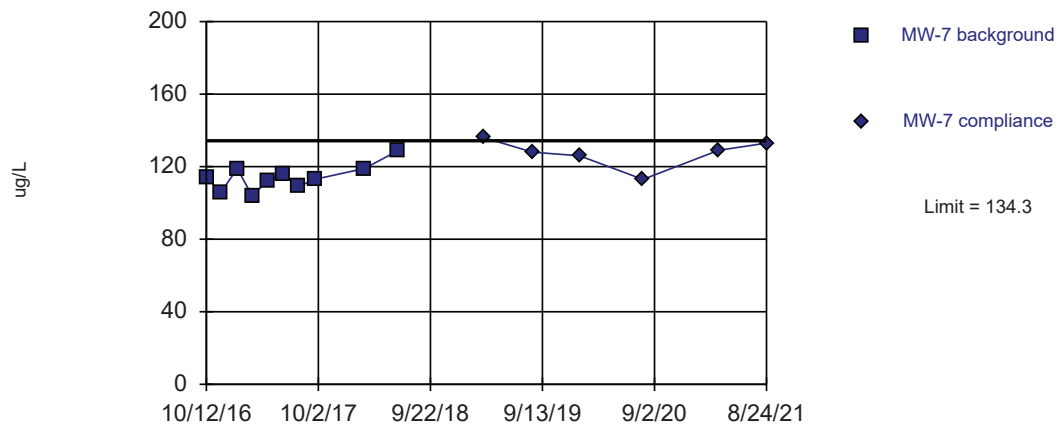


Background Data Summary: Mean=138.7, Std. Dev.=36.6, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9715, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Barium [total] Analysis Run 10/3/2021 10:23 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

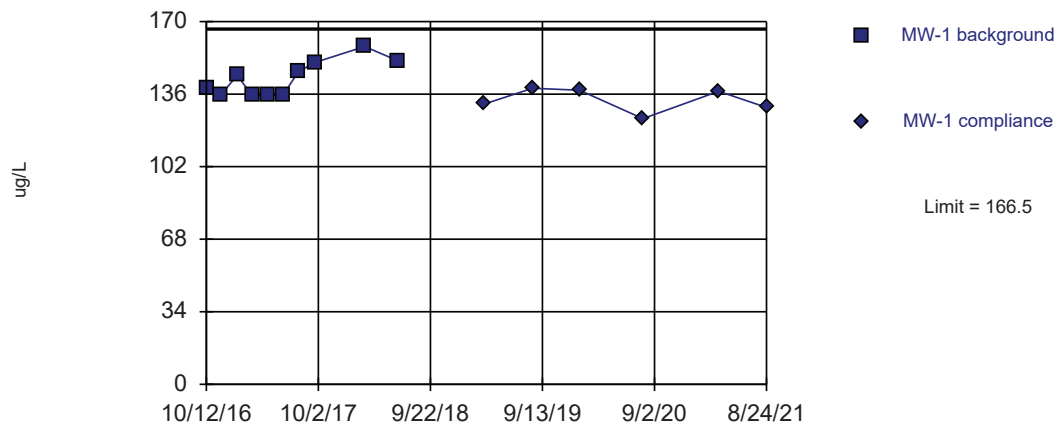
Within Limit

Prediction Limit Intrawell Parametric



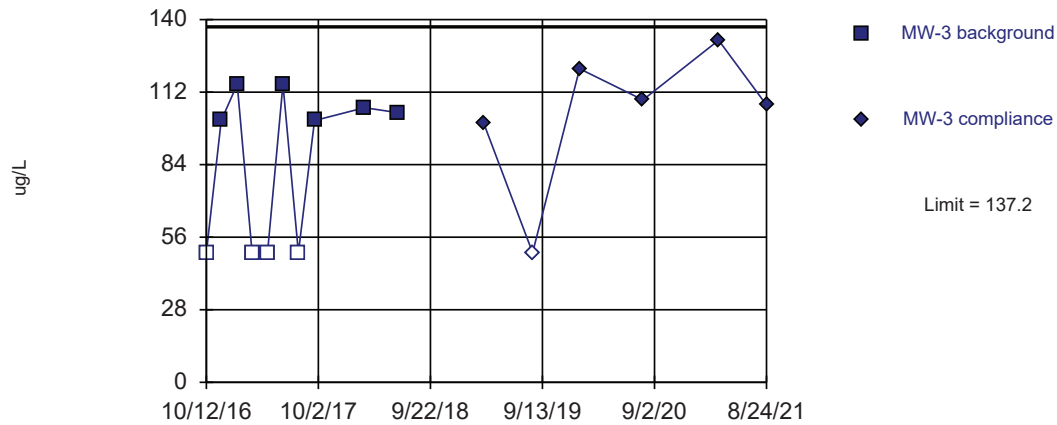
Within Limit

Prediction Limit Intrawell Parametric



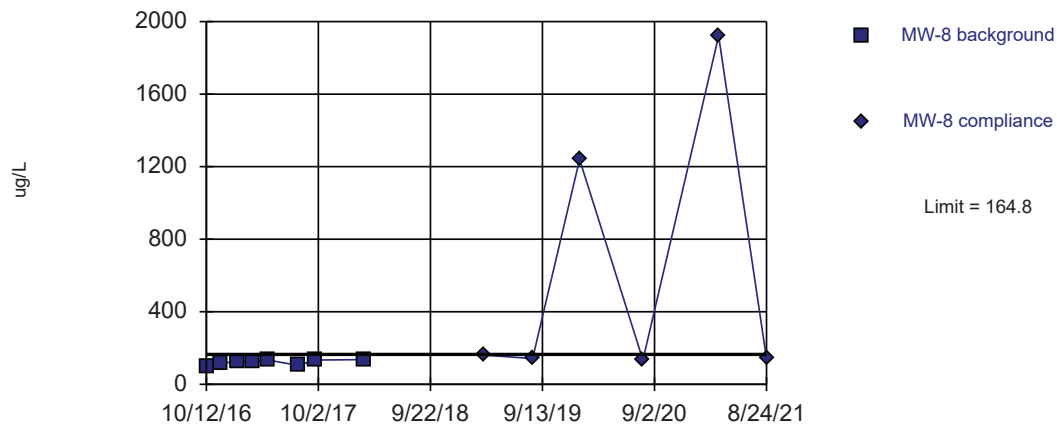
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

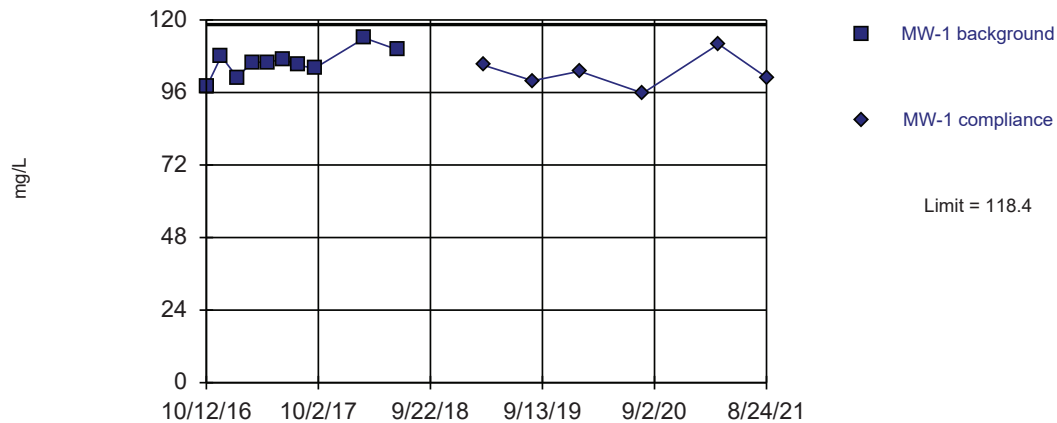


Background Data Summary: Mean=122.6, Std. Dev.=13.49, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8556, critical = 0.749. Kappa = 3.123 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Boron Analysis Run 10/3/2021 10:23 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

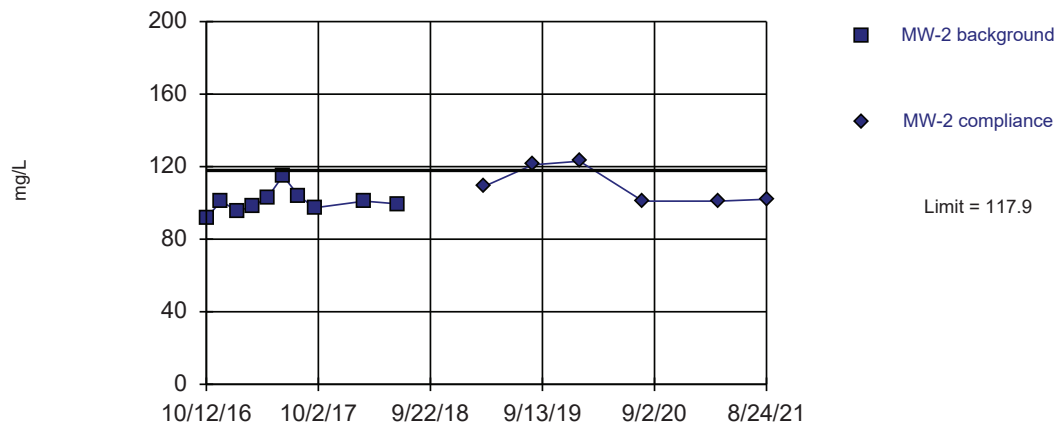


Background Data Summary: Mean=105.9, Std. Dev.=4.518, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9799, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 10/3/2021 10:23 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

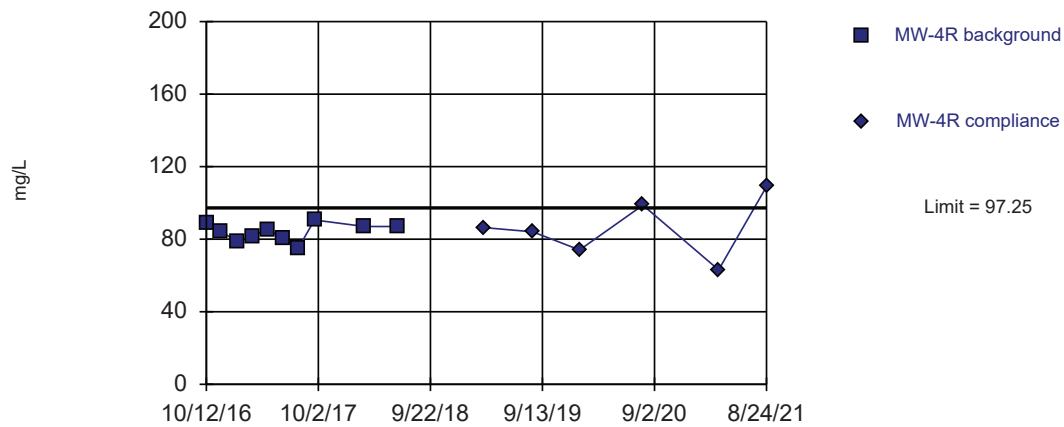
Within Limit

Prediction Limit Intrawell Parametric



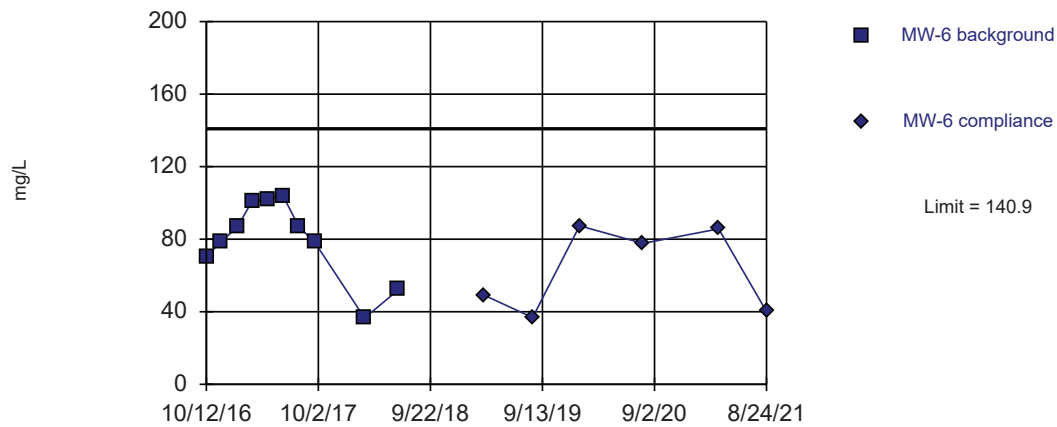
Exceeds Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric



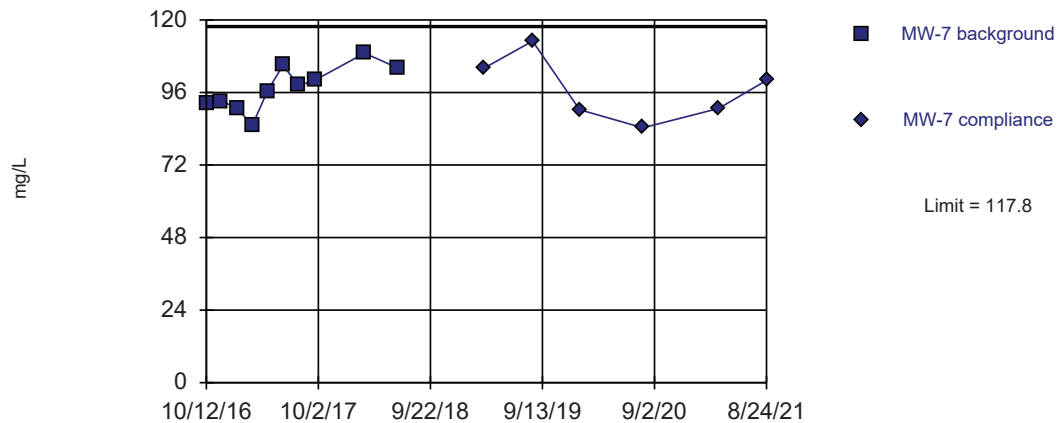
Background Data Summary: Mean=79.7, Std. Dev.=21.97, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9128, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



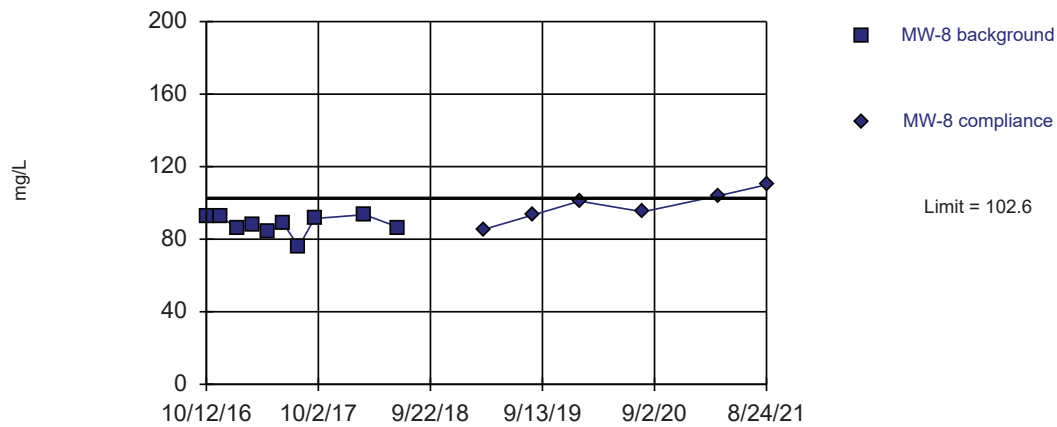
Background Data Summary: Mean=97.44, Std. Dev.=7.317, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9838, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Calcium Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

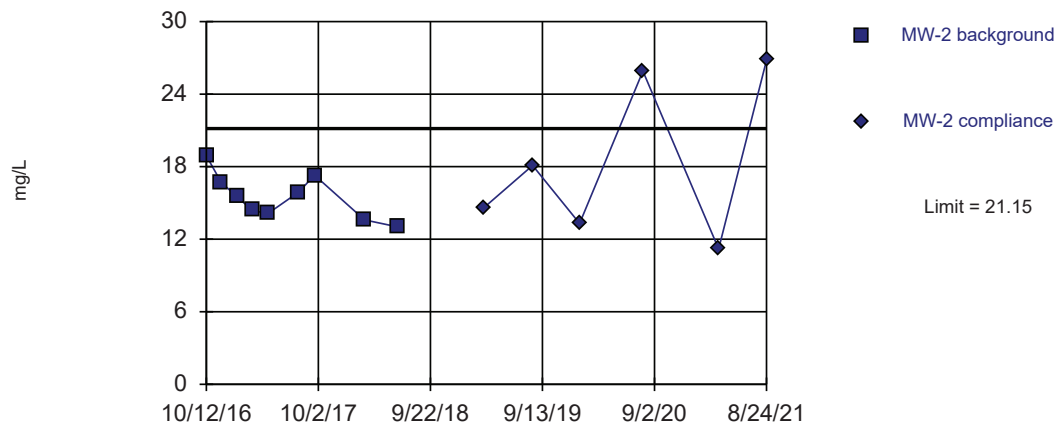
Exceeds Limit

Prediction Limit Intrawell Parametric



Exceeds Limit

Prediction Limit Intrawell Parametric

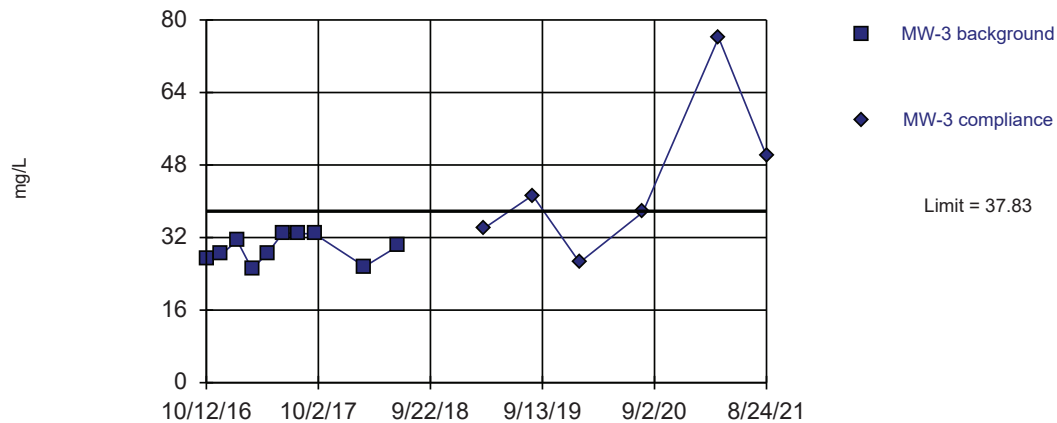


Background Data Summary: Mean=15.49, Std. Dev.=1.918, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9653, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

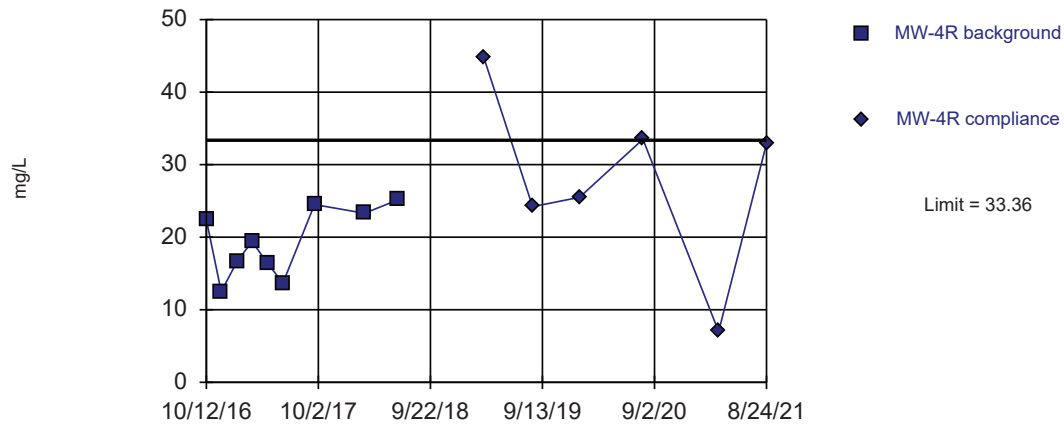


Background Data Summary: Mean=29.52, Std. Dev.=2.984, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9142, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

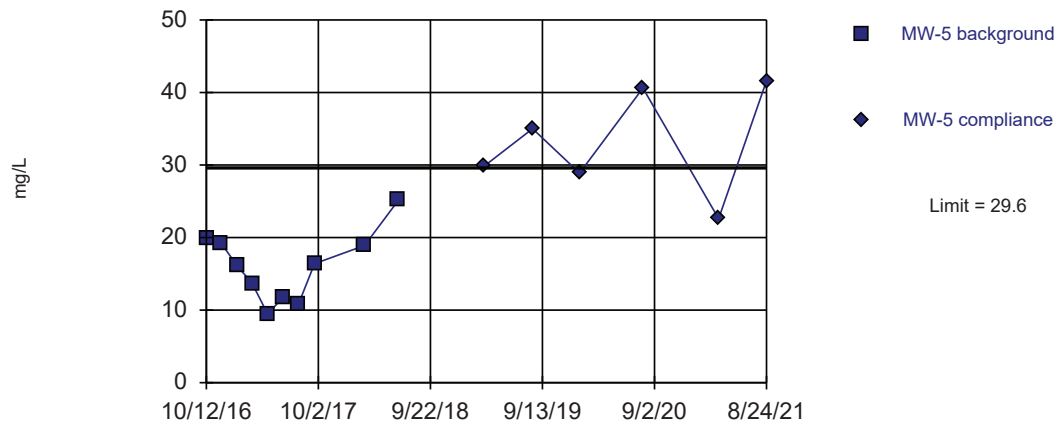


Background Data Summary: Mean=19.34, Std. Dev.=4.746, n=9. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9211, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric

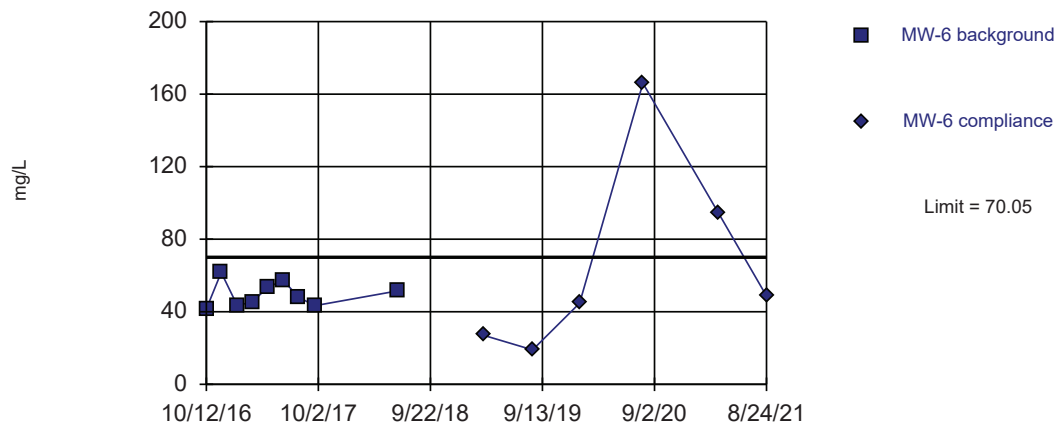


Background Data Summary: Mean=16.13, Std. Dev.=4.84, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9601, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Chloride Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

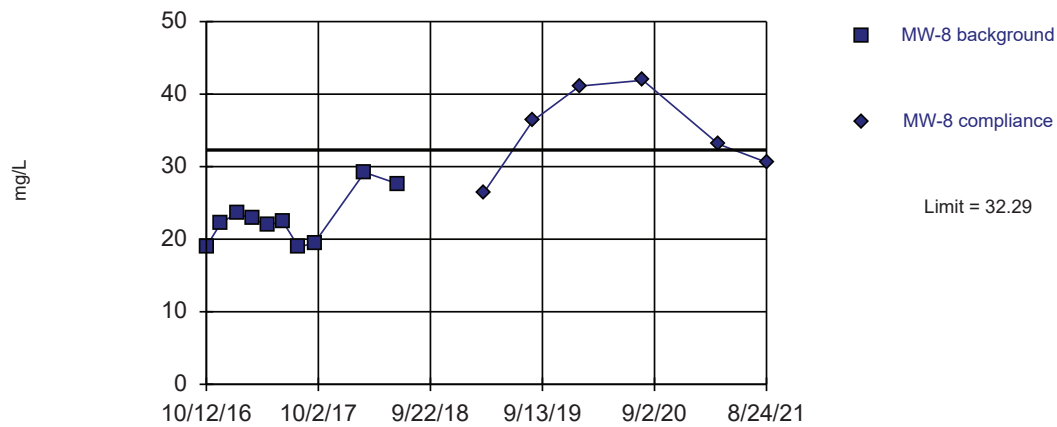
Within Limit

Prediction Limit Intrawell Parametric



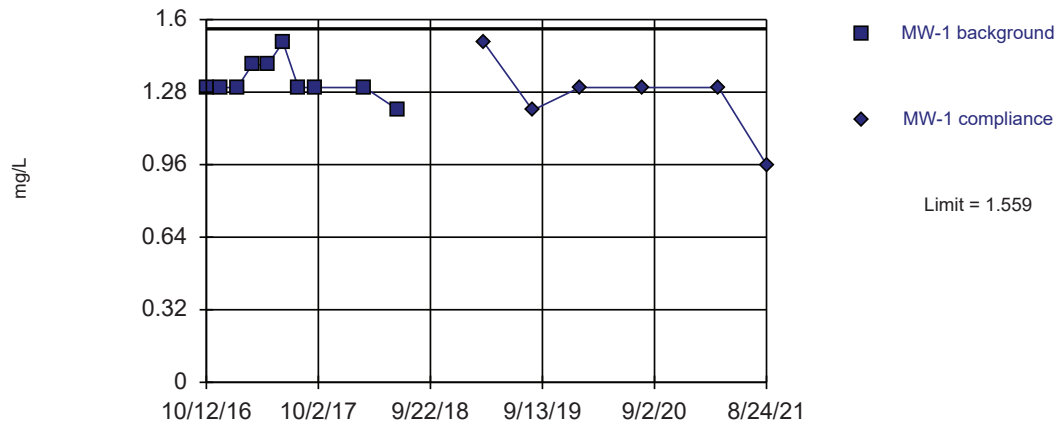
Within Limit

Prediction Limit Intrawell Parametric



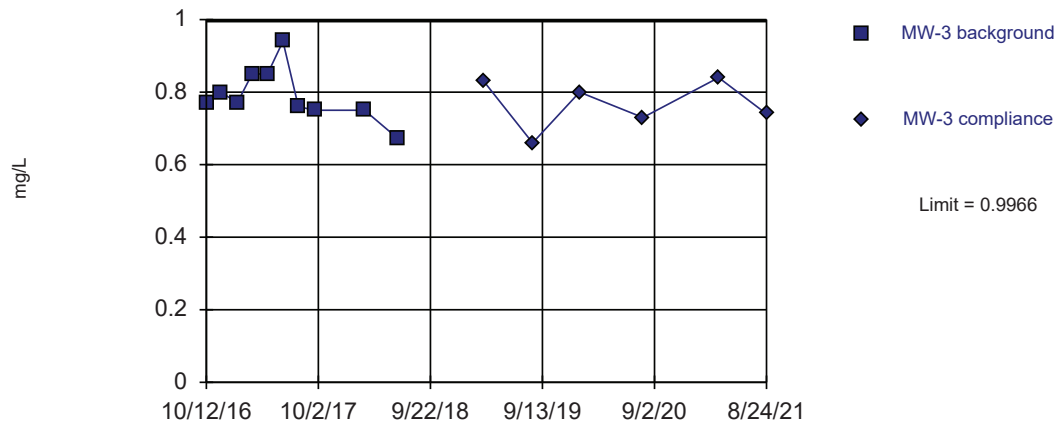
Within Limit

Prediction Limit Intrawell Parametric



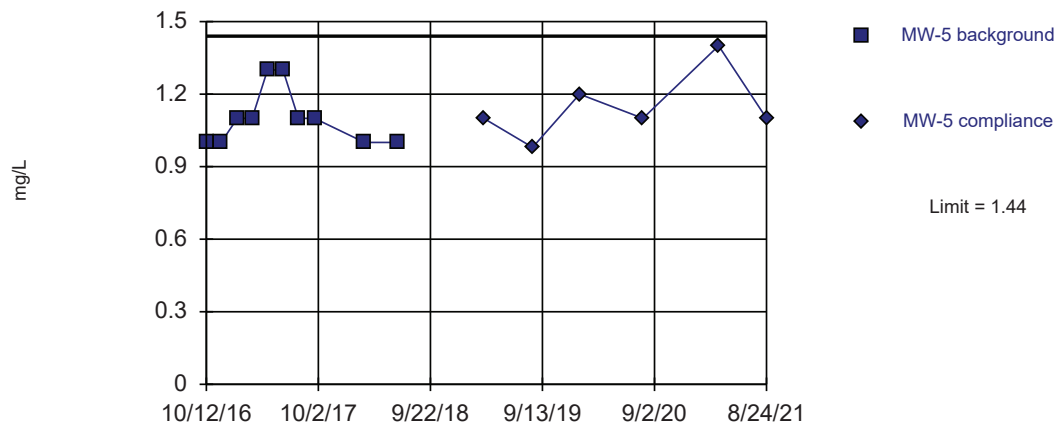
Within Limit

Prediction Limit Intrawell Parametric



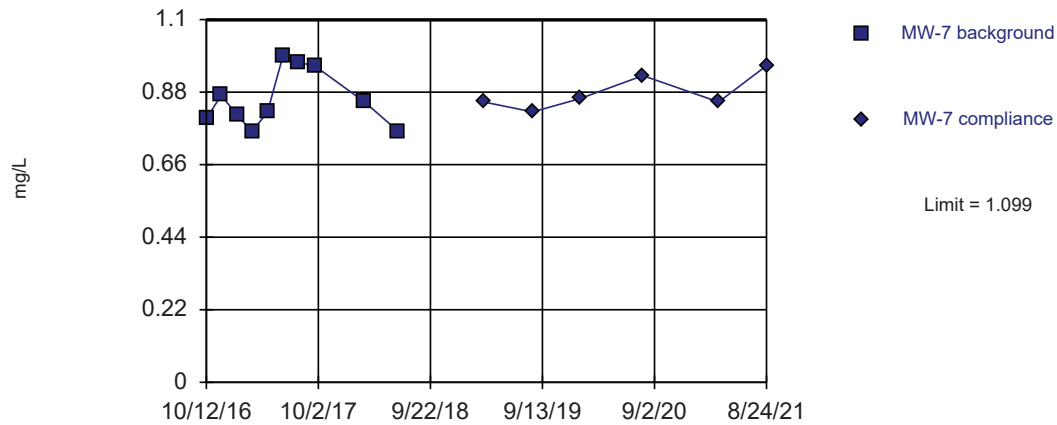
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

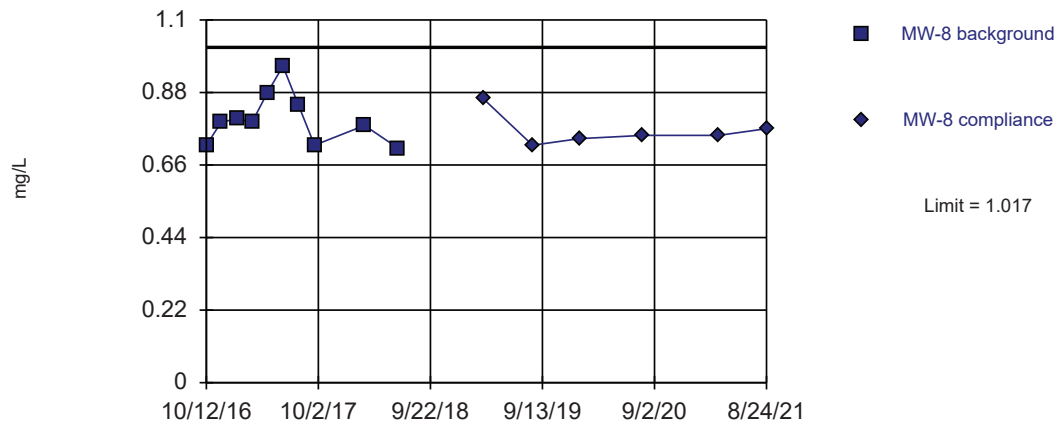


Background Data Summary: Mean=0.859, Std. Dev.=0.08621, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8894, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Fluoride Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

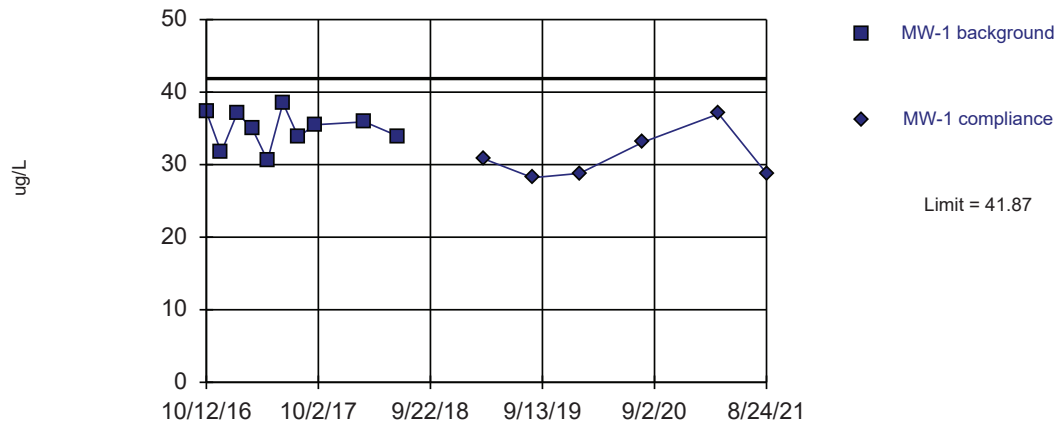


Background Data Summary: Mean=0.799, Std. Dev.=0.07824, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.913, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Fluoride Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

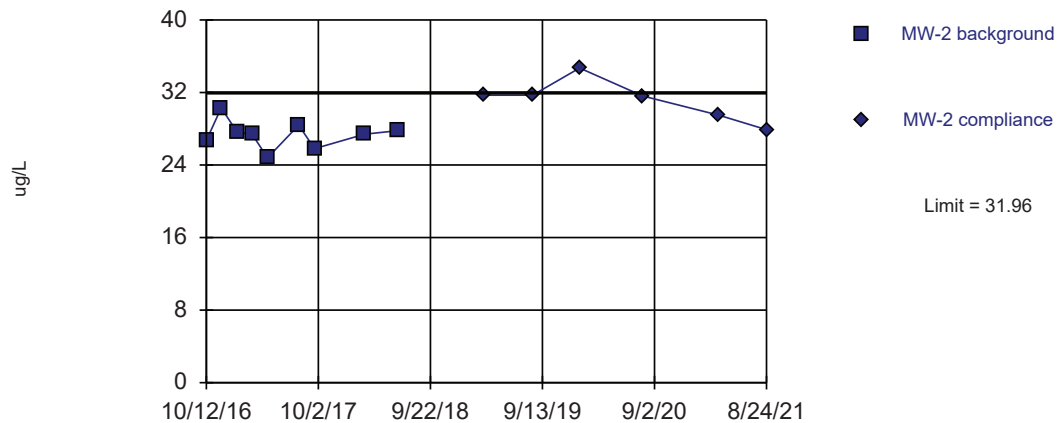


Background Data Summary: Mean=34.93, Std. Dev.=2.491, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9666, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Lithium Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

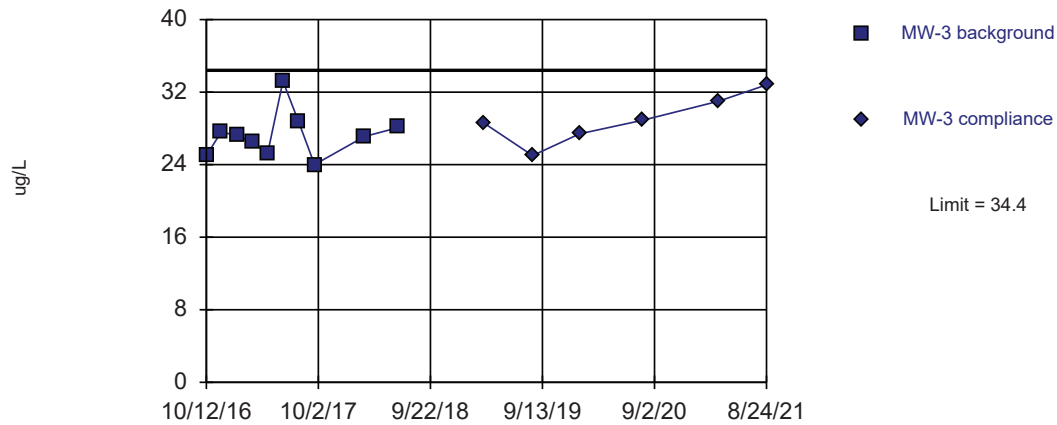


Background Data Summary: Mean=27.36, Std. Dev.=1.557, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.961, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Lithium Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

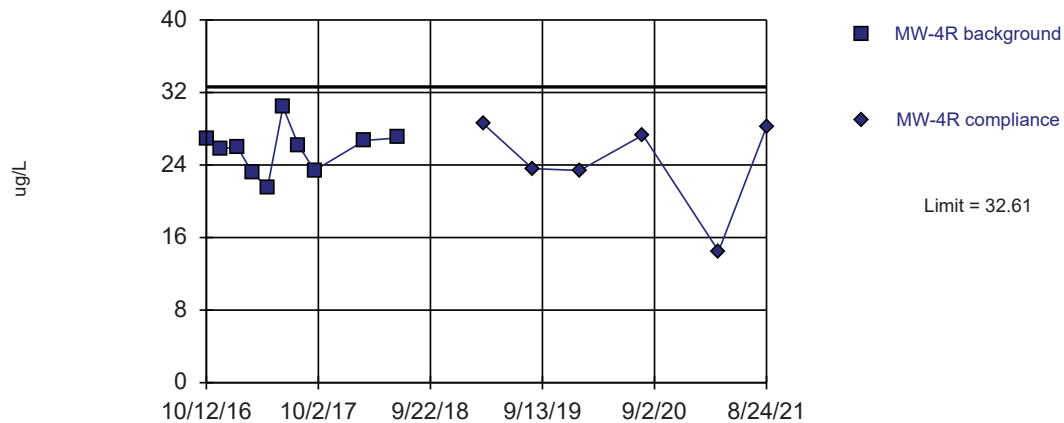


Background Data Summary: Mean=27.27, Std. Dev.=2.562, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8998, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Lithium Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



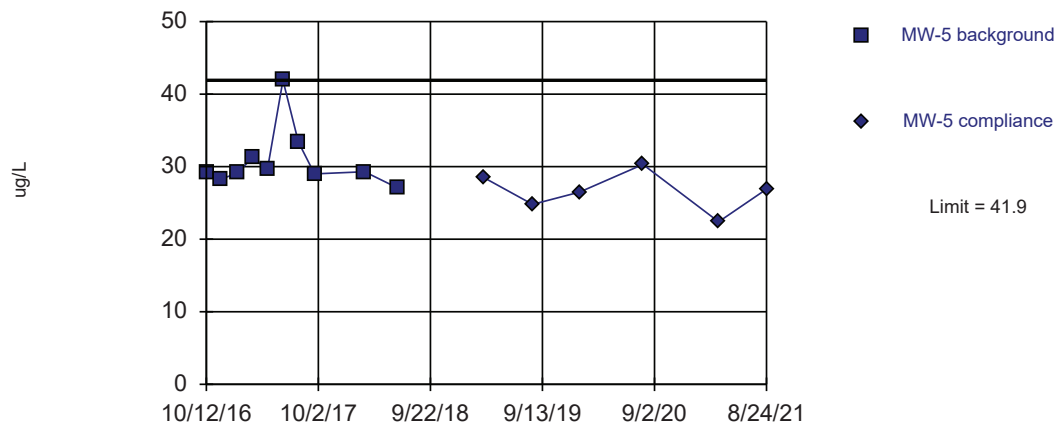
Background Data Summary: Mean=25.7, Std. Dev.=2.484, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9349, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Lithium Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit

Intrawell Non-parametric



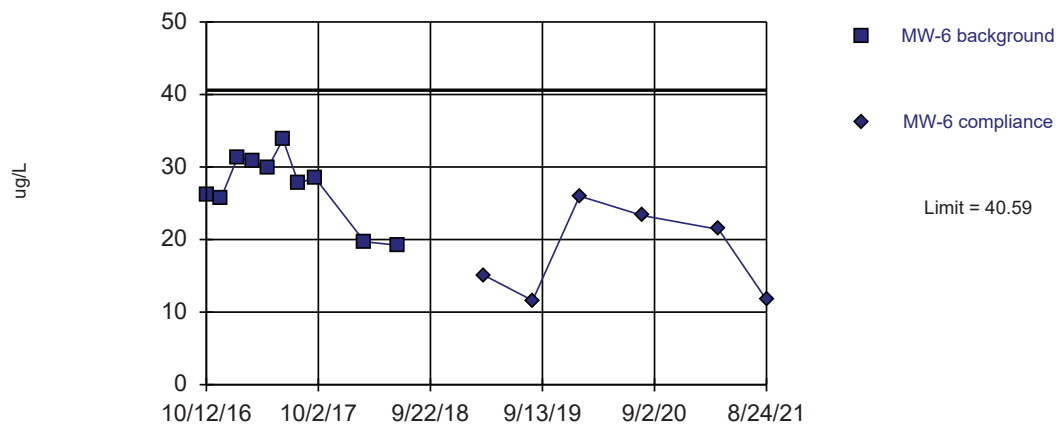
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 10 background values. Well-constituent pair annual alpha = 0.0293. Individual comparison alpha = 0.01476 (1 of 2). Seasonality was not detected with 95% confidence.

