2019 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. 27219045.00 | January 7, 2020

SCS Engineers
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Omaha, NE 68144
402-884-6202

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1.0 INTRODUCTION

This 2019 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 U.S. 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). 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 2019 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, 2019 through December 31, 2019.

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 2019. 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 11, 2019 and the second sampling event on August 13, 2019 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 2019.

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 (2020):

Annual groundwater sampling and analysis event for all constituents identified in appendix III and appendix IV of 40 CFR part 258 (First Quarter 2020).

Within 14 days, place a notice in the operating record identifying the appendix IV constituents that have been detected and notify the NDEE that this notice has been placed in the operating record (if applicable).

Statistical evaluation and determination of any SSIs for the First Quarter 2020 monitoring event.

Within 90 days, or on at least a semiannual basis, resample all monitoring wells and analyze for all the constituents in appendix III and all appendix IV detects of 40 CFR part 258.

Statistical evaluation and determination of any SSIs for the second assessment monitoring groundwater sampling and analysis event.

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 2019.

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 2019.

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.

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TABLE 1

CCR Rule Groundwater Samples Summary

Table 1
CCR Rule Groundwater Samples Summary
Lon D. Wright Power Plant FFCA Monofill
March & August 2019

Well ID	Designation	Number of Samples Collected	Sampling Dates
MW-1	Downgradient	2 (1 each event)	3.11.19
			8.13.19
MW-2	Downgradient	2 (1 each event)	3.11.19
			8.13.19
MW-3	Downgradient	2 (1 each event)	3.11.19
			8.13.19
MW-4R	Upgradient	2 (1 each event)	3.11.19
			8.13.19
MW-5	Downgradient	2 (1 each event)	3.11.19
			8.13.19
MW-6	Downgradient	2 (1 each event)	3.11.19
			8.13.19
MW-7	Downgradient	2 (1 each event)	3.11.19
			8.13.19
MW-8	Downgradient	2 (1 each event)	3.11.19
			8.13.19

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

FIGURE 1

Site Vicinity Map

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

REV.	DATE	CK. BY
△	-	-
△	-	-
△	-	-
△	-	-
△	-	-
△	-	-

SHEET TITLE
SITE VICINITY MAP

PROJECT TITLE
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
PH. (402) 884-6202 FAX. (402) 884-6203

PROJ. NO. 27219045.00 | DWN. BY: ZEM | Q/A RVW BY: BRS
DSN. BY: ZEM | CHK. BY: BRS | PROJ. MGR. BRS

CADD FILE: ANNUAL GW CAR FIGURES.DWG

DATE: 12/11/19

FIGURE NO. **1**

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FIGURE 2

Site Map with Monitoring Wells

LEGEND

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

100 0 100 200

SCALE FEET

REV.	DATE	CK. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

SHEET TITLE
SITE MAP

PROJECT TITLE
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

CLIENT
FREMONT DEPARTMENT OF UTILITIES
LON D. WRIGHT POWER PLANT
FREMONT, NEBRASKA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NEBRASKA 68144
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PROJ. NO. 27219045.00
DSN. BY: KB
DWN. BY: ZEM
CHK. BY: CJ
Q/A RVW BY: CJ
PROJ. MGR. BRS

CADD FILE: ANNUAL GW CAR FIGURES.DWG

DATE: 12/11/19

FIGURE NO.
2

T:\27219045.00\Data and Calculations\2019 Annual CCR GWM & CA Report\DWG\Annual GW CAR Figures.dwg Dec 11, 2019 - 3:27pm Layout Name: Figure 2 By: 4277zem

APPENDIX A

Groundwater Monitoring Program Reports

A1 March 2019 Groundwater Monitoring Program Report

FREMONT
Department of Utilities

Operated by the
Board for Public Works

400 EAST MILITARY AVENUE P.O. BOX 1468 FREMONT, NE 68025

April 29, 2019

State of Nebraska
Department of Environmental Quality
Remediation Section

RECEIVED

MAY - 2 2019

Nebraska Dept of Environmental Quality
By: _____DEQ#182_____

Attn:
Nancy Harris
Groundwater Geologist
Waste Management Division
Suite 400, The Atrium
1200 N. Street
P.O. Box 98922
Lincoln, NE 68509-8922

Dear Ms. Harris:

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 11, 2019. If you have any questions concerning this report please feel free to call or email Tony Sedlacek.

Sincerely,

Tony Sedlacek

Tony Sedlacek
Environmental Engineering Technician
Lon D. Wright Power Plant
Fremont Department of Utilities
2701 E. 1st St
Fremont, NE 68025
Phone (402) 727-2651
Fax (402) 727-2640
tony.sedlacek@fremontne.gov

Enclosures

2019003645

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3.3 Quality Control Report

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4.2 Chain-of-Custody Records
4.3 Statistical Summary Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60296409001	MW-1	Water	03/11/19 13:49	03/12/19 06:15
60296409002	MW-2	Water	03/11/19 11:14	03/12/19 06:15
60296409003	MW-3	Water	03/11/19 13:12	03/12/19 06:15
60296409004	MW-4R	Water	03/11/19 08:50	03/12/19 06:15
60296409005	MW-5	Water	03/11/19 10:39	03/12/19 06:15
60296409006	MW-6	Water	03/11/19 09:58	03/12/19 06:15
60296409007	MW-7	Water	03/11/19 11:54	03/12/19 06:15
60296409008	MW-8	Water	03/11/19 12:35	03/12/19 06:15
60296409009	DUPLICATE	Water	03/11/19 23:59	03/12/19 06:15

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60296409001	MW-1	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60296409002	MW-2	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60296409003	MW-3	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60296409004	MW-4R	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60296409005	MW-5	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60296409006	MW-6	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60296409007	MW-7	EPA 6010	EMR	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60296409008	**MW-8**	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60296409009	**DUPLICATE**	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: MW-1 **Lab ID: 60296409001** Collected: 03/11/19 13:49 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**140**	ug/L	100	1	03/18/19 10:32	03/18/19 18:08	7440-42-8	
Calcium	**105**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:08	7440-70-2	
Lithium	**30.8**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:04	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:54	7440-36-0	
Arsenic	**3.9**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:54	7440-38-2	
Barium	**147**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:54	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 13:54	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 13:54	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:54	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:54	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:54	7439-92-1	
Molybdenum	**8.7**	ug/L	1.0	1	03/18/19 10:32	03/20/19 10:34	7439-98-7	
Selenium	**10.5**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:54	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**498**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		03/13/19 09:21		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.0**	mg/L	1.0	1		03/21/19 22:15	16887-00-6	
Fluoride	**1.5**	mg/L	0.20	1		03/21/19 22:15	16984-48-8	
Sulfate	**43.1**	mg/L	5.0	5		03/21/19 22:30	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: MW-2 **Lab ID: 60296409002** Collected: 03/11/19 11:14 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**132**	ug/L	100	1	03/18/19 10:32	03/18/19 18:10	7440-42-8	
Calcium	**109**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:10	7440-70-2	
Lithium	**31.7**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:07	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:56	7440-36-0	
Arsenic	**4.0**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:56	7440-38-2	
Barium	**108**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:56	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 13:56	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 13:56	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:56	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:56	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:56	7439-92-1	
Molybdenum	**8.2**	ug/L	1.0	1	03/18/19 10:32	03/20/19 10:35	7439-98-7	
Selenium	**14.3**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:56	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**492**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**6.9**	Std. Units	0.10	1		03/13/19 09:09		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**14.6**	mg/L	1.0	1		03/21/19 22:46	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	1		03/21/19 22:46	16984-48-8	
Sulfate	**54.0**	mg/L	5.0	5		03/21/19 23:02	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: MW-3 **Lab ID: 60296409003** Collected: 03/11/19 13:12 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**100**	ug/L	100	1	03/18/19 10:32	03/18/19 18:12	7440-42-8	
Calcium	**98.2**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:12	7440-70-2	
Lithium	**28.6**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:09	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:57	7440-36-0	
Arsenic	**3.4**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:57	7440-38-2	
Barium	**191**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:57	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 13:57	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 13:57	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:57	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:57	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:57	7439-92-1	
Molybdenum	**12.1**	ug/L	1.0	1	03/18/19 10:32	03/20/19 10:36	7439-98-7	
Selenium	**8.9**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:57	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:57	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**481**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		03/13/19 09:17		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**34.0**	mg/L	5.0	5		03/22/19 00:06	16887-00-6	
Fluoride	**0.83**	mg/L	0.20	1		03/21/19 23:50	16984-48-8	
Sulfate	**61.2**	mg/L	5.0	5		03/22/19 00:06	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: MW-4R **Lab ID: 60296409004** Collected: 03/11/19 08:50 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**188**	ug/L	100	1	03/18/19 10:32	03/18/19 18:14	7440-42-8	
Calcium	**86.4**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:14	7440-70-2	
Lithium	**28.5**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:11	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:59	7440-36-0	
Arsenic	**4.4**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:59	7440-38-2	
Barium	**126**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:59	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 13:59	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 13:59	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:59	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:59	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:59	7439-92-1	
Molybdenum	**5.3**	ug/L	1.0	1	03/18/19 10:32	03/20/19 10:37	7439-98-7	
Selenium	**7.3**	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:59	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 13:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**452**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		03/13/19 08:59		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**44.8**	mg/L	5.0	5		03/22/19 00:37	16887-00-6	
Fluoride	**0.93**	mg/L	0.20	1		03/22/19 00:21	16984-48-8	
Sulfate	**45.1**	mg/L	5.0	5		03/22/19 00:37	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: MW-5 **Lab ID: 60296409005** Collected: 03/11/19 10:39 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**129**	ug/L	100	1	03/18/19 10:32	03/18/19 18:16	7440-42-8	
Calcium	**92.7**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:16	7440-70-2	
Lithium	**28.5**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:13	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:01	7440-36-0	
Arsenic	**4.8**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:01	7440-38-2	
Barium	**121**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:01	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:01	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:01	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:01	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:01	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:01	7439-92-1	
Molybdenum	**5.2**	ug/L	1.0	1	03/18/19 10:32	03/20/19 10:38	7439-98-7	
Selenium	**7.9**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:01	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:01	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:28	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**469**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**7.1**	Std. Units	0.10	1		03/13/19 09:06		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**29.8**	mg/L	5.0	5		03/22/19 00:43	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	1		03/22/19 00:04	16984-48-8	
Sulfate	**36.8**	mg/L	5.0	5		03/22/19 00:43	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: MW-6 **Lab ID: 60296409006** Collected: 03/11/19 09:58 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	03/18/19 10:32	03/18/19 18:23	7440-42-8	
Calcium	**49.2**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:23	7440-70-2	
Lithium	**15.1**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:16	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:03	7440-36-0	
Arsenic	**2.9**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:03	7440-38-2	
Barium	**92.1**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:03	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:03	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:03	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:03	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:03	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:03	7439-92-1	
Molybdenum	**6.1**	ug/L	1.0	1	03/18/19 10:32	03/20/19 10:39	7439-98-7	
Selenium	**5.3**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:03	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:03	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**253**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**6.9**	Std. Units	0.10	1		03/13/19 09:02		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**27.0**	mg/L	5.0	5		03/22/19 01:09	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	1		03/22/19 00:53	16984-48-8	
Sulfate	**24.3**	mg/L	5.0	5		03/22/19 01:09	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: MW-7 **Lab ID: 60296409007** Collected: 03/11/19 11:54 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**135**	ug/L	100	1	03/18/19 10:32	03/18/19 18:25	7440-42-8	
Calcium	**104**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:25	7440-70-2	
Lithium	**27.6**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:18	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7440-36-0	
Arsenic	**3.9**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7440-38-2	
Barium	**136**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:13	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:13	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7439-92-1	
Molybdenum	**8.0**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7439-98-7	
Selenium	**9.5**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:13	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**592**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**6.9**	Std. Units	0.10	1		03/13/19 09:12		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**119**	mg/L	10.0	10		03/22/19 11:44	16887-00-6	
Fluoride	**0.85**	mg/L	0.20	1		03/22/19 01:25	16984-48-8	
Sulfate	**39.9**	mg/L	5.0	5		03/22/19 01:41	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: MW-8 **Lab ID: 60296409008** Collected: 03/11/19 12:35 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**161**	ug/L	100	1	03/18/19 10:32	03/18/19 18:31	7440-42-8	
Calcium	**85.4**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:31	7440-70-2	
Lithium	**25.9**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:24	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7440-36-0	
Arsenic	**2.8**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7440-38-2	
Barium	**142**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:14	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:14	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7439-92-1	
Molybdenum	**7.6**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7439-98-7	
Selenium	**11.0**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:14	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**425**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		03/13/19 09:15		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**26.4**	mg/L	5.0	5		03/22/19 01:09	16887-00-6	
Fluoride	**0.86**	mg/L	0.20	1		03/22/19 00:56	16984-48-8	
Sulfate	**39.5**	mg/L	5.0	5		03/22/19 01:09	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

Sample: DUPLICATE **Lab ID: 60296409009** Collected: 03/11/19 23:59 Received: 03/12/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**137**	ug/L	100	1	03/18/19 10:32	03/18/19 18:33	7440-42-8	
Calcium	**104**	mg/L	0.20	1	03/18/19 10:32	03/18/19 18:33	7440-70-2	
Lithium	**29.6**	ug/L	10.0	1	03/18/19 10:32	03/19/19 16:31	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7440-36-0	
Arsenic	**4.0**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7440-38-2	
Barium	**137**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7440-39-3	
Beryllium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:16	7440-41-7	
Cadmium	ND	ug/L	0.50	1	03/18/19 10:32	03/19/19 14:16	7440-43-9	
Chromium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7440-47-3	
Cobalt	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7440-48-4	
Lead	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7439-92-1	
Molybdenum	**8.1**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7439-98-7	
Selenium	**9.8**	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7782-49-2	
Thallium	ND	ug/L	1.0	1	03/18/19 10:32	03/19/19 14:16	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	03/13/19 10:23	03/18/19 10:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**587**	mg/L	5.0	1		03/13/19 14:34		
9040 pH	Analytical Method: EPA 9040							
pH	**7.0**	Std. Units	0.10	1		03/13/19 09:34		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**121**	mg/L	10.0	10		03/22/19 12:00	16887-00-6	
Fluoride	**0.78**	mg/L	0.20	1		03/22/19 01:21	16984-48-8	
Sulfate	**40.3**	mg/L	5.0	5		03/22/19 01:34	14808-79-8	

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: MW-1 **Lab ID: 60296370001** Collected: 03/11/19 13:49 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.534 ± 0.483 (0.712)** **C:NA T:96%**	pCi/L	03/25/19 21:59	13982-63-3	
Radium-228	EPA 904.0	**1.59 ± 0.731 (1.21)** **C:75% T:90%**	pCi/L	04/01/19 16:33	15262-20-1	
Total Radium	Total Radium Calculation	**2.12 ± 1.21 (1.92)**	pCi/L	04/02/19 13:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: MW-2 **Lab ID: 60296370002** Collected: 03/11/19 11:14 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.582 ± 0.527 (0.777)** **C:NA T:90%**	pCi/L	03/25/19 21:59	13982-63-3	
Radium-228	EPA 904.0	**1.11 ± 0.605 (1.10)** **C:74% T:82%**	pCi/L	04/01/19 16:32	15262-20-1	
Total Radium	Total Radium Calculation	**1.69 ± 1.13 (1.88)**	pCi/L	04/02/19 13:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: MW-3 **Lab ID: 60296370003** Collected: 03/11/19 13:12 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**2.15 ± 0.875 (0.855) C:NA T:84%**	pCi/L	03/25/19 21:59	13982-63-3	
Radium-228	EPA 904.0	**1.66 ± 0.631 (0.963) C:78% T:88%**	pCi/L	04/01/19 16:32	15262-20-1	
Total Radium	Total Radium Calculation	**3.81 ± 1.51 (1.82)**	pCi/L	04/02/19 13:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: MW-4R **Lab ID: 60296370004** Collected: 03/11/19 08:50 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.687 ± 0.608 (0.901)** **C:NA T:76%**	pCi/L	03/25/19 21:59	13982-63-3	
Radium-228	EPA 904.0	**1.01 ± 0.511 (0.905)** **C:84% T:90%**	pCi/L	04/01/19 16:33	15262-20-1	
Total Radium	Total Radium Calculation	**1.70 ± 1.12 (1.81)**	pCi/L	04/02/19 13:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: MW-5 **Lab ID: 60296370005** Collected: 03/11/19 10:39 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.11 ± 0.631 (0.742)** **C:NA T:96%**	pCi/L	03/25/19 21:59	13982-63-3	
Radium-228	EPA 904.0	**1.25 ± 0.701 (1.27)** **C:76% T:92%**	pCi/L	04/01/19 18:46	15262-20-1	
Total Radium	Total Radium Calculation	**2.36 ± 1.33 (2.01)**	pCi/L	04/02/19 13:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: MW-6 **Lab ID: 60296370006** Collected: 03/11/19 09:58 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.671 ± 0.417 (0.411)** **C:NA T:94%**	pCi/L	03/25/19 21:59	13982-63-3	
Radium-228	EPA 904.0	**0.866 ± 0.671 (1.33)** **C:74% T:87%**	pCi/L	04/01/19 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**1.54 ± 1.09 (1.74)**	pCi/L	04/02/19 13:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: MW-7 **Lab ID: 60296370007** Collected: 03/11/19 11:54 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.654 ± 0.549 (0.786)** **C:NA T:89%**	pCi/L	03/25/19 22:13	13982-63-3	
Radium-228	EPA 904.0	**0.299 ± 0.589 (1.30)** **C:78% T:84%**	pCi/L	04/01/19 18:48	15262-20-1	
Total Radium	Total Radium Calculation	**0.953 ± 1.14 (2.09)**	pCi/L	04/02/19 13:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: MW-8 **Lab ID: 60296370008** Collected: 03/11/19 12:35 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.851 ± 0.565 (0.659)** **C:NA T:81%**	pCi/L	03/25/19 22:13	13982-63-3	
Radium-228	EPA 904.0	**0.586 ± 0.560 (1.14)** **C:76% T:92%**	pCi/L	04/01/19 18:49	15262-20-1	
Total Radium	Total Radium Calculation	**1.44 ± 1.13 (1.80)**	pCi/L	04/02/19 13:32	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

Sample: DUPLICATE **Lab ID: 60296370009** Collected: 03/11/19 23:59 Received: 03/12/19 06:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.450 ± 0.353 (0.414)** **C:NA T:95%**	pCi/L	03/25/19 22:13	13982-63-3	
Radium-228	EPA 904.0	**1.36 ± 0.711 (1.25)** **C:74% T:89%**	pCi/L	04/01/19 18:49	15262-20-1	
Total Radium	Total Radium Calculation	**1.81 ± 1.06 (1.66)**	pCi/L	04/02/19 13:32	7440-14-4	

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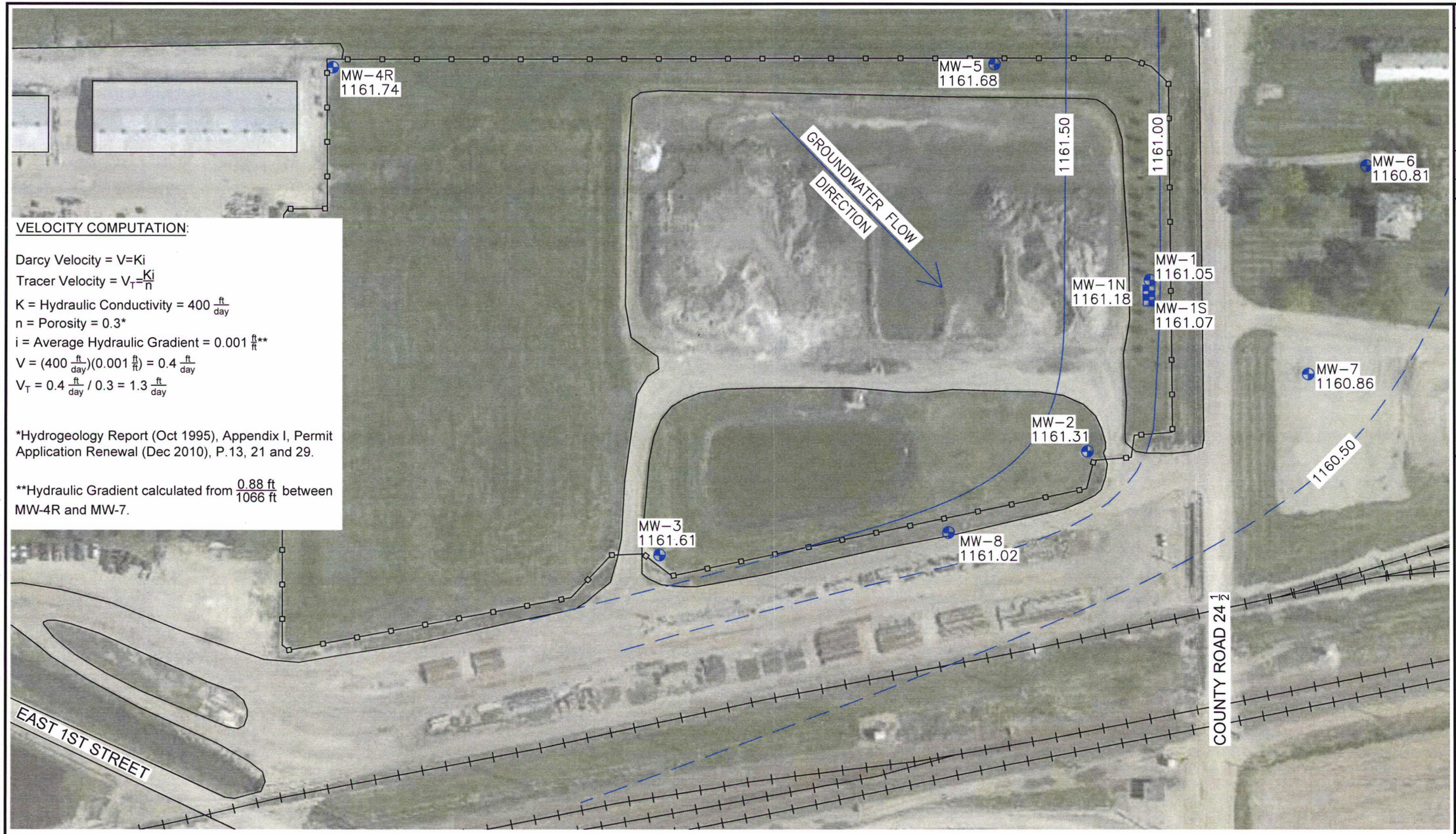

VELOCITY COMPUTATION:

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 $\frac{0.88\ ft}{1066\ ft}$ between MW-4R and MW-7.

LEGEND

	RAILROAD TRACKS		ESTIMATED POTENTIOMETRIC CONTOUR
	FENCE		POTENTIOMETRIC CONTOUR
	MONITORING WELL	1161.00	FEET ABOVE MEAN SEA LEVEL
	PIEZOMETER		

NOTES:

1. DEPTHS TO GROUNDWATER MEASURED 3/11/2019.
2. GROUNDWATER DATA FROM MW-1N AND MW-1S WERE NOT USED IN THE CALCULATION OF GROUNDWATER CONTOURS.

100 0 100 200

SCALE FEET

REV.	DATE	CK. BY

SHEET TITLE
POTENTIOMETRIC CONTOUR MAP

PROJECT TITLE
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) 884-6202 FAX. (402) 884-6203

PROJ. NO. 27219066.00 | DWN. BY: ZEM | Q/A RVW BY: CJ
DSN. BY: KB | CHK. BY: CJ | PROJ. MGR. BRS

CADD FILE: GR GROUNDWATER CONTOURS.DWG

DATE: 3/19/19

FIGURE NO. 1

T:\27219045.00\Data and Calculations\1Q2019 GW\DWG\Q1 Groundwater Contours.dwg Mar 19, 2019 - 8:26am Layout Name: 11x17 By: 4277zem

Field Data Sheet

Project Name: FDU GW Sampling
Project Location: Fremont, NE
Project Number: 27219045.00

Monitoring Point: MW -1
Date(s): 3/11/19

Field Team Members

Name: B. Stephan — Affiliation: SCS Engineers
Name: J. Wiedl — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 21 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad: OK
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	✓	
Well		✓

Groundwater Level Measurements

Date/Time Measured: 3/11/19 11:37
Total Depth: 29.00 feet below TOC
Static Water Level: 19.87 feet below TOC
TD - SWL: 9.13 water column (ft.)

Purging Activities

Purged By: B. Stephan — Purge Date: 3/11/19
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: 9.13 x 10 = 91.3 — Min Purge Volume: 100 mL
Initial Parameter Readings: Temp (°C) 10.49 pH 7.35 ORP 160
Sp. Cond. 0.889 Turbidity 0.0 DO 2.53
Physical appearance of purge water: 19.87

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)
13:43	400	200	10.75	7.27	162	0.879	0.0	2.57	19.87
13:46	1000	200	10.56	7.30	161	0.889	0.0	2.61	19.87
13:49	1500	200	10.49	7.35	160	0.889	0.0	2.53	19.87

Sampling Activities

Sampled By: B. Stephan — Sample Date/Time: 3/11/19 13:49
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 10.49 pH 7.35 ORP 160
Sp. Cond. 0.889 Turbidity 0.0 DO 2.53
Water Level 19.87 (feet below TOC)

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

WL for 1-S: 20.70
WL for 1-N: 20.75

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU GW Sampling
Project Location: Fremont, NE
Project Number: 27219045.00

Monitoring Point: MW-2
Date(s): 3/11/19

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 21 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: OK
Casing: OK
Protective Casing: paint ok can/chipping
Reference Mark/Identification: OK

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3/11/19 11:00
Total Depth: 28.00 feet below TOC
Static Water Level: 16.15 feet below TOC
TD - SWL: 11.85 water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3/11/19
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: 11.85 x 10 = 118.5 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 8.82 pH 7.12 ORP 162
Sp. Cond. 0.828 Turbidity 0.0 DO 7.71
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)
11:08	400	200	9.09	7.07	167	0.847	0.0	2.65	16.15
11:11	1000	200	9.48	7.08	168	0.853	0.0	2.16	16.15
11:14	1600	200	9.66	7.07	169	0.859	0.0	1.75	16.15

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3/11/19 11:14
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 9.66 pH 7.07 ORP 169
Sp. Cond. 0.859 Turbidity 0.0 DO 1.75
Water Level 16.15 (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: 27219045.00

Monitoring Point: MW-~~2~~ 3
Date(s): 3/11/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 21 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad: OK
Casing: OK
Protective Casing: paint chipping
Reference Mark/Identification: OK

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 3/11/19 12:57

Total Depth: 28.00 feet below TOC
Static Water Level: 17.20 feet below TOC
TD - SWL: 10.80 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 3/11/19
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: 10.80 X10 = 108.0 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 10.43 pH 7.36 ORP 149
Sp. Cond. 0.831 Turbidity 0.0 DO 2.57
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)
12:03	150	200	10.43	7.36	149	0.831	0.0	2.57	17.20
12:06	750	200	10.74	7.15	165	0.839	0.0	1.98	17.20
12:09	1350	200	10.91	7.18	166	0.836	0.0	1.89	17.20
12:12	1950	200	11.07	7.20	167	0.835	0.0	1.83	17.20

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 3/11/19 12:12
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 11.07 pH 7.20 ORP 167
Sp. Cond. 0.835 Turbidity 0.0 DO 1.83
Water Level 17.20 (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: 27219045.00

Monitoring Point: MW-4R
Date(s): 3/11/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Wahl — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 21 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy Sunny (Partly)

Well Observations

Well Pad: OK
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 08:12 3/11/19

Total Depth: 28.00 feet below TOC
Static Water Level: 16.55 feet below TOC
TD - SWL: 11.45 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 3/11/19
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: 11.45 x 10 = 114.5 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 10.30 pH 9.26 ORP 16
Sp. Cond. 0.779 Turbidity 0.0 DO 6.85
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)
8:38	400	200	9.02	8.06	53	0.805	0.0	8.75	16.55
8:41	1000	200	9.23	6.54	136	0.803	0.0	7.40	16.55
8:44	1600	200	9.26	6.89	119	0.800	0.0	7.13	16.55
8:47	2200	200	9.29	6.87	123	0.800	0.0	6.45	16.55
8:50	2800	200	9.30	6.88	128	0.807	0.0	6.70	16.55

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 3/11/19 850
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 9.30 pH 6.88 ORP 128
Sp. Cond. 0.807 Turbidity 0.0 DO 6.30
Water Level 16.55 (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: 27219045.00

Monitoring Point: MW-5
Date(s): 3/11/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: T. Worth — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 21 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy Sunny (Partly)

Well Observations

Well Pad: ok
Casing: ok
Protective Casing: paint chipping
Reference Mark/Identification: ok

Locks	Yes	No
Protective Casing	Y	
Well		X

Groundwater Level Measurements

Date/Time Measured: 3/11/19 10:29
Total Depth: 28.00 feet below TOC
Static Water Level: 16.38 feet below TOC
TD - SWL: 11.62 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 3/11/19
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: 11.62 x 10 = 116.2 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 7.94 pH 7.10 ORP 170
Sp. Cond. 0.829 Turbidity 0.0 DO 1.45
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)
10:33	200	200	8.92	7.09	170	0.815	0.0	1.72	16.40
10:36	800	200	9.55	7.10	170	0.815	0.0	1.46	16.40
10:39	1400	200	9.77	7.11	169	0.813	0.0	1.52	16.39

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 3/11/19 10:39
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 9.77 pH 7.11 ORP 169
Sp. Cond. 0.813 Turbidity 0.0 DO 1.52
Water Level 16.39 (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: 27219045.00

Monitoring Point: MW-6
Date(s): 3/11/19

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Worth — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 21 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy Sunny (Partly)

Well Observations
Well Pad: OK
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3/11/19 09:16
Total Depth: 28.00 feet below TOC
Static Water Level: 16.97 feet below TOC
TD - SWL: 11.03 water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3/11/19 9:48
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: 11.03 x 10 = 110.3 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 6.20 — pH 6.86 — ORP 150
Sp. Cond. 0.621 — Turbidity 0.0 — DO 10.34
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)
9:49	350	200	6.87	6.80	154	0.601	0.0	7.53	16.97
9:52	950	200	7.73	6.78	156	0.589	0.0	6.09	16.97
9:55	1550	200	8.11	6.78	156	0.580	0.0	5.70	16.97
9:58	2150	200	8.30	6.78	157	0.579	0.0	5.32	16.97

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3/11/19 9:58
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 8.30 — pH 6.78 — ORP 157
Sp. Cond. 0.579 — Turbidity 0.0 — DO 5.32
Water Level 16.97 (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: 27219045.00

Monitoring Point: MW-7
Date(s): 3/11/19

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 21 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: ok
Casing: |
Protective Casing: |
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Date/Time Measured: 3/11/19 11:43
Total Depth: 28.00 feet below TOC
Static Water Level: 16.49 feet below TOC
TD - SWL: 11.51 water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3/11/19
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: 11.51 x10 = 115.1 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 7.55 — pH 6.99 — ORP 166
Sp. Cond. 1.62 — Turbidity 0.0 — DO 7.03
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)
11:48	150	200	8.00	6.82	170	1.64	0.0	2.26	16.49
11:51	750	200	8.77	6.72	174	1.07	0.0	5.37	16.49
11:54	1350	200	9.09	6.84	169	1.08	0.0	5.09	16.49

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3/11/19 11:54
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 9.09 — pH 6.84 — ORP 169
Sp. Cond. 1.08 — Turbidity 0.0 — DO 5.09
Water Level 16.49 (feet below TOC)

Observations/Comments: (i.e., equipment malfunctions, contamination sources, sampling difficulties; duplicate sample)
DUP taken @ 1123:59"

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU GW Sampling
Project Location: Fremont, NE
Project Number: 27219045.00

Monitoring Point: MW-8
Date(s): 3/11/19

Field Team Members
Name: B. Stephens — Affiliation: SCS Engineers
Name: T. Worth — Affiliation: SCS Engineers

Weather Conditions
Mean Temp: 21 °F (Mean) — Wind Direction: N (S) E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations
Well Pad: OK
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements
Total Depth: 28.00 feet below TOC
Static Water Level: 16.52 feet below TOC
Date/Time Measured: 3/11/19 12:27 — TD - SWL: 11.48 water column (ft.)

Purging Activities
Purged By: B. Stephens — Purge Date: 3/11/19
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: 11.48 x 10 = 114.8 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 8.48 — pH 6.88 — ORP 170
Sp. Cond. 0.773 — Turbidity 0.0 — DO 4.48
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)
12:29	400	200	9.10	7.00	162	0.776	0.0	2.89	16.52
12:32	1000	200	9.77	6.98	163	0.770	0.0	2.17	16.52
12:35	1600	200	10.16	6.98	162	0.767	0.0	1.71	16.52

Sampling Activities
Sampled By: B. Stephens — Sample Date/Time: 3/11/19 12:35
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump (circle one)
Sample Parameters: Temp (°C) 10.16 — pH 6.98 — ORP 162
Sp. Cond. 0.767 — Turbidity 0.0 — DO 1.71
Water Level 16.52 (feet below TOC)

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

Electronic Form Completed By: _____ **Date:** _____

Project Name: FDM GW Sampling
Project Location: Fremont, NE
Project Number: 27219045.00

Date: 3.11.19
Weather Info: AM - Sunny, low 20's, 0 - South Wind
PM - Sunny, low 40's, 0 - South Wind
Personnel On site: B. Stephens (SCS); J. Worth (SCS)
Equipment On site: F-250 (SCS)
Field Equipment: Horiba U-52 → S/N
↳ Calibrated
QED M210 Bladder Pump Controller
↳ S/N #3535
Nitrogen (cylinder ✓)

Work Comments/Observations:
09:00 - SCS (B. Stephens) (J. Worth) arrive onsite at MW-4R.
09:04 - Moved to MW-6
10:14 - Moved to MW-5
10:54 - Moved to MW-2
11:25 - Moved to MW-7
12:08 - Moved to MW-8
12:49 - Moved to MW-3
13:26 - Moved to MW-1
14:06 - SCS offsite.
End of Log, [signature], Project Scientist

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

QC Batch: 573341 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

METHOD BLANK: 2351650 Matrix: Water
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	03/18/19 10:06	

LABORATORY CONTROL SAMPLE: 2351651

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2351652 2351653

Parameter	Units	60296409001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.9	4.8	98	97	75-125	1	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

QC Batch: 574112 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

METHOD BLANK: 2355024 Matrix: Water
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	03/18/19 18:05	
Calcium	mg/L	ND	0.20	03/18/19 18:05	
Lithium	ug/L	ND	10.0	03/19/19 15:58	

LABORATORY CONTROL SAMPLE: 2355025

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	991	99	80-120	
Calcium	mg/L	10	9.8	98	80-120	
Lithium	ug/L	1000	1030	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2355026 2355027

Parameter	Units	60296409007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	135	1000	1000	1130	1120	99	98	75-125	1	20	
Calcium	mg/L	104	10	10	116	114	116	100	75-125	1	20	
Lithium	ug/L	27.6	1000	1000	1060	1040	103	101	75-125	2	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

QC Batch: 574111 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

METHOD BLANK: 2355020 Matrix: Water
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	03/19/19 13:50	
Arsenic	ug/L	ND	1.0	03/19/19 13:50	
Barium	ug/L	ND	1.0	03/19/19 13:50	
Beryllium	ug/L	ND	0.50	03/19/19 13:50	
Cadmium	ug/L	ND	0.50	03/19/19 13:50	
Chromium	ug/L	ND	1.0	03/19/19 13:50	
Cobalt	ug/L	ND	1.0	03/19/19 13:50	
Lead	ug/L	ND	1.0	03/19/19 13:50	
Molybdenum	ug/L	ND	1.0	03/19/19 13:50	
Selenium	ug/L	ND	1.0	03/19/19 13:50	
Thallium	ug/L	ND	1.0	03/19/19 13:50	

LABORATORY CONTROL SAMPLE: 2355021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.2	100	80-120	
Arsenic	ug/L	40	40.7	102	80-120	
Barium	ug/L	40	38.3	96	80-120	
Beryllium	ug/L	40	40.4	101	80-120	
Cadmium	ug/L	40	40.7	102	80-120	
Chromium	ug/L	40	39.2	98	80-120	
Cobalt	ug/L	40	39.8	100	80-120	
Lead	ug/L	40	38.9	97	80-120	
Molybdenum	ug/L	40	36.6	92	80-120	
Selenium	ug/L	40	42.3	106	80-120	
Thallium	ug/L	40	37.2	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2355022 2355023

Parameter	Units	60296409006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	41.2	40.7	102	101	75-125	1	20	
Arsenic	ug/L	2.9	40	40	43.9	43.4	103	101	75-125	1	20	
Barium	ug/L	92.1	40	40	131	131	98	98	75-125	0	20	
Beryllium	ug/L	ND	40	40	39.6	40.1	99	100	75-125	1	20	
Cadmium	ug/L	ND	40	40	40.4	40.1	101	100	75-125	1	20	
Chromium	ug/L	ND	40	40	39.1	39.0	97	97	75-125	0	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2355022 2355023

Parameter	Units	60296409006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	38.6	38.3	96	96	75-125	1	20	
Lead	ug/L	ND	40	40	40.2	39.9	100	99	75-125	1	20	
Molybdenum	ug/L	6.1	40	40	44.5	44.0	96	95	75-125	1	20	
Selenium	ug/L	5.3	40	40	46.8	46.4	104	103	75-125	1	20	
Thallium	ug/L	ND	40	40	38.4	38.0	96	95	75-125	1	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

QC Batch: 573489 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

METHOD BLANK: 2352118 Matrix: Water
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	03/13/19 14:34	

LABORATORY CONTROL SAMPLE: 2352119

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	962	96	80-120	

SAMPLE DUPLICATE: 2352120

Parameter	Units	60296537001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	174	176	1	10	

SAMPLE DUPLICATE: 2352121

Parameter	Units	60296409008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	425	428	1	10	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

QC Batch: 573310 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409005, 60296409006, 60296409007, 60296409008, 60296409009

SAMPLE DUPLICATE: 2351551

Parameter	Units	60295727010 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.1	7.1	0	10	H6

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

QC Batch: 574878 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409006, 60296409007

METHOD BLANK: 2357982 Matrix: Water
Associated Lab Samples: 60296409001, 60296409002, 60296409003, 60296409004, 60296409006, 60296409007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/21/19 11:29	
Fluoride	mg/L	ND	0.20	03/21/19 11:29	
Sulfate	mg/L	ND	1.0	03/21/19 11:29	

LABORATORY CONTROL SAMPLE: 2357983

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	80-120	
Fluoride	mg/L	2.5	2.6	104	80-120	
Sulfate	mg/L	5	5.2	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2357984 2357985

Parameter	Units	2097903008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	894	250	250	1200	1190	123	117	80-120	1	15	E,M1, R1
Fluoride	mg/L	6.3J	125	125	136	135	104	103	80-120	1	15	
Sulfate	mg/L	620	250	250	904	892	114	109	80-120	1	15	

SAMPLE DUPLICATE: 2357986

Parameter	Units	2097903009 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	423	416	2	15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	215	211	2	15	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

QC Batch: 574934 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60296409005, 60296409008, 60296409009

METHOD BLANK: 2358163 Matrix: Water
Associated Lab Samples: 60296409005, 60296409008, 60296409009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/21/19 17:30	
Fluoride	mg/L	ND	0.20	03/21/19 17:30	
Sulfate	mg/L	ND	1.0	03/21/19 17:30	

LABORATORY CONTROL SAMPLE: 2358164

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	100	80-120	
Sulfate	mg/L	5	5.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2358165 2358166

Parameter	Units	2097897002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	330	250	250	535	552	82	88	80-120	3	15	
Sulfate	mg/L	146	250	250	393	402	99	103	80-120	2	15	

SAMPLE DUPLICATE: 2358167

Parameter	Units	2097897003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	1460	1410	3	15	
Sulfate	mg/L	172	165	4	15	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

QC Batch: 575055 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60296409007, 60296409009

METHOD BLANK: 2358813 Matrix: Water
Associated Lab Samples: 60296409007, 60296409009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/22/19 11:12	

LABORATORY CONTROL SAMPLE: 2358814

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	80-120	

SAMPLE DUPLICATE: 2358815

Parameter	Units	60296409007 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	119	115	3	15	

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QUALIFIERS

Project: City of Fremont/27219045.00
Pace Project No.: 60296409

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.

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TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

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.

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9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

QC Batch: 333683 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60296370001, 60296370002, 60296370003, 60296370004, 60296370005, 60296370006, 60296370007, 60296370008, 60296370009

METHOD BLANK: 1623704 Matrix: Water
Associated Lab Samples: 60296370001, 60296370002, 60296370003, 60296370004, 60296370005, 60296370006, 60296370007, 60296370008, 60296370009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.464 ± 0.347 (0.685) C:79% T:89%	pCi/L	04/01/19 13:15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

QC Batch: 333678 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60296370001, 60296370002, 60296370003, 60296370004, 60296370005, 60296370006, 60296370007, 60296370008, 60296370009

METHOD BLANK: 1623687 Matrix: Water
Associated Lab Samples: 60296370001, 60296370002, 60296370003, 60296370004, 60296370005, 60296370006, 60296370007, 60296370008, 60296370009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.130 ± 0.404 (0.782) C:NA T:92%	pCi/L	03/25/19 21:29	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: City of Fremont/27219045.00
Pace Project No.: 60296370

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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Groundwater Elevation Summary
Fremont Utilities FFCA Monofill
First Quarter 2019

Well Name	Hydraulic Location	Top of Casing Elevation	Depth to Groundwater (March 2019)	Groundwater Elevation (March 2019)
MW-1	Downgradient	1180.92	19.87	1161.05
MW-1N	Downgradient	1181.93	20.75	1161.18
MW-1S	Downgradient	1181.77	20.70	1161.07
MW-2	Downgradient	1177.46	16.15	1161.31
MW-3	Downgradient	1178.81	17.20	1161.61
MW-4R	Upgradient	1178.29	16.55	1161.74
MW-5	Downgradient	1178.06	16.38	1161.68
MW-6	Downgradient	1177.78	16.97	1160.81
MW-7	Downgradient	1177.35	16.49	1160.86
MW-8	Downgradient	1177.54	16.52	1161.02

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	bstephens@scsengineers.com
Phone: 402-938-0327	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Bret Stephens
Copy To:	Rebecca Nelson (rnelson@scsengineers.com)
Purchase Order No.:	
Project Name:	City of Fremont
Project Number:	27219075.00

Section C Invoice Information:

Attention:	Bret Stephens
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226*	904.0 Radium-228*	Total Radium*	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. (60296370)
1	MW-1 2BPIN	WT	G	xxx	xxx	3/11/19	13:49		2			2							X	X	X	N	001
2	MW-2	WT	G	xxx	xxx		~~13:12~~ 11:54		2			2							X	X	X		002
3	MW-3	WT	G	xxx	xxx		13:12		2			2							X	X	X		003
4	MW-4R	WT	G	xxx	xxx		08:50		2			2							X	X	X		004
5	MW-5	WT	G	xxx	xxx		10:39		2			2							X	X	X		005
6	MW-6	WT	G	xxx	xxx		09:58		2			2							X	X	X		006
7	MW-7	WT	G	xxx	xxx		11:54		2			2							X	X	X		007
8	MW-8	WT	G	xxx	xxx		~~13:12~~ 11:54		2			2							X	X	X		008
9	DUPLICATE	WT	G	xxx	xxx		23:59		2			2							X	X	X		009
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	3.11.19	15:00	Lizpt / Pace	3.12.19	0615	1.0	Y	Y	Y
*Subcontract Pace PA (2-1L plastic HNO3)							0.7	↓	↓	↓

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	Bret Stephens		
SIGNATURE of SAMPLER:	Bret Stephens	DATE Signed (MM/DD/YY):	3.11.19 / 15:00

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*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

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

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

Workorder: 60296370 **Workorder Name:** City of Fremont/27219045.00 **Owner Received Date:** 3/12/2019 **Results Requested By:** 4/3/2019

Report To

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

Subcontract To

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

WO#: 30283803

30283803

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						903.1 Radium-226	904.0 Radium-228 & Total Radium										LAB USE ONLY
1	MW-1	PS	3/11/2019 13:49	60296370001	Water	2						X	X										001
2	MW-2	PS	3/11/2019 11:14	60296370002	Water	2						X	X										002
3	MW-3	PS	3/11/2019 13:12	60296370003	Water	2						X	X										003
4	MW-4R	PS	3/11/2019 08:50	60296370004	Water	2						X	X										004
5	MW-5	PS	3/11/2019 10:39	60296370005	Water	2						X	X										005
6	MW-6	PS	3/11/2019 09:58	60296370006	Water	2						X	X										006
7	MW-7	PS	3/11/2019 11:54	60296370007	Water	2						X	X										007
8	MW-8	PS	3/11/2019 12:35	60296370008	Water	2						X	X										008
9	DUPLICATE	PS	3/11/2019 23:59	60296370009	Water	2						X	X										009

Transfers	Released By	Date/Time	Received By	Date/Time
1	E Brackett / Pace	3/12/19 1800	[illegible] PACE	03/13/19 1000
2				
3				

Comments

Cooler Temperature on Receipt — °C | **Custody Seal** Y or (N) | **Received on Ice** Y or (N) | **Samples Intact** (Y) or N

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

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	SCS Engineers
Address:	14755 Grover Street
	Omaha NE 68144
Email To:	bstephens@scsengineers.com
Phone: 402-938-0327	Fax:
Requested Due Date/TAT:	Standard

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Report To:	Bret Stephens
Copy To:	Rebecca Nelson (rnelson@scsengineers.com)
Purchase Order No.:	
Project Name:	City of Fremont
Project Number:	27219045.00

Section C Invoice Information

Attention:	Bret Stephens
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

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH						Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS																	N	N	N											
1	MW-1	WT	G	xxx	xxx	03/11	13:49		3	1		2							X	X	X	X	X	X	BP2U, 2B4B			N	N		001
2	MW-2	WT	G	xxx	xxx		11:14		3	1		2							X	X	X	X	X	X							002
3	MW-3	WT	G	xxx	xxx		13:12		3	1		2							X	X	X	X	X	X							003
4	MW-4R	WT	G	xxx	xxx		08:50		3	1		2							X	X	X	X	X	X							004
5	MW-5	WT	G	xxx	xxx		10:39		3	1		2							X	X	X	X	X	X							005
6	MW-6	WT	G	xxx	xxx		09:58		3	1		2							X	X	X	X	X	X							006
7	MW-7	WT	G	xxx	xxx		11:54		3	1		2							X	X	X	X	X	X							007
8	MW-8	WT	G	xxx	xxx		12:35		3	1		2							X	X	X	X	X	X							008
9	DUPLICATE	WT	G	xxx	xxx		23:59		3	1		2							X	X	X	X	X	X							009
10																															
11																															
12																															

6029409

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	3.11.19	15:00	[illegible]	3.12.19	0615	1.7	Y	Y	Y
* Sb-As-Ba-Be-Cd-Cr-Co-Pb-Mo-Se-Tl							1.1	↓	↓	↓

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Bret Stephens					
SIGNATURE of SAMPLER:	Bret Stephens	DATE Signed (MM/DD/YY): 3.11.19				

*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

Lon D. Wright Power Plant
Statistical Summary of March 2019 Data

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

SCS ENGINEERS

27219045.00 | April 29, 2019

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

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Attachments

A Background Evaluation
A.1 Outlier Analysis
A.2 Sen's Slope/Mann-Kendall Analysis
B Compliance Statistical Analysis
B.1 Time Series Plots
B.2 Intrawell Prediction Limits
B.3 Interwell Prediction Limits
B.4 Sen's Slope/Mann-Kendall Analysis
B.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 December 2018), 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 9.6.10. The statistical analysis methods used include time series plots, outlier analysis, 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 3** at the end of this Section.

Statistical output charts and tables are included in **Attachments A and B**.

1.2 BACKGROUND EVALUATION

Based on the revisions made to the Groundwater Monitoring Plan (December 2018), the background dataset for each monitoring well was evaluated. The statistical analysis methods used include outlier analysis and Sen's slope trend analyses. The proposed background dataset includes observations from October 2016 through June 2018.

An outlier analysis was performed on the proposed background dataset for each monitoring well. For datasets that are normal, outliers were evaluated using Dixon's Test (for background datasets with 25 or less observations) with EPA Screening to specify suspect values. For datasets that are not normally distributed, Tukey's outlier test with IQR multiplier of 3 was employed. An outlier test identifies data points that do not appear to fit the distribution of the rest of the data set and determines if they differ significantly from the rest of the data. If an outlier is identified, it must be evaluated for laboratory, field collection or data entry errors. However, outliers may exist naturally in the data if there is an extremely wide inherent or temporal variability in the data. The Unified Guidance states that unless a likely error or reasonable cause can be identified, the outlier should not be removed. If an identified outlier has basis for likely error or discrepancy, it should be removed. Additionally, consistent with the GMP, if a data point is greater than an order of magnitude higher or lower than the rest of the data, it should be excluded from the background data set, but not permanently deleted. Otherwise, outliers generally should not be excluded from the background data set. In general, outliers identified during approximately the initial six months of sampling at a well were removed since it often takes time for a well to stabilize following installation. Five observations were marked as outliers with the associated rationale identified in **Table 1**.

Table 1. Background Dataset Outliers

Well	Parameter	Date	Rationale for marking outlier
MW-2	Sulfate	6/12/2017	An isolated spike that could bias background dataset.
MW-4R	Chloride	7/31/2017	An isolated spike that could bias background dataset.
	Lead	11/28/2016	Outlier likely related to well instability due to new well installation.
	Selenium	7/31/2017	An isolated spike that could bias background dataset.
MW-6	Chloride	2/26/2018	An isolated spike that could bias background dataset.
MW-8	Boron	6/14/2017	An isolated spike that could bias background dataset.

Sen's Slope/Mann-Kendall statistical analysis was performed on the proposed background dataset for each monitoring well to determine if any trends are present. 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. Therefore, proposed background data with trends may be excluded from the background dataset if reasoned not representative of the site groundwater quality or may be included if the trend is reasoned to be representative of the site groundwater quality and likely not the result of the monofill. Six statistically significant trends were identified in the proposed background dataset. The identified statistically significant trends and the rationale for accepting or rejecting the trending proposed background dataset is outlined in **Table 2.**

Table 2. Background Dataset Statistically Significant Trends

Well	Parameter	Slope	Rational for accepting or rejecting proposed background dataset
MW-1	Selenium	-3.635	The concentrations are decreasing and approaching levels observed in the upgradient monitoring well MW-4R.
	Total Dissolved Solids	35.78	An increasing trend with a similar slope was identified in upgradient monitoring well MW-4R, indicating likely naturally occurring changes.
MW-2	Molybdenum	-1.355	A decreasing trend is also observed in upgradient monitoring well MW-4R, indicating naturally occurring changes.
MW-3	Molybdenum	2.096	Until the concentrations begin to stabilize, the increasing trend will be noted when utilizing the background dataset.
	Total Dissolved Solids	62.78	An increasing trend with a similar slope was identified in upgradient monitoring well MW-4R, indicating naturally occurring changes.
MW-8	Boron	18.32	No statistically significant trend identified when excluding the boron spike detected during the June 2018 sampling event. There was no definitive evidence to determine if the June 2018 boron detection is an anomaly or indication of impact from the facility. The June 2018 boron detection is removed from the background dataset at this time and will be further evaluated in future background evaluations.

Based on the results from the outlier analysis and trend analysis, the background dataset for each monitoring well will include observations 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

1.3 COMPLIANCE STATISTICAL ANALYSIS

Compliance statistical analysis was performed on data collected from the March 2019 sampling event. Pertinent statistical results are summarized in **Table 3** at the end of this Section.

1.3.1 Time Series Plots

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

1.3.2 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 Shaprio-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 identified in **Section 1.2**. Intrawell prediction limit analysis results are included in **Attachment B.2** and summarized in **Table 3**.

1.3.3 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-4 & 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 2018 sampling event data. Interwell prediction limits analysis results are included in **Attachment B.3** and summarized in **Table 3**.

1.3.4 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 2019 sampling event to determine trends in the

concentration of these constituents. The same Sen's Slope/Mann-Kendall statistical trend analysis methods described in **Section 1.2** were used for the compliance statistical analysis. Sen's Slope/Mann-Kendall analysis results are included in **Attachment B.4** and summarized in **Table 3**.