Constituent: Lithium Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit

Intrawell Parametric

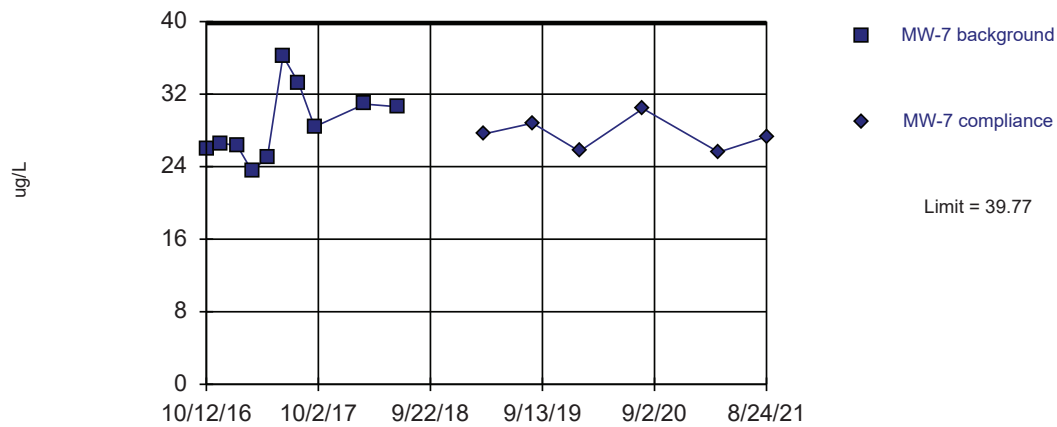


Background Data Summary: Mean=27.29, Std. Dev.=4.777, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9183, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Lithium Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

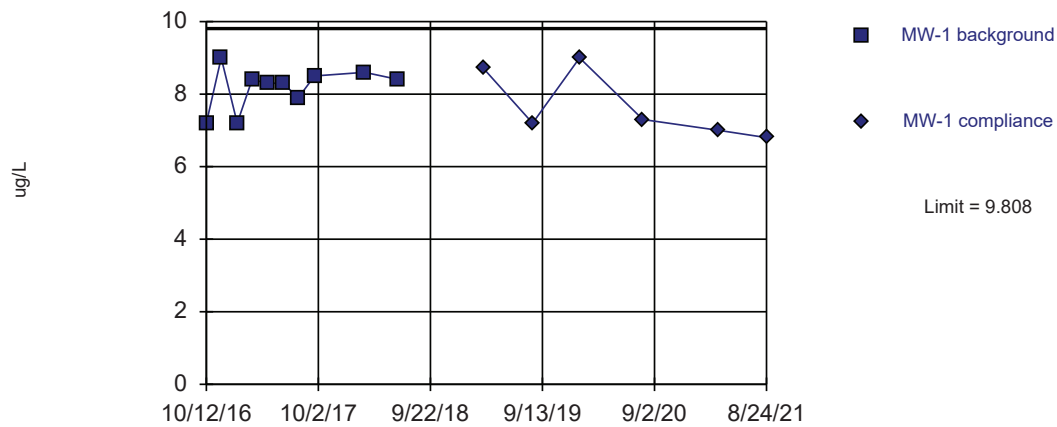
Within Limit

Prediction Limit Intrawell Parametric



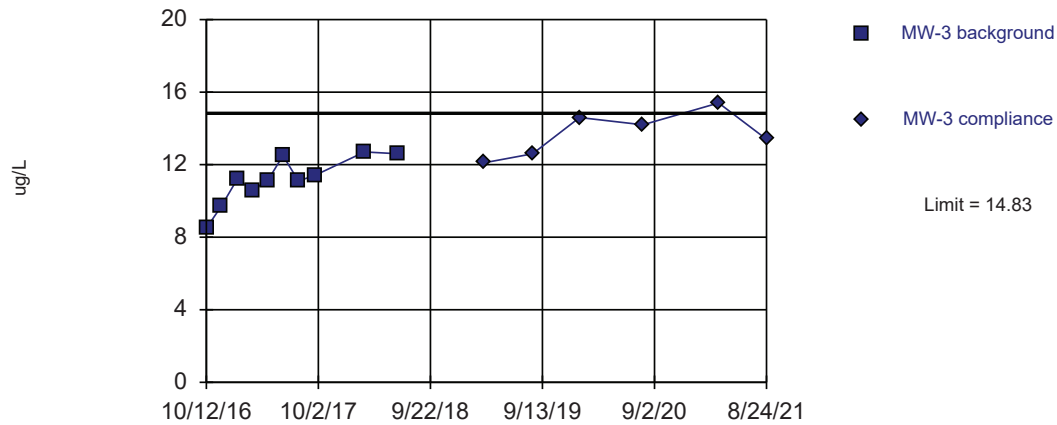
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

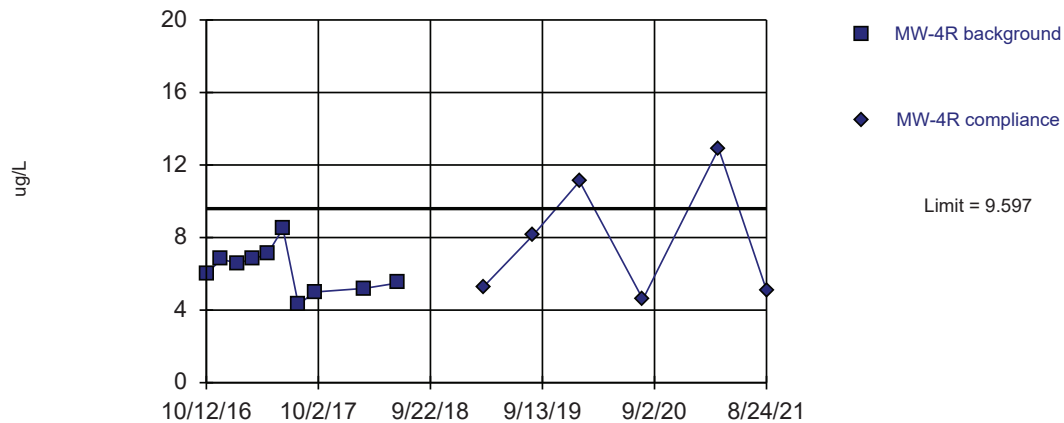


Background Data Summary: Mean=11.14, Std. Dev.=1.326, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9184, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Molybdenum Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

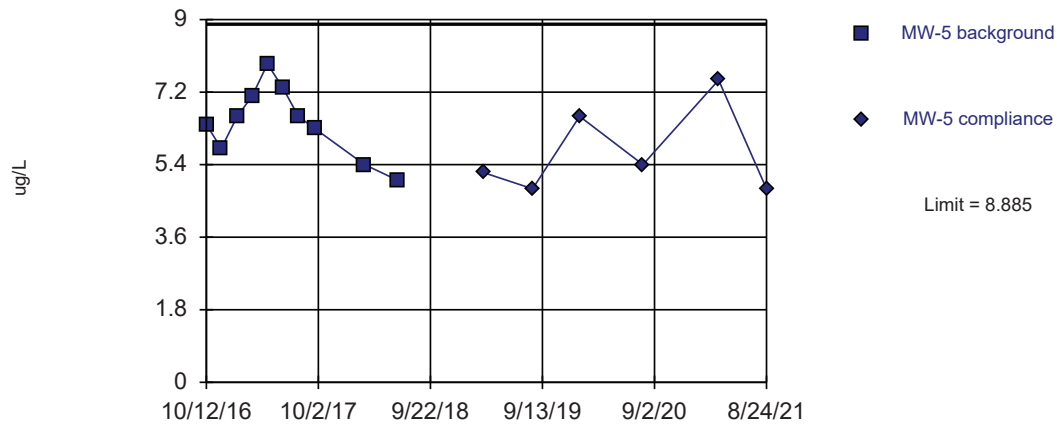
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

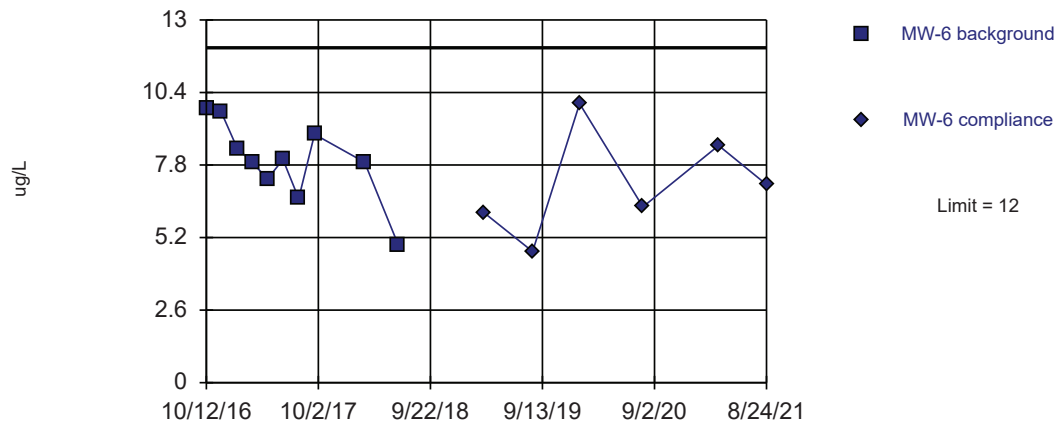


Background Data Summary: Mean=6.44, Std. Dev.=0.8784, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.983, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Molybdenum Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

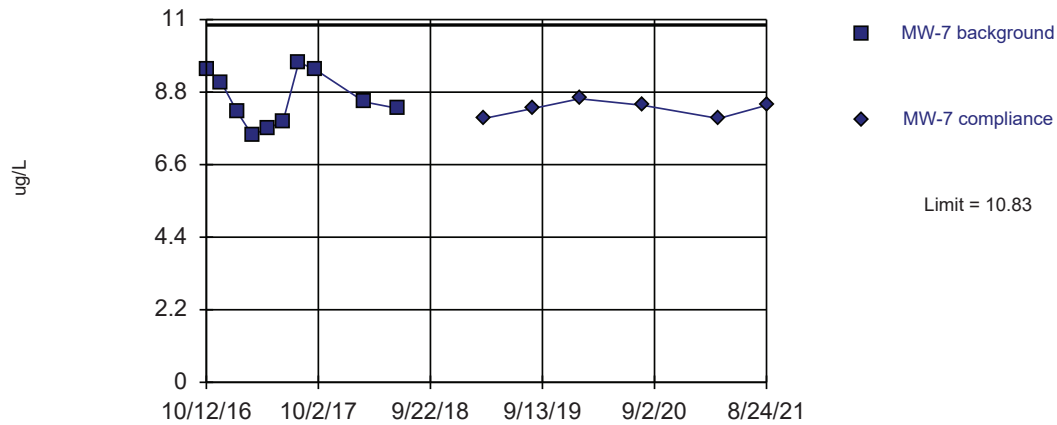


Background Data Summary: Mean=7.94, Std. Dev.=1.458, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9391, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Molybdenum Analysis Run 10/3/2021 10:24 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

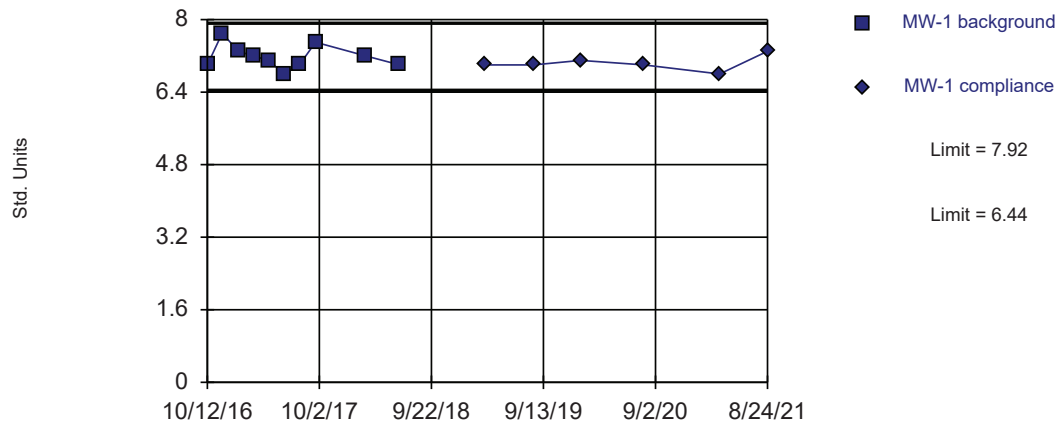
Within Limit

Prediction Limit Intrawell Parametric



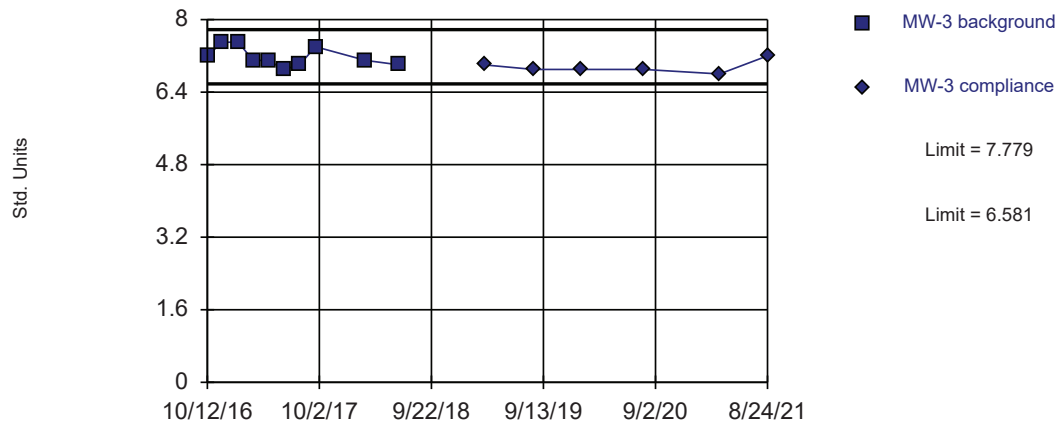
Within Limits

Prediction Limit Intrawell Parametric



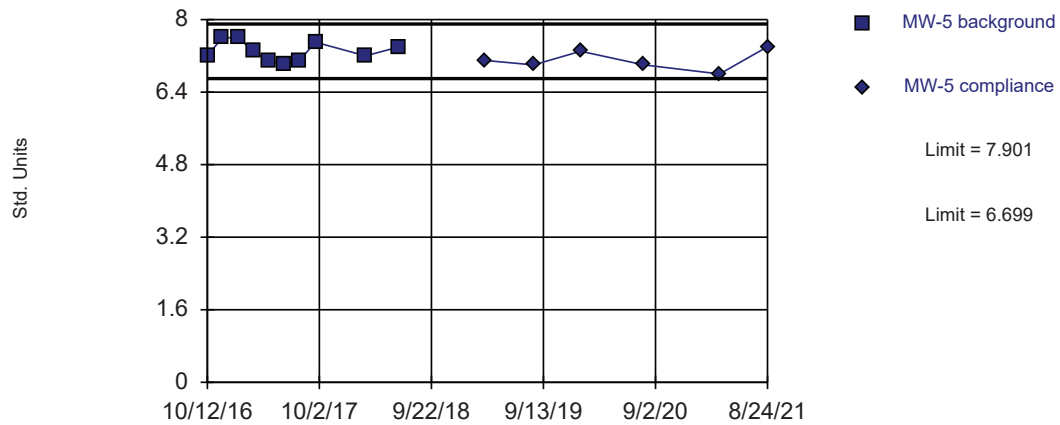
Within Limits

Prediction Limit Intrawell Parametric



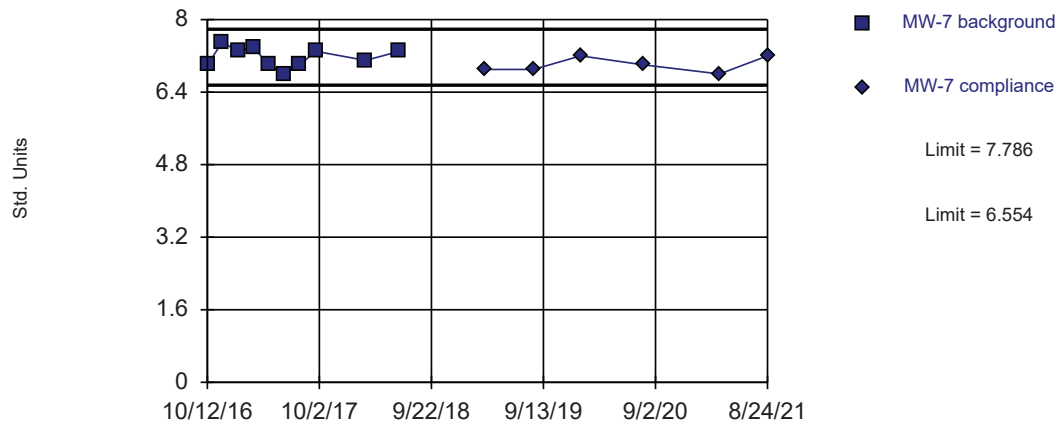
Within Limits

Prediction Limit Intrawell Parametric



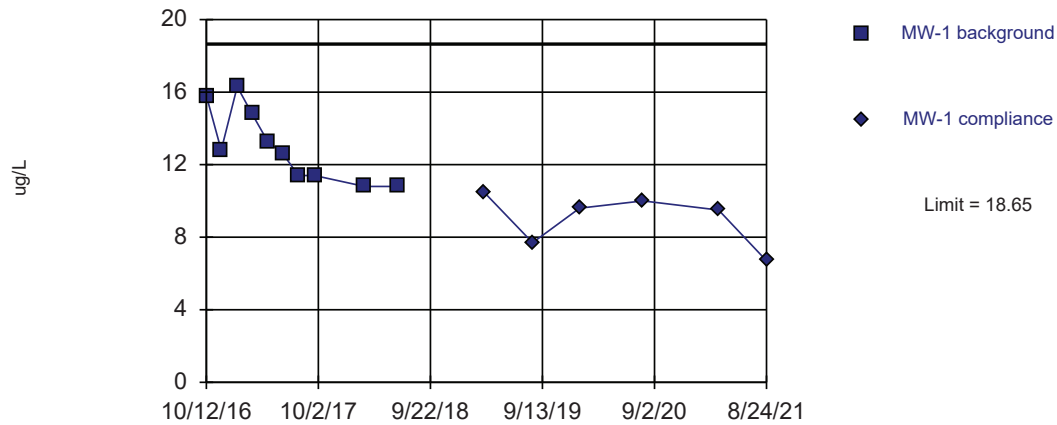
Within Limits

Prediction Limit Intrawell Parametric



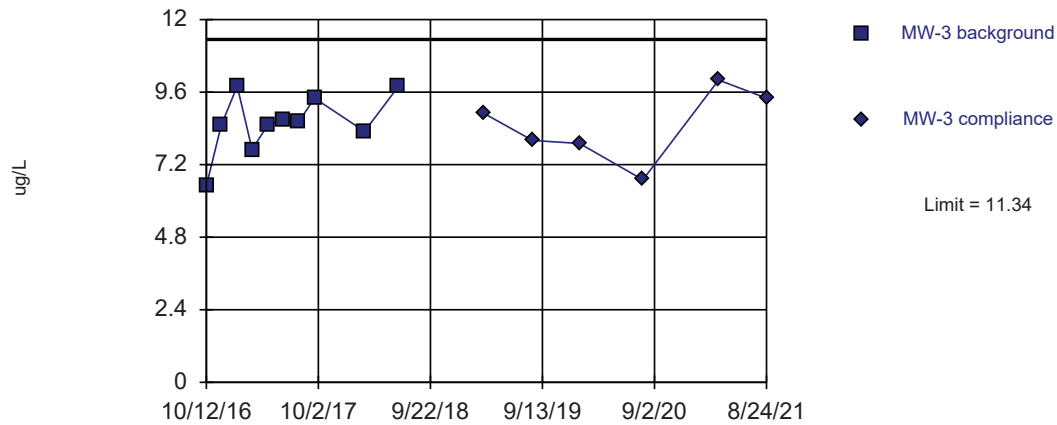
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric



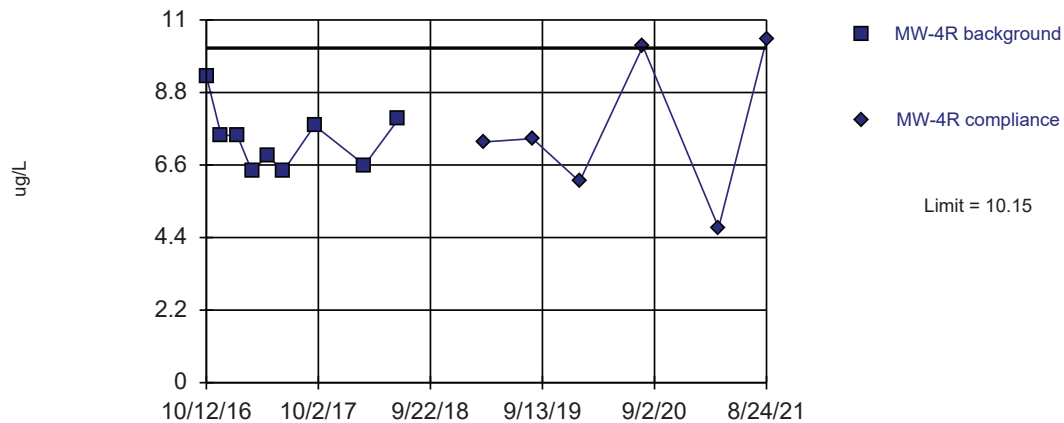
Background Data Summary: Mean=8.58, Std. Dev.=0.992, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9165, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit

Prediction Limit Intrawell Parametric



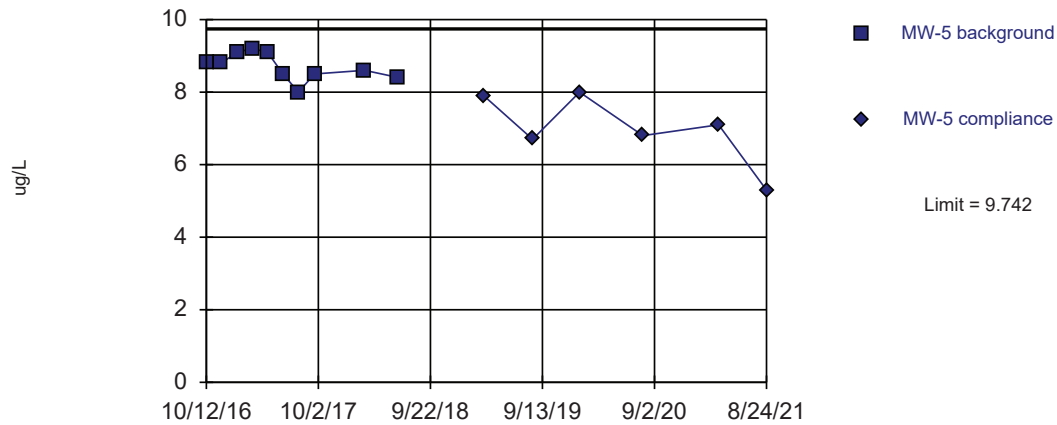
Background Data Summary: Mean=7.378, Std. Dev.=0.9378, n=9. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.903, critical = 0.764. Kappa = 2.954 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

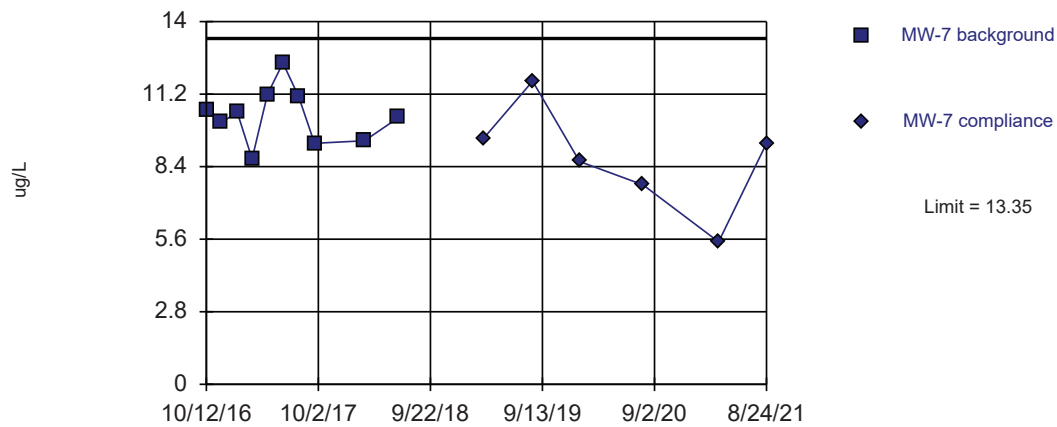
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric



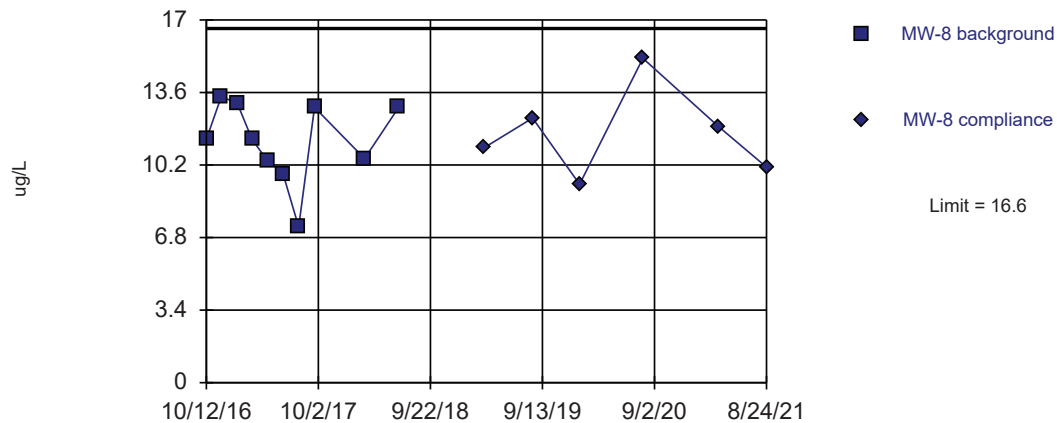
Background Data Summary: Mean=10.36, Std. Dev.=1.073, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9769, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



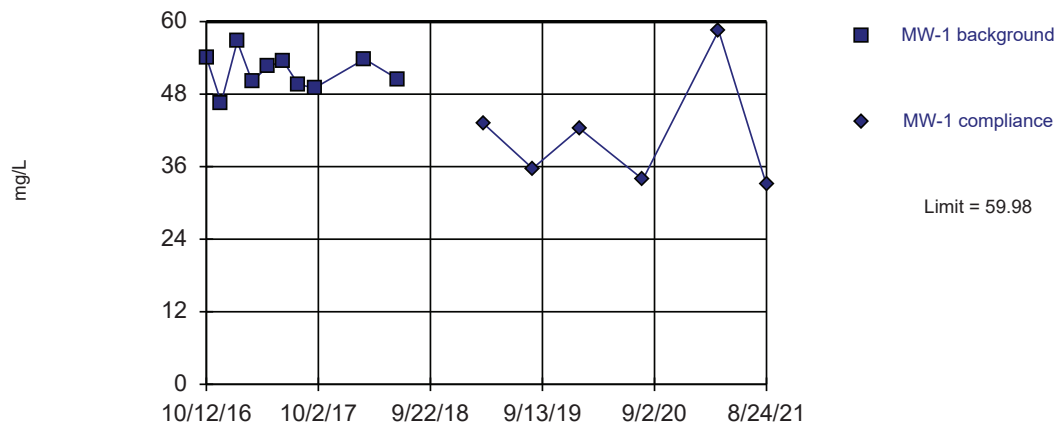
Background Data Summary: Mean=11.31, Std. Dev.=1.9, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9028, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Selenium [total] Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

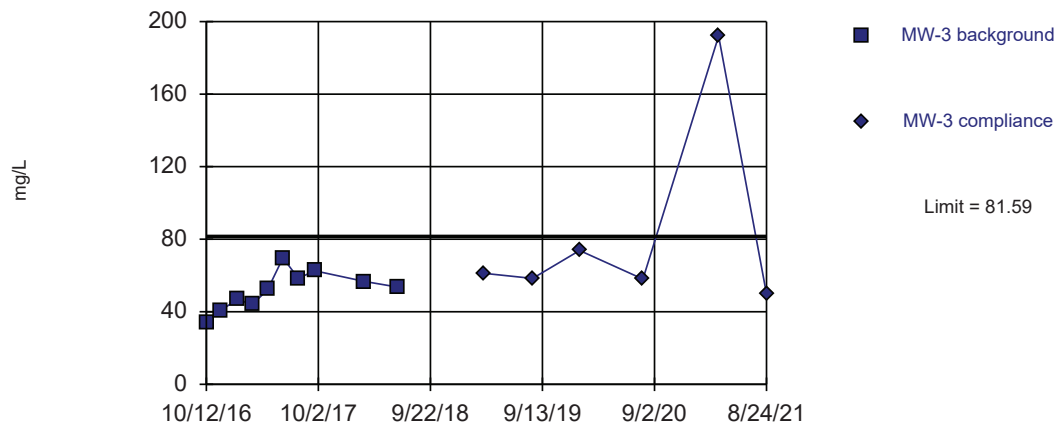
Within Limit

Prediction Limit Intrawell Parametric



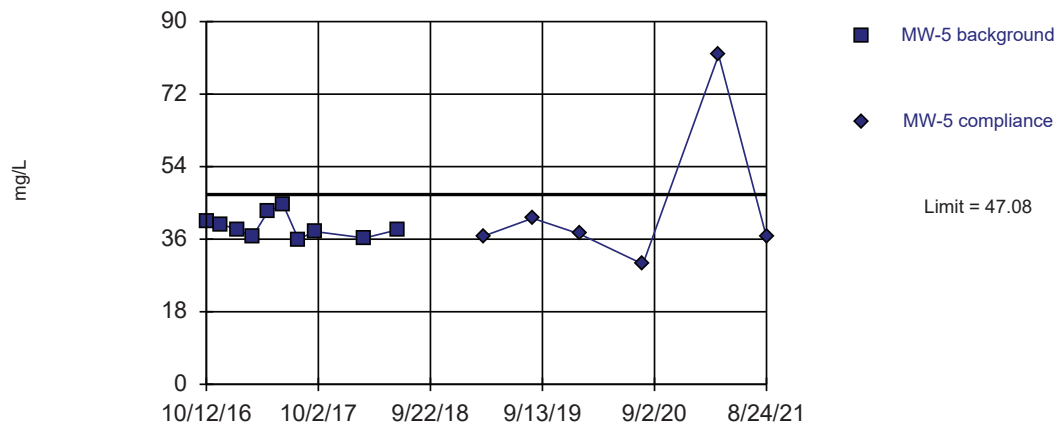
Within Limit

Prediction Limit Intrawell Parametric



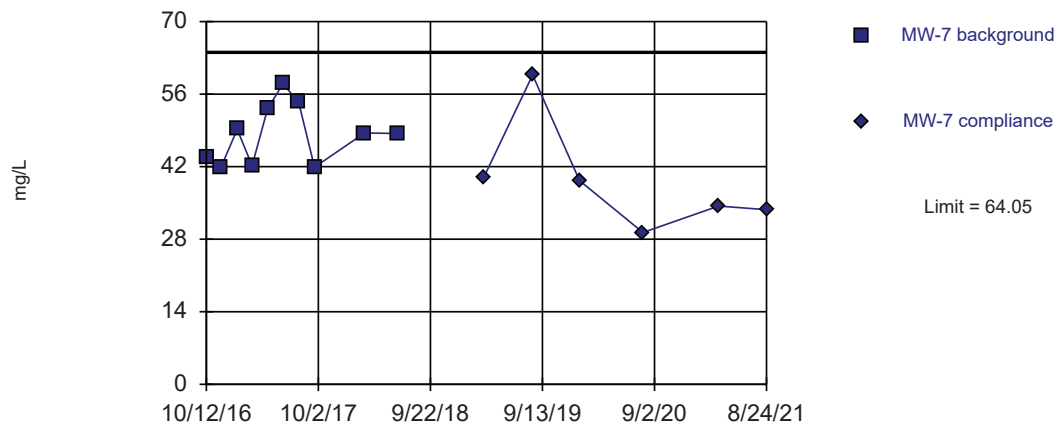
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

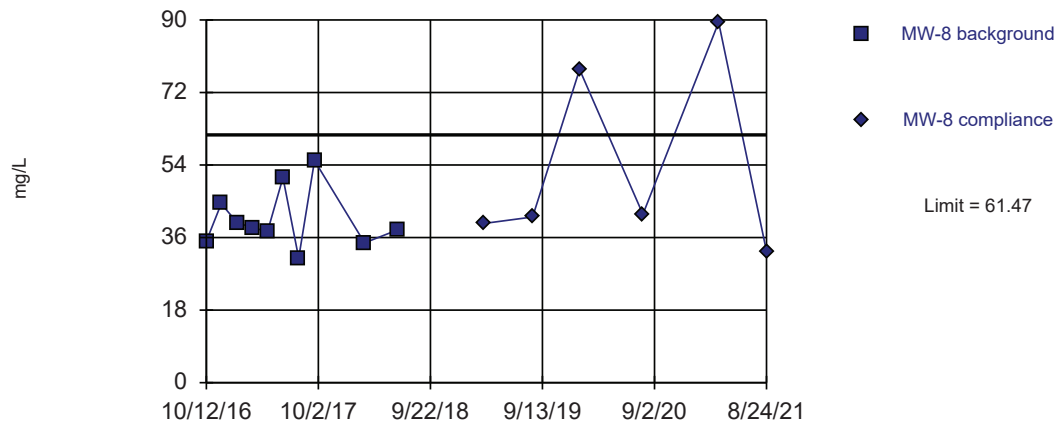


Background Data Summary: Mean=48.14, Std. Dev.=5.715, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9073, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

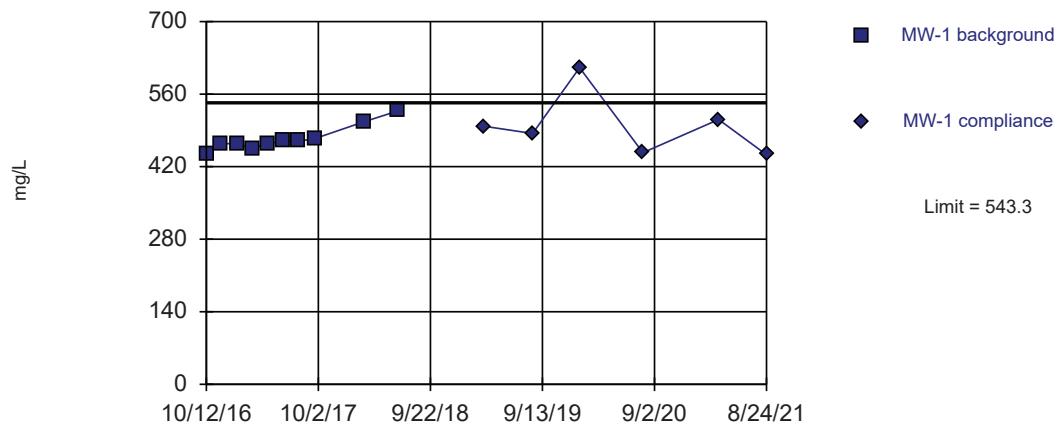


Background Data Summary: Mean=40.48, Std. Dev.=7.538, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9039, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Sulfate Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

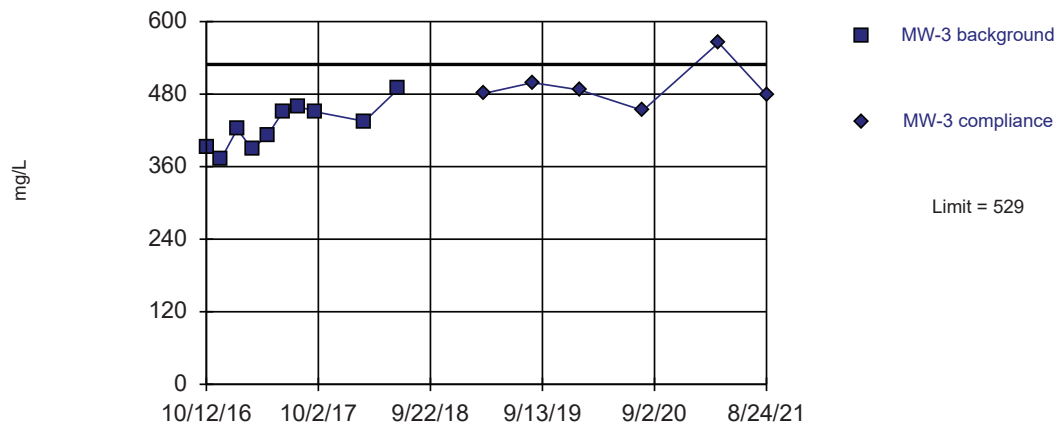
Within Limit

Prediction Limit Intrawell Parametric



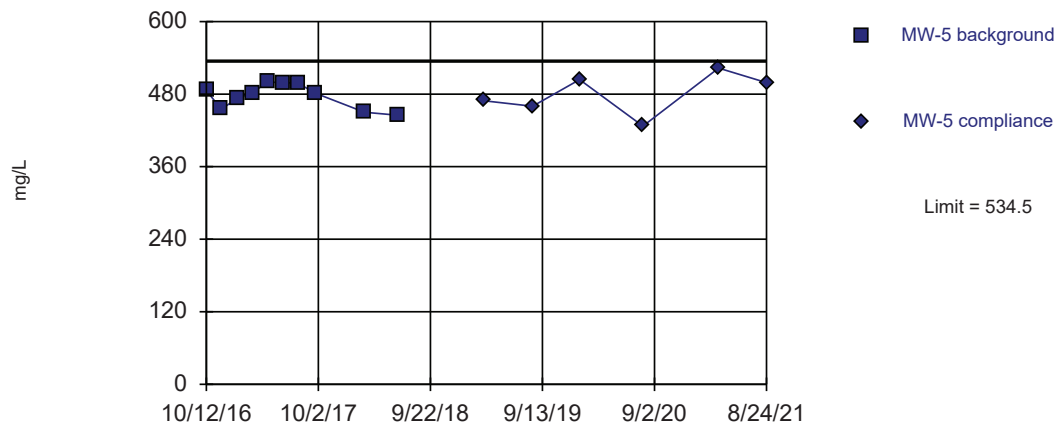
Within Limit

Prediction Limit Intrawell Parametric



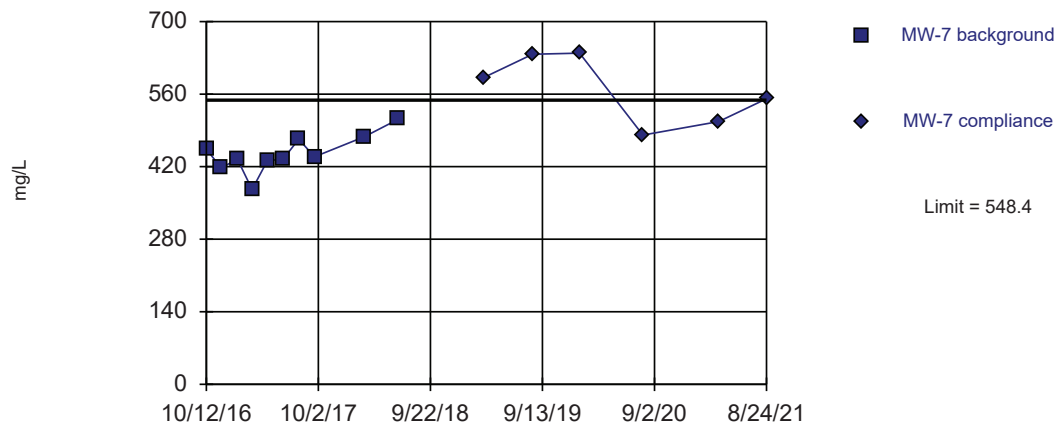
Within Limit

Prediction Limit Intrawell Parametric



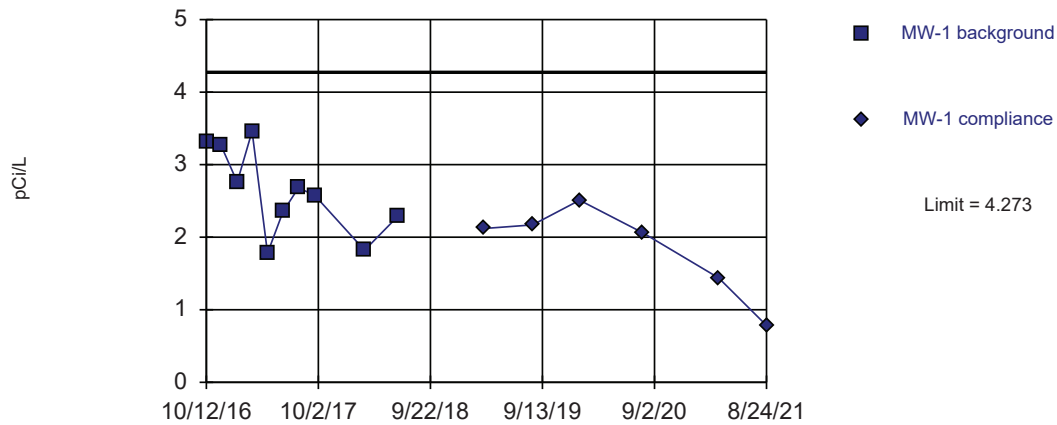
Exceeds Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

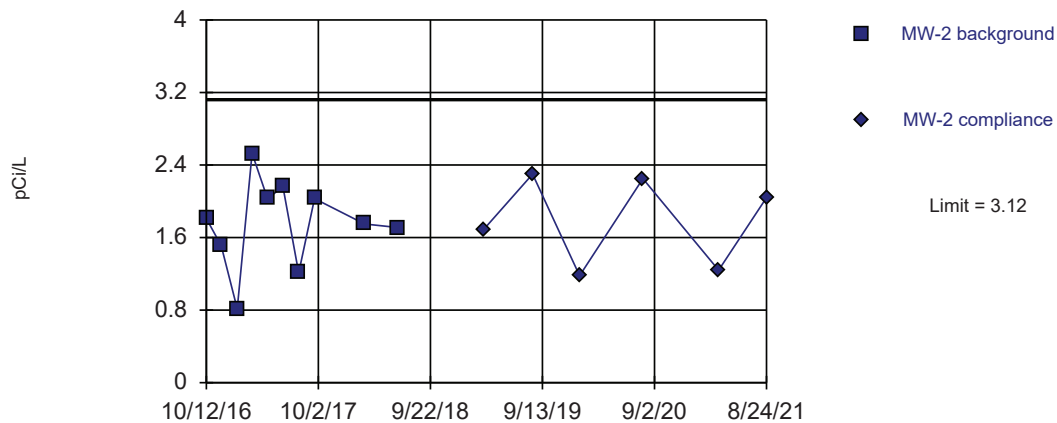


Background Data Summary: Mean=2.63, Std. Dev.=0.5903, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.937, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

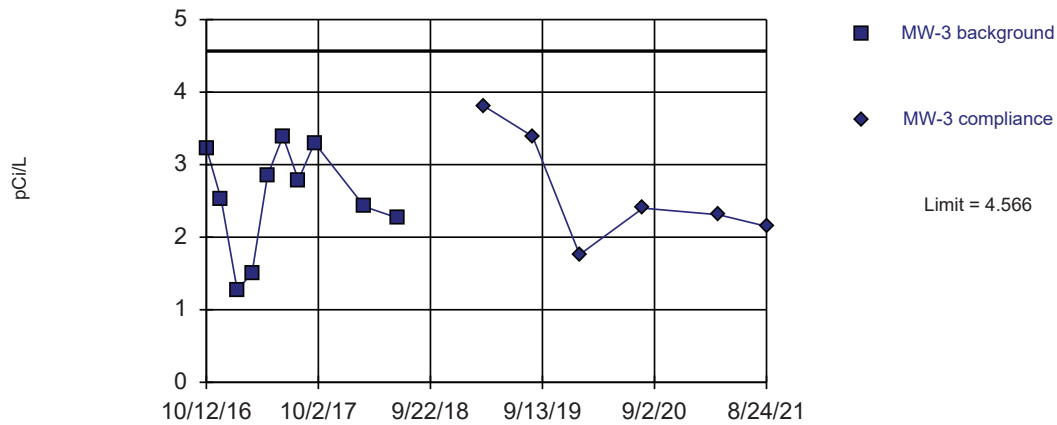


Background Data Summary: Mean=1.755, Std. Dev.=0.4903, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9723, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

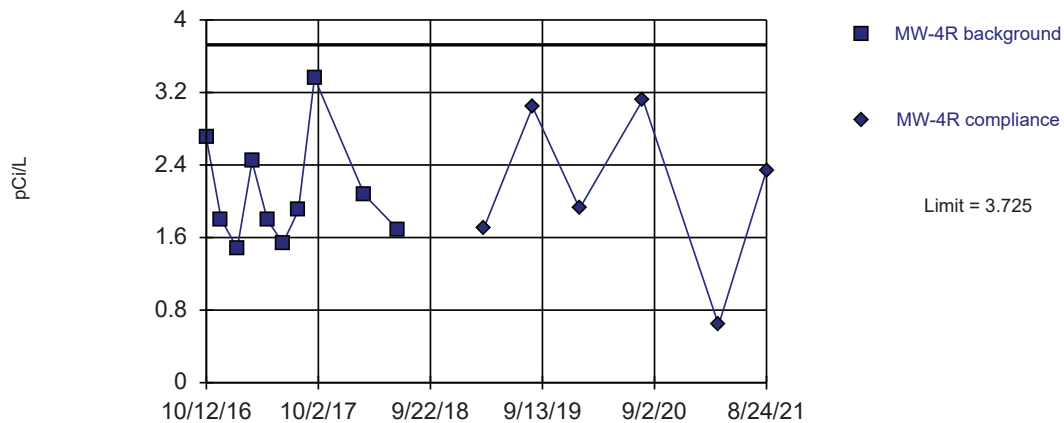


Background Data Summary: Mean=2.554, Std. Dev.=0.7226, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9177, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric

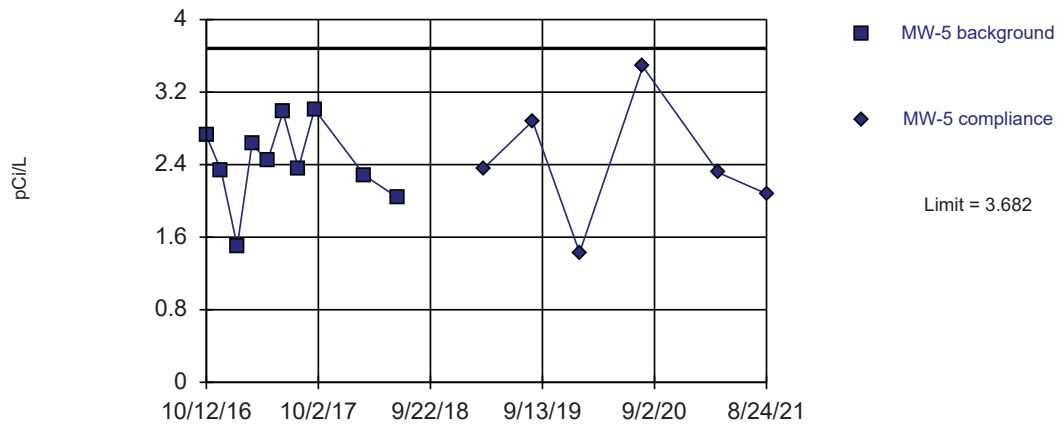


Background Data Summary: Mean=2.076, Std. Dev.=0.5924, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8741, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 10/3/2021 10:25 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

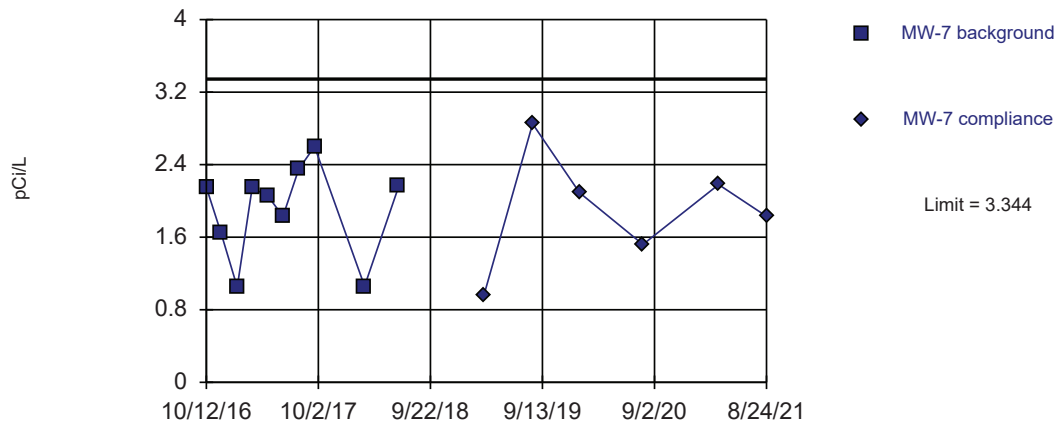
Within Limit

Prediction Limit Intrawell Parametric



Within Limit

Prediction Limit Intrawell Parametric

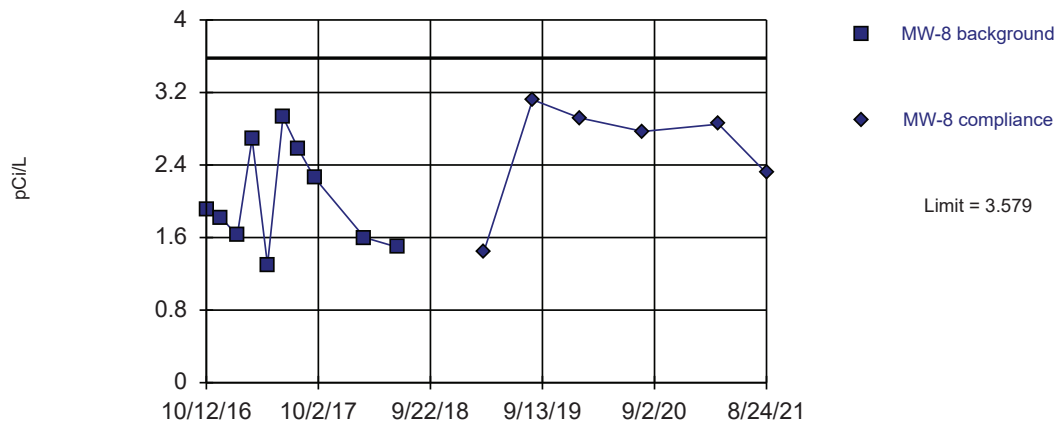


Background Data Summary: Mean=1.904, Std. Dev.=0.5171, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8953, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 10/3/2021 10:26 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Intrawell Parametric



Background Data Summary: Mean=2.019, Std. Dev.=0.5602, n=10. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.929, critical = 0.781. Kappa = 2.784 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007979.