1.3.5 Confidence Interval Analysis

Confidence Interval analysis was performed on the detected constituent/well pairs from the March 2019 sampling event. Confidence interval analysis is an intrawell test used to compare the compliance data to a fixed numerical limit (compliance limit). The compliance limit is either represented by the groundwater protection standard (GWPS) or derived from the average concentration of the upgradient wells; whichever value is greater will represent the compliance limit. 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-4 and MW-4R, were used as the compliance limit for boron and calcium. The GWPS was used as the compliance limit for the other parameters analyzed. The confidence interval analysis results are included in **Attachment B.5** and summarized in **Table 3**.

1.3.6 Statistical Summary

The statistical analysis results from the March 2019 sampling event are summarized in **Table 3** below. Intrawell prediction limit statistical exceedances identified from the March 2019 sampling event that do not have statistically significant increasing trend, exceed the interwell prediction limit, exceed the confidence interval, and exceed the GWPS do not warrant changes to the sampling schedule since these concentrations are within acceptable concentration levels and do not show evidence of dramatic increase. Intrawell prediction limit analysis is the primary statistical evaluation method per the GMP; therefore, if an intrawell prediction limit statistical exceedance is not identified and the GWPS is not exceeded, then an SSI is not noted.

No intrawell prediction limit exceedances or statistically significant increasing trends were identified for the detected constituents in MW-5 and MW-6. One interwell prediction limit exceedance was identified for fluoride at MW-5 and one confidence interval limit exceedance was identified for calcium at MW-5. These exceedances were calculated based on comparisons to the upgradient data. Spatial variability has been established at this site and considering the location of well MW-5 and the groundwater flow direction, it seems unlikely the site is the source of these exceedances. It is likely the levels of constituents detected during the March 2019 sampling event at MW-5 and MW-6 are naturally occurring. Therefore, MW-5 and MW-6 are possible candidates for detection monitoring depending on results of the third quarter 2019 monitoring event.

MW-1 and MW-2 have intrawell prediction limit statistical exceedances but do not have GWPS exceedances. MW-8 does not have an intrawell prediction limit statistical exceedance or GWPS exceedance; however, there is a statistically significant increasing trend for boron. Therefore, while no SSI is noted from the March 2019 sampling event statistical analysis, these wells are candidates for detection monitoring depending on results of the third quarter 2019 monitoring event.

Two constituents (chloride and total dissolved solids) at MW-7 exceeded both the intrawell and interwell prediction limits. However, chloride did not have a statistically significant increasing trend, did not exceed the confidence interval, and did not exceed the GWPS. Total dissolved solids at MW-7 did have a statistically significant increasing trend and exceeded the GWPS. Total dissolved solids at MW-7 is noted as an initial SSI from the March 2019 sampling event. Depending on results of the third quarter 2019 monitoring event, MW-7 may be a candidate for assessment monitoring.

As noted in Section 1.2 – Background Evaluation, molybdenum had an increasing trend in the background dataset. During compliance statistical analysis, an interwell prediction limit exceedance and statistically significant increasing trend were noted. However, molybdenum at MW-3 did not exceed the confidence interval limit or exceed the GWPS. Depending on results of the third quarter 2019 monitoring event, MW-3 may be a candidate for assessment monitoring. The next regular monitoring event for Appendix III and IV parameters is scheduled for third quarter 2019.

Table 3. Statistical Summary

Well	Detected Parameters	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance?[1]
MW-1	Arsenic [total] (ug/L)	3.9	No	No	No	No	No
	Barium [total] (ug/L)	147	No	**Yes**	No	No	No
	Boron (ug/L)	140	No	No	No	No	No[2]
	Calcium (mg/L)	105	No	**Yes**	No	**Yes**	No[2]
	Chloride (mg/L)	19	**Yes**	No	No	No	No
	Fluoride (mg/L)	1.5	No	**Yes**	No	No	No
	Lithium (ug/L)	30.8	No	No	No	No	No
	Molybdenum (ug/L)	8.7	No	No	No	No	No
	pH (Std. Units)	7	No	No	No	No	No
	Selenium [total] (ug/L)	10.5	No	**Yes**	-	No	No
	Sulfate (mg/L)	43.1	No	No	No	No	No
	Total Dissolved Solids (mg/L)	498	No	No	+	No	No
	Total Radium (pCi/L)	2.12	No	No	No	No	No
MW-2	Arsenic [total] (ug/L)	4	No	No	No	No	No
	Barium [total] (ug/L)	108	No	No	No	No	No
	Boron (ug/L)	132	No	No	No	No	No[2]
	Calcium (mg/L)	109	No	**Yes**	No	**Yes**	No[2]
	Chloride (mg/L)	14.6	No	No	No	No	No
	Fluoride (mg/L)	1.1	**Yes**	**Yes**	No	No	No
	Lithium (ug/L)	31.7	No	No	No	No	No
	Molybdenum (ug/L)	8.2	No	No	No	No	No
	pH (Std. Units)	6.9	No	No	No	No	No
	Selenium [total] (ug/L)	14.3	No	**Yes**	No	No	No
	Sulfate (mg/L)	54	No	No	No	No	No
	Total Dissolved Solids (mg/L)	492	**Yes**	No	No	No	No
	Total Radium (pCi/L)	1.69	No	No	No	No	No
MW-3	Arsenic [total] (ug/L)	3.4	**Yes**	No	No	No	No
	Barium [total] (ug/L)	191	No	**Yes**	+	No	No
	Boron (ug/L)	100	No	No	No	No	No[2]
	Calcium (mg/L)	98.2	No	**Yes**	+	No	No[2]
	Chloride (mg/L)	34	No	No	No	No	No
	Fluoride (mg/L)	0.83	No	No	No	No	No
	Lithium (ug/L)	28.6	No	No	No	No	No
	Molybdenum (ug/L)	12.1	No	**Yes**	+	No	No

Well	Detected Parameters	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance?[1]
	pH (Std. Units)	7	No	No	No	No	No
	Selenium [total] (ug/L)	8.9	No	No	No	No	No
	Sulfate (mg/L)	61.2	No	**Yes**	No	No	No
	Total Dissolved Solids (mg/L)	481	No	No	+	No	No
	Total Radium (pCi/L)	3.81	No	**Yes**	No	No	No
MW-4R (upgradient)	Arsenic [total] (ug/L)	4.4	No	n/a	No	No	No
	Barium [total] (ug/L)	126	No		No	No	No
	Boron (ug/L)	188	No		No	No	No[2]
	Calcium (mg/L)	86.4	No		No	No	No[2]
	Chloride (mg/L)	44.8	**Yes**		No	No	No
	Fluoride (mg/L)	0.93	No		No	No	No
	Lithium (ug/L)	28.5	No		No	No	No
	Molybdenum (ug/L)	5.3	No		No	No	No
	pH (Std. Units)	7	No		No	No	No
	Selenium [total] (ug/L)	7.3	No		No	No	No
	Sulfate (mg/L)	45.1	No		No	No	No
	Total Dissolved Solids (mg/L)	452	No		No	No	No
	Total Radium (pCi/L)	1.7	No		No	No	No
MW-5	Arsenic [total] (ug/L)	4.8	No	No	No	No	No
	Barium [total] (ug/L)	121	No	No	No	No	No
	Boron (ug/L)	129	No	No	No	No	No[2]
	Calcium (mg/L)	92.7	No	No	No	**Yes**	No[2]
	Chloride (mg/L)	29.8	No	No	No	No	No
	Fluoride (mg/L)	1.1	No	**Yes**	No	No	No
	Lithium (ug/L)	28.5	No	No	No	No	No
	Molybdenum (ug/L)	5.2	No	No	No	No	No
	pH (Std. Units)	7.1	No	No	No	No	No
	Selenium [total] (ug/L)	7.9	No	No	No	No	No
	Sulfate (mg/L)	36.8	No	No	No	No	No
	Total Dissolved Solids (mg/L)	469	No	No	No	No	No
	Total Radium (pCi/L)	2.36	No	No	No	No	No
MW-6	Arsenic [total] (ug/L)	2.9	No	No	No	No	No
	Barium [total] (ug/L)	92.1	No	No	No	No	No
	Calcium (mg/L)	49.2	No	No	No	No	No[2]
	Chloride (mg/L)	27	No	No	No	No	No
	Fluoride (mg/L)	0.53	No	No	No	No	No

Well	Detected Parameters	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance?[1]
	Lithium (ug/L)	15.1	No	No	No	No	No
	Molybdenum (ug/L)	6.1	No	No	-	No	No
	pH (Std. Units)	6.9	No	No	No	No	No
	Selenium [total] (ug/L)	5.3	No	No	No	No	No
	Sulfate (mg/L)	24.3	No	No	No	No	No
	Total Dissolved Solids (mg/L)	253	No	No	No	No	No
	Total Radium (pCi/L)	1.54	No	No	No	No	No
MW-7	Arsenic [total] (ug/L)	3.9	No	No	No	No	No
	Barium [total] (ug/L)	136	No	No	No	No	No
	Boron (ug/L)	135	No	No	No	No	No[2]
	Calcium (mg/L)	104	No	**Yes**	+	**Yes**	No[2]
	Chloride (mg/L)	119	**Yes**	**Yes**	No	No	No
	Fluoride (mg/L)	0.85	No	No	No	No	No
	Lithium (ug/L)	27.6	No	No	No	No	No
	Molybdenum (ug/L)	8	No	No	No	No	No
	pH (Std. Units)	6.9	No	No	No	No	No
	Selenium [total] (ug/L)	9.5	No	No	No	No	No
	Sulfate (mg/L)	39.9	No	No	No	No	No
	Total Dissolved Solids (mg/L)	592	**Yes**	**Yes**	+	No	**Yes**
	Total Radium (pCi/L)	0.953	No	No	No	No	No
MW-8	Arsenic [total] (ug/L)	2.8	No	No	No	No	No
	Barium [total] (ug/L)	142	No	No	No	No	No
	Boron (ug/L)	161	No	No	+	No	No[2]
	Calcium (mg/L)	85.4	No	No	No	No	No[2]
	Chloride (mg/L)	26.4	No	No	No	No	No
	Fluoride (mg/L)	0.86	No	No	No	No	No
	Lithium (ug/L)	25.9	No	No	No	No	No
	Molybdenum (ug/L)	7.6	No	No	No	No	No
	pH (Std. Units)	7	No	No	No	No	No
	Selenium [total] (ug/L)	11	No	**Yes**	No	No	No
	Sulfate (mg/L)	39.5	No	No	No	No	No
	Total Dissolved Solids (mg/L)	425	No	No	No	No	No
	Total Radium (pCi/L)	1.44	No	No	No	No	No

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

[2]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 9.6.10 and User Guide

Attachment A. Background Evaluation

A.1 Outlier Analysis

Outlier Analysis

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 6:58 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony [total] (ug/L)	MW-1	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Antimony [total] (ug/L)	MW-2	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Antimony [total] (ug/L)	MW-3	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Antimony [total] (ug/L)	MW-4R (bg)	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Antimony [total] (ug/L)	MW-5	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Antimony [total] (ug/L)	MW-6	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Antimony [total] (ug/L)	MW-7	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Antimony [total] (ug/L)	MW-8	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Arsenic [total] (ug/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	3.49	0.2767	normal	ShapiroWilk
Arsenic [total] (ug/L)	MW-2	No	n/a	n/a	EPA 1989	0.05	10	3.77	0.3743	normal	ShapiroWilk
Arsenic [total] (ug/L)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	2.97	0.1252	normal	ShapiroWilk
Arsenic [total] (ug/L)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	3.93	0.386	normal	ShapiroWilk
Arsenic [total] (ug/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	4.42	0.2201	normal	ShapiroWilk
Arsenic [total] (ug/L)	MW-6	No	n/a	n/a	EPA 1989	0.05	10	2.9	0.4967	normal	ShapiroWilk
Arsenic [total] (ug/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	3.44	0.2171	normal	ShapiroWilk
Arsenic [total] (ug/L)	MW-8	No	n/a	n/a	EPA 1989	0.05	10	2.57	0.1567	normal	ShapiroWilk
Barium [total] (ug/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	136	13.61	normal	ShapiroWilk
Barium [total] (ug/L)	**MW-2**	**Yes**	**87.4**	**4/24/2017**	**Dixon`s**	**0.05**	**10**	**98.45**	**4.784**	**normal**	**ShapiroWilk**
Barium [total] (ug/L)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	168.6	9.64	normal	ShapiroWilk
Barium [total] (ug/L)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	120	8.055	normal	ShapiroWilk
Barium [total] (ug/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	140.1	10.43	normal	ShapiroWilk
Barium [total] (ug/L)	MW-6	No	n/a	n/a	Dixon`s	0.05	10	138.7	36.6	normal	ShapiroWilk
Barium [total] (ug/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	114.1	7.249	normal	ShapiroWilk
Barium [total] (ug/L)	MW-8	No	n/a	n/a	EPA 1989	0.05	10	147.3	11.93	normal	ShapiroWilk
BERYLIUM (ug/L)	MW-1	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
BERYLIUM (ug/L)	MW-2	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
BERYLIUM (ug/L)	MW-3	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
BERYLIUM (ug/L)	MW-4R (bg)	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
BERYLIUM (ug/L)	MW-5	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
BERYLIUM (ug/L)	MW-6	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
BERYLIUM (ug/L)	MW-7	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
BERYLIUM (ug/L)	MW-8	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Boron (ug/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	143.9	11.21	normal	ShapiroWilk
Boron (ug/L)	**MW-2**	**Yes**	**153**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**122**	**12.64**	**normal**	**ShapiroWilk**
Boron (ug/L)	MW-3	No	n/a	n/a	NP (nrm)	NaN	10	84.2	29.83	unknown	ShapiroWilk
Boron (ug/L)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	182.6	113.4	normal	ShapiroWilk
Boron (ug/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	128.5	9.56	normal	ShapiroWilk
Boron (ug/L)	MW-6	No	n/a	n/a	EPA 1989	0.05	10	112.5	37.52	normal	ShapiroWilk
Boron (ug/L)	MW-7	No	n/a	n/a	NP (nrm)	NaN	10	175.1	18.19	unknown	ShapiroWilk
Boron (ug/L)	**MW-8**	**Yes**	**227,552**	**6/14/2018...**	**Dixon`s**	**0.05**	**10**	**176**	**136.6**	**normal**	**ShapiroWilk**
Cadmium [total] (ug/L)	MW-1	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Cadmium [total] (ug/L)	MW-2	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Cadmium [total] (ug/L)	MW-3	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Cadmium [total] (ug/L)	MW-4R (bg)	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Cadmium [total] (ug/L)	MW-5	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Cadmium [total] (ug/L)	MW-6	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Cadmium [total] (ug/L)	MW-7	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Cadmium [total] (ug/L)	MW-8	n/a	n/a	n/a	NP (nrm)	NaN	9	0.5	0	unknown	ShapiroWilk
Calcium (mg/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	105.9	4.518	normal	ShapiroWilk
Calcium (mg/L)	**MW-2**	**Yes**	**115**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**100.6**	**6.214**	**normal**	**ShapiroWilk**

Outlier Analysis

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 6:58 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Calcium (mg/L)	MW-3	No	n/a	n/a	Dixon`s	0 05	10	92.59	7.372	normal	ShapiroWilk
Calcium (mg/L)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	83.88	4.802	normal	ShapiroWilk
Calcium (mg/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	110.4	8.98	normal	ShapiroWilk
Calcium (mg/L)	MW-6	No	n/a	n/a	Dixon`s	0.05	10	79.7	21.97	normal	ShapiroWilk
Calcium (mg/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	97.44	7.317	normal	ShapiroWilk
Calcium (mg/L)	**MW-8**	**Yes**	**75.9**	**8/1/2017**	**Dixon`s**	**0.05**	**10**	**87.99**	**5.239**	**normal**	**ShapiroWilk**
Chloride (mg/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	11.38	1.23	normal	ShapiroWilk
Chloride (mg/L)	MW-2	No	n/a	n/a	EPA 1989	0.05	10	15.37	1.847	normal	ShapiroWilk
Chloride (mg/L)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	29.52	2.984	normal	ShapiroWilk
Chloride (mg/L)	**MW-4R (bg)**	**Yes**	**63.2**	**7/31/2017**	**Dixon`s**	**0.05**	**10**	**23.73**	**14.57**	**normal**	**ShapiroWilk**
Chloride (mg/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	16.13	4.84	normal	ShapiroWilk
Chloride (mg/L)	**MW-6**	**Yes**	**16.3**	**2/26/2018**	**Dixon`s**	**0.05**	**10**	**46.22**	**12.38**	**normal**	**ShapiroWilk**
Chloride (mg/L)	**MW-7**	**Yes**	**47.9**	**6/14/2018**	**Dixon`s**	**0.05**	**10**	**23.96**	**8.941**	**normal**	**ShapiroWilk**
Chloride (mg/L)	MW-8	No	n/a	n/a	EPA 1989	0.05	10	22.73	3.435	normal	ShapiroWilk
Chromium [total] (ug/L)	MW-1	n/a	n/a	n/a	NP (nrm)	NaN	9	1.078	0.2333	unknown	ShapiroWilk
Chromium [total] (ug/L)	MW-2	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Chromium [total] (ug/L)	MW-3	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Chromium [total] (ug/L)	MW-4R (bg)	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Chromium [total] (ug/L)	MW-5	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Chromium [total] (ug/L)	MW-6	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Chromium [total] (ug/L)	MW-7	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Chromium [total] (ug/L)	MW-8	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Cobalt [total] (ug/L)	MW-1	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Cobalt [total] (ug/L)	MW-2	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Cobalt [total] (ug/L)	MW-3	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Cobalt [total] (ug/L)	MW-4R (bg)	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Cobalt [total] (ug/L)	MW-5	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Cobalt [total] (ug/L)	MW-6	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Cobalt [total] (ug/L)	MW-7	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Cobalt [total] (ug/L)	MW-8	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Fluoride (mg/L)	MW-1	No	n/a	n/a	NP (nrm)	NaN	10	1.33	0.08233	unknown	ShapiroWilk
Fluoride (mg/L)	MW-2	No	n/a	n/a	EPA 1989	0.05	10	0.91	0.05617	normal	ShapiroWilk
Fluoride (mg/L)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	0.791	0.07385	normal	ShapiroWilk
Fluoride (mg/L)	**MW-4R (bg)**	**Yes**	**1**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**0.839**	**0.06773**	**normal**	**ShapiroWilk**
Fluoride (mg/L)	MW-5	No	n/a	n/a	NP (nrm)	NaN	10	1.1	0.1155	unknown	ShapiroWilk
Fluoride (mg/L)	MW-6	No	n/a	n/a	NP (nrm)	NaN	10	0.547	0.07804	unknown	ShapiroWilk
Fluoride (mg/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	0.859	0.08621	normal	ShapiroWilk
Fluoride (mg/L)	MW-8	No	n/a	n/a	EPA 1989	0.05	10	0.799	0.07824	normal	ShapiroWilk
Lead [total] (ug/L)	MW-1	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Lead [total] (ug/L)	MW-2	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Lead [total] (ug/L)	MW-3	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Lead [total] (ug/L)	**MW-4R (bg)**	**Yes**	**2.8**	**11/28/2016**	**NP (nrm)**	**NaN**	**9**	**1.244**	**0.5981**	**unknown**	**ShapiroWilk**
Lead [total] (ug/L)	MW-5	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Lead [total] (ug/L)	MW-6	n/a	n/a	n/a	NP (nrm)	NaN	10	1.09	0.2846	unknown	ShapiroWilk
Lead [total] (ug/L)	MW-7	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Lead [total] (ug/L)	MW-8	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Lithium (ug/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	34.93	2.491	normal	ShapiroWilk
Lithium (ug/L)	**MW-2**	**Yes**	**43.7**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**28.99**	**5.373**	**normal**	**ShapiroWilk**
Lithium (ug/L)	**MW-3**	**Yes**	**33.2**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**27.27**	**2.562**	**normal**	**ShapiroWilk**
Lithium (ug/L)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	25.7	2.484	normal	ShapiroWilk

Outlier Analysis

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 6:58 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Lithium (ug/L)	**MW-5**	**Yes**	**41.9**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**30.82**	**4.251**	**normal**	**ShapiroWilk**
Lithium (ug/L)	MW-6	No	n/a	n/a	EPA 1989	0.05	10	27.29	4.777	normal	ShapiroWilk
Lithium (ug/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	28.67	3.987	normal	ShapiroWilk
Lithium (ug/L)	**MW-8**	**Yes**	**38.8**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**28.9**	**3.588**	**normal**	**ShapiroWilk**
Mercury (ug/L)	MW-1	n/a	n/a	n/a	NP (nrm)	NaN	9	0.2	0	unknown	ShapiroWilk
Mercury (ug/L)	MW-2	n/a	n/a	n/a	NP (nrm)	NaN	9	0.2	0	unknown	ShapiroWilk
Mercury (ug/L)	MW-3	n/a	n/a	n/a	NP (nrm)	NaN	9	0.2	0	unknown	ShapiroWilk
Mercury (ug/L)	MW-4R (bg)	n/a	n/a	n/a	NP (nrm)	NaN	9	0.2	0	unknown	ShapiroWilk
Mercury (ug/L)	MW-5	n/a	n/a	n/a	NP (nrm)	NaN	9	0.2	0	unknown	ShapiroWilk
Mercury (ug/L)	MW-6	n/a	n/a	n/a	NP (nrm)	NaN	9	0.2	0	unknown	ShapiroWilk
Mercury (ug/L)	MW-7	n/a	n/a	n/a	NP (nrm)	NaN	9	0.2	0	unknown	ShapiroWilk
Mercury (ug/L)	MW-8	n/a	n/a	n/a	NP (nrm)	NaN	9	0.2	0	unknown	ShapiroWilk
Molybdenum (ug/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	8.18	0.5846	normal	ShapiroWilk
Molybdenum (ug/L)	MW-2	No	n/a	n/a	EPA 1989	0.05	10	8.31	0.7156	normal	ShapiroWilk
Molybdenum (ug/L)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	11.14	1.326	normal	ShapiroWilk
Molybdenum (ug/L)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	6.18	1.227	normal	ShapiroWilk
Molybdenum (ug/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	6 44	0 8784	normal	ShapiroWilk
Molybdenum (ug/L)	MW-6	No	n/a	n/a	Dixon`s	0.05	10	7.94	1.458	normal	ShapiroWilk
Molybdenum (ug/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	8.59	0.8062	normal	ShapiroWilk
Molybdenum (ug/L)	**MW-8**	**Yes**	**14.6**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**8.49**	**2.265**	**normal**	**ShapiroWilk**
pH (Std. Units)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	7.18	0.2658	normal	ShapiroWilk
pH (Std. Units)	MW-2	No	n/a	n/a	EPA 1989	0.05	10	7.12	0.23	normal	ShapiroWilk
pH (Std. Units)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	7.18	0.215	normal	ShapiroWilk
pH (Std. Units)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	7.23	0.3234	normal	ShapiroWilk
pH (Std. Units)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	7.3	0.216	normal	ShapiroWilk
pH (Std Units)	MW-6	No	n/a	n/a	EPA 1989	0.05	10	7.11	0.247	normal	ShapiroWilk
pH (Std. Units)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	7.17	0.2214	normal	ShapiroWilk
pH (Std. Units)	MW-8	No	n/a	n/a	EPA 1989	0.05	10	7.18	0.2348	normal	ShapiroWilk
Selenium [total] (ug/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	13	2.029	normal	ShapiroWilk
Selenium [total] (ug/L)	MW-2	No	n/a	n/a	EPA 1989	0.05	10	13 66	2.07	normal	ShapiroWilk
Selenium [total] (ug/L)	MW-3	No	n/a	n/a	Dixon`s	0.05	10	8.58	0.992	normal	ShapiroWilk
Selenium [total] (ug/L)	**MW-4R (bg)**	**Yes**	**4.3**	**7/31/2017**	**Dixon`s**	**0.05**	**10**	**7.07**	**1.315**	**normal**	**ShapiroWilk**
Selenium [total] (ug/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	8.7	0.3742	normal	ShapiroWilk
Selenium [total] (ug/L)	MW-6	No	n/a	n/a	Dixon`s	0.05	10	8.76	3.009	normal	ShapiroWilk
Selenium [total] (ug/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	10.36	1.073	normal	ShapiroWilk
Selenium [total] (ug/L)	MW-8	No	n/a	n/a	Dixon`s	0.05	10	11.31	1.9	normal	ShapiroWilk
Sulfate (mg/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	51.63	2.999	normal	ShapiroWilk
Sulfate (mg/L)	**MW-2**	**Yes**	**75.7**	**6/12/2017**	**Dixon`s**	**0.05**	**10**	**48.08**	**10.45**	**normal**	**ShapiroWilk**
Sulfate (mg/L)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	51.88	10.67	normal	ShapiroWilk
Sulfate (mg/L)	MW-4R (bg)	No	n/a	n/a	NP (nrm)	NaN	10	37.53	6.906	unknown	ShapiroWilk
Sulfate (mg/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	39.12	2.859	normal	ShapiroWilk
Sulfate (mg/L)	MW-6	No	n/a	n/a	EPA 1989	0.05	10	48 84	20.69	normal	ShapiroWilk
Sulfate (mg/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	48.14	5.715	normal	ShapiroWilk
Sulfate (mg/L)	MW-8	No	n/a	n/a	EPA 1989	0.05	10	40.48	7.538	normal	ShapiroWilk
Thallium [total] (ug/L)	MW-1	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Thallium [total] (ug/L)	MW-2	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Thallium [total] (ug/L)	MW-3	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Thallium [total] (ug/L)	MW-4R (bg)	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Thallium [total] (ug/L)	MW-5	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Thallium [total] (ug/L)	MW-6	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk

Outlier Analysis

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 6:58 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Thallium [total] (ug/L)	MW-7	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Thallium [total] (ug/L)	MW-8	n/a	n/a	n/a	NP (nrm)	NaN	9	1	0	unknown	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-1	No	n/a	n/a	NP (nrm)	NaN	10	474	24.9	unknown	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-2	No	n/a	n/a	NP (nrm)	NaN	10	434.9	16.26	unknown	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	427.4	36.49	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	402.6	29.8	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-5	No	n/a	n/a	EPA 1989	0.05	10	477	20.65	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-6	No	n/a	n/a	Dixon`s	0.05	10	451.7	95.24	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	445	37.14	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-8	No	n/a	n/a	EPA 1989	0.05	10	399.1	18.69	normal	ShapiroWilk
Total Radium (pCi/L)	MW-1	No	n/a	n/a	EPA 1989	0.05	10	2.63	0.5903	normal	ShapiroWilk
Total Radium (pCi/L)	MW-2	No	n/a	n/a	Dixon`s	0.05	10	1.755	0.4903	normal	ShapiroWilk
Total Radium (pCi/L)	MW-3	No	n/a	n/a	EPA 1989	0.05	10	2.554	0.7226	normal	ShapiroWilk
Total Radium (pCi/L)	MW-4R (bg)	No	n/a	n/a	EPA 1989	0.05	10	2.076	0.5924	normal	ShapiroWilk
Total Radium (pCi/L)	MW-5	No	n/a	n/a	Dixon`s	0.05	10	2.428	0.4504	normal	ShapiroWilk
Total Radium (pCi/L)	MW-6	No	n/a	n/a	EPA 1989	0.05	10	1.952	0.6812	normal	ShapiroWilk
Total Radium (pCi/L)	MW-7	No	n/a	n/a	EPA 1989	0.05	10	1.904	0.5171	normal	ShapiroWilk
Total Radium (pCi/L)	MW-8	No	n/a	n/a	EPA 1989	0.05	10	2.019	0.5602	normal	ShapiroWilk

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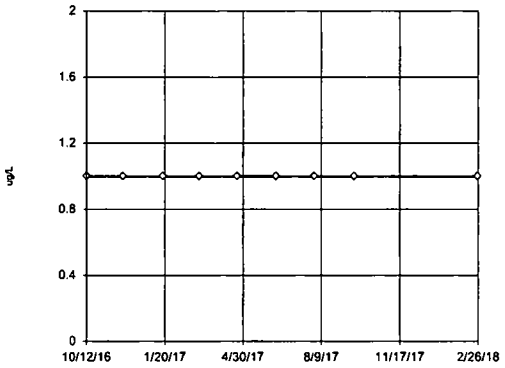
Tukey's Outlier Screening

MW-1



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Antimony [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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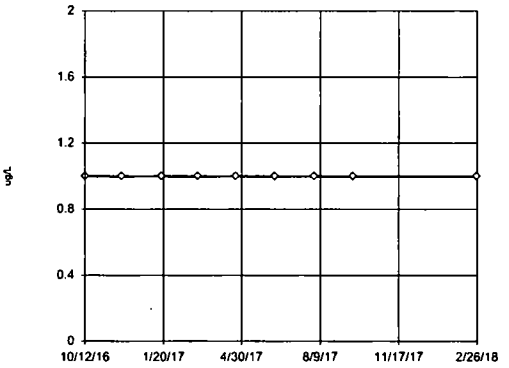
Tukey's Outlier Screening

MW-2



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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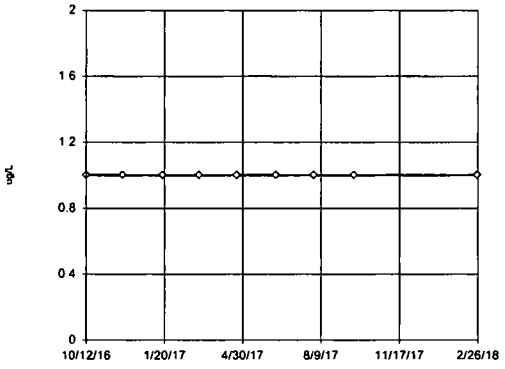
Tukey's Outlier Screening

MW-3



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Antimony [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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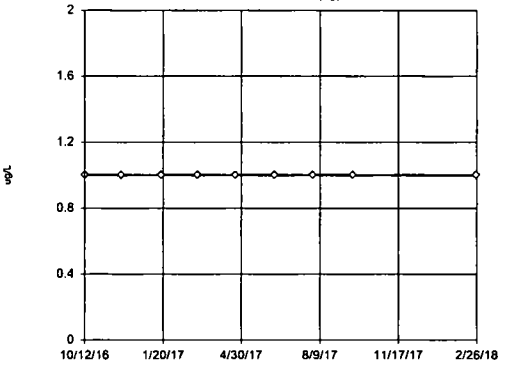
Tukey's Outlier Screening

MW-4R (bg)



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Antimony [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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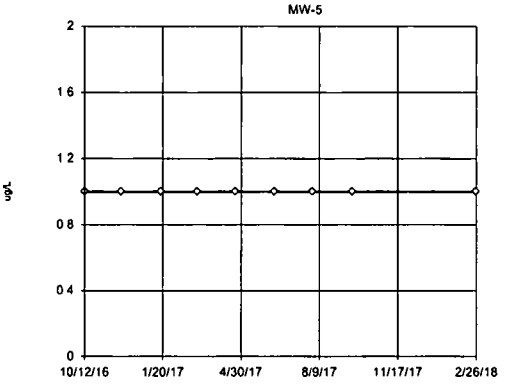
Tukey's Outlier Screening

MW-5



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Antimony [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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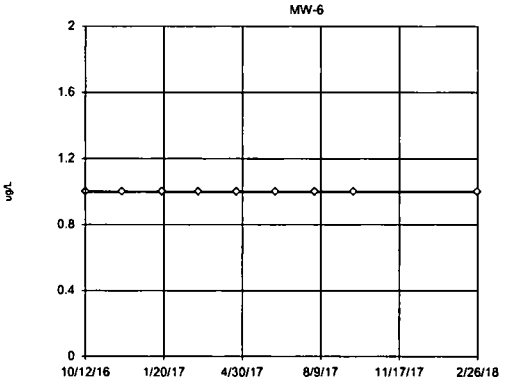
Tukey's Outlier Screening

MW-6



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Antimony [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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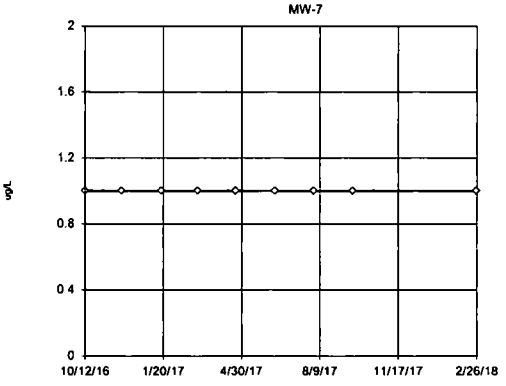
Tukey's Outlier Screening

MW-7



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Antimony [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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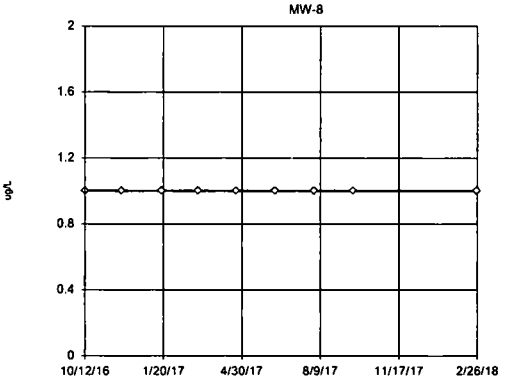
Tukey's Outlier Screening

MW-8



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Antimony [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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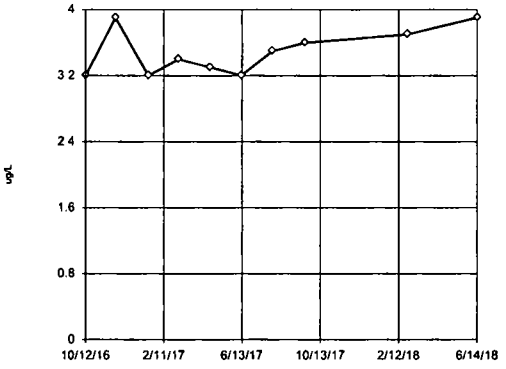
EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 3 49 std dev 0 2757,
critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 8827
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Arsenic [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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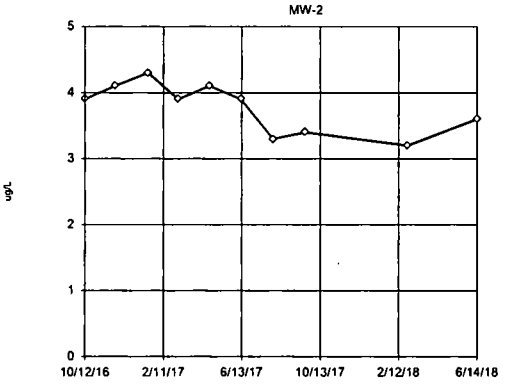
EPA Screening (suspected outliers for Dixon's Test)

MW-2



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 3 77, std dev 0 3743
critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 927
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Arsenic [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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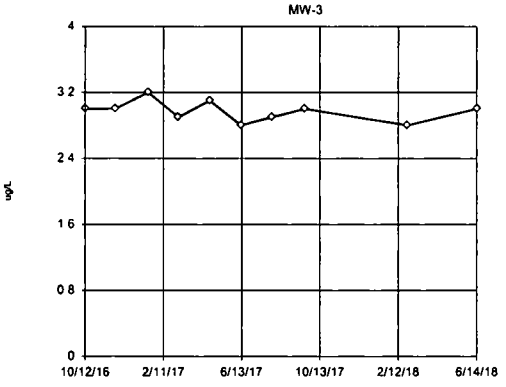
EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 2 97 std dev 0 1252
critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 8291
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Arsenic [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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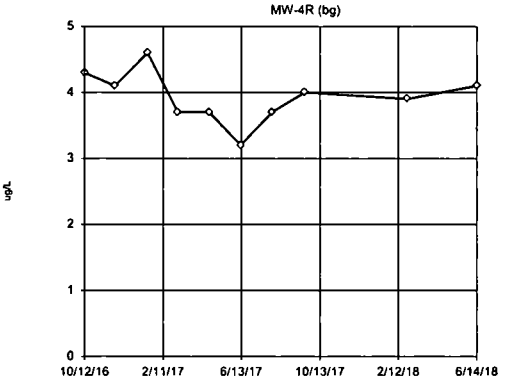
EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 3 93 std dev 0 356
critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 8683
Critical = 0 869
The distribution was found to be normally distributed.

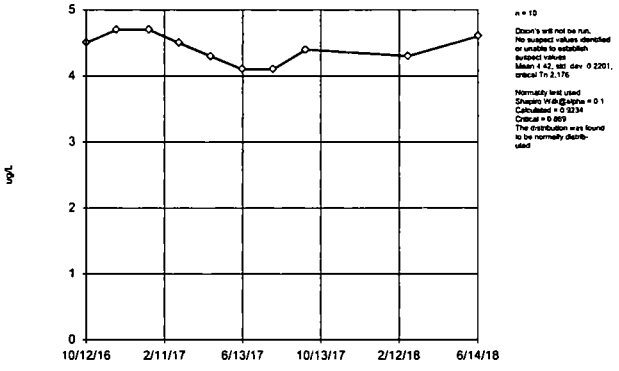
Constituent Arsenic [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-5



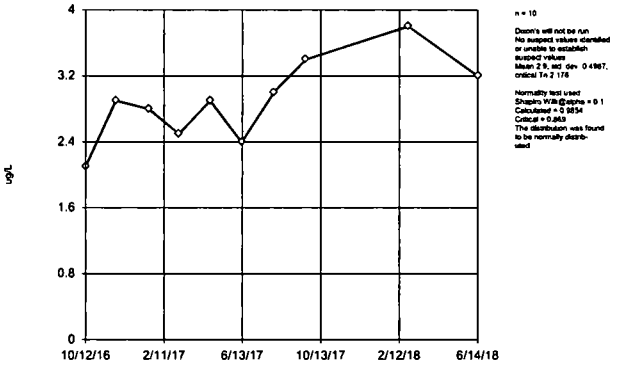
Constituent: Arsenic [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-6



Constituent: Arsenic [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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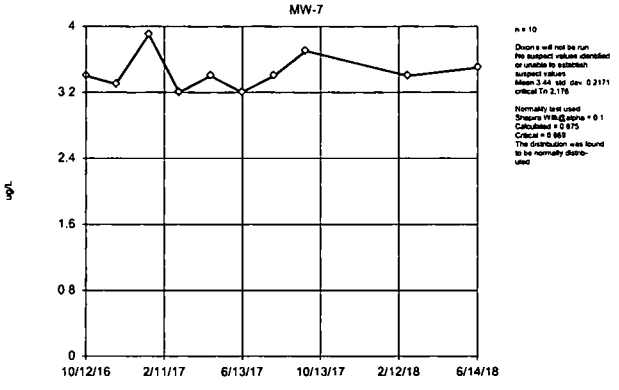
EPA Screening (suspected outliers for Dixon's Test)

MW-7



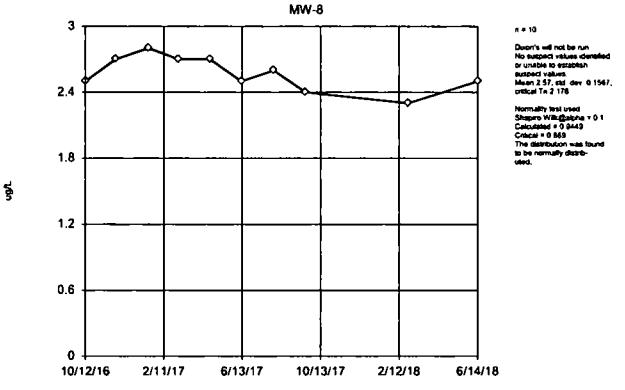
Constituent: Arsenic [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-8



Constituent: Arsenic [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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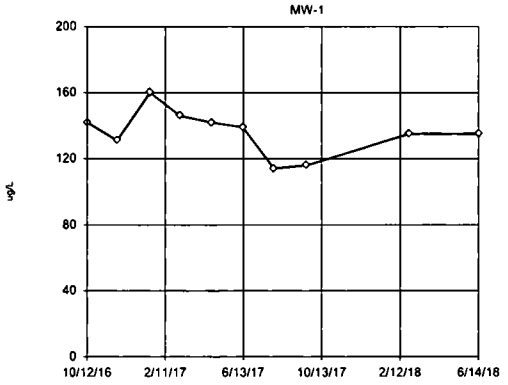
EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 136 std dev 13 61
critical Tn 2 176

Normality test used:
Shapiro Wilk@alpha = 0 1
Calculated = 0 9422
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Barium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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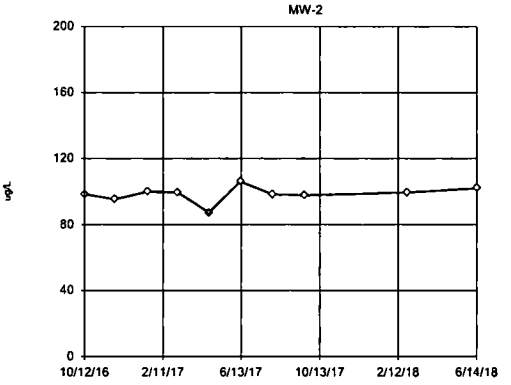
Dixon's Outlier Test

MW-2



n = 10

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 98 45
Std Dev = 4 784
87 4 : c = 0 5479
tabl = 0 477.
Alpha = 0 05

Normality test used:
Shapiro Wilk@alpha = 0 1
Calculated = 0 9111
Critical = 0 859
The distribution, after removal of suspect value, was found to be normally distributed

Constituent: Barium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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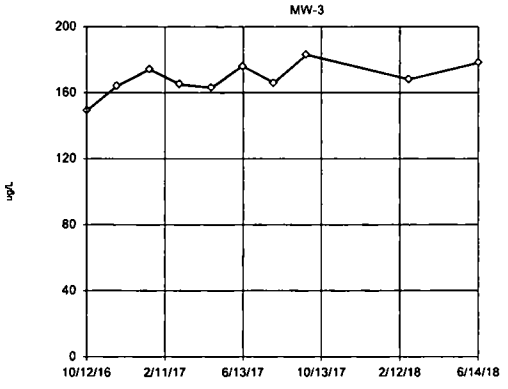
EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon s will not be run
No suspect values identified or unable to establish suspect values
Mean 168 6 std dev 9 64 critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9508
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Barium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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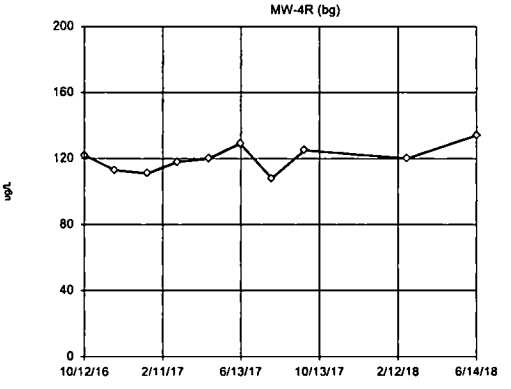
EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon s will not be run
No suspect values identified or unable to establish suspect values
Mean 120 std dev 8 055
critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9784
Critical = 0 869
The distribution was found to be normally distributed.

Constituent: Barium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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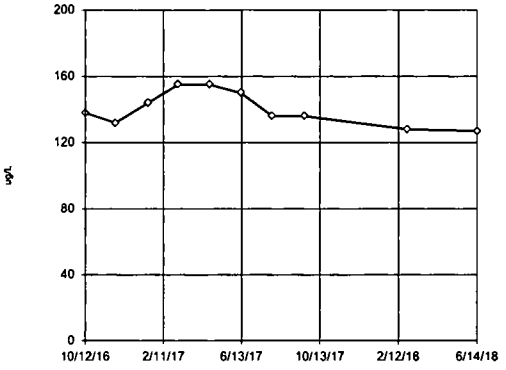
EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 140 1, std dev 10 43, critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9113
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Barium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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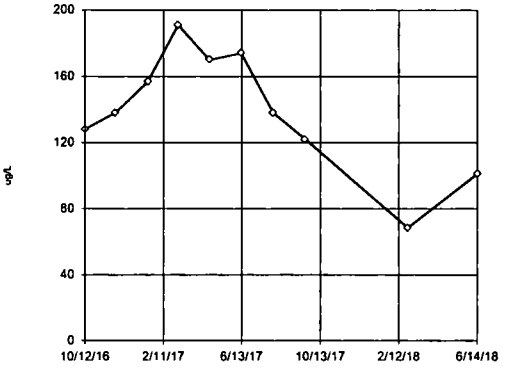
Dixon's Outlier Test

MW-6



n = 10

No statistical outliers
Testing for 1 low outlier
Mean = 138 7,
Std Dev = 36.6
68 4, c = 0 3087
tabl = 0 477,
Alpha = 0 05

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9752
Critical = 0 859
The distribution was found to be normally distributed

Constituent: Barium [total] Analysis Run 4/25/2019 6.52 PM View: Time Series
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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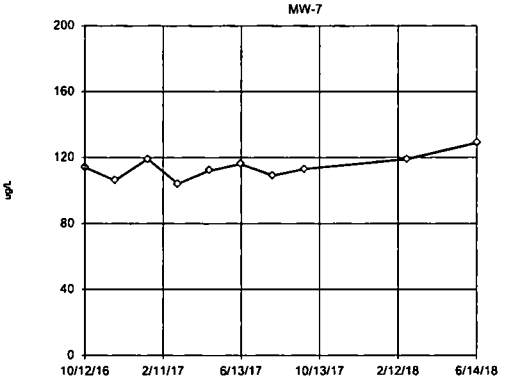
EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 114 1 std dev 7 349 critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 959
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Barium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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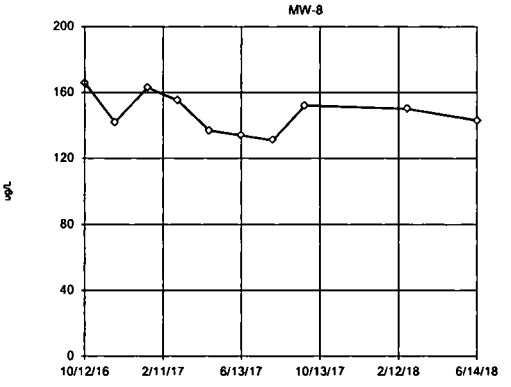
EPA Screening (suspected outliers for Dixon's Test)

MW-8



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 147 3 std dev 11 93 critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9563
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Barium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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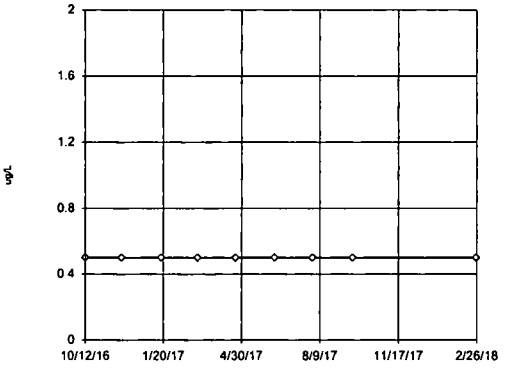
Tukey's Outlier Screening

MW-1



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units).

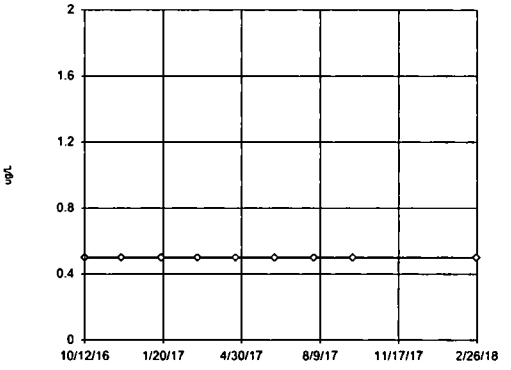
The results were invalidated, because the lower and upper quartiles are equal

Constituent: BERYLIUM Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-2



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Data were square root transformed to achieve best W statistic (graph shown in original units)

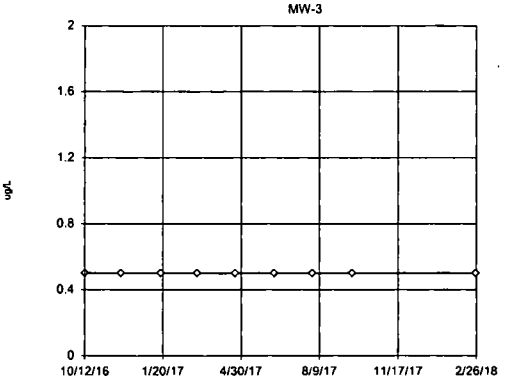
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: BERYLIUM Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-3



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were square root transformed to achieve best W statistic (graph shown in original units)

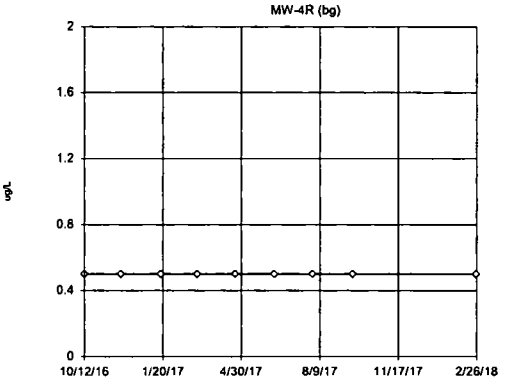
The results were invalidated, because the lower and upper quartiles are equal

Constituent: BERYLIUM Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-4R (bg)



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units)

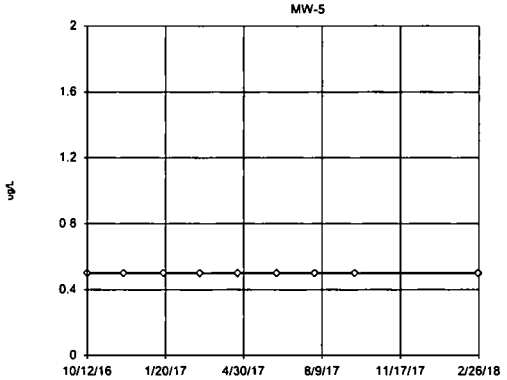
The results were invalidated, because the lower and upper quartiles are equal

Constituent: BERYLIUM Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-5



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

Constituent: BERYLIUM Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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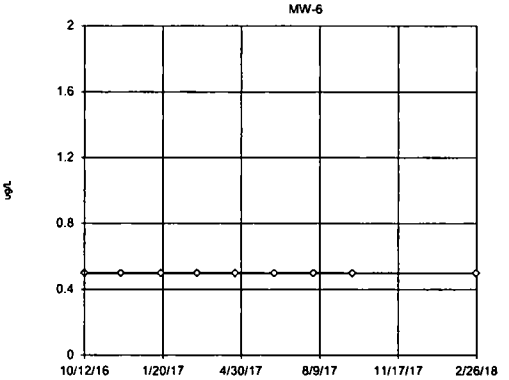
Tukey's Outlier Screening

MW-6



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

Constituent: BERYLIUM Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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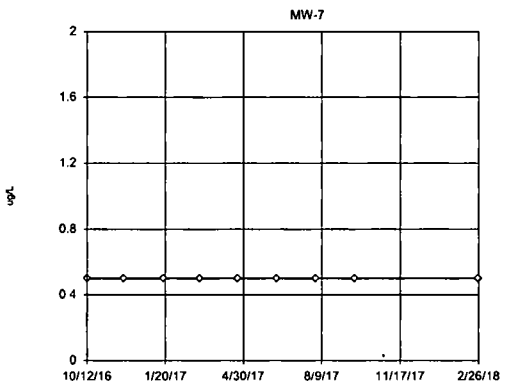
Tukey's Outlier Screening

MW-7



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal

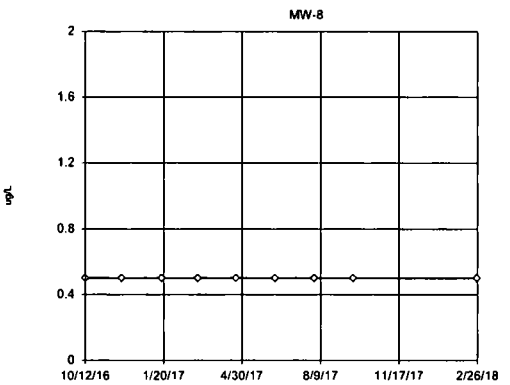
Constituent: BERYLIUM Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-8



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal.

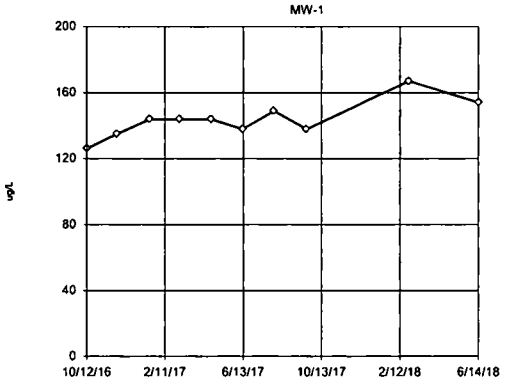
Constituent: BERYLIUM Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 143 8 std dev 11 21, critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9553
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Boron Analysis Run 4/25/2019 6:52 PM View: Time Series

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

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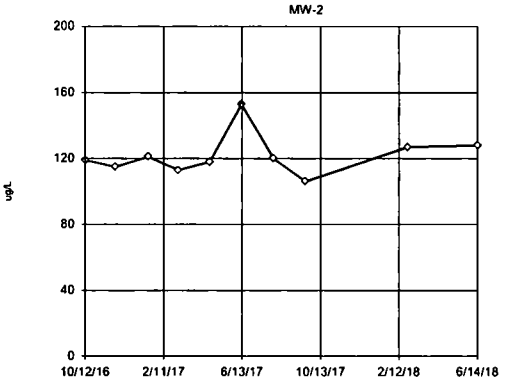
Dixon's Outlier Test

MW-2



n = 10

Statistical outlier is drawn as solid
Testing for 1 high outlier.
Mean = 122,
Std Dev. = 12 64
153 (o); c = 0 625
tabl = 0 477,
Alpha = 0 05

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9618
Critical = 0 859
The distribution, after removal of suspect value, was found to be normally distributed

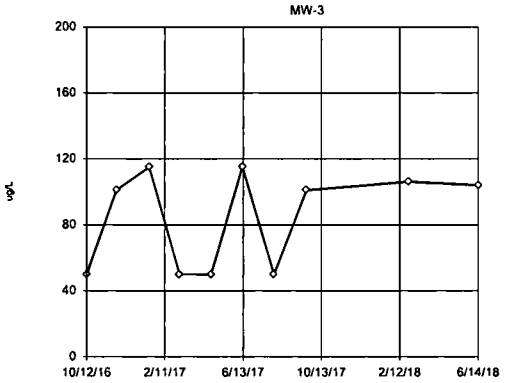
Constituent: Boron Analysis Run 4/25/2019 6.52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-3



n = 10

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were x^6 transformed to achieve best W statistic (graph shown in original units)

High cutoff = 139 8, low cutoff = -133, based on IQR multiplier of 3

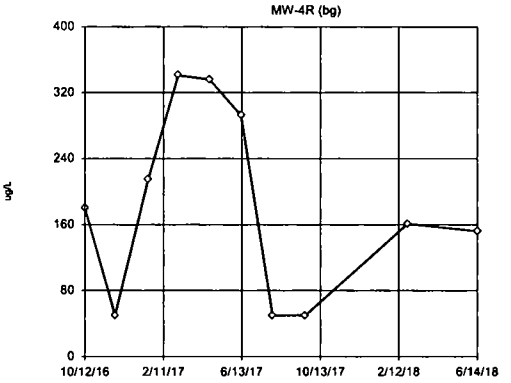
Constituent: Boron Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 182 6, std dev 113 4 critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 8919
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Boron Analysis Run 4/25/2019 6 52 PM View: Time Series

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

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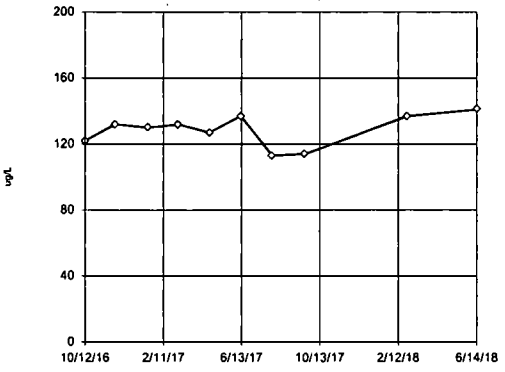
EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 129 5 std dev 9 56 critical Tn 2 176

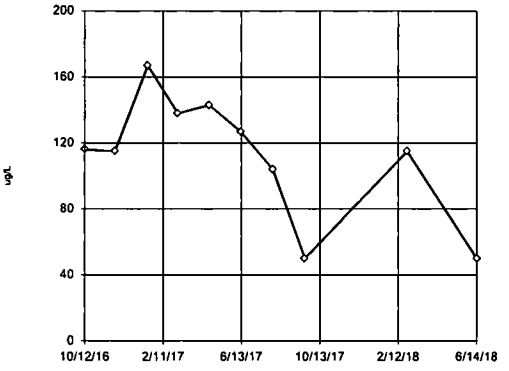
Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9223
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Boron Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-6



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 112 6 std dev 37 52, critical Tn 2 176

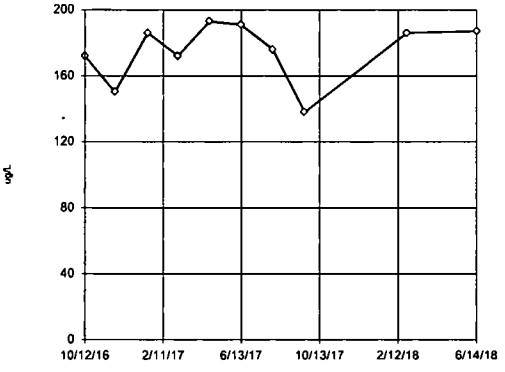
Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 8950
Critical = 0.869
The distribution was found to be normally distributed

Constituent: Boron Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept. of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-7



n = 10

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were x^6 transformed to achieve best W statistic (graph shown in original units)

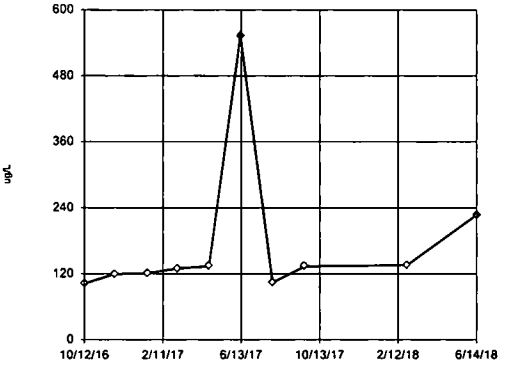
High cutoff = 224 1, low cutoff = -199 2, based on IQR multiplier of 3

Constituent: Boron Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-8



n = 10

Statistical outliers are drawn as solid
Testing for 2 high outliers
Mean = 178.
Std Dev = 138 6
227 (o) c = 0 7396
tabl = 0 477,
Alpha = 0 05

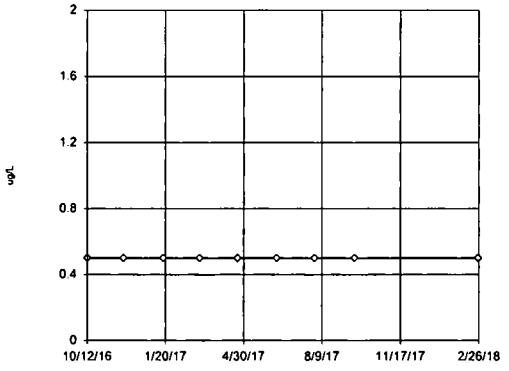
Normality test used.
Shapiro Wilk@alpha = 0 1
Calculated = 0 8556
Critical = 0 851
The distribution, after removal of suspect values, was found to be normally distributed

Constituent: Boron Analysis Run 4/25/2019 6:52 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-1



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to acheve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

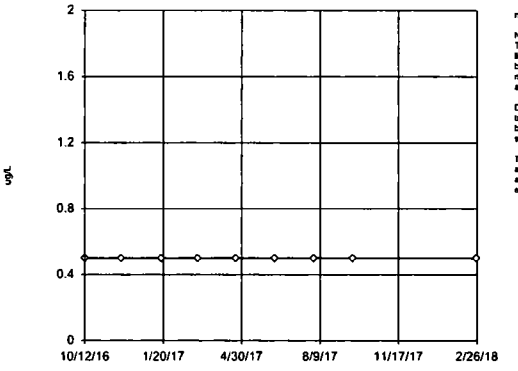
Constituent: Cadmium [total] Analysis Run 4/25/2019 6.52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-2



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were square root transformed to acheve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal.

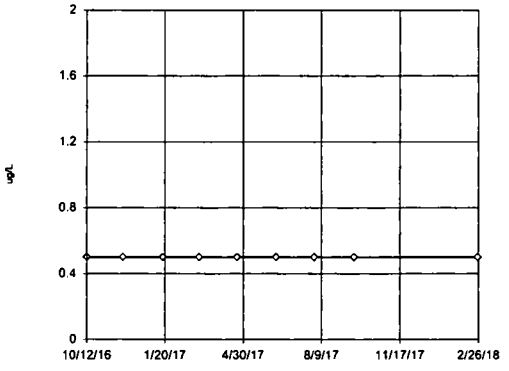
Constituent: Cadmium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-3



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were square root transformed to acheve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

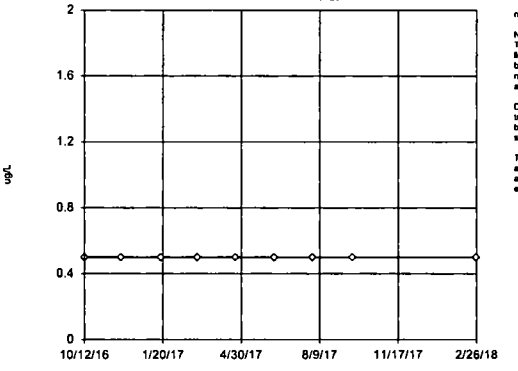
Constituent: Cadmium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-4R (bg)



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Data were square root transformed to acheve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

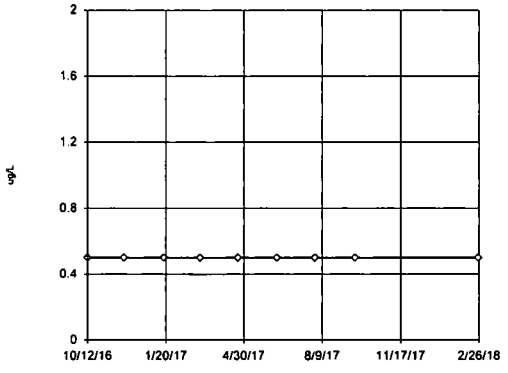
Constituent: Cadmium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-5



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal

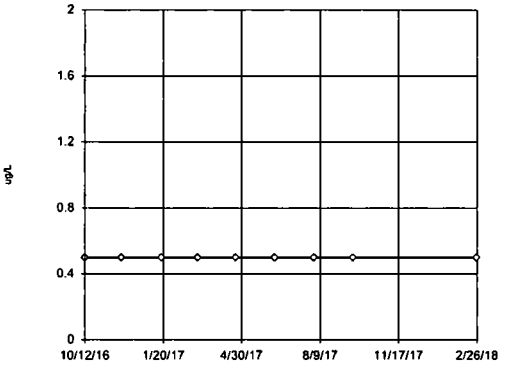
Constituent: Cadmium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-6



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were square root transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

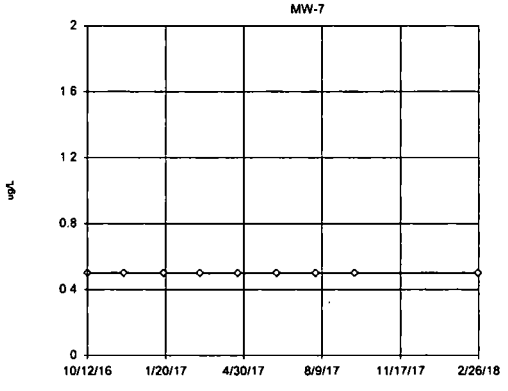
Constituent: Cadmium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-7



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

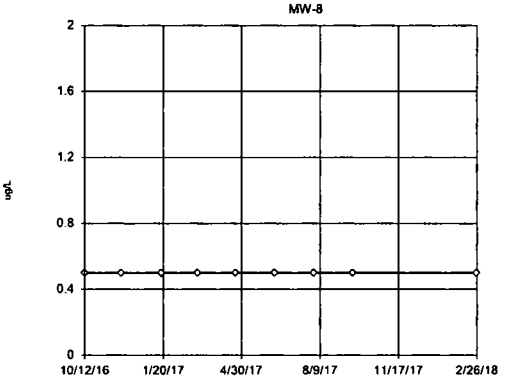
Constituent: Cadmium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-8



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal

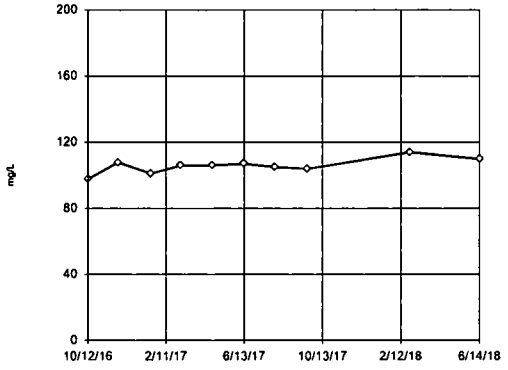
Constituent: Cadmium [total] Analysis Run 4/25/2019 6:52 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run.
No suspect values identified
or unable to establish
suspect values
Mean 105 9 std dev
4 518, critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9789
Critical = 0 869
The distribution was found
to be normally distrib-
uted

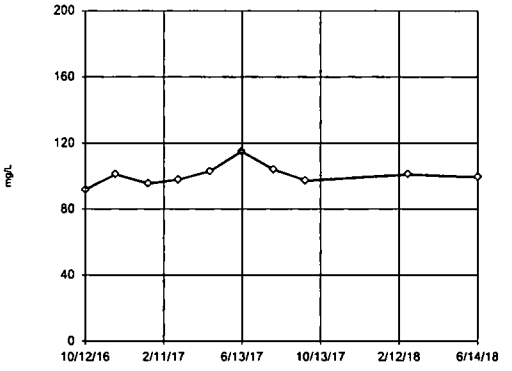
Constituent: Calcium Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-2



n = 10

Statistical outlier is
drawn as solid
Testing for 1 high outlier.
Mean = 100.6
Std Dev = 6.214
115. c = 0 5641
tabl = 0 477.
Alpha = 0 05

Normality test used:
Shapiro Wilk @alpha = 0 1
Calculated = 0.9649
Critical = 0.859
The distribution, after
removal of suspect val-
ue, was found to be nor-
mally distributed.

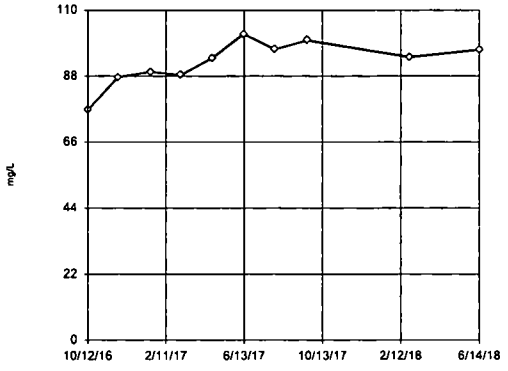
Constituent: Calcium Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-3



n = 10

No statistical outliers
Testing for 1 low outlier
Mean = 82 59
Std Dev = 7 372
75 7 (o) c = 0 4698
tabl = 0 477.
Alpha = 0 05

Normality test used
Shapiro Wilk @alpha = 0.1
Calculated = 0.938
Critical = 0 859
The distribution was found
to be normally distrib-
uted

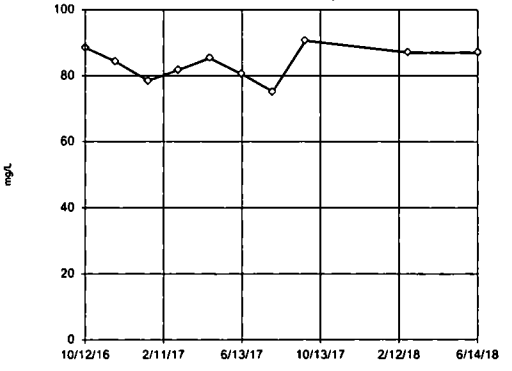
Constituent: Calcium Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon's will not be run
No suspect values identified
or unable to establish
suspect values
Mean 83 88 std dev
4 802 critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9063
Critical = 0 869
The distribution was found
to be normally distrib-
uted.

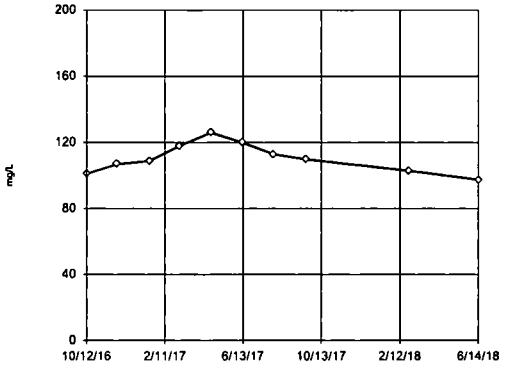
Constituent: Calcium Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon s will not be run.
No suspect values identified or unable to establish suspect values
Mean 110 4 std dev 6 98 critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9787
Critical = 0 869
The distribution was found to be normally distributed

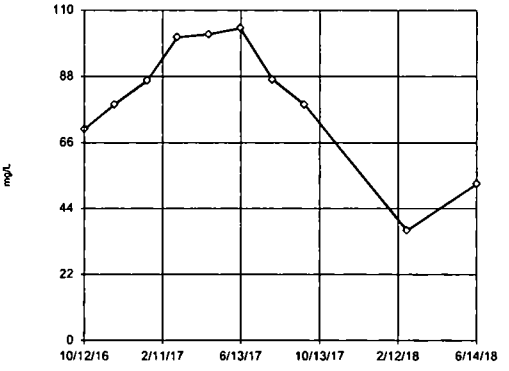
Constituent: Calcium Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-6



n = 10

No statistical outliers
Testing for 1 low outlier.
Mean = 79 7.
Std Dev = 21.97
38 6. c = 0.2385
tabl = 0 477.
Alpha = 0 05

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0.9269
Critical = 0 859
The distribution was found to be normally distributed.

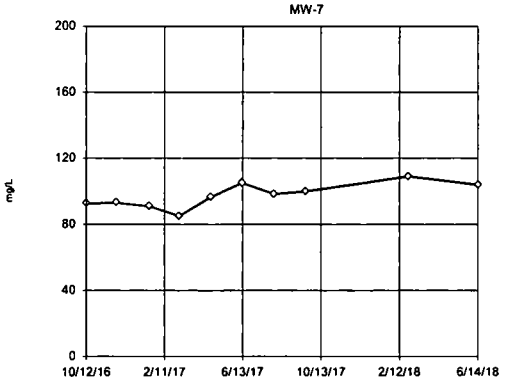
Constituent: Calcium Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon s will not be run
No suspect values identified or unable to establish suspect values
Mean 97 44 std dev 7 317, critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9639
Critical = 0 869
The distribution was found to be normally distributed

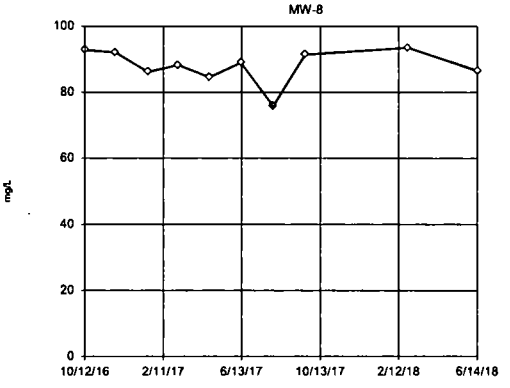
Constituent: Calcium Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-8



n = 10

Statistical outlier is drawn as solid
Testing for 1 low outlier
Mean = 87 99
Std Dev. = 5 239
75 9 c = 0 5089
tabl = 0 477.
Alpha = 0 05

Normality test used.
Shapiro Wilk @alpha = 0 1
Calculated = 0 9323
Critical = 0 859
The distribution, after removal of suspect value, was found to be normally distributed

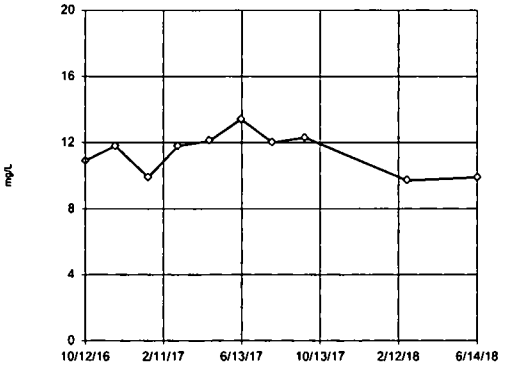
Constituent: Calcium Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 11.38 std dev 1.23 critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9694
Critical = 0.859
The distribution was found to be normally distributed

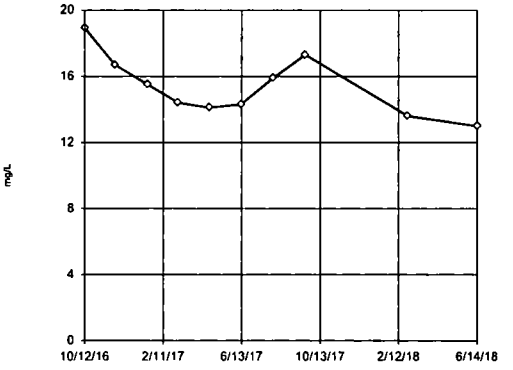
Constituent: Chloride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-2



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 15.37, std dev 1.847, critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9458
Critical = 0.859
The distribution was found to be normally distributed

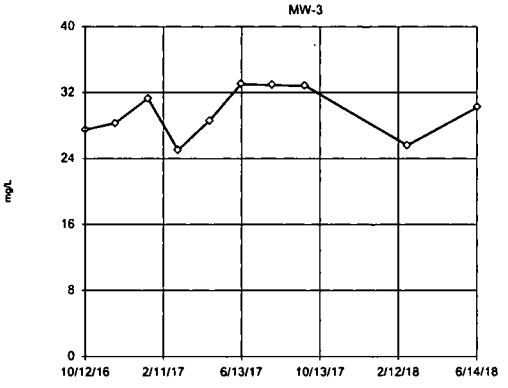
Constituent: Chloride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 29.52 std dev 2.984, critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9142
Critical = 0.859
The distribution was found to be normally distributed

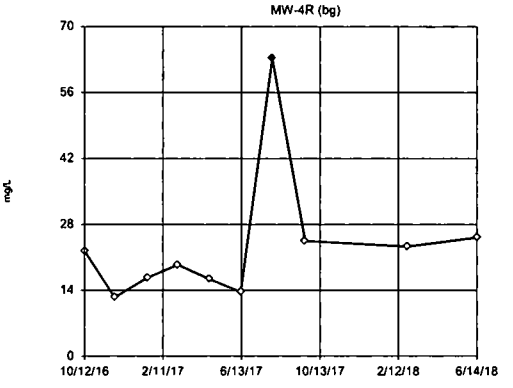
Constituent: Chloride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-4R (bg)



n = 10

Statistical outlier is drawn as solid
Testing for 1 high outlier
Mean = 23.73
Std. Dev. = 14.57,
63.2 (o); c = 0.7677
tabl = 0.477
Alpha = 0.05

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9211
Critical = 0.859
The distribution, after removal of suspect value, was found to be normally distributed

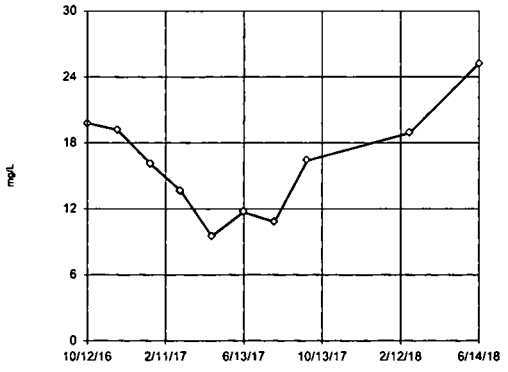
Constituent: Chloride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon's will not be run.
No suspect values identified
or unable to establish
suspect values
Mean 16 13 std dev
4 84 critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9601
Critical = 0 869
The distribution was found
to be normally distrib-
uted

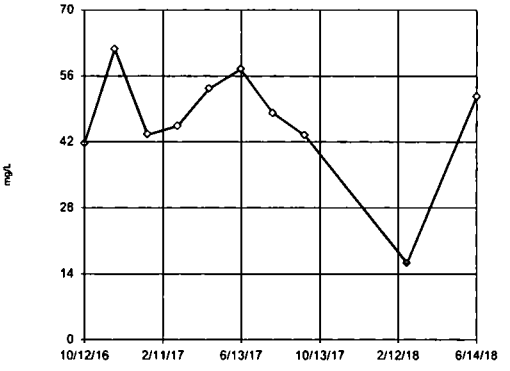
Constituent: Chloride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-6



n = 10

Statistical outlier is
drawn as solid
Testing for 1 low outlier.
Mean = 46.22
Std Dev = 12 38
18 3 (o) c = 0 6156
tabl = 0 477,
Alpha = 0 05

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9293
Critical = 0 859
The distribution, after
removal of suspect val-
ue, was found to be nor-
mally distributed

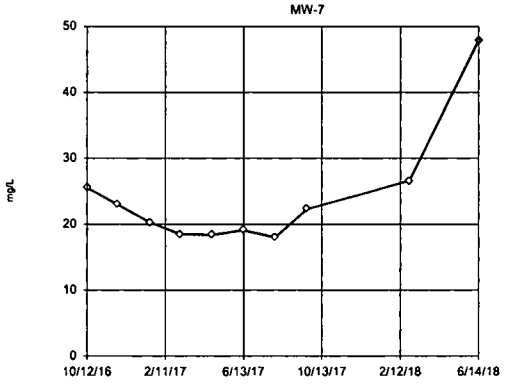
Constituent. Chloride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-7



n = 10

Statistical outlier is
drawn as solid
Testing for 1 high outlier.
Mean = 23 96,
Std. Dev = 8 941,
47.9 c = 0 722
tabl = 0 477,
Alpha = 0 05

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 8869
Critical = 0.859
The distribution, after
removal of suspect val-
ue was found to be nor-
mally distributed

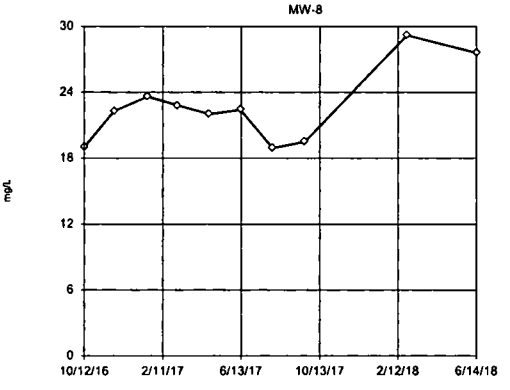
Constituent: Chloride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-8



n = 10

Dixon s will not be run
No suspect values identified
or unable to establish
suspect values
Mean 23 73 std dev
3.435 critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 89
Critical = 0 869
The distribution was found
to be normally distrib-
uted

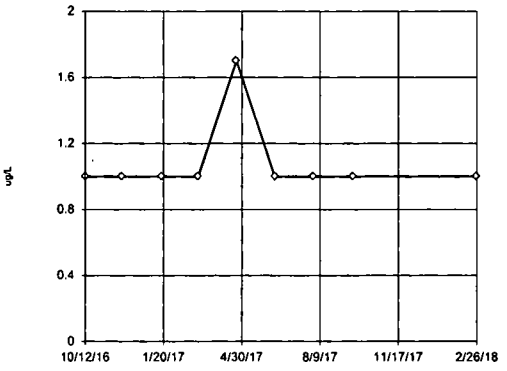
Constituent: Chloride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-1



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality: analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

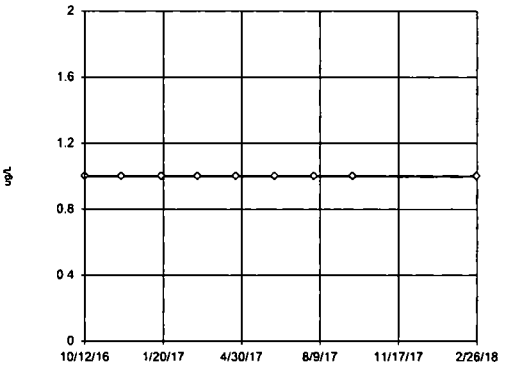
Constituent: Chromium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-2



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Ladder of Powers transformations did not improve normality: analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal

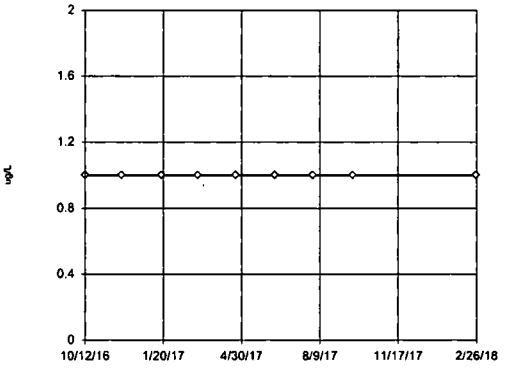
Constituent: Chromium [total] Analysis Run 4/25/2019 6 53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-3



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality: analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

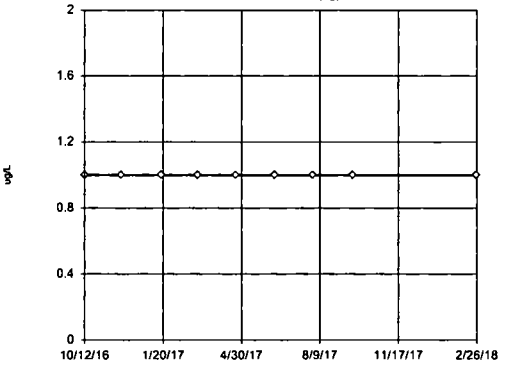
Constituent: Chromium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-4R (bg)



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Ladder of Powers transformations did not improve normality: analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal

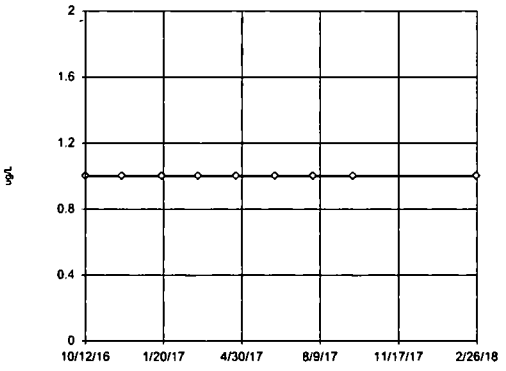
Constituent: Chromium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-5



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Chromium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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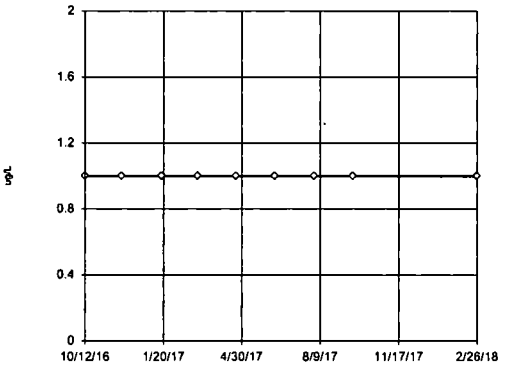
Tukey's Outlier Screening

MW-6



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

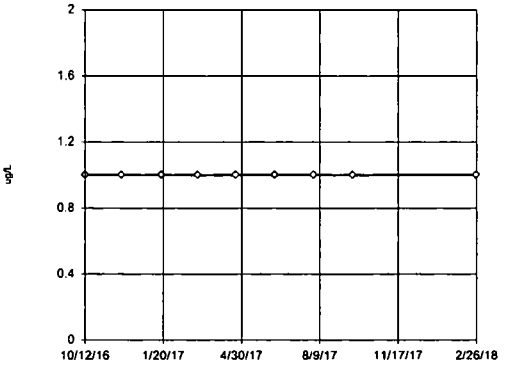
Constituent: Chromium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-7



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal

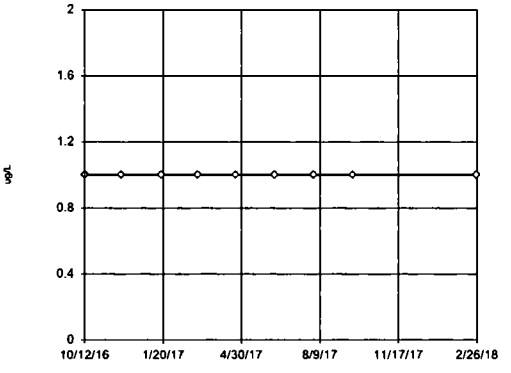
Constituent: Chromium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-8



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal

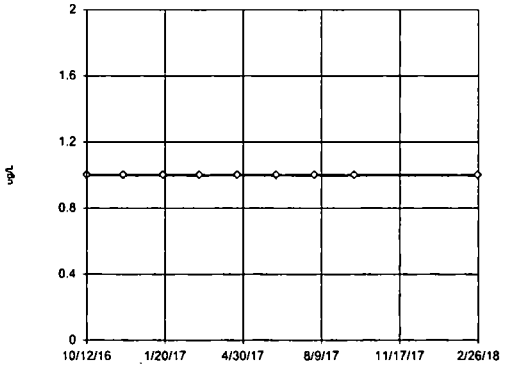
Constituent: Chromium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-1



n = 9

No outliers found. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Cobalt [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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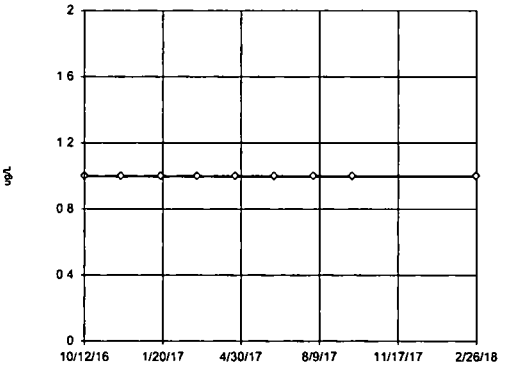
Tukey's Outlier Screening

MW-2



n = 9

No outliers found Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal

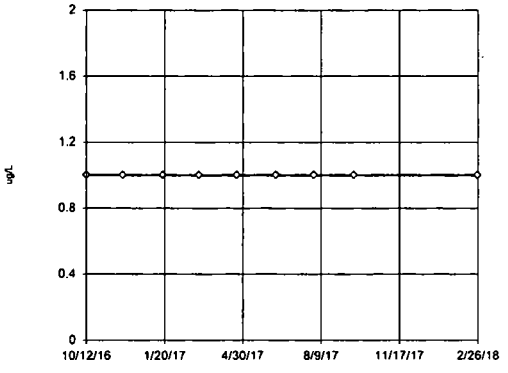
Constituent: Cobalt [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-3



n = 9

No outliers found Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

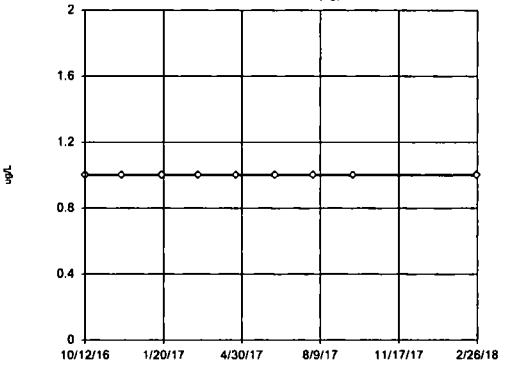
Constituent: Cobalt [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-4R (bg)



n = 9

No outliers found Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal.

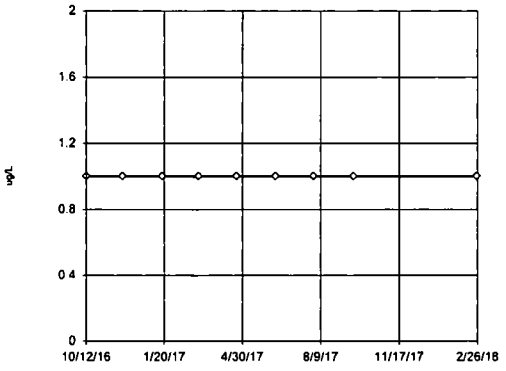
Constituent: Cobalt [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-5



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

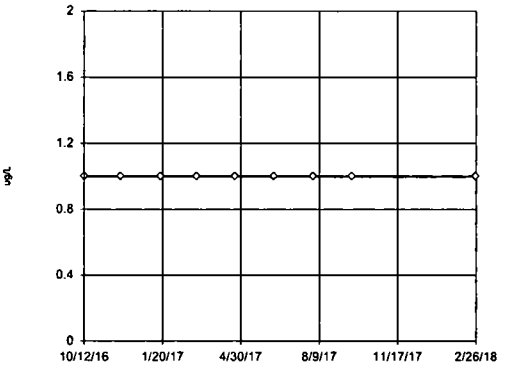
Constituent: Cobalt [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-6



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal

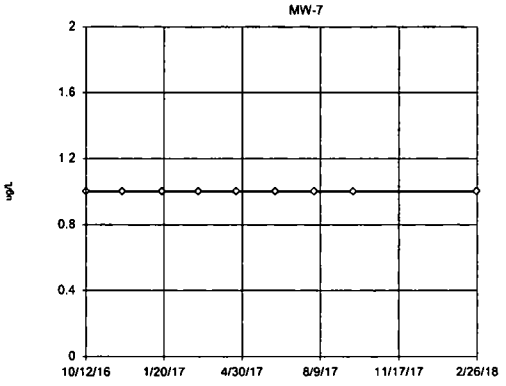
Constituent: Cobalt [total] Analysis Run 4/25/2019 6 53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-7



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

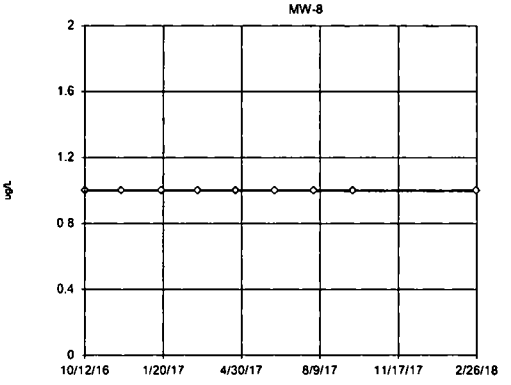
Constituent: Cobalt [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-8



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Cobalt [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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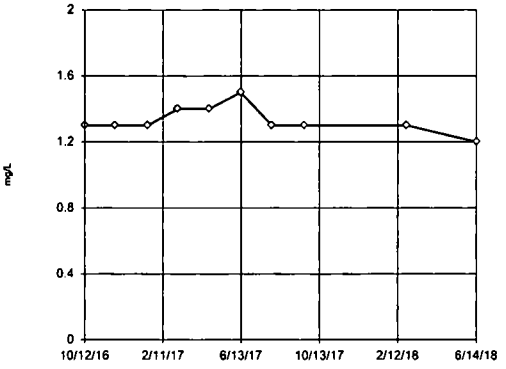
Tukey's Outlier Screening

MW-1



n = 10

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units)

High cutoff = 1.749, low cutoff = 1.041, based on IQR multiplier of 3

Constituent: Fluoride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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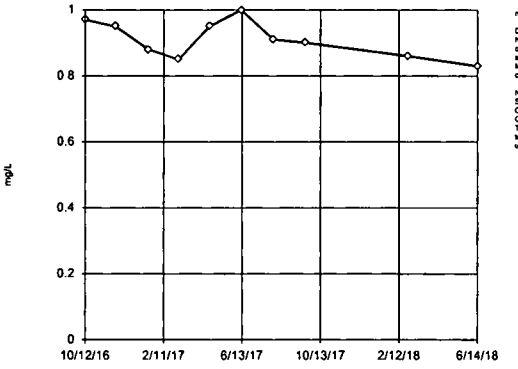
EPA Screening (suspected outliers for Dixon's Test)

MW-2



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 0 91, std. dev. 0 05417, critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 962
Critical = 0.869
The distribution was found to be normally distributed

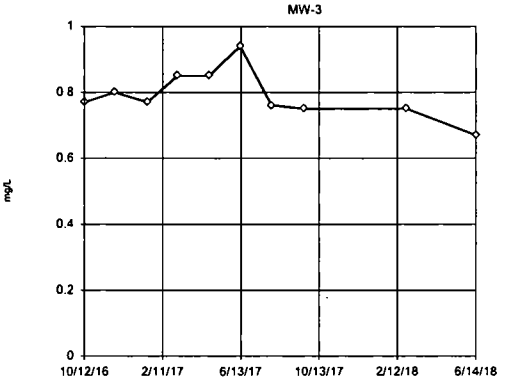
Constituent: Fluoride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 0 791, std dev 0 07385 critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9344
Critical = 0 869
The distribution was found to be normally distributed

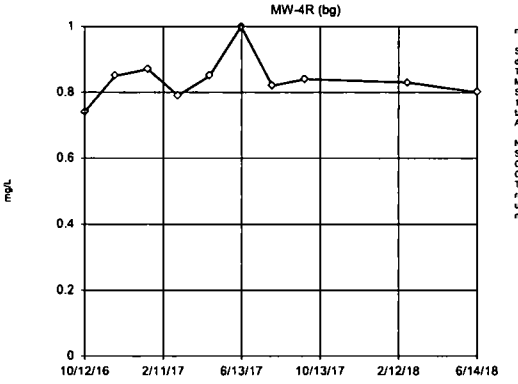
Constituent: Fluoride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-4R (bg)



n = 10

Statistical outlier is drawn as solid
Testing for 1 high outlier.
Mean = 0 839
Std Dev = 0 06773
1: c = 0 819
tabl = 0 477,
Alpha = 0 05

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9302
Critical = 0 859
The distribution, after removal of suspect value, was found to be normally distributed.

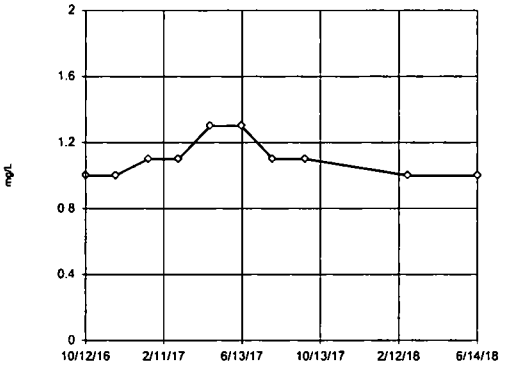
Constituent: Fluoride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-5



n = 10

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units)

High cutoff = 2 045, low cutoff = 0 5648, based on IQR multiplier of 3.

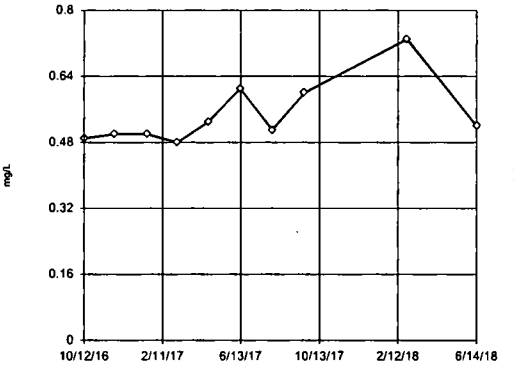
Constituent: Fluoride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-6



n = 10

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units)

High cutoff = 1.105, low cutoff = 0 2711, based on IQR multiplier of 3.

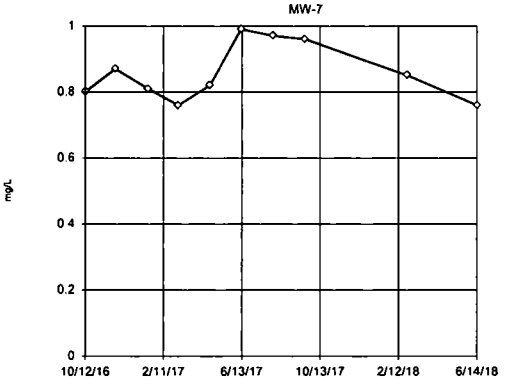
Constituent: Fluoride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 0 859 std dev 0 08621, critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 8894
Critical = 0 869
The distribution was found to be normally distributed

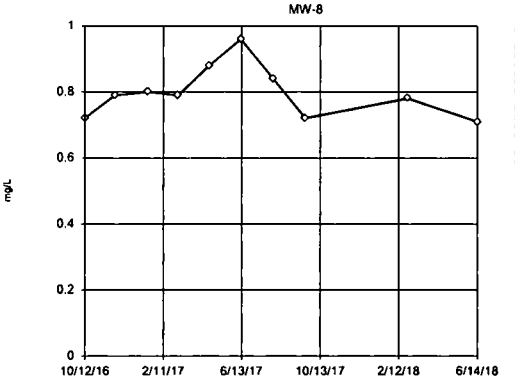
Constituent: Fluoride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-8



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values.
Mean 0 799 std dev 0 07834, critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 913
Critical = 0 869
The distribution was found to be normally distributed

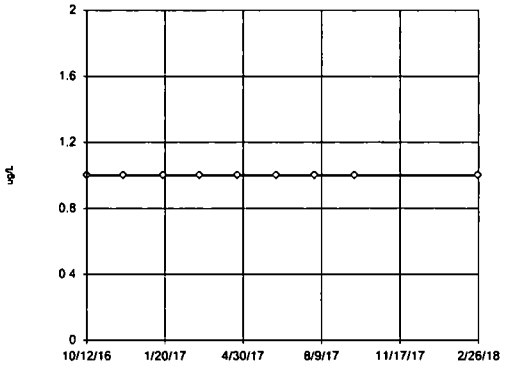
Constituent: Fluoride Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-1



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

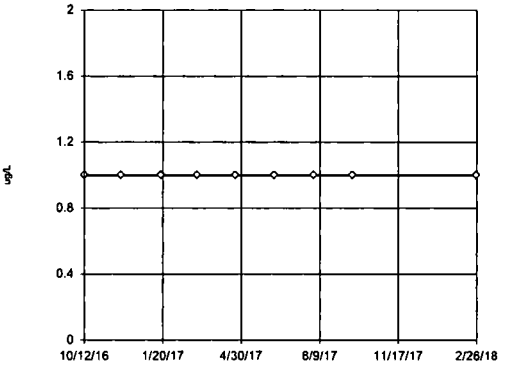
The results were invalidated, because the lower and upper quartiles are equal

Constituent: Lead [total] Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-2



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

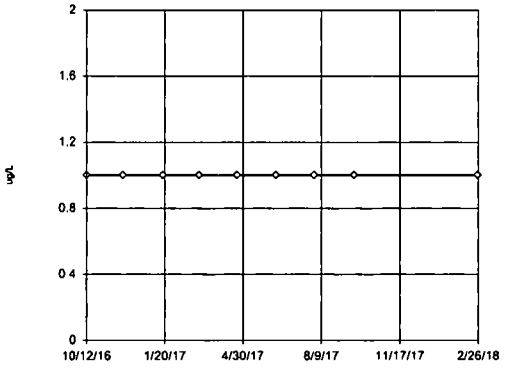
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead [total] Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-3



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

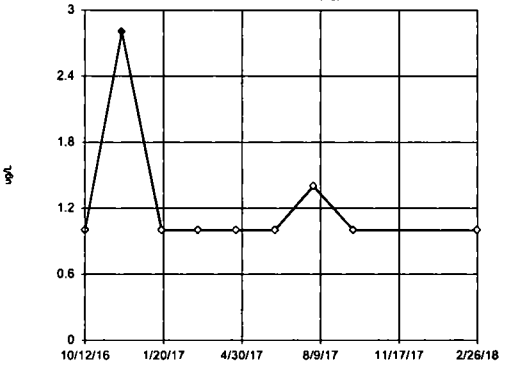
The results were invalidated, because the lower and upper quartiles are equal

Constituent: Lead [total] Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-4R (bg)



n = 9

Outlier is drawn as solid.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.98, low cutoff = 0 6037, based on IQR multiplier of 3

Constituent: Lead [total] Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

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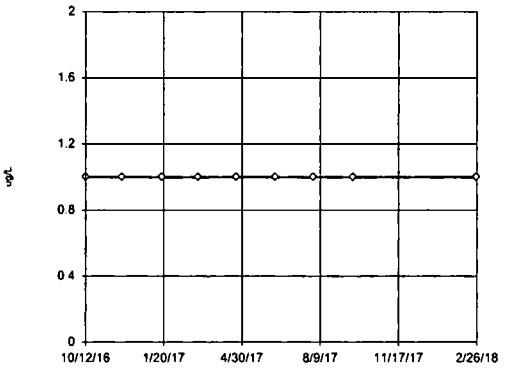
Tukey's Outlier Screening

MW-5



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

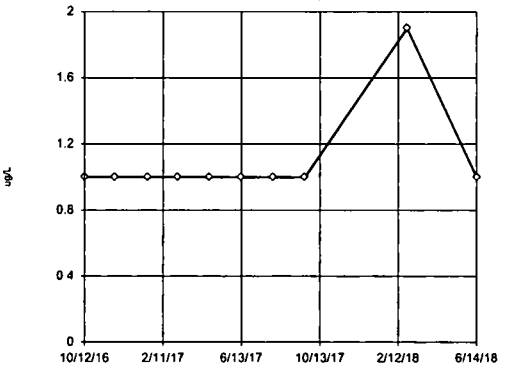
Constituent: Lead [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-6



n = 10

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Lead [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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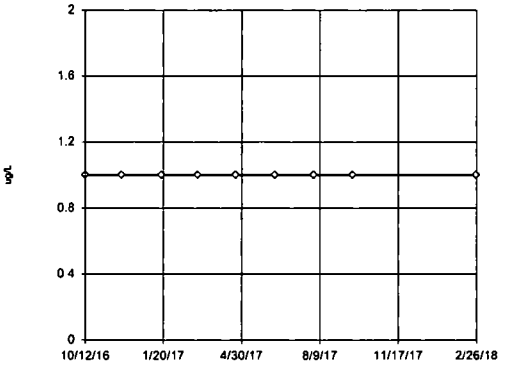
Tukey's Outlier Screening

MW-7



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

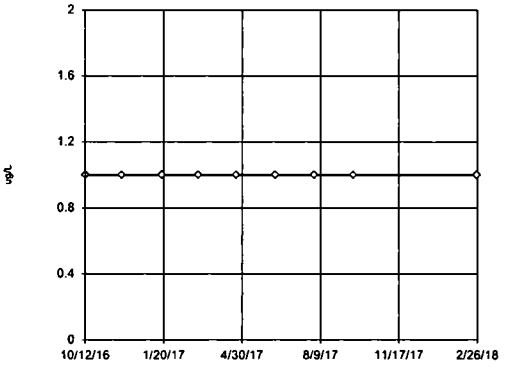
Constituent: Lead [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-8



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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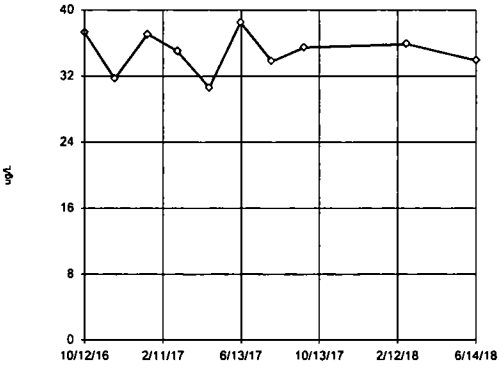
EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 34 53 std dev 2 491, critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9664
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Lithium Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

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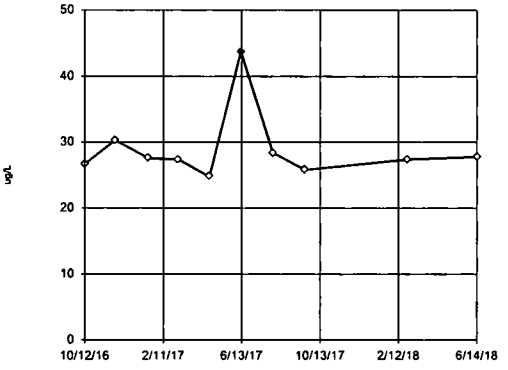
Dixon's Outlier Test

MW-2



n = 10

Statistical outlier is drawn as solid
Testing for 1 high outlier.
Mean = 28 99
Std Dev = 5 373,
43 7 (o), c = 0 7486
tabl = 0 477
Alpha = 0 05

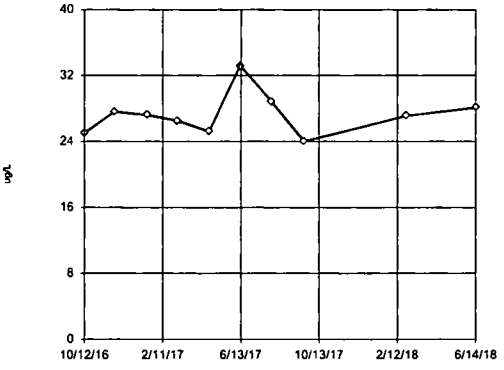
Normality test used:
Shapiro Wilk@alpha = 0 1
Calculated = 0 961
Critical = 0 859
The distribution, after removal of suspect value was found to be normally distributed

Constituent: Lithium Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-3



n = 10

Statistical outlier is drawn as solid
Testing for 1 high outlier.
Mean = 27 27.
Std Dev. = 2 582.
33 2 c = 0 5388
tabl = 0 477.
Alpha = 0 05

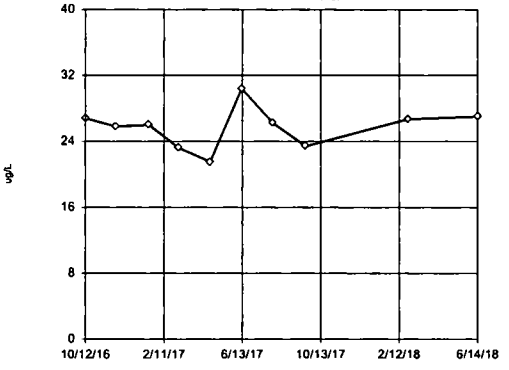
Normality test used.
Shapiro Wilk@alpha = 0 1
Calculated = 0 9564
Critical = 0 859
The distribution, after removal of suspect value, was found to be normally distributed

Constituent: Lithium Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon s will not be run
No suspect values identified or unable to establish suspect values
Mean 25 7, std dev 2 484
critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9349
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Lithium Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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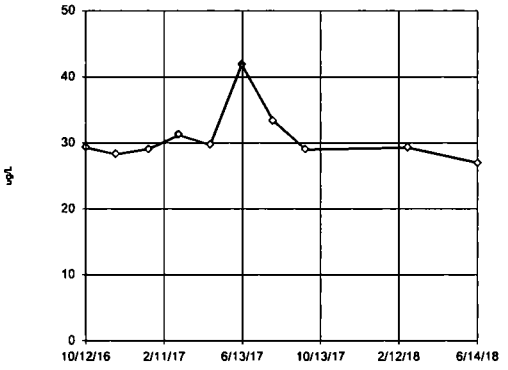
Dixon's Outlier Test

MW-5



n = 10

Statistical outlier is drawn as solid
Testing for 1 high outlier
Mean = 30.82,
Std. Dev. = 4.251,
41.9 c = 0.625
tabl = 0.477,
Alpha = 0.05

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9022
Critical = 0.859
The distribution, after removal of suspect value was found to be normally distributed

Constituent: Lithium Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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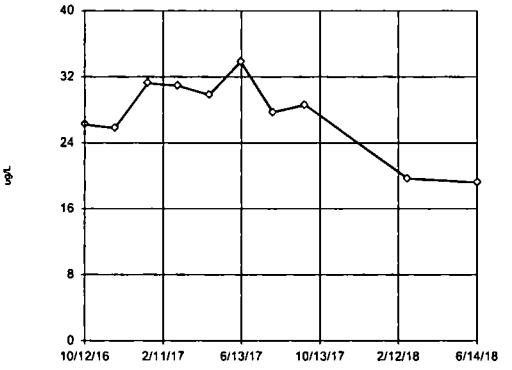
EPA Screening (suspected outliers for Dixon's Test)

MW-6



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 27.29, std. dev. 4.777, critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9183
Critical = 0.869
The distribution was found to be normally distributed

Constituent: Lithium Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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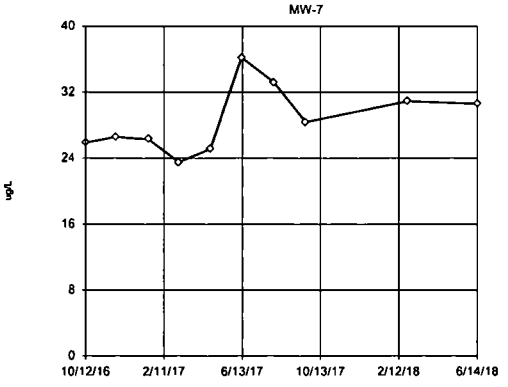
EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 29.67, std. dev. 3.987, critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9444
Critical = 0.869
The distribution was found to be normally distributed

Constituent: Lithium Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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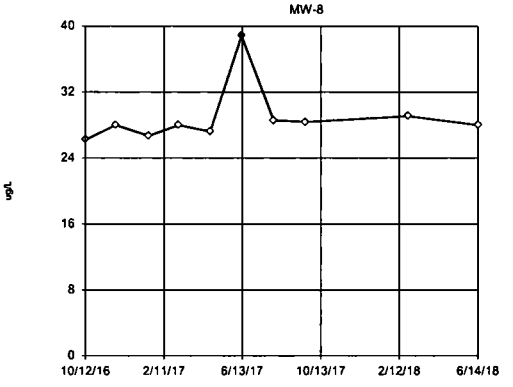
Dixon's Outlier Test

MW-8



n = 10

Statistical outlier is drawn as solid
Testing for 1 high outlier.
Mean = 28.9
Std. Dev. = 3.588
38.8 (o) c = 0.8017
tabl = 0.477
Alpha = 0.05

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9451
Critical = 0.859
The distribution, after removal of suspect value, was found to be normally distributed

Constituent: Lithium Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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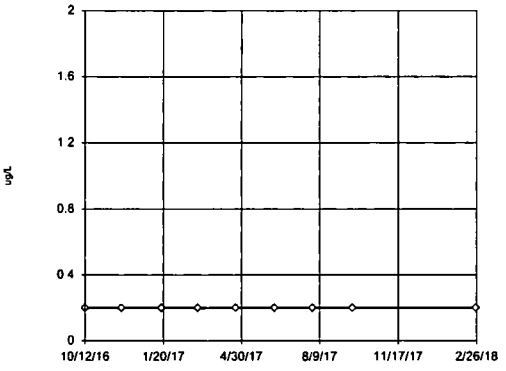
Tukey's Outlier Screening

MW-1



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

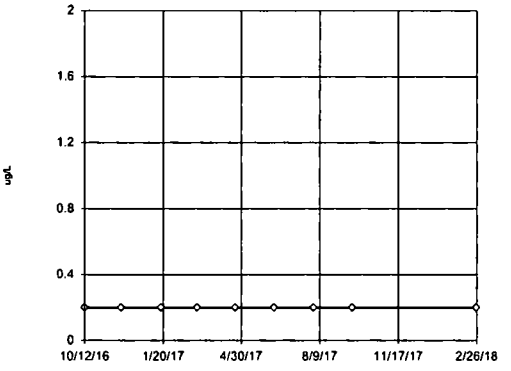
Constituent: Mercury Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-2



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal.