Constituent: Total Radium Analysis Run 10/3/2021 10:26 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A.3 Interwell Prediction Limits

Interwell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 10/4/2021, 1:10 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic [total] (ug/L)	MW-1	5.586	n/a	8/24/2021	4.7	No	16	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-2	5.586	n/a	8/24/2021	4.1	No	16	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-3	5.586	n/a	8/24/2021	3.7	No	16	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-5	5.586	n/a	8/24/2021	4.6	No	16	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-6	5.586	n/a	8/24/2021	3.6	No	16	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-7	5.586	n/a	8/24/2021	4	No	16	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-8	5.586	n/a	8/24/2021	2.7	No	16	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-1	149.1	n/a	8/24/2021	126	No	16	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-2	149.1	n/a	8/24/2021	105	No	16	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-3	149.1	n/a	8/24/2021	194	Yes	16	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-5	149.1	n/a	8/24/2021	137	No	16	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-6	149.1	n/a	8/24/2021	64.8	No	16	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-7	149.1	n/a	8/24/2021	133	No	16	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-8	149.1	n/a	8/24/2021	172	Yes	16	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-1	455.5	n/a	8/24/2021	117	No	16	31.25	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-2	455.5	n/a	8/24/2021	118	No	16	31.25	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-3	455.5	n/a	8/24/2021	107	No	16	31.25	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-5	455.5	n/a	8/24/2021	128	No	16	31.25	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-8	455.5	n/a	8/24/2021	142	No	16	31.25	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-1	109.1	n/a	8/24/2021	101	No	16	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-2	109.1	n/a	8/24/2021	102	No	16	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-3	109.1	n/a	8/24/2021	106	No	16	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-5	109.1	n/a	8/24/2021	110	Yes	16	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-6	109.1	n/a	8/24/2021	40.1	No	16	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-7	109.1	n/a	8/24/2021	100	No	16	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-8	109.1	n/a	8/24/2021	110	Yes	16	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-1	45.69	n/a	8/24/2021	35.8	No	15	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-2	45.69	n/a	8/24/2021	26.8	No	15	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-3	45.69	n/a	8/24/2021	50	Yes	15	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-5	45.69	n/a	8/24/2021	41.6	No	15	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-6	45.69	n/a	8/24/2021	48.7	Yes	15	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-7	45.69	n/a	8/24/2021	101	Yes	15	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-8	45.69	n/a	8/24/2021	30.6	No	15	0	No	0.000...	Param 1 of 2
Chromium [total] (ug/L)	n/a	1.9	n/a	n/a	3 future	n/a	14	92.86	n/a	0.008038	NP (NDs) 1 of 2
Fluoride (mg/L)	MW-1	1.094	n/a	8/24/2021	0.96	No	16	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-2	1.094	n/a	8/24/2021	1.3	Yes	16	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-3	1.094	n/a	8/24/2021	0.74	No	16	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-5	1.094	n/a	8/24/2021	1.1	Yes	16	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-6	1.094	n/a	8/24/2021	0.65	No	16	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-7	1.094	n/a	8/24/2021	0.96	No	16	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-8	1.094	n/a	8/24/2021	0.77	No	16	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-1	33.88	n/a	8/24/2021	28.8	No	16	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-2	33.88	n/a	8/24/2021	27.9	No	16	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-3	33.88	n/a	8/24/2021	32.8	No	16	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-5	33.88	n/a	8/24/2021	26.9	No	16	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-6	33.88	n/a	8/24/2021	11.7	No	16	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-7	33.88	n/a	8/24/2021	27.3	No	16	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-8	33.88	n/a	8/24/2021	25.6	No	16	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-1	12.45	n/a	8/24/2021	6.8	No	16	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-2	12.45	n/a	8/24/2021	7.6	No	16	0	No	0.000...	Param 1 of 2

Interwell Prediction Limit

Fremont Dept. of Utilities

Client: SCS Engineers

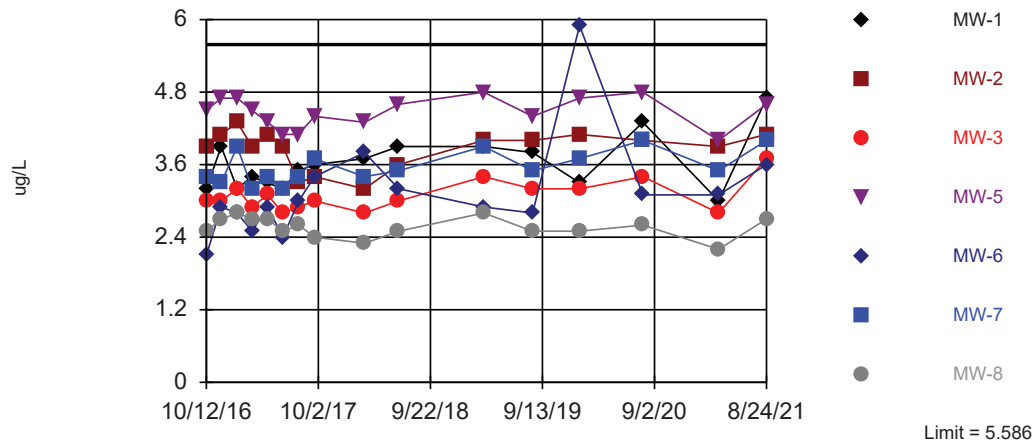
Data: Fremont Department of Utilities Groundwater

Printed 10/4/2021, 1:10 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Molybdenum (ug/L)	MW-3	12.45	n/a	8/24/2021	13.4	Yes	16	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-5	12.45	n/a	8/24/2021	4.8	No	16	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-6	12.45	n/a	8/24/2021	7.1	No	16	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-7	12.45	n/a	8/24/2021	8.4	No	16	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-8	12.45	n/a	8/24/2021	7	No	16	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-1	7.883	6.392	8/24/2021	7.3	No	16	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-2	7.883	6.392	8/24/2021	7.2	No	16	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-3	7.883	6.392	8/24/2021	7.2	No	16	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-5	7.883	6.392	8/24/2021	7.4	No	16	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-6	7.883	6.392	8/24/2021	6.8	No	16	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-7	7.883	6.392	8/24/2021	7.2	No	16	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-8	7.883	6.392	8/24/2021	7.1	No	16	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-1	11.21	n/a	8/24/2021	6.7	No	15	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-2	11.21	n/a	8/24/2021	7.3	No	15	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-3	11.21	n/a	8/24/2021	9.4	No	15	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-5	11.21	n/a	8/24/2021	5.3	No	15	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-6	11.21	n/a	8/24/2021	2.2	No	15	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-7	11.21	n/a	8/24/2021	9.3	No	15	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-8	11.21	n/a	8/24/2021	10.1	No	15	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-1	53.01	n/a	8/24/2021	33	No	16	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-2	53.01	n/a	8/24/2021	32.3	No	16	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-3	53.01	n/a	8/24/2021	49.8	No	16	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-5	53.01	n/a	8/24/2021	36.5	No	16	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-6	53.01	n/a	8/24/2021	19.7	No	16	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-7	53.01	n/a	8/24/2021	33.7	No	16	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-8	53.01	n/a	8/24/2021	32.6	No	16	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	513	n/a	8/24/2021	443	No	16	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-2	513	n/a	8/24/2021	431	No	16	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-3	513	n/a	8/24/2021	479	No	16	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-5	513	n/a	8/24/2021	499	No	16	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-6	513	n/a	8/24/2021	142	No	16	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-7	513	n/a	8/24/2021	551	Yes	16	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-8	513	n/a	8/24/2021	459	No	16	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-1	3.771	n/a	8/24/2021	0.783	No	16	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-2	3.771	n/a	8/24/2021	2.04	No	16	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-3	3.771	n/a	8/24/2021	2.15	No	16	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-5	3.771	n/a	8/24/2021	2.08	No	16	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-6	3.771	n/a	8/24/2021	0.213	No	16	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-7	3.771	n/a	8/24/2021	1.83	No	16	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-8	3.771	n/a	8/24/2021	2.31	No	16	0	No	0.000...	Param 1 of 2

Within Limit

Prediction Limit Interwell Parametric

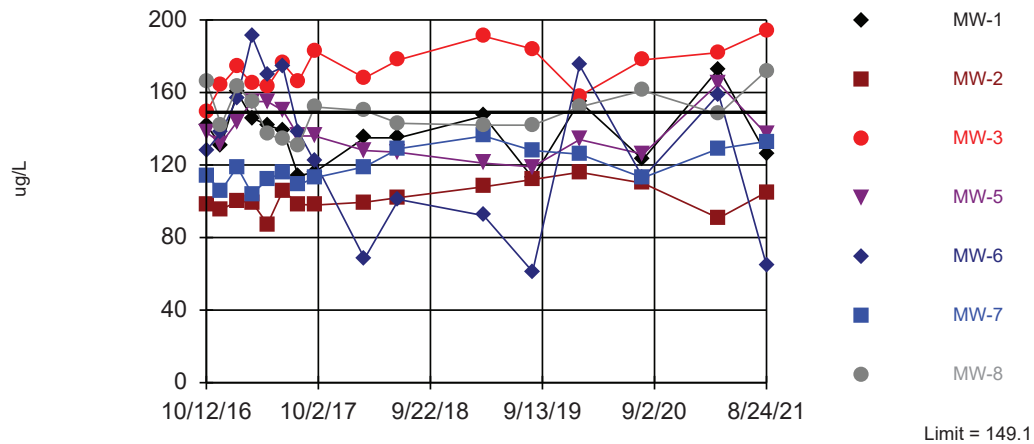


Background Data Summary: Mean=4.031, Std. Dev.=0.6549, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9605, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Arsenic [total] Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-3, MW-8

Prediction Limit Interwell Parametric

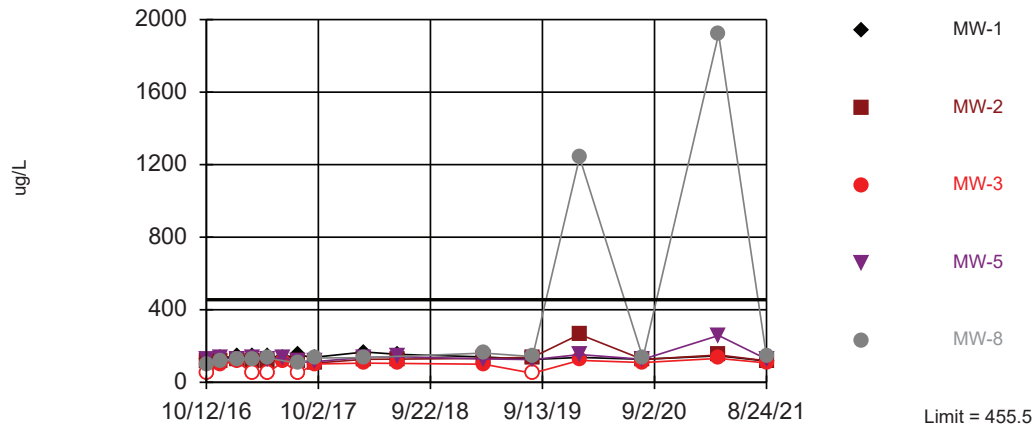


Background Data Summary: Mean=125.2, Std. Dev.=10.07, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.97, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Barium [total] Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Interwell Parametric

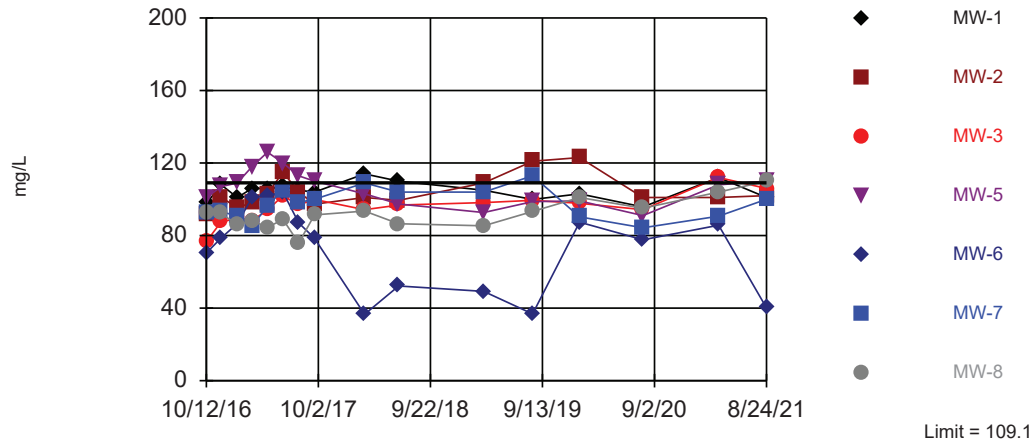


Background Data Summary (after Aitchison's Adjustment): Mean=160.5, Std. Dev.=124.3, n=16, 31.25% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8986, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 5 points to limit.

Constituent: Boron Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-5, MW-8

Prediction Limit Interwell Parametric

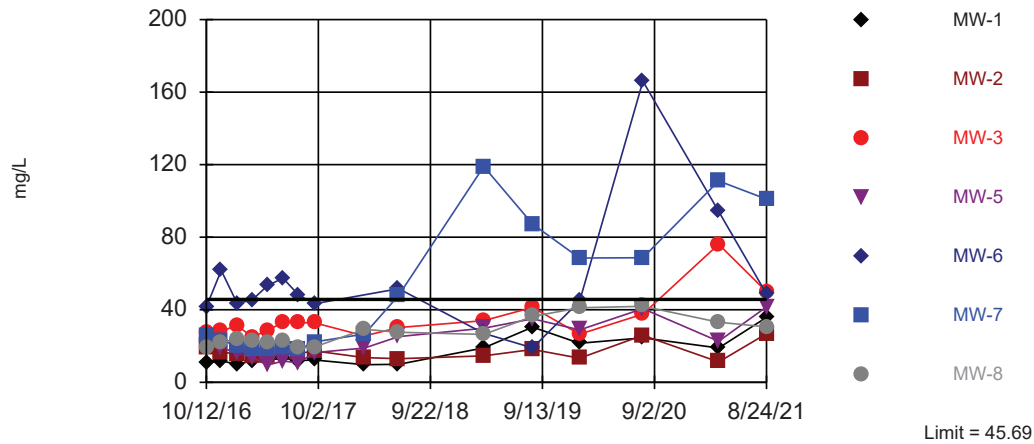


Background Data Summary: Mean=84.64, Std. Dev.=10.28, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9474, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Calcium Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-3, MW-6, MW-7

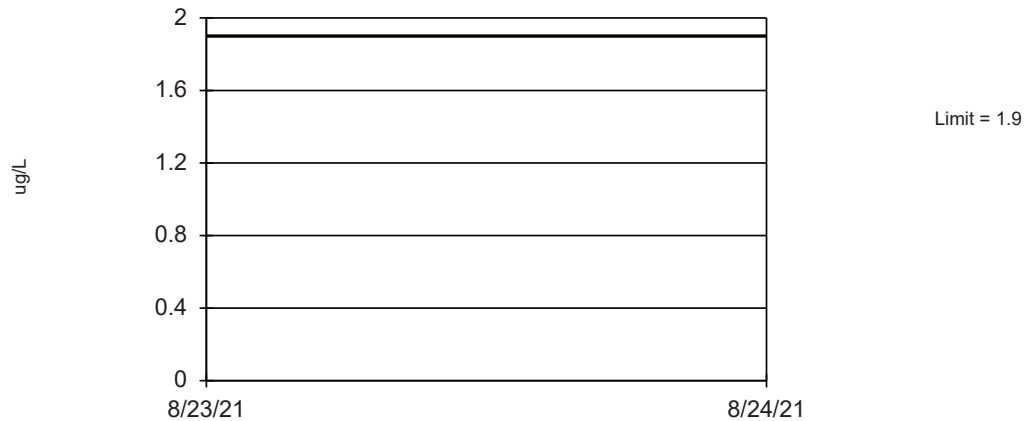
Prediction Limit Interwell Parametric



Background Data Summary: Mean=22.8, Std. Dev.=9.438, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9592, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Chloride Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Prediction Limit Interwell Non-parametric

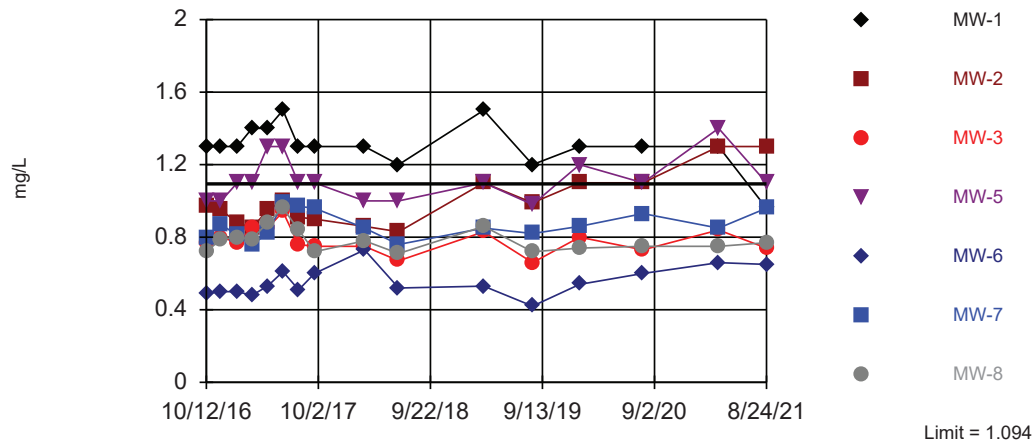


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 14 background values. 92.86% NDs. Annual per-constituent alpha = 0.04727. Individual comparison alpha = 0.008038 (1 of 2). Assumes 3 future values. Seasonality was not detected with 95% confidence.

Constituent: Chromium [total] Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-2, MW-5

Prediction Limit Interwell Parametric



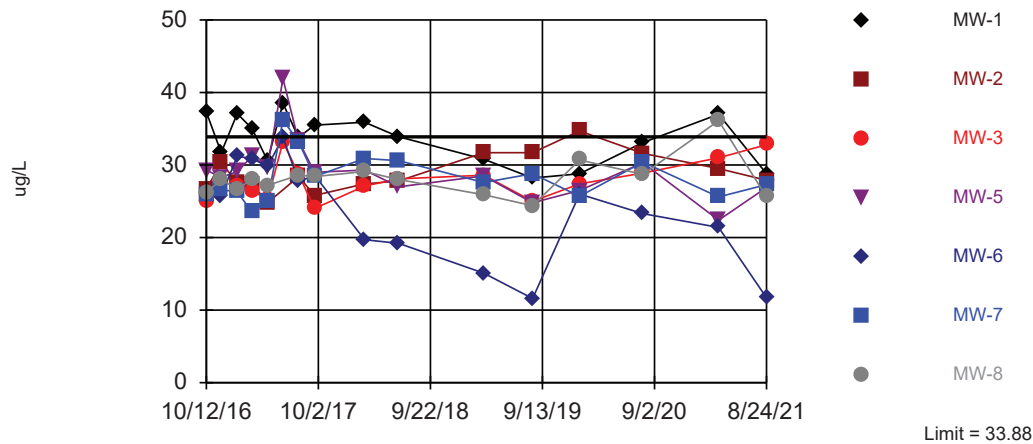
Background Data Summary: Mean=0.8731, Std. Dev.=0.09293, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9033, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Fluoride Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Interwell Parametric



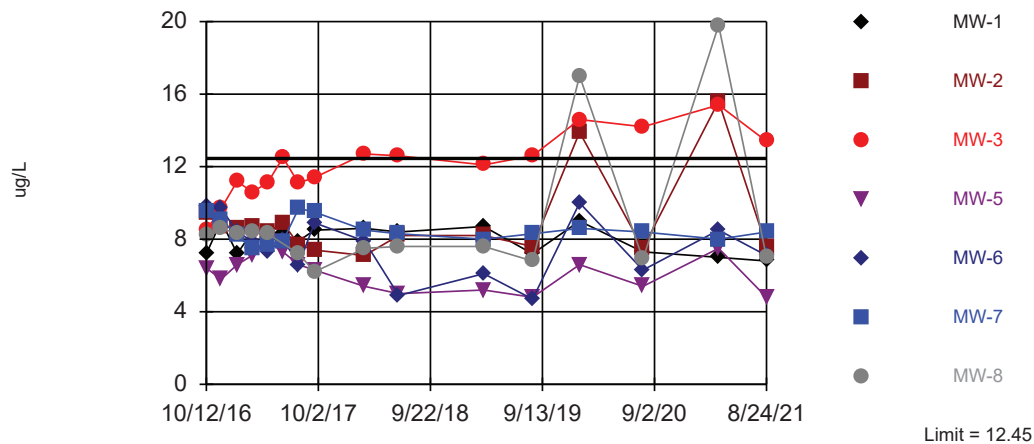
Background Data Summary: Mean=25.16, Std. Dev.=3.675, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8678, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Lithium Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-3

Prediction Limit Interwell Parametric

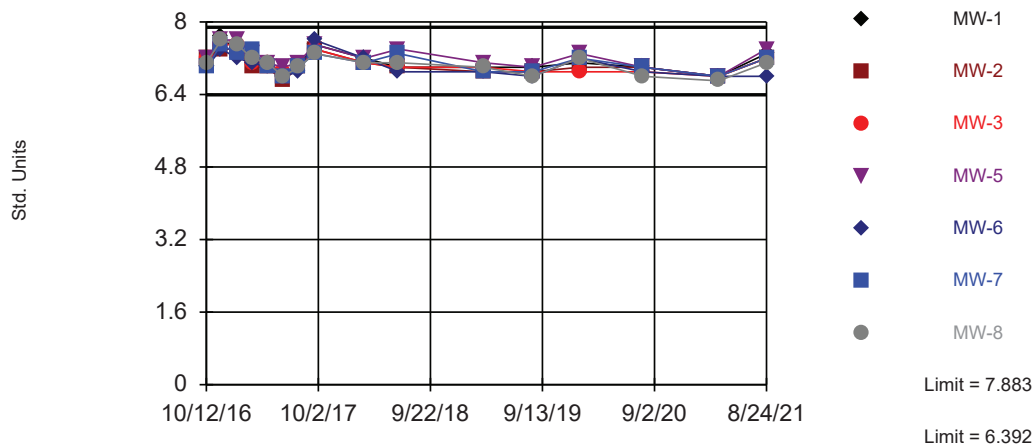


Background Data Summary: Mean=6.806, Std. Dev.=2.377, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8454, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Molybdenum Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limits

Prediction Limit Interwell Parametric

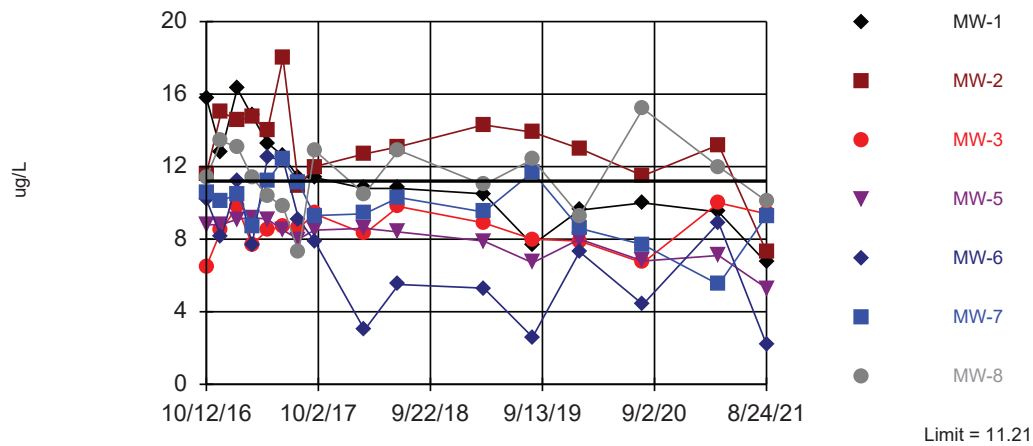


Background Data Summary: Mean=7.138, Std. Dev.=0.3138, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9504, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0003989. Comparing 7 points to limit.

Constituent: pH Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Interwell Parametric



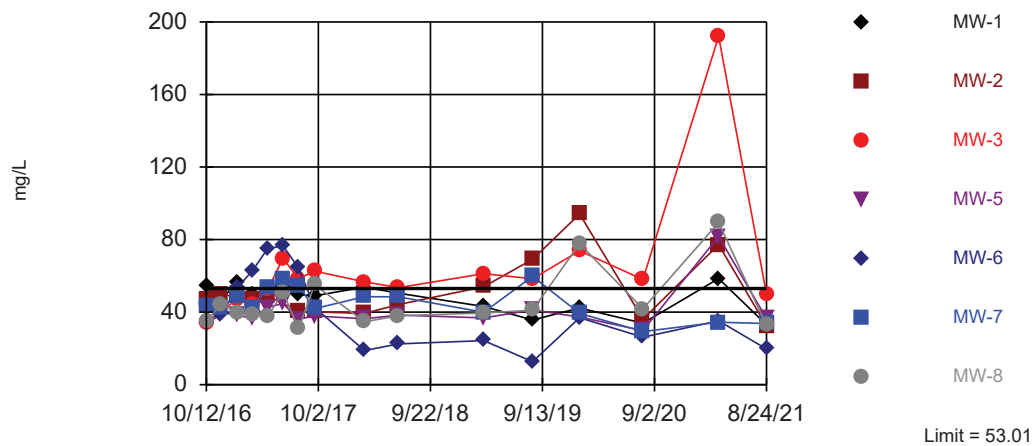
Background Data Summary: Mean=7.5, Std. Dev.=1.529, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9376, critical = 0.835. Kappa = 2.426 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Selenium [total] Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Interwell Parametric



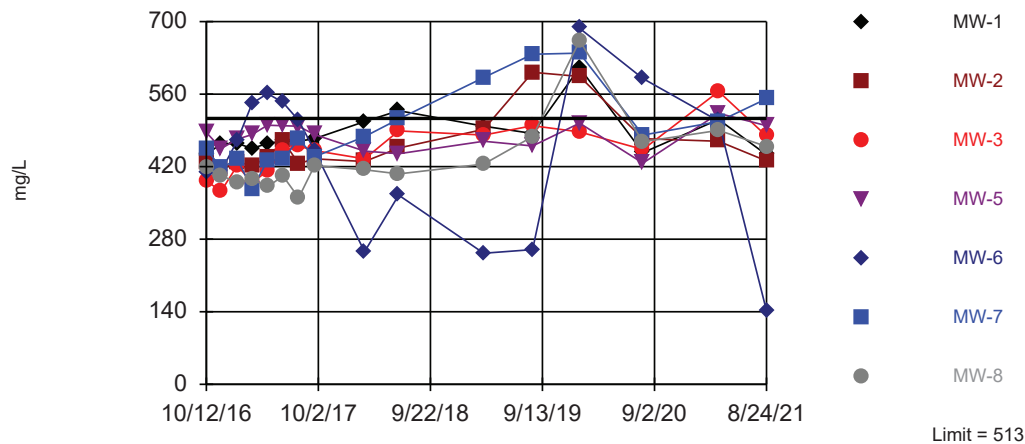
Background Data Summary: Mean=38.26, Std. Dev.=6.211, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8735, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Sulfate Analysis Run 10/4/2021 1:08 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Exceeds Limit: MW-7

Prediction Limit Interwell Parametric



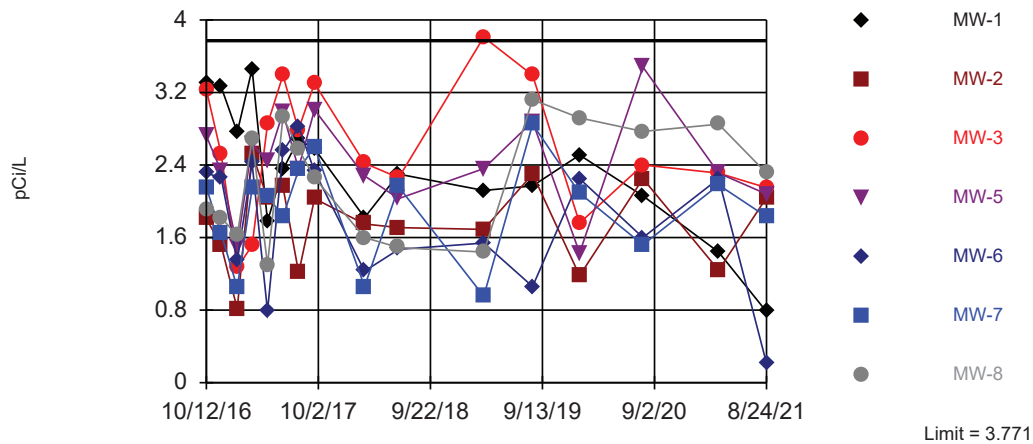
Background Data Summary: Mean=410.8, Std. Dev.=43.08, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9548, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Total Dissolved Solids Analysis Run 10/4/2021 1:09 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Within Limit

Prediction Limit Interwell Parametric



Background Data Summary: Mean=2.095, Std. Dev.=0.7061, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.954, critical = 0.844. Kappa = 2.374 (c=22, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002392. Individual comparison alpha = 0.0007979. Comparing 7 points to limit.

Constituent: Total Radium Analysis Run 10/4/2021 1:09 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A.4 Sen's Slope/Mann-Kendall Analysis

Trend Test

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 10/4/2021, 1:39 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic [total] (ug/L)	MW-1	0.2466	43	53	No	16	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-2	0	3	53	No	16	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-3	0.08265	30	53	No	16	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-4R (bg)	0.05292	16	53	No	16	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-5	0	5	53	No	16	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-6	0.1966	55	53	Yes	16	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-7	0.1078	57	53	Yes	16	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-8	-0.03004	-24	-53	No	16	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-1	-1.931	-10	-53	No	16	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-2	3.057	43	53	No	16	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-3	4.883	63	53	Yes	16	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-4R (bg)	4.799	71	53	Yes	16	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-5	-3.35	-32	-53	No	16	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-6	-13.9	-35	-53	No	16	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-7	4.503	59	53	Yes	16	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-8	0.8593	6	53	No	16	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-1	-0.6277	-9	-53	No	16	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-2	7.171	46	48	No	15	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-3	4.037	38	53	No	16	31.25	n/a	n/a	0.02	NP
Boron (ug/L)	MW-5	3.625	23	53	No	16	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-8	14.37	63	44	Yes	14	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-1	-0.5164	-11	-53	No	16	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2	2.413	44	53	No	16	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-3	3.824	69	53	Yes	16	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4R (bg)	0.9317	5	53	No	16	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	-2.979	-31	-53	No	16	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	-4.805	-28	-53	No	16	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7	1.92	16	53	No	16	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-8	3.053	50	53	No	16	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-1	3.384	66	53	Yes	16	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2	-0.4201	-9	-48	No	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3	4.055	60	53	Yes	16	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4R (bg)	3.153	43	48	No	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	5.356	60	53	Yes	16	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	0.9557	9	48	No	15	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7	16.23	62	53	Yes	16	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-8	3.602	66	53	Yes	16	0	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-4R (bg)	0	13	44	No	14	92.86	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-1	0	-29	-53	No	16	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2	0.0599	47	53	No	16	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3	-0.01099	-32	-53	No	16	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4R (bg)	0.02551	33	53	No	16	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	0	16	53	No	16	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.02487	53	53	No	16	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7	0.01616	24	53	No	16	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-8	-0.00...	-17	-53	No	16	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-1	-1.121	-39	-53	No	16	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-2	0.6582	37	48	No	15	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-3	0.7652	41	53	No	16	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-4R (bg)	0.1365	9	53	No	16	0	n/a	n/a	0.02	NP

Trend Test

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 10/4/2021, 1:39 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Lithium (ug/L)	MW-5	-0.8685	-45	-53	No	16	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-6	-3.066	-60	-53	Yes	16	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-7	0.1793	4	53	No	16	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-8	0.5903	20	48	No	15	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-1	-0.1053	-14	-53	No	16	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-2	-0.2451	-29	-53	No	16	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-3	1.066	90	53	Yes	16	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-4R (bg)	0.09837	5	53	No	16	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-5	-0.3248	-35	-53	No	16	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-6	-0.5751	-39	-53	No	16	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-7	-0.01431	-4	-53	No	16	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-8	-0.248	-17	-48	No	15	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-1	-0.04791	-27	-53	No	16	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-2	-0.04926	-34	-53	No	16	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-3	-0.07878	-60	-53	Yes	16	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-4R (bg)	-0.08367	-38	-53	No	16	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-5	-0.0744	-36	-53	No	16	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-6	-0.05935	-48	-53	No	16	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-7	-0.04407	-30	-53	No	16	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-8	-0.09885	-49	-53	No	16	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-1	-1.525	-102	-53	Yes	16	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-2	-0.5383	-36	-53	No	16	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-3	0.1578	17	53	No	16	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-4R (bg)	-0.03694	-3	-48	No	15	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-5	-0.5445	-82	-53	Yes	16	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-6	-1.47	-60	-53	Yes	16	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-7	-0.521	-43	-53	No	16	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-8	-0.223	-14	-53	No	16	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-1	-4.019	-50	-53	No	16	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2	-1.323	-5	-48	No	15	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3	7.105	55	53	Yes	16	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4R (bg)	-0.1967	-4	-53	No	16	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	-0.6631	-20	-53	No	16	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-6.543	-38	-53	No	16	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7	-2.088	-44	-53	No	16	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-8	1.612	22	53	No	16	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-1	12.11	46	53	No	16	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-2	12.86	57	53	Yes	16	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-3	29.64	77	53	Yes	16	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-4R (bg)	17.77	48	53	No	16	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	0.1229	2	53	No	16	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	-26.72	-12	-53	No	16	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7	35.97	76	53	Yes	16	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-8	19.74	62	53	Yes	16	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-1	-0.3334	-72	-53	Yes	16	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-2	0.001153	1	53	No	16	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-3	-0.06293	-11	-53	No	16	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-4R (bg)	0.06261	8	53	No	16	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-5	-0.04134	-13	-53	No	16	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-6	-0.1246	-27	-53	No	16	0	n/a	n/a	0.02	NP

Trend Test

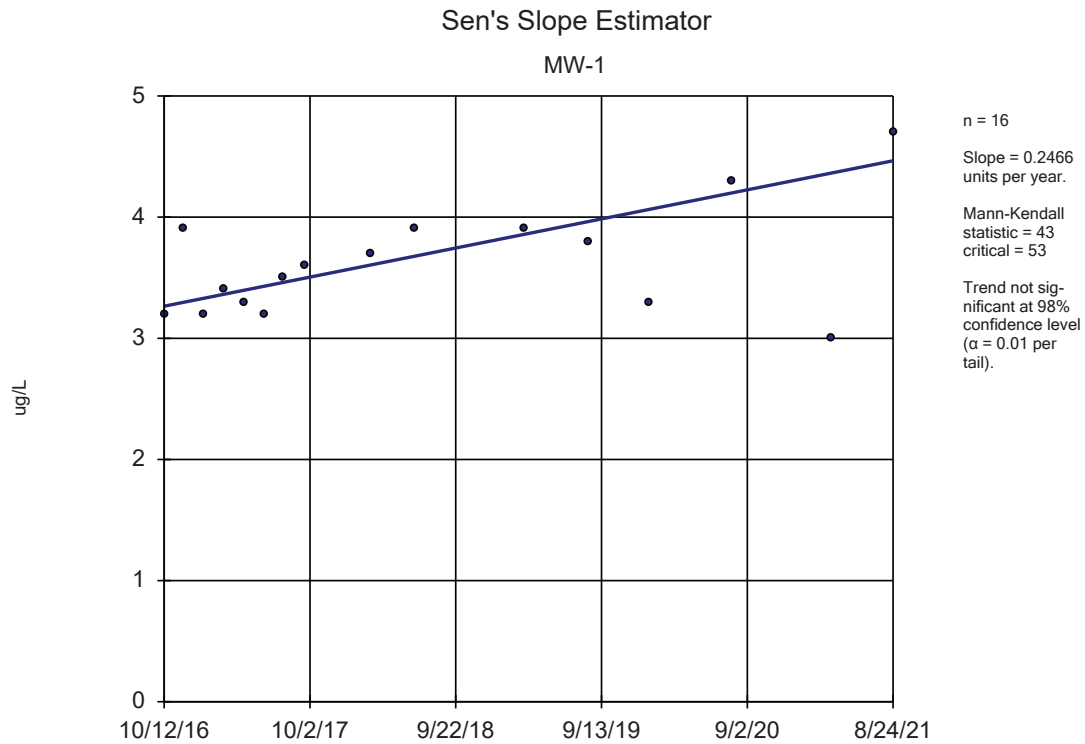
Fremont Dept. of Utilities

Client: SCS Engineers

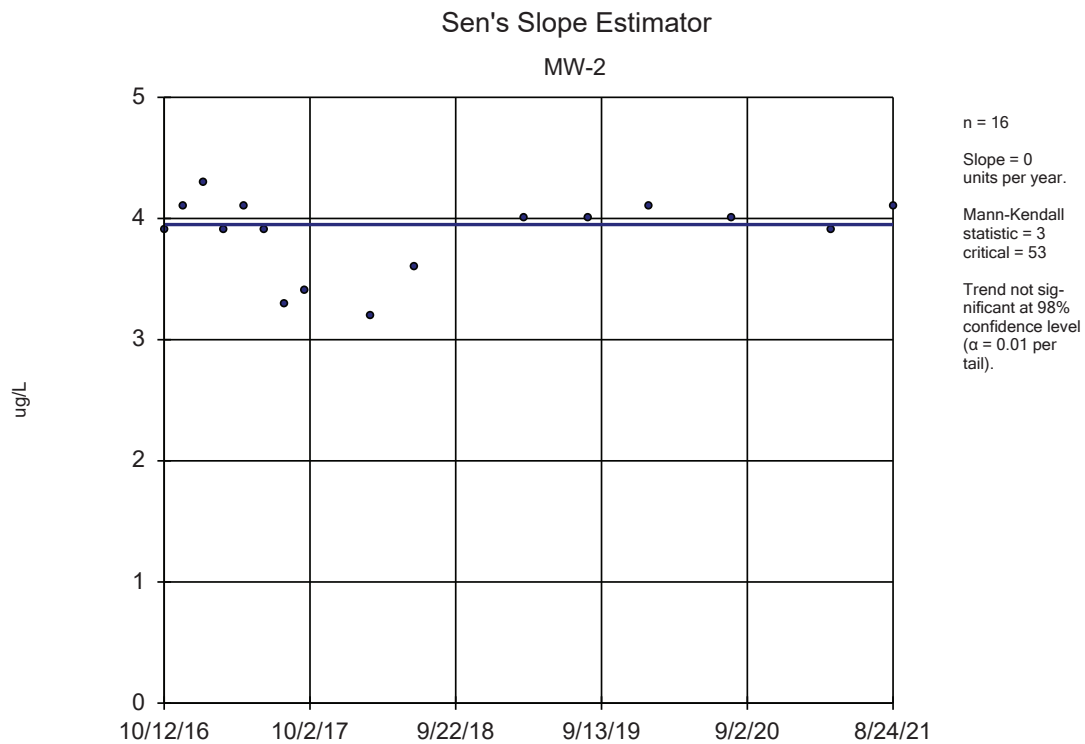
Data: Fremont Department of Utilities Groundwater

Printed 10/4/2021, 1:39 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Total Radium (pCi/L)	MW-7	0.008113	7	53	No	16	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-8	0.09547	18	53	No	16	0	n/a	n/a	0.02	NP



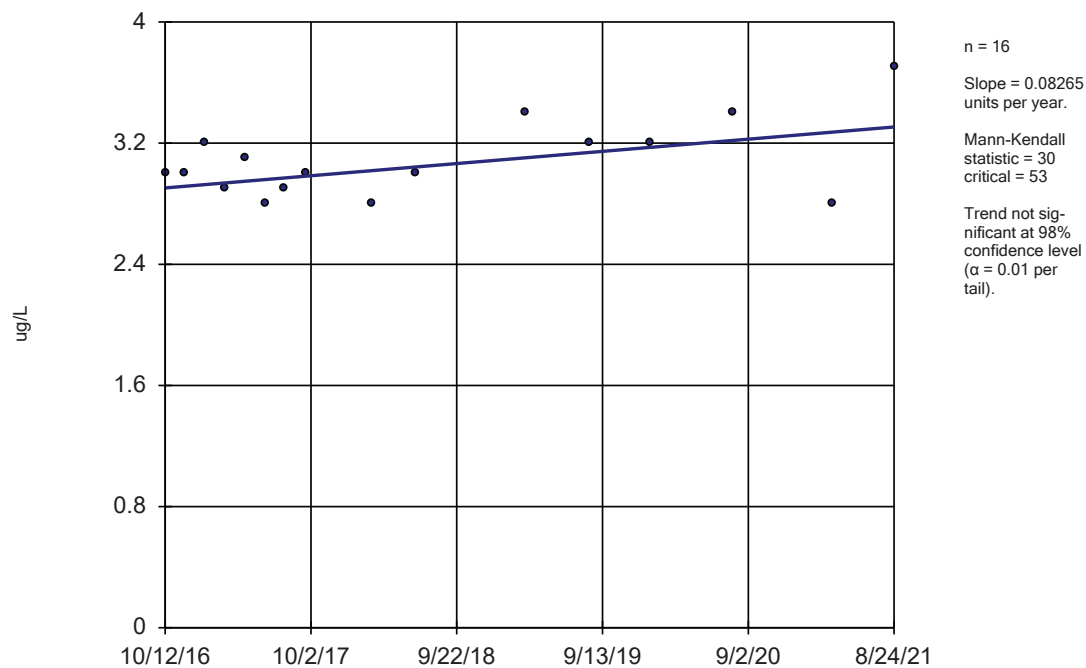
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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Arsenic [total] Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-3

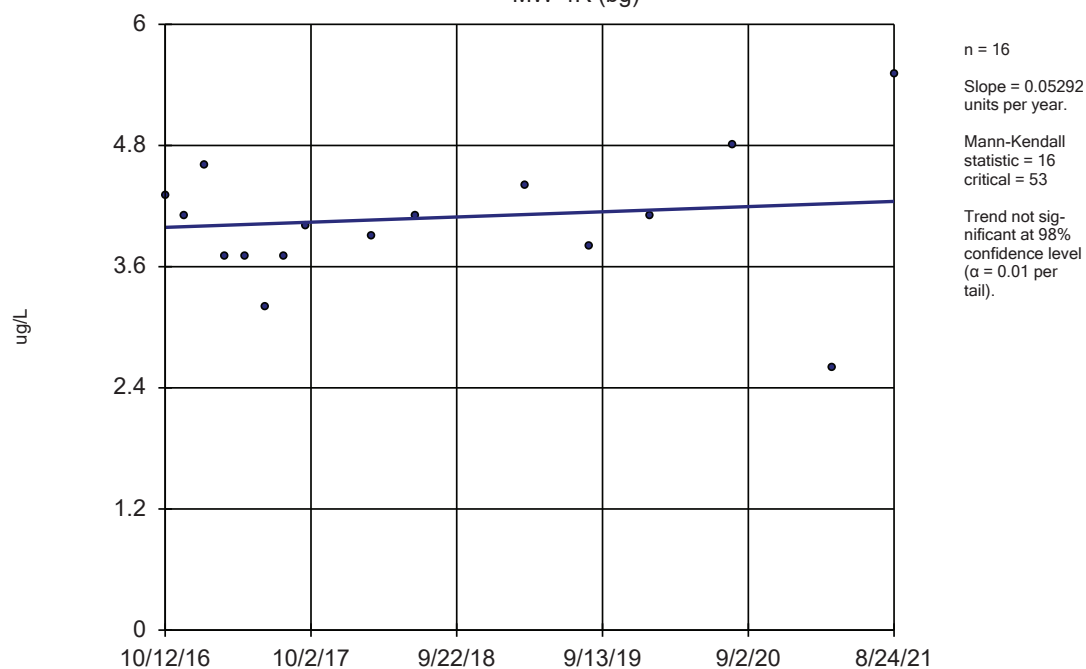


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

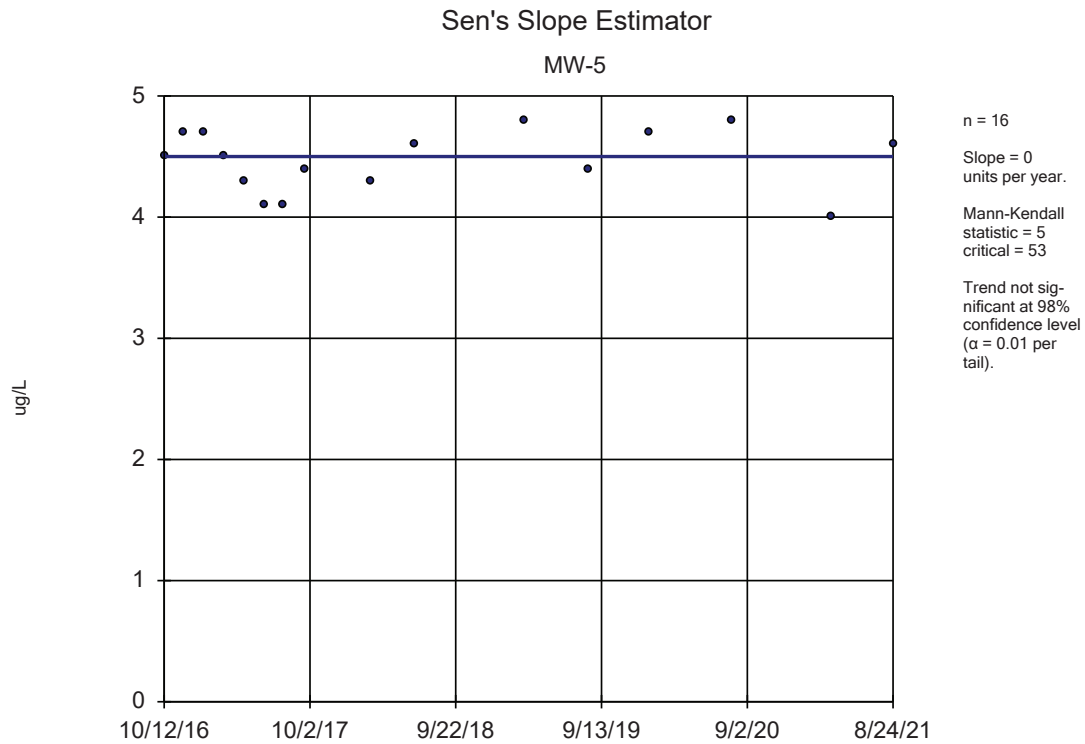
Sen's Slope Estimator

MW-4R (bg)

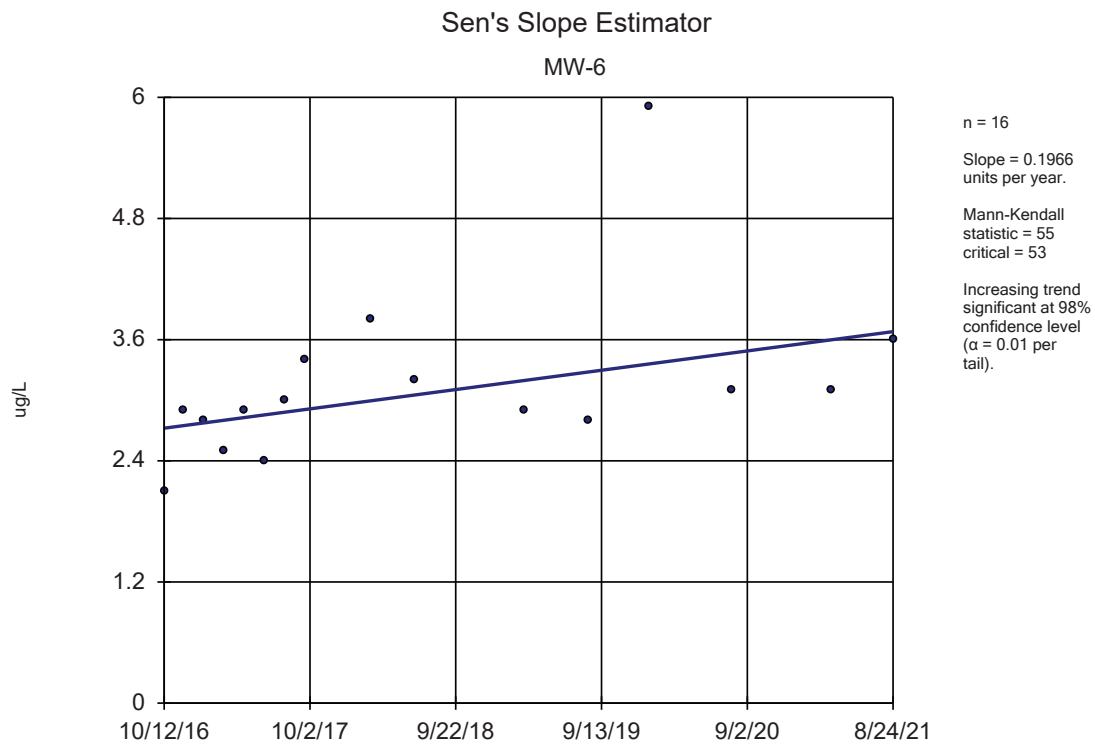


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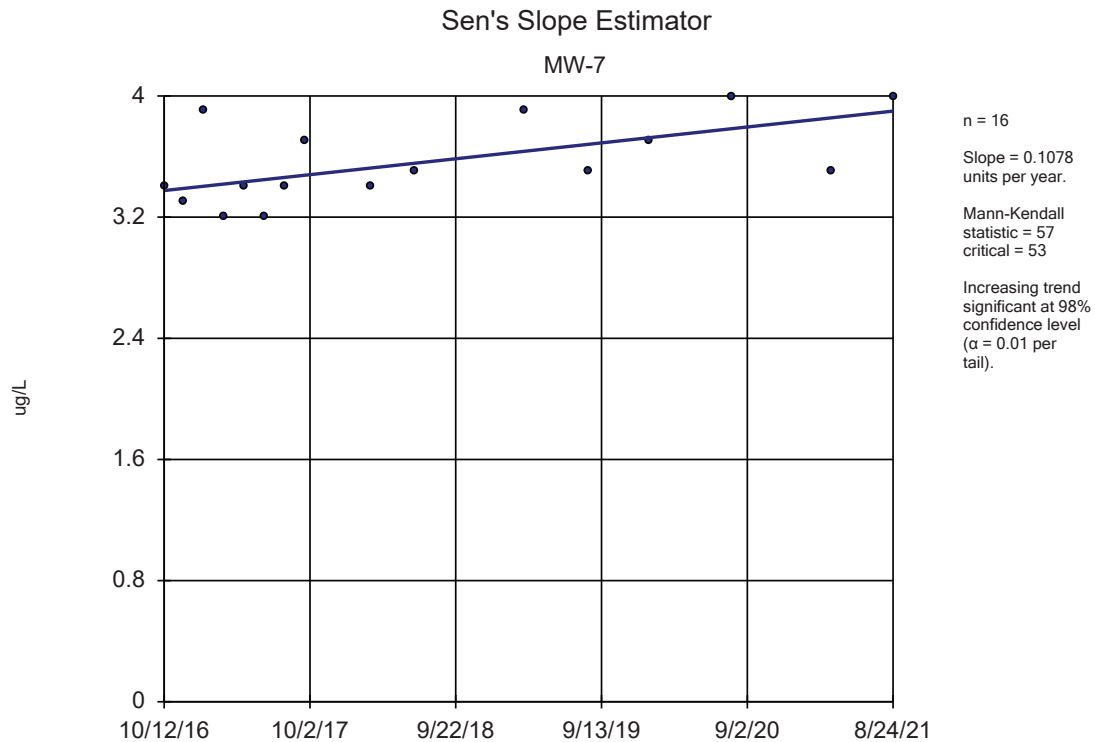
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



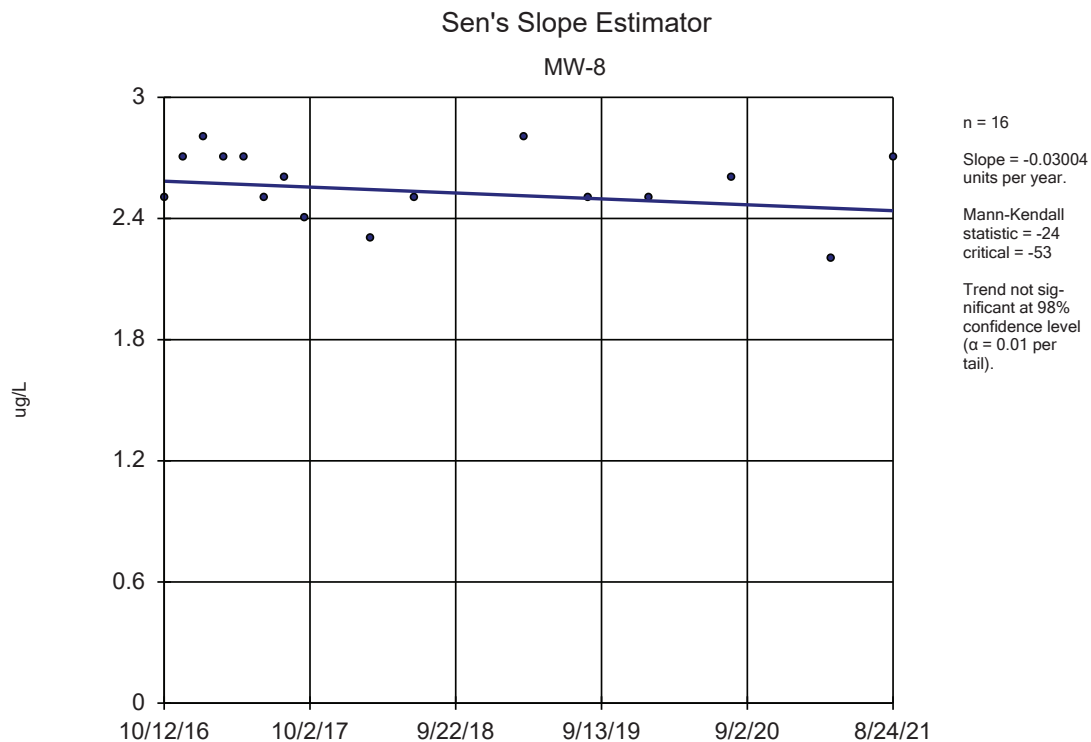
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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Arsenic [total] Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

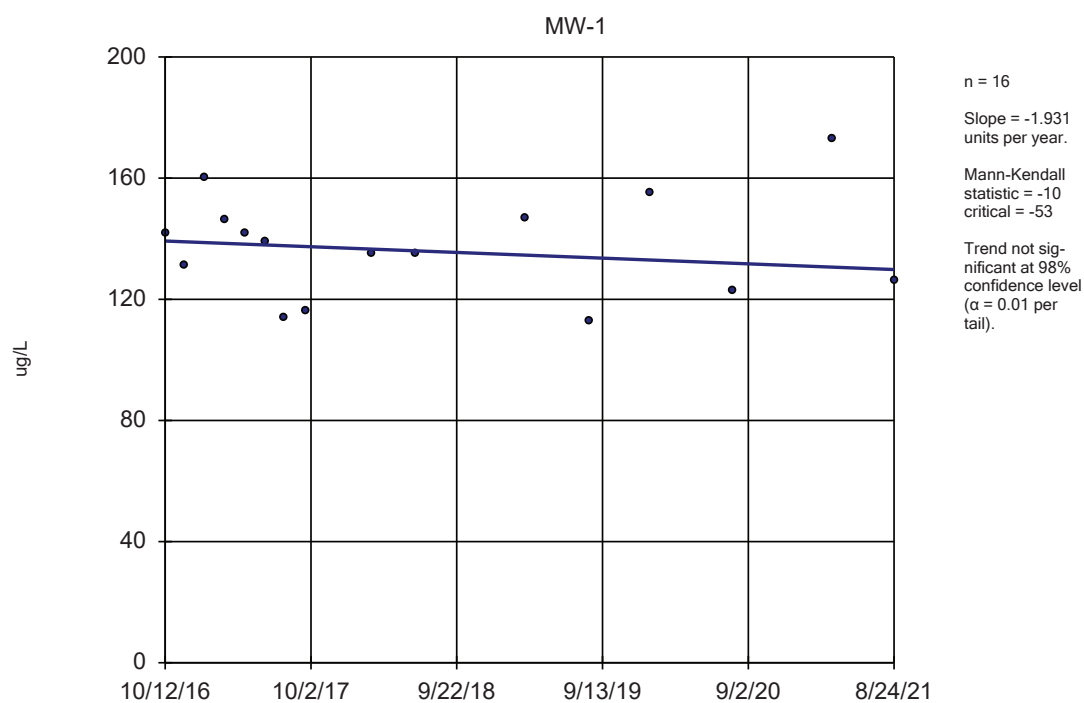


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 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



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 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

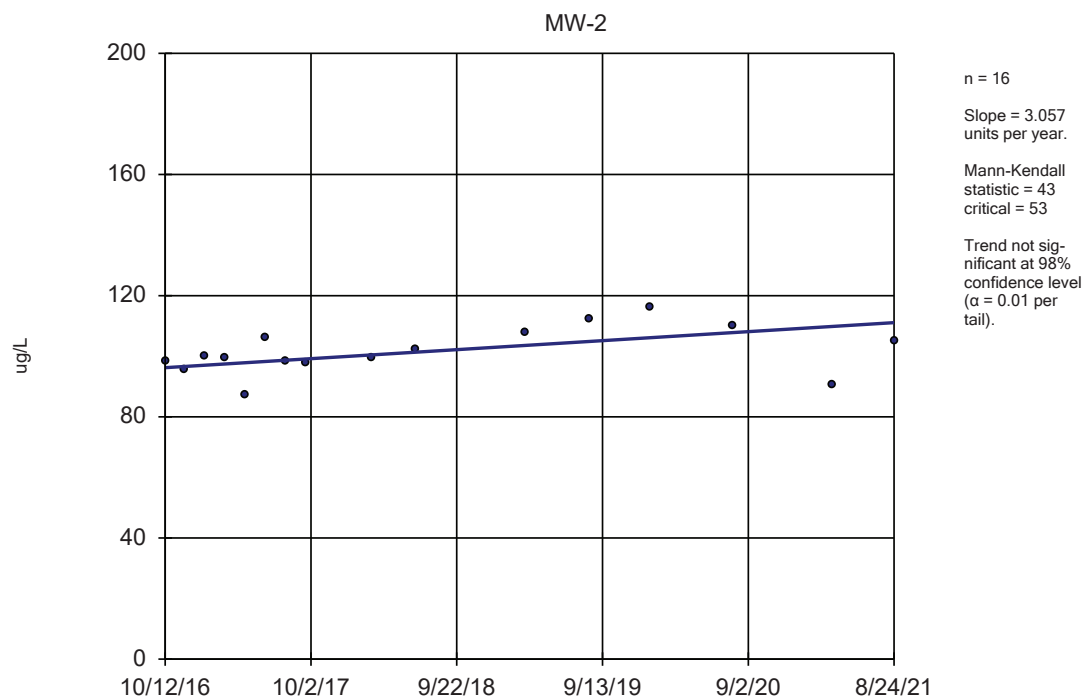
Sen's Slope Estimator



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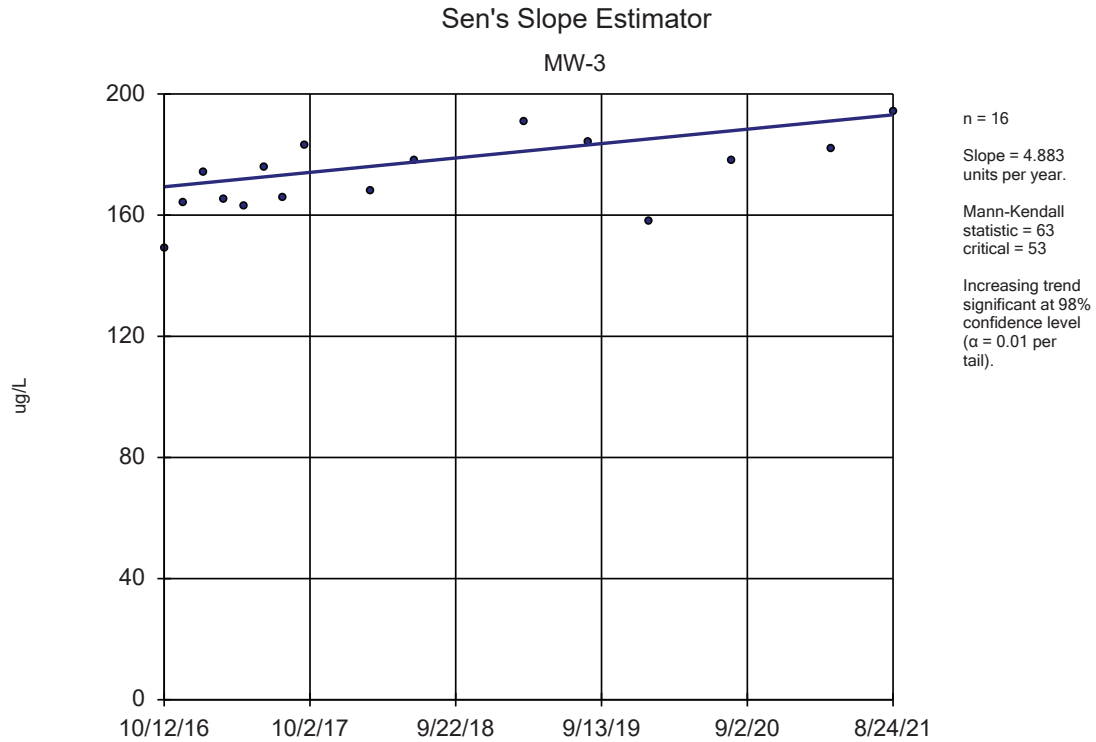
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

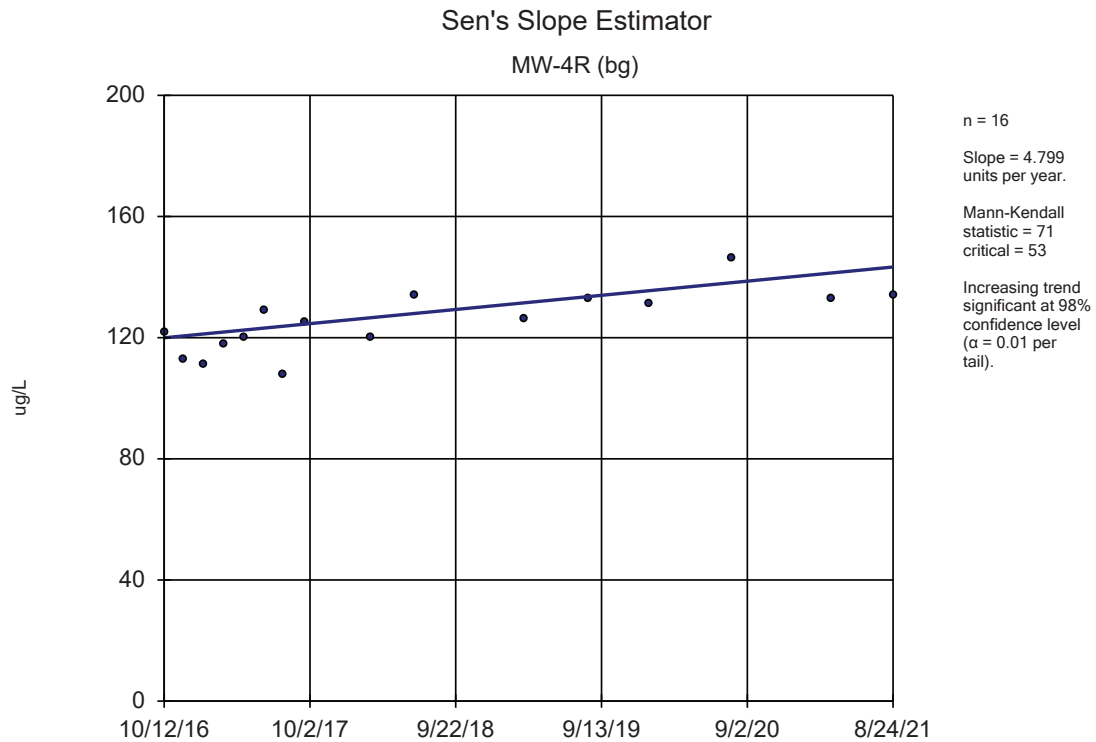


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



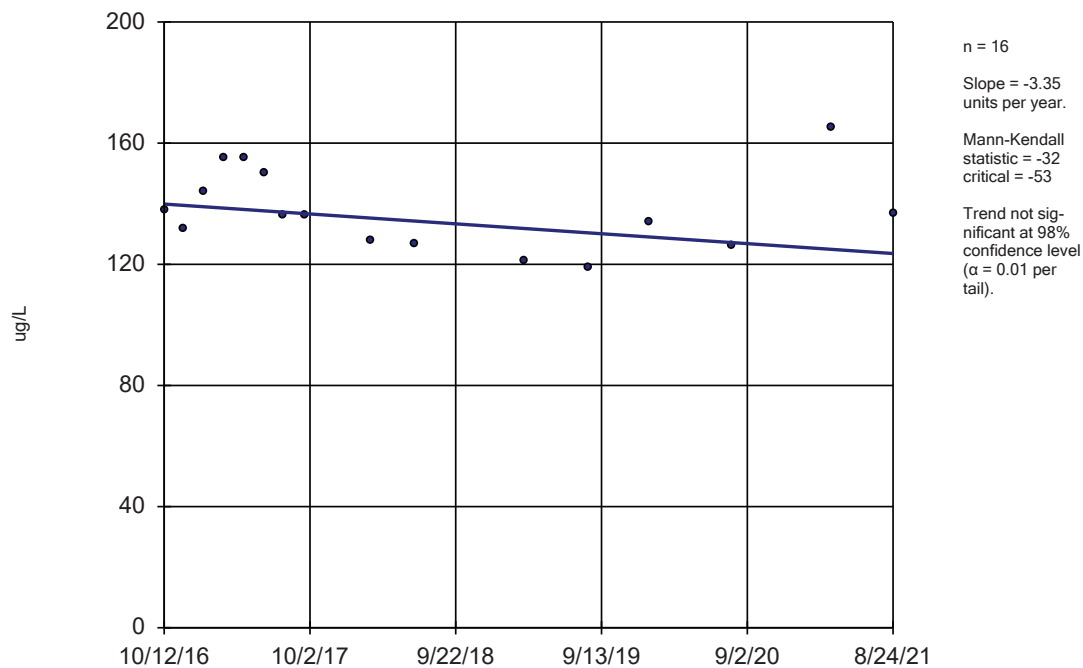
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 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Barium [total] Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-5

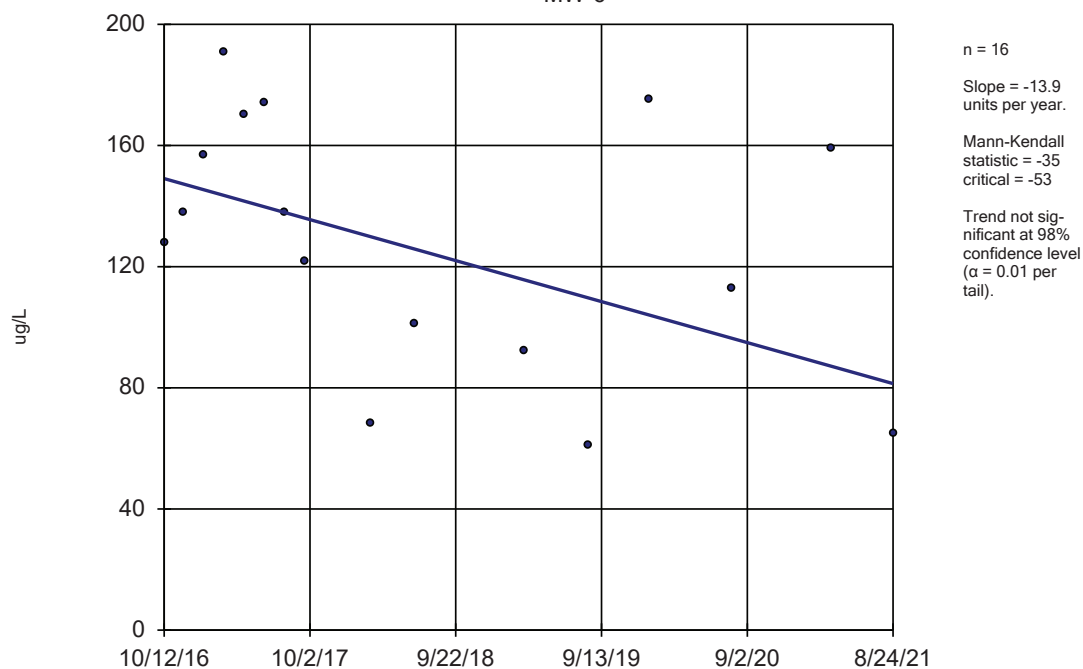


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

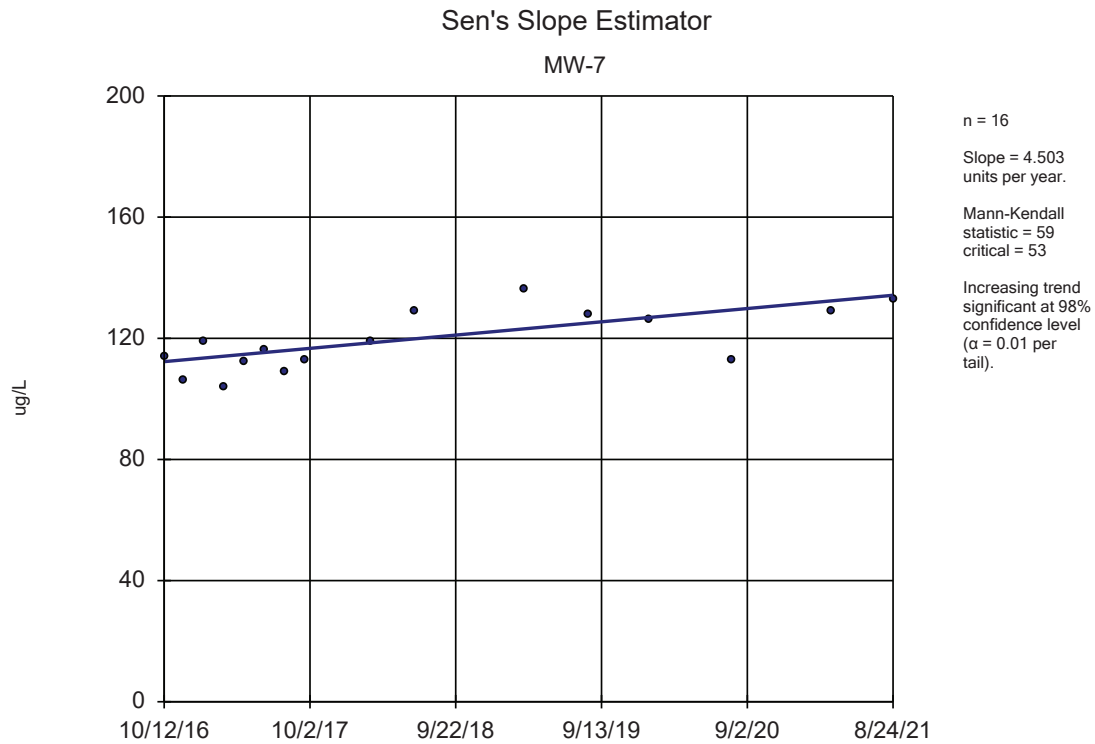
Sen's Slope Estimator

MW-6

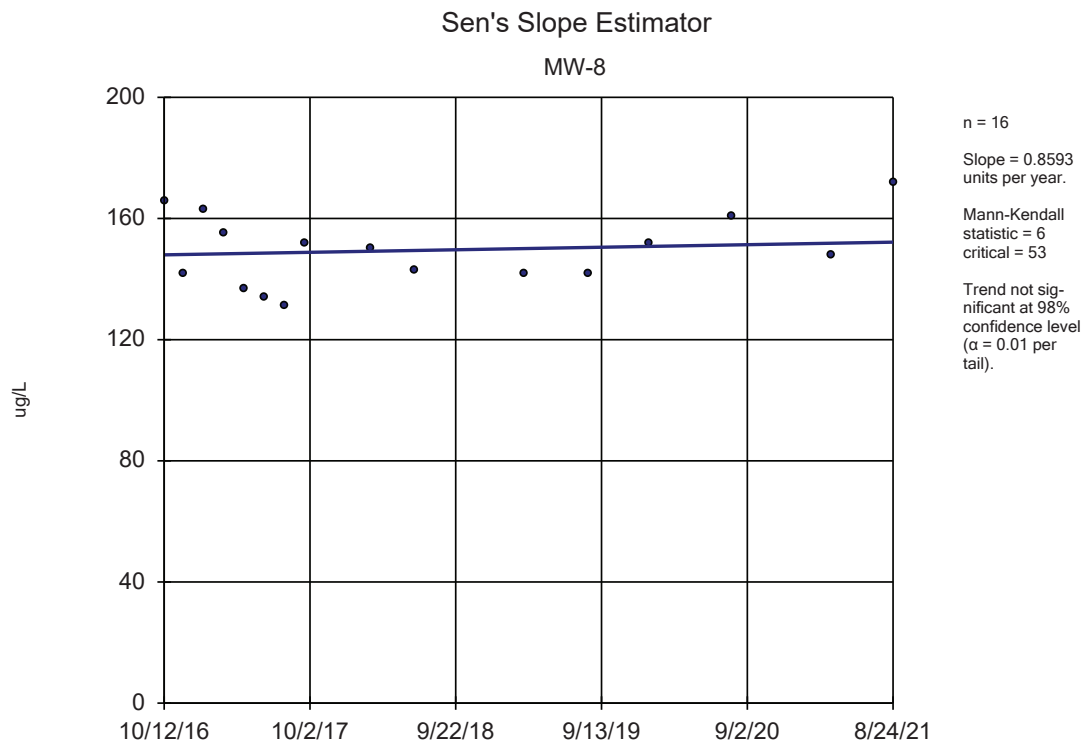


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



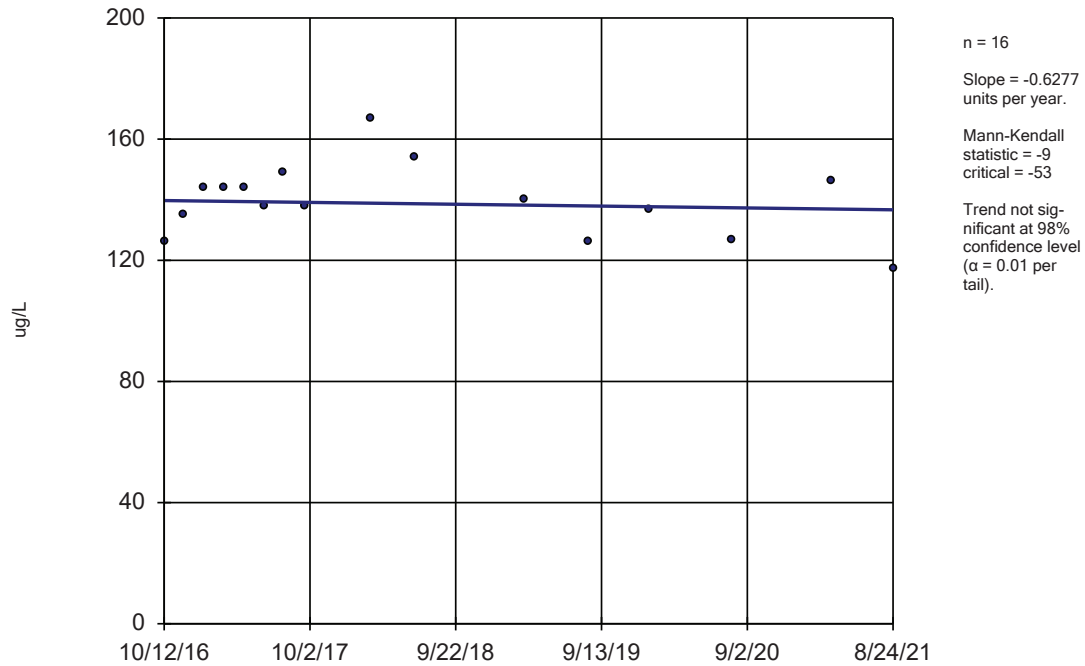
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 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Barium [total] Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-1

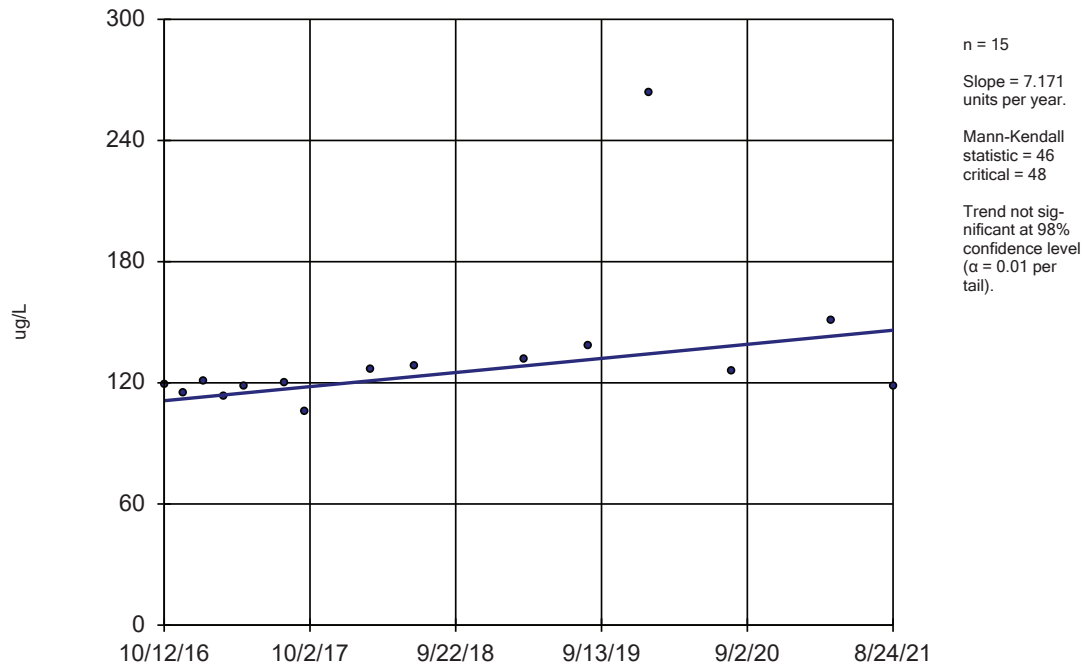


Constituent: Boron Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

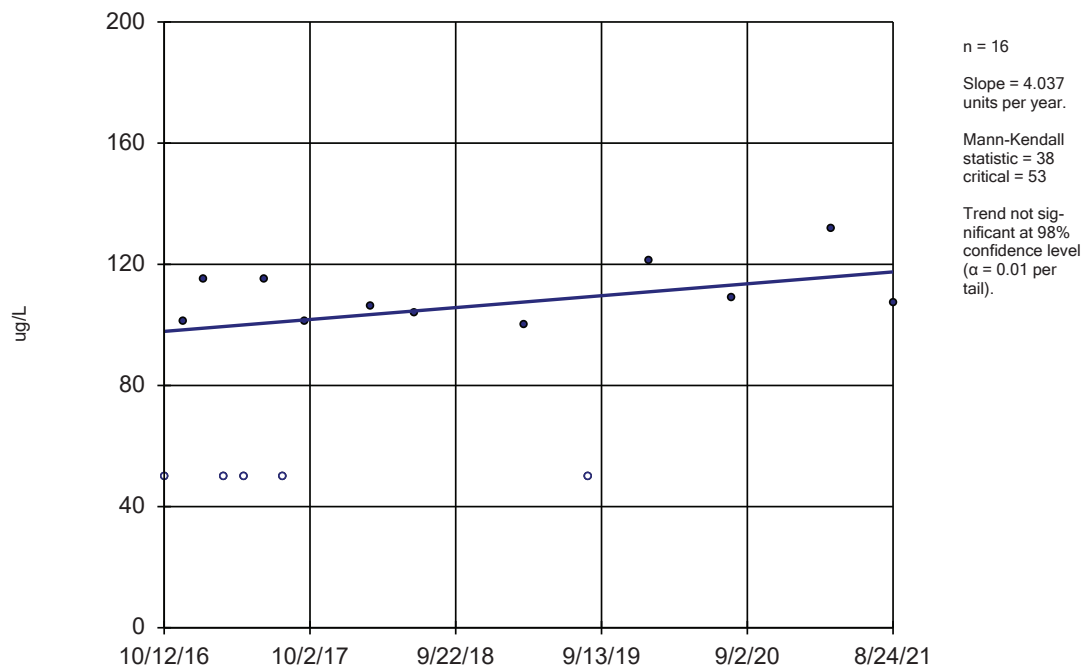


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

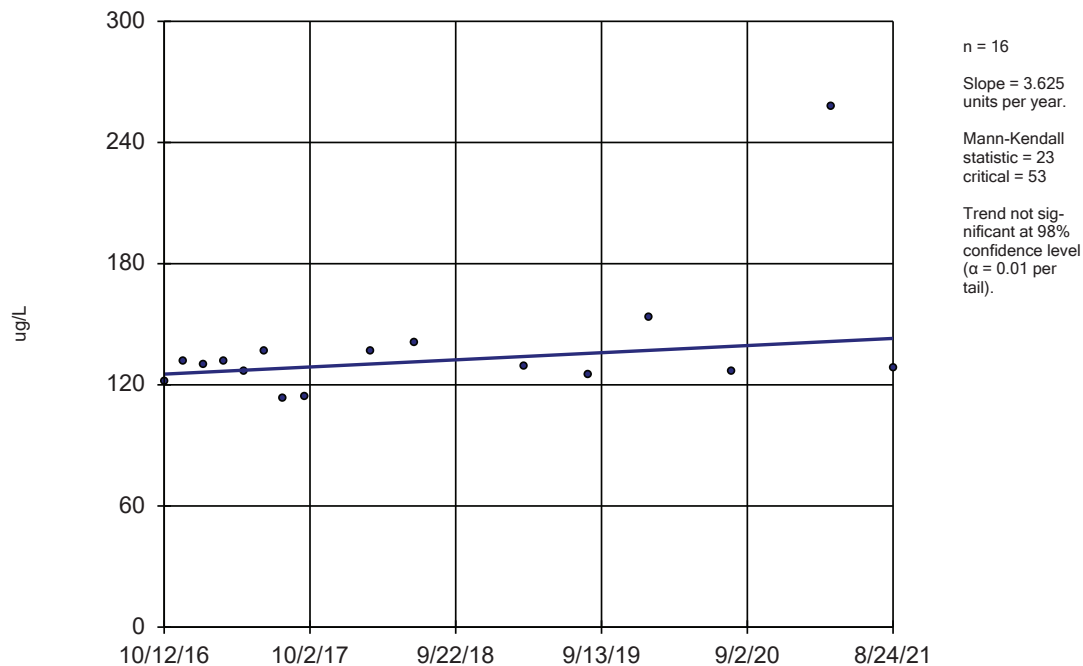
MW-3



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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

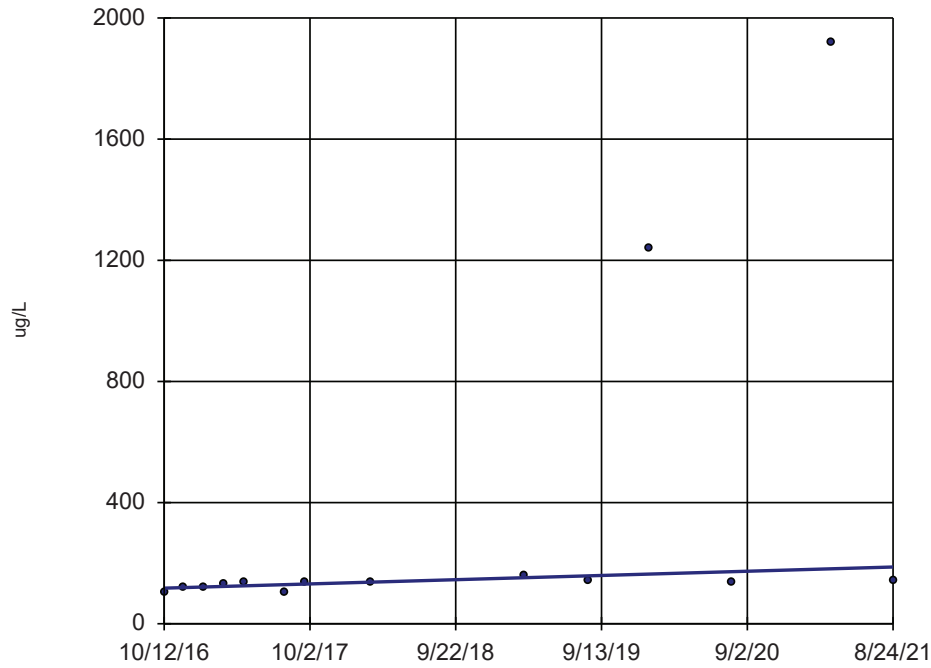
MW-5



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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

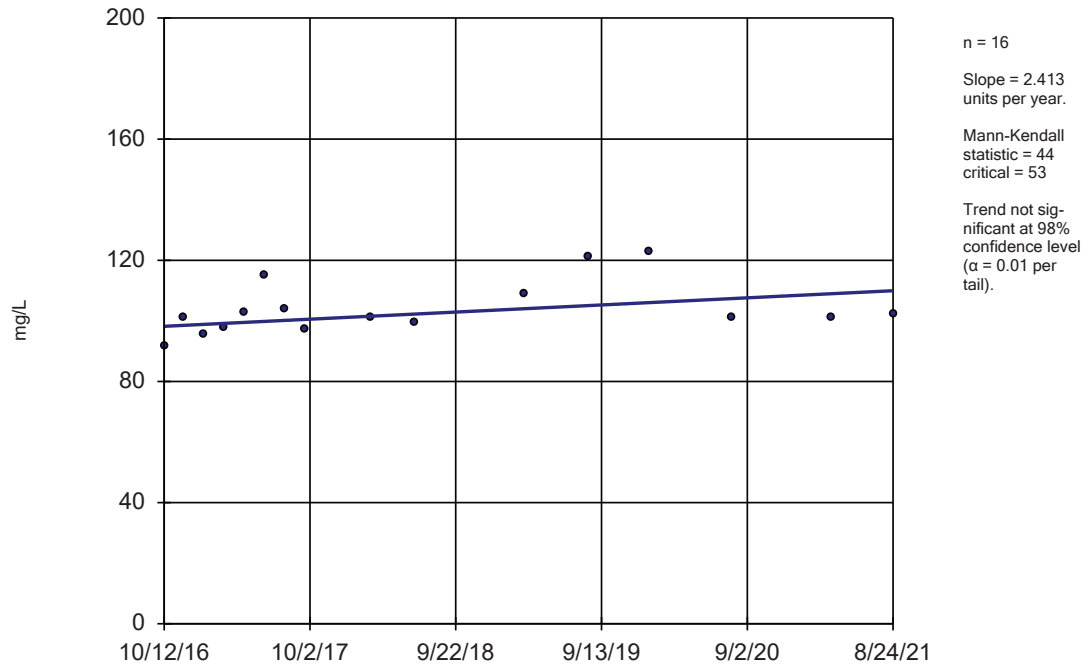
Sen's Slope Estimator

MW-8



Sen's Slope Estimator

MW-2

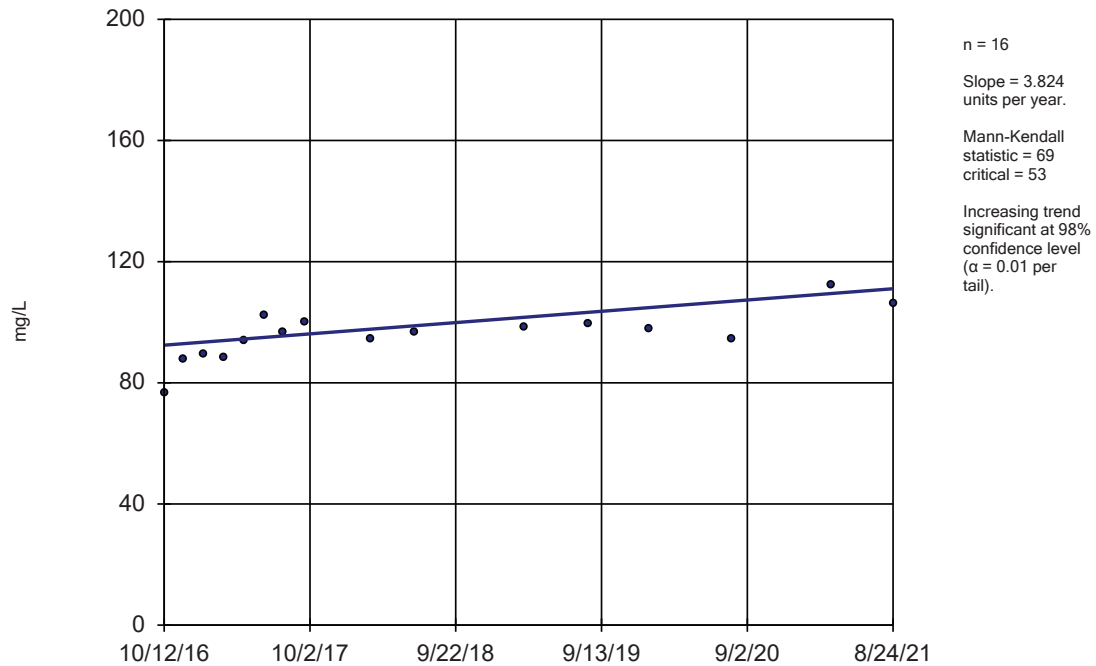


Constituent: Calcium Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-3

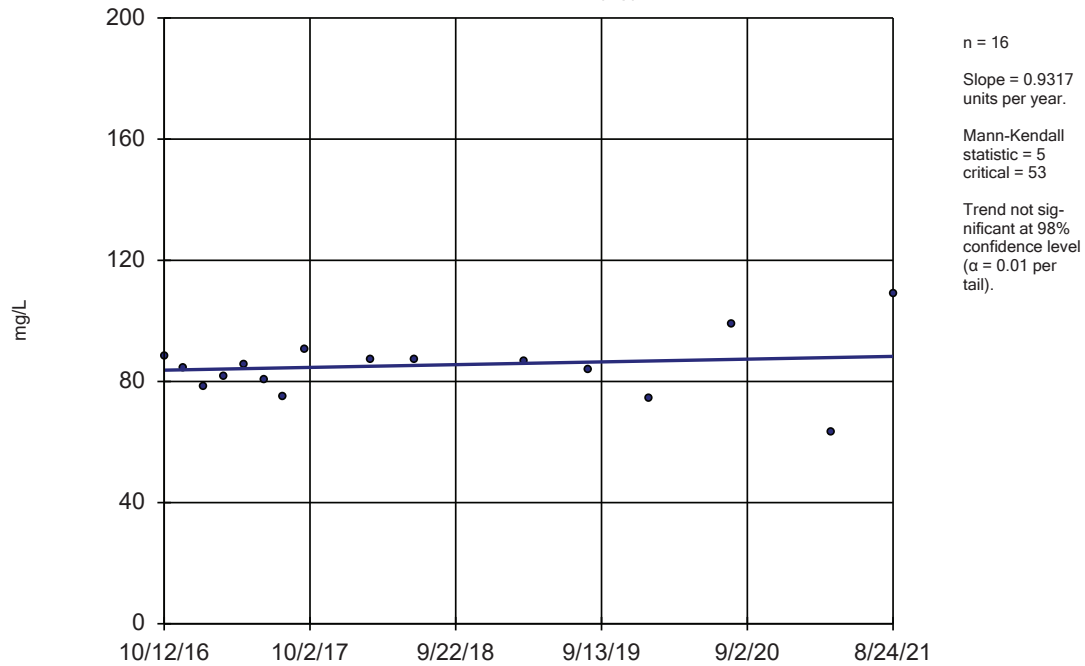


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-4R (bg)