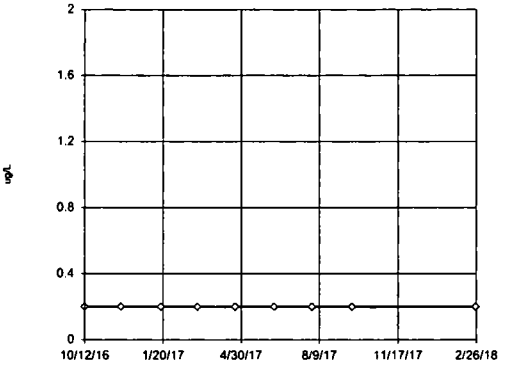
Constituent: Mercury Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-3



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Mercury Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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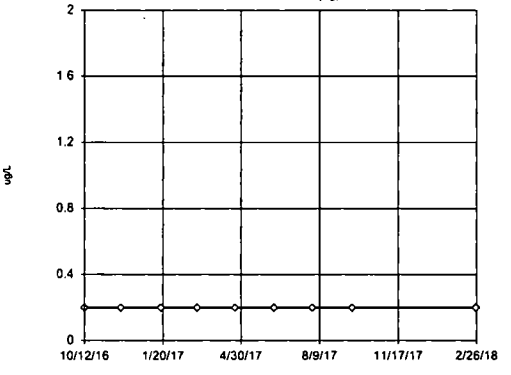
Tukey's Outlier Screening

MW-4R (bg)



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

Constituent: Mercury Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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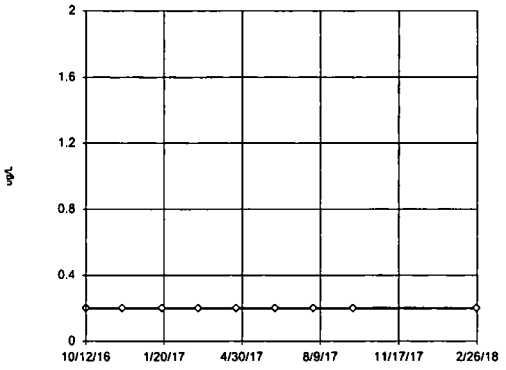
Tukey's Outlier Screening

MW-5



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal

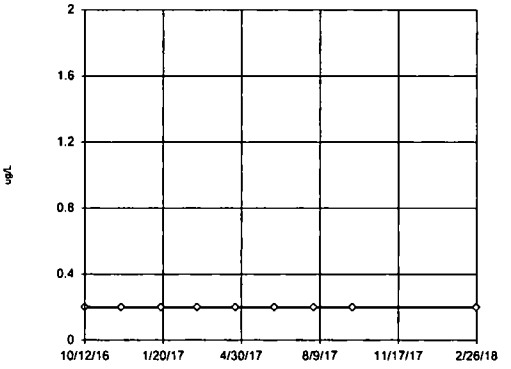
Constituent: Mercury Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-6



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

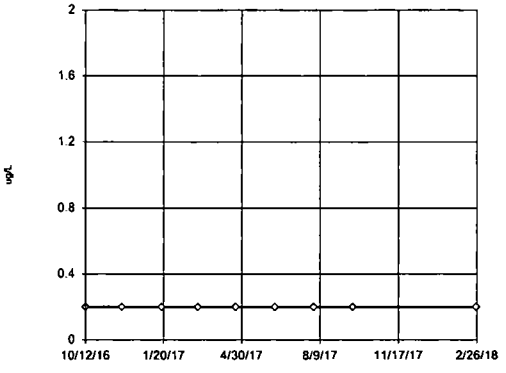
Constituent: Mercury Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-7



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal

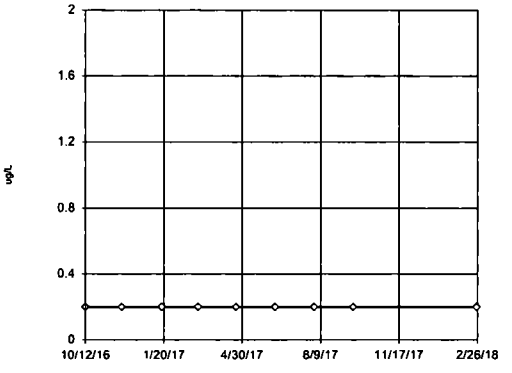
Constituent: Mercury Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-8



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units)

The results were invalidated, because the lower and upper quartiles are equal.

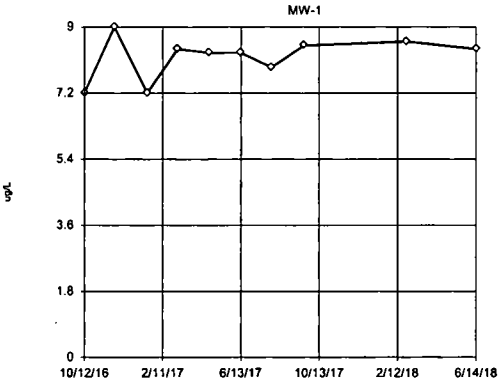
Constituent: Mercury Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 8.18 std dev 0.5846
critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.8727
Critical = 0.869
The distribution was found to be normally distributed

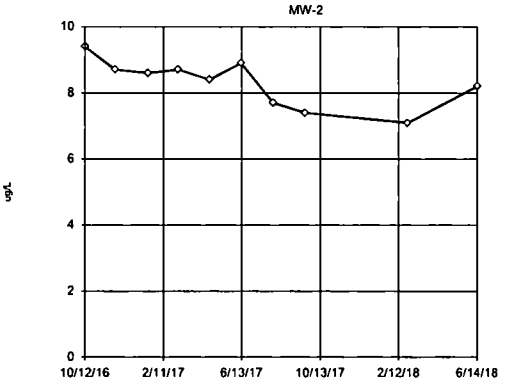
Constituent: Molybdenum Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-2



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 8.31 std dev 0.7156
critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.954
Critical = 0.869
The distribution was found to be normally distributed

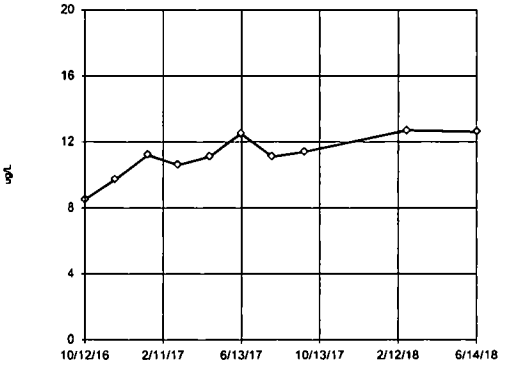
Constituent: Molybdenum Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 11.14 std dev 1.326 critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9184
Critical = 0.869
The distribution was found to be normally distributed

Constituent: Molybdenum Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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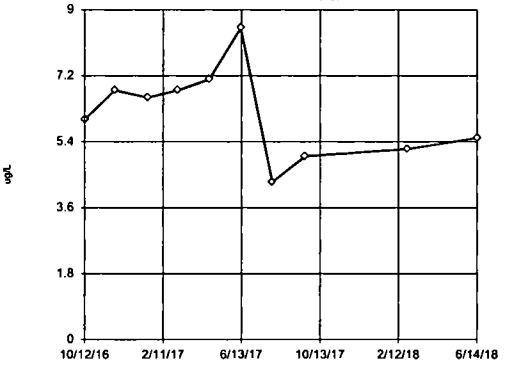
EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 6.18 std dev 1.227, critical Tn 2.176

Normality test used.
Shapiro Wilk@alpha = 0.1
Calculated = 0.9705
Critical = 0.869
The distribution was found to be normally distributed

Constituent: Molybdenum Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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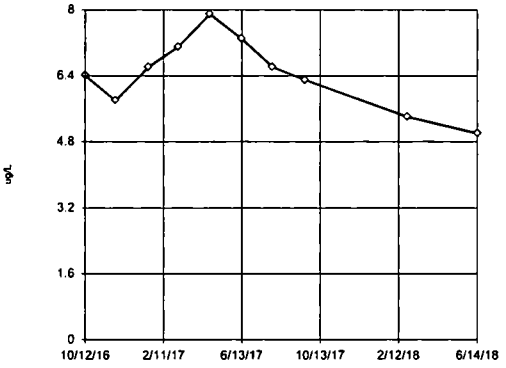
EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon's will not be run
No suspect values identified
or unable to establish
suspect values
Mean 6.44, std dev 0.8784,
critical Tn 2.176

Normality test used
Shapiro Wilk @alpha = 0.1
Calculated = 0.983
Critical = 0.869
The distribution was found
to be normally distrib-
uted

Constituent: Molybdenum Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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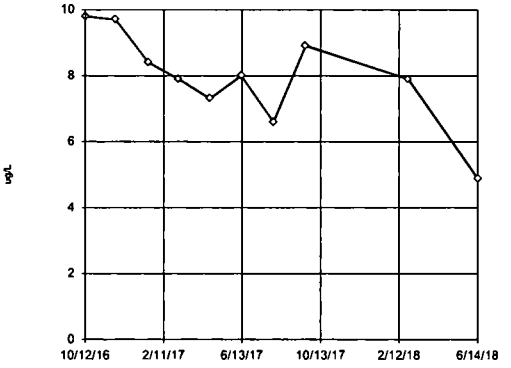
Dixon's Outlier Test

MW-6



n = 10

No statistical outliers
Testing for 1 low outlier
Mean = 7.94
Std Dev = 1.458
4.9 c = 0.3542
tabl = 0.477,
Alpha = 0.05

Normality test used.
Shapiro Wilk @alpha = 0.1
Calculated = 0.9526
Critical = 0.859
The distribution was found
to be normally distrib-
uted

Constituent: Molybdenum Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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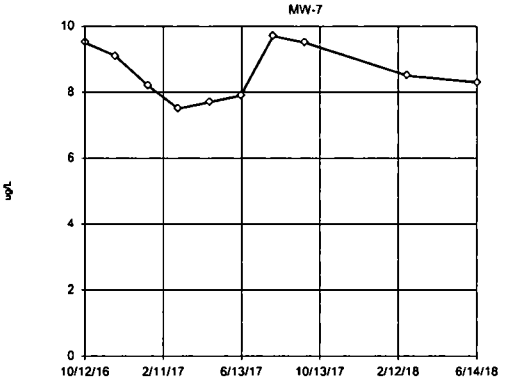
EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon's will not be run
No suspect values identified
or unable to establish
suspect values
Mean 8.59 std dev 0.8062
critical Tn 2.176

Normality test used
Shapiro Wilk @alpha = 0.1
Calculated = 0.9188
Critical = 0.869
The distribution was found
to be normally distrib-
uted

Constituent: Molybdenum Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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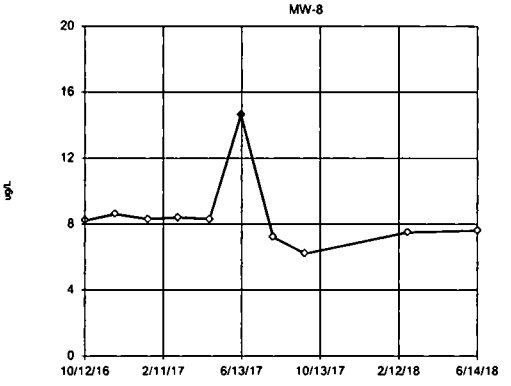
Dixon's Outlier Test

MW-8



n = 10

Statistical outlier is
drawn as solid
Testing for 1 high and
1 low outliers
Mean = 8.49
Std Dev = 2.265
14.6 (or) c = 0.8108
tabl = 0.477,
6.2 c = 0.4167
tabl = 0.477,
Alpha = 0.05

Normality test used
Shapiro Wilk @alpha = 0.1
Calculated = 0.8871
Critical = 0.851
The distribution after
removal of suspect val-
ue, was found to be nor-
mally distributed

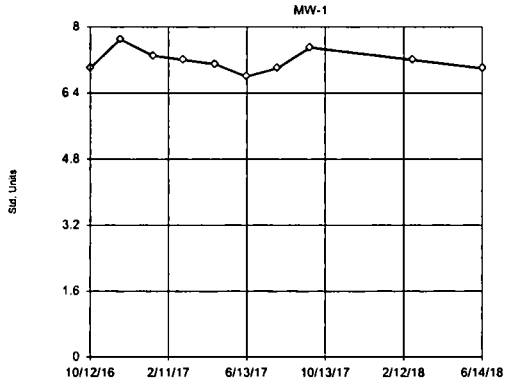
Constituent: Molybdenum Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 7.18 std. dev. 0.2656
critical Tn 2.176

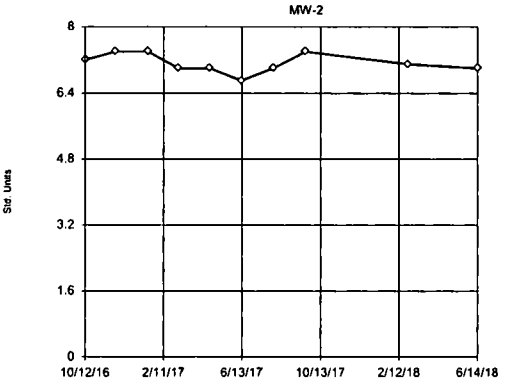
Normality test used
Shapiro Wilk @alpha = 0.1
Calculated = 0.9414
Critical = 0.869
The distribution was found to be normally distributed

Constituent: pH Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-2



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 7.12 std. dev. 0.23
critical Tn 2.176

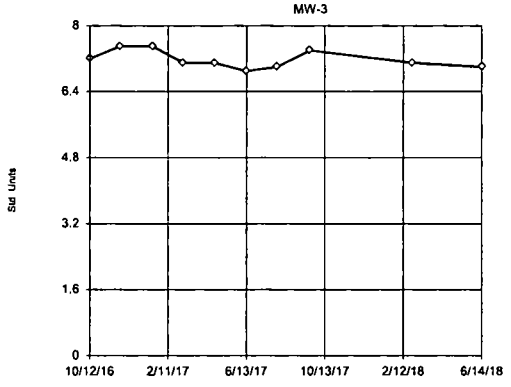
Normality test used
Shapiro Wilk @alpha = 0.1
Calculated = 0.8807
Critical = 0.869
The distribution was found to be normally distributed

Constituent: pH Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 7.18 std. dev. 0.215
critical Tn 2.176

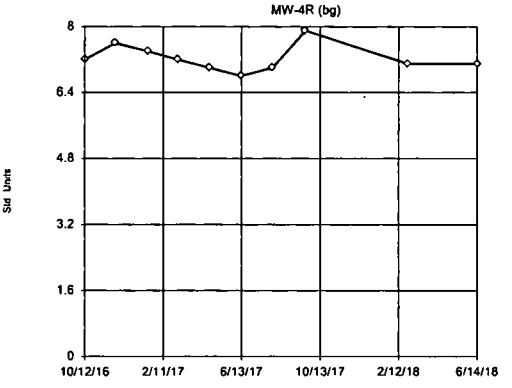
Normality test used
Shapiro Wilk @alpha = 0.1
Calculated = 0.853
Critical = 0.869
The distribution was found to be normally distributed

Constituent: pH Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 7.23 std. dev. 0.3234
critical Tn 2.176

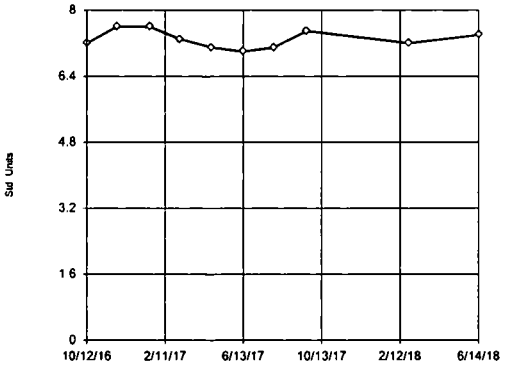
Normality test used
Shapiro Wilk @alpha = 0.1
Calculated = 0.8204
Critical = 0.869
The distribution was found to be normally distributed

Constituent: pH Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 7.3, std. dev. 0.216
critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9341
Critical = 0.869
The distribution was found to be normally distributed

Constituent: pH Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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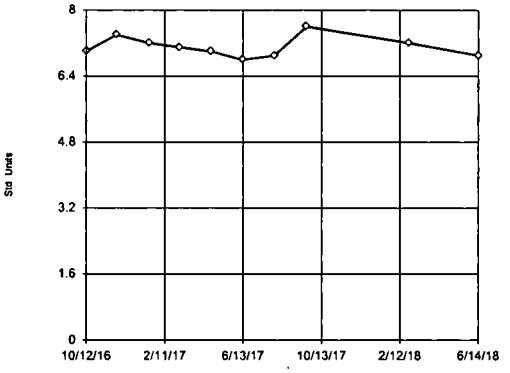
EPA Screening (suspected outliers for Dixon's Test)

MW-6



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 7.11, std. dev. 0.247,
critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9348
Critical = 0.869
The distribution was found to be normally distributed

Constituent: pH Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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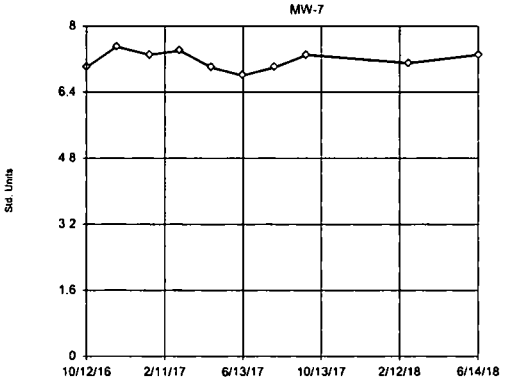
EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 7.17, std. dev. 0.2214
critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9355
Critical = 0.869
The distribution was found to be normally distributed

Constituent: pH Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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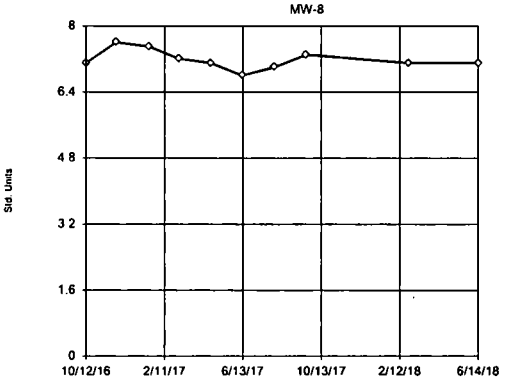
EPA Screening (suspected outliers for Dixon's Test)

MW-8



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 7.18, std. dev. 0.2348
critical Tn 2.176

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0.9288
Critical = 0.869
The distribution was found to be normally distributed

Constituent: pH Analysis Run 4/25/2019 6:53 PM View: Time Series

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

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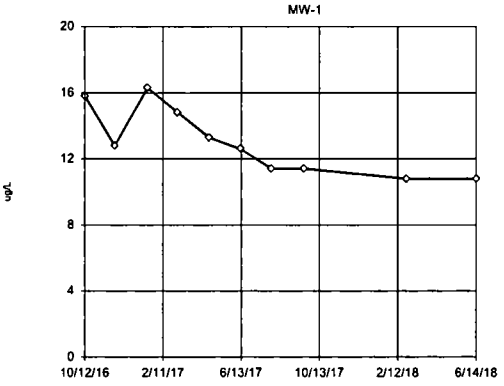
EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 13, std dev 2 029, critical Tn 2 176

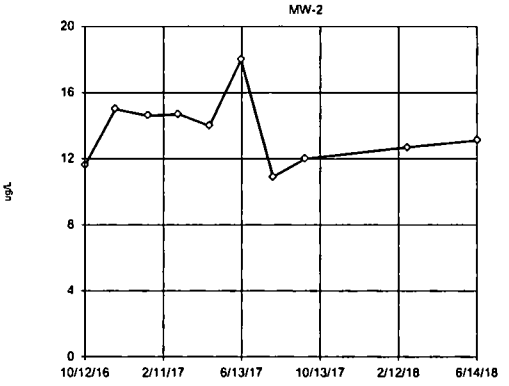
Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 8985
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Selenium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-2



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 13 64 std dev 2 07, critical Tn 2 176

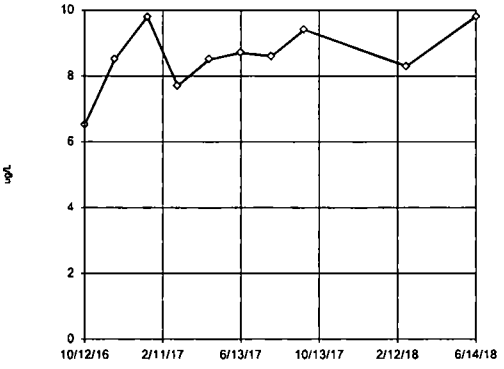
Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9461
Critical = 0.869
The distribution was found to be normally distributed

Constituent: Selenium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-3



n = 10

No statistical outliers
Testing for 1 low outlier.
Mean = 8 58,
Std. Dev = 0.992,
6 5 (o) c = 0 3636
tabl = 0 477,
Alpha = 0 05

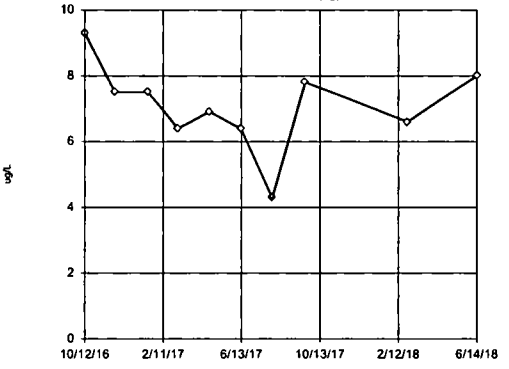
Normality test used:
Shapiro Wilk @alpha = 0.1
Calculated = 0 9103
Critical = 0 859
The distribution was found to be normally distributed

Constituent: Selenium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-4R (bg)



n = 10

Statistical outlier is drawn as solid.
Testing for 1 low outlier,
Mean = 7.07,
Std. Dev. = 1.315,
4 3 (o); c = 0 5676
tabl = 0 477,
Alpha = 0 05

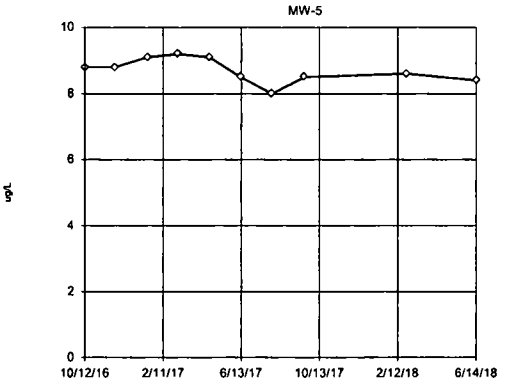
Normality test used,
Shapiro Wilk @alpha = 0.1
Calculated = 0 903
Critical = 0 859
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Selenium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series
Fremont Dept. of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 8 7 std dev 0 3742
critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9488
Critical = 0 859
The distribution was found to be normally distributed

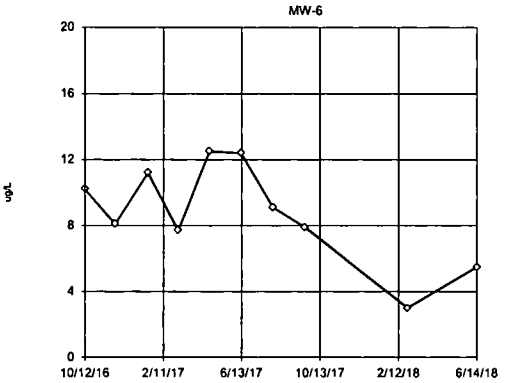
Constituent: Selenium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-6



n = 10

No statistical outliers
Testing for 1 low outlier
Mean = 8 76
Std Dev = 3 009
3 c = 0 266
tabl = 0 477
Alpha = 0 05

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9481
Critical = 0 859
The distribution was found to be normally distributed

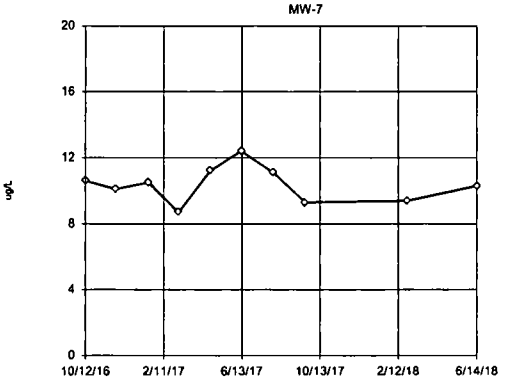
Constituent: Selenium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon s will not be run
No suspect values identified or unable to establish suspect values
Mean 10 36 std dev
1 073 critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9769
Critical = 0 859
The distribution was found to be normally distributed

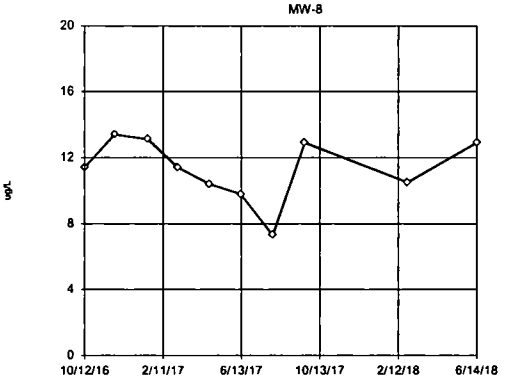
Constituent: Selenium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-8



n = 10

No statistical outliers
Testing for 1 low outlier.
Mean = 11 31.
Std Dev = 1 9
7.3: c = 0 431
tabl = 0 477.
Alpha = 0 05

Normality test used.
Shapiro Wilk @alpha = 0 1
Calculated = 0 8922
Critical = 0 859
The distribution was found to be normally distributed

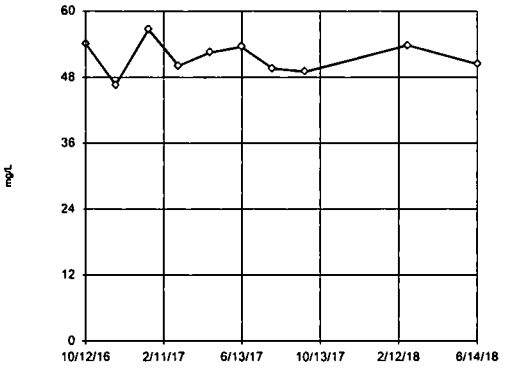
Constituent: Selenium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 51 63 std dev 2 999, critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9727
Critical = 0 869
The distribution was found to be normally distributed

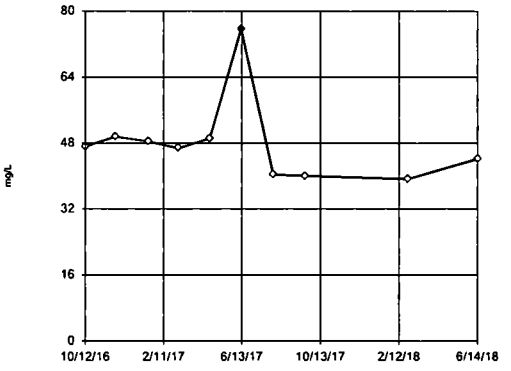
Constituent: Sulfate Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-2



n = 10

Statistical outlier is drawn as solid
Testing for 1 high outlier.
Mean = 48 08
Std. Dev. = 10 45
75.7; c = 0.7331
tabl = 0 477,
Alpha = 0 05

Normality test used:
Shapiro Wilk@alpha = 0 1
Calculated = 0 868
Critical = 0 859
The distribution, after removal of suspect value, was found to be normally distributed.

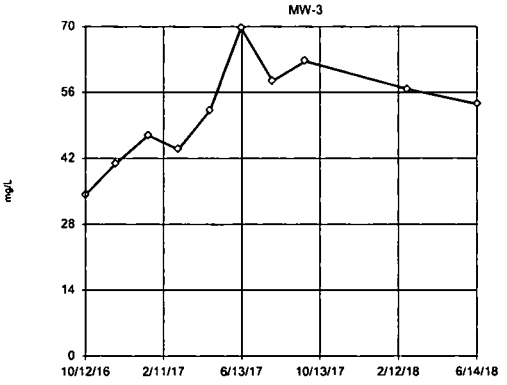
Constituent: Sulfate Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 51 88 std dev 10 97, critical Tn 2 176

Normality test used
Shapiro Wilk @alpha = 0 1
Calculated = 0 9935
Critical = 0 869
The distribution was found to be normally distributed

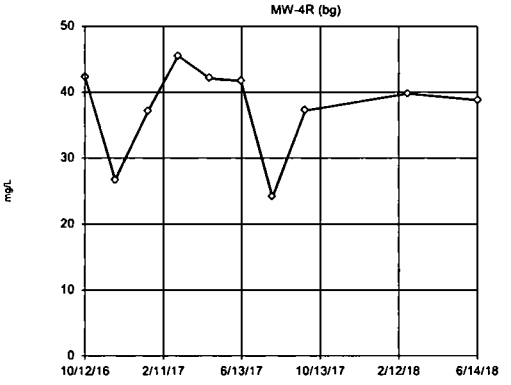
Constituent: Sulfate Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-4R (bg)



n = 10

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Data were x^5 transformed to achieve best W statistic (graph shown in original units)

High cutoff = 52.78, low cutoff = -47.18, based on IQR multiplier of 3.

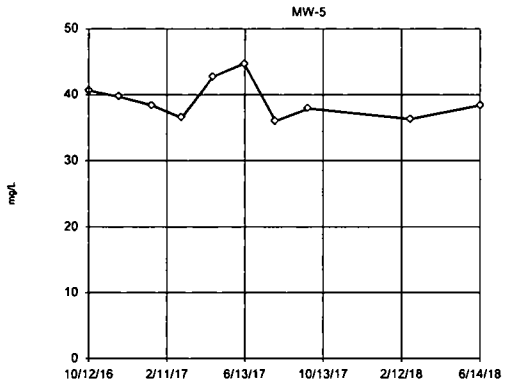
Constituent: Sulfate Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 39 12, std dev 2 859, critical Tn 2 176

Normality test used.
Shapiro Wilk@alpha = 0 1
Calculated = 0 9133
Critical = 0 869
The distribution was found to be normally distributed

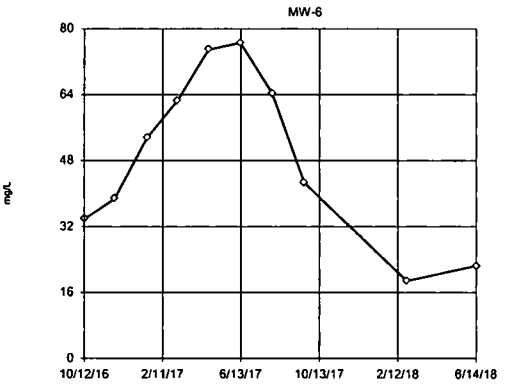
Constituent. Sulfate Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-6



n = 10

Dixon's will not be run.
No suspect values identified or unable to establish suspect values
Mean 48 84 std dev 20 69 critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9417
Critical = 0 869
The distribution was found to be normally distributed

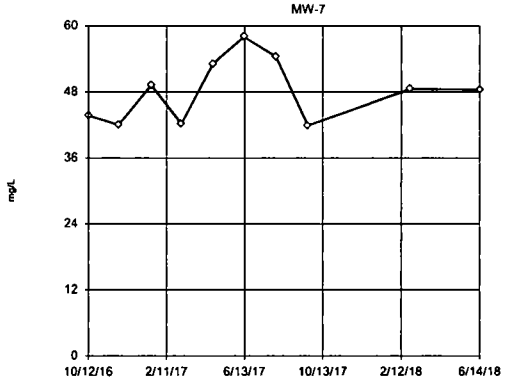
Constituent: Sulfate Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 46 14 std dev 5 715, critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9073
Critical = 0 869
The distribution was found to be normally distributed

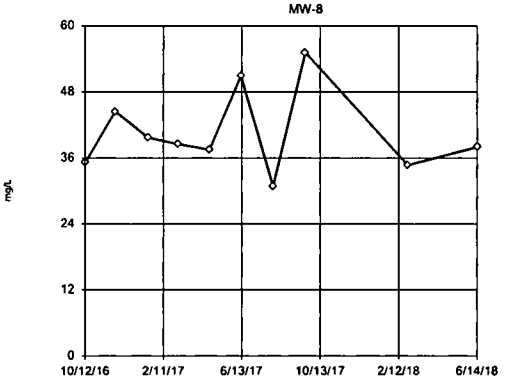
Constituent: Sulfate Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-8



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 40 48 std dev 7 536 critical Tn 2 176

Normality test used.
Shapiro Wilk@alpha = 0 1
Calculated = 0 9039
Critical = 0 869
The distribution was found to be normally distributed.

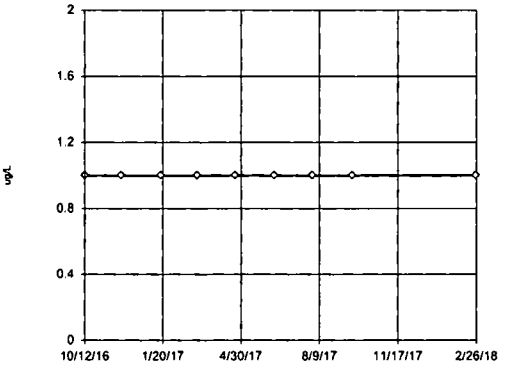
Constituent: Sulfate Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-1



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

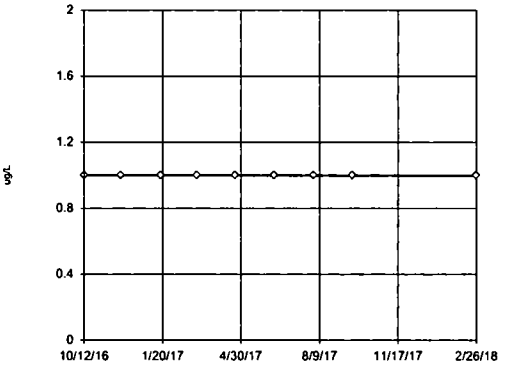
Constituent: Thallium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-2



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

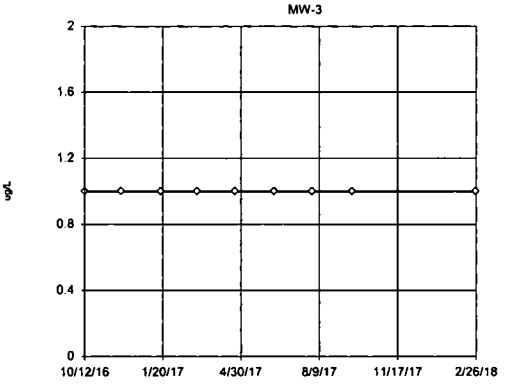
Constituent: Thallium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-3



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

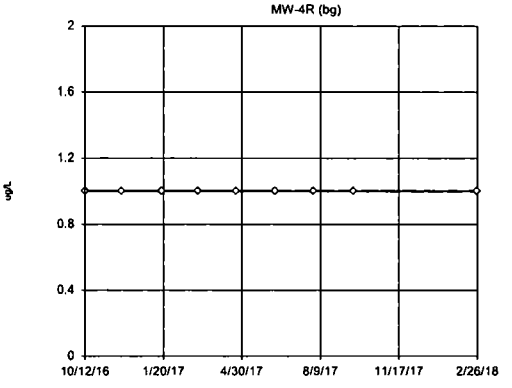
Constituent: Thallium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-4R (bg)



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal.

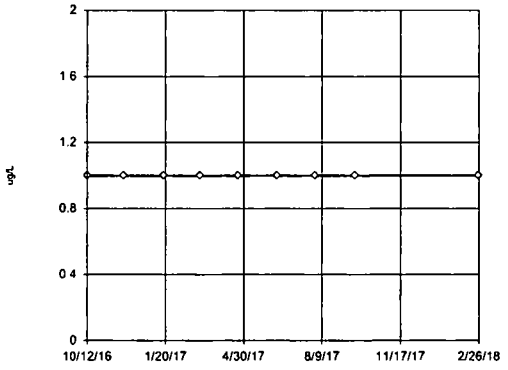
Constituent: Thallium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-5



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

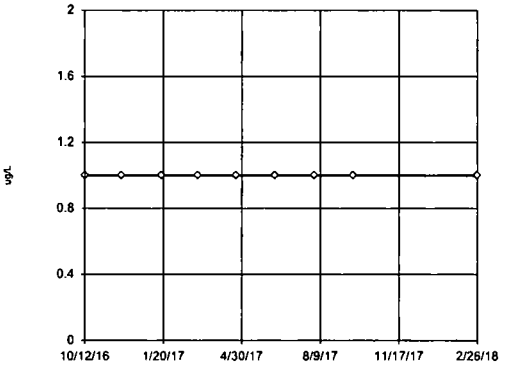
Constituent: Thallium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-6



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

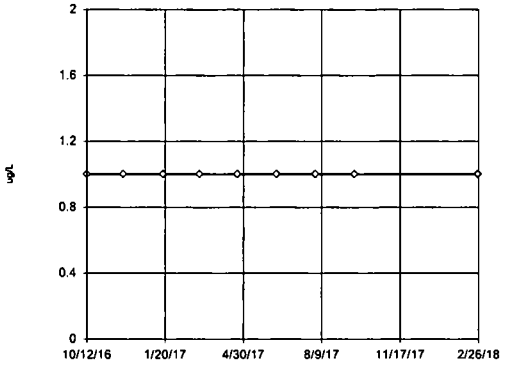
Constituent: Thallium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-7



n = 9

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

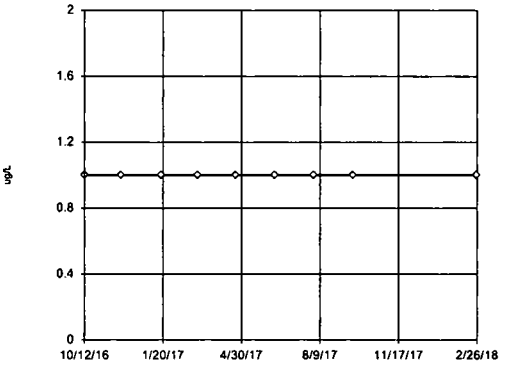
Constituent: Thallium [total] Analysis Run 4/25/2019 6:53 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-8



n = 9

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level

Ladder of Powers transformations did not improve normality; analysis run on raw data

The results were invalidated, because the lower and upper quartiles are equal

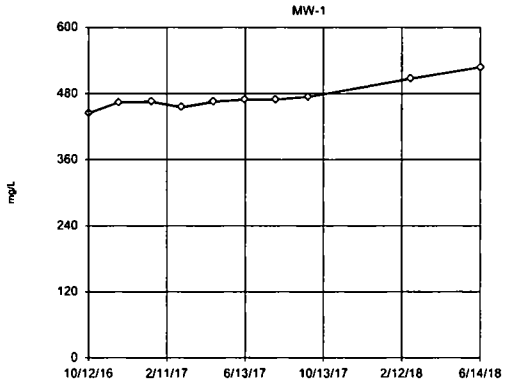
Constituent: Thallium [total] Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-1



n = 10

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units)

High cutoff = 595 4, low cutoff = 378 3, based on IQR multiplier of 3

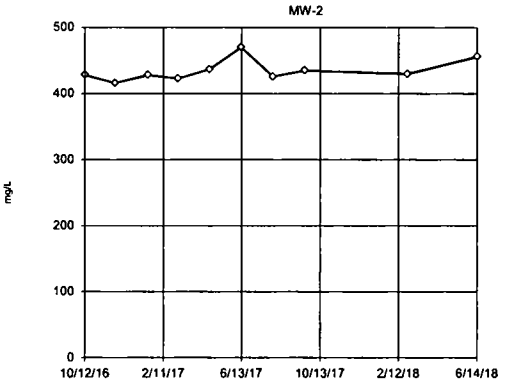
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Tukey's Outlier Screening

MW-2



n = 10

No outliers found
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0 1 alpha level

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 519 1, low cutoff = 365, based on IQR multiplier of 3.

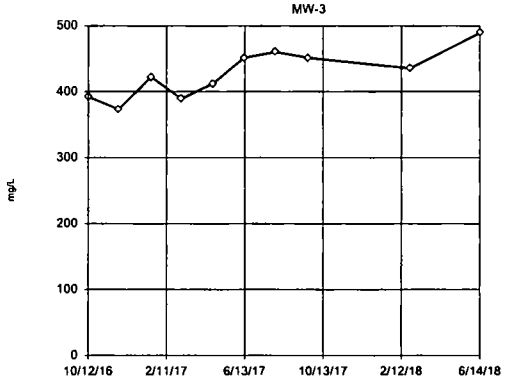
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 427 4 std dev 36 49 critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 971
Critical = 0 869
The distribution was found to be normally distributed

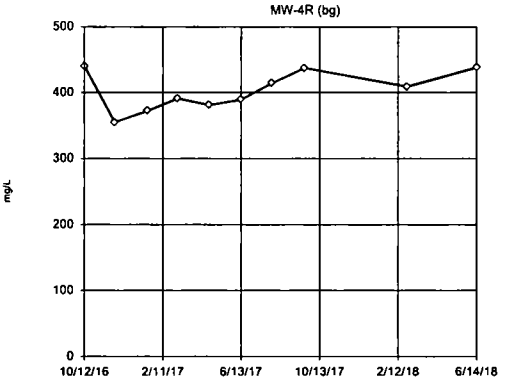
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 402 6 std dev 29 8, critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 931
Critical = 0 869
The distribution was found to be normally distributed

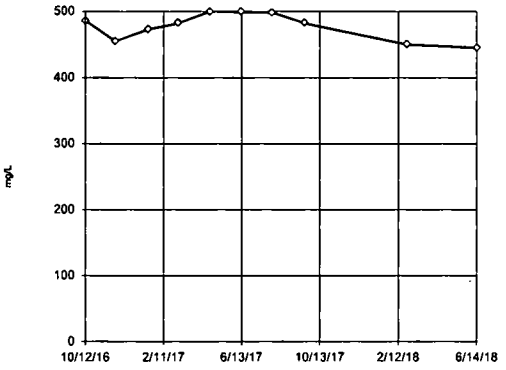
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-5



n = 10

Dixon s will not be run
No suspect values identified
or unable to establish
suspect values
Mean 477, std dev 20 65
critical Tn 2 176

Normality test used
Shapiro Wilk @ alpha = 0 1
Calculated = 0 8913
Critical = 0 869
The distribution was found
to be normally distrib-
uted

Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:54 PM View: Time Series

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

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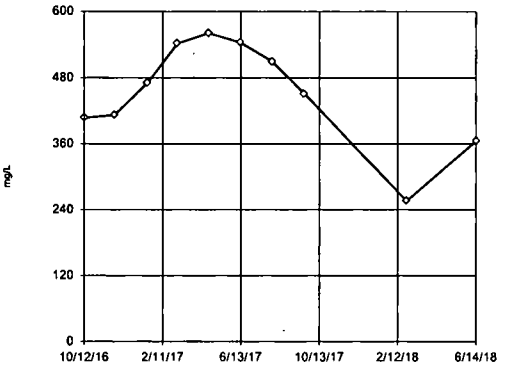
Dixon's Outlier Test

MW-6



n = 10

No statistical outliers.
Testing for 1 low outlier
Mean = 451.7,
Std Dev = 95.24
25d c = 0 3785
tabl = 0 477,
Alpha = 0 05

Normality test used
Shapiro Wilk @ alpha = 0 1
Calculated = 0 9339
Critical = 0 859
The distribution was found
to be normally distrib-
uted.