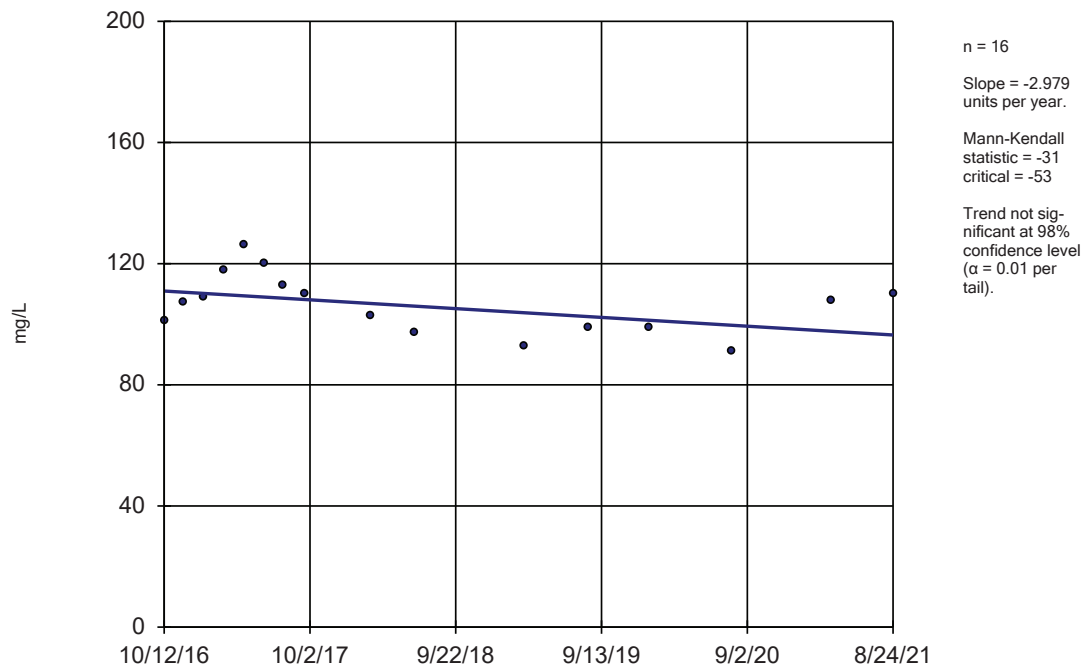


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-5

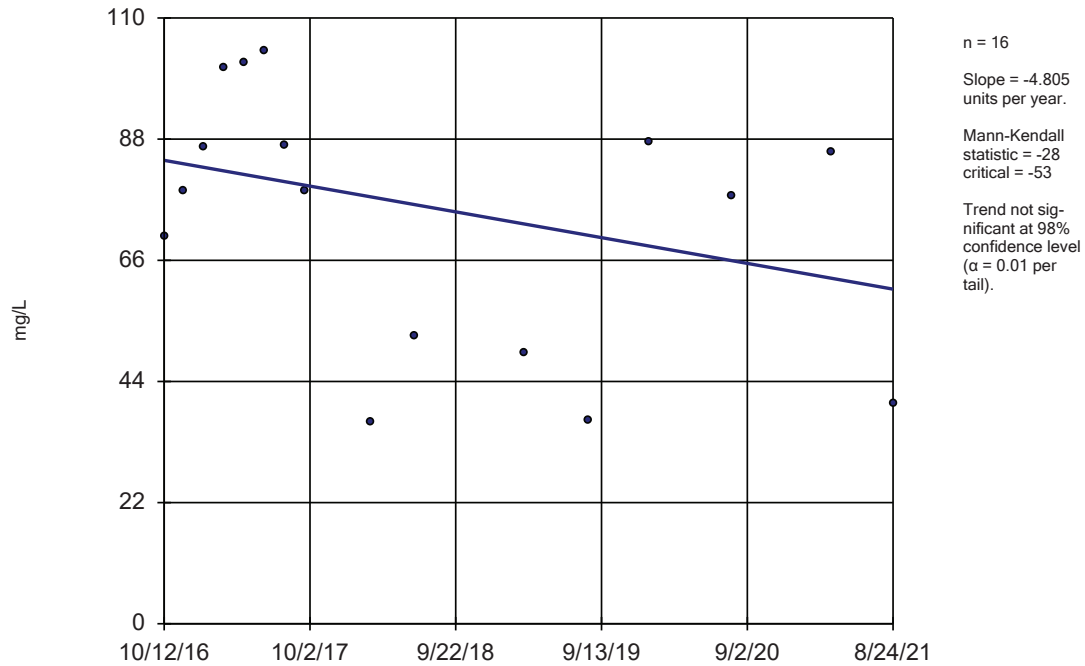


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6

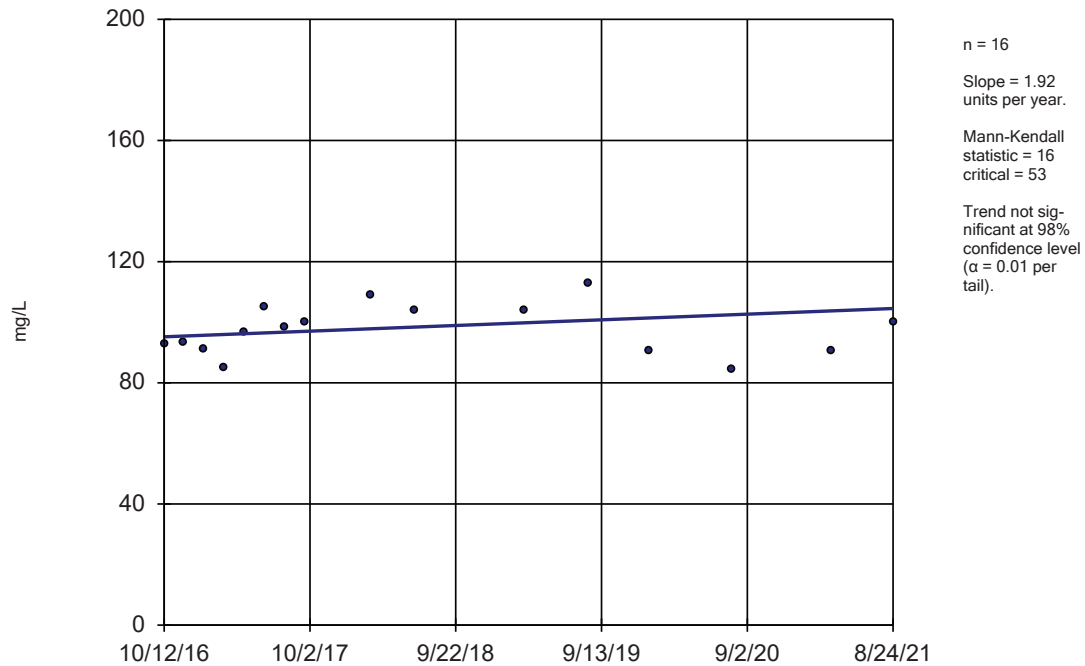


Constituent: Calcium Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

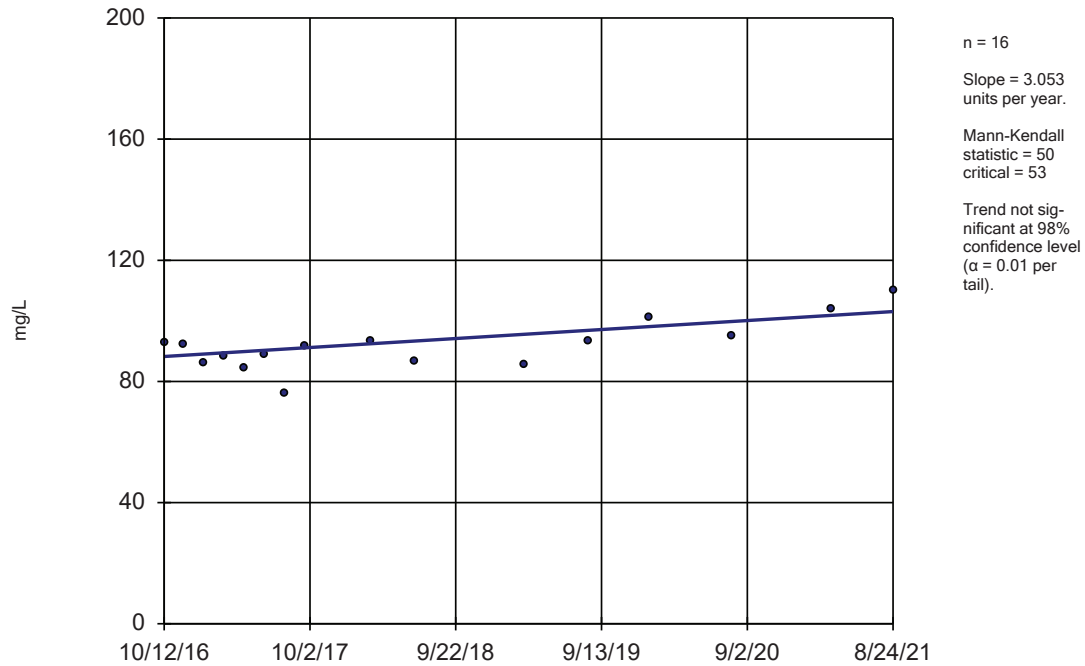
Sen's Slope Estimator

MW-7



Sen's Slope Estimator

MW-8

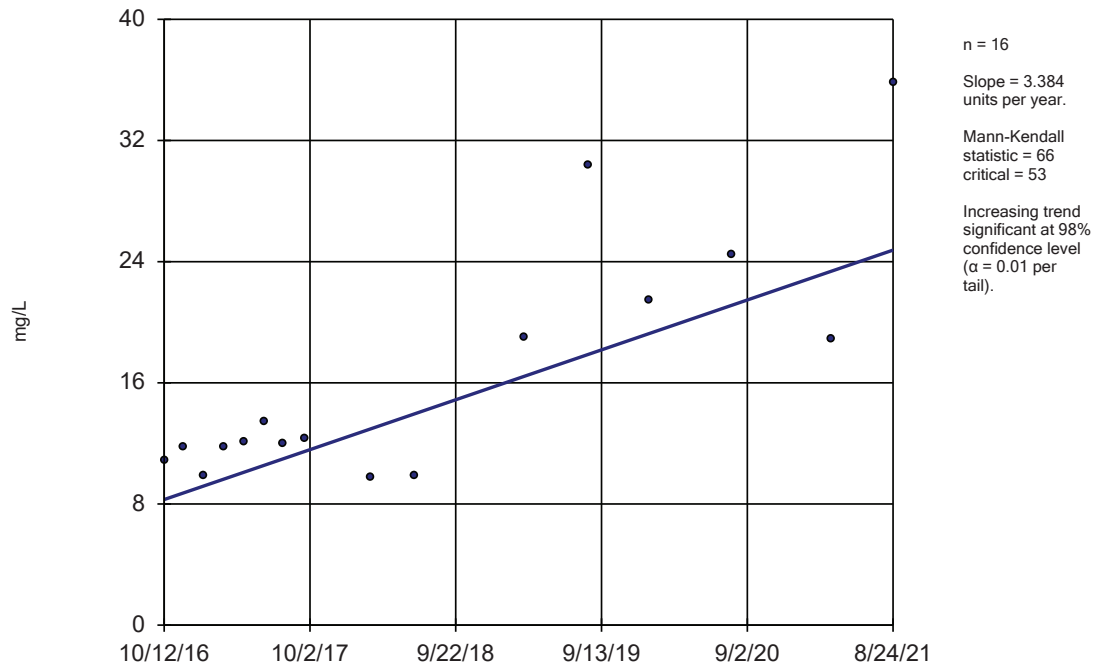


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

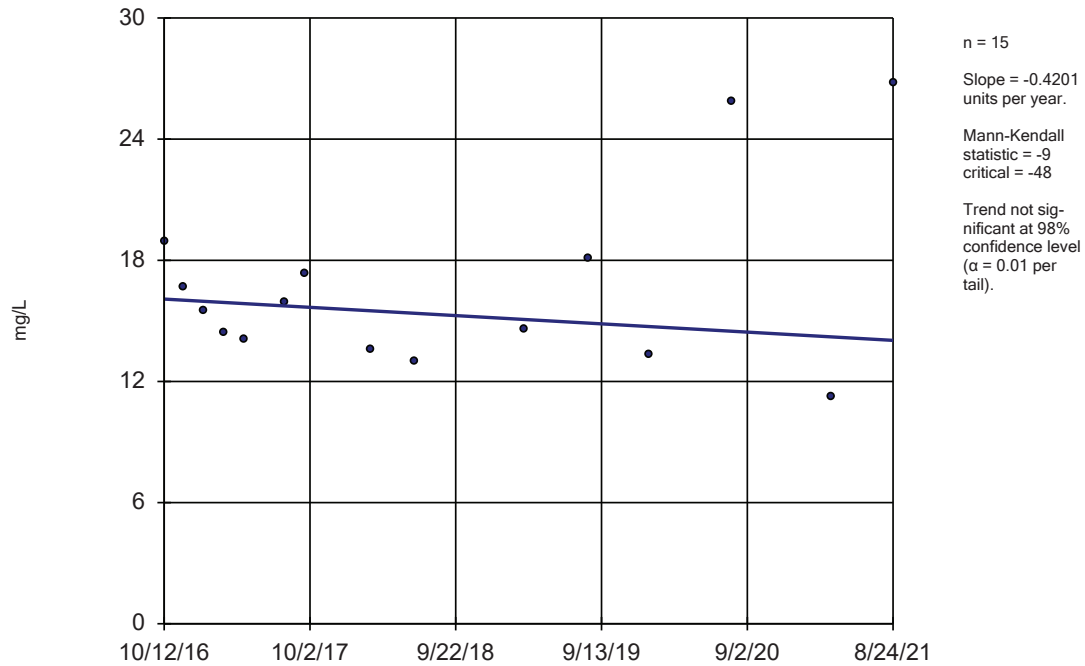
Sen's Slope Estimator

MW-1



Sen's Slope Estimator

MW-2

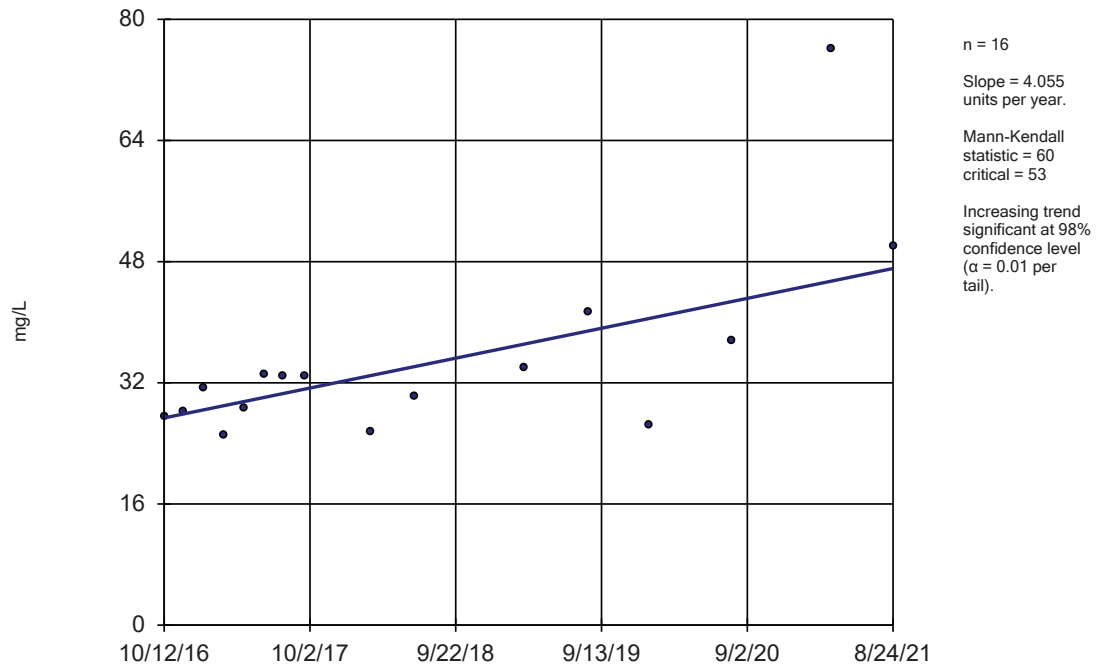


Constituent: Chloride Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

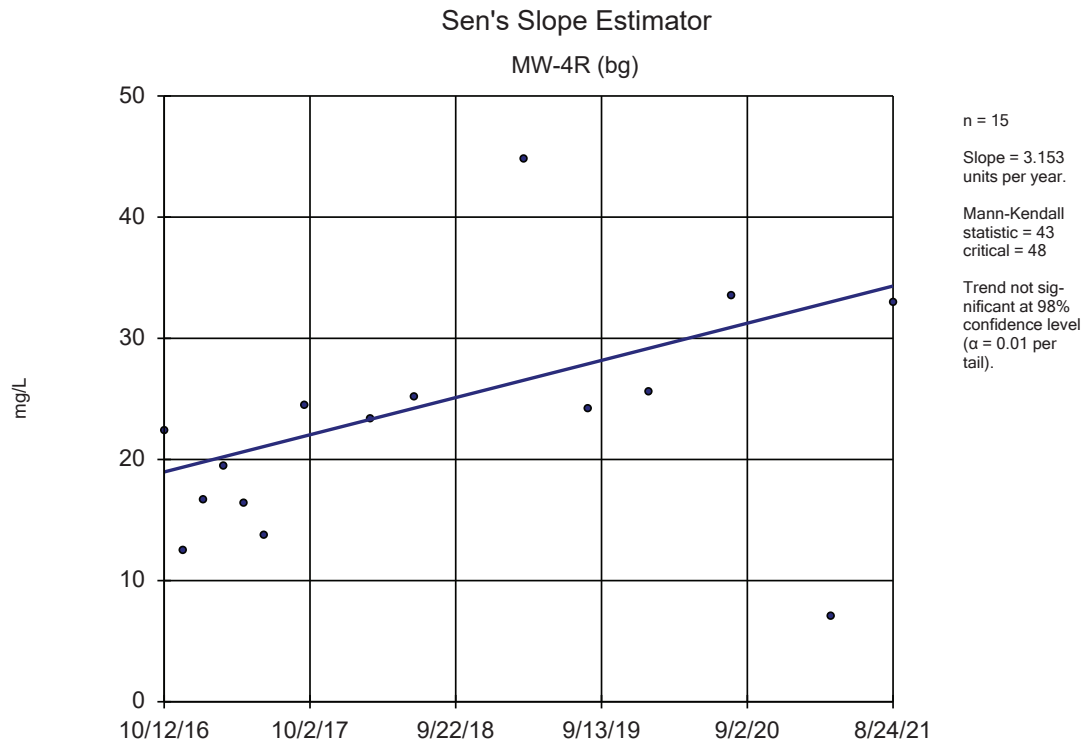
Sen's Slope Estimator

MW-3

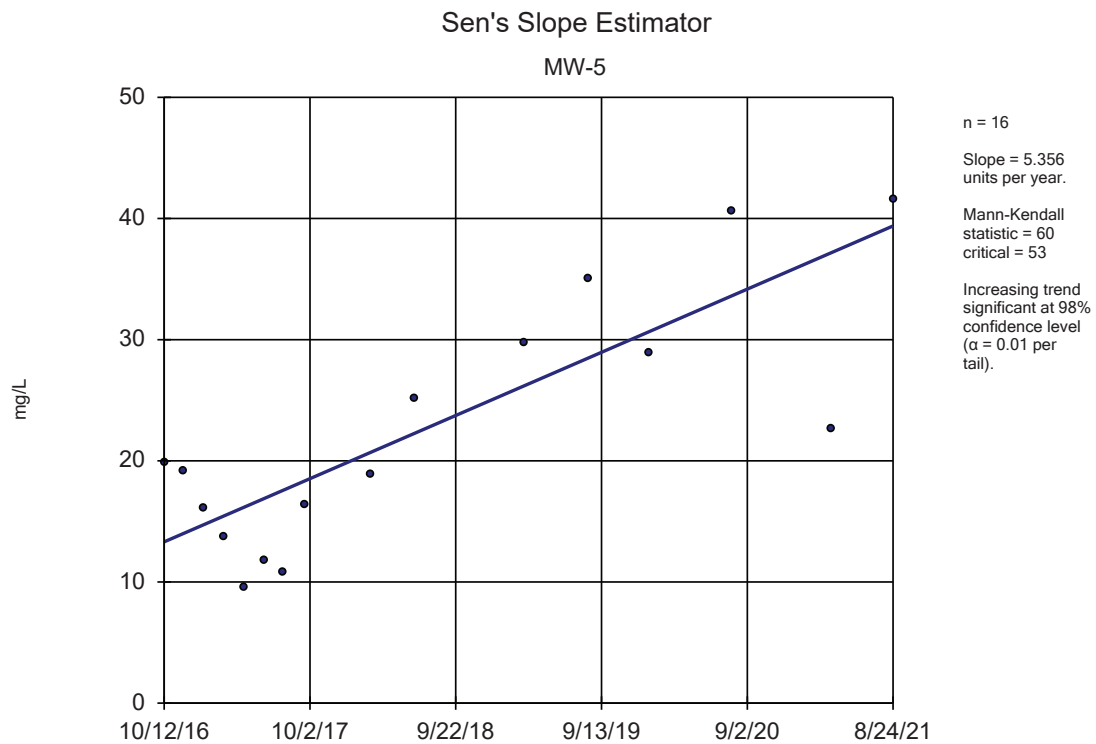


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

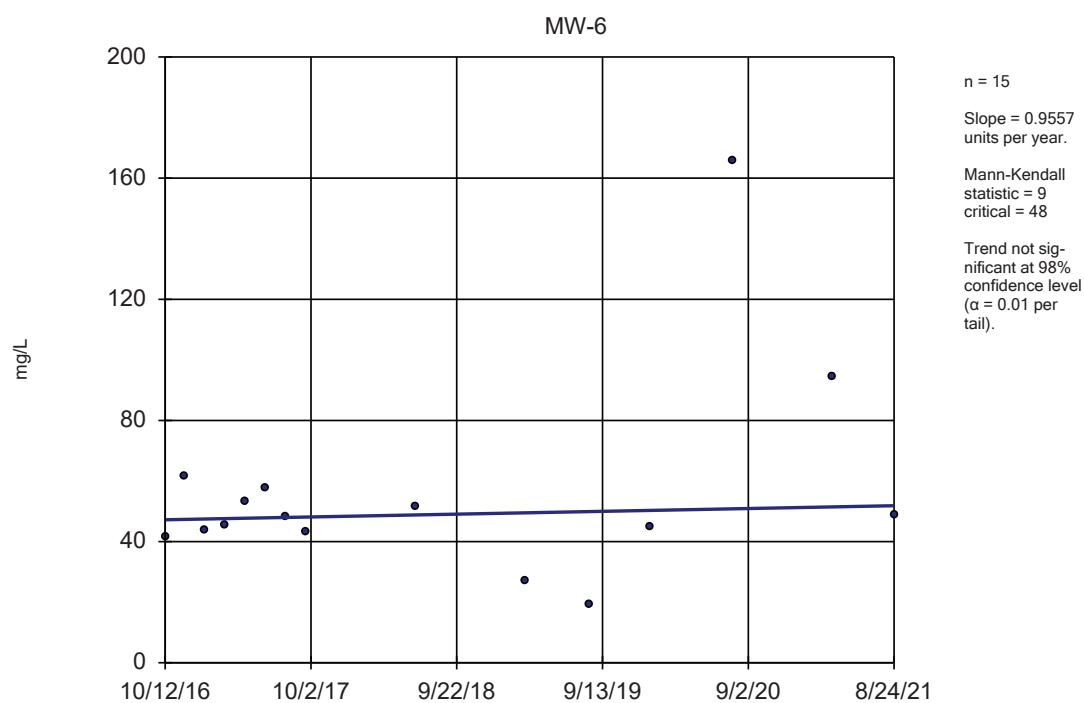


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 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



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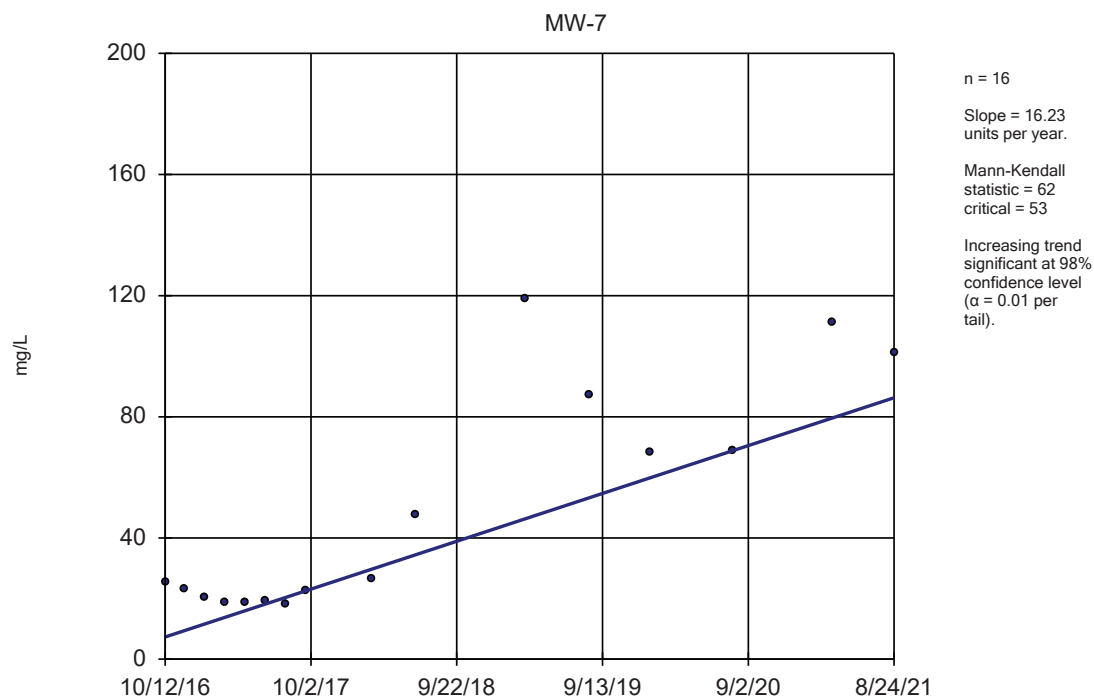
Sen's Slope Estimator



Constituent: Chloride Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

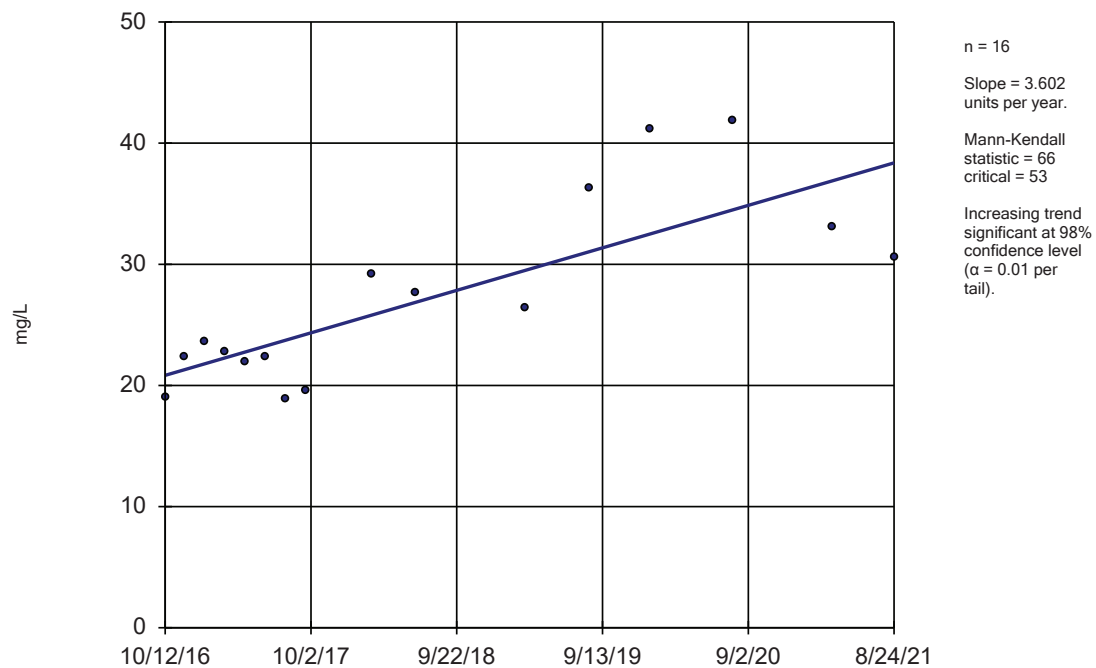


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-8

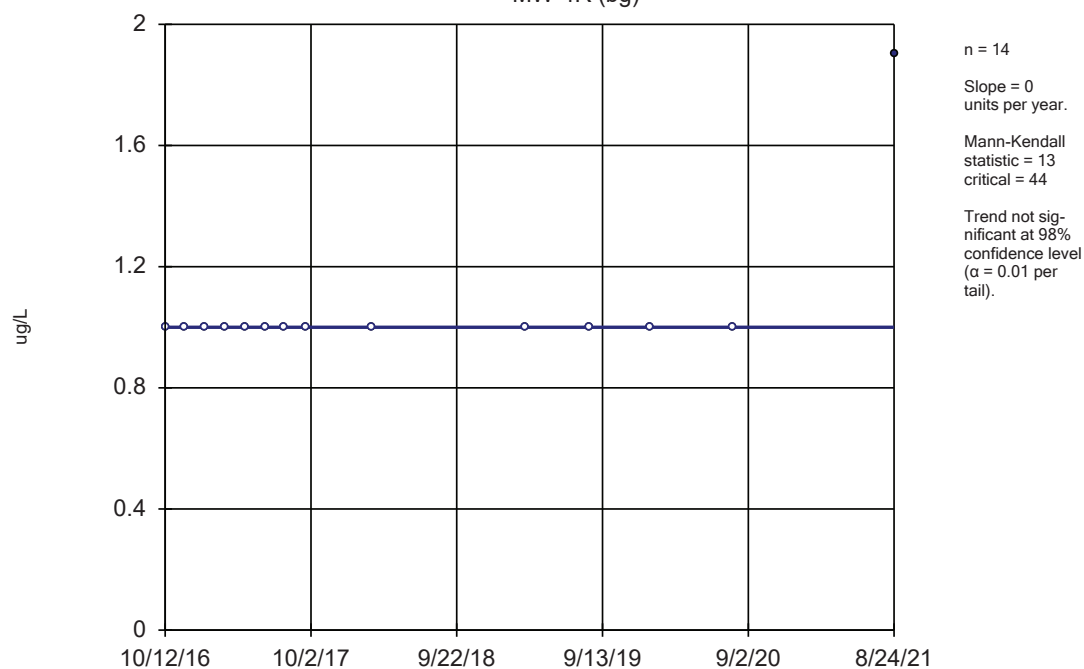


Constituent: Chloride Analysis Run 10/4/2021 1:35 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-4R (bg)

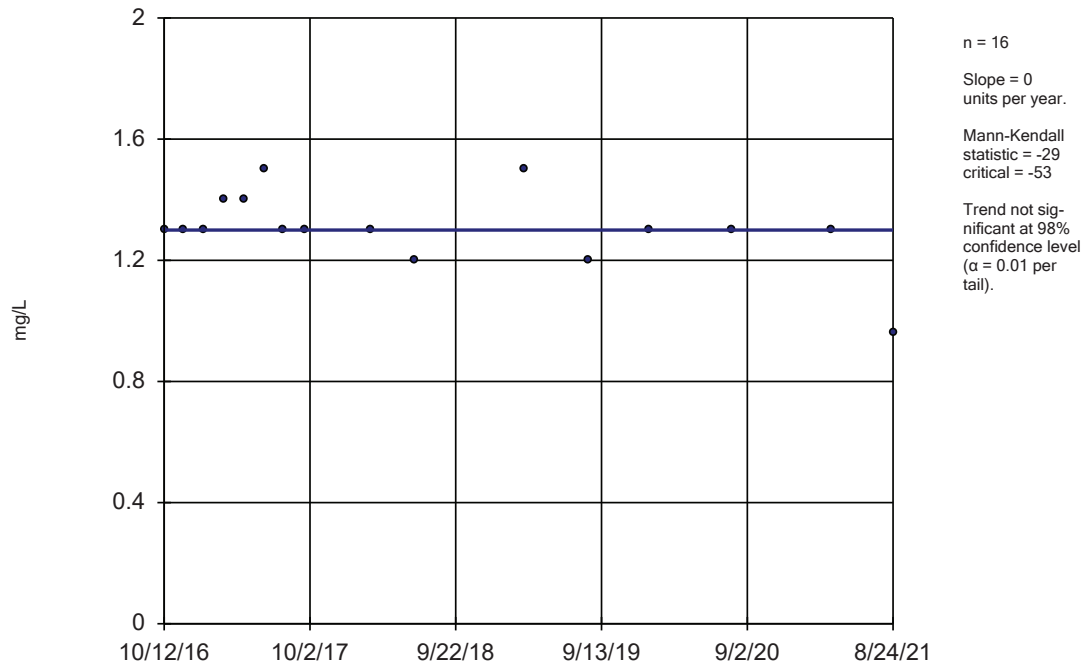


Constituent: Chromium [total] Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

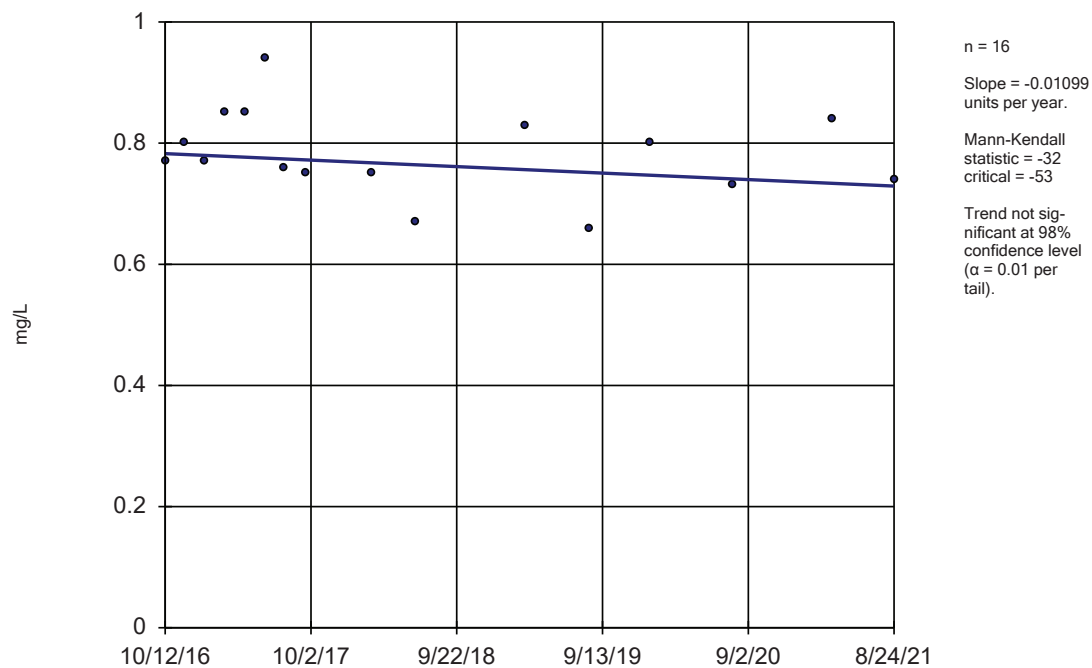
Sen's Slope Estimator

MW-1



Sen's Slope Estimator

MW-3

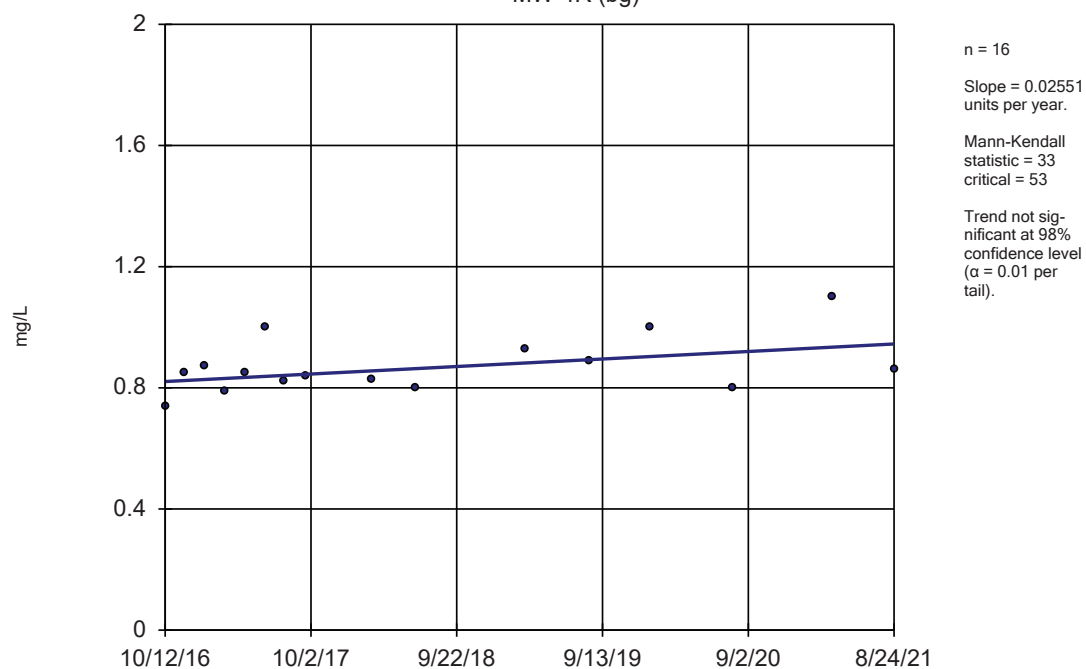


Constituent: Fluoride Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

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Sen's Slope Estimator

MW-4R (bg)

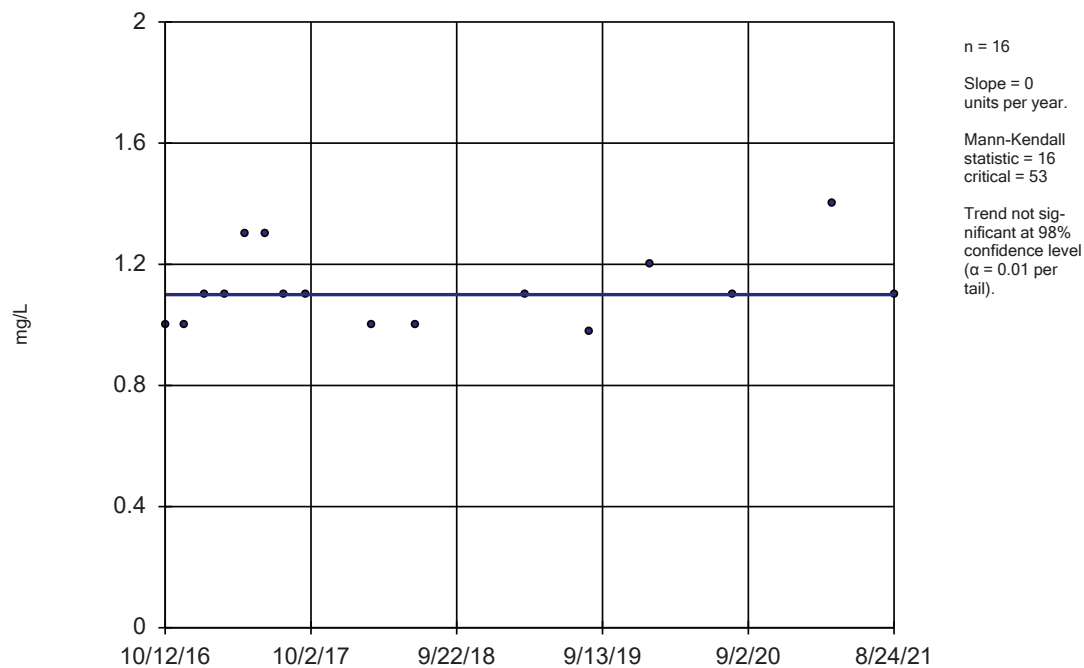


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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-5

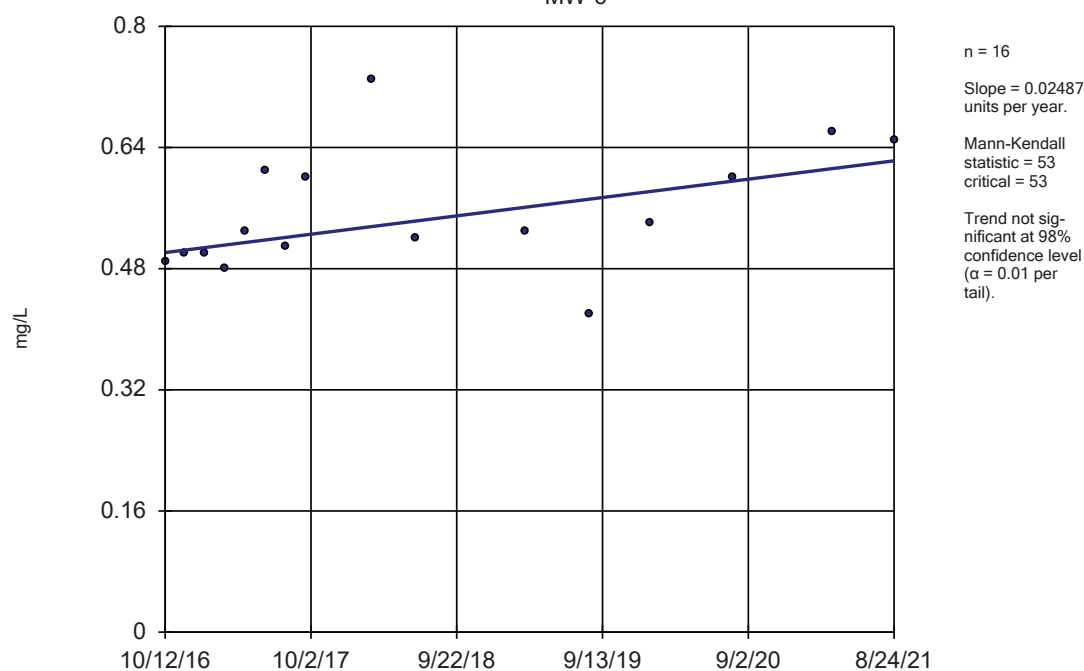


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Sen's Slope Estimator

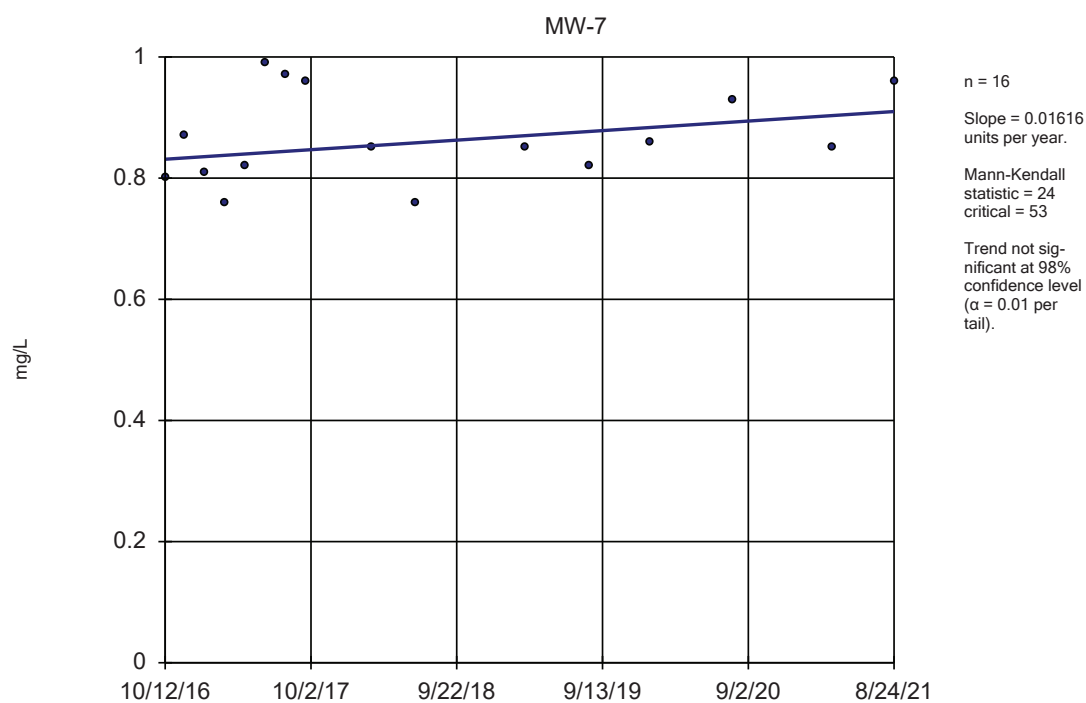
MW-6



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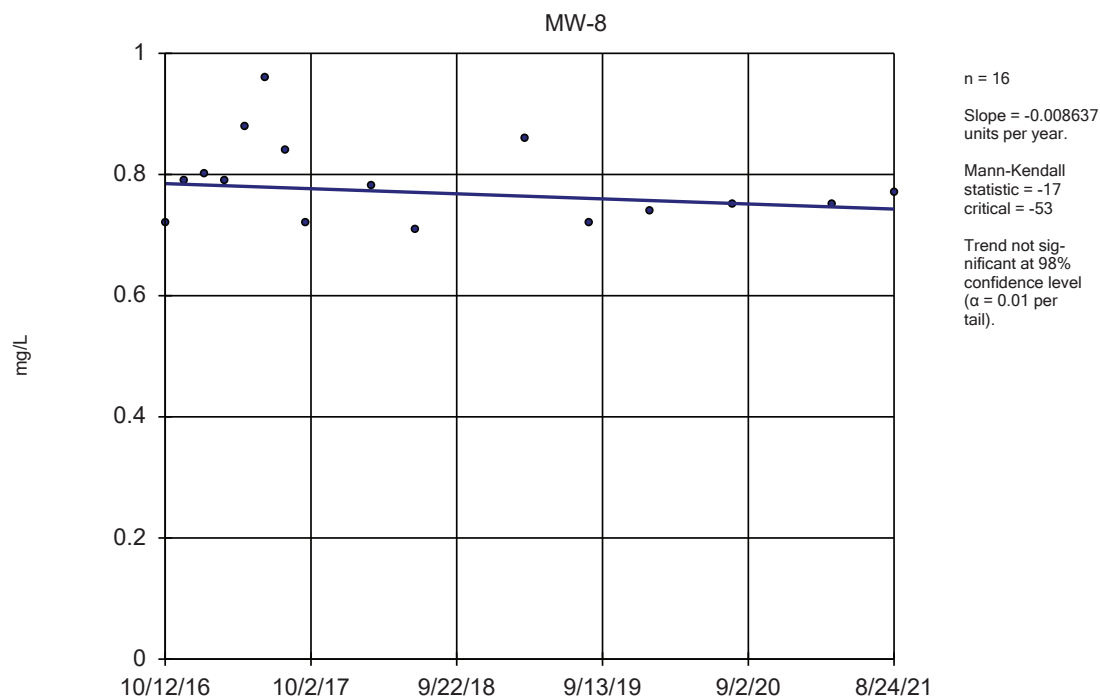
Sen's Slope Estimator



Constituent: Fluoride Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

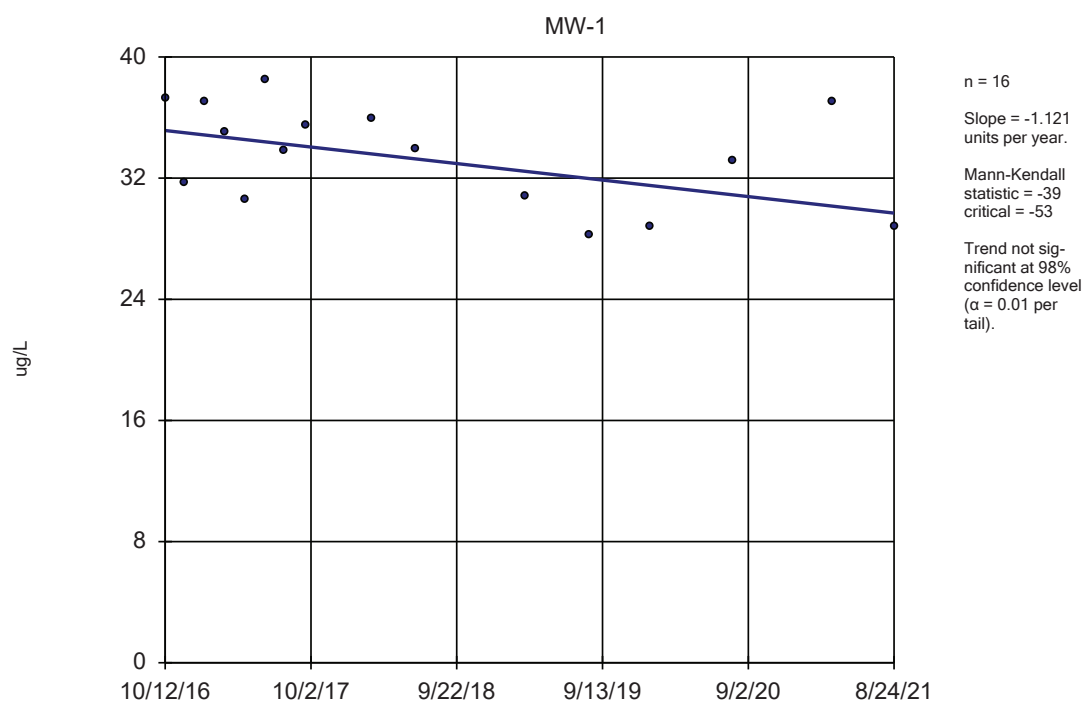
Sen's Slope Estimator



Constituent: Fluoride Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

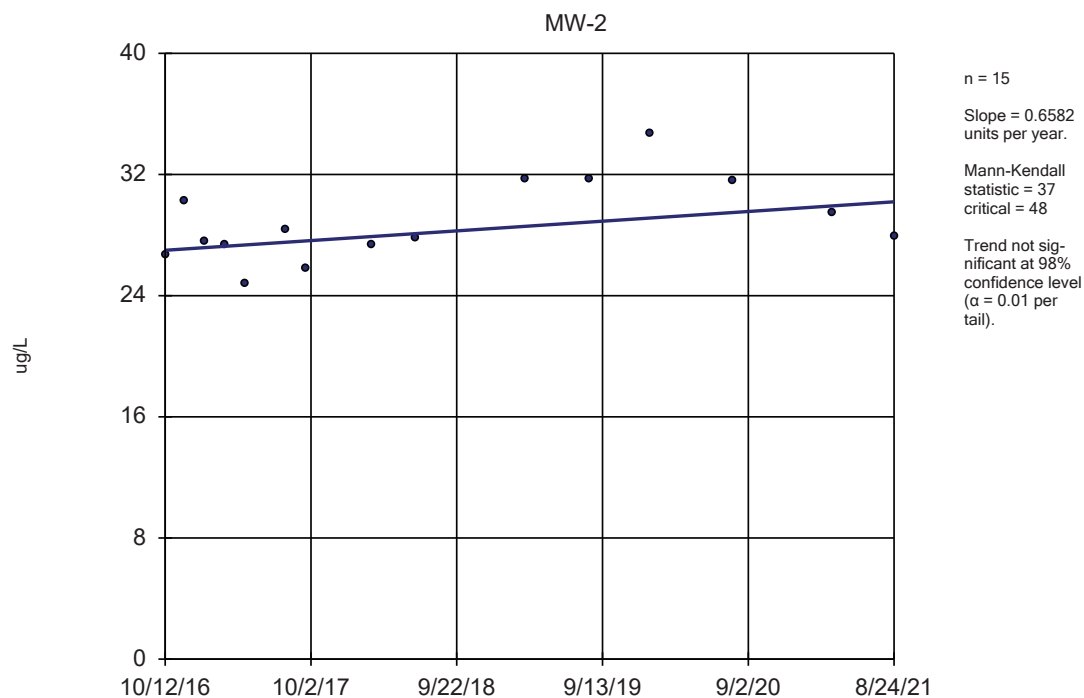
Sen's Slope Estimator



Constituent: Lithium Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

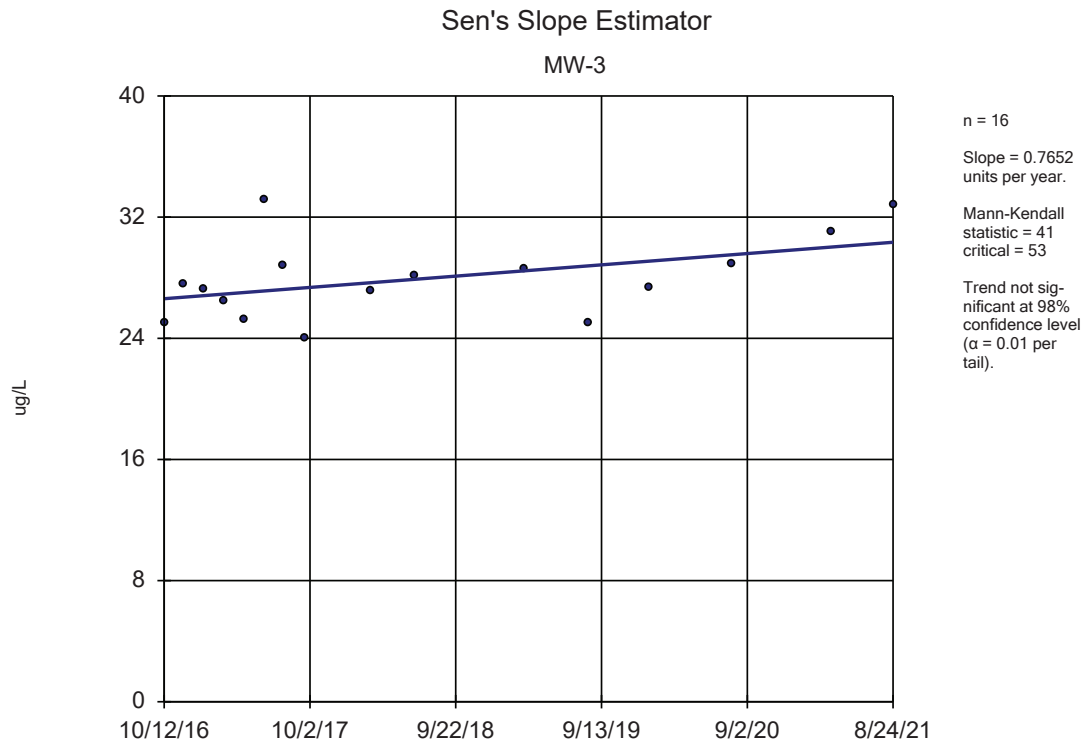
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

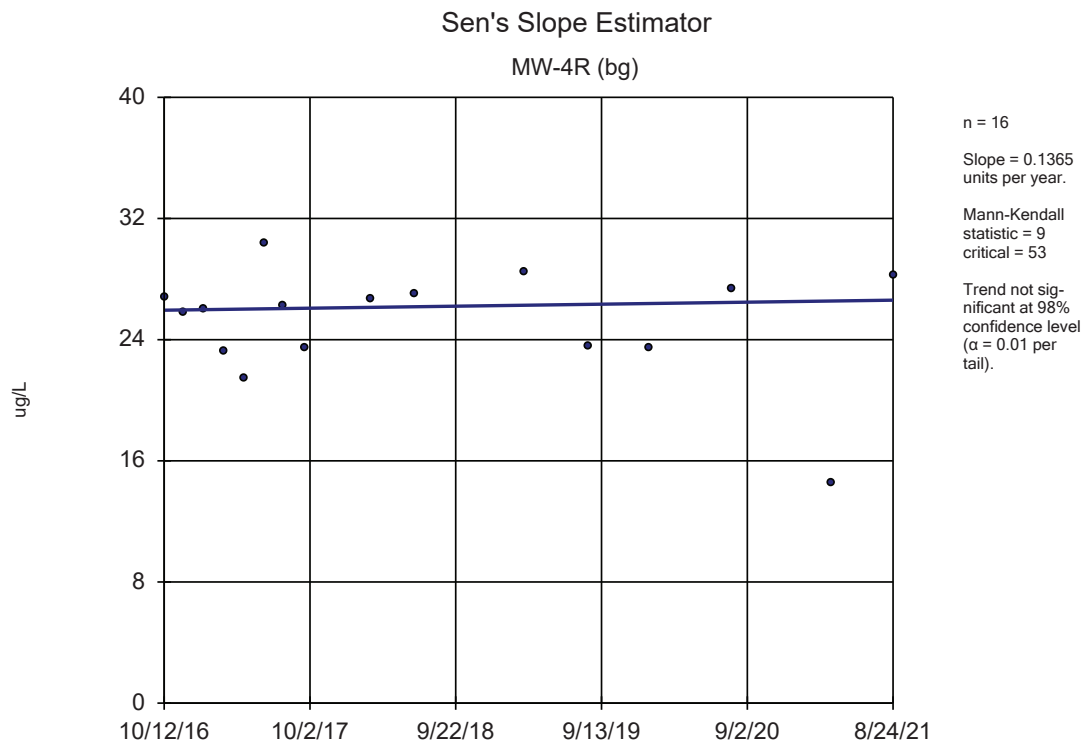


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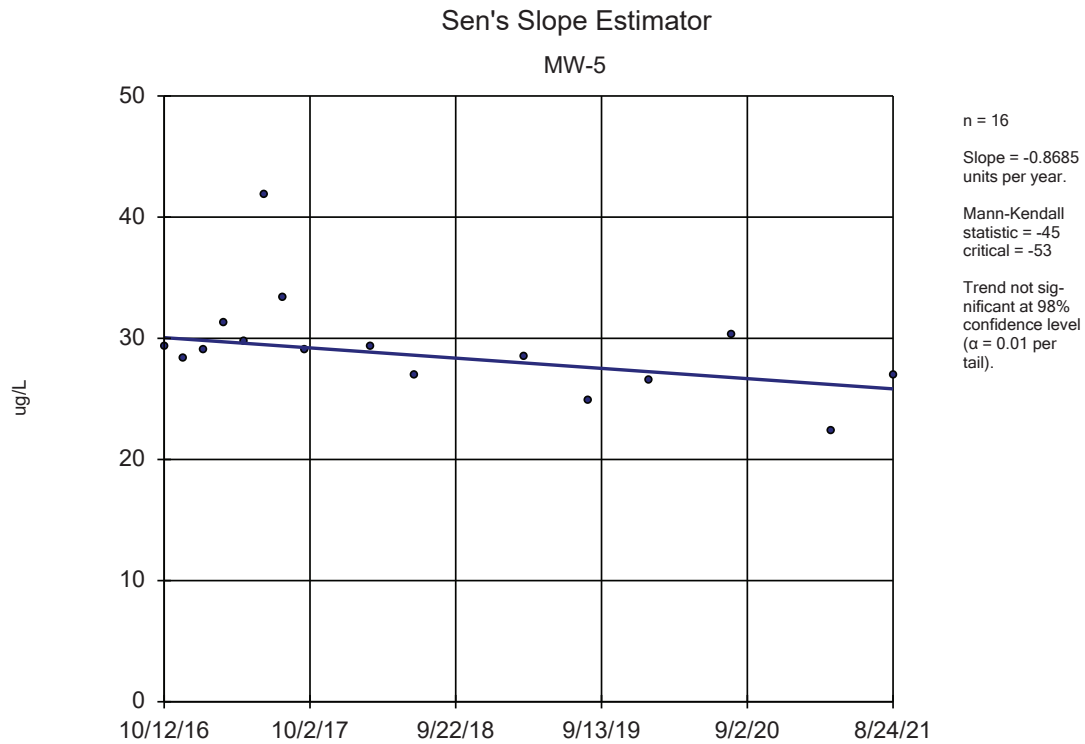
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