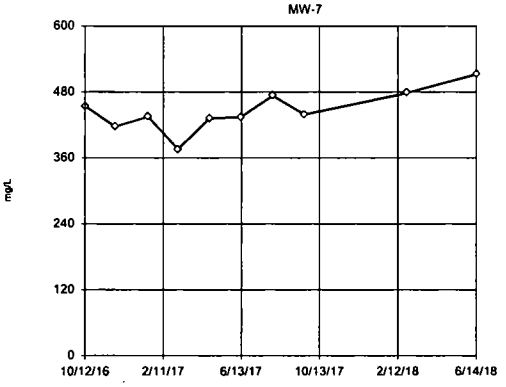
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon s will not be run
No suspect values identified
or unable to establish
suspect values
Mean 445 std dev 37 14,
critical Tn 2 176

Normality test used
Shapiro Wilk @ alpha = 0 1
Calculated = 0 9561
Critical = 0 869
The distribution was found
to be normally distrib-
uted

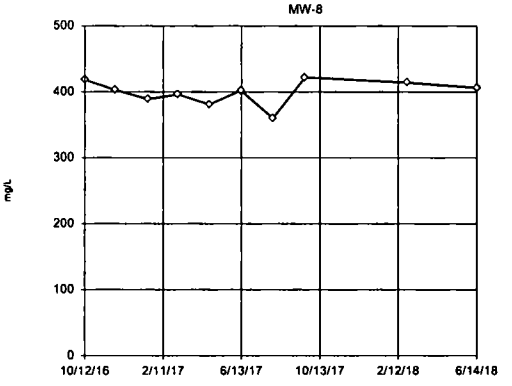
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-8



n = 10

Dixon's will not be run
No suspect values identified
or unable to establish
suspect values
Mean 399 1, std dev
18 63, critical Tn 2 176

Normality test used
Shapiro Wilk @ alpha = 0 1
Calculated = 0 9407
Critical = 0 869
The distribution was found
to be normally distrib-
uted

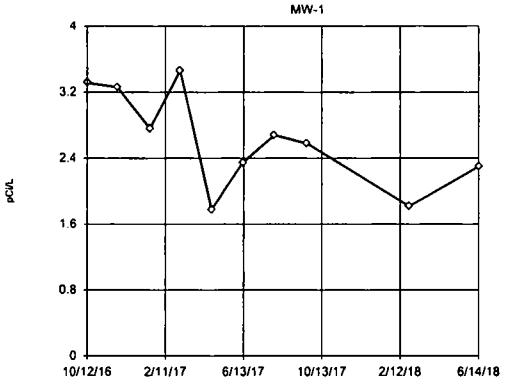
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-1



n = 10

Dixon's will not be run.
No suspect values identified
or unable to establish
suspect values
Mean 2 63, std dev 0 5903
critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 937
Critical = 0 869
The distribution was found
to be normally distrib-
uted

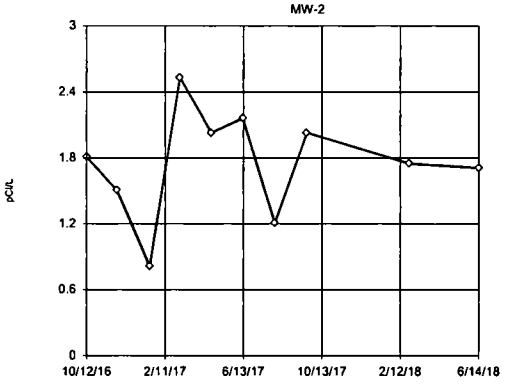
Constituent: Total Radium Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-2



n = 10

No statistical outliers
Testing for 1 low outlier
Mean = 1.755
Std Dev = 0 4903
0 814 c = 0 2942
tabl = 0 477,
Alpha = 0 05

Normality test used
Shapiro Wilk@alpha = 0.1
Calculated = 0 9855
Critical = 0 859
The distribution was found
to be normally distrib-
uted

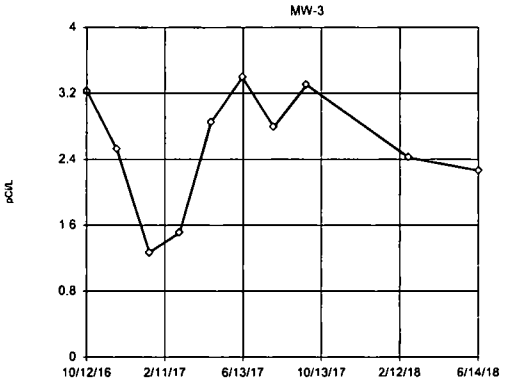
Constituent: Total Radium Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-3



n = 10

Dixon's will not be run
No suspect values identified
or unable to establish
suspect values
Mean 2 554 std dev
0 7226 critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9177
Critical = 0 869
The distribution was found
to be normally distrib-
uted

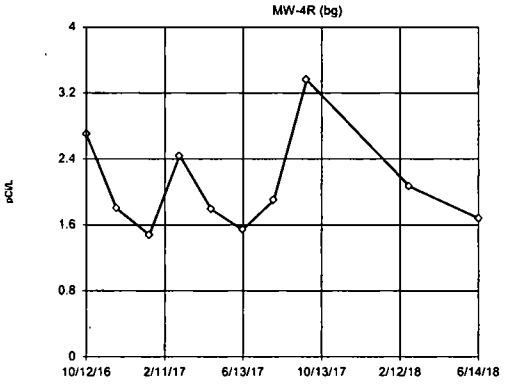
Constituent: Total Radium Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-4R (bg)



n = 10

Dixon's will not be run
No suspect values identified
or unable to establish
suspect values
Mean 2 076 std dev
0 5924 critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 8741
Critical = 0 869
The distribution was found
to be normally distrib-
uted.

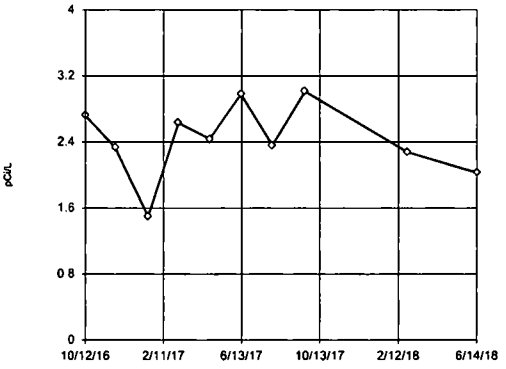
Constituent: Total Radium Analysis Run 4/25/2019 6:54 PM View: Time Series

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Dixon's Outlier Test

MW-5



n = 10

No statistical outliers
Testing for 1 low outlier.
Mean = 2.429
Std. Dev = 0 4504
1.5 c = 0 3581
total = 0 477
Alpha = 0 05.

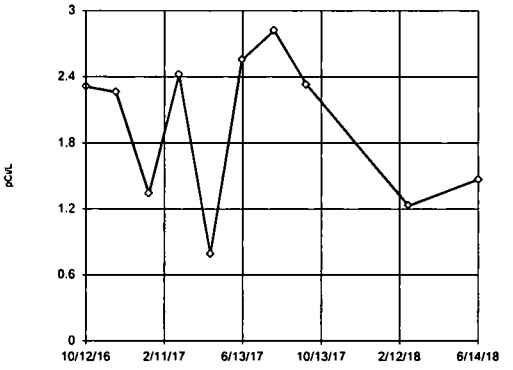
Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 9467
Critical = 0 859
The distribution was found to be normally distributed

Constituent: Total Radium Analysis Run 4/25/2019 6:54 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-6



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 1 952 std dev 0 6812, critical Tn 2.176

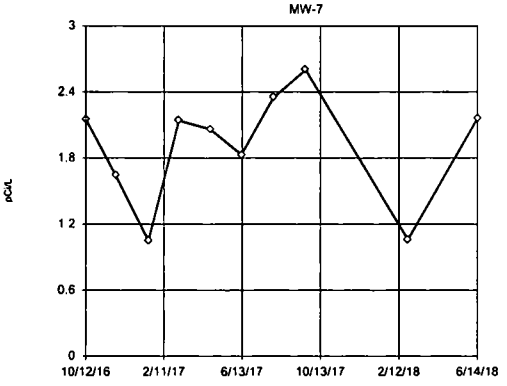
Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 8967
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Total Radium Analysis Run 4/25/2019 6:54 PM View: Time Series
Fremont Dept of Utilities Client SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-7



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 1 904 std dev 0 5171, critical Tn 2 176

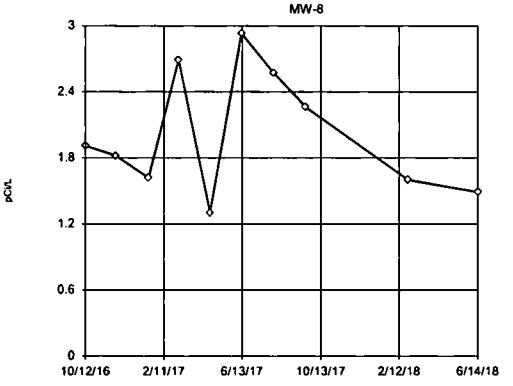
Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 8953
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Total Radium Analysis Run 4/25/2019 6:54 PM View: Time Series
Fremont Dept. of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

EPA Screening (suspected outliers for Dixon's Test)

MW-8



n = 10

Dixon's will not be run
No suspect values identified or unable to establish suspect values
Mean 2 019 std dev 0 5602, critical Tn 2 176

Normality test used
Shapiro Wilk@alpha = 0 1
Calculated = 0 929
Critical = 0 869
The distribution was found to be normally distributed

Constituent: Total Radium Analysis Run 4/25/2019 6:54 PM View: Time Series
Fremont Dept. of Utilities Client SCS Engineers Data: Fremont Department of Utilities Groundwater

A.2 Sen's Slope/Mann-Kendall Analysis

Trend Test

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 7:21 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Antimony [total] (ug/L)	MW-1	0	0	23	No	9	100	n/a	n/a	0.02	NP
Antimony [total] (ug/L)	MW-2	0	0	23	No	9	100	n/a	n/a	0.02	NP
Antimony [total] (ug/L)	MW-3	0	0	23	No	9	100	n/a	n/a	0.02	NP
Antimony [total] (ug/L)	MW-4R (bg)	0	0	23	No	9	100	n/a	n/a	0.02	NP
Antimony [total] (ug/L)	MW-5	0	0	23	No	9	100	n/a	n/a	0.02	NP
Antimony [total] (ug/L)	MW-6	0	0	23	No	9	100	n/a	n/a	0.02	NP
Antimony [total] (ug/L)	MW-7	0	0	23	No	9	100	n/a	n/a	0.02	NP
Antimony [total] (ug/L)	MW-8	0	0	23	No	9	100	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-1	0.3802	21	27	No	10	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-2	-0.509	-23	-27	No	10	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-3	-0.1022	-11	-27	No	10	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-4R (bg)	-0.1233	-7	-27	No	10	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-5	-0.1843	-13	-27	No	10	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-6	0.722	26	27	No	10	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-7	0.05984	8	27	No	10	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-8	-0.2139	-21	-27	No	10	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-1	-8.634	-17	-27	No	10	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-2	2.094	8	27	No	10	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-3	11.17	25	27	No	10	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-4R (bg)	10.51	14	27	No	10	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-5	-10.33	-17	-27	No	10	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-6	-39.92	-14	-27	No	10	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-7	8.632	16	27	No	10	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-8	-12.41	-17	-27	No	10	0	n/a	n/a	0.02	NP
BERYLIUM (ug/L)	MW-1	0	0	23	No	9	100	n/a	n/a	0.02	NP
BERYLIUM (ug/L)	MW-2	0	0	23	No	9	100	n/a	n/a	0.02	NP
BERYLIUM (ug/L)	MW-3	0	0	23	No	9	100	n/a	n/a	0.02	NP
BERYLIUM (ug/L)	MW-4R (bg)	0	0	23	No	9	100	n/a	n/a	0.02	NP
BERYLIUM (ug/L)	MW-5	0	0	23	No	9	100	n/a	n/a	0.02	NP
BERYLIUM (ug/L)	MW-6	0	0	23	No	9	100	n/a	n/a	0.02	NP
BERYLIUM (ug/L)	MW-7	0	0	23	No	9	100	n/a	n/a	0.02	NP
BERYLIUM (ug/L)	MW-8	0	0	23	No	9	100	n/a	n/a	0.02	NP
Boron (ug/L)	MW-1	15.91	25	27	No	10	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-2	5.619	10	23	No	9	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-3	1.945	9	27	No	10	40	n/a	n/a	0.02	NP
Boron (ug/L)	MW-4R (bg)	-30.42	-8	-27	No	10	30	n/a	n/a	0.02	NP
Boron (ug/L)	MW-5	6.324	11	27	No	10	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-6	-42.14	-21	-27	No	10	20	n/a	n/a	0.02	NP
Boron (ug/L)	MW-7	8.975	9	27	No	10	0	n/a	n/a	0.02	NP
Boron (ug/L)	**MW-8**	**34.41**	**27**	**23**	**Yes**	**9**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Cadmium [total] (ug/L)	MW-1	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cadmium [total] (ug/L)	MW-2	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cadmium [total] (ug/L)	MW-3	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cadmium [total] (ug/L)	MW-4R (bg)	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cadmium [total] (ug/L)	MW-5	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cadmium [total] (ug/L)	MW-6	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cadmium [total] (ug/L)	MW-7	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cadmium [total] (ug/L)	MW-8	0	0	23	No	9	100	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-1	5.739	16	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2	3.687	12	27	No	10	0	n/a	n/a	0.02	NP

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Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Calcium (mg/L)	MW-3	12.88	27	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-4R (bg)	1.75	4	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	-3.209	-3	-27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	-12.07	-5	-27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-7	8.508	27	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-8	-1.49	-5	-27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-1	0.298	3	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2	-2.317	-20	-23	No	9	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3	1.616	9	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4R (bg)	5.258	14	23	No	9	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	-0.2407	-1	-27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	4.448	4	23	No	9	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7	2.235	3	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-8	2.98	9	27	No	10	0	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-1	0	0	23	No	9	88.89	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-2	0	0	23	No	9	100	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-3	0	0	23	No	9	100	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-4R (bg)	0	0	23	No	9	100	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-5	0	0	23	No	9	100	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-6	0	0	23	No	9	100	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-7	0	0	23	No	9	100	n/a	n/a	0.02	NP
Chromium [total] (ug/L)	MW-8	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cobalt [total] (ug/L)	MW-1	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cobalt [total] (ug/L)	MW-2	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cobalt [total] (ug/L)	MW-3	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cobalt [total] (ug/L)	MW-4R (bg)	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cobalt [total] (ug/L)	MW-5	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cobalt [total] (ug/L)	MW-6	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cobalt [total] (ug/L)	MW-7	0	0	23	No	9	100	n/a	n/a	0.02	NP
Cobalt [total] (ug/L)	MW-8	0	0	23	No	9	100	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-1	0	-7	-27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2	-0.07474	-20	-27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3	-0.04011	-18	-27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4R (bg)	-0.01233	-2	-27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	0	0	27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.07526	24	27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7	0.03614	4	27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-8	-0.00...	-5	-27	No	10	0	n/a	n/a	0.02	NP
Lead [total] (ug/L)	MW-1	0	0	23	No	9	100	n/a	n/a	0.02	NP
Lead [total] (ug/L)	MW-2	0	0	23	No	9	100	n/a	n/a	0.02	NP
Lead [total] (ug/L)	MW-3	0	0	23	No	9	100	n/a	n/a	0.02	NP
Lead [total] (ug/L)	MW-4R (bg)	0	3	20	No	8	87.5	n/a	n/a	0.02	NP
Lead [total] (ug/L)	MW-5	0	0	23	No	9	100	n/a	n/a	0.02	NP
Lead [total] (ug/L)	MW-6	0	7	27	No	10	90	n/a	n/a	0.02	NP
Lead [total] (ug/L)	MW-7	0	0	23	No	9	100	n/a	n/a	0.02	NP
Lead [total] (ug/L)	MW-8	0	0	23	No	9	100	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-1	-0.8634	-3	-27	No	10	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-2	-0.09035	-1	-23	No	9	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-3	0.6134	5	27	No	10	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-4R (bg)	0.5959	7	27	No	10	0	n/a	n/a	0.02	NP

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Constituent	Well	Slope	Calc.	Cntical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Lithium (ug/L)	MW-5	-0.149	-2	-27	No	10	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-6	-4 24	-13	-27	No	10	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-7	3.129	15	27	No	10	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-8	1.101	19	23	No	9	0	n/a	n/a	0.02	NP
Mercury (ug/L)	MW-1	0	0	23	No	9	100	n/a	n/a	0.02	NP
Mercury (ug/L)	MW-2	0	0	23	No	9	100	n/a	n/a	0.02	NP
Mercury (ug/L)	MW-3	0	0	23	No	9	100	n/a	n/a.	0.02	NP
Mercury (ug/L)	MW-4R (bg)	0	0	23	No	9	100	n/a	n/a	0.02	NP
Mercury (ug/L)	MW-5	0	0	23	No	9	100	n/a	n/a	0.02	NP
Mercury (ug/L)	MW-6	0	0	23	No	9	100	n/a	n/a	0.02	NP
Mercury (ug/L)	MW-7	0	0	23	No	9	100	n/a	n/a	0.02	NP
Mercury (ug/L)	MW-8	0	0	23	No	9	100	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-1	0.2296	12	27	No	10	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	**MW-2**	**-1.355**	**-28**	**-27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Molybdenum (ug/L)	**MW-3**	**2.096**	**32**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Molybdenum (ug/L)	MW-4R (bg)	-0.7842	-6	-27	No	10	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-5	-0.8377	-12	-27	No	10	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-6	-2.495	-26	-27	No	10	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-7	0	0	27	No	10	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-8	-0.7338	-15	-23	No	9	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-1	-0.157	-9	-27	No	10	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-2	-0.07271	-10	-27	No	10	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-3	-0.1881	-18	-27	No	10	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-4R (bg)	-0.1022	-10	-27	No	10	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-5	-0.1233	-6	-27	No	10	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-6	-0.1246	-8	-27	No	10	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-7	0	-3	-27	No	10	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-8	-0.2734	-13	-27	No	10	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	**MW-1**	**-3.635**	**-35**	**-27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Selenium [total] (ug/L)	MW-2	-1.117	-7	-27	No	10	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-3	1.11	17	27	No	10	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-4R (bg)	-0.5387	-4	-23	No	9	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-5	-0.3699	-18	-27	No	10	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-6	-3.281	-17	-27	No	10	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-7	-0.1795	-3	-27	No	10	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-8	-0.6544	-11	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-1	-1.241	-5	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2	-5.022	-20	-23	No	9	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3	21.64	25	27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4R (bg)	-2.094	-7	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	-1.897	-12	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-6.821	-1	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7	3.49	5	27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-8	-0.3925	-3	-27	No	10	0	n/a	n/a	0.02	NP
Thallium [total] (ug/L)	MW-1	0	0	23	No	9	100	n/a	n/a	0.02	NP
Thallium [total] (ug/L)	MW-2	0	0	23	No	9	100	n/a	n/a	0.02	NP
Thallium [total] (ug/L)	MW-3	0	0	23	No	9	100	n/a	n/a	0.02	NP
Thallium [total] (ug/L)	MW-4R (bg)	0	0	23	No	9	100	n/a	n/a	0.02	NP
Thallium [total] (ug/L)	MW-5	0	0	23	No	9	100	n/a	n/a	0.02	NP
Thallium [total] (ug/L)	MW-6	0	0	23	No	9	100	n/a	n/a	0.02	NP

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Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Thallium [total] (ug/L)	MW-7	0	0	23	No	9	100	n/a	n/a	0.02	NP
Thallium [total] (ug/L)	MW-8	0	0	23	No	9	100	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-1**	**35.78**	**39**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	MW-2	14.84	18	27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-3**	**62.78**	**28**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	MW-4R (bg)	43.32	19	27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-7.449	-10	-27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	-30.47	-5	-27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-7	38.85	23	27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-8	1.945	1	27	No	10	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-1	-0.7768	-23	-27	No	10	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-2	-0.04363	-2	-27	No	10	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-3	-0.08022	-1	-27	No	10	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-4R (bg)	-0.02483	-1	-27	No	10	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-5	-0.1896	-5	-27	No	10	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-6	-0.09938	-1	-27	No	10	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-7	0.2491	9	27	No	10	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-8	-0.2254	-9	-27	No	10	0	n/a	n/a	0.02	NP

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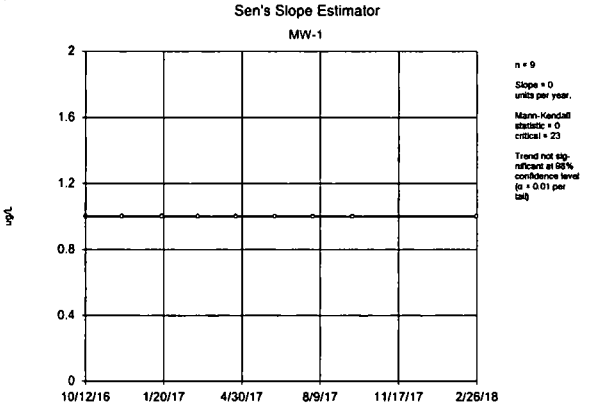

Constituent: Antimony [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

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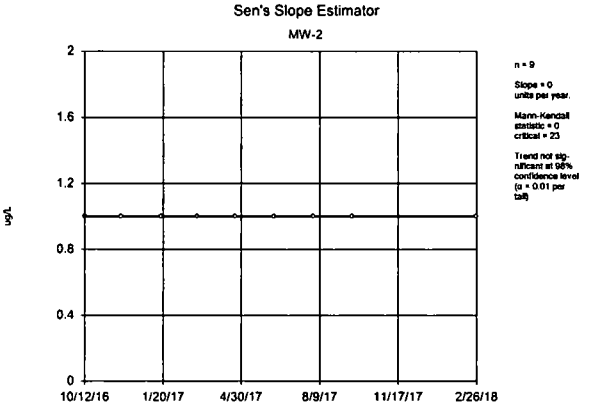

Constituent: Antimony [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
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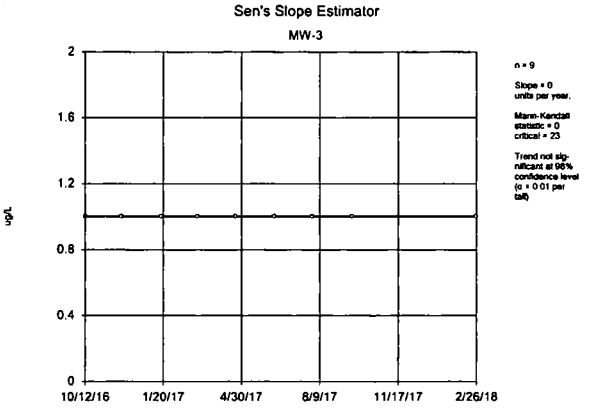

Constituent: Antimony [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
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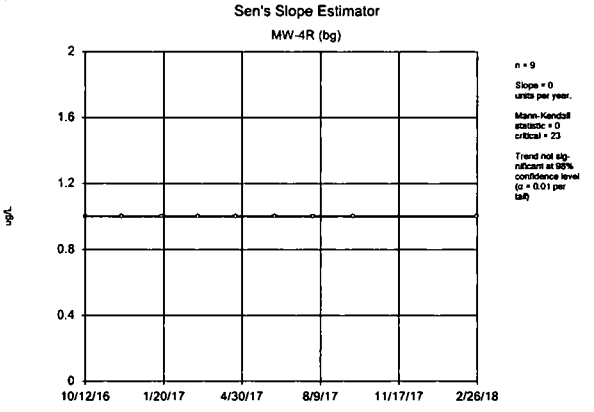

Constituent: Antimony [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
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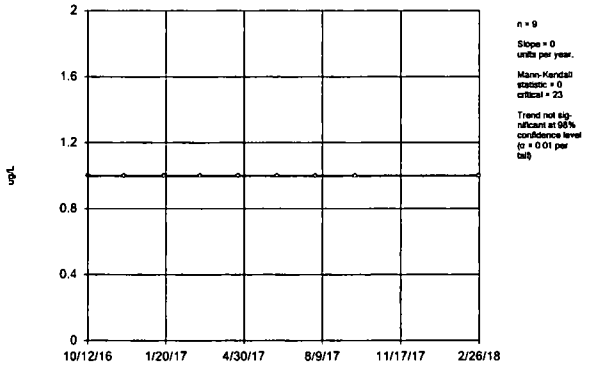
Sen's Slope Estimator

MW-5



Constituent: Antimony [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
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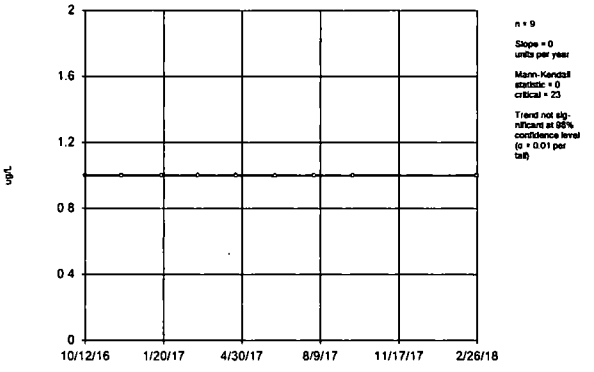
Sen's Slope Estimator

MW-6



Constituent: Antimony [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

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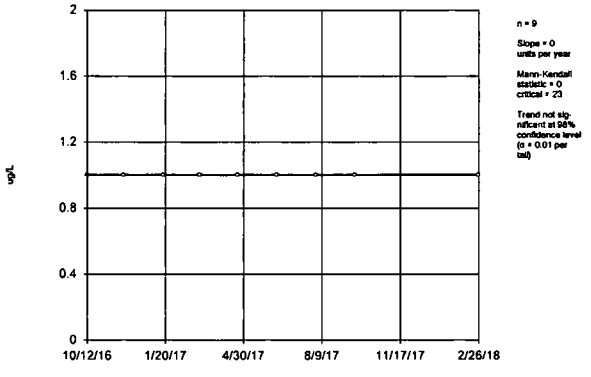
Sen's Slope Estimator

MW-7



Constituent: Antimony [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
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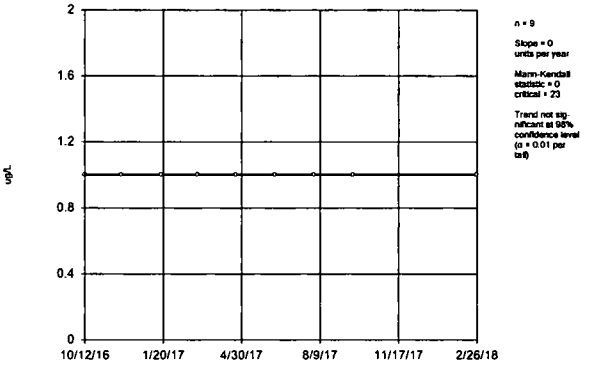
Sen's Slope Estimator

MW-8



Constituent: Antimony [total] Analysis Run 4/25/2019 7:19 PM View. TREND TEST - bkg
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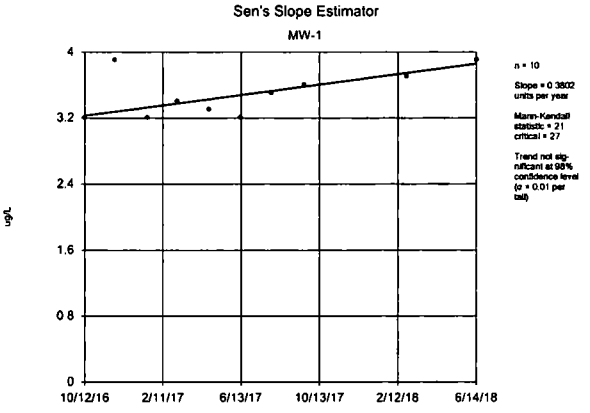

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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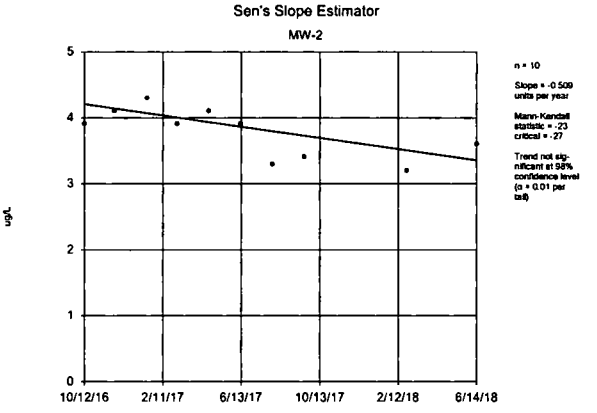
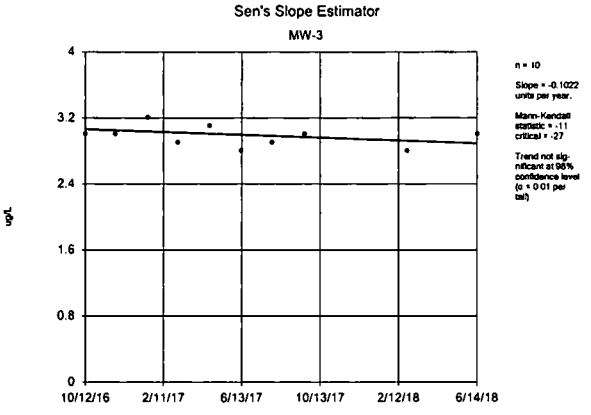


Constituent: Arsenic [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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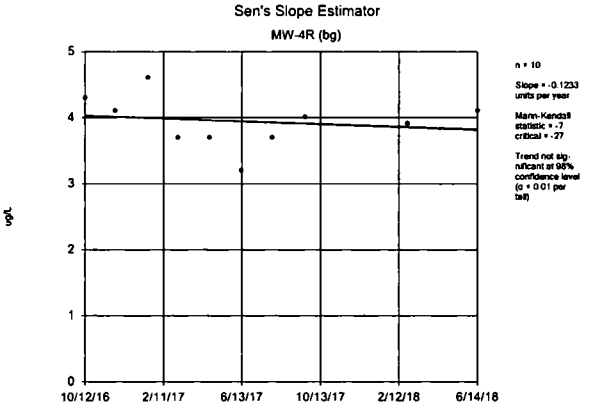
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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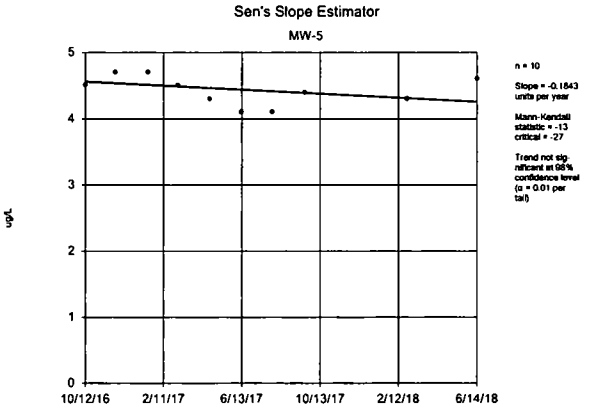
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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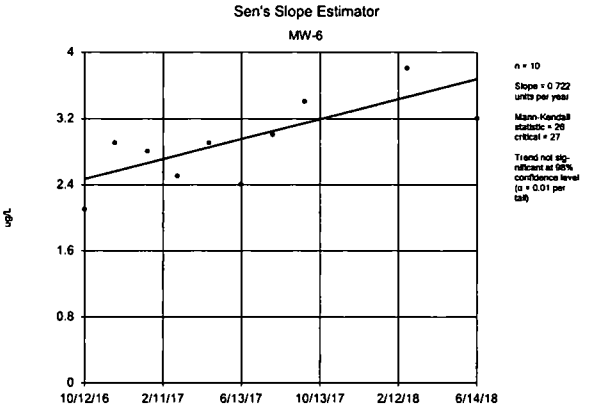
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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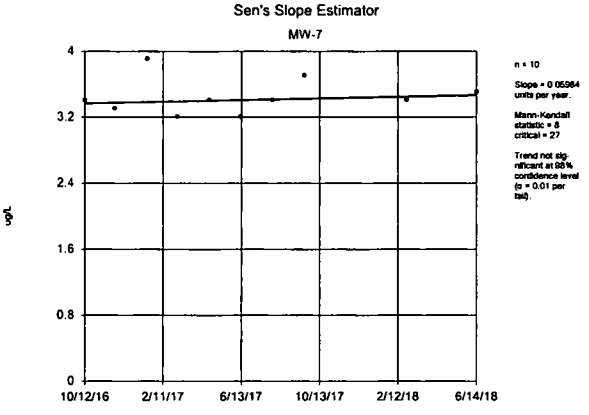
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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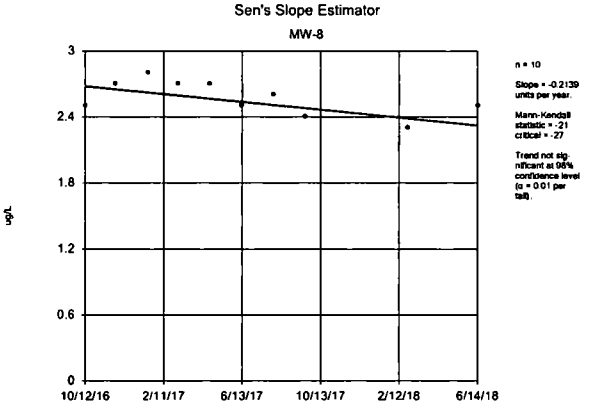

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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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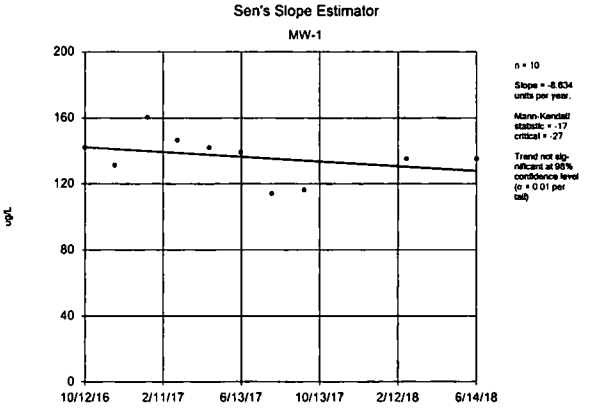

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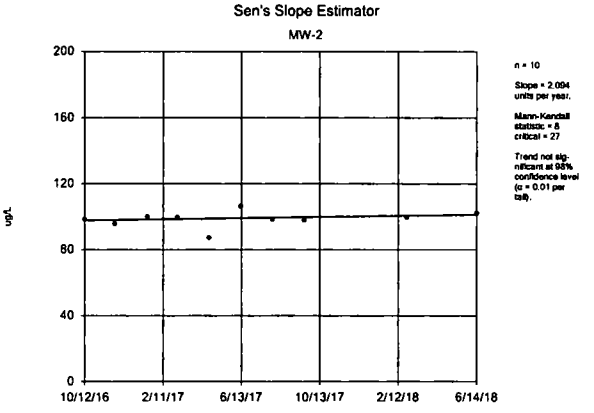

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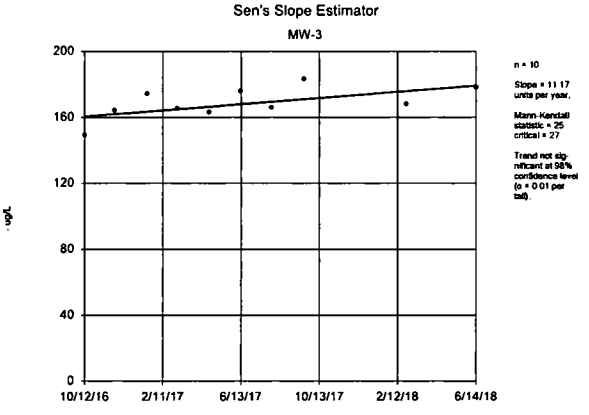

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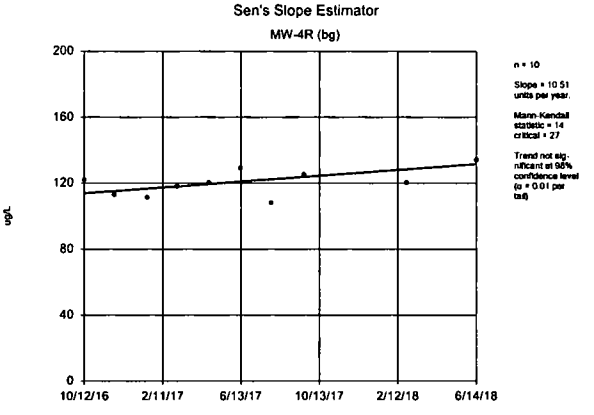

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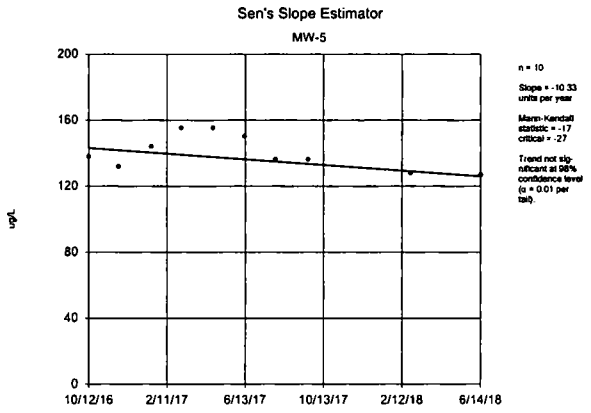
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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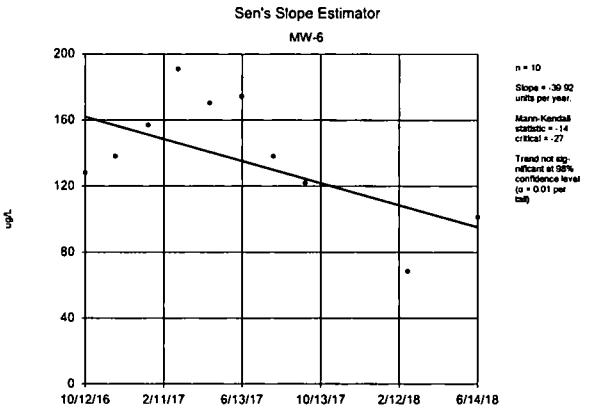

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Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

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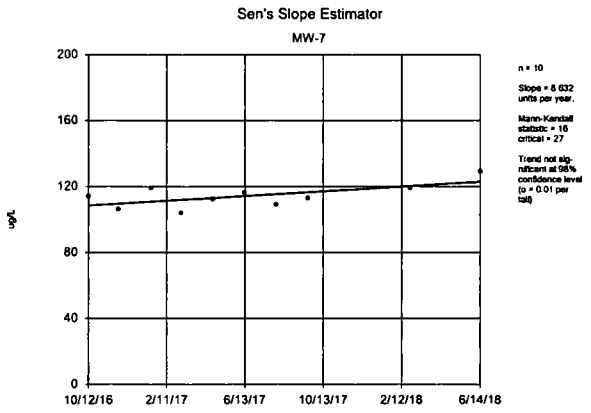

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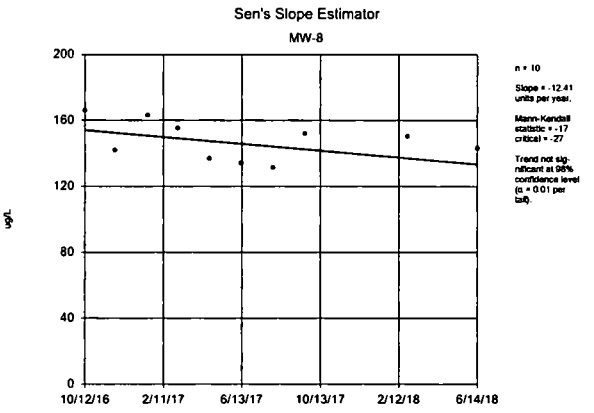
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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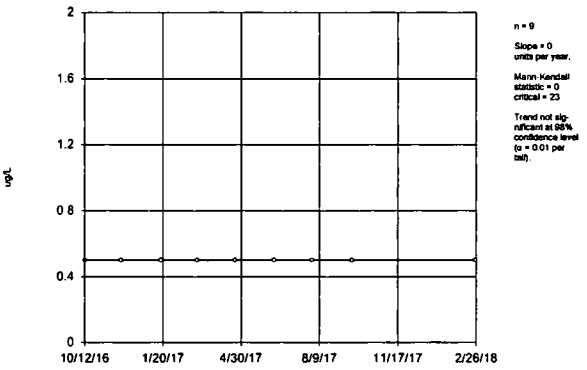
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-1

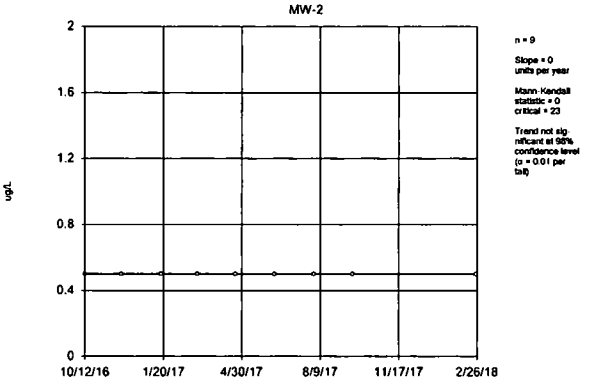


Constituent: BERYLIUM Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-2



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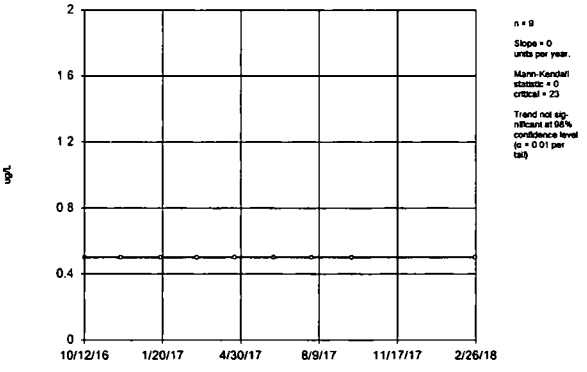
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-3



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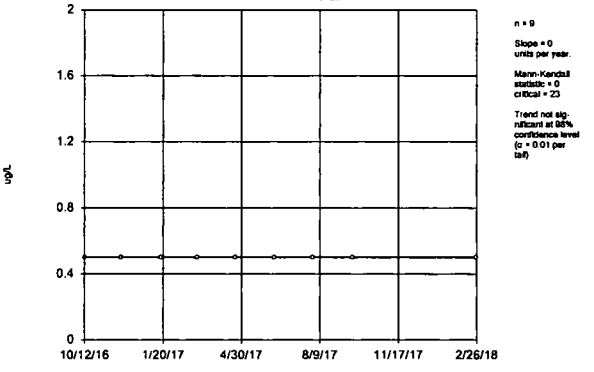
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-4R (bg)

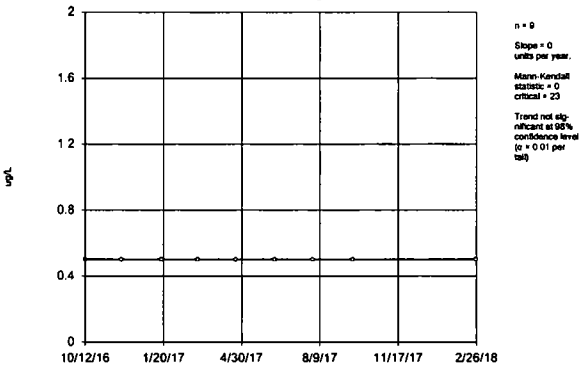


Constituent: BERYLIUM Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-5



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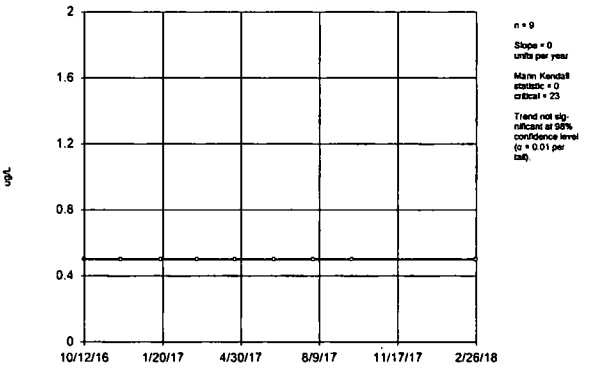
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-6

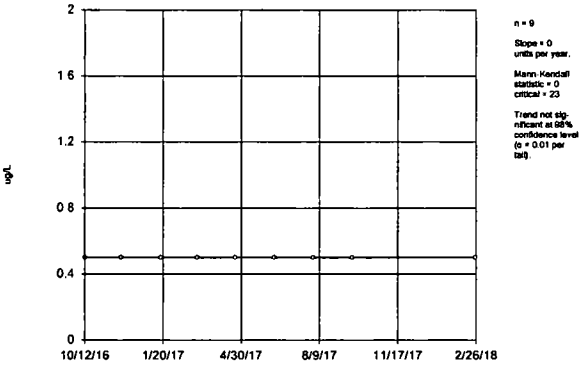


Constituent: BERYLIUM Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-7



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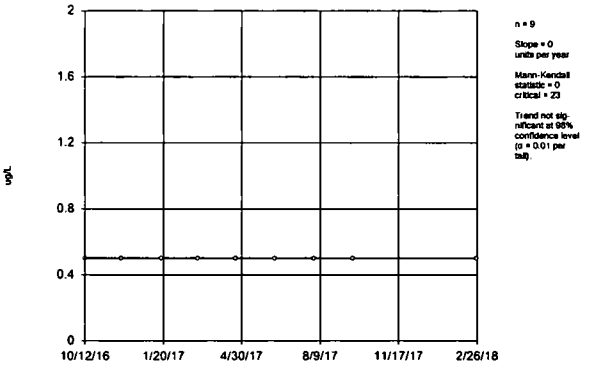
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

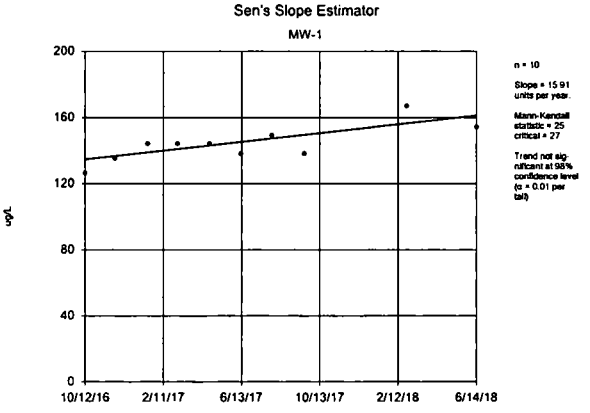
Sen's Slope Estimator

MW-8



Constituent: BERYLIUM Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



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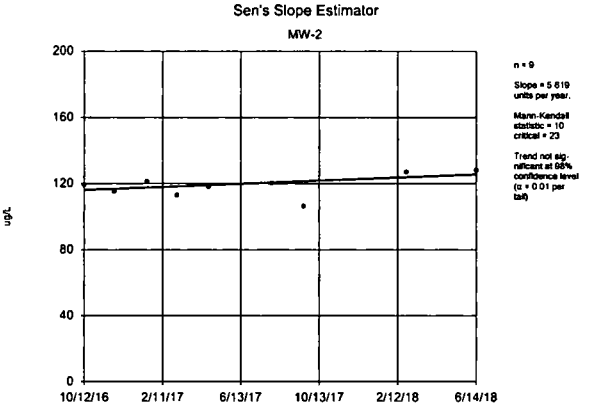
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



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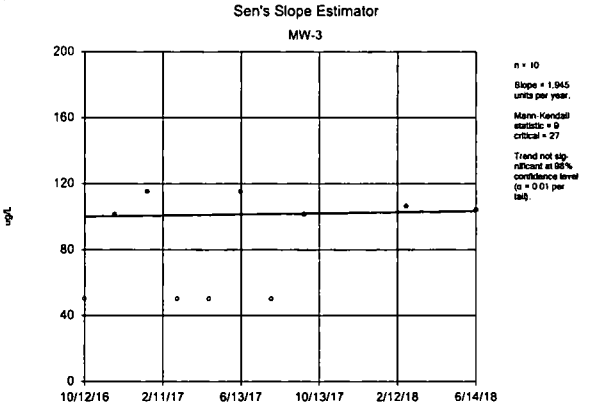
Hollow symbols indicate censored values.



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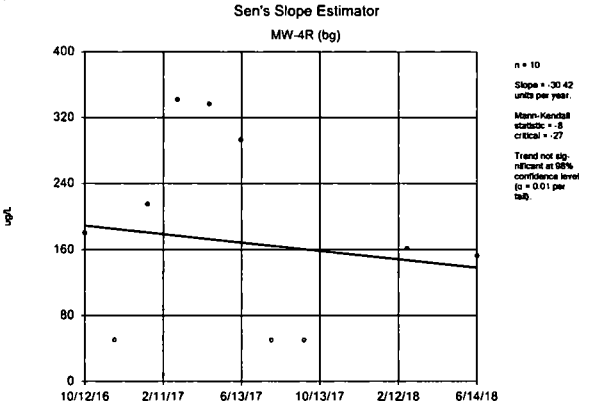
Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



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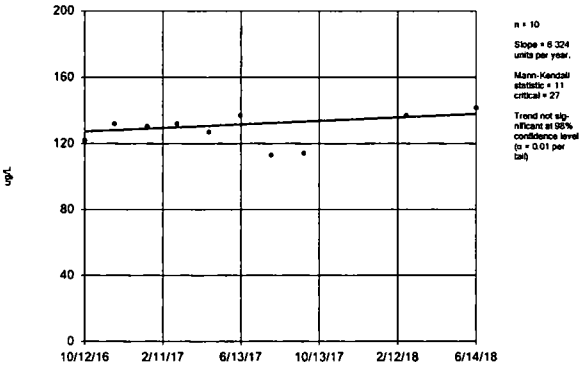
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



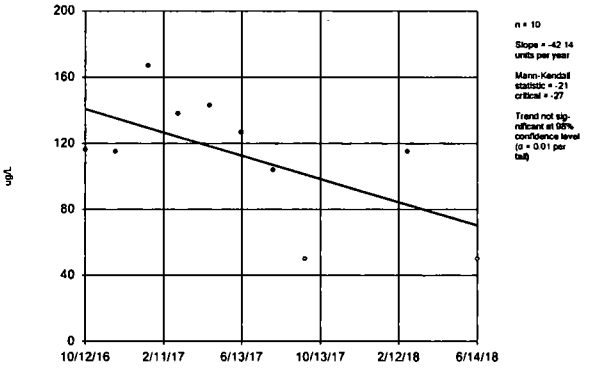
Constituent: Boron Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-6



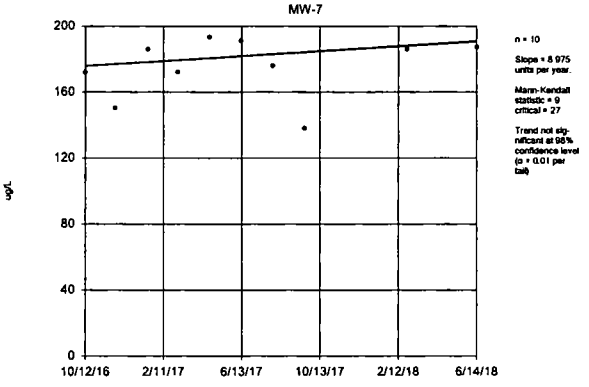
Constituent: Boron Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



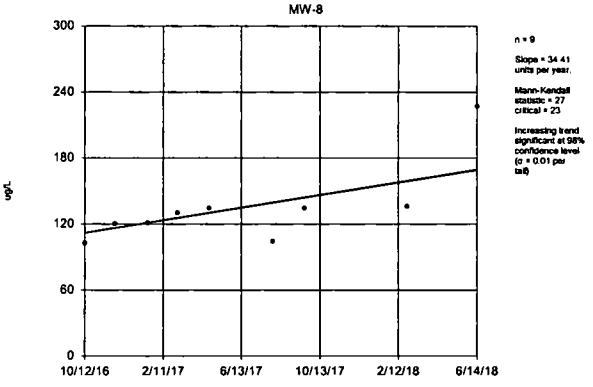
Constituent: Boron Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



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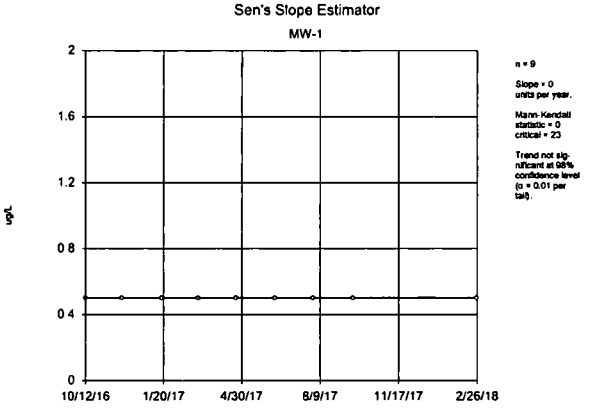
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values.



Constituent: Cadmium [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
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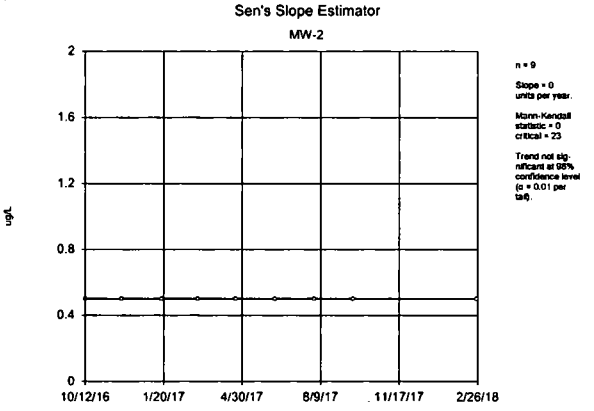

Constituent: Cadmium [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client SCS Engineers Data. Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
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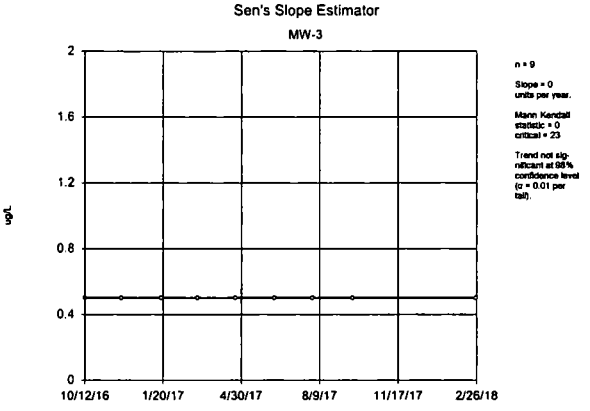

Constituent: Cadmium [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
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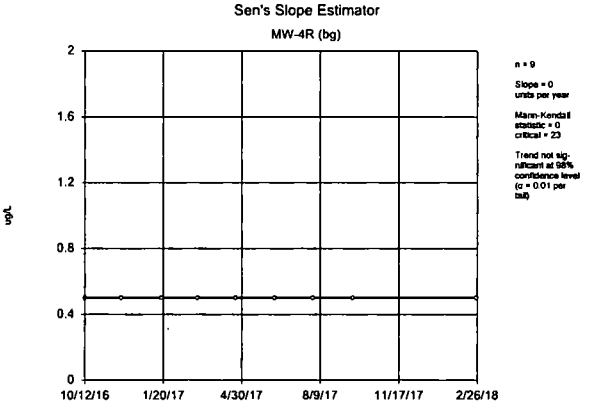

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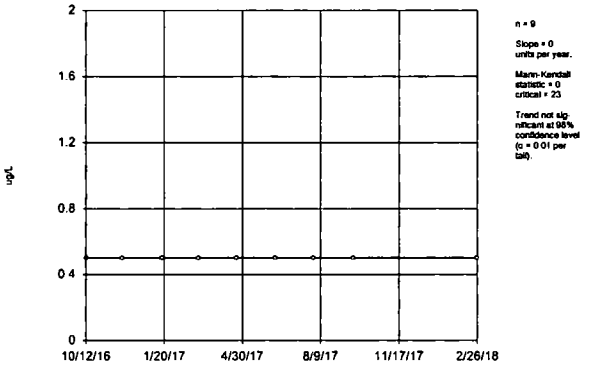
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-5



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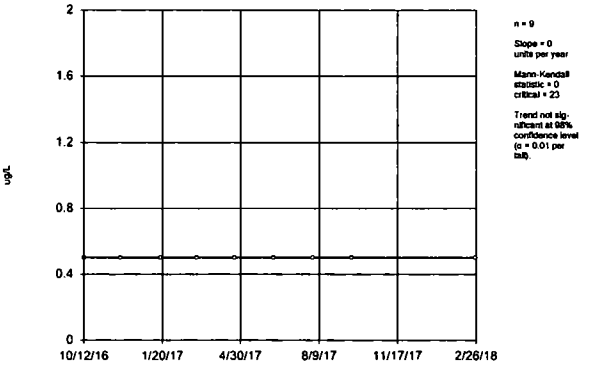
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-6



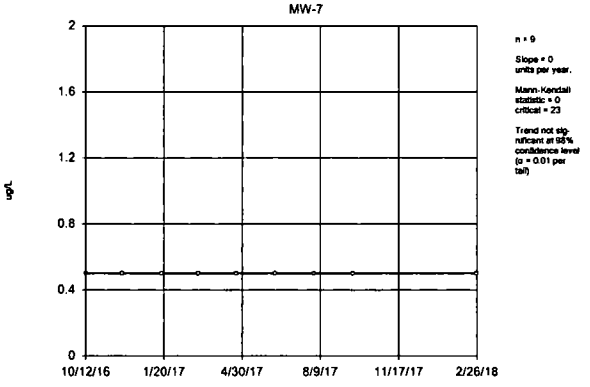
Constituent: Cadmium [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-7



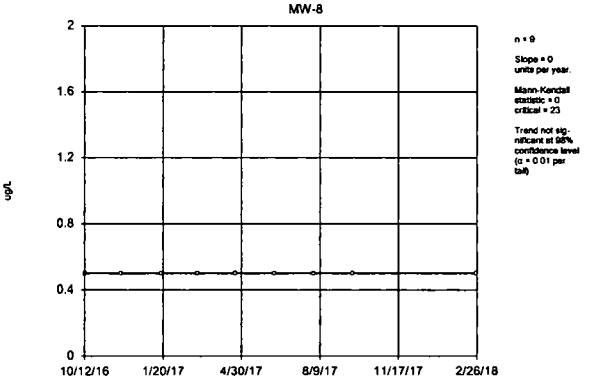
Constituent: Cadmium [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

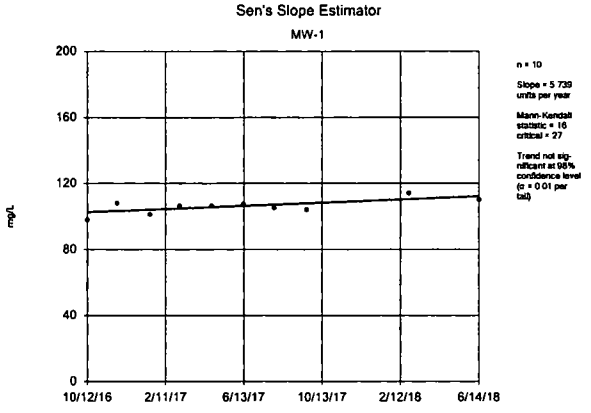
MW-8



Constituent: Cadmium [total] Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

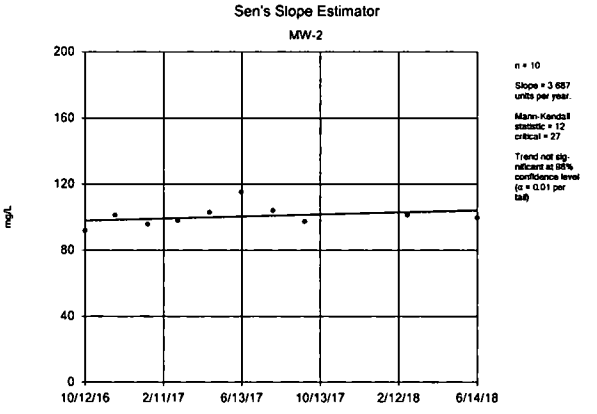
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



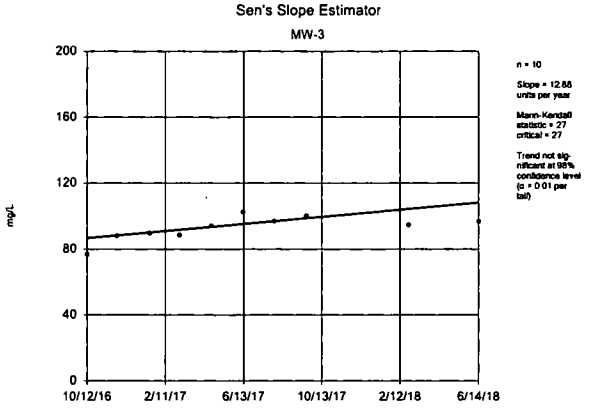
Constituent: Calcium Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



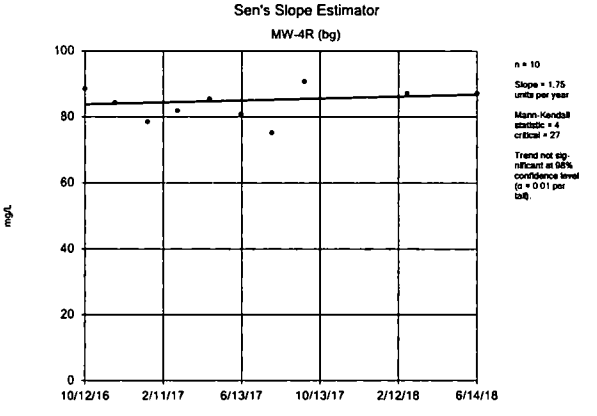
Constituent: Calcium Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



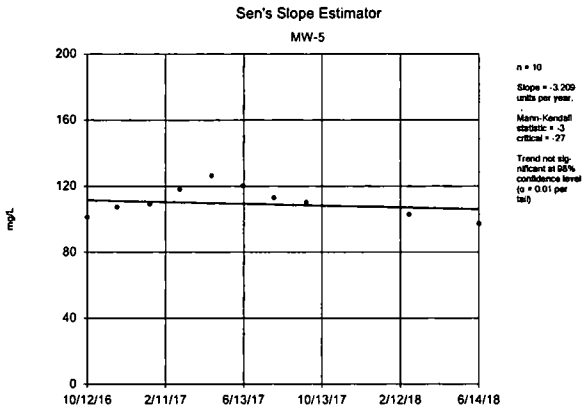
Constituent: Calcium Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



Constituent: Calcium Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

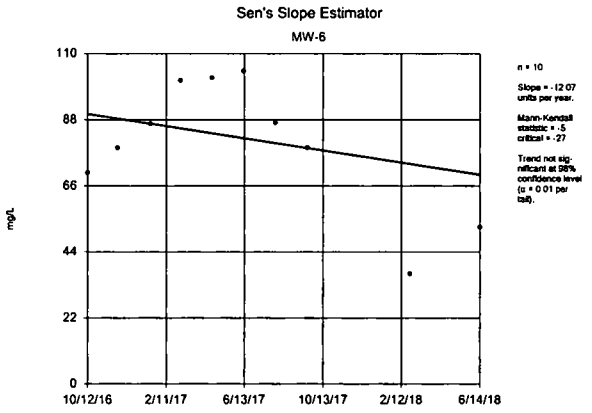
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Calcium Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

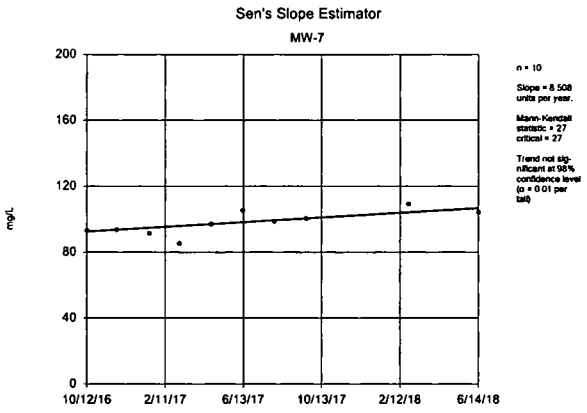
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Calcium Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

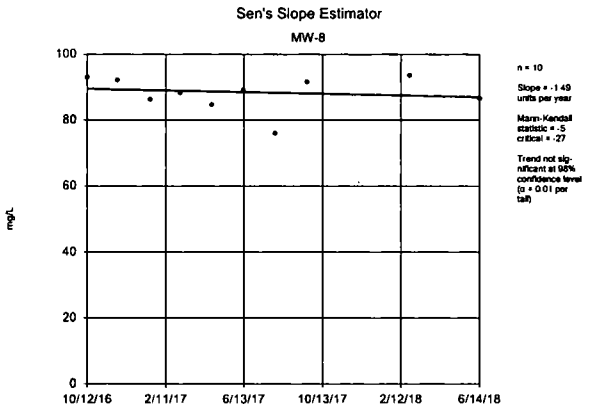
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Calcium Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



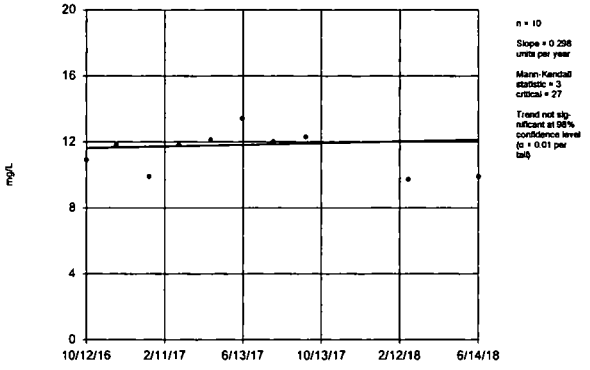
Constituent: Calcium Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



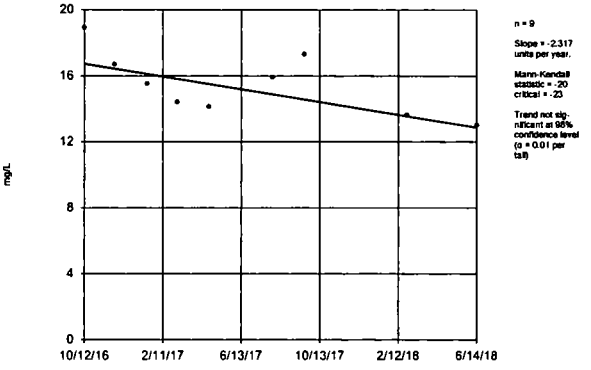
Constituent: Chloride Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



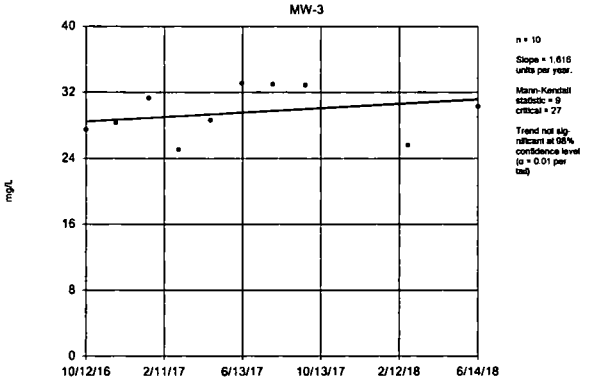
Constituent: Chloride Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



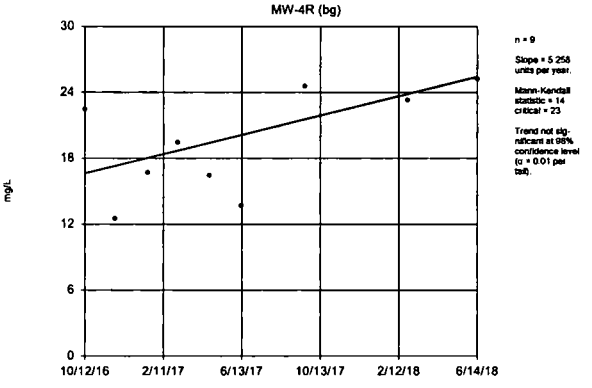
Constituent: Chloride Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

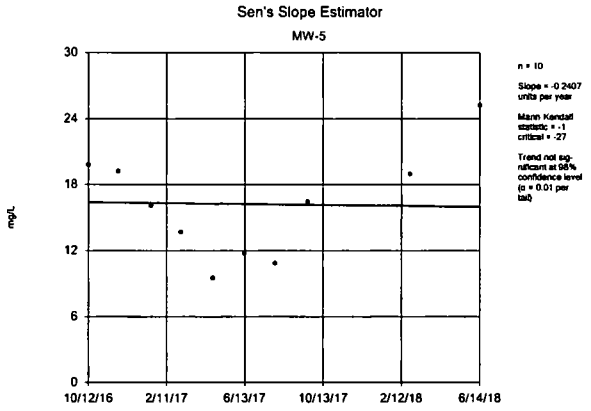
MW-4R (bg)



Constituent: Chloride Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

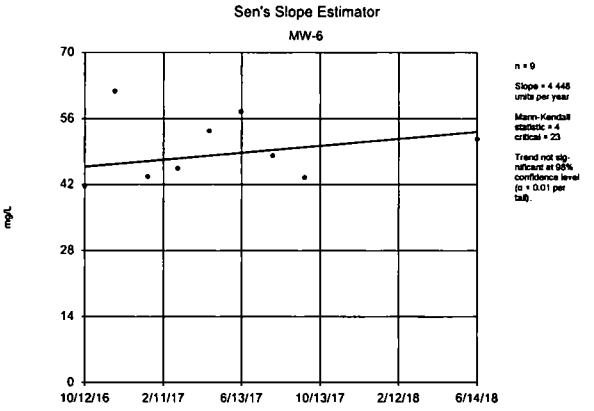
Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



Constituent: Chloride Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

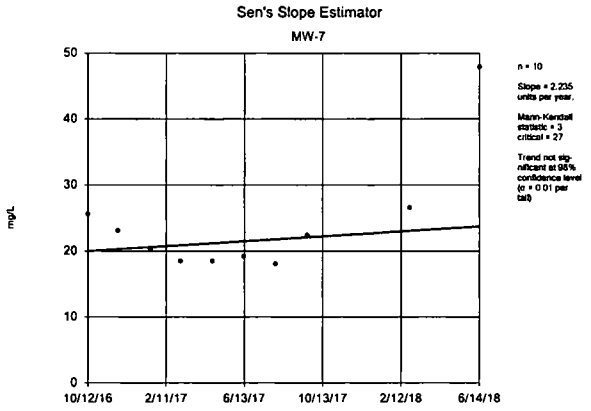
Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



Constituent: Chloride Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

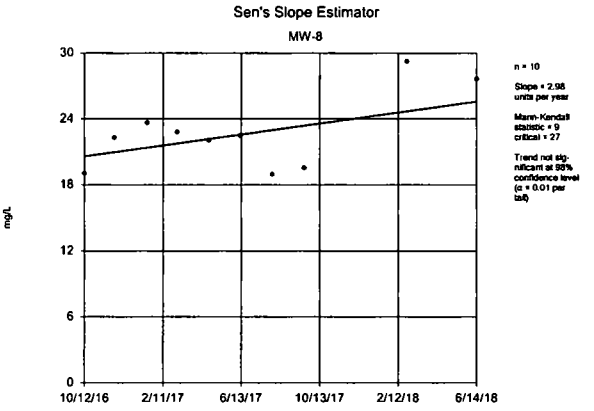
Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



Constituent: Chloride Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

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

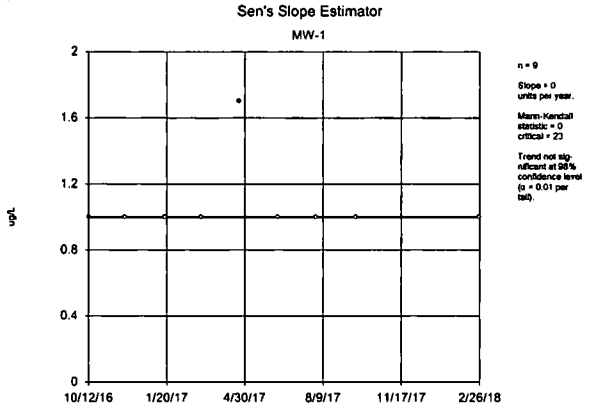
Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



Constituent: Chloride Analysis Run 4/25/2019 7:19 PM View: TREND TEST - bkg

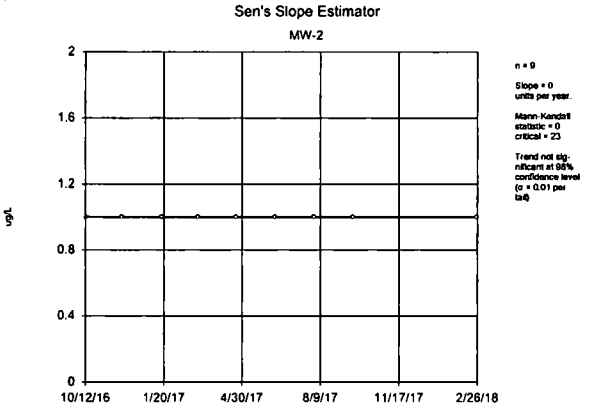
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



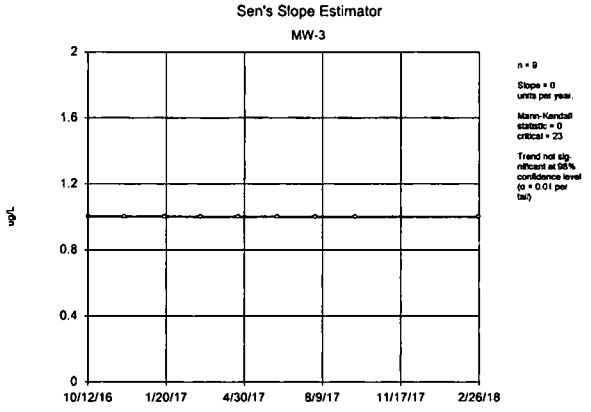
Constituent: Chromium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



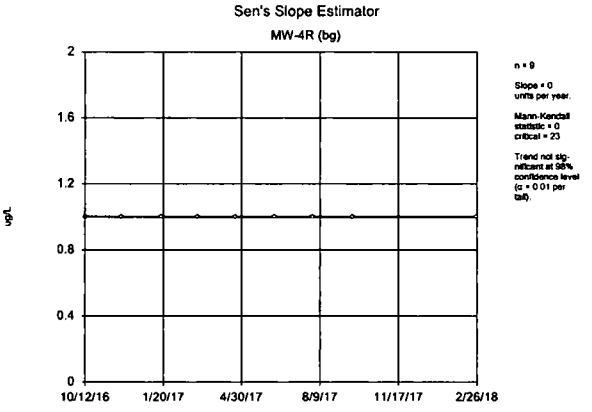
Constituent: Chromium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



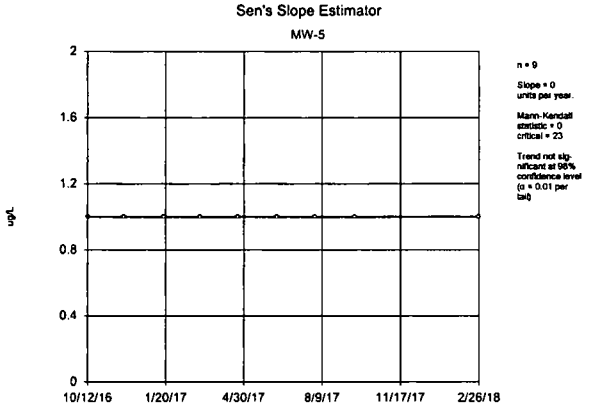
Constituent: Chromium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



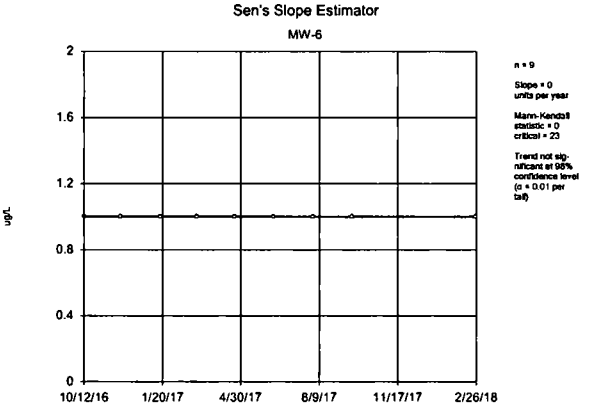
Constituent: Chromium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values.



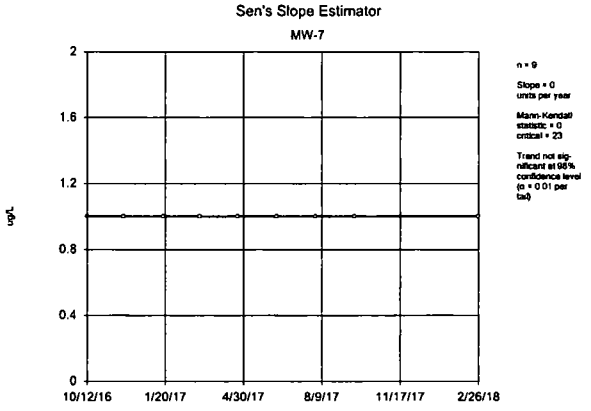
Constituent: Chromium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values.



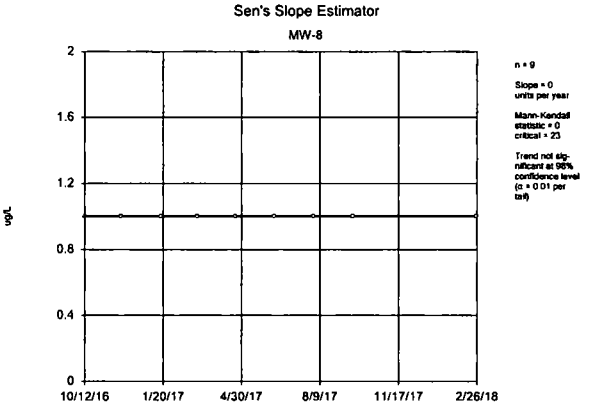
Constituent: Chromium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



Constituent: Chromium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

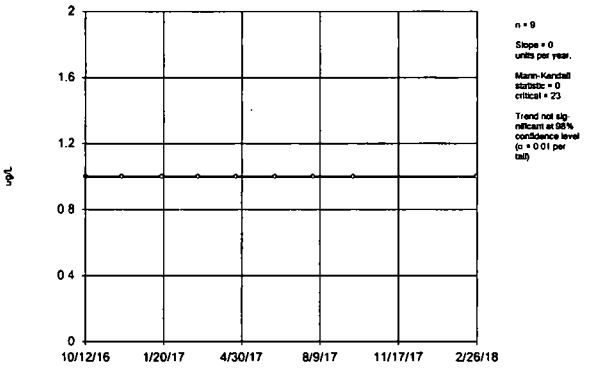


Constituent: Chromium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-1

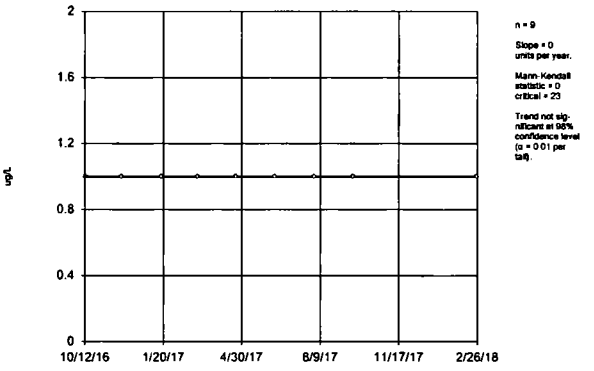


Constituent: Cobalt [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-2

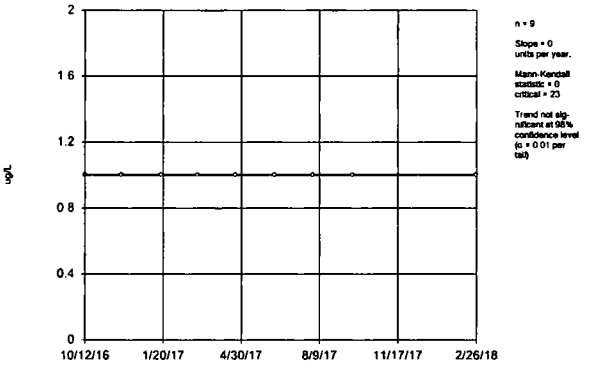


Constituent: Cobalt [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-3

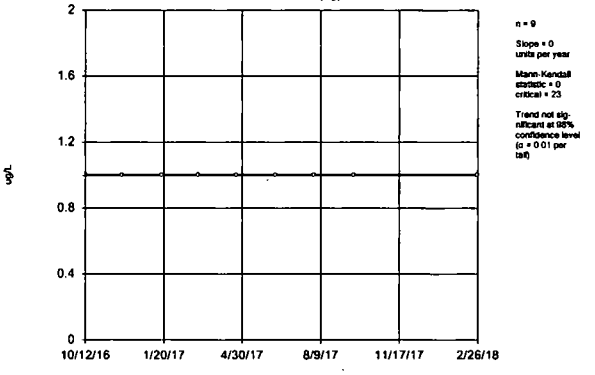


Constituent: Cobalt [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-4R (bg)

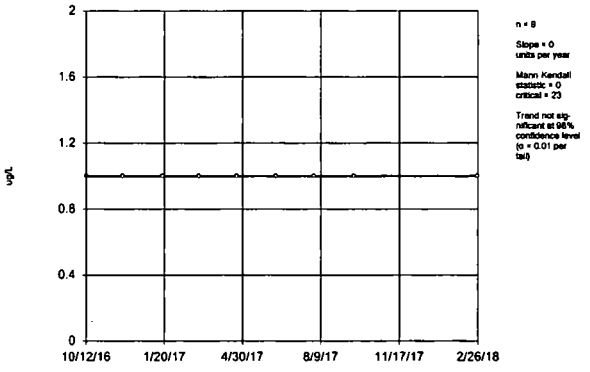


Constituent: Cobalt [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-5

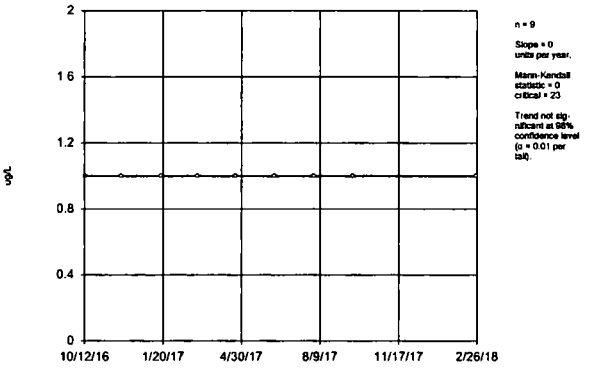


Constituent: Cobalt [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-6

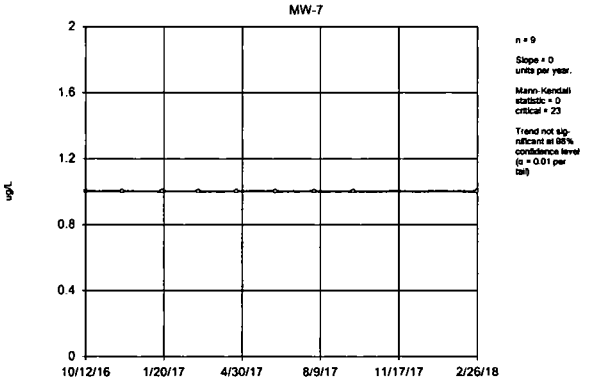


Constituent: Cobalt [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-7

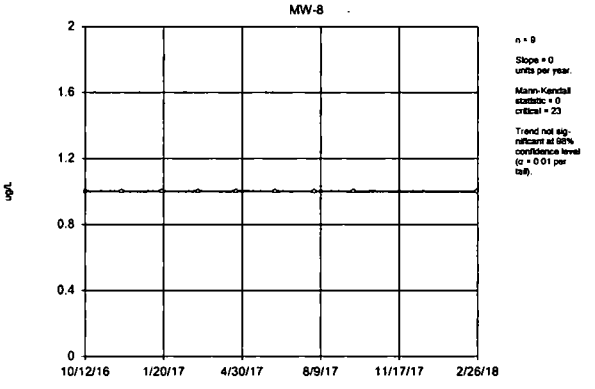


Constituent: Cobalt [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-8

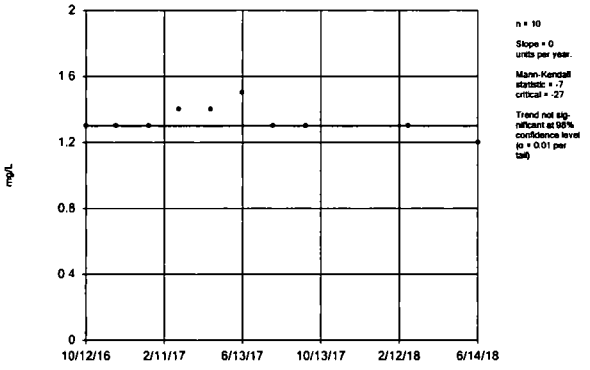


Constituent: Cobalt [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



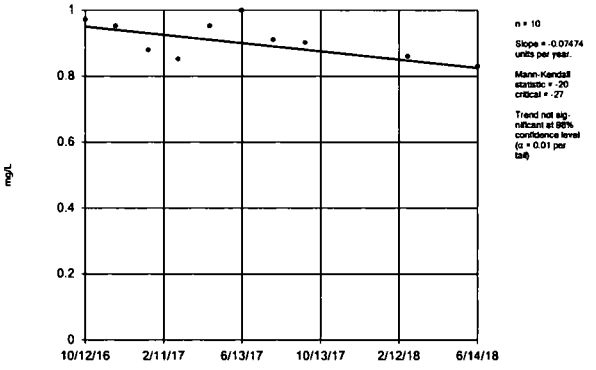
Constituent: Fluoride Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



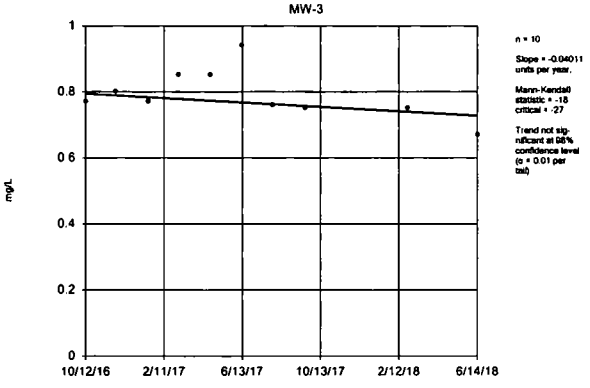
Constituent: Fluoride Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



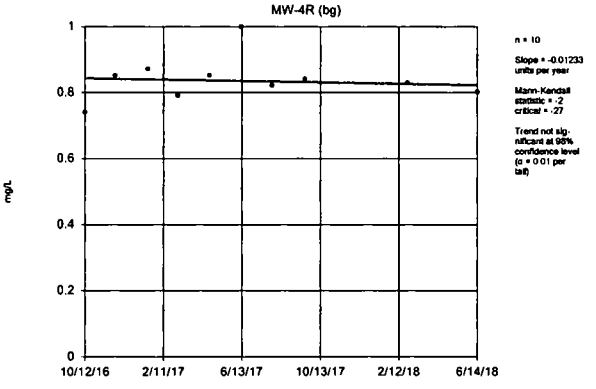
Constituent: Fluoride Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

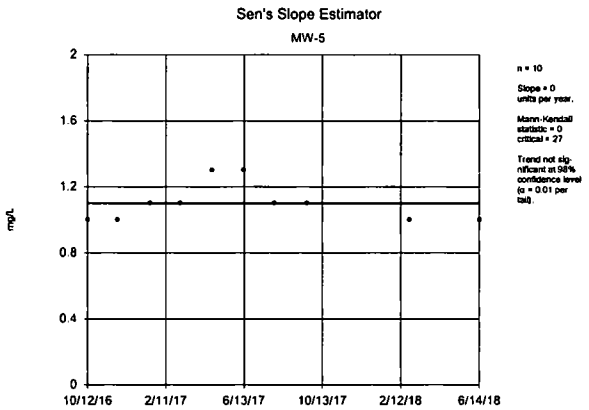
MW-4R (bg)



Constituent: Fluoride Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

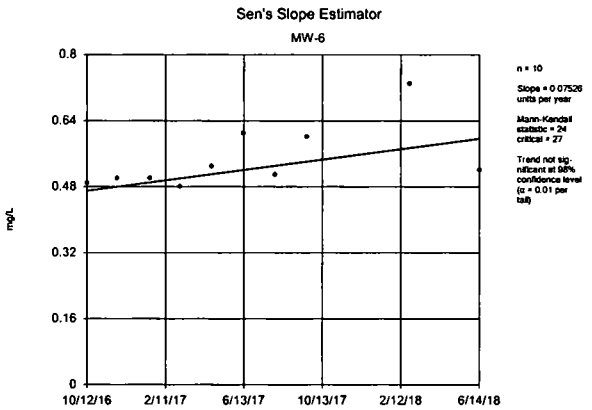
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Fluoride Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

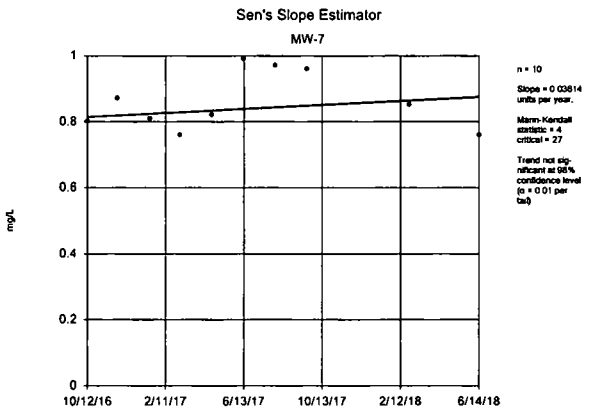
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Fluoride Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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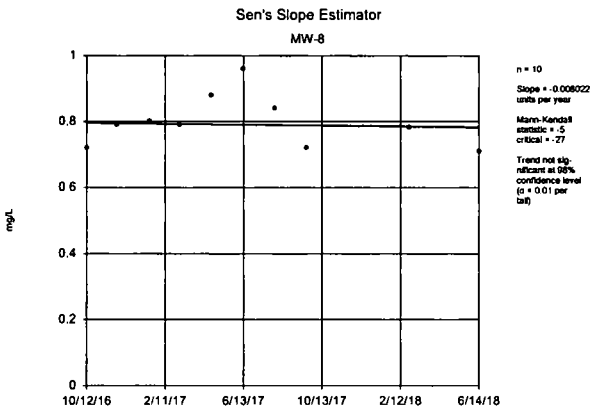
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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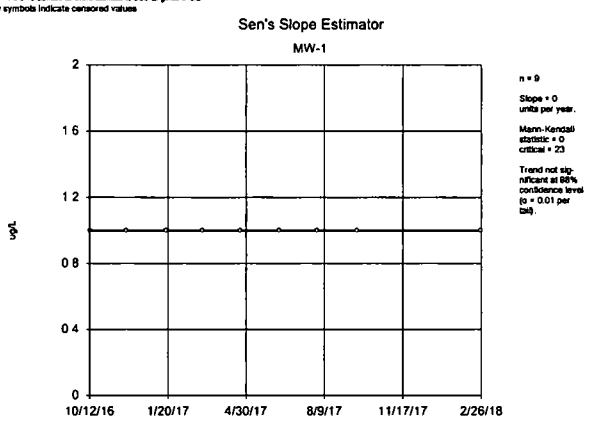
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



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Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
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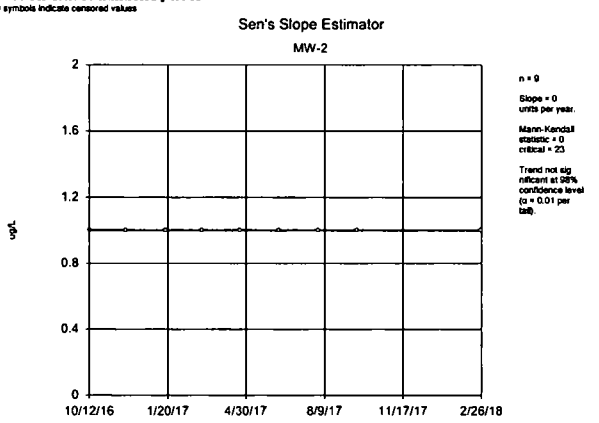

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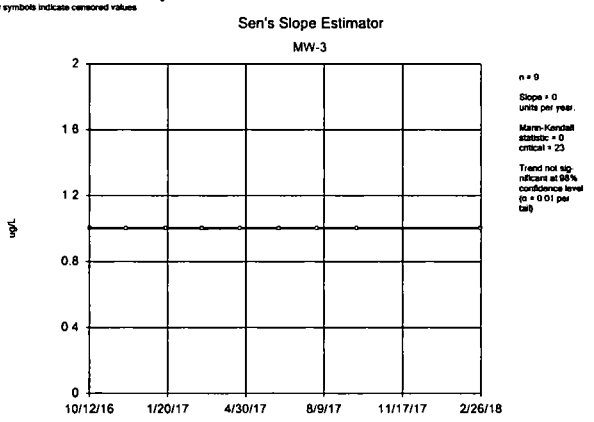

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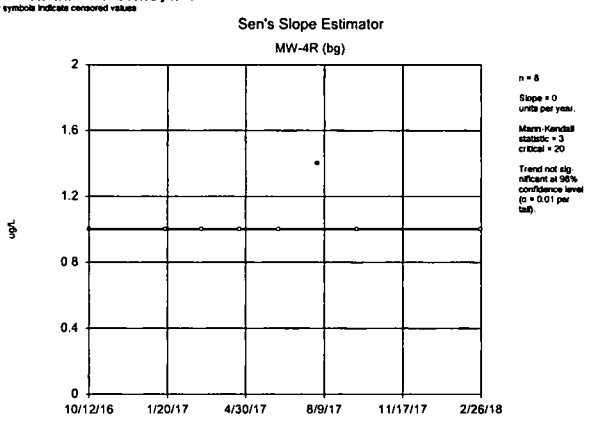
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



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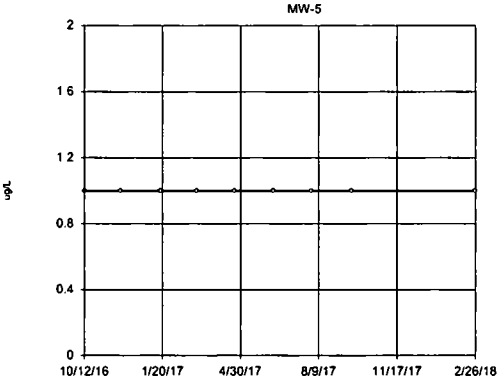
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-5



n = 9

Slope = 0 units per year

Mann-Kendall statistic = 0 critical = 23

Trend not significant at 98% confidence level (α = 0.01 per tail).

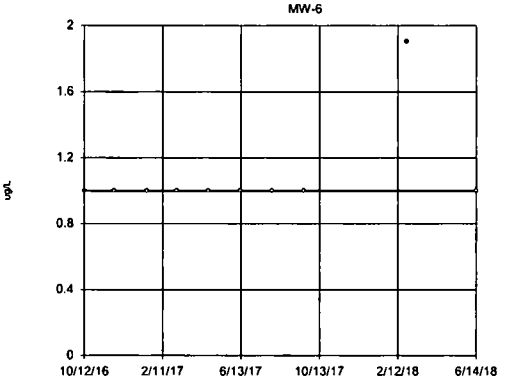
Constituent: Lead [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-6



n = 10

Slope = 0 units per year.

Mann-Kendall statistic = 7 critical = 27

Trend not significant at 98% confidence level (α = 0.01 per tail)

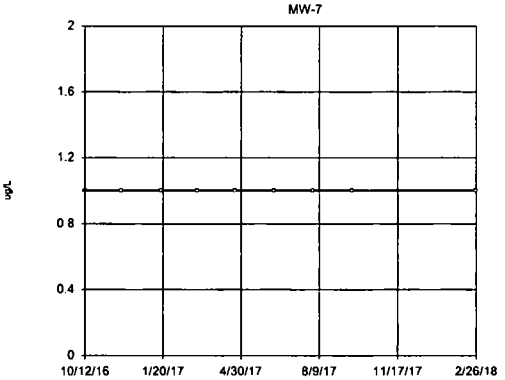
Constituent: Lead [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-7



n = 9

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 23

Trend not significant at 98% confidence level (α = 0.01 per tail)

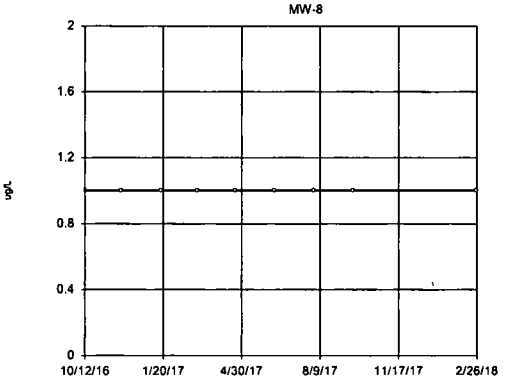
Constituent: Lead [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-8



n = 9

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 23

Trend not significant at 98% confidence level (α = 0.01 per tail)

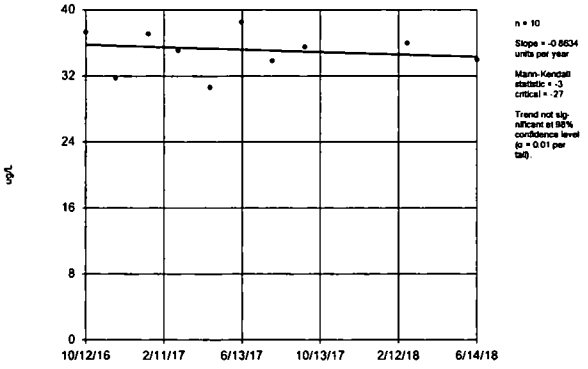
Constituent: Lead [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



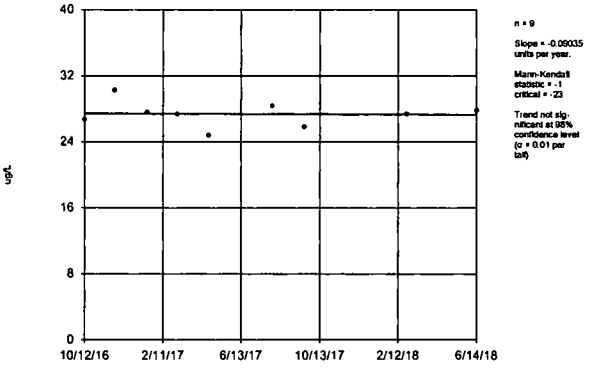
Constituent: Lithium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



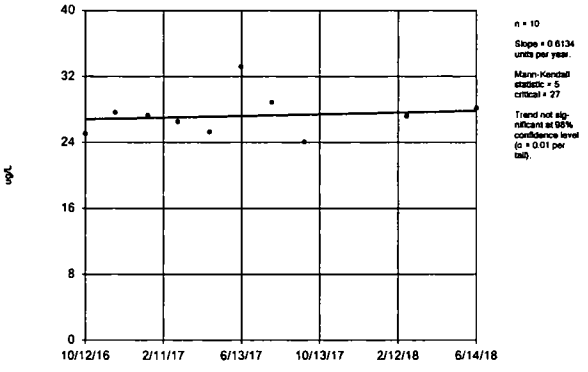
Constituent: Lithium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



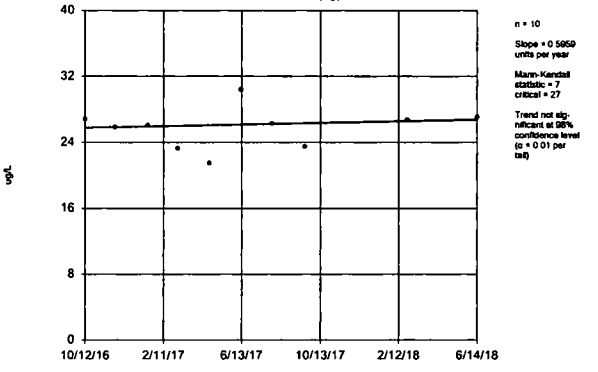
Constituent: Lithium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



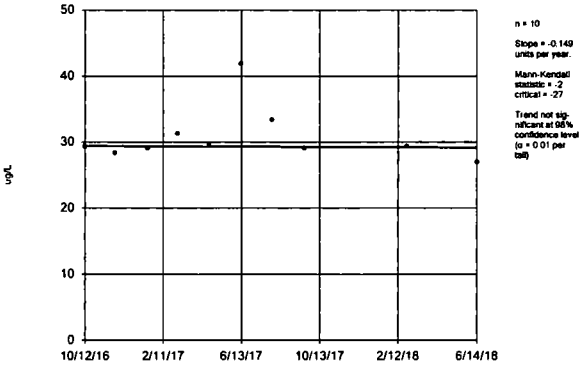
Constituent: Lithium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



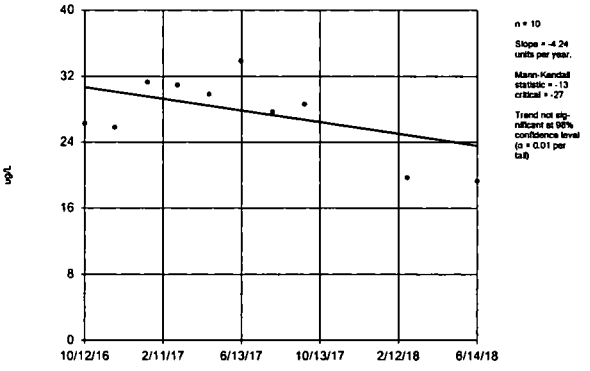
Constituent: Lithium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



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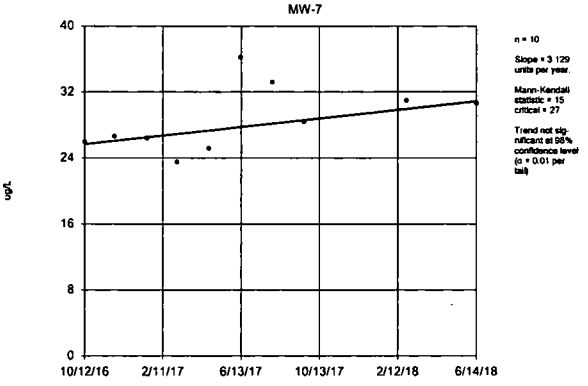
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



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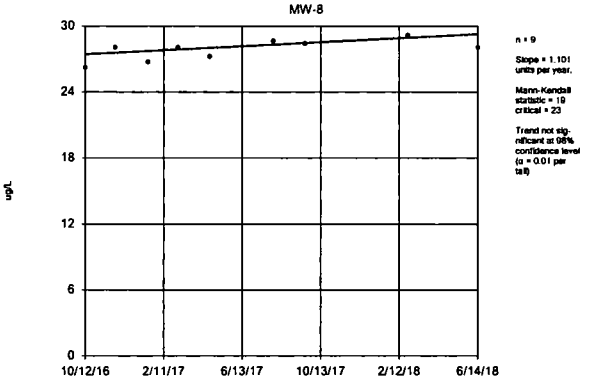
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



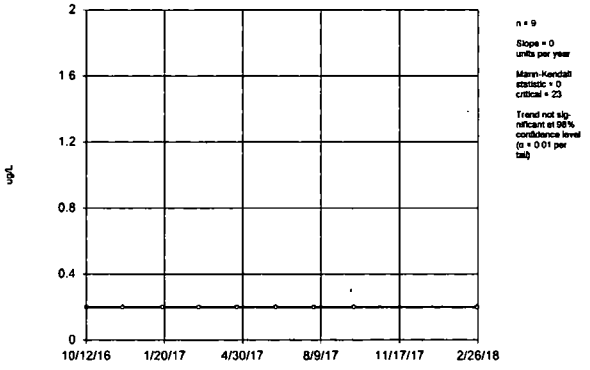
Constituent: Lithium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-1

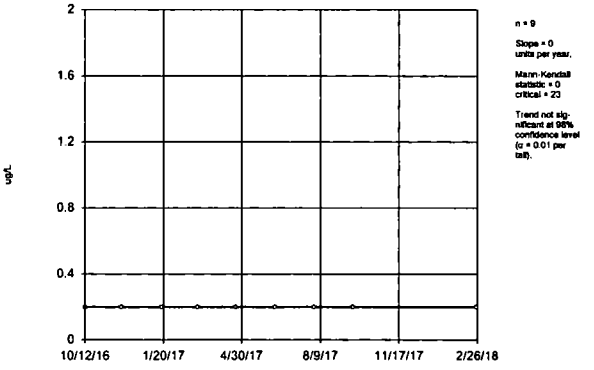


Constituent: Mercury Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-2

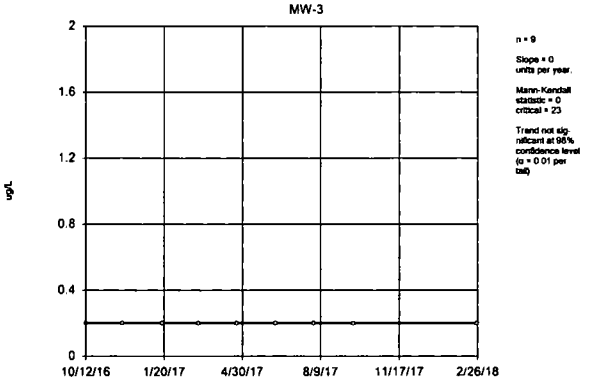


Constituent: Mercury Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-3

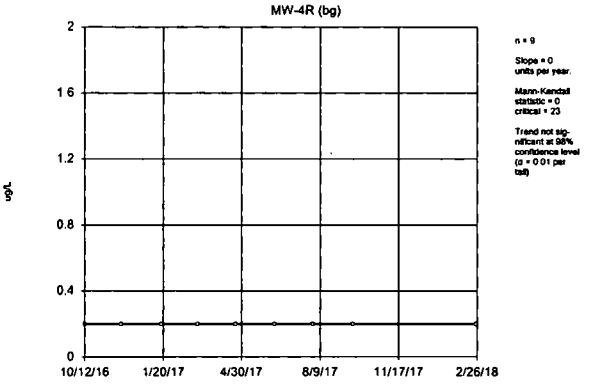


Constituent: Mercury Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-4R (bg)



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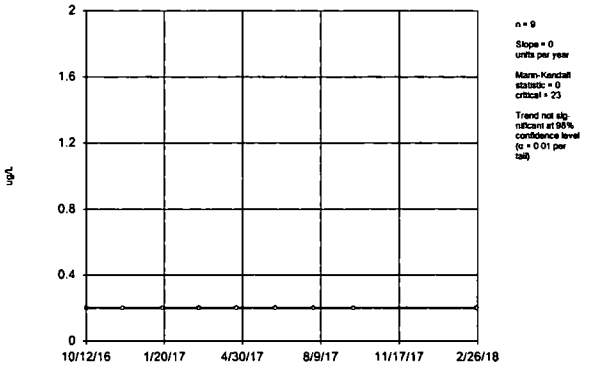
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-5

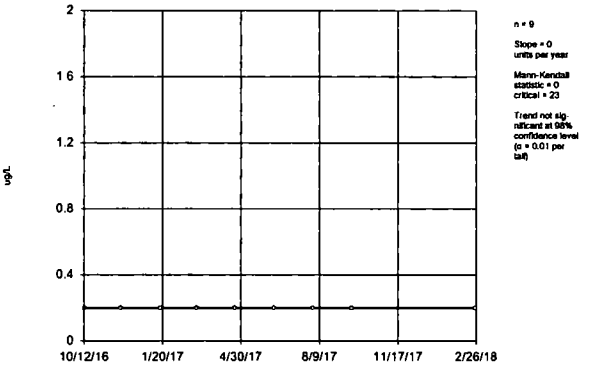


Constituent: Mercury Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-6



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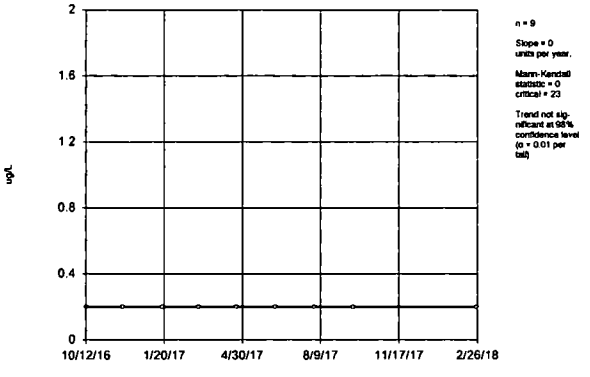
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-7

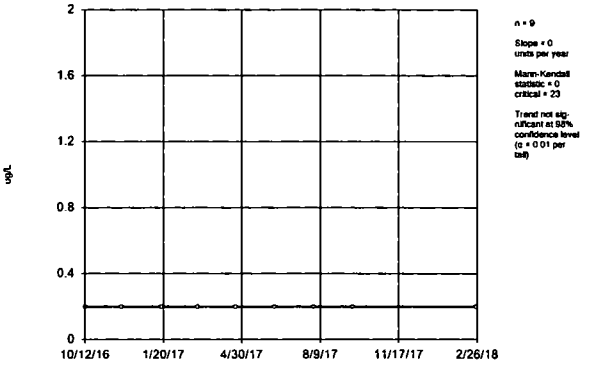


Constituent: Mercury Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-8

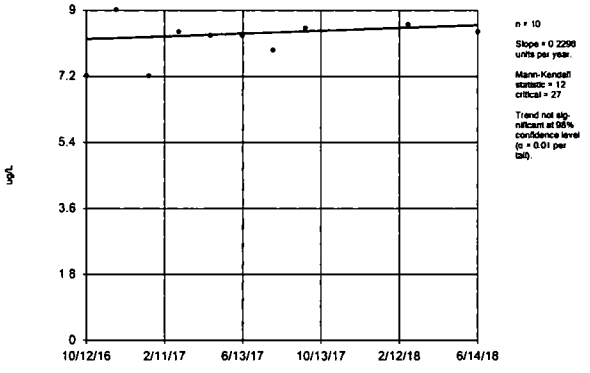


Constituent: Mercury Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



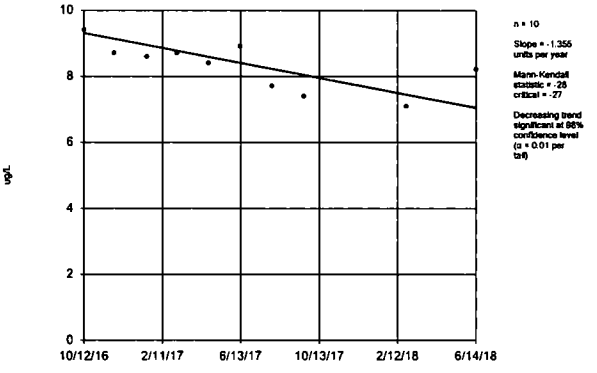
Constituent: Molybdenum Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



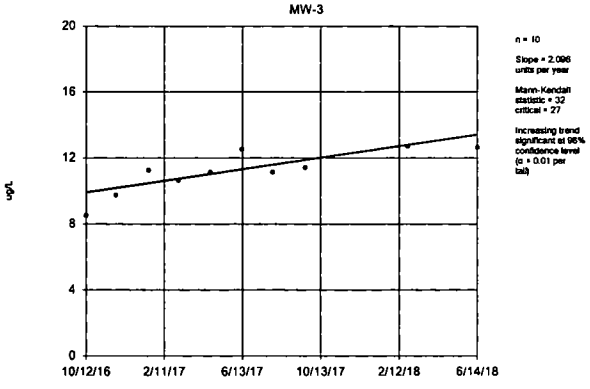
Constituent: Molybdenum Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



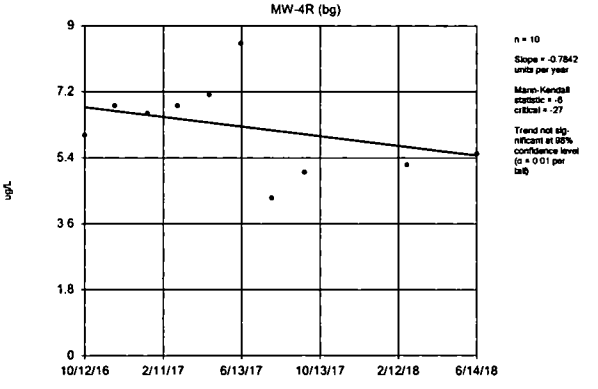
Constituent: Molybdenum Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



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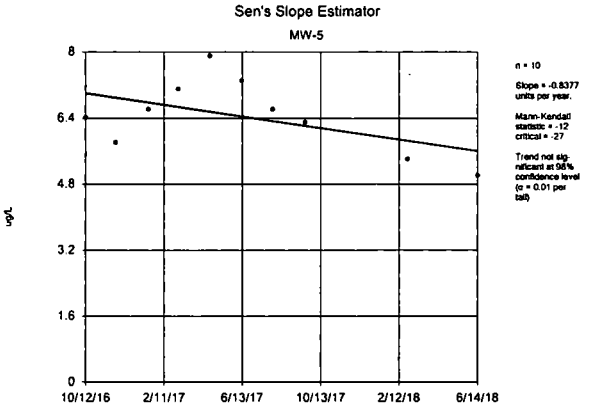
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



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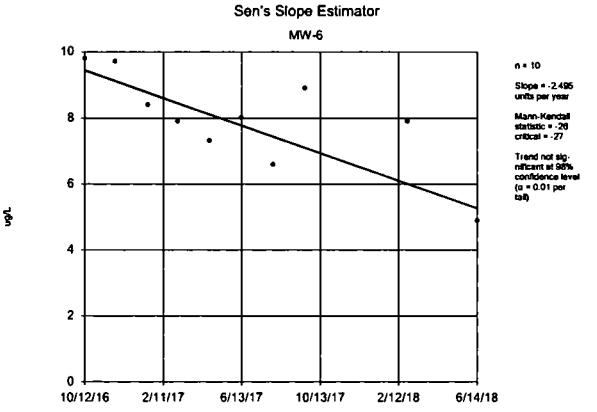
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



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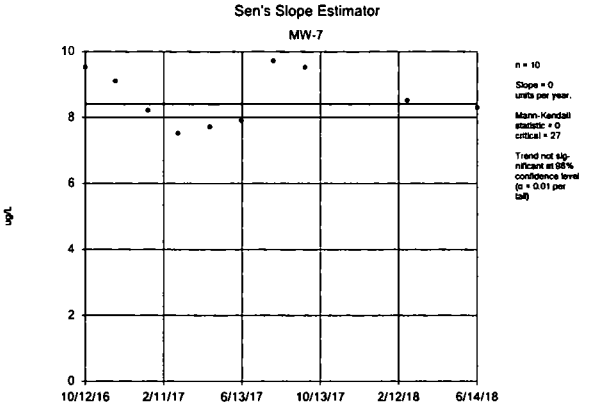
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



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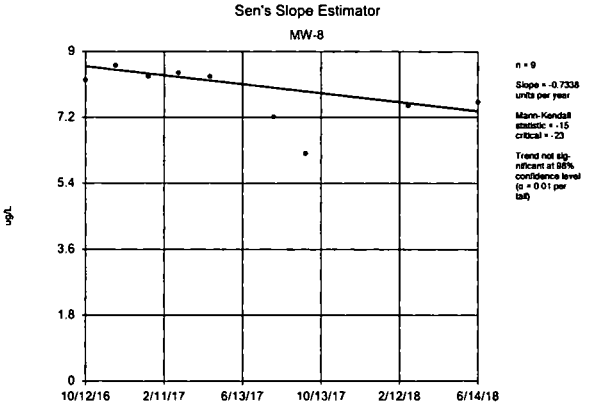
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



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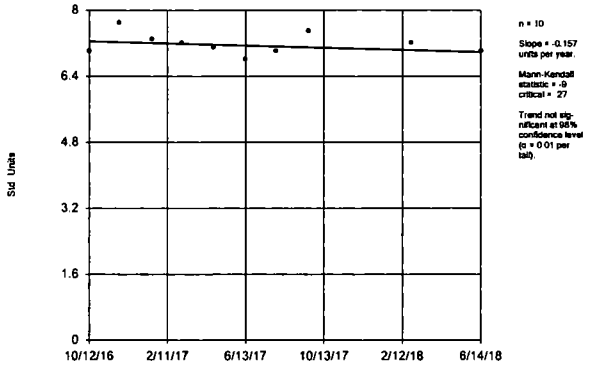
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



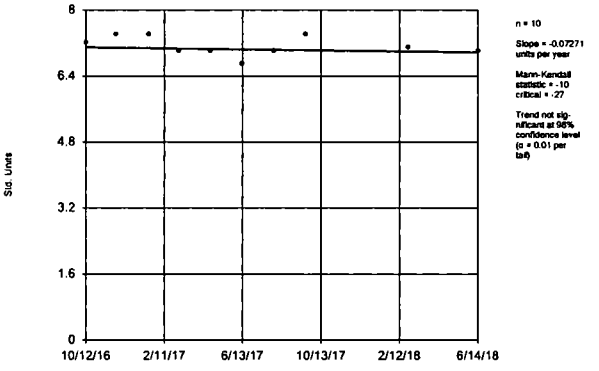
Constituent: pH Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



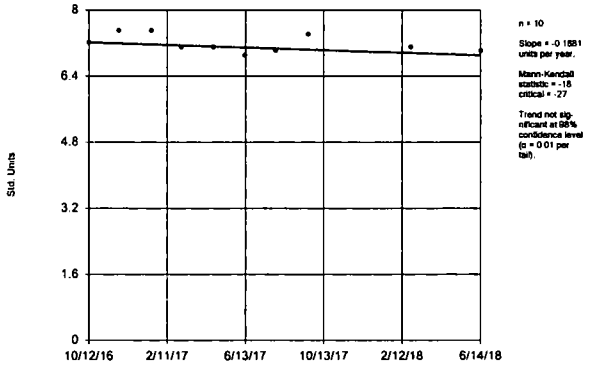
Constituent: pH Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



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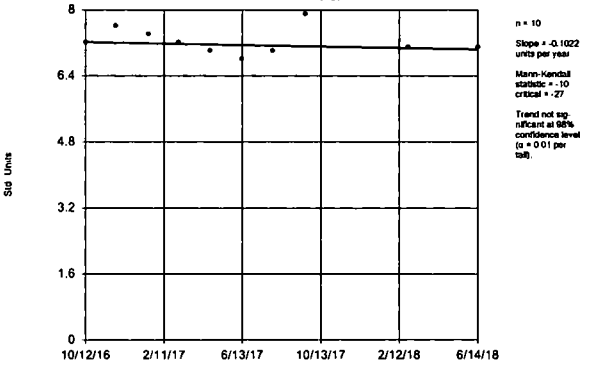
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



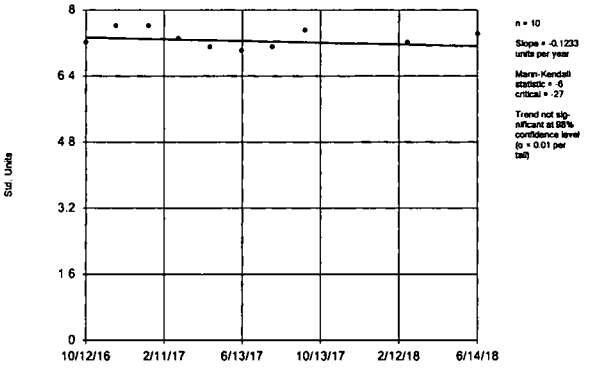
Constituent: pH Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



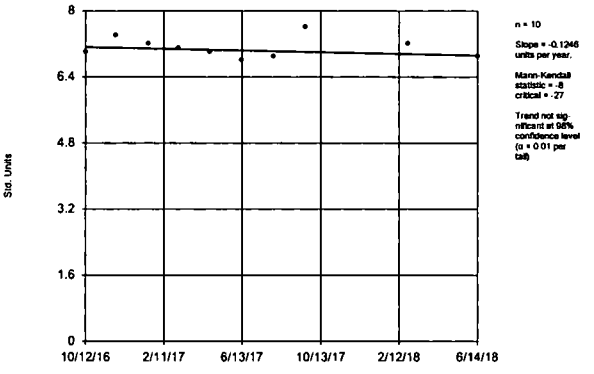
Constituent: pH Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



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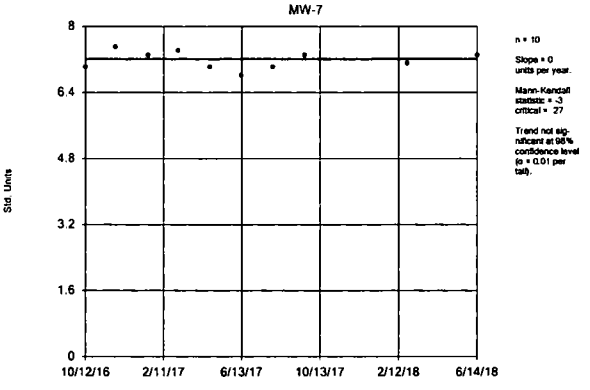
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



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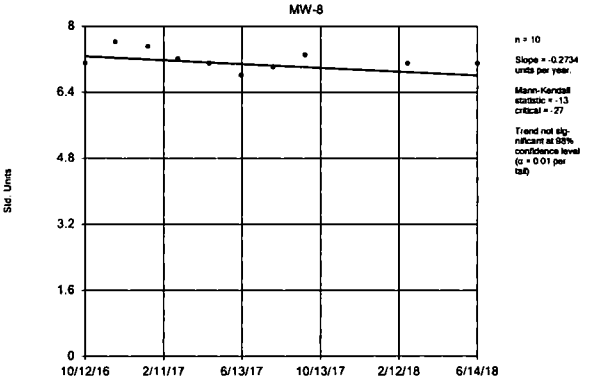
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



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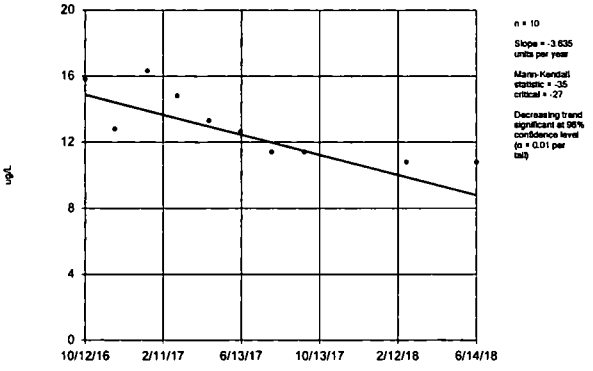
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-1



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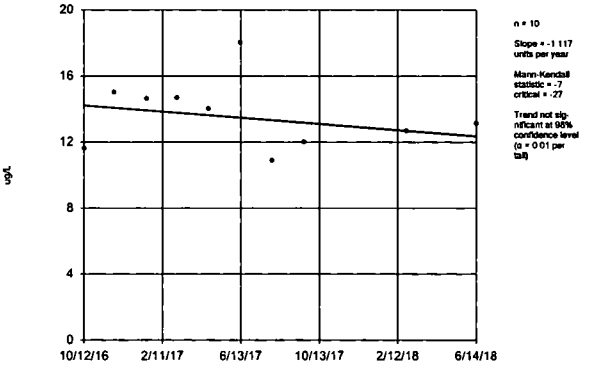
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-2



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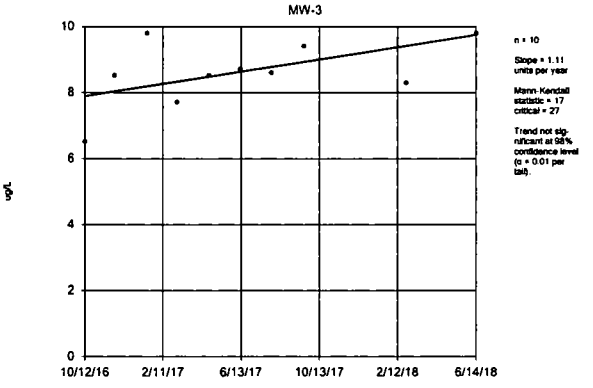
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-3



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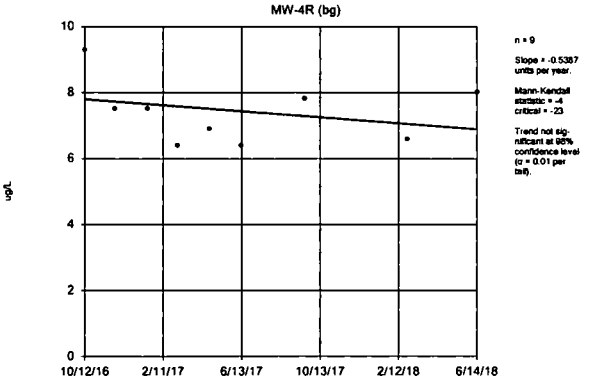
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-4R (bg)



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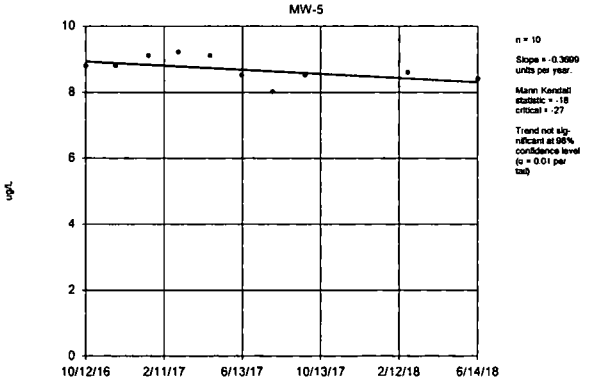
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



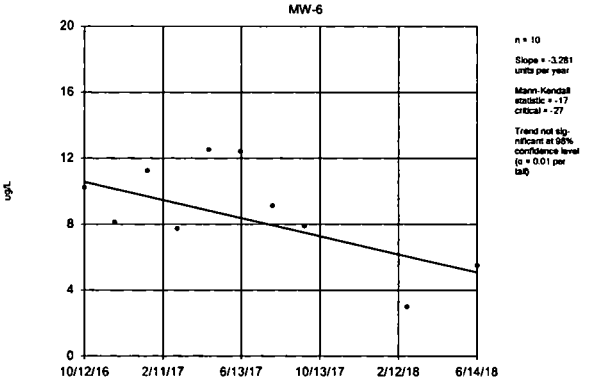
Constituent: Selenium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



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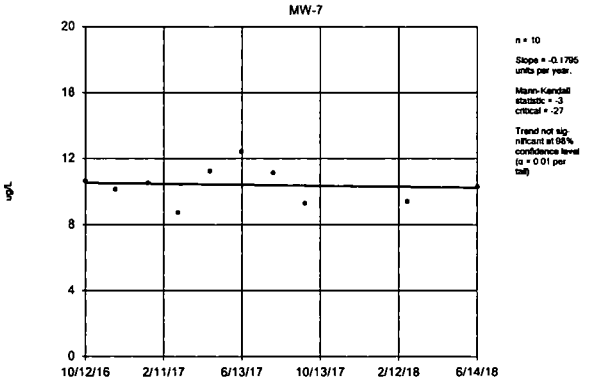
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



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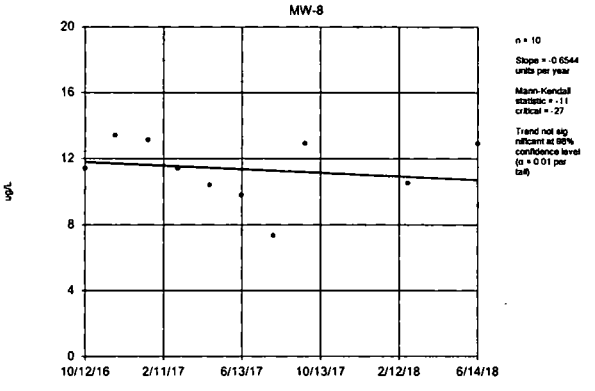
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



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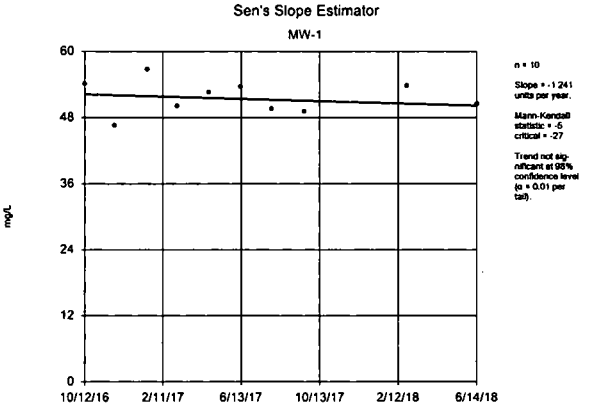
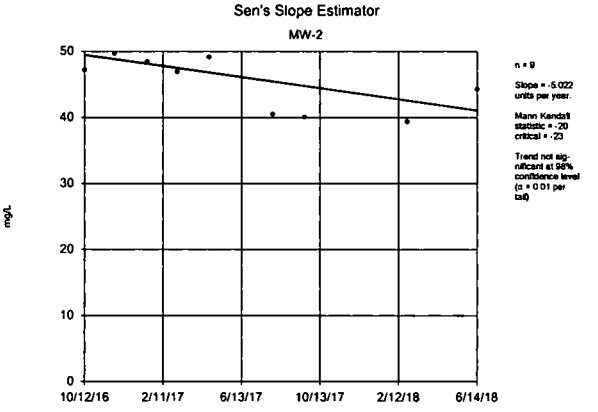
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Sulfate Analysis Run 4/25/2019 7:20 PM View TREND TEST - bkg
Fremont Dept of Utilities Client. SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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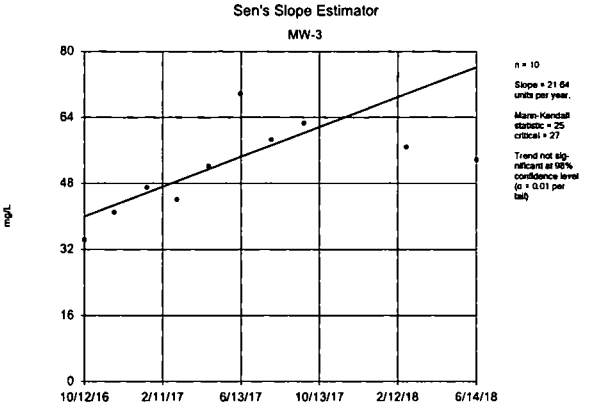
Fremont Dept of Utilities Client. SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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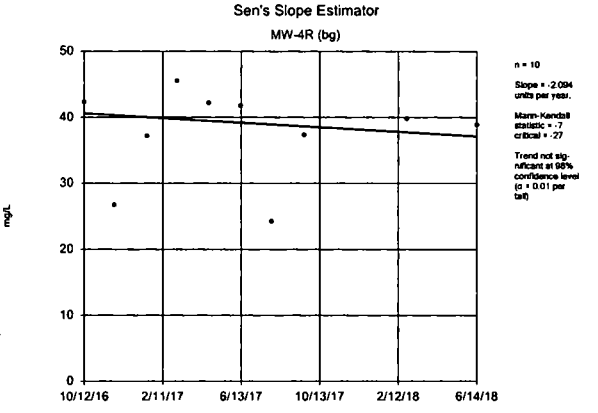
Fremont Dept. of Utilities Client. SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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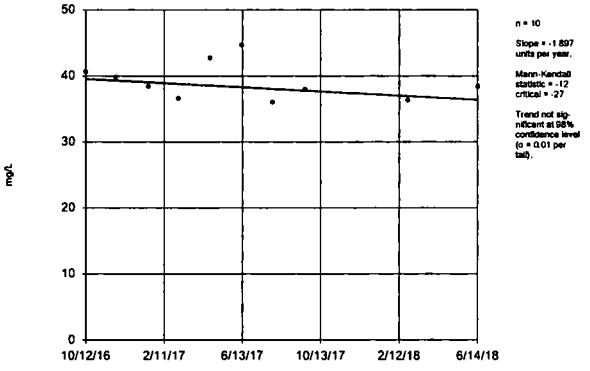
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



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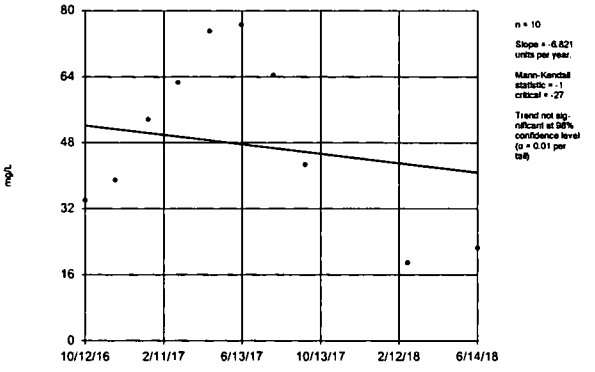
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



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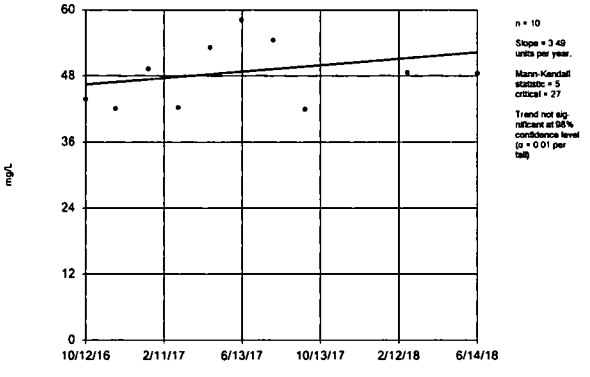
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



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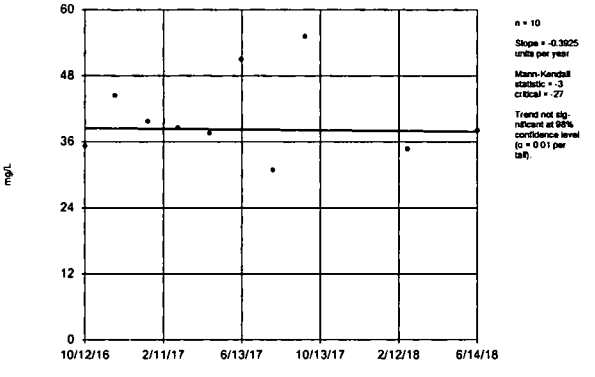
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



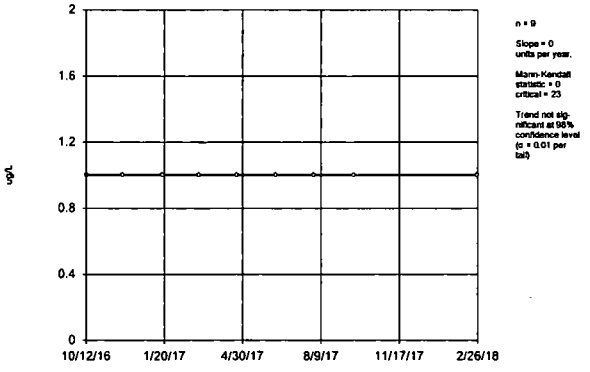
Constituent: Sulfate Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-1



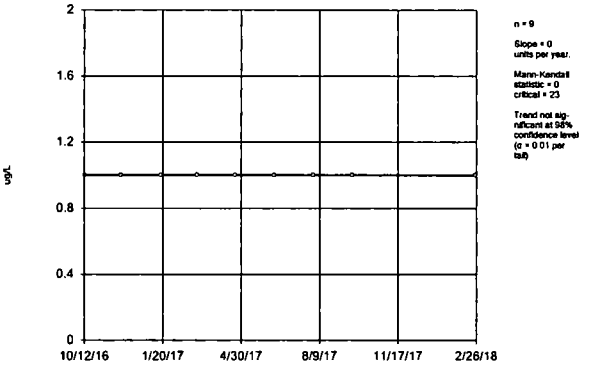
Constituent: Thallium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-2



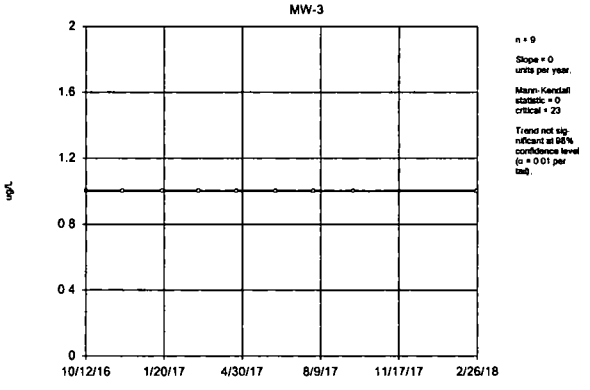
Constituent: Thallium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-3



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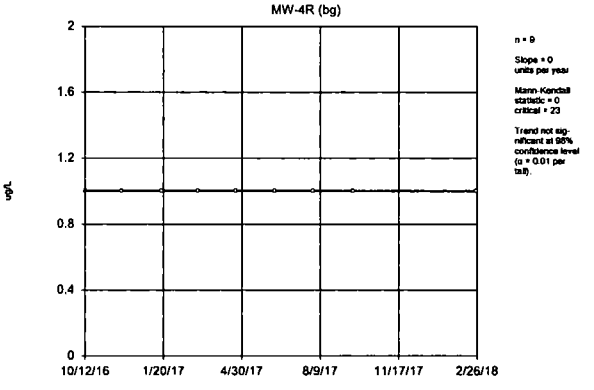
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-4R (bg)



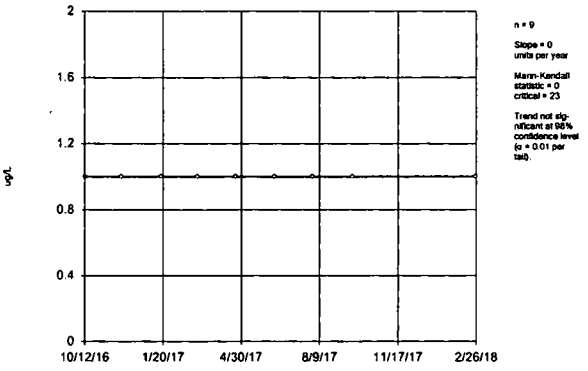
Constituent: Thallium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-5



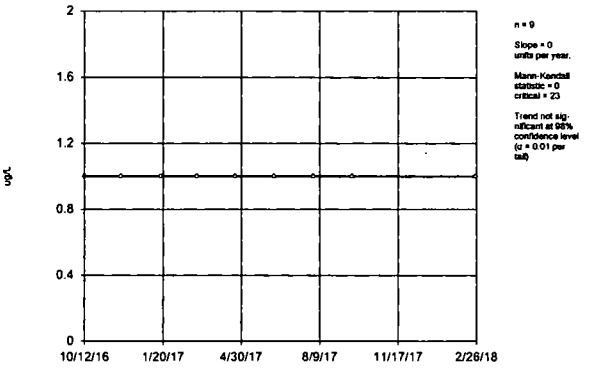
Constituent: Thallium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-6



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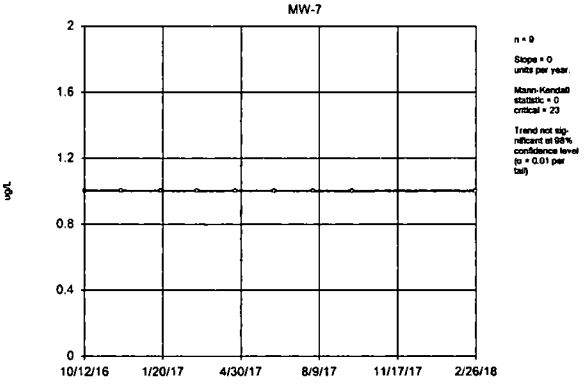
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-7



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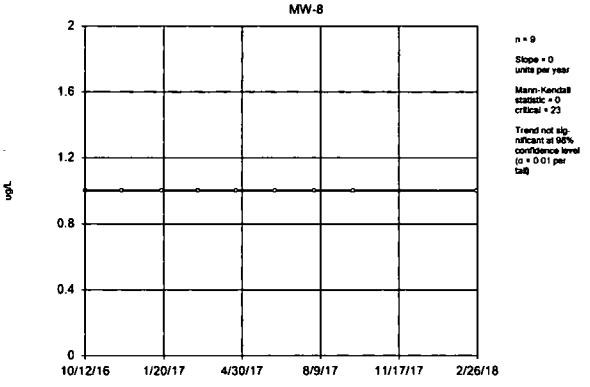
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values

Sen's Slope Estimator

MW-8



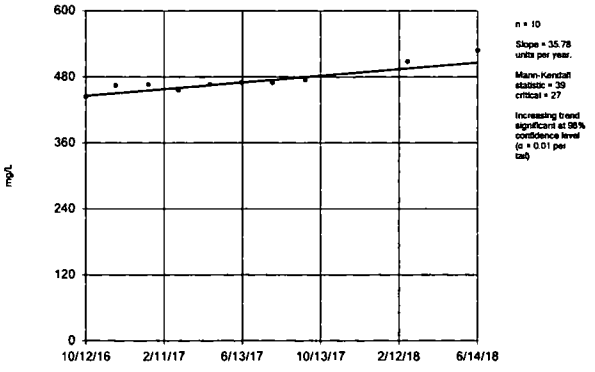
Constituent: Thallium [total] Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



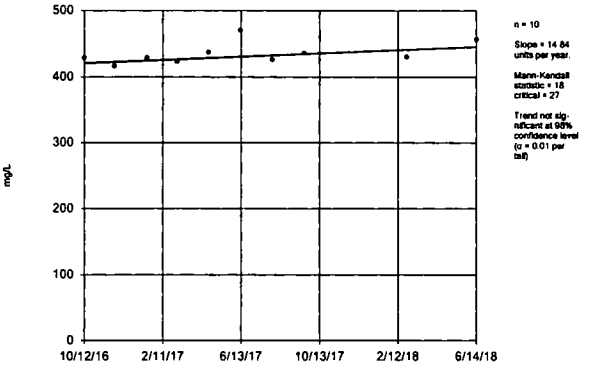
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



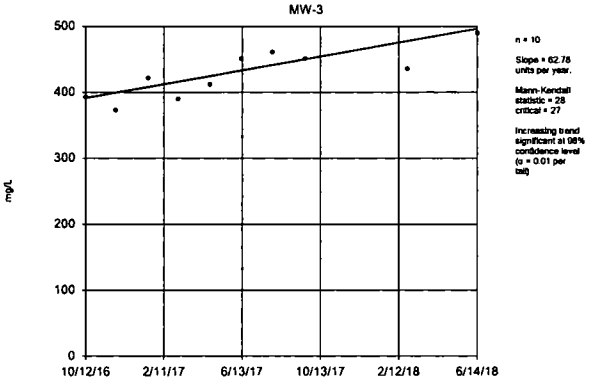
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



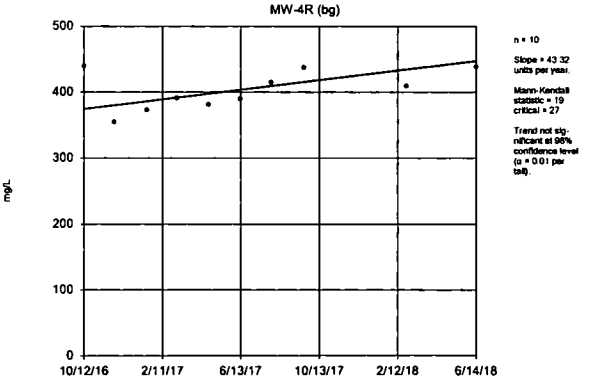
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

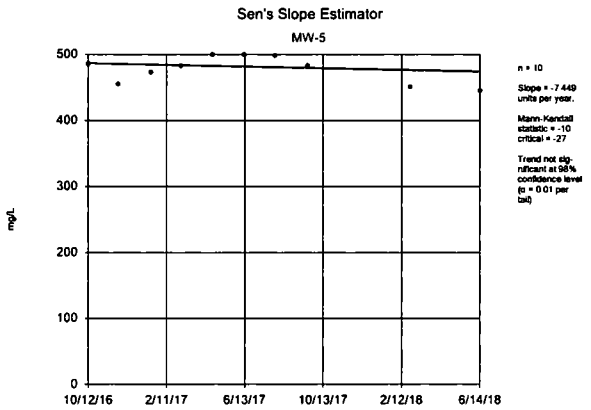
MW-4R (bg)



Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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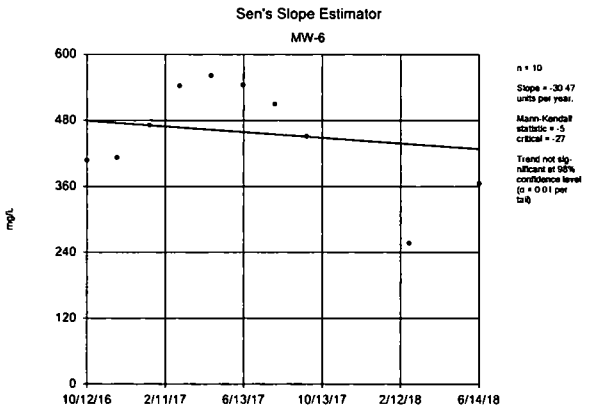
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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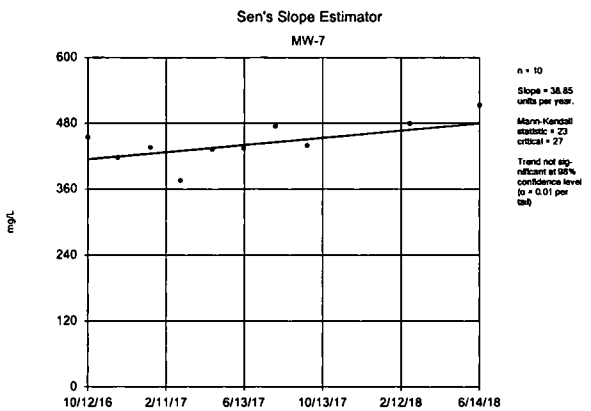
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

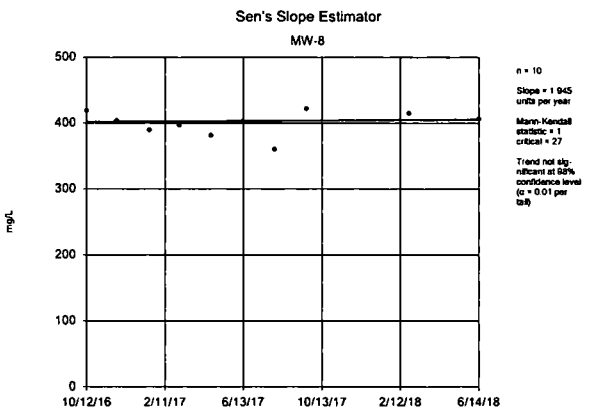
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



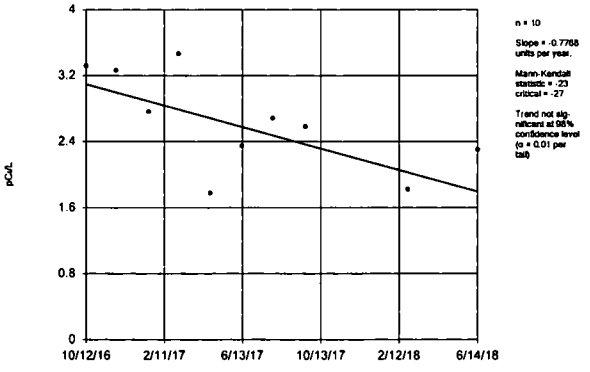
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-1



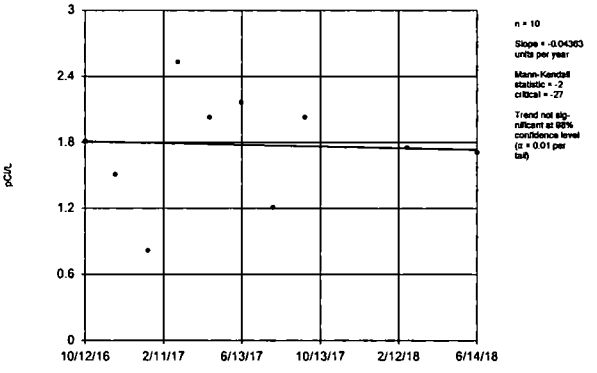
Constituent: Total Radium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-2



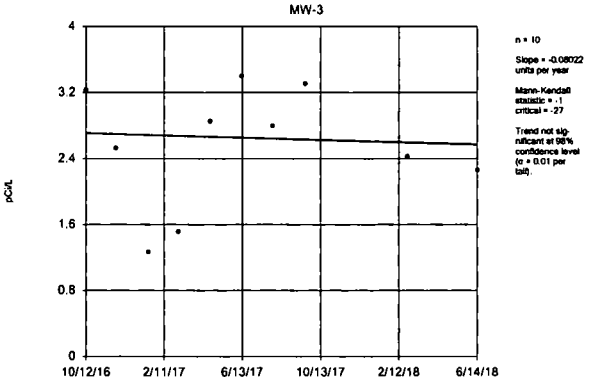
Constituent: Total Radium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-3



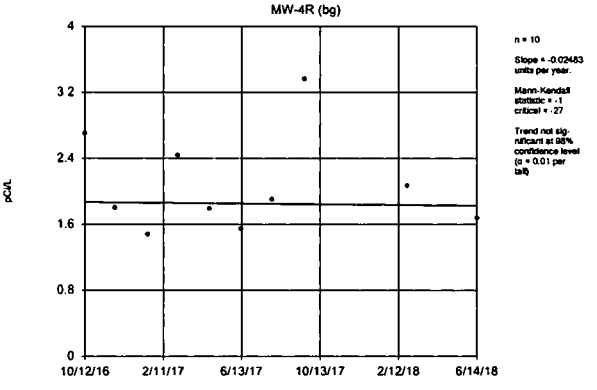
Constituent: Total Radium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

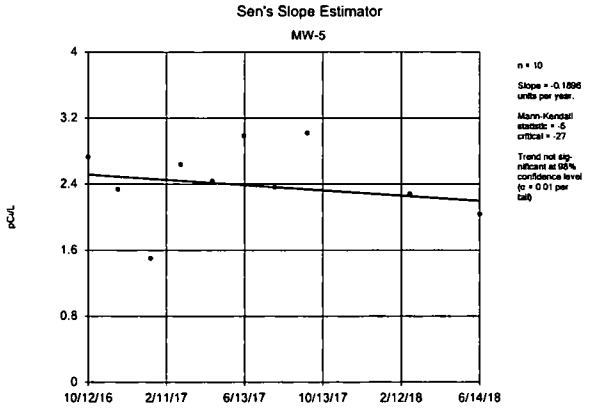
MW-4R (bg)



Constituent: Total Radium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg

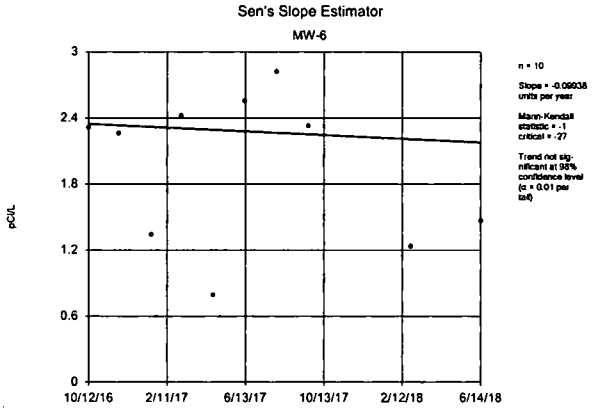
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



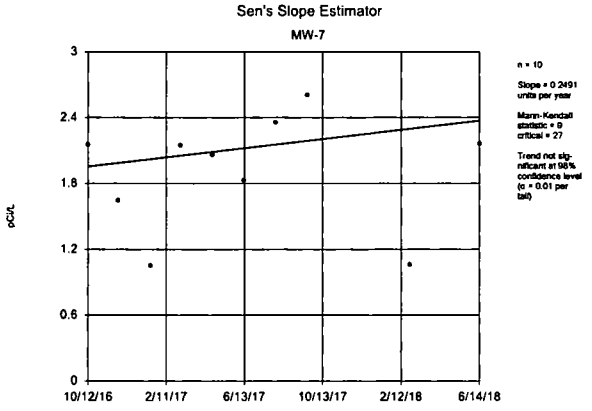
Constituent: Total Radium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



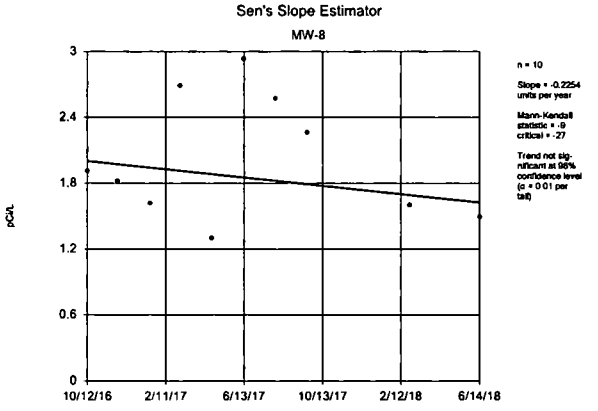
Constituent: Total Radium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Total Radium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Total Radium Analysis Run 4/25/2019 7:20 PM View: TREND TEST - bkg
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Trend Test

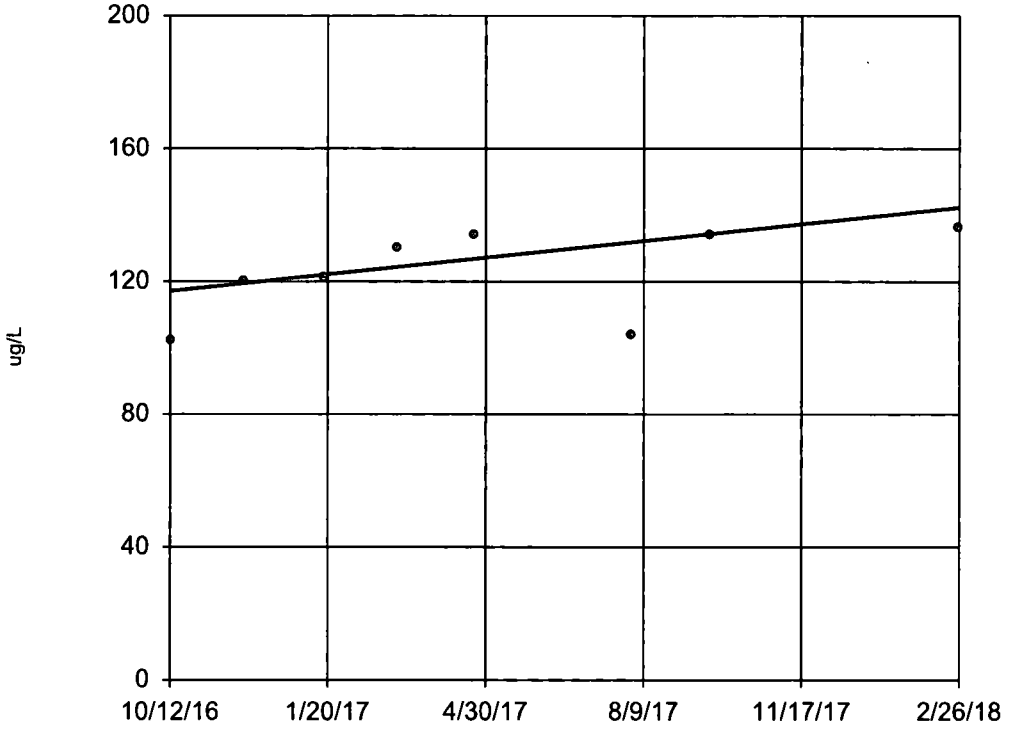
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 7:25 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (ug/L)	MW-8	18.32	19	20	No	8	0	n/a	n/a	0.02	NP

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-8



n = 8

Slope = 18.32 units per year.

Mann-Kendall statistic = 19 critical = 20

Trend not significant at 98% confidence level (α = 0.01 per tail).

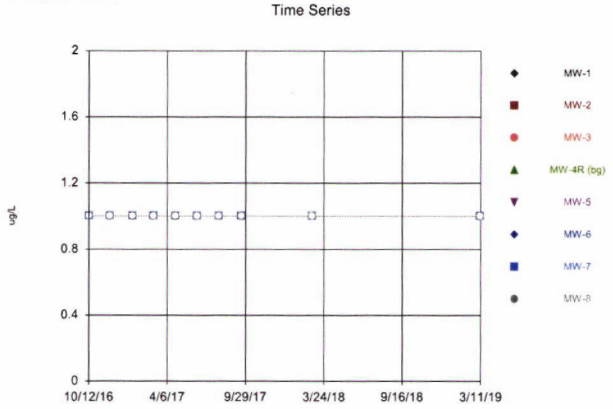
Constituent: Boron Analysis Run 4/25/2019 7:25 PM View: TREND TEST - bkg

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

Attachment B. Compliance Statistical Analysis

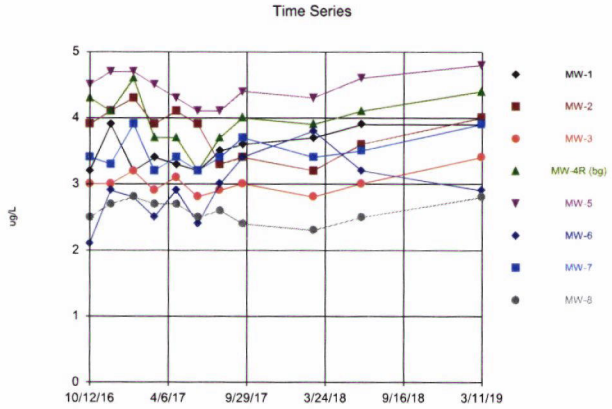
B.1 Time Series Plots

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.