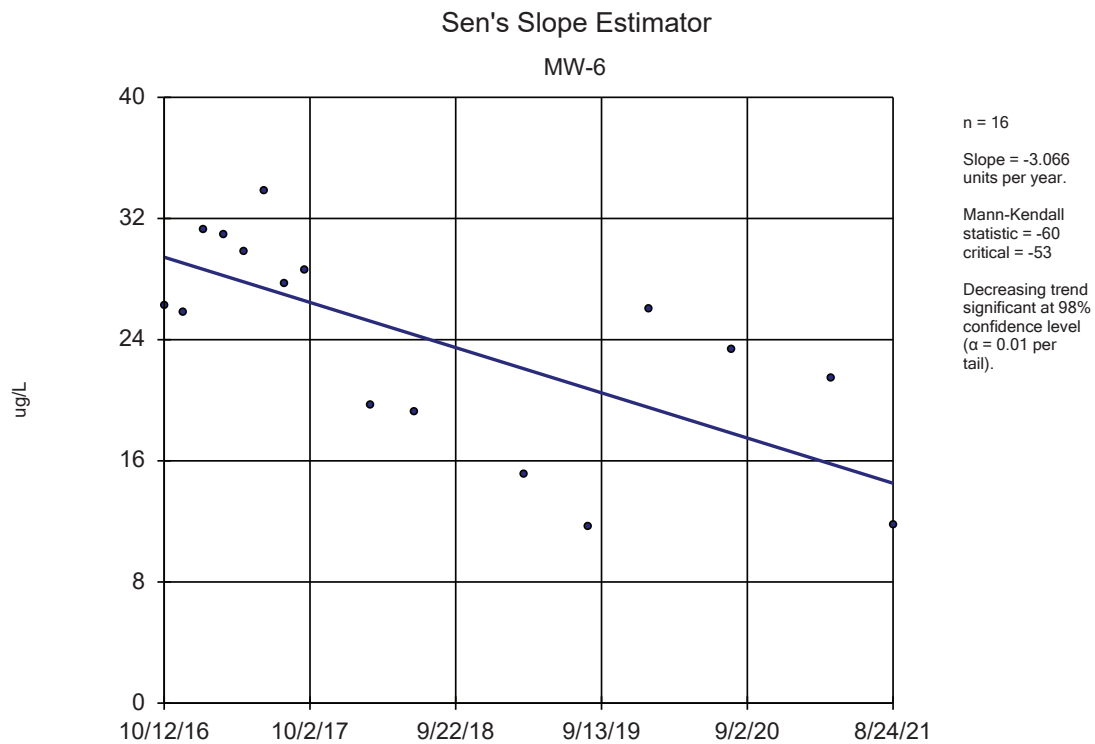
Constituent: Lithium Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Lithium Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



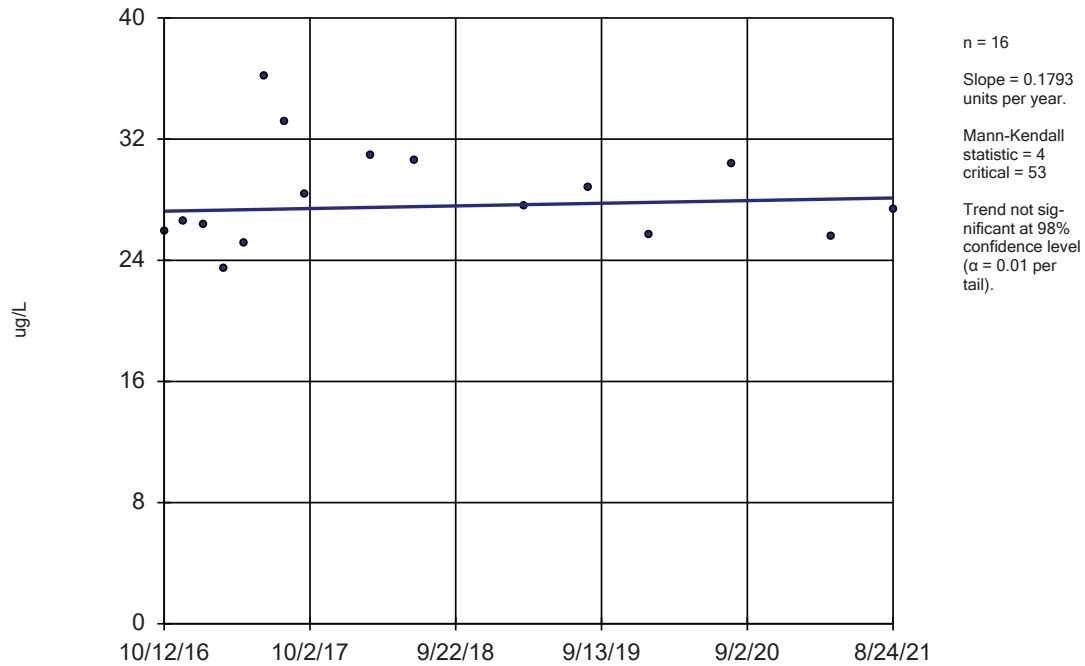
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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



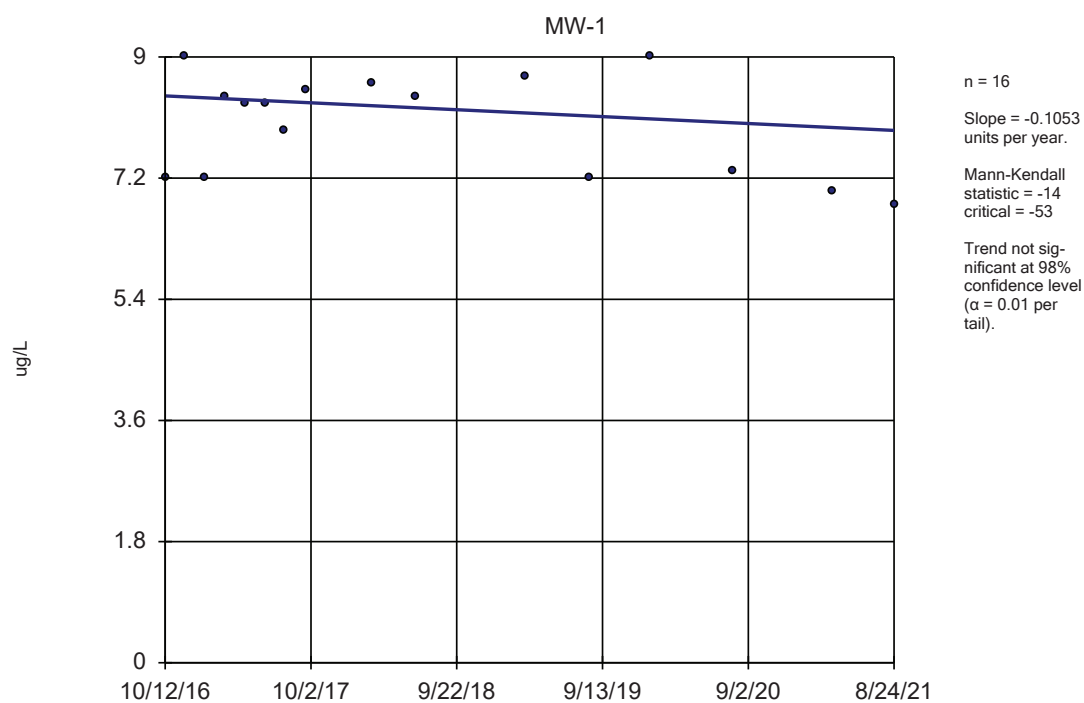
Constituent: Lithium Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-7

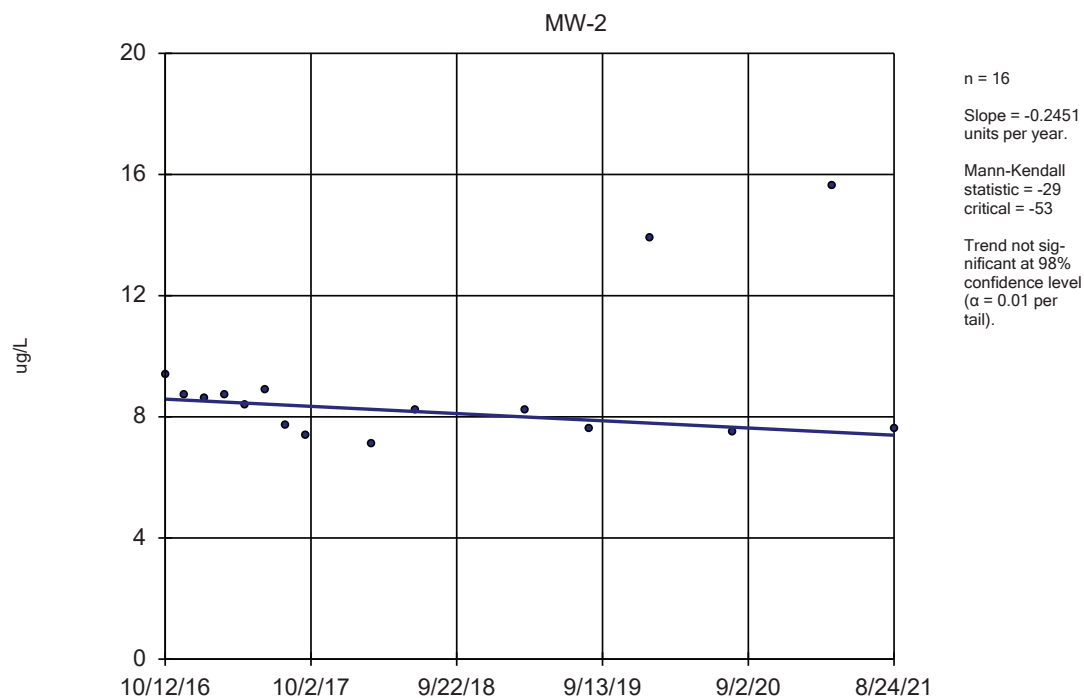


Sen's Slope Estimator

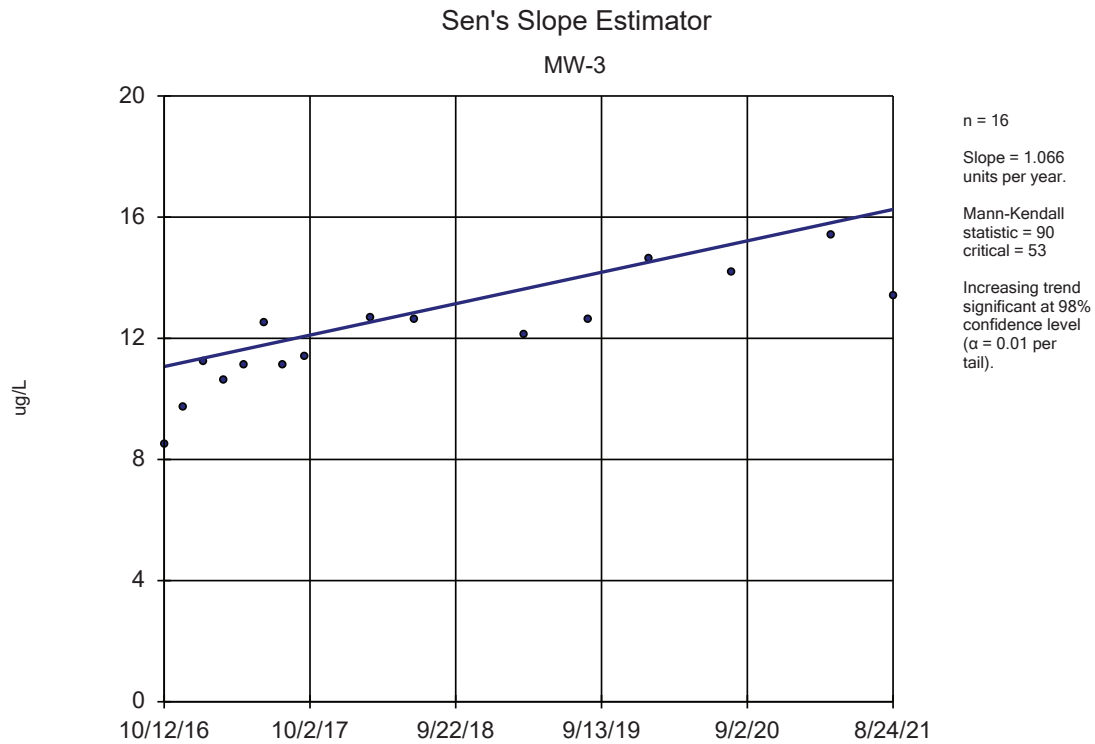


Constituent: Molybdenum Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

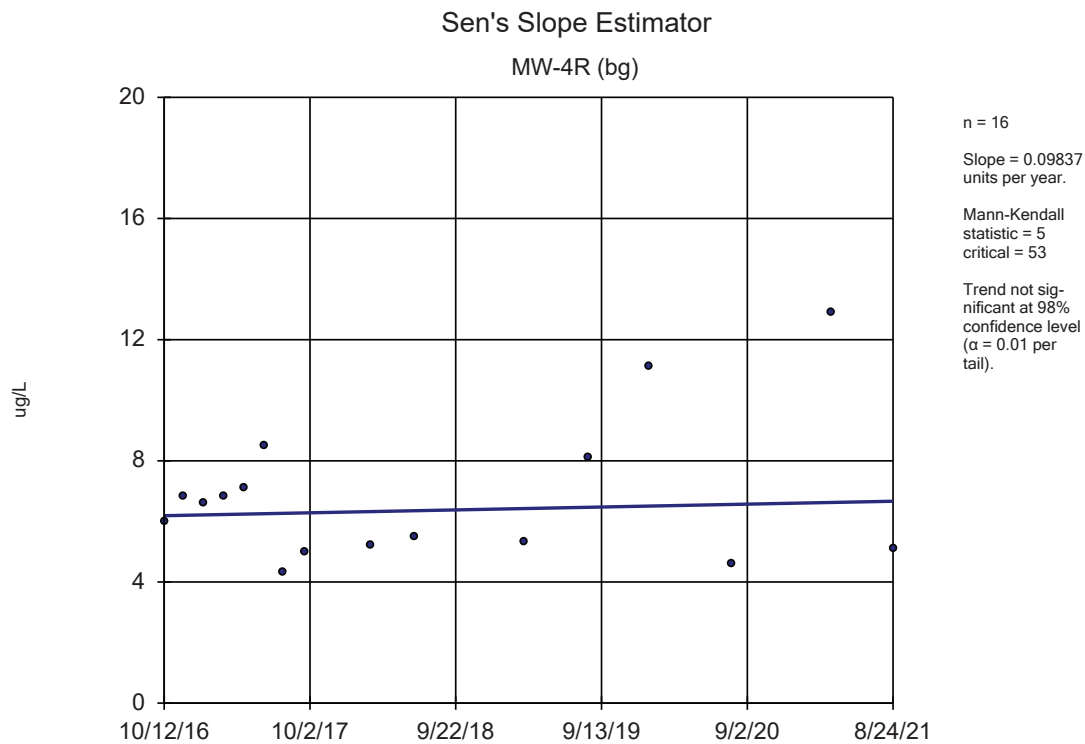
Sen's Slope Estimator



Constituent: Molybdenum Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

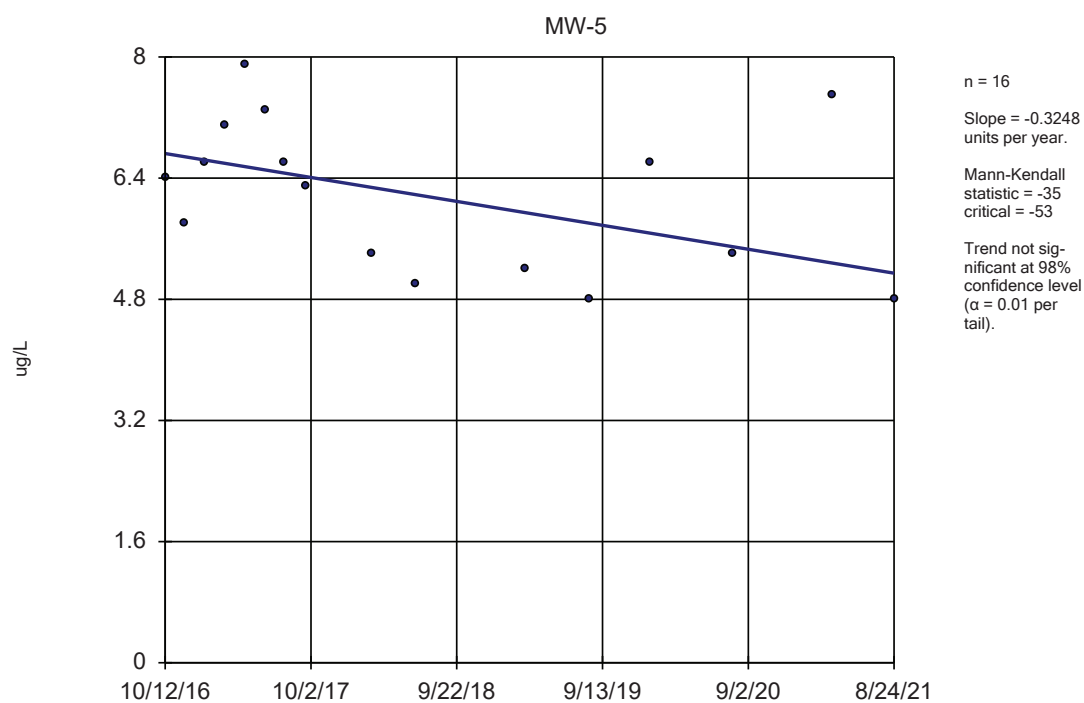


Constituent: Molybdenum Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



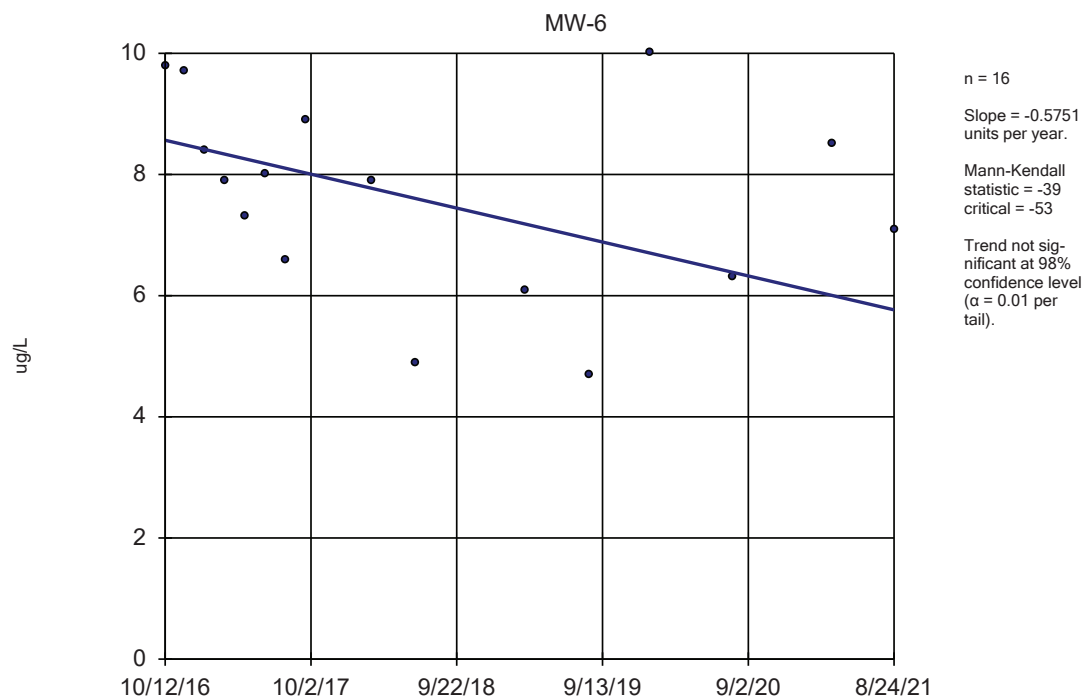
Constituent: Molybdenum Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator



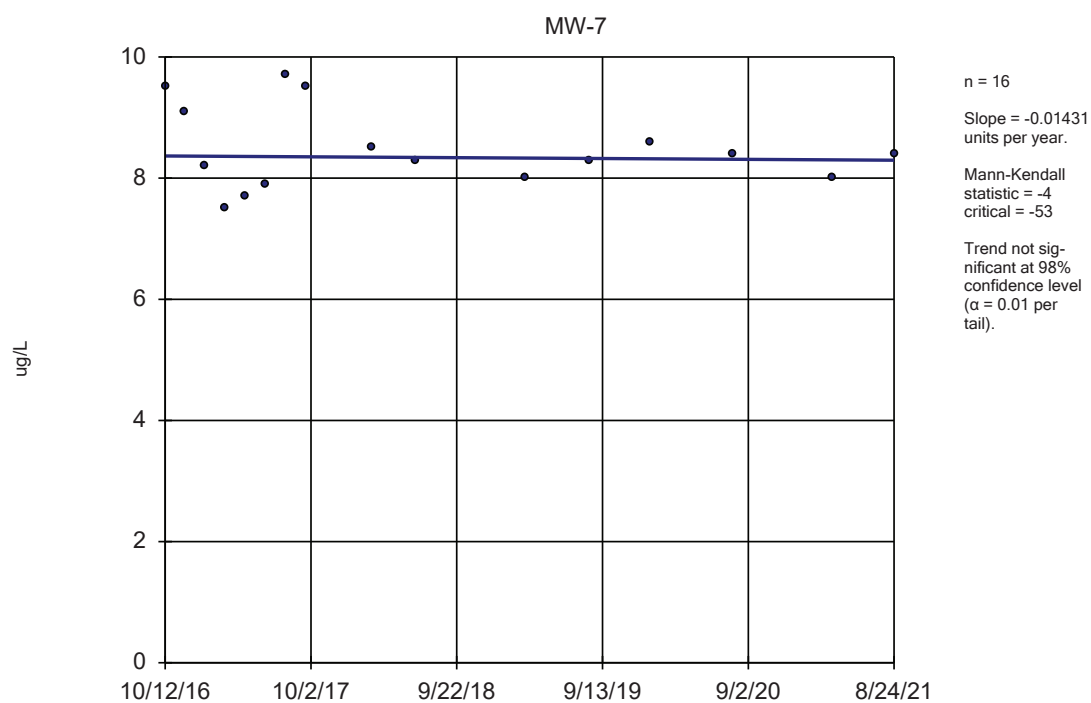
Constituent: Molybdenum Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator



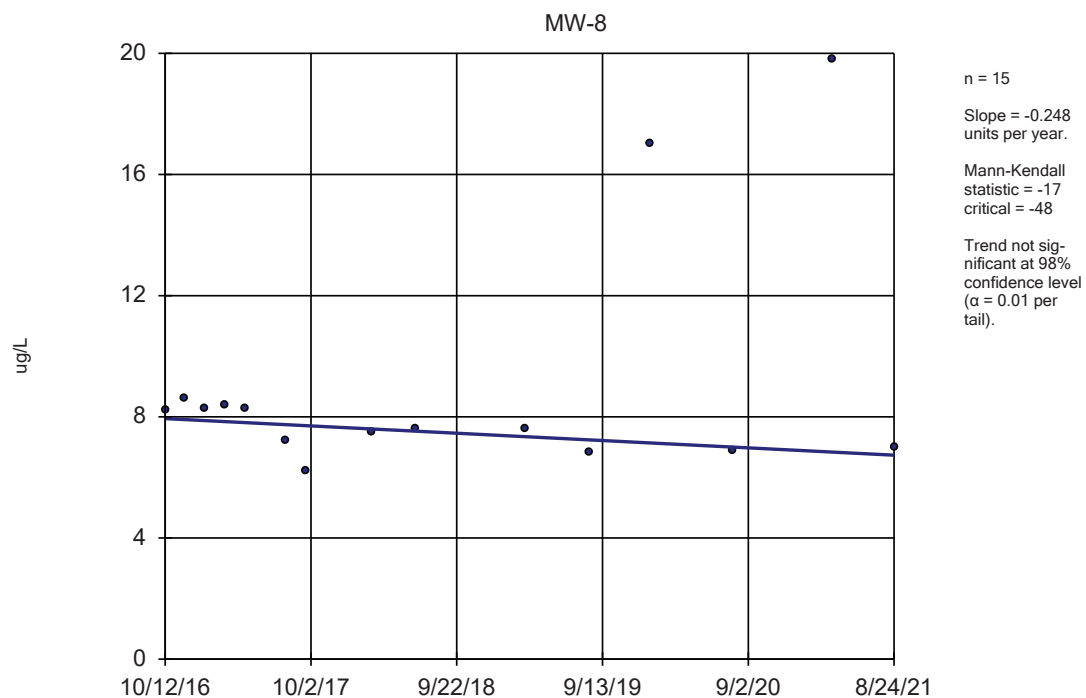
Constituent: Molybdenum Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator



Constituent: Molybdenum Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

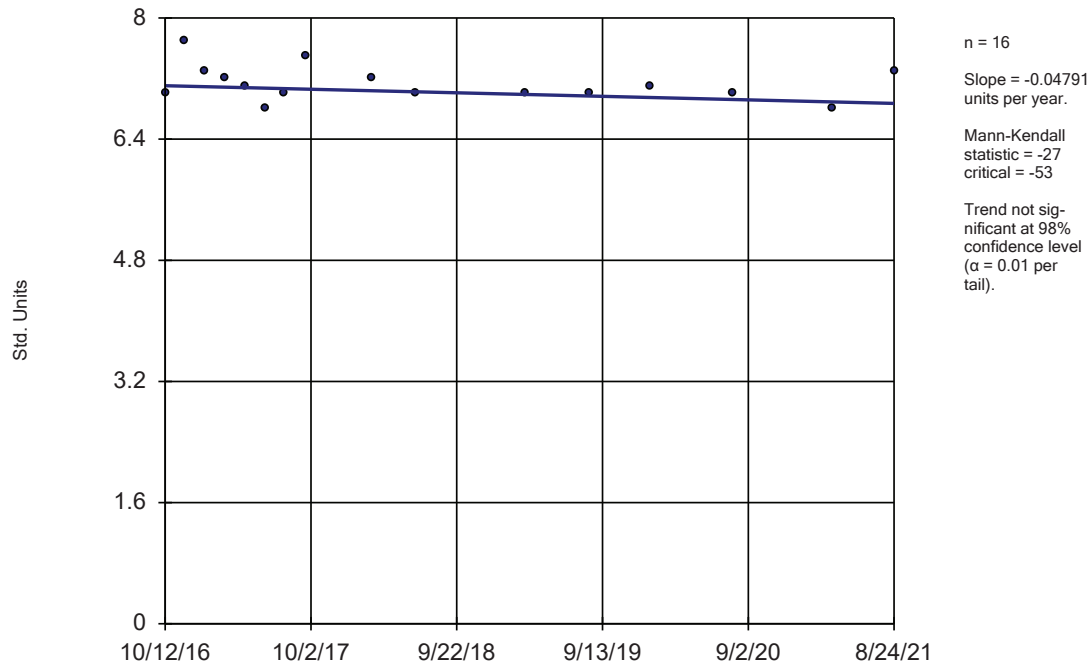
Sen's Slope Estimator



Constituent: Molybdenum Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-1

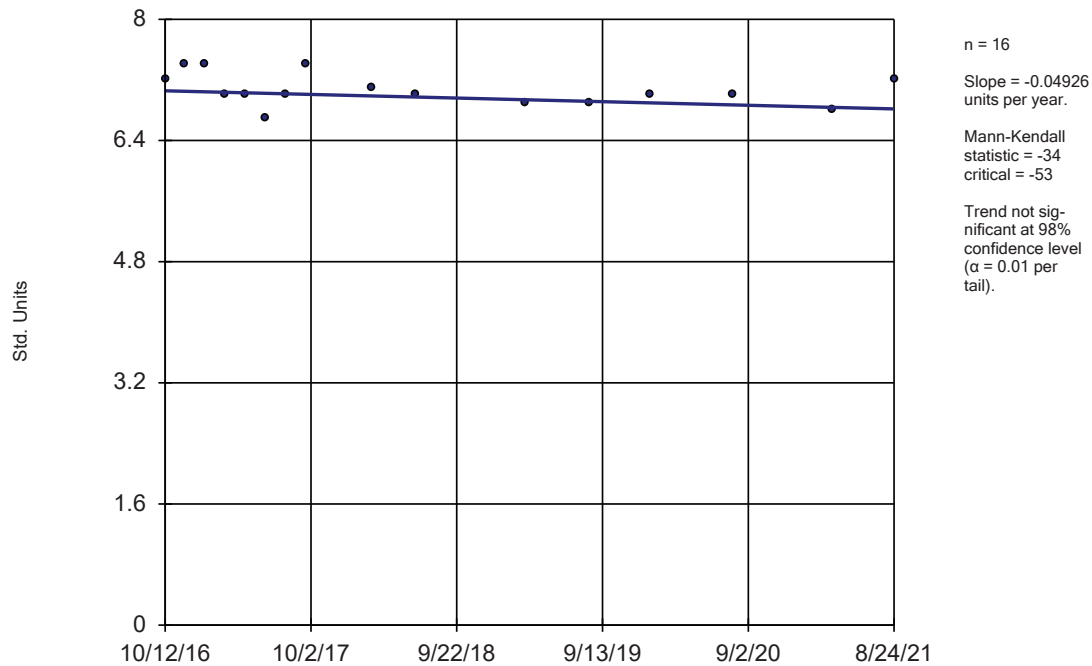


Constituent: pH Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2

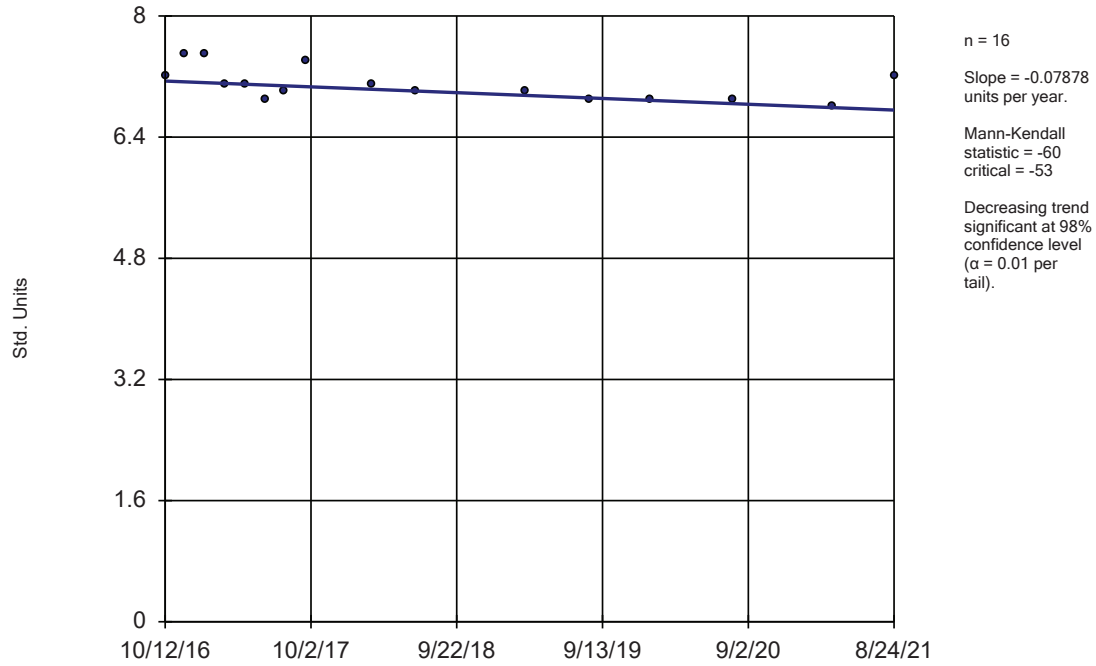


Constituent: pH Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

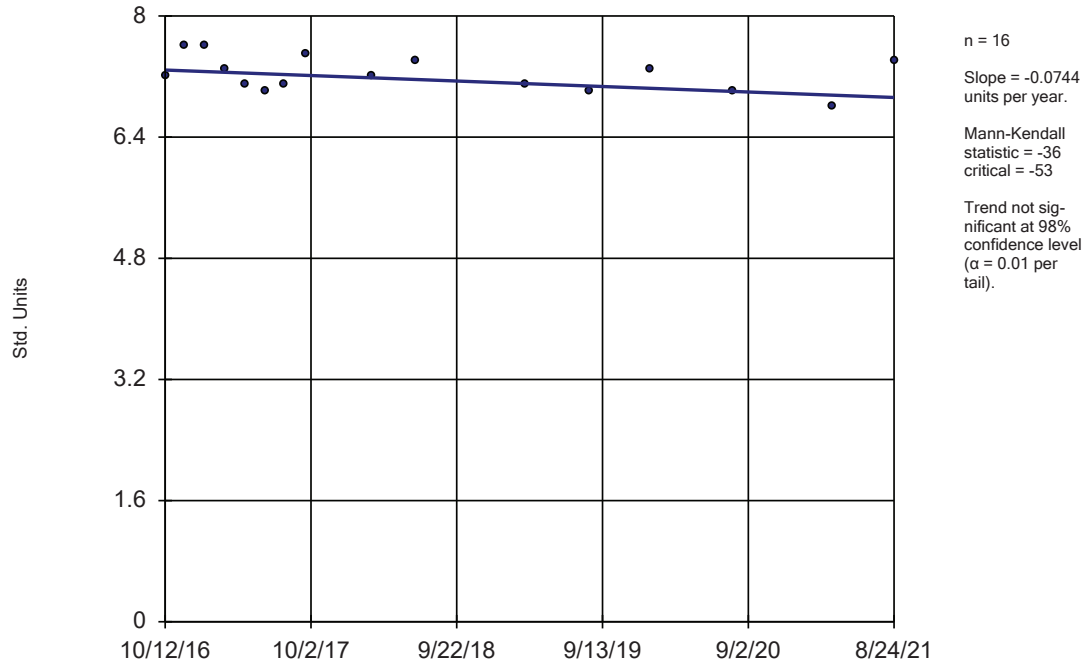
Sen's Slope Estimator

MW-3



Sen's Slope Estimator

MW-5

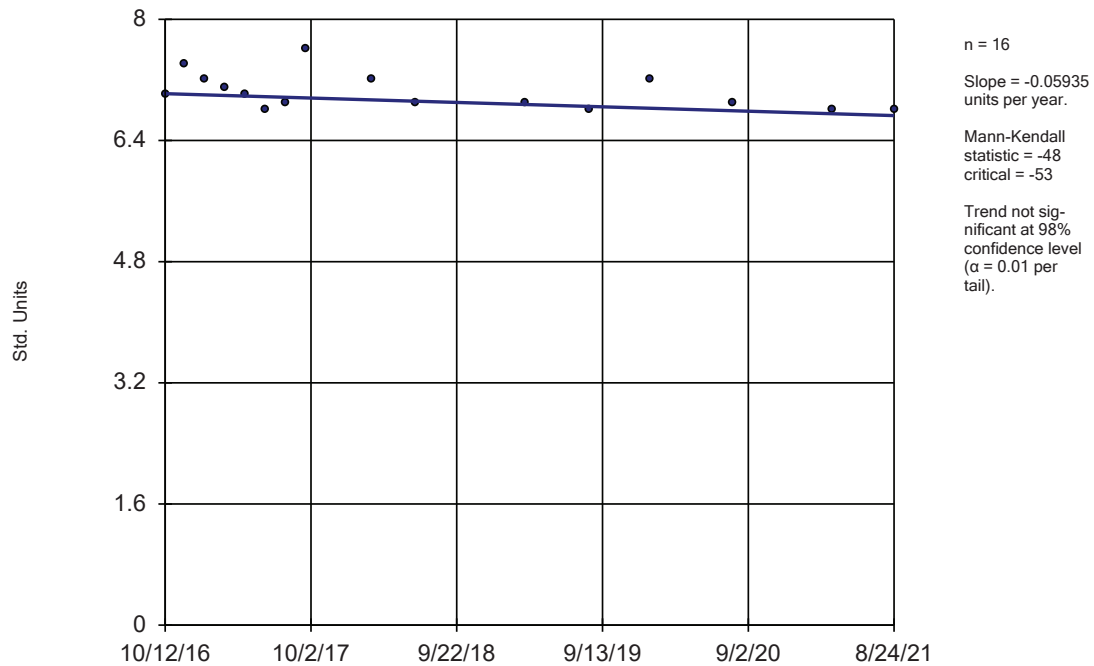


Constituent: pH Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-6

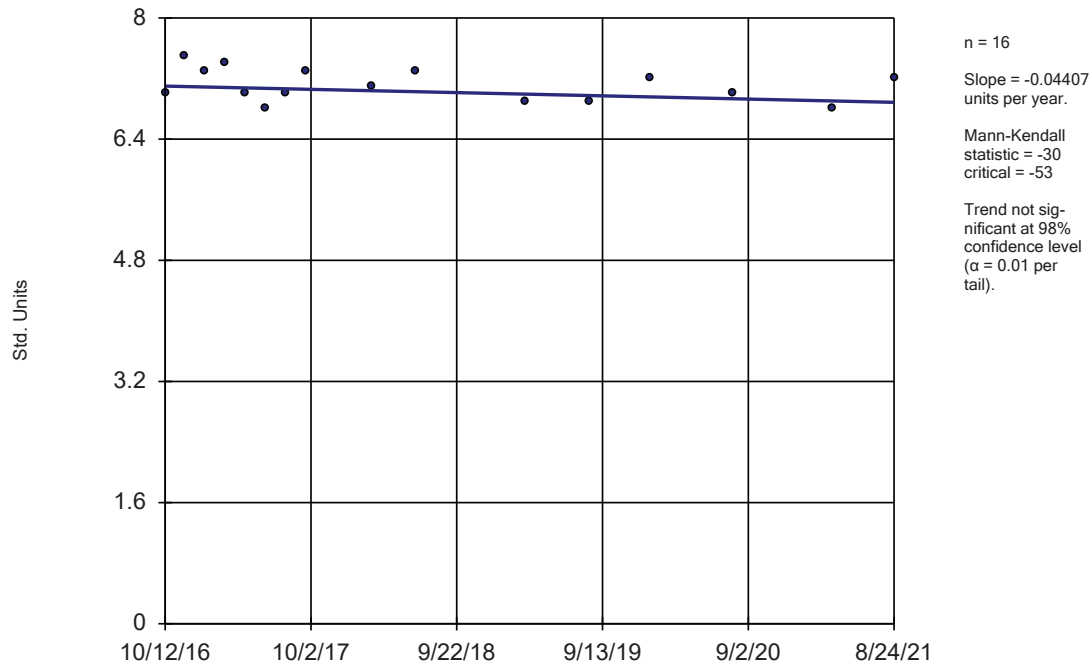


Constituent: pH Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

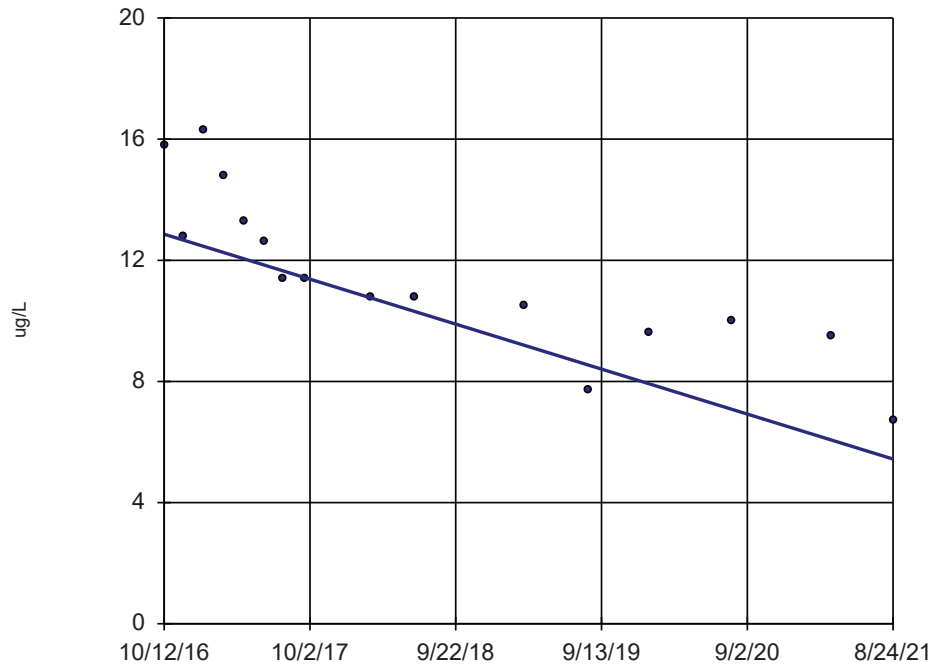
Sen's Slope Estimator

MW-7



Sen's Slope Estimator

MW-1



n = 16

Slope = -1.525
units per year.

Mann-Kendall
statistic = -102
critical = -53

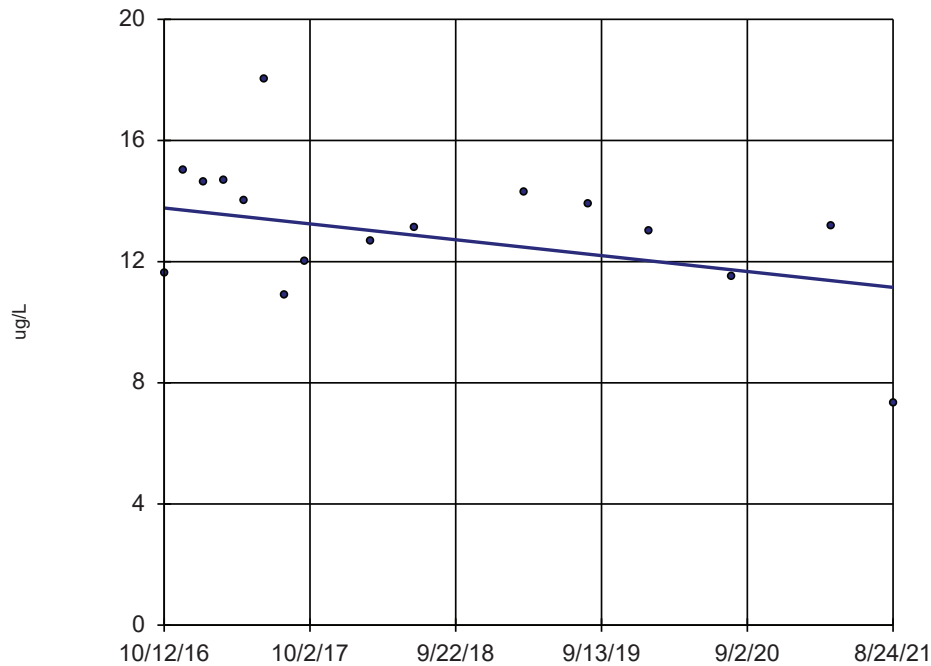
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Selenium [total] Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-2



n = 16

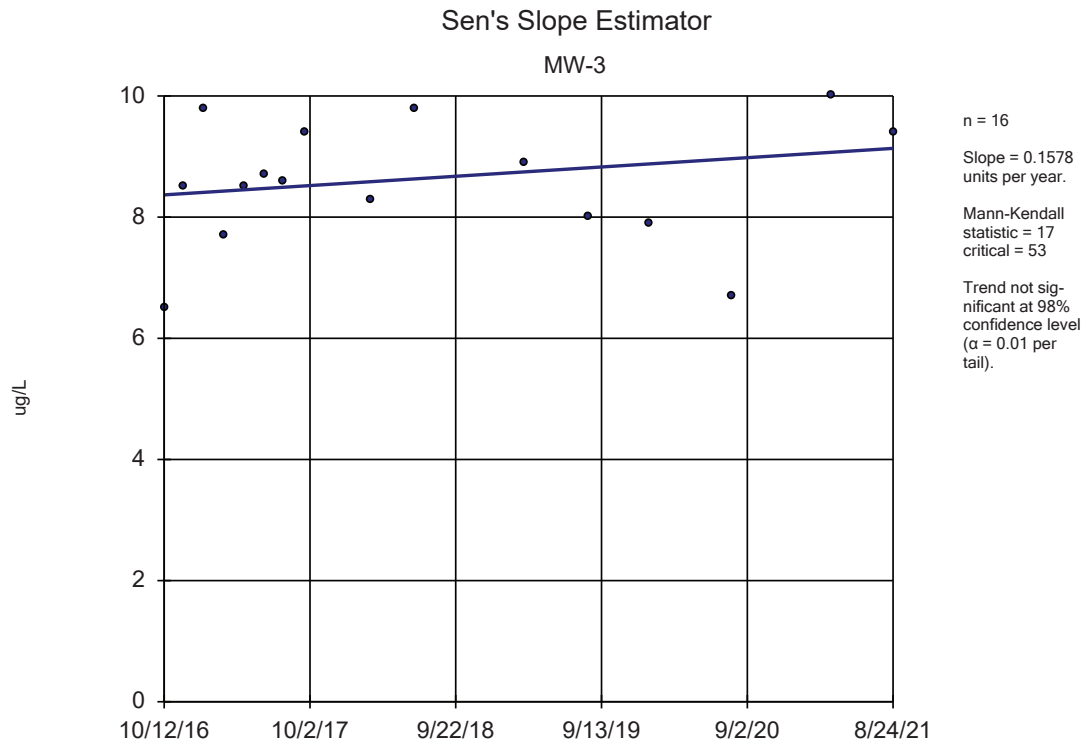
Slope = -0.5383
units per year.

Mann-Kendall
statistic = -36
critical = -53

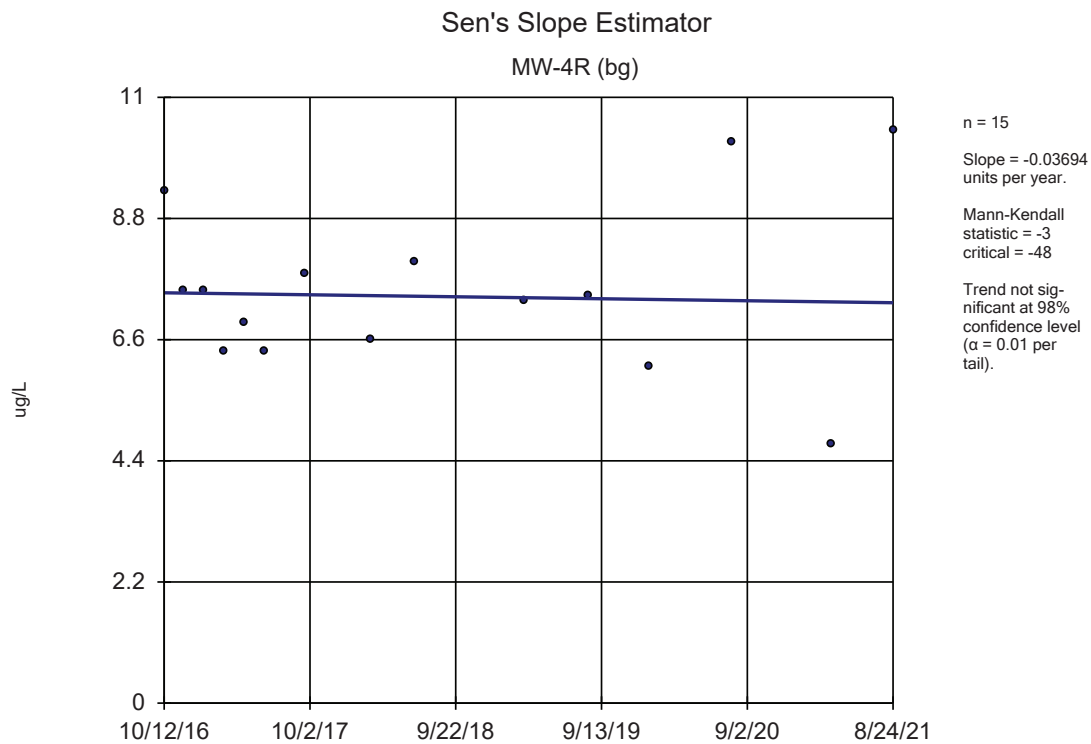
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Selenium [total] Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects

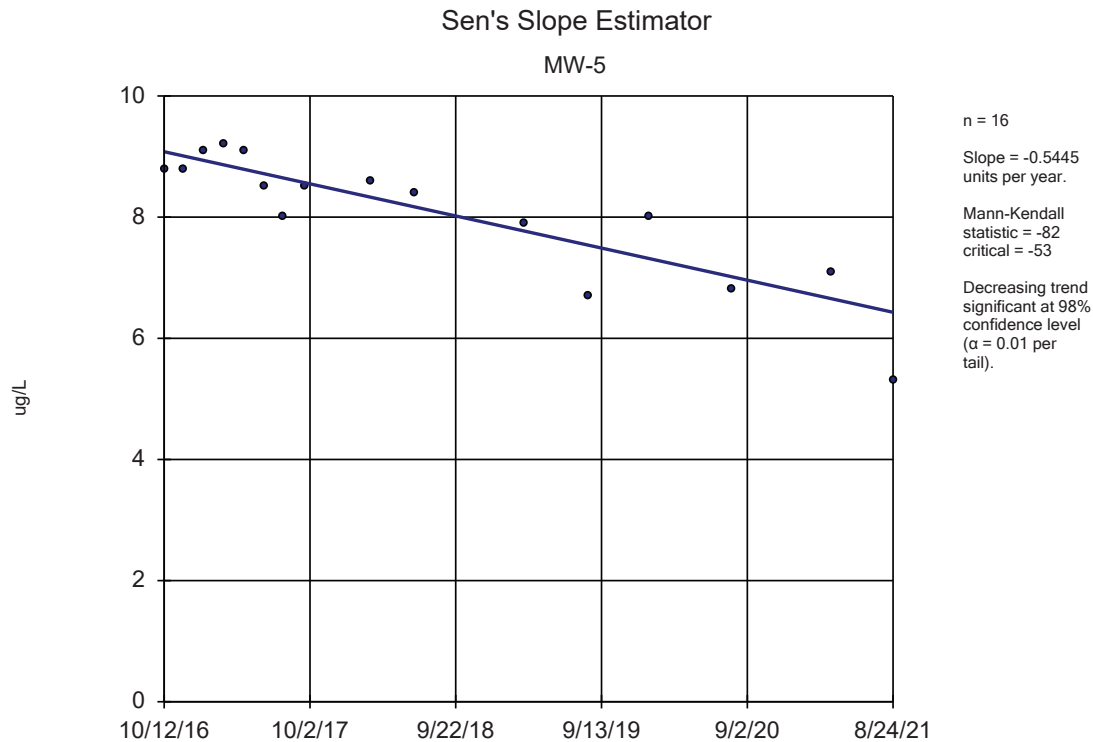
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Selenium [total] Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

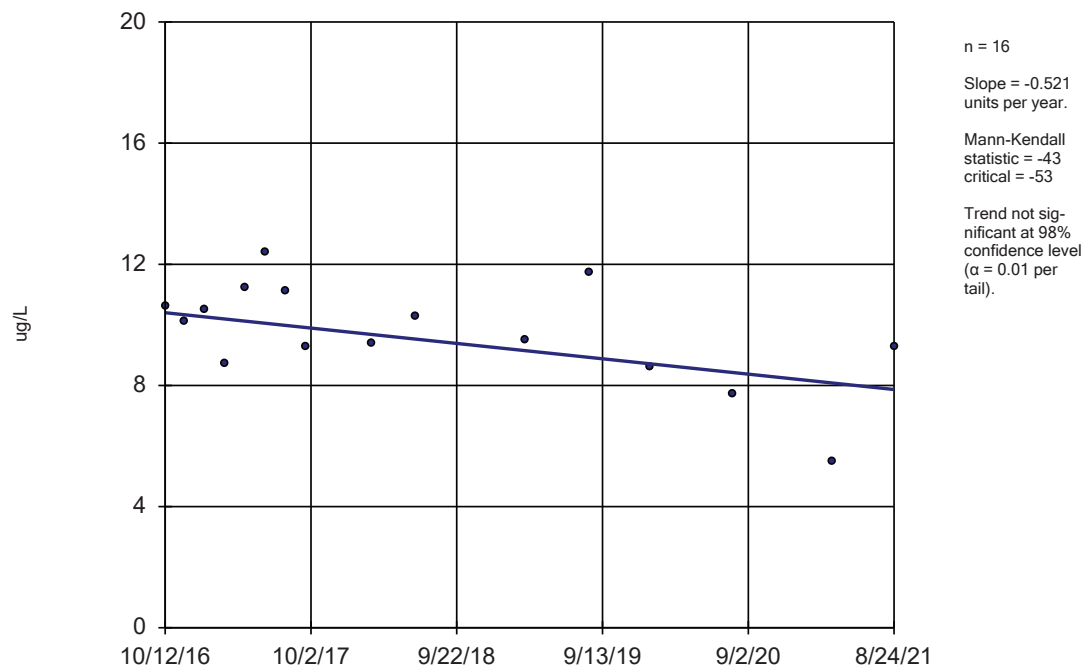


Constituent: Selenium [total] Analysis Run 10/4/2021 1:36 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Sen's Slope Estimator

MW-7

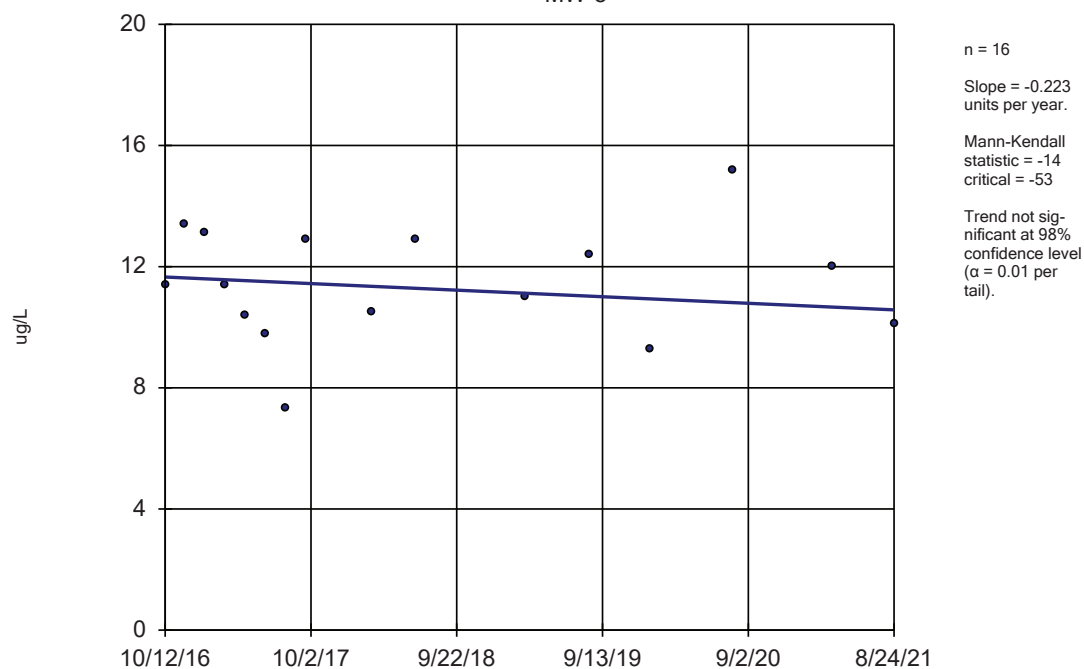


Constituent: Selenium [total] Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

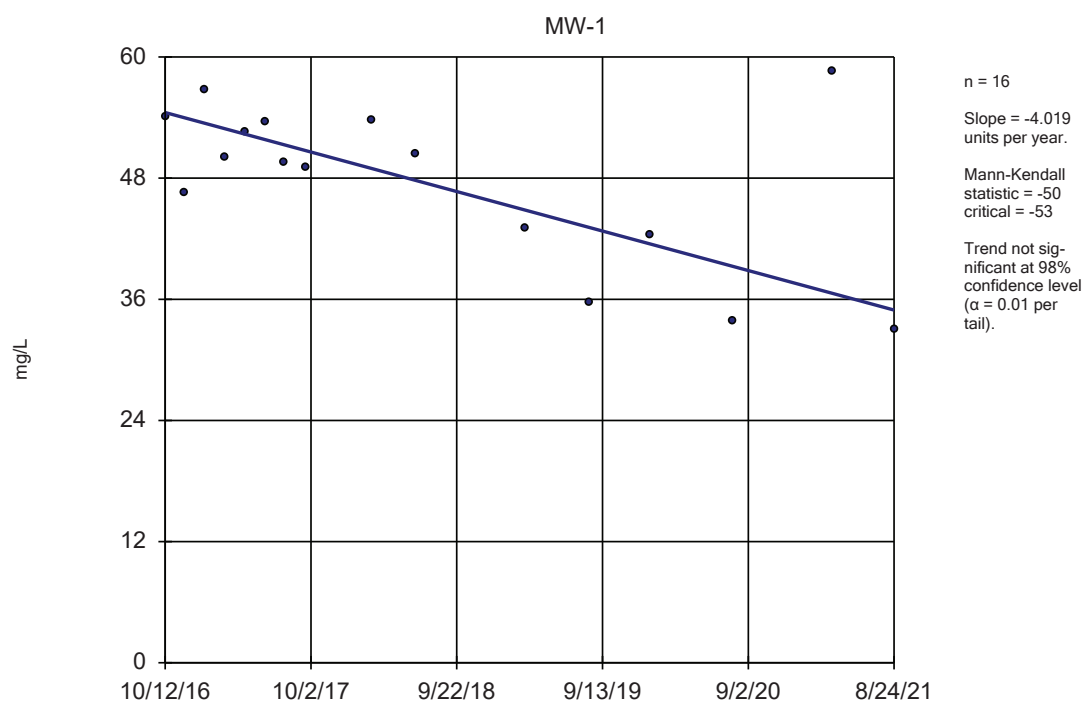
MW-8



Constituent: Selenium [total] Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

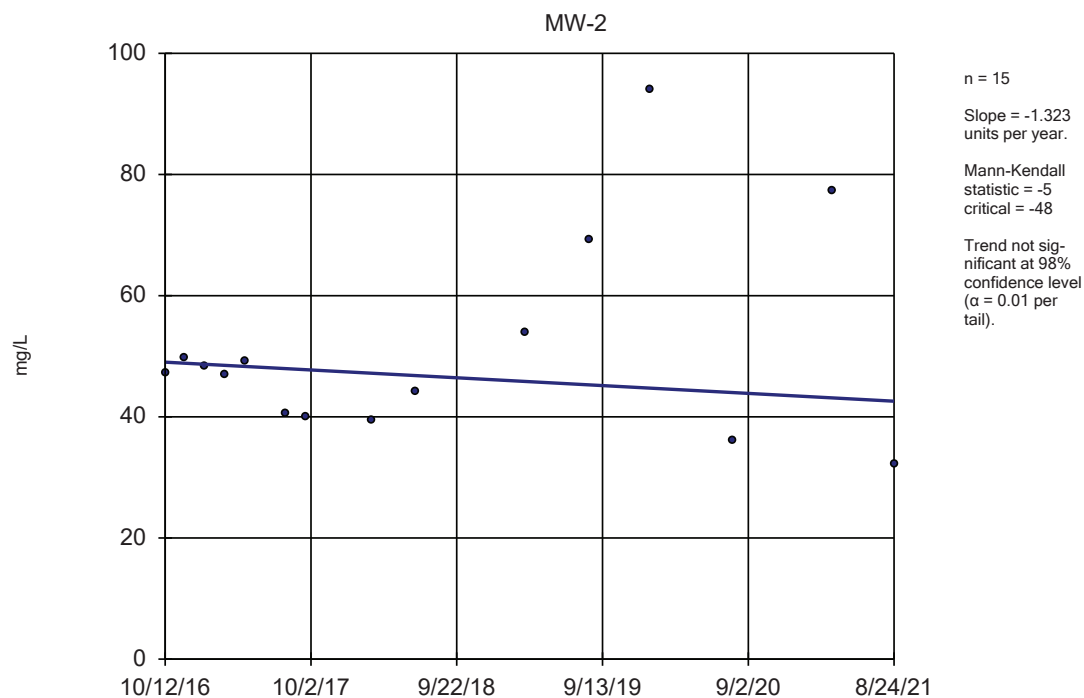
Sen's Slope Estimator



Constituent: Sulfate Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

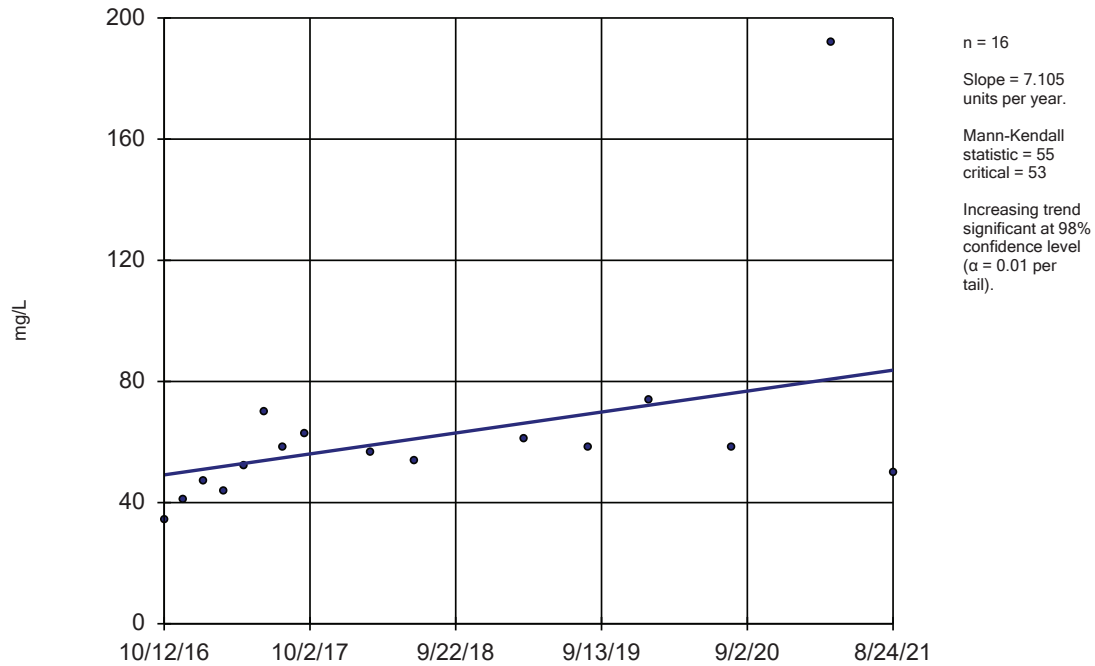


Constituent: Sulfate Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-3

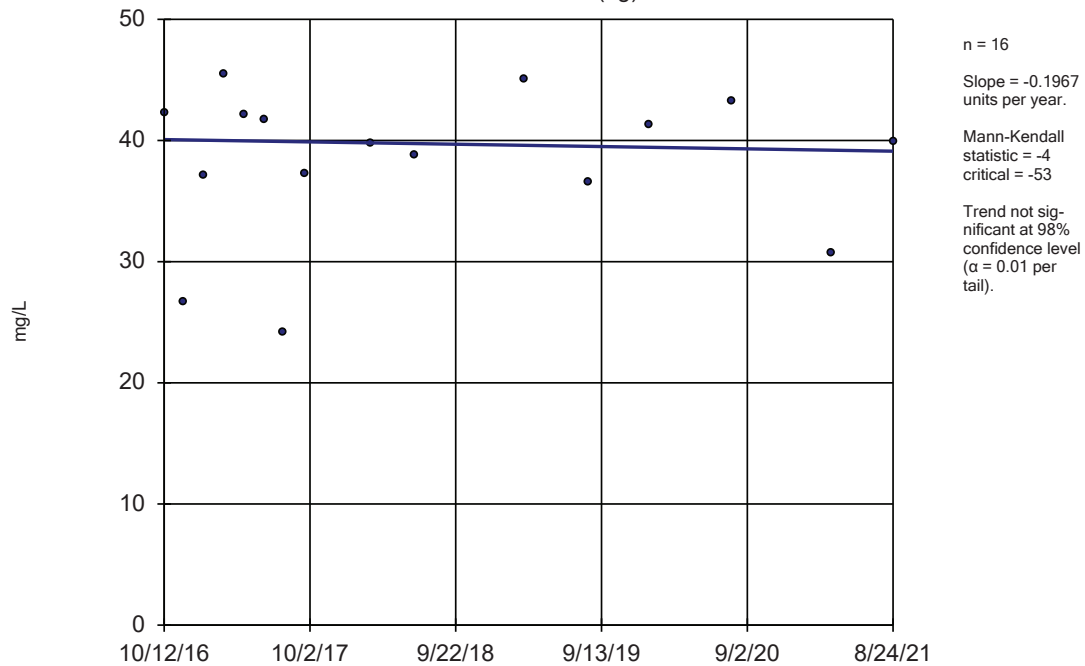


Constituent: Sulfate Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-4R (bg)

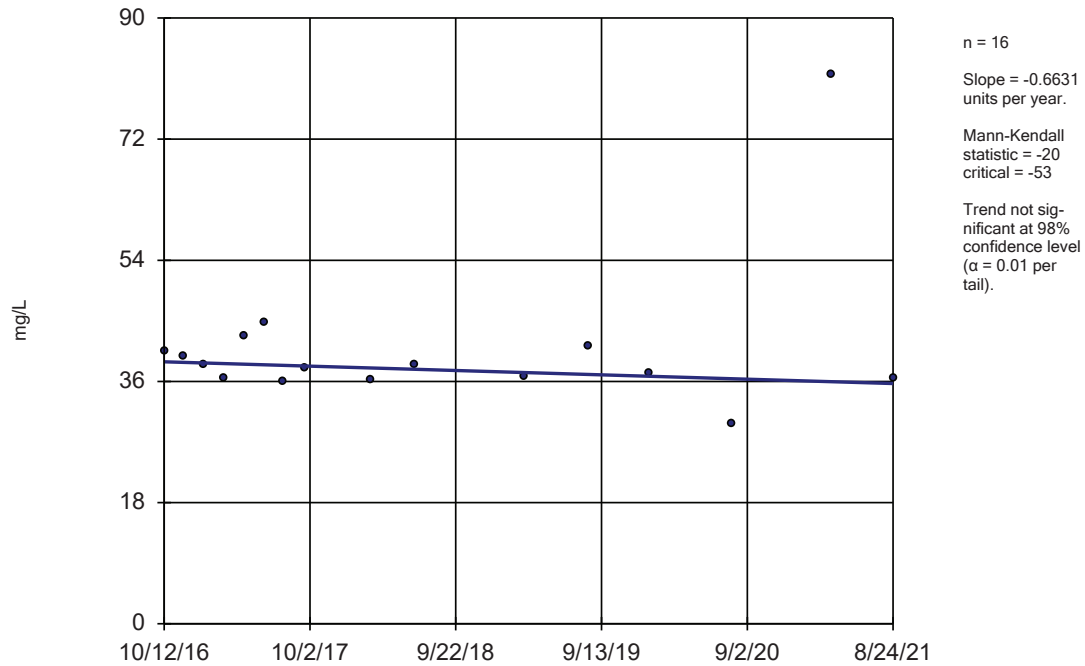


Constituent: Sulfate Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-5

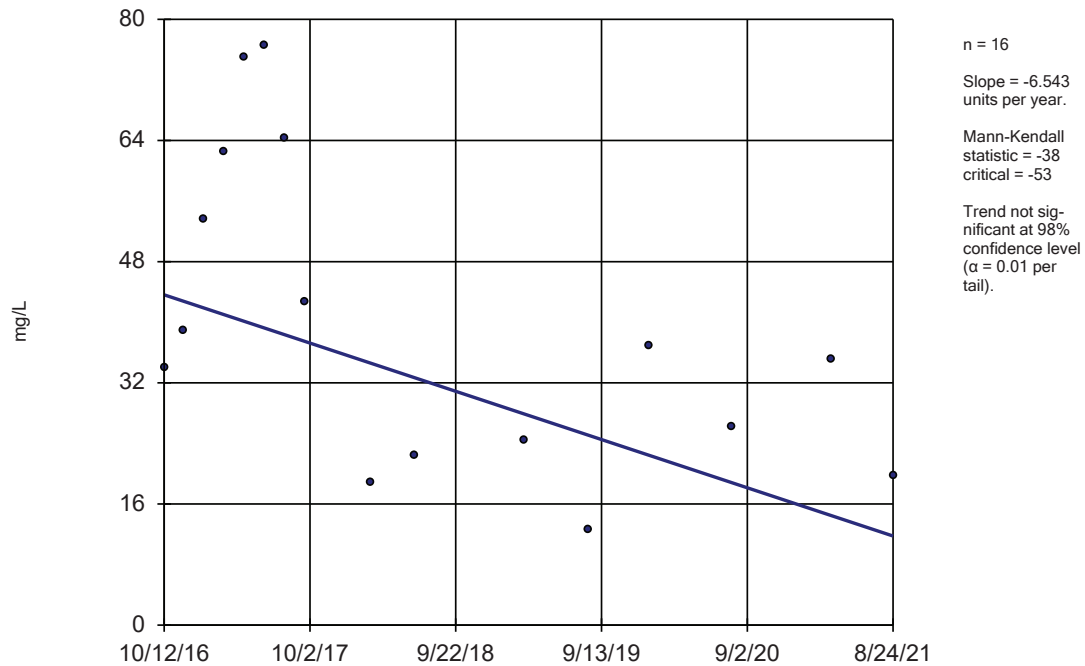


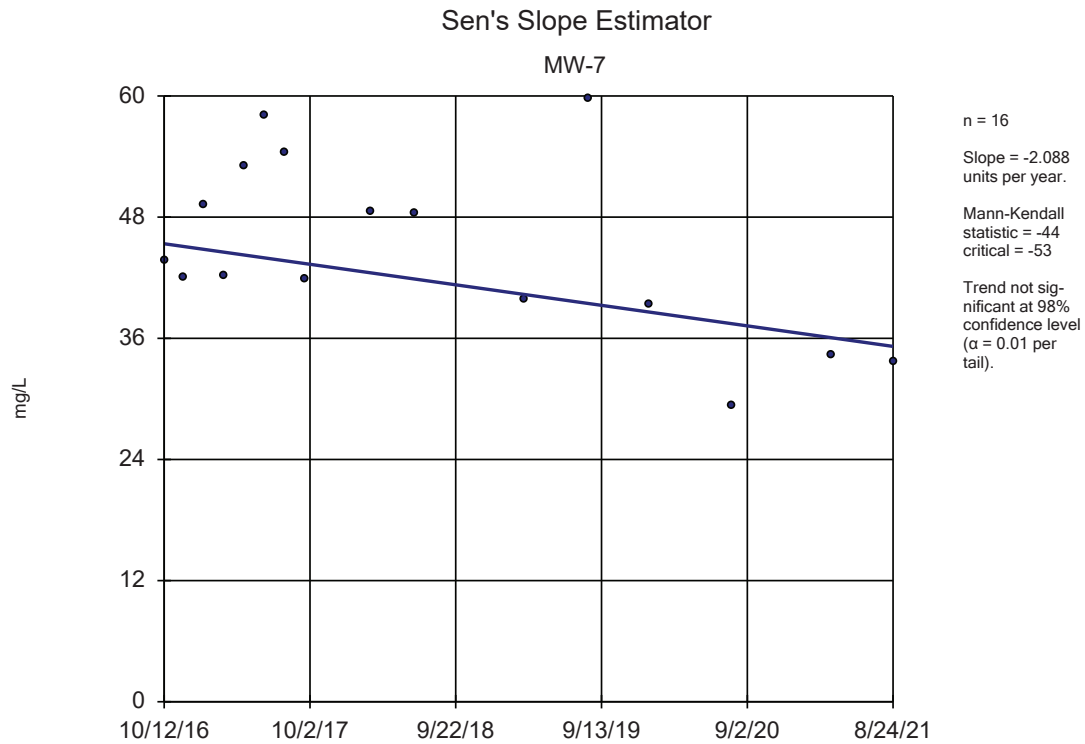
Constituent: Sulfate Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

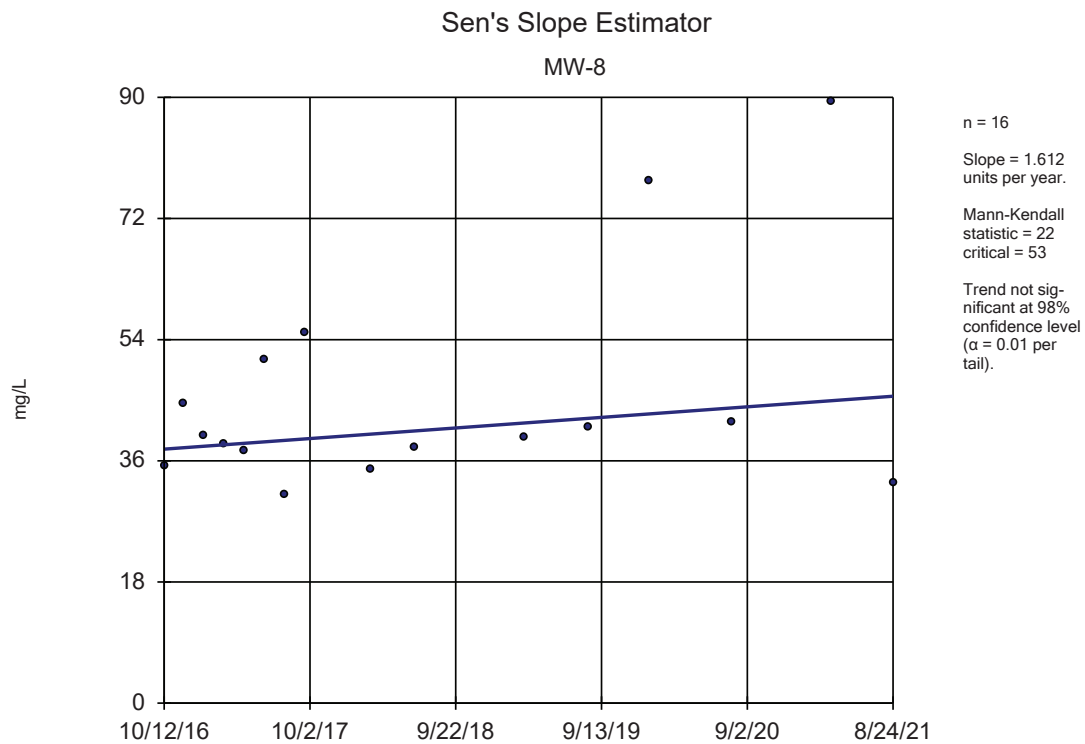
Sen's Slope Estimator

MW-6

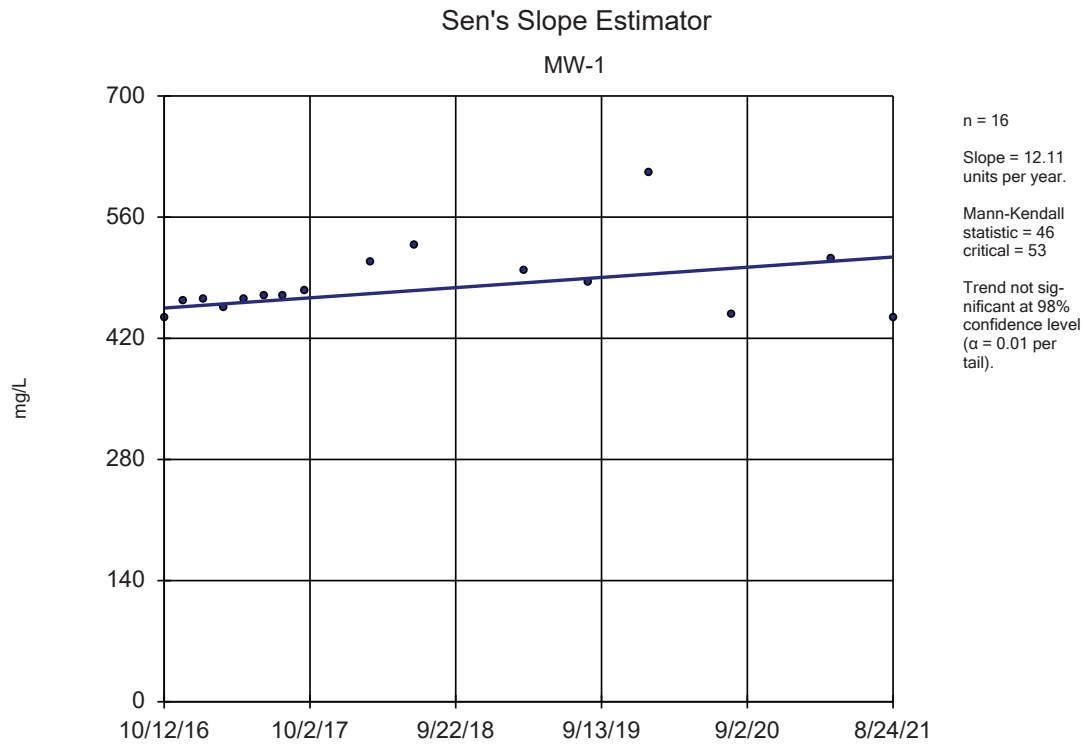


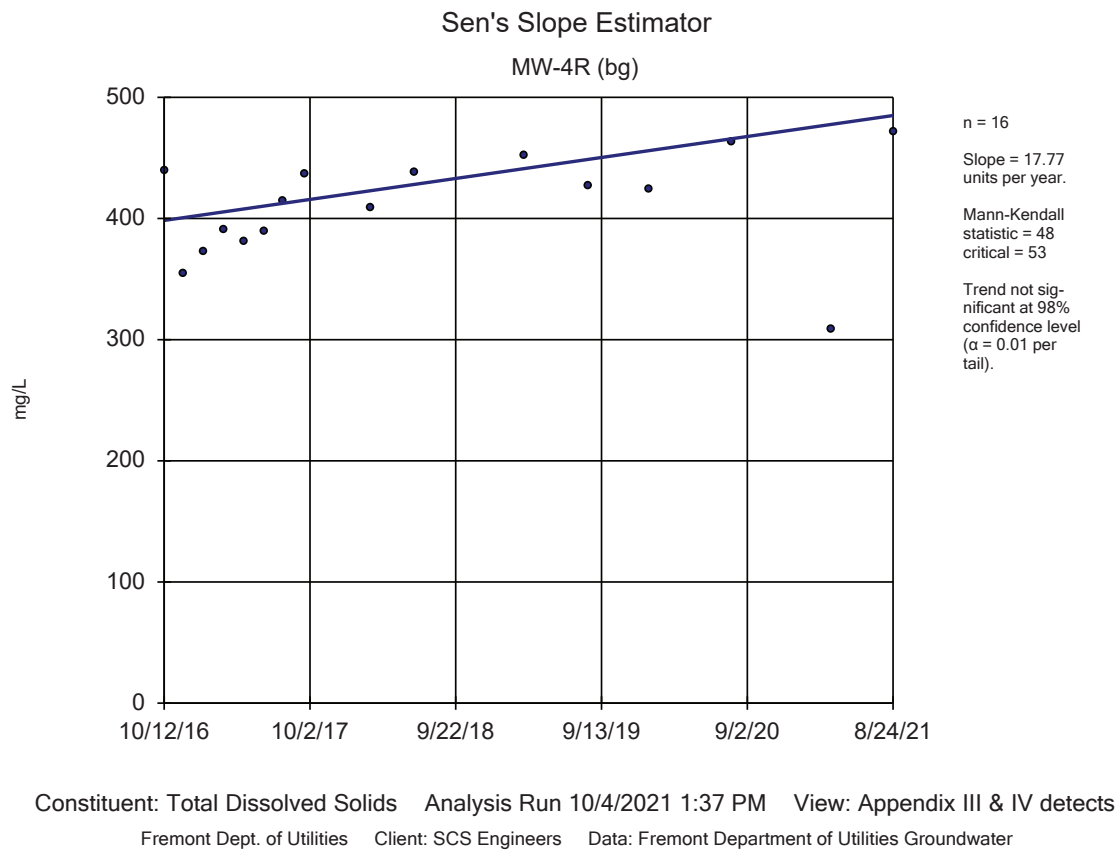
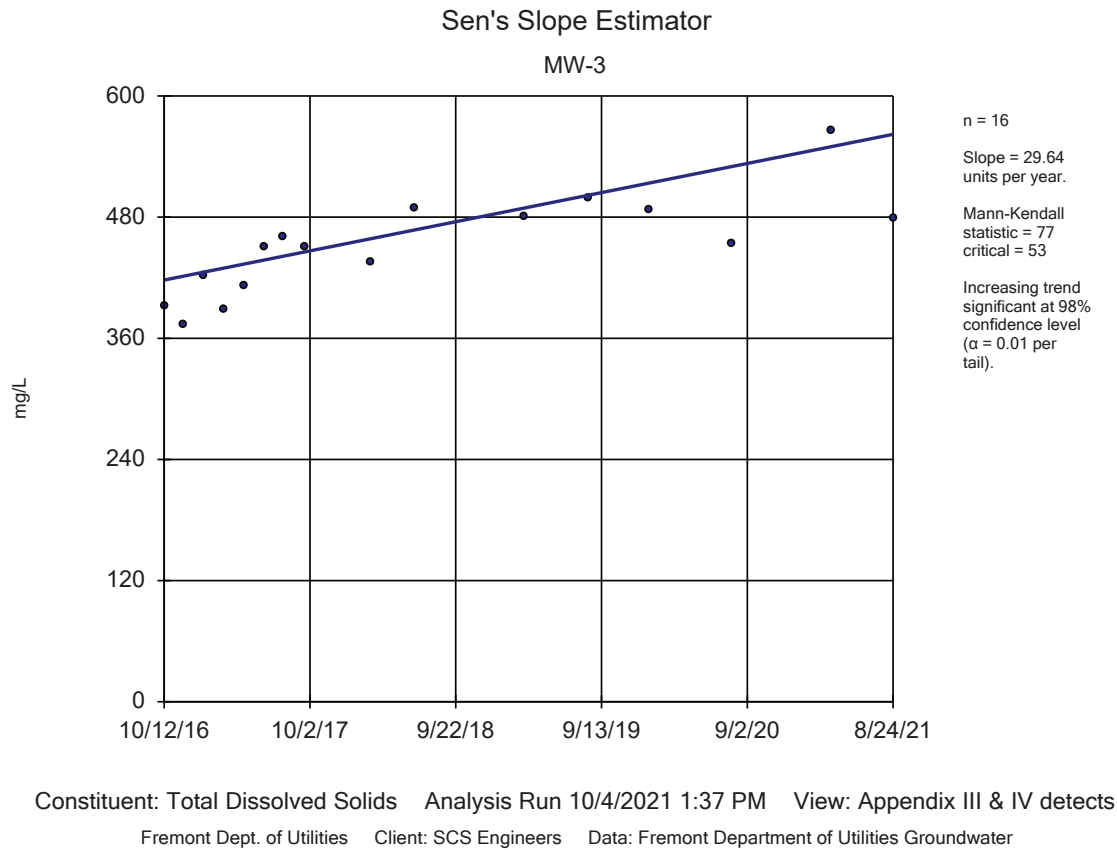


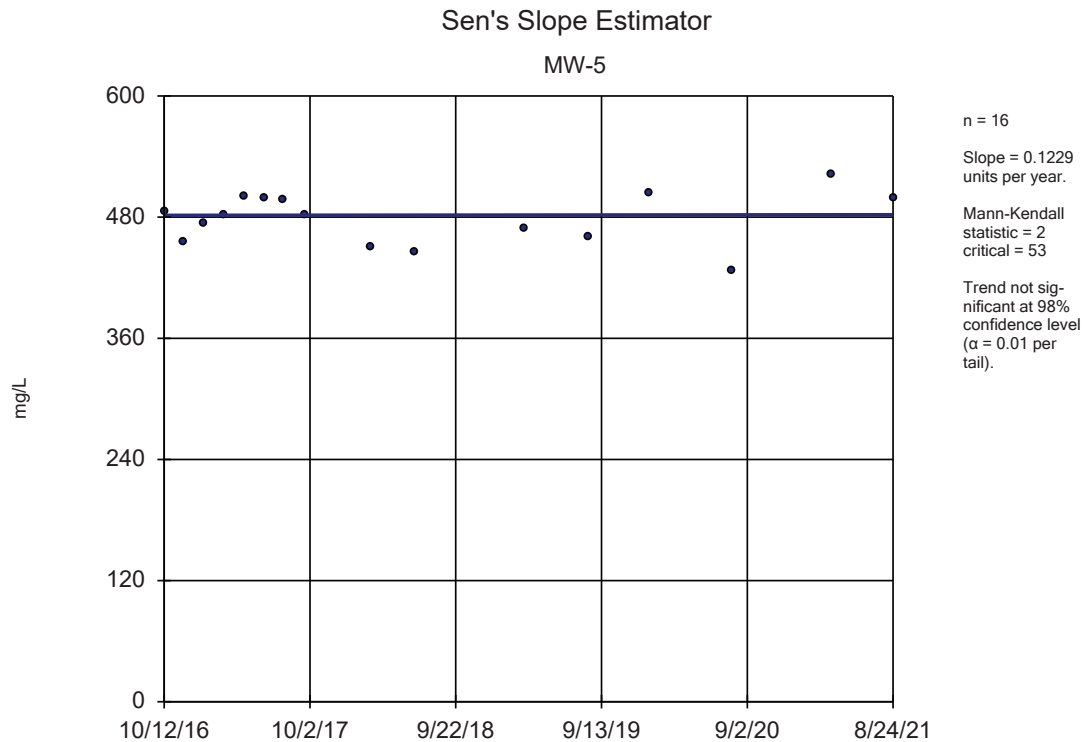
Constituent: Sulfate Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

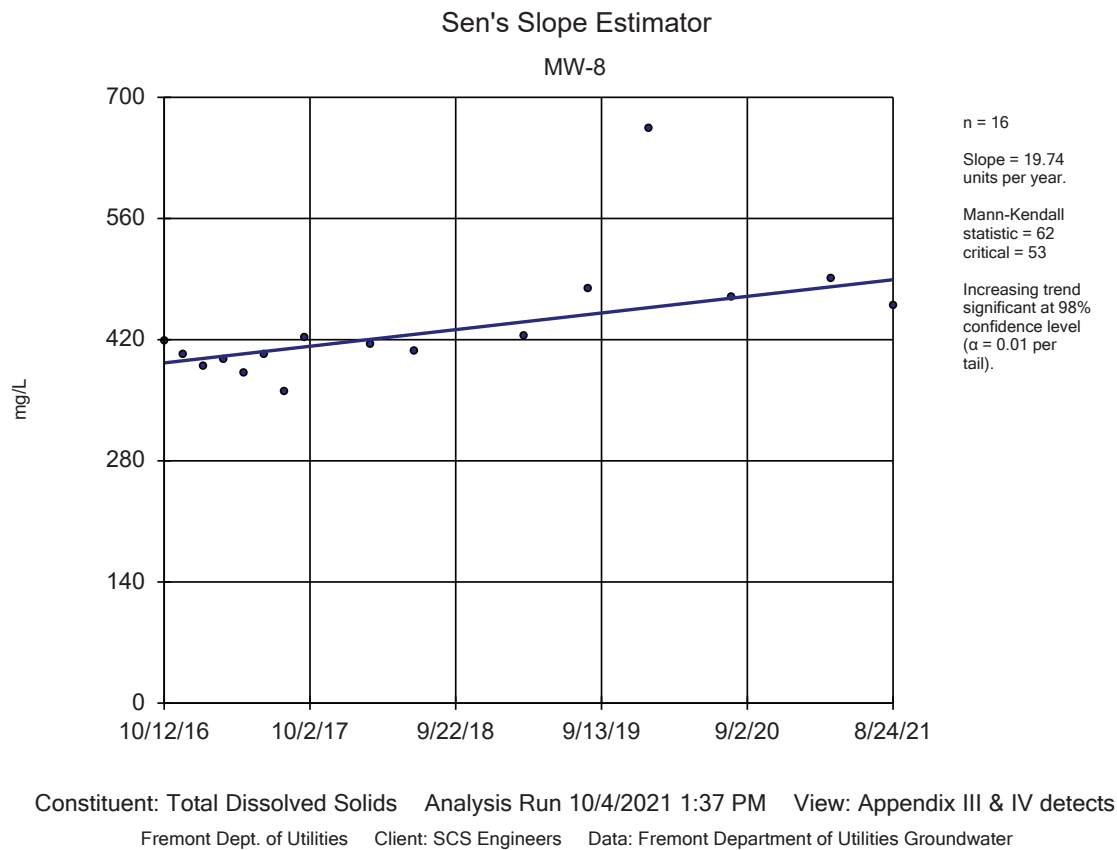
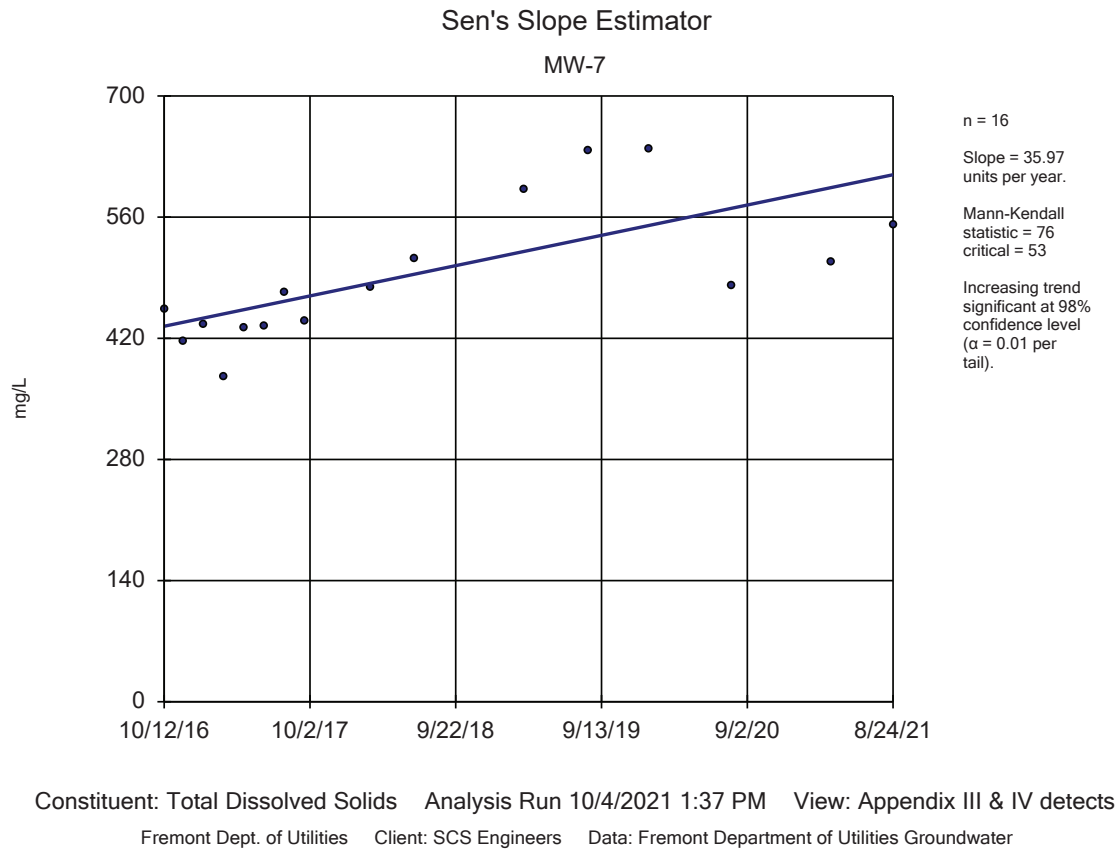


Constituent: Sulfate Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

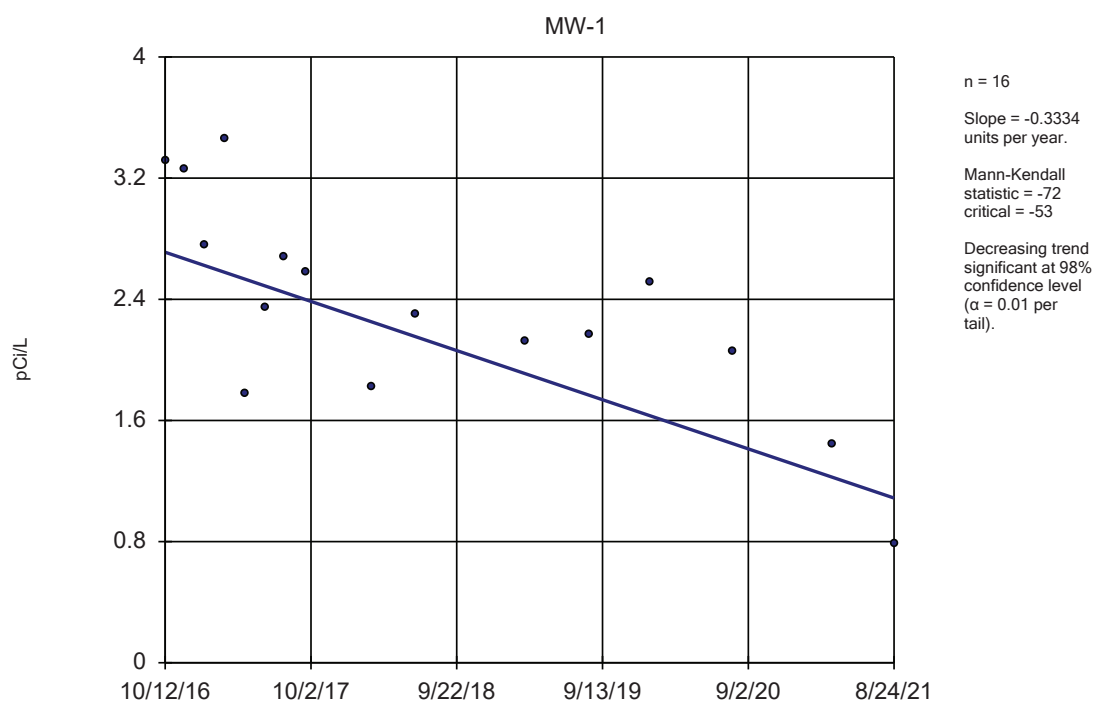






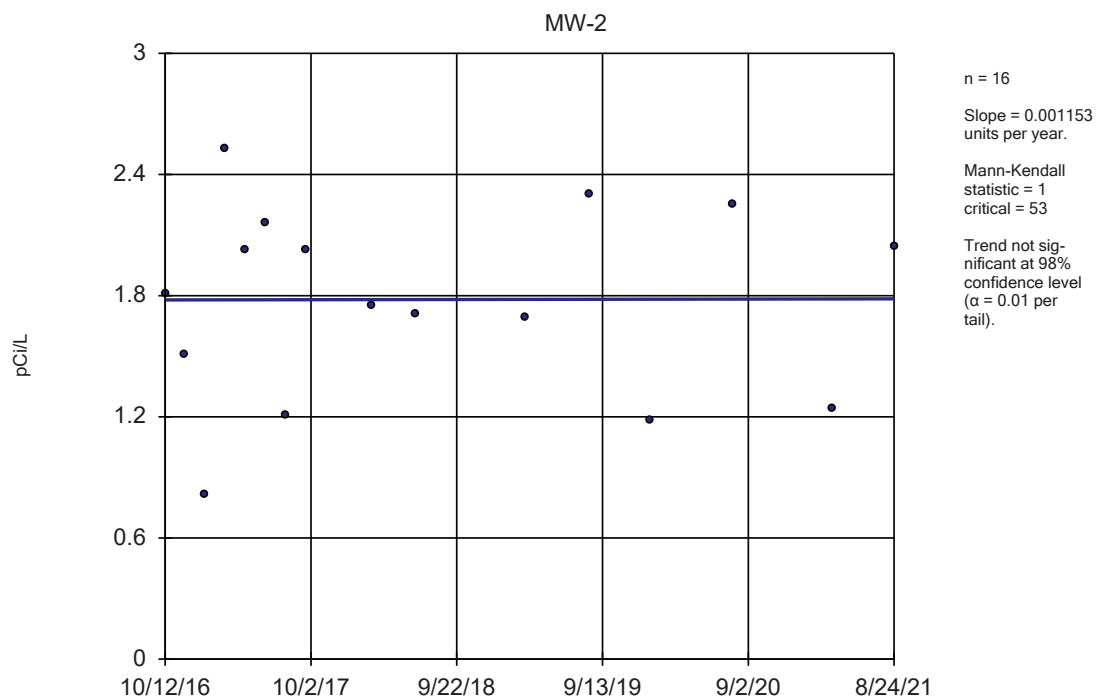


Sen's Slope Estimator



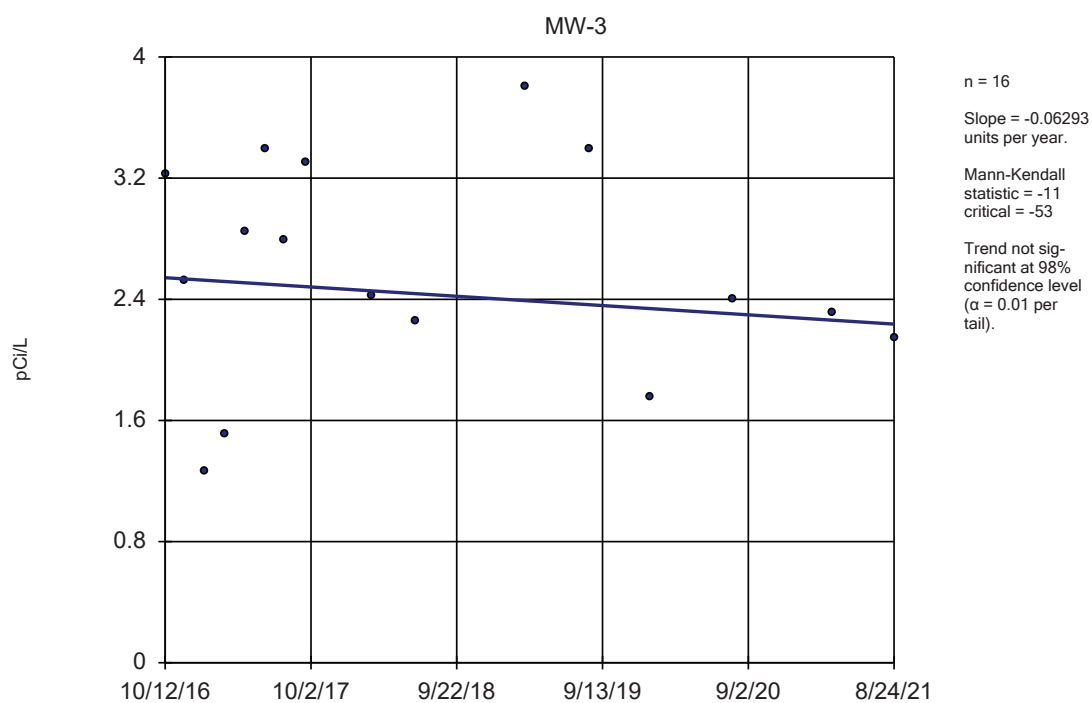
Constituent: Total Radium Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator