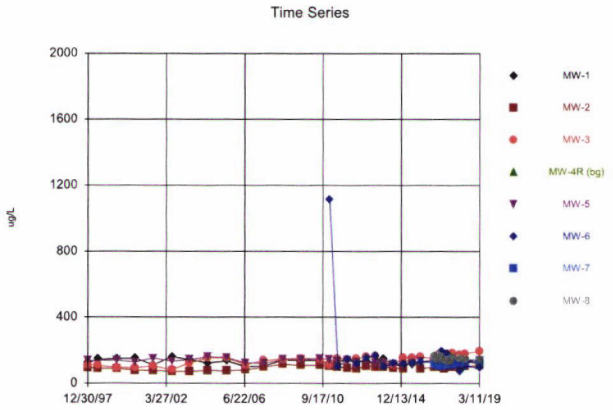
Constituent: Antimony [total] Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



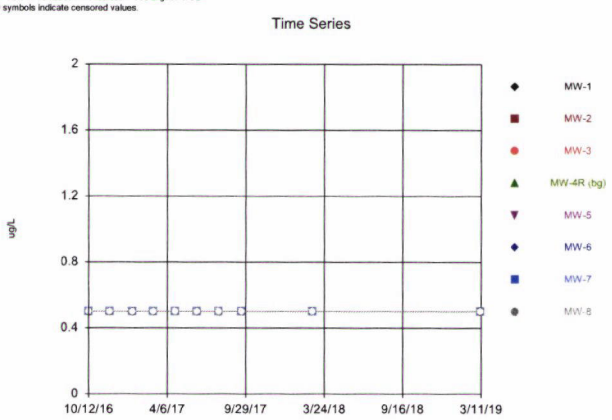
Constituent: Arsenic [total] Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



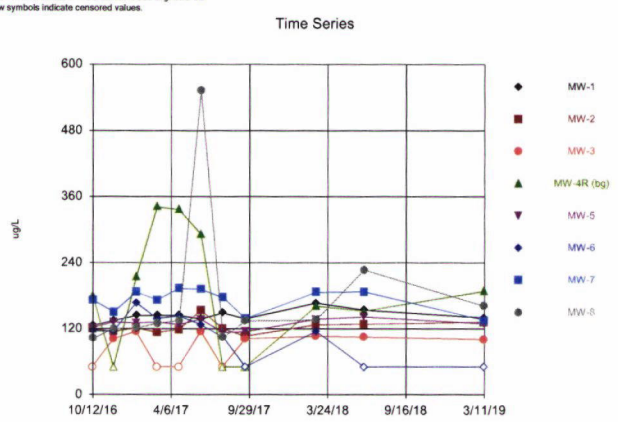
Constituent: Barium [total] Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.



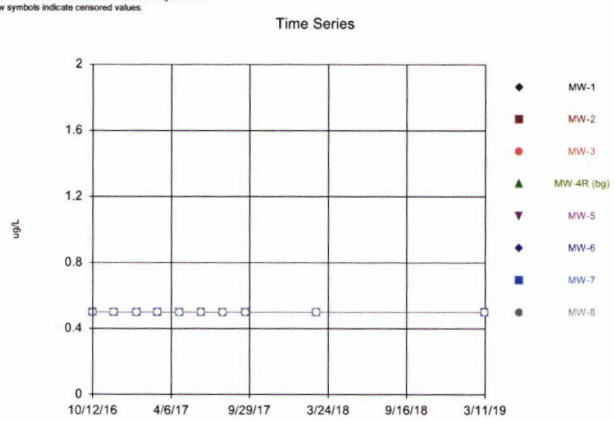
Constituent: BERYLIUM Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers, UG
Hollow symbols indicate censored values.



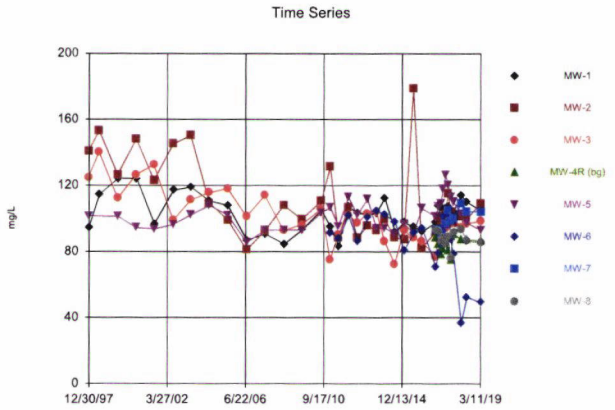
Constituent: Boron Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers, UG
Hollow symbols indicate censored values.



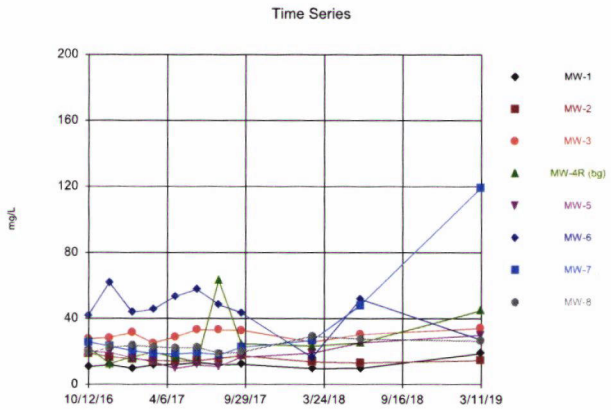
Constituent: Cadmium [total] Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers, UG



Constituent: Calcium Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

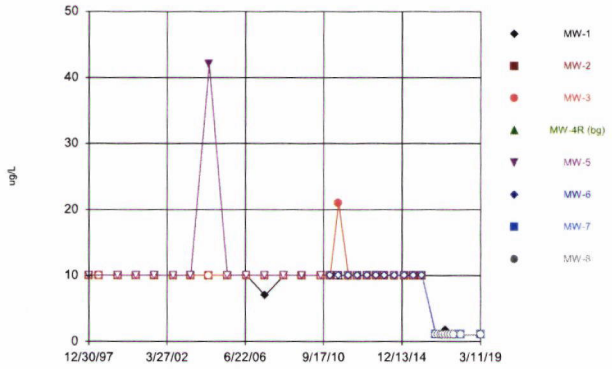
Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers, UG



Constituent: Chloride Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

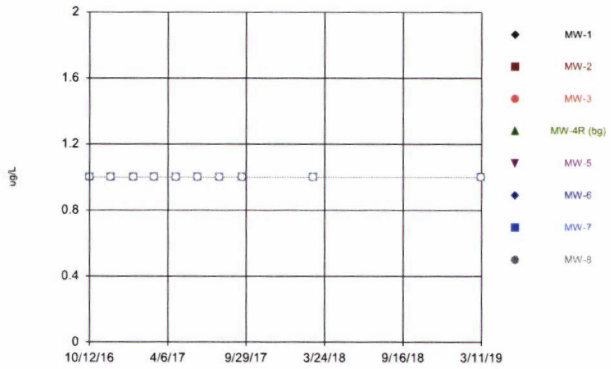
Time Series



Constituent: Chromium [total] Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

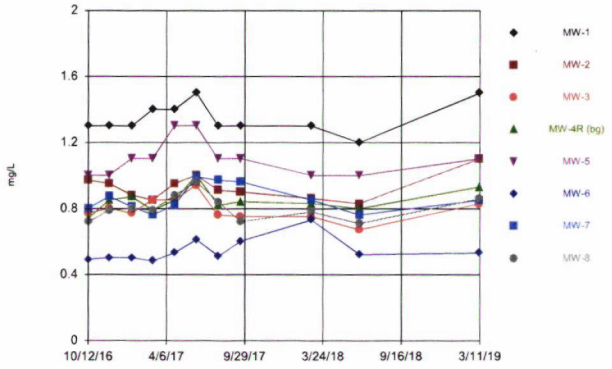
Time Series



Constituent: Cobalt [total] Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

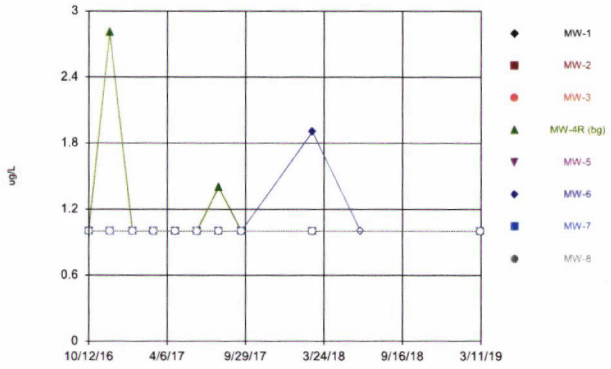
Time Series



Constituent: Fluoride Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

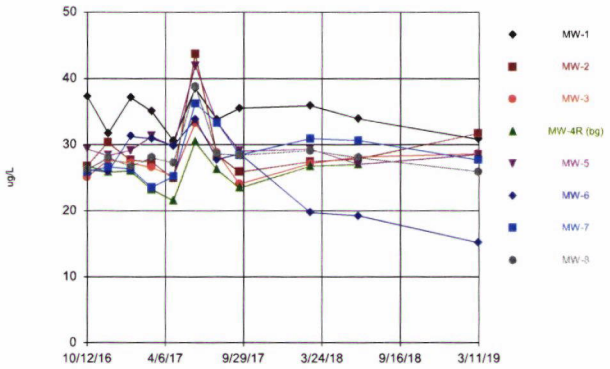
Time Series



Constituent: Lead [total] Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Time Series

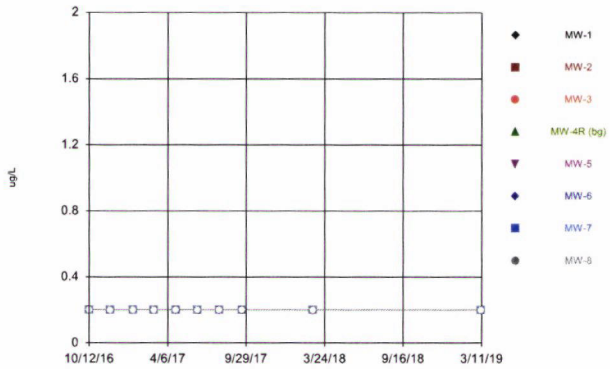


Constituent: Lithium Analysis Run 4/25/2019 6:39 PM View: Time Series

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

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Time Series

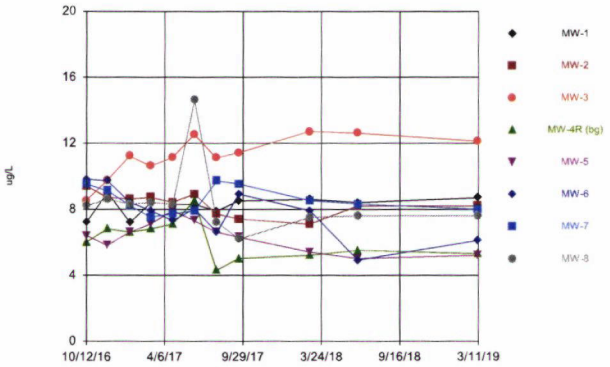


Constituent: Mercury Analysis Run 4/25/2019 6:39 PM View: Time Series

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

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Time Series

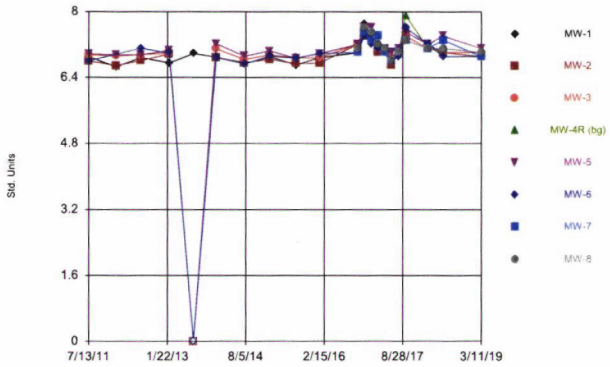


Constituent: Molybdenum Analysis Run 4/25/2019 6:39 PM View: Time Series

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

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

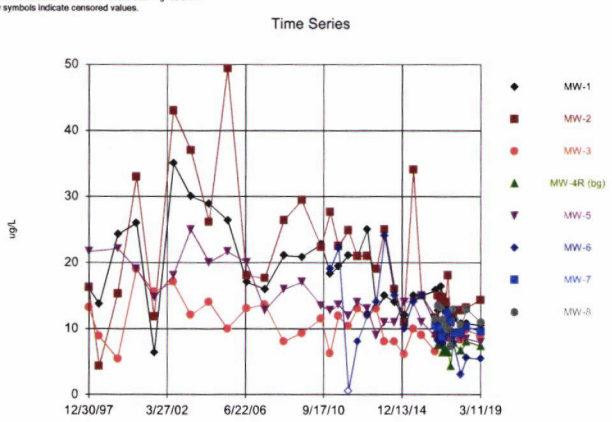
Time Series



Constituent: pH Analysis Run 4/25/2019 6:39 PM View: Time Series

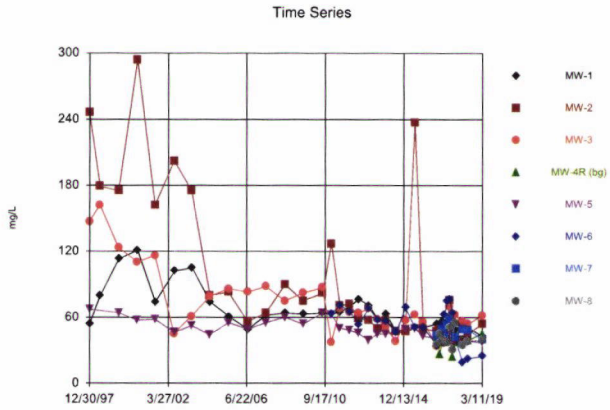
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.



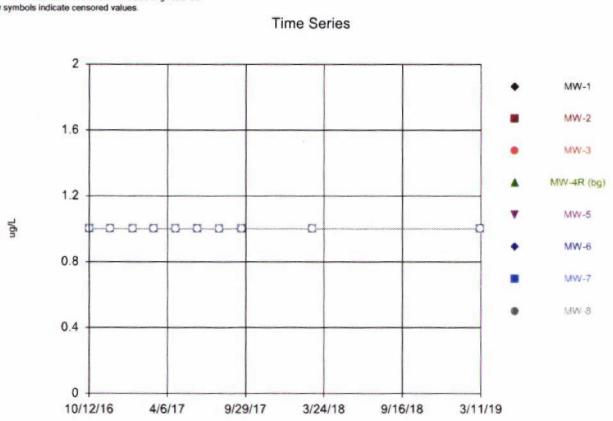
Constituent: Selenium [total] Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



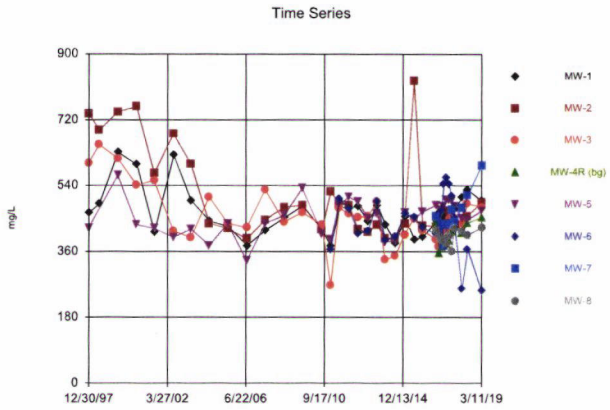
Constituent: Sulfate Analysis Run 4/25/2019 6:39 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.



Constituent: Thallium [total] Analysis Run 4/25/2019 6:40 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

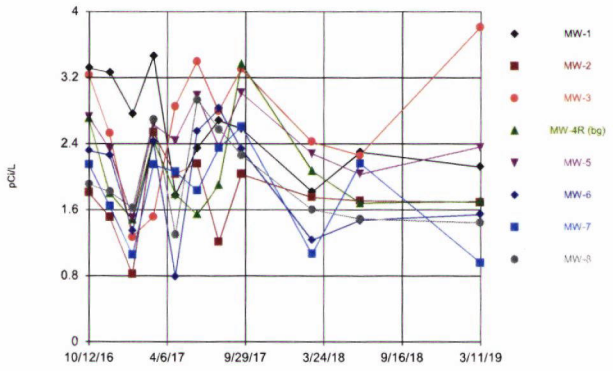
Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Constituent: Total Dissolved Solids Analysis Run 4/25/2019 6:40 PM View: Time Series
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers, UG

Time Series



Constituent: Total Radium Analysis Run 4/25/2019 6:40 PM View: Time Series

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

B.2 Intrawell Prediction Limits

Intrawell Prediction Limit

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 7:28 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Arsenic [total] (ug/L)	MW-1	4.369	3/11/2019	3.9	No	10	n/a	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-2	4.96	3/11/2019	4	No	10	n/a	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	**MW-3**	**3.368**	**3/11/2019**	**3.4**	**Yes**	**10**	**n/a**	**0**	**No**	**0.000...**	Param 1 of 2
Arsenic [total] (ug/L)	MW-4R	5.157	3/11/2019	4.4	No	10	n/a	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-5	5.119	3/11/2019	4.8	No	10	n/a	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-6	4.478	3/11/2019	2.9	No	10	n/a	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-7	4.13	3/11/2019	3.9	No	10	n/a	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-8	3.068	3/11/2019	2.8	No	10	n/a	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-1	179.3	3/11/2019	147	No	10	n/a	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-2	109.8	3/11/2019	108	No	9	n/a	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-3	199.2	3/11/2019	191	No	10	n/a	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-4R	145.6	3/11/2019	126	No	10	n/a	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-5	173.2	3/11/2019	121	No	10	n/a	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-6	255	3/11/2019	92.1	No	10	n/a	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-7	137.1	3/11/2019	136	No	10	n/a	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-8	185.2	3/11/2019	142	No	10	n/a	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-1	179.5	3/11/2019	140	No	10	n/a	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-2	141.7	3/11/2019	132	No	9	n/a	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-3	141.6	3/11/2019	100	No	10	n/a	40	x^3	0.000...	Param 1 of 2
Boron (ug/L)	MW-4R	592.3	3/11/2019	188	No	10	n/a	30	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-5	158.9	3/11/2019	129	No	10	n/a	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-7	232.9	3/11/2019	135	No	10	n/a	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-8	171.5	3/11/2019	161	No	8	n/a	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-1	120.2	3/11/2019	105	No	10	n/a	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-2	112	3/11/2019	109	No	9	n/a	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-3	116	3/11/2019	98.2	No	10	n/a	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-4R	99.14	3/11/2019	86.4	No	10	n/a	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-5	139	3/11/2019	92.7	No	10	n/a	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-6	149.5	3/11/2019	49.2	No	10	n/a	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-7	120.7	3/11/2019	104	No	10	n/a	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-8	100.4	3/11/2019	85.4	No	9	n/a	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-1**	**15.29**	**3/11/2019**	**19**	**Yes**	**10**	**n/a**	**0**	**No**	**0.000...**	Param 1 of 2
Chloride (mg/L)	MW-2	22.01	3/11/2019	14.6	No	9	n/a	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-3	39	3/11/2019	34	No	10	n/a	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-4R**	**35.49**	**3/11/2019**	**44.8**	**Yes**	**9**	**n/a**	**0**	**No**	**0.000...**	Param 1 of 2
Chloride (mg/L)	MW-5	31.51	3/11/2019	29.8	No	10	n/a	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-6	73.16	3/11/2019	27	No	9	n/a	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-7**	**32.23**	**3/11/2019**	**119**	**Yes**	**9**	**n/a**	**0**	**No**	**0.000...**	Param 1 of 2
Chloride (mg/L)	MW-8	33.65	3/11/2019	26.4	No	10	n/a	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-1	1.592	3/11/2019	1.5	No	10	n/a	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	**MW-2**	**1.089**	**3/11/2019**	**1.1**	**Yes**	**10**	**n/a**	**0**	**No**	**0.000...**	Param 1 of 2
Fluoride (mg/L)	MW-3	1.026	3/11/2019	0.83	No	10	n/a	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-4R	0.9555	3/11/2019	0.93	No	9	n/a	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-5	1.493	3/11/2019	1.1	No	10	n/a	0	x^(1/3)	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-6	0.795	3/11/2019	0.53	No	10	n/a	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-7	1.133	3/11/2019	0.85	No	10	n/a	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-8	1.048	3/11/2019	0.86	No	10	n/a	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-1	42.85	3/11/2019	30.8	No	10	n/a	0	No	0.000 ..	Param 1 of 2
Lithium (ug/L)	MW-2	32.65	3/11/2019	31.7	No	9	n/a	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-3	31.99	3/11/2019	28.6	No	9	n/a	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 4/25/2019, 7:28 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Lithium (ug/L)	MW-4R	33.59	3/11/2019	28.5	No	10	n/a	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-5	35.75	3/11/2019	28.5	No	9	n/a	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-6	42.47	3/11/2019	15.1	No	10	n/a	0	No	0.000 ..	Param 1 of 2
Lithium (ug/L)	MW-7	41.34	3/11/2019	27.6	No	10	n/a	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-8	30.97	3/11/2019	25.9	No	9	n/a	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-1	10.04	3/11/2019	8.7	No	10	n/a	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-2	10.58	3/11/2019	8.2	No	10	n/a	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-3	15.35	3/11/2019	12.1	No	10	n/a	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-4R	10.08	3/11/2019	5.3	No	10	n/a	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-5	9.231	3/11/2019	5.2	No	10	n/a	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-6	12.57	3/11/2019	6.1	No	10	n/a	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-7	11.15	3/11/2019	8	No	10	n/a	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-8	10.42	3/11/2019	7.6	No	9	n/a	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-1	8.025	3/11/2019	7	No	10	n/a	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-2	7.851	3/11/2019	6.9	No	10	n/a	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-3	7.863	3/11/2019	7	No	10	n/a	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-4R	8.258	3/11/2019	7	No	10	n/a	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-5	7.986	3/11/2019	7.1	No	10	n/a	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-6	7.895	3/11/2019	6.9	No	10	n/a	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-7	7.873	3/11/2019	6.9	No	10	n/a	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-8	7.926	3/11/2019	7	No	10	n/a	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-1	19.45	3/11/2019	10.5	No	10	n/a	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-2	20.24	3/11/2019	14.3	No	10	n/a	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-3	11.73	3/11/2019	8.9	No	10	n/a	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-4R	10.57	3/11/2019	7.3	No	9	n/a	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-5	9.889	3/11/2019	7.9	No	10	n/a	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-6	18.32	3/11/2019	5.3	No	10	n/a	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-7	13.77	3/11/2019	9.5	No	10	n/a	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-8	17.35	3/11/2019	11	No	10	n/a	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-1	61.16	3/11/2019	43.1	No	10	n/a	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-2	59.03	3/11/2019	54	No	9	n/a	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-3	85.79	3/11/2019	61.2	No	10	n/a	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-4R	59.48	3/11/2019	45.1	No	10	n/a	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-5	48.2	3/11/2019	36.8	No	10	n/a	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-6	114.6	3/11/2019	24.3	No	10	n/a	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-7	66.3	3/11/2019	39.9	No	10	n/a	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-8	64.43	3/11/2019	39.5	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	553.1	3/11/2019	498	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-2**	**486.6**	**3/11/2019**	**492**	**Yes**	**10**	**n/a**	**0**	**No**	**0.000...**	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-3	543.4	3/11/2019	481	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-4R	497.3	3/11/2019	452	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-5	542.6	3/11/2019	469	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-6	754.3	3/11/2019	253	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-7**	**563**	**3/11/2019**	**592**	**Yes**	**10**	**n/a**	**0**	**No**	**0.000...**	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-8	458.5	3/11/2019	425	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-1	4.506	3/11/2019	2.12	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-2	3.313	3/11/2019	1.69	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-3	4.85	3/11/2019	3.81	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-4R	3.959	3/11/2019	1.7	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-5	3.859	3/11/2019	2.36	No	10	n/a	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 4/25/2019, 7:28 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Total Radium (pCi/L)	MW-6	4.117	3/11/2019	1.54	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-7	3.547	3/11/2019	0.953	No	10	n/a	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-8	3.799	3/11/2019	1.44	No	10	n/a	0	No	0.000...	Param 1 of 2

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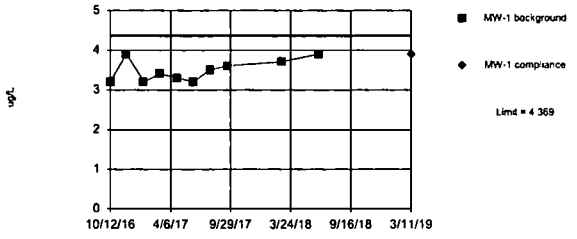
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.49, Std. Dev.=0.2767, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8827, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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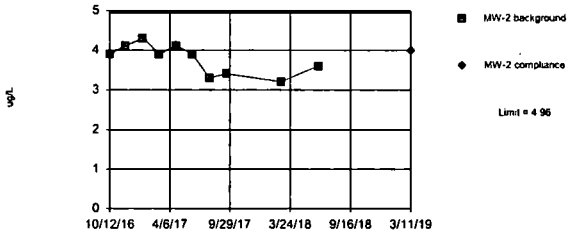
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.77, Std. Dev.=0.3743, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.927, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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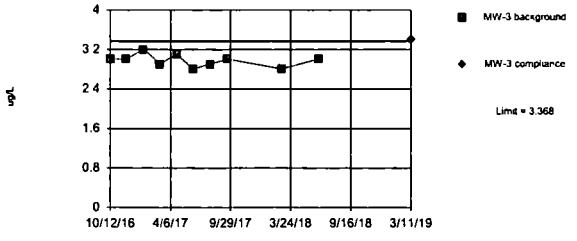
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.97, Std. Dev.=0.1252, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9291, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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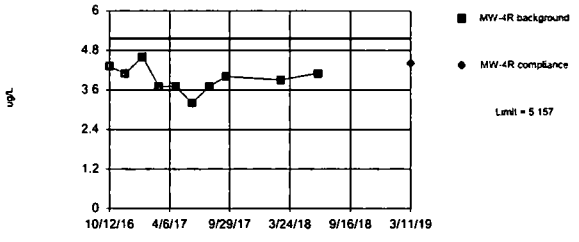
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.93, Std. Dev.=0.386, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9683, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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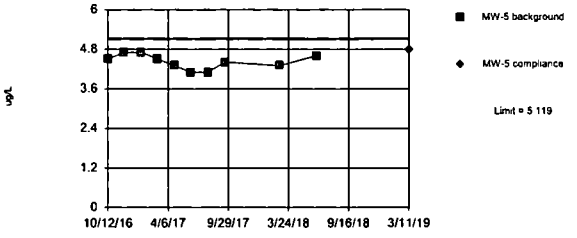
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary. Mean=4.42, Std. Dev.=0 2201, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 9234, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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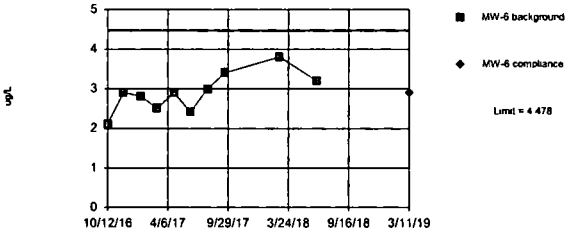
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary. Mean=2.9, Std. Dev.=0 4967, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9854, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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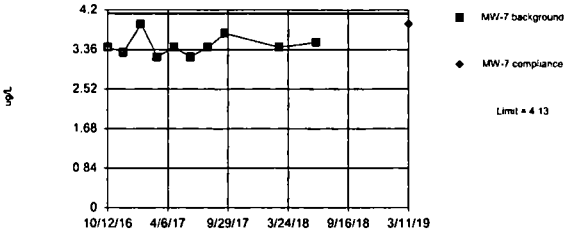
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.44, Std Dev =0 2171, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.875, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found.

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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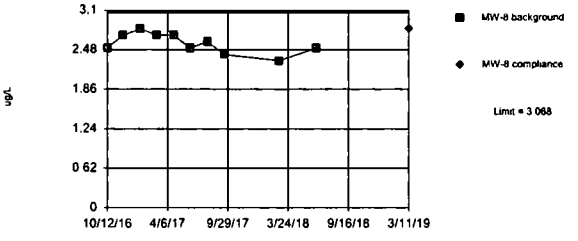
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.57, Std Dev.=0.1567, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0 9449, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132) Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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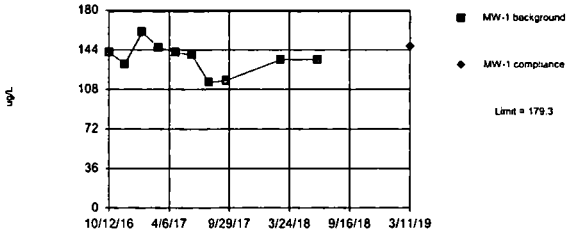
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=136, Std. Dev.=13.61, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9422, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

Constituent: Barium [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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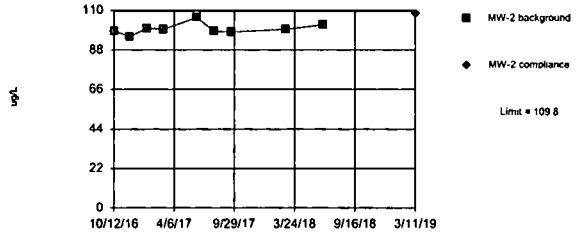
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=99.68, Std. Dev.=2.964, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9111, critical = 0.764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. One background outlier was removed: 87.4 (4/24/2017).

Constituent: Barium [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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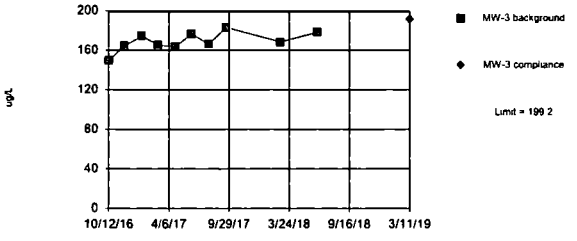
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=168.6, Std. Dev.=9.64, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9508, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Barium [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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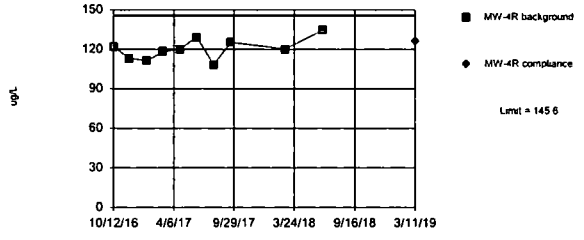
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=120, Std. Dev.=8.055, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9784, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Barium [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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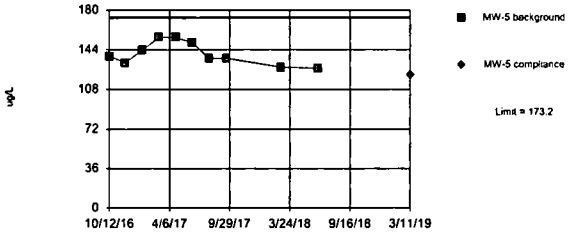
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=140.1, Std. Dev.=10.43, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9113, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132) Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Barium [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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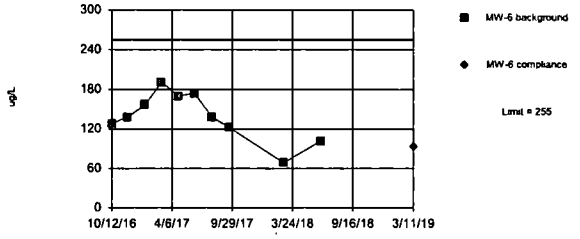
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=138.7, Std. Dev.=36.6, n=10. Insufficient data to test for seasonality. data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9715, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. Dixon's outlier test was performed on the background data. No background outliers were found.

Constituent: Barium [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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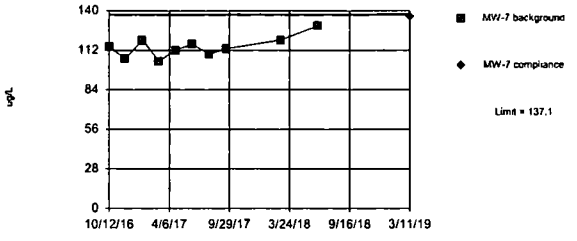
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=114.1, Std Dev.=7.249, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.959, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Barium [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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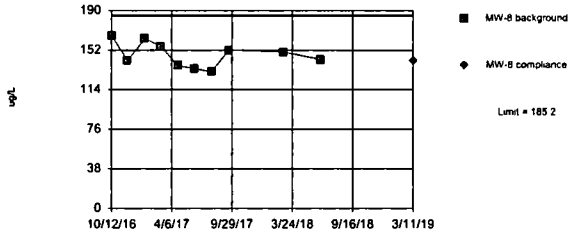
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=147.3, Std Dev =11 93, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0.9563, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Barium [total] Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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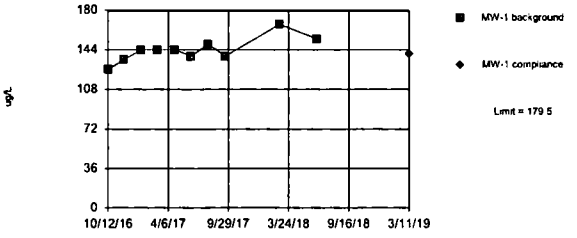
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=143.9, Std. Dev =11 21, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9555, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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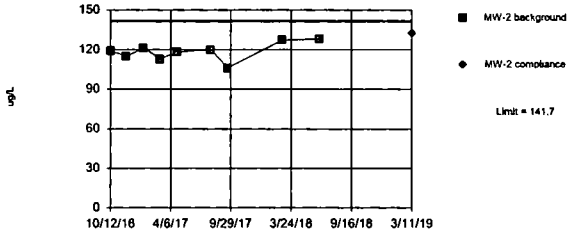
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=118.6, Std. Dev.=6 803, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9618, critical = 0 764 Kappa = 3 401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Boron Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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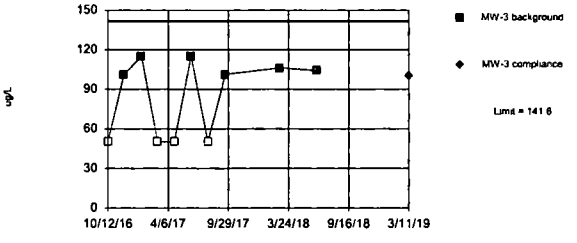
Hollow symbols indicate censored values

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. Insufficient data to test for seasonality: data were not deseasonalized Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0.8047, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified.

Constituent Boron Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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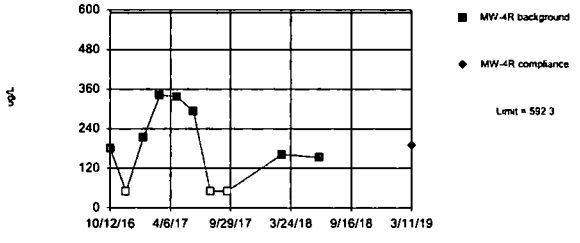
Hollow symbols indicate censored values

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (after Aitchison's Adjustment): Mean=167.6, Std. Dev.=133.7, n=10, 30% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 8919, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Boron Analysis Run 4/25/2019 7:26 PM View: Intrawell Prediction Limits

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

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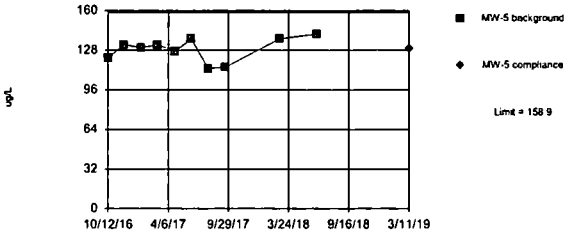
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary. Mean=128 5, Std. Dev.=9 56, n=10. Insufficient data to test for seasonality data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0.9223, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Boron Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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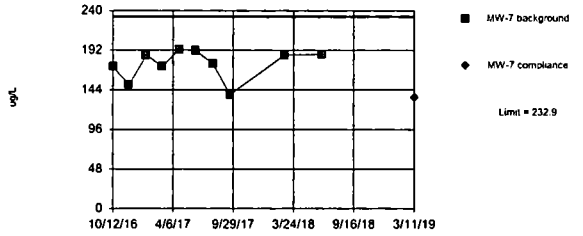
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=175.1, Std. Dev.=18.19, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0 8521, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583 Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified

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

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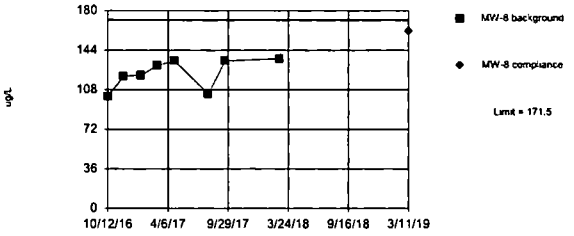
Within Limit

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 = 3 624 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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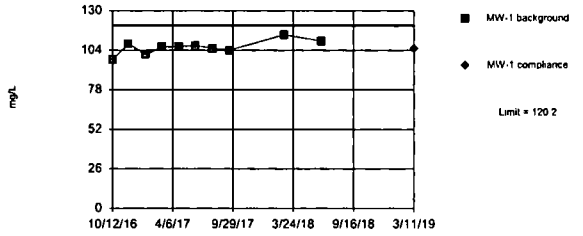
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=105.9, Std. Dev.=4.518, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9799, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Calcium Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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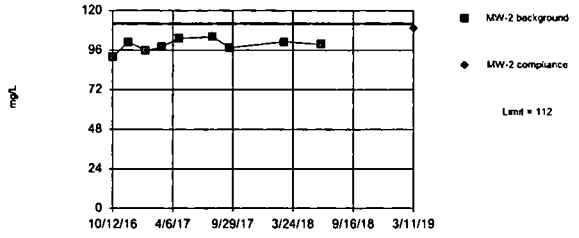
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=99, Std. Dev.=3 827, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0.9649, critical = 0.764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. Dixon's outlier test was performed on the background data. One background outlier was removed: 115 (6/12/2017).

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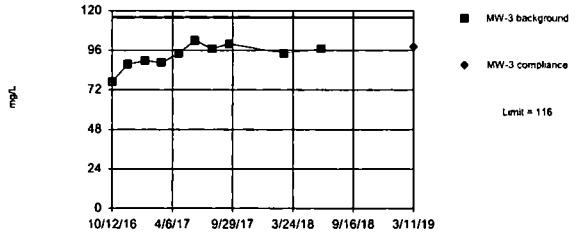
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=92.59, Std Dev =7.372, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9298, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583. Dixon's outlier test was performed on the background data. No background outliers were found

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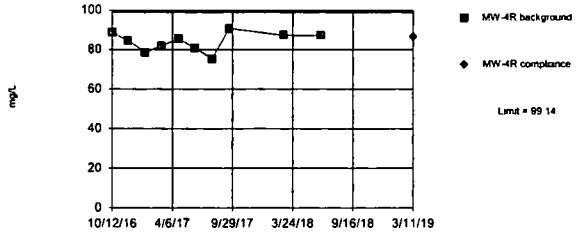
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=83 88, Std. Dev.=4.802, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9683, critical = 0.781 Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found.

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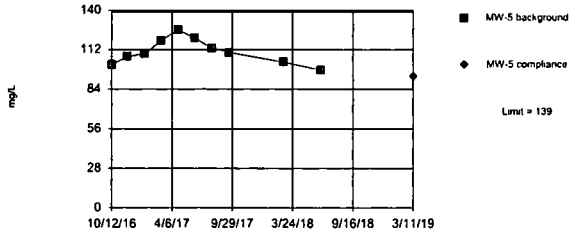
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=110 4, Std. Dev.=8.98, n=10. Insufficient data to test for seasonality. data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9787, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0 05132) Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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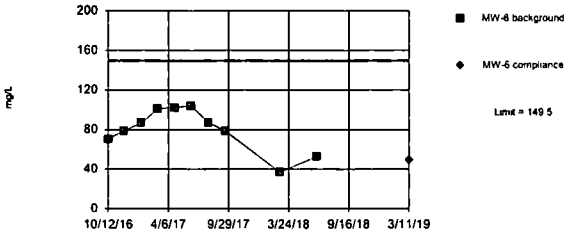
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=79.7, Std. Dev.=21.97, n=10. Insufficient data to test for seasonality; data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9128, critical = 0 781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. No background outliers were found.

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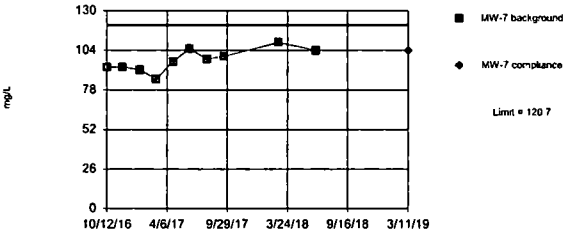
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=97.44, Std. Dev.=7.317, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9838, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

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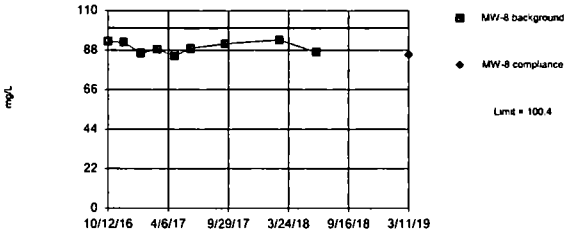
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=89 33, Std. Dev.=3 252, n=9 Insufficient data to test for seasonality. data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9323, critical = 0.764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. One background outlier was removed: 75.9 (8/1/2017)

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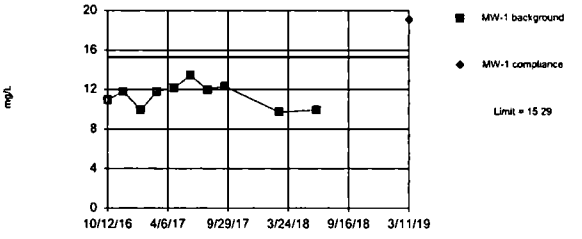
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=11.38, Std. Dev.=1.23, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9094, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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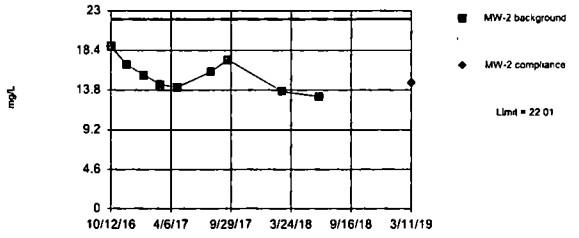
Within Limit

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 = 3.401 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Chloride Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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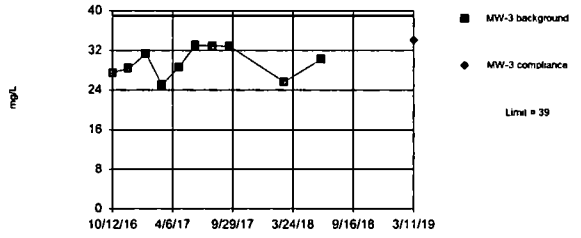
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=29 52, Std. Dev.=2.984, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9142, critical = 0 781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132) Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found.

Constituent: Chloride Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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

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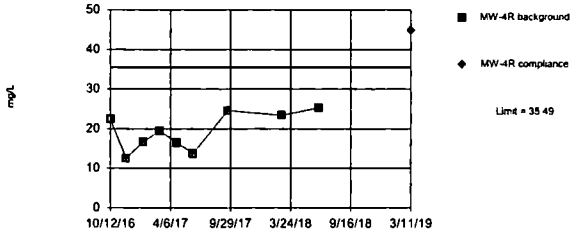
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=19.34, Std. Dev.=4.746, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9211, critical = 0 764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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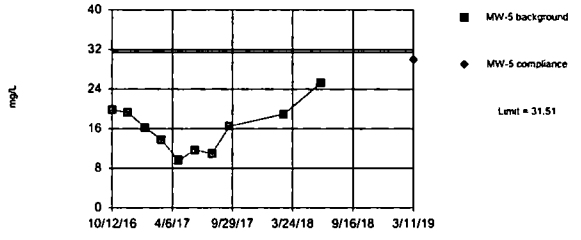
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=16.13, Std Dev.=4.84, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 9601, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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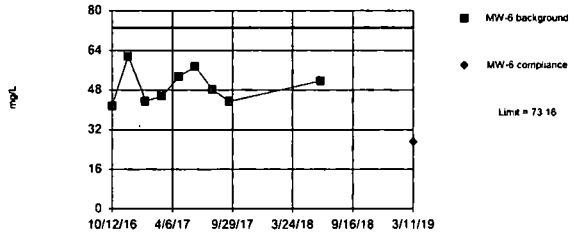
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary. Mean=49.54, Std. Dev.=6 944, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9293, critical = 0 764 Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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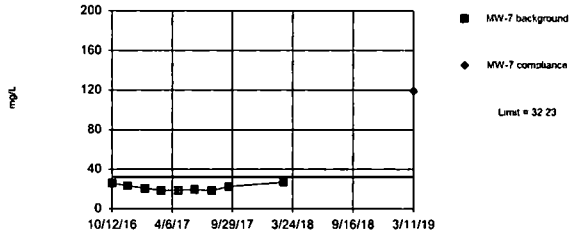
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=21.3, Std. Dev.=3.213, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8869, critical = 0.764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. One background outlier was removed. 47.9 (6/14/2018).

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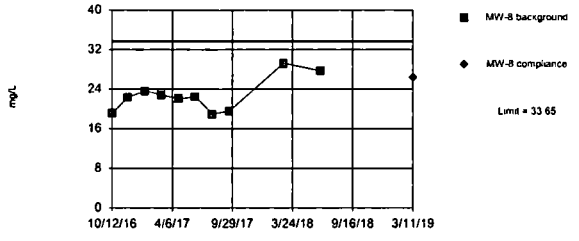
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=22 73, Std. Dev.=3 435, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.89, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132) Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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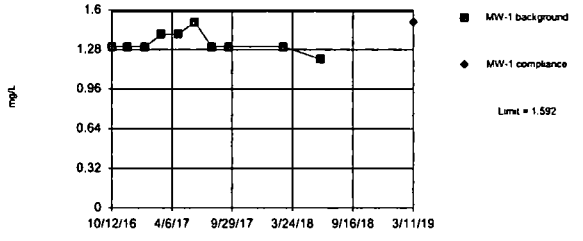
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.33, Std. Dev.=0 08233, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8409, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified.

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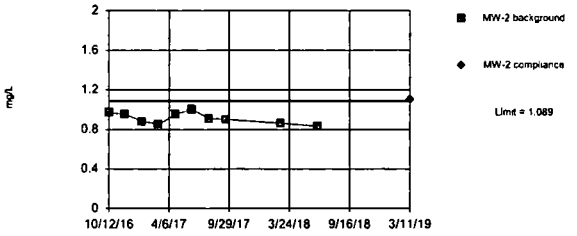
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0 91, Std. Dev.=0.05617, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.962, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found.

Constituent: Fluoride Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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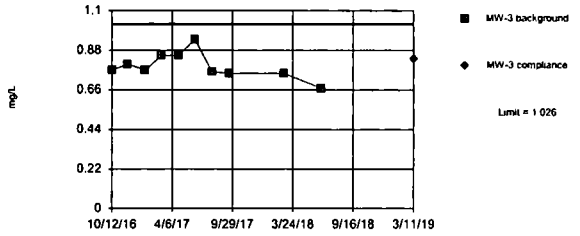
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.791, Std. Dev.=0.07385, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0 01, calculated = 0 9344, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

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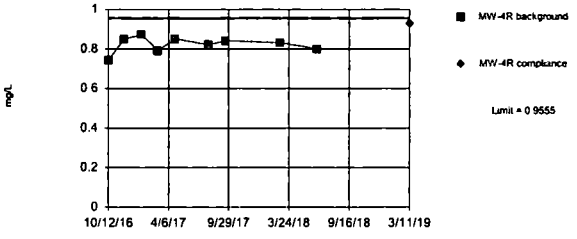
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.8211, Std. Dev.=0.03951, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9302, critical = 0 764. Kappa = 3 401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. One background outlier was removed: 1 (6/12/2017).

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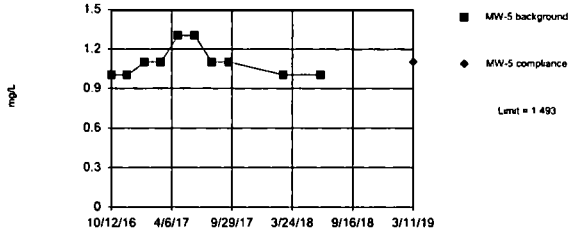
Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=1.031, Std. Dev.=0.03519, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0 7826, critical = 0 781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified.

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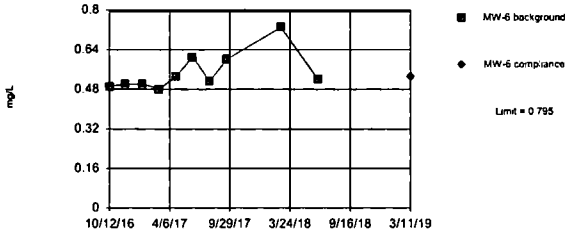
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.547, Std. Dev.=0.07804, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7927, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. After outlier removal distribution was non-normal, so outlier results were invalidated.

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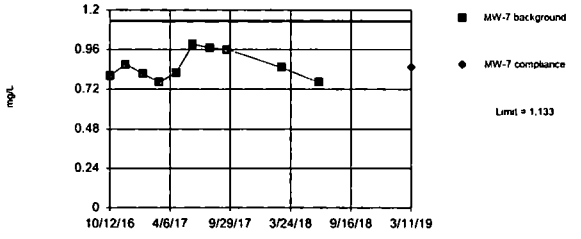
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.859, Std. Dev.=0.08621, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8894, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

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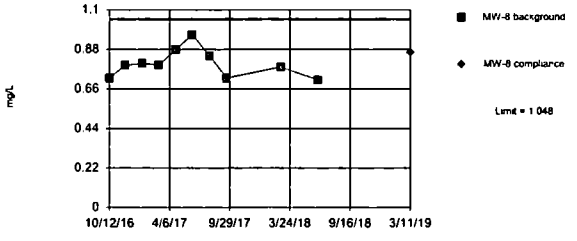
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.799, Std. Dev.=0.07824, n=10. Insufficient data to test for seasonality. data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.913, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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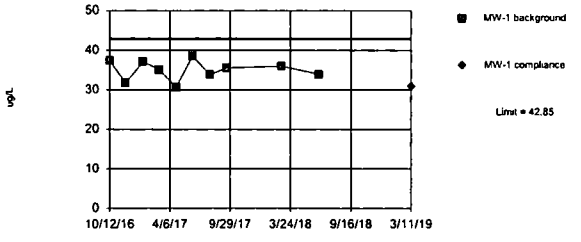
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=34.93, Std. Dev.=2.491, n=10. Insufficient data to test for seasonality. data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9666, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132) Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Lithium Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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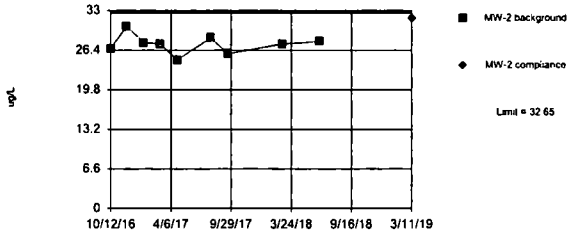
Within Limit

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 = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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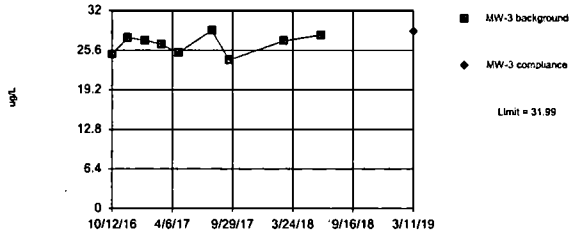
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=26.61, Std. Dev.=1.581, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9564, critical = 0.764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. One background outlier was removed: 33.2 (6/12/2017).

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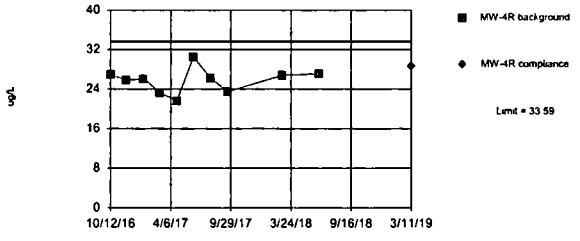
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=25.7, Std. Dev.=2.484, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9349, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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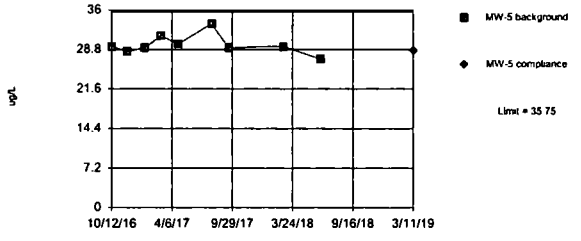
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=29.59, Std. Dev.=1.811, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9022, critical = 0.764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. One background outlier was removed: 41.9 (6/12/2017).

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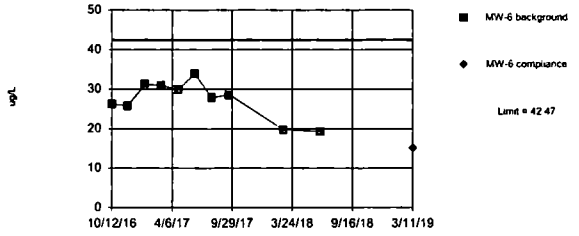
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=27.29, Std. Dev.=4.777, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9183, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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