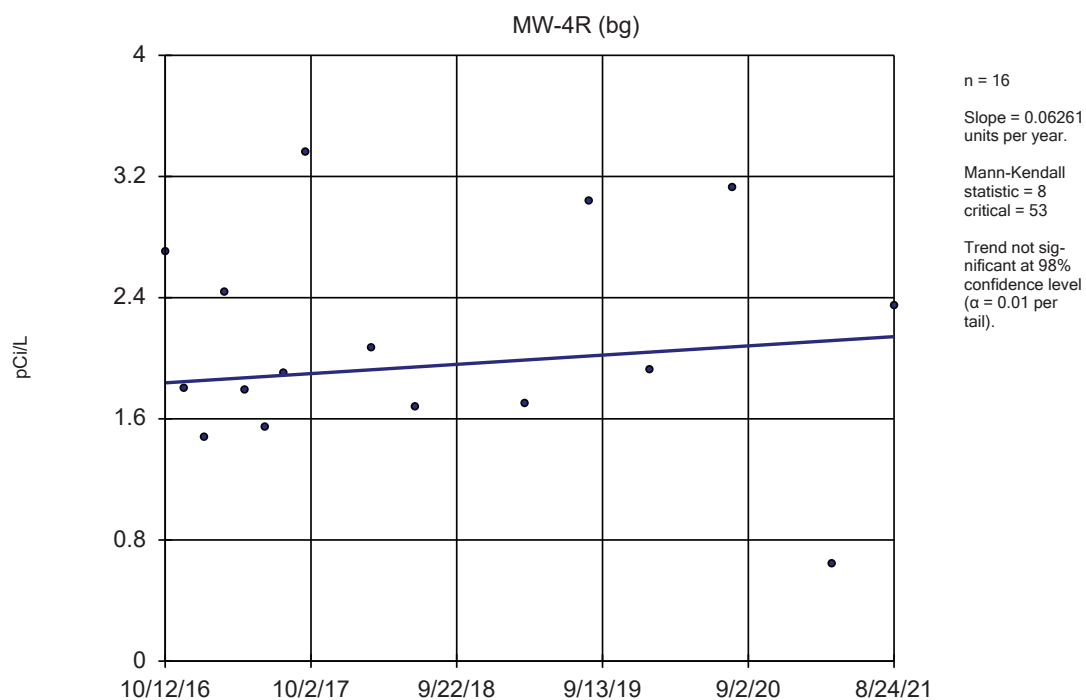
Constituent: Total Radium Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

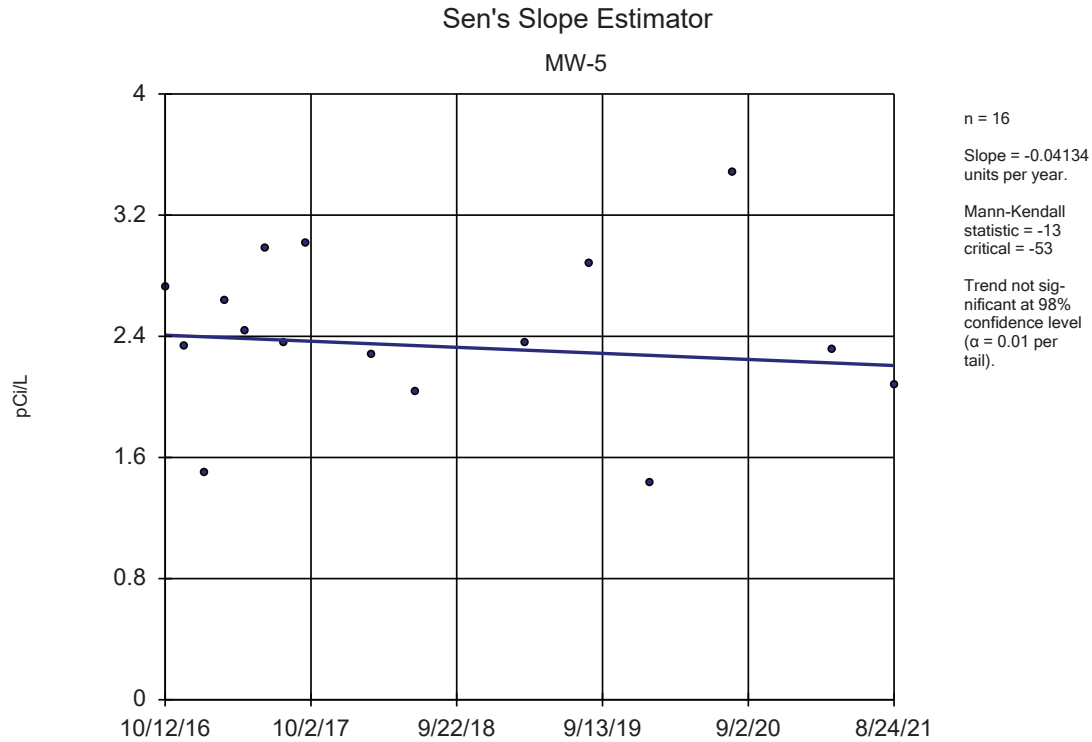


Constituent: Total Radium Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

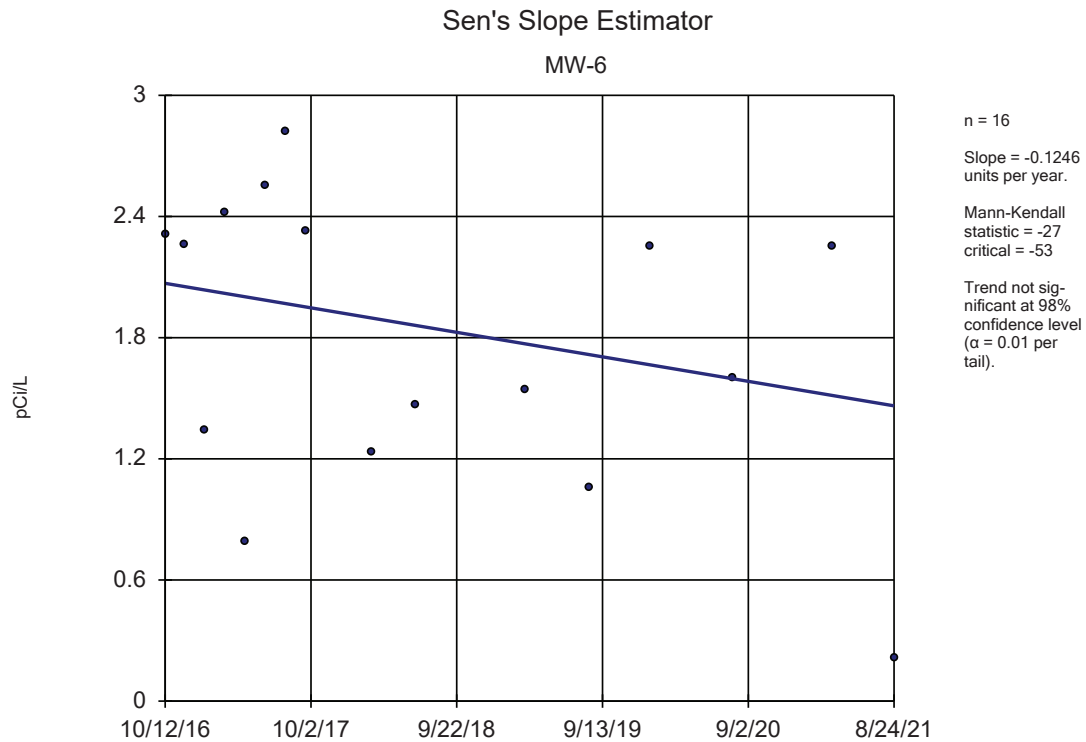
Sen's Slope Estimator



Constituent: Total Radium Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



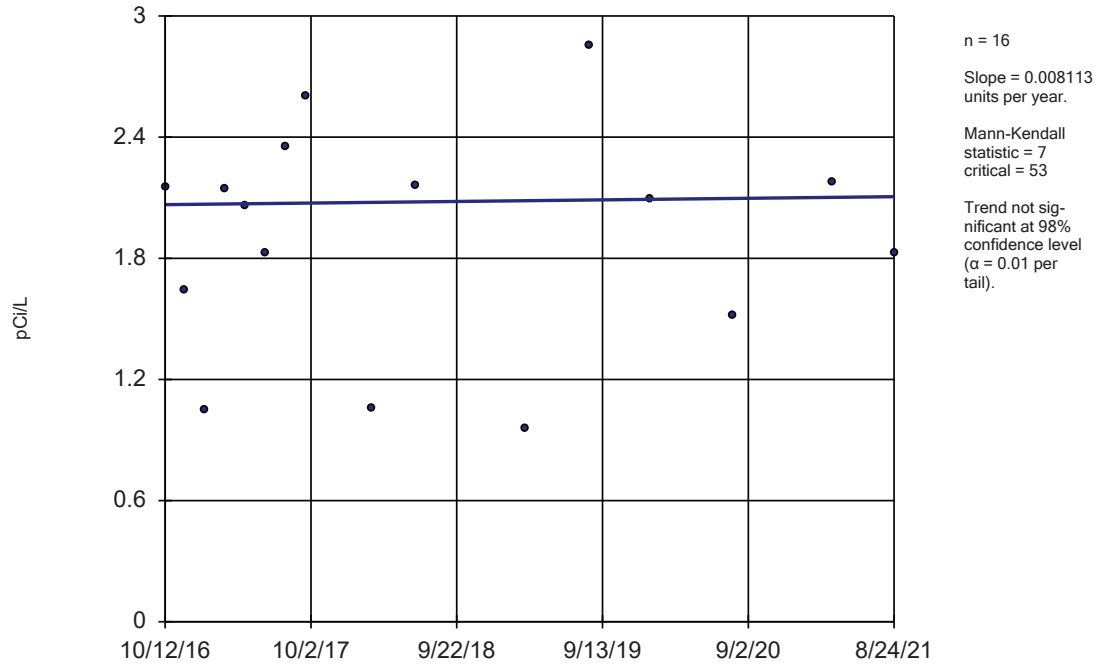
Constituent: Total Radium Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater



Constituent: Total Radium Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

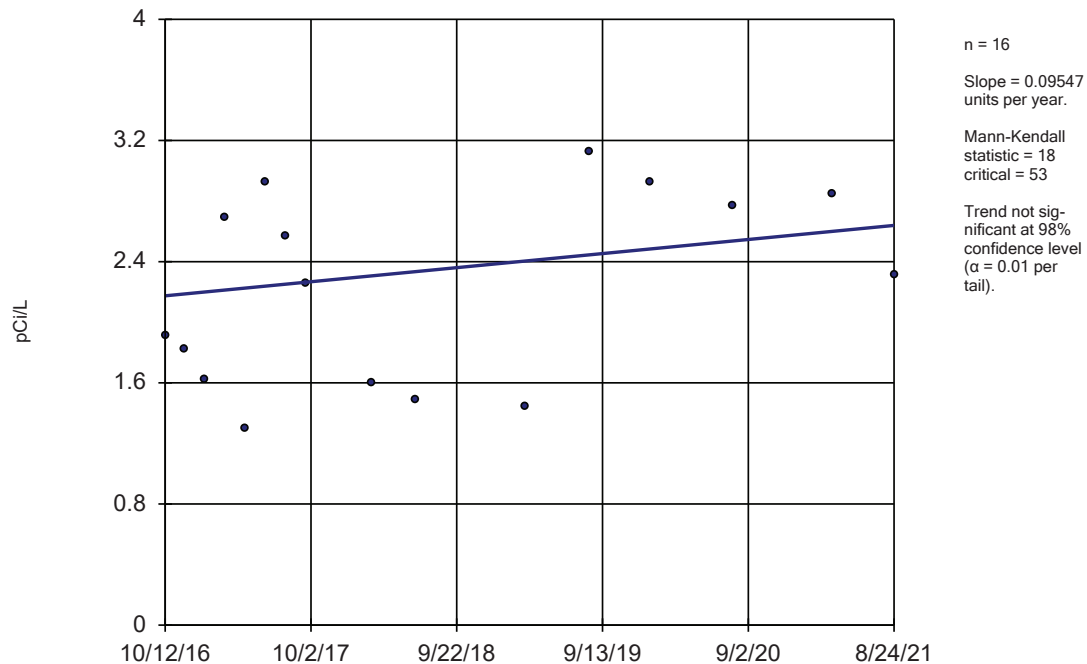
MW-7



Constituent: Total Radium Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sen's Slope Estimator

MW-8



Constituent: Total Radium Analysis Run 10/4/2021 1:37 PM View: Appendix III & IV detects
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

A.5 Confidence Interval Analysis

Confidence Interval

Fremont Dept. of Utilities

Client: SCS Engineers

Data: Fremont Department of Utilities Groundwater

Printed 10/4/2021, 2:13 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic [total] (ug/L)	MW-1	3.914	3.324	10	No	16	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-2	4.069	3.656	10	No	16	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-3	3.252	2.923	10	No	16	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-4R (bg)	4.457	3.605	10	No	16	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-5	4.635	4.303	10	No	16	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-6	3.601	2.634	10	No	16	0	x^(1/3)	0.01	Param.
Arsenic [total] (ug/L)	MW-7	3.738	3.387	10	No	16	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-8	2.674	2.451	10	No	16	0	No	0.01	Param.
Barium [total] (ug/L)	MW-1	148.3	126.3	200	No	16	0	No	0.01	Param.
Barium [total] (ug/L)	MW-2	106.6	96.7	200	No	16	0	No	0.01	Param.
Barium [total] (ug/L)	MW-3	181.3	165.4	200	No	16	0	No	0.01	Param.
Barium [total] (ug/L)	MW-4R (bg)	131.7	118.6	200	No	16	0	No	0.01	Param.
Barium [total] (ug/L)	MW-5	146.2	129.2	200	No	16	0	No	0.01	Param.
Barium [total] (ug/L)	MW-6	155.5	101	200	No	16	0	No	0.01	Param.
Barium [total] (ug/L)	MW-7	125.6	112.7	200	No	16	0	No	0.01	Param.
Barium [total] (ug/L)	MW-8	157.1	141.7	200	No	16	0	No	0.01	Param.
Boron (ug/L)	MW-1	147.4	131.6	191.8	No	16	0	No	0.01	Param.
Boron (ug/L)	MW-2	138	115	191.8	No	15	0	No	0.01	NP (normality)
Boron (ug/L)	MW-3	112.5	100	191.8	No	16	31.25	x^2	0.01	Param.
Boron (ug/L)	MW-5	141	122	191.8	No	16	0	No	0.01	NP (normality)
Boron (ug/L)	MW-8	161	120	191.8	No	14	0	No	0.01	NP (normality)
Calcium (mg/L)	MW-1	107.9	101.5	84.64	Yes	16	0	No	0.01	Param.
Calcium (mg/L)	MW-2	109.7	98.22	84.64	Yes	16	0	No	0.01	Param.
Calcium (mg/L)	MW-3	101.1	90.58	84.64	Yes	16	0	No	0.01	Param.
Calcium (mg/L)	MW-4R (bg)	91.33	77.95	84.64	No	16	0	No	0.01	Param.
Calcium (mg/L)	MW-5	112.9	100.1	84.64	Yes	16	0	No	0.01	Param.
Calcium (mg/L)	MW-6	88.53	58.21	84.64	No	16	0	No	0.01	Param.
Calcium (mg/L)	MW-7	102.7	91.87	84.64	Yes	16	0	No	0.01	Param.
Calcium (mg/L)	MW-8	97.14	86.45	84.64	Yes	16	0	No	0.01	Param.
Chloride (mg/L)	MW-1	20.4	11.47	250	No	16	0	x^(1/3)	0.01	Param.
Chloride (mg/L)	MW-2	19.64	13.6	250	No	15	0	No	0.01	Param.
Chloride (mg/L)	MW-3	41.3	26.5	250	No	16	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-4R (bg)	29.2	16.4	250	No	15	0	No	0.01	Param.
Chloride (mg/L)	MW-5	29.12	15.85	250	No	16	0	No	0.01	Param.
Chloride (mg/L)	MW-6	72.09	35.7	250	No	15	0	x^(1/3)	0.01	Param.
Chloride (mg/L)	MW-7	101	18.5	250	No	16	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-8	32.18	22.41	250	No	16	0	No	0.01	Param.
Chromium [total] (ug/L)	MW-4R (bg)	1.9	1	50	No	14	92.86	No	0.01	NP (NDs)
Fluoride (mg/L)	MW-1	1.385	1.229	4	No	16	0	x^2	0.01	Param.
Fluoride (mg/L)	MW-2	1.094	0.9044	4	No	16	0	No	0.01	Param.
Fluoride (mg/L)	MW-3	0.828	0.7358	4	No	16	0	No	0.01	Param.
Fluoride (mg/L)	MW-4R (bg)	0.9336	0.8127	4	No	16	0	No	0.01	Param.
Fluoride (mg/L)	MW-5	1.194	1.037	4	No	16	0	sqrt(x)	0.01	Param.
Fluoride (mg/L)	MW-6	0.6066	0.5022	4	No	16	0	No	0.01	Param.
Fluoride (mg/L)	MW-7	0.9146	0.8179	4	No	16	0	No	0.01	Param.
Fluoride (mg/L)	MW-8	0.8312	0.7413	4	No	16	0	No	0.01	Param.
Lithium (ug/L)	MW-1	35.68	31.32	40	No	16	0	No	0.01	Param.
Lithium (ug/L)	MW-2	30.69	27.09	40	No	15	0	No	0.01	Param.
Lithium (ug/L)	MW-3	29.64	26.16	40	No	16	0	No	0.01	Param.
Lithium (ug/L)	MW-4R (bg)	27.55	22.77	40	No	16	0	No	0.01	Param.

Confidence Interval

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 10/4/2021, 2:13 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Lithium (ug/L)	MW-5	31.98	26.47	40	No	16	0	No	0.01	Param.
Lithium (ug/L)	MW-6	28.35	19.4	40	No	16	0	No	0.01	Param.
Lithium (ug/L)	MW-7	30.41	26.1	40	No	16	0	No	0.01	Param.
Lithium (ug/L)	MW-8	29.95	26.26	40	No	15	0	No	0.01	Param.
Molybdenum (ug/L)	MW-1	8.476	7.499	100	No	16	0	No	0.01	Param.
Molybdenum (ug/L)	MW-2	9.4	7.5	100	No	16	0	No	0.01	NP (normality)
Molybdenum (ug/L)	MW-3	13.28	10.94	100	No	16	0	No	0.01	Param.
Molybdenum (ug/L)	MW-4R (bg)	8.353	5.26	100	No	16	0	No	0.01	Param.
Molybdenum (ug/L)	MW-5	6.818	5.52	100	No	16	0	No	0.01	Param.
Molybdenum (ug/L)	MW-6	8.686	6.576	100	No	16	0	No	0.01	Param.
Molybdenum (ug/L)	MW-7	8.903	8.047	100	No	16	0	No	0.01	Param.
Molybdenum (ug/L)	MW-8	8.6	6.9	100	No	15	0	No	0.01	NP (normality)
pH (Std. Units)	MW-1	7.3	6.95	8.5	No	16	0	No	0.005	Param.
pH (Std. Units)	MW-2	7.217	6.908	8.5	No	16	0	No	0.005	Param.
pH (Std. Units)	MW-3	7.254	6.934	8.5	No	16	0	No	0.005	Param.
pH (Std. Units)	MW-4R (bg)	7.369	6.906	8.5	No	16	0	No	0.005	Param.
pH (Std. Units)	MW-5	7.396	7.054	8.5	No	16	0	No	0.005	Param.
pH (Std. Units)	MW-6	7.205	6.858	8.5	No	16	0	No	0.005	Param.
pH (Std. Units)	MW-7	7.264	6.948	8.5	No	16	0	No	0.005	Param.
pH (Std. Units)	MW-8	7.27	6.905	8.5	No	16	0	No	0.005	Param.
Selenium [total] (ug/L)	MW-1	13.24	9.755	50	No	16	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-2	14.62	11.61	50	No	16	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-3	9.215	7.873	50	No	16	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-4R (bg)	8.536	6.464	50	No	15	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-5	8.75	7.35	50	No	16	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-6	9.556	5.231	50	No	16	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-7	10.83	8.658	50	No	16	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-8	12.69	10.2	50	No	16	0	No	0.01	Param.
Sulfate (mg/L)	MW-1	52.86	42.49	250	No	16	0	No	0.01	Param.
Sulfate (mg/L)	MW-2	62.52	39.87	250	No	15	0	No	0.01	Param.
Sulfate (mg/L)	MW-3	69.7	43.9	250	No	16	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-4R (bg)	42.3	34.22	250	No	16	0	No	0.01	Param.
Sulfate (mg/L)	MW-5	42.7	36.3	250	No	16	0	No	0.01	NP (normality)
Sulfate (mg/L)	MW-6	53.51	26.92	250	No	16	0	No	0.01	Param.
Sulfate (mg/L)	MW-7	50.56	39.15	250	No	16	0	No	0.01	Param.
Sulfate (mg/L)	MW-8	55.1	34.7	250	No	16	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-1	511	447	500	No	16	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-2	492	426	500	No	16	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-3	484.2	420.6	500	No	16	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-4R (bg)	438.8	382.7	500	No	16	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-5	495	461.5	500	No	16	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-6	530.9	338.8	500	No	16	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-7	541.7	440.4	500	No	16	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-8	478	389	500	No	16	0	No	0.01	NP (normality)
Total Radium (pCi/L)	MW-1	2.793	1.88	5	No	16	0	No	0.01	Param.
Total Radium (pCi/L)	MW-2	2.075	1.457	5	No	16	0	No	0.01	Param.
Total Radium (pCi/L)	MW-3	3.055	2.115	5	No	16	0	No	0.01	Param.
Total Radium (pCi/L)	MW-4R (bg)	2.554	1.635	5	No	16	0	No	0.01	Param.
Total Radium (pCi/L)	MW-5	2.773	2.079	5	No	16	0	No	0.01	Param.
Total Radium (pCi/L)	MW-6	2.251	1.303	5	No	16	0	No	0.01	Param.

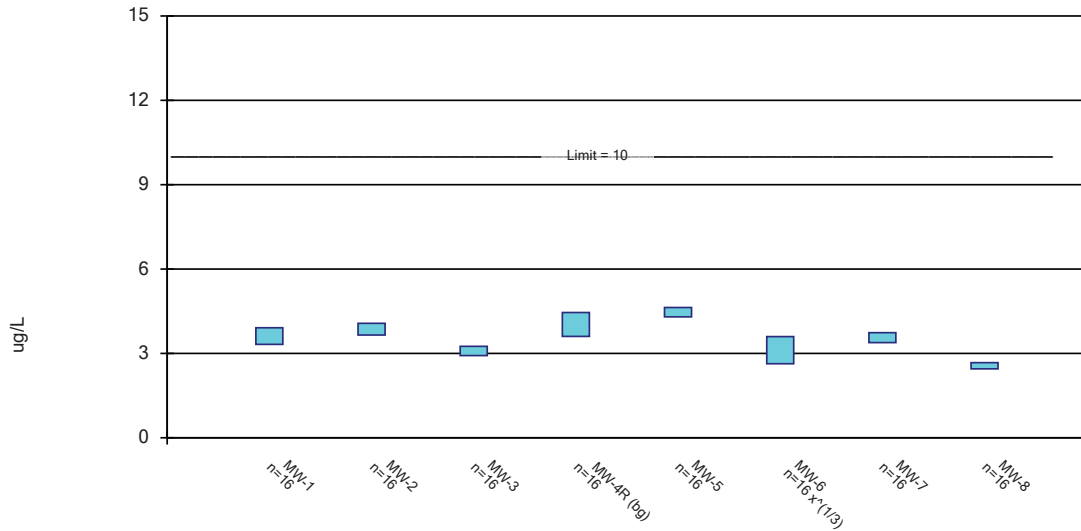
Confidence Interval

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 10/4/2021, 2:13 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Total Radium (pCi/L)	MW-7	2.259	1.549	5	No	16	0	No	0.01	Param.
Total Radium (pCi/L)	MW-8	2.631	1.819	5	No	16	0	No	0.01	Param.

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

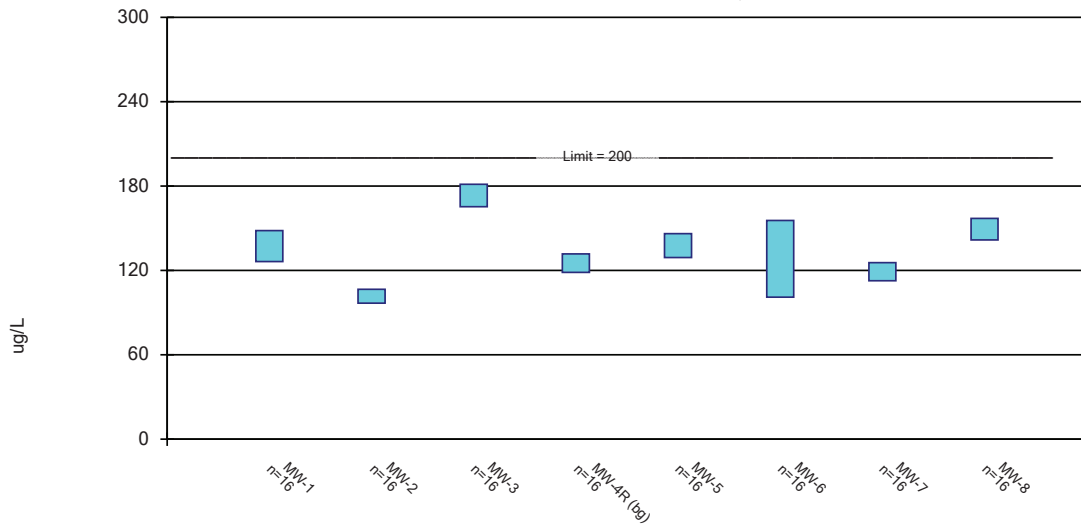


Constituent: Arsenic [total] Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

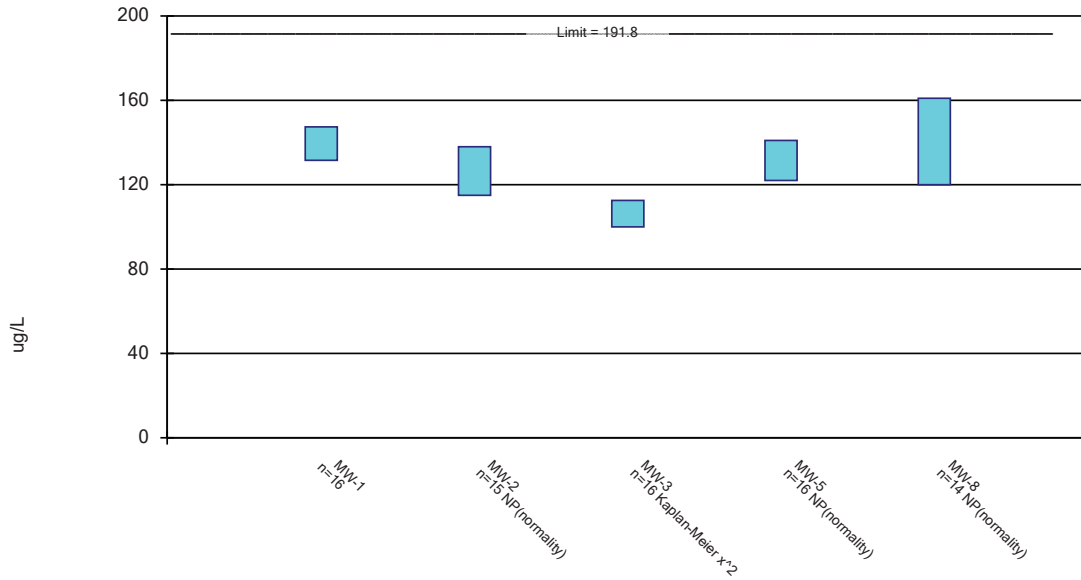


Constituent: Barium [total] Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

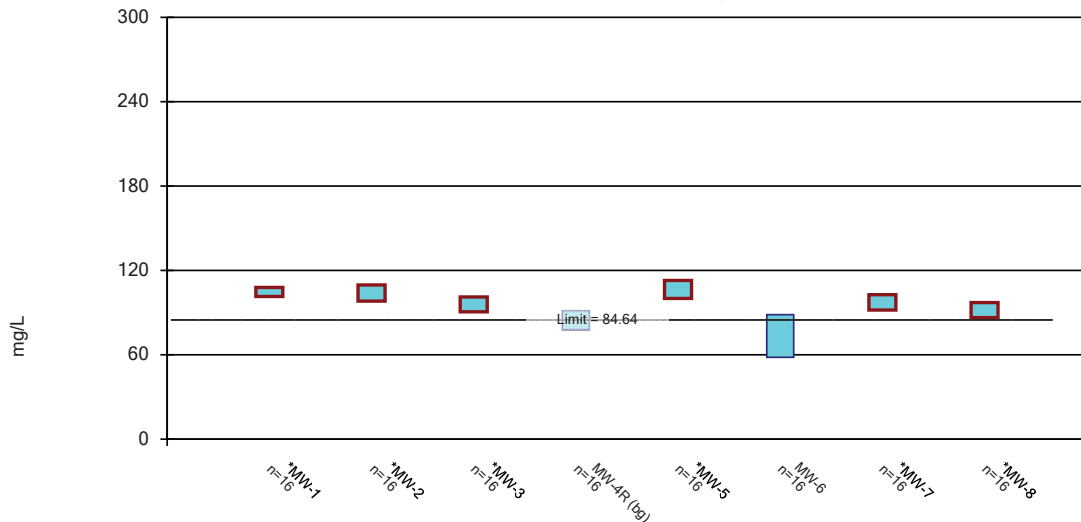


Constituent: Boron Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

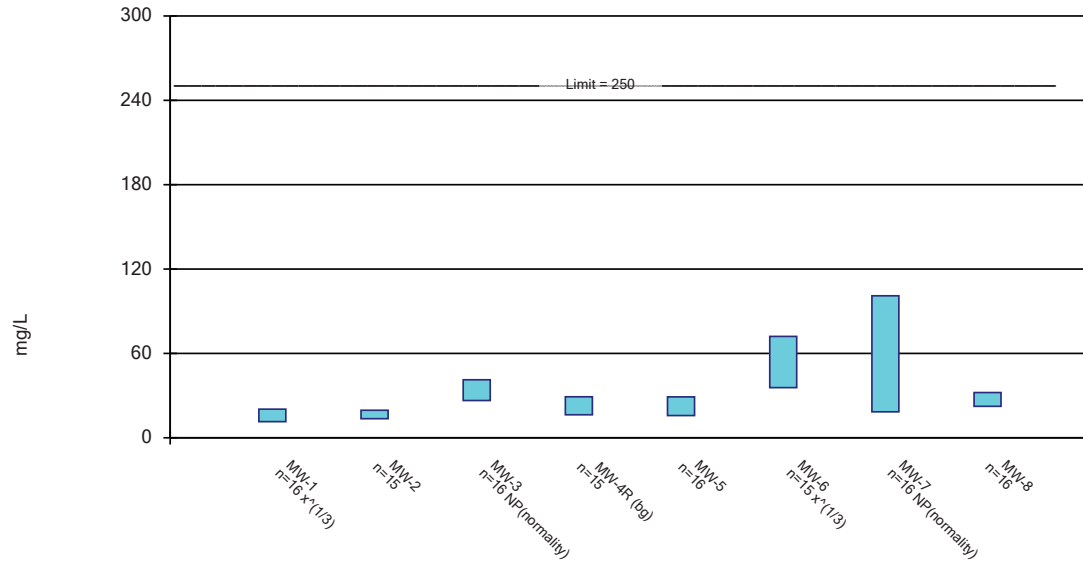


Constituent: Calcium Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Chloride Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

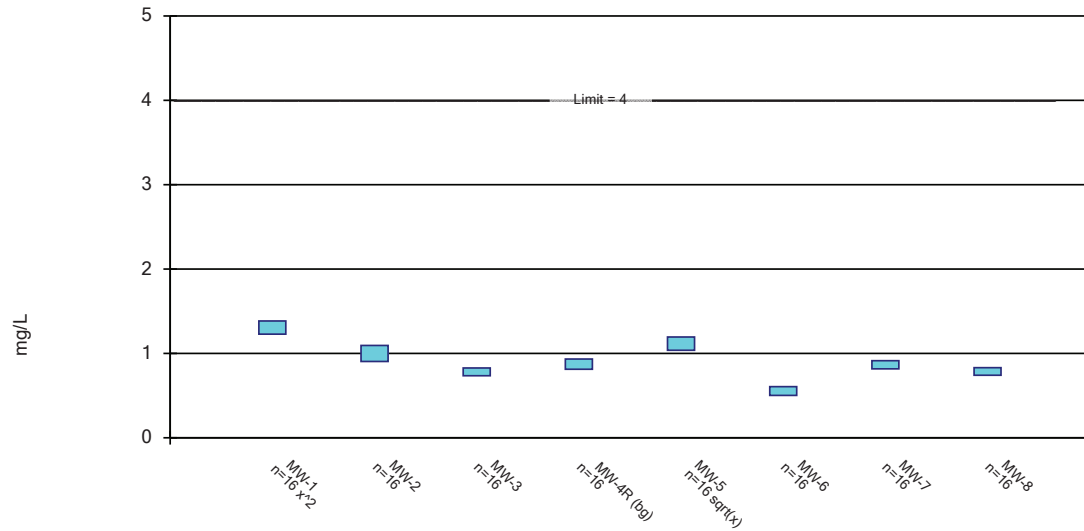


Constituent: Chromium [total] Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

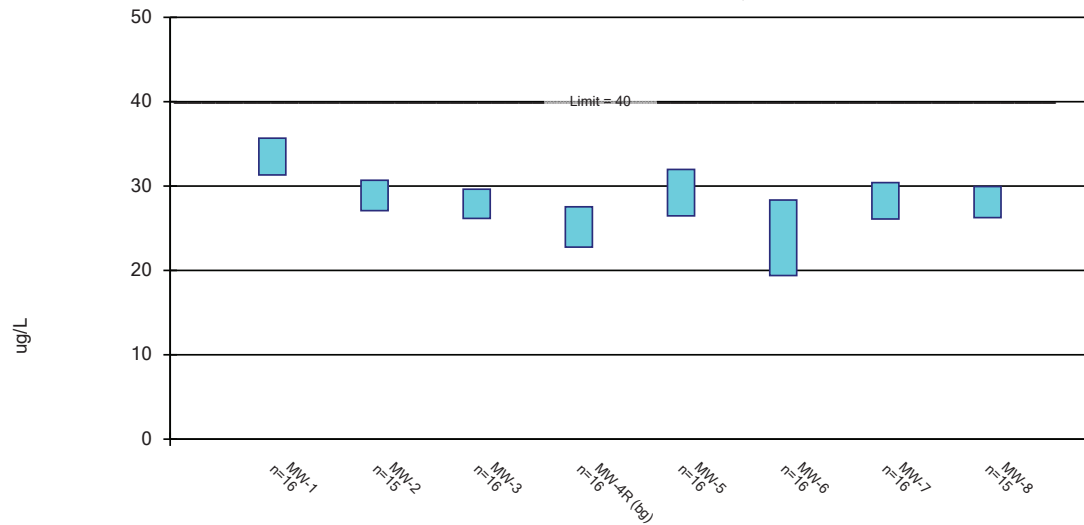


Constituent: Fluoride Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

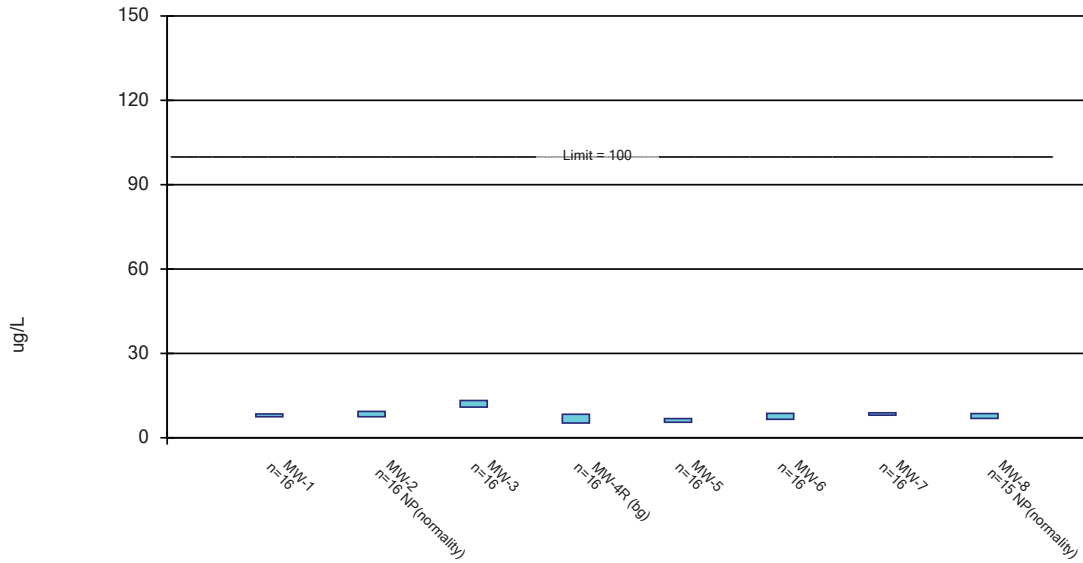


Constituent: Lithium Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

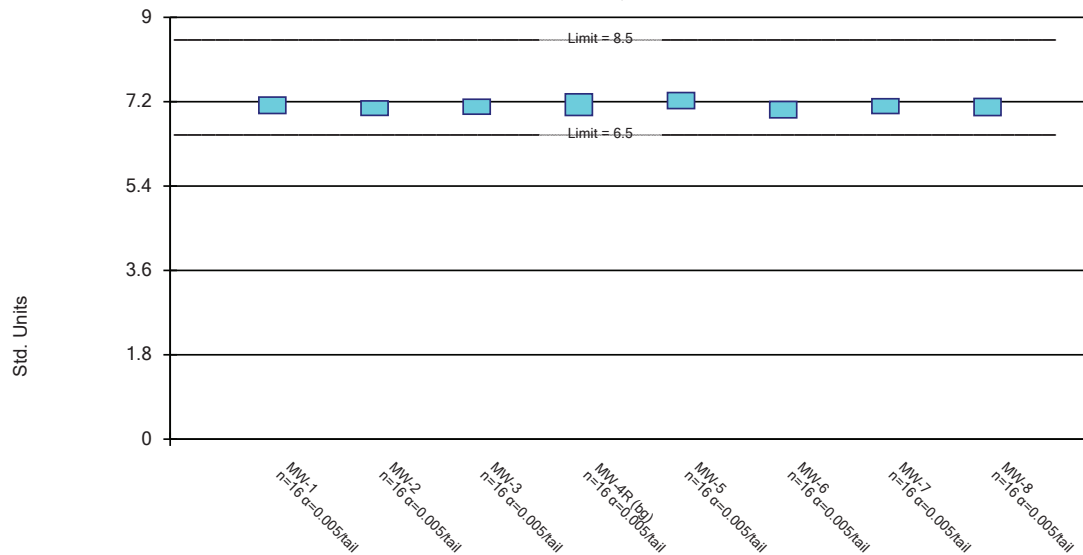
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Molybdenum Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

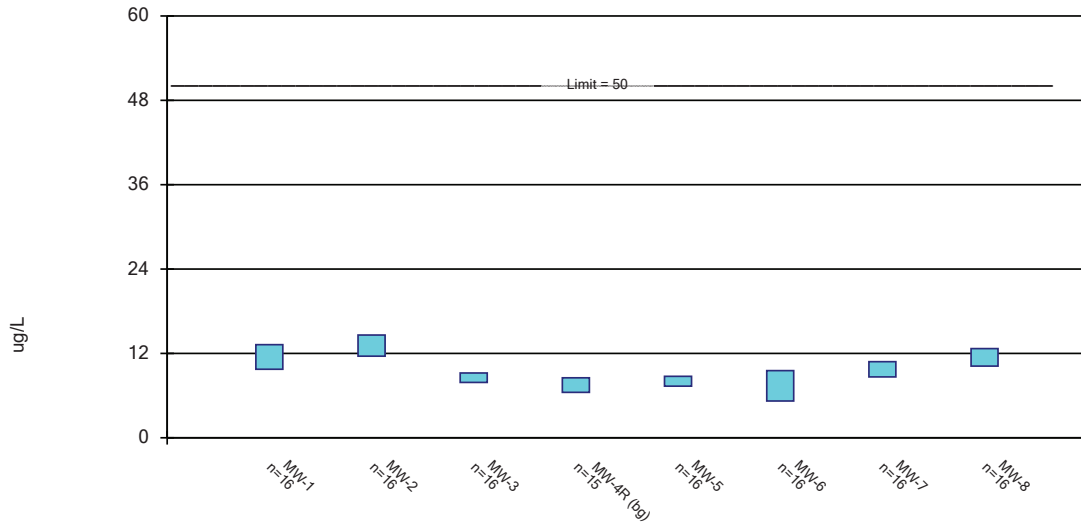
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: pH Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects
 Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

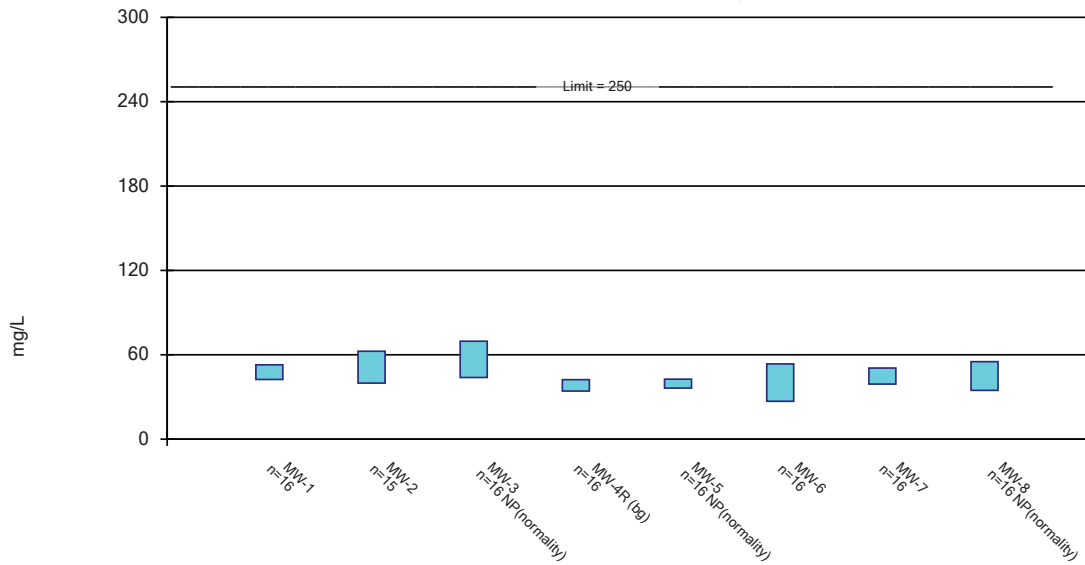


Constituent: Selenium [total] Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

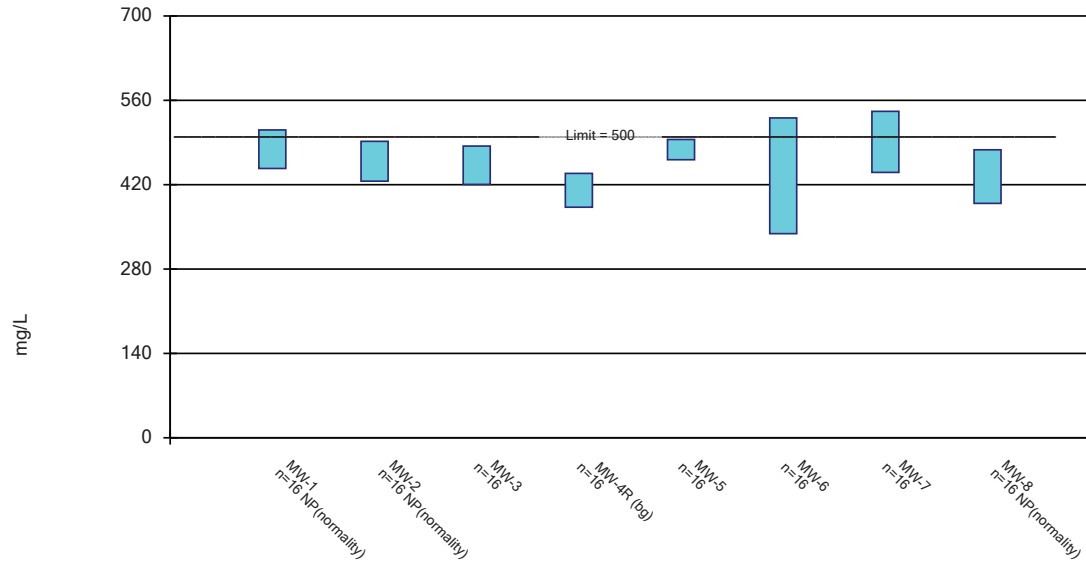


Constituent: Sulfate Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.

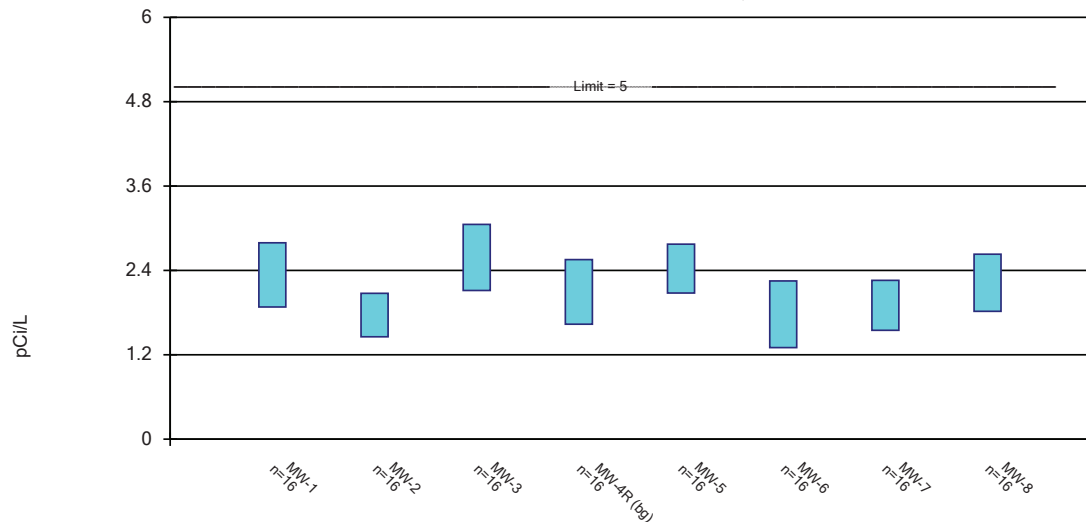


Constituent: Total Dissolved Solids Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Total Radium Analysis Run 10/4/2021 2:11 PM View: Appendix III & IV detects

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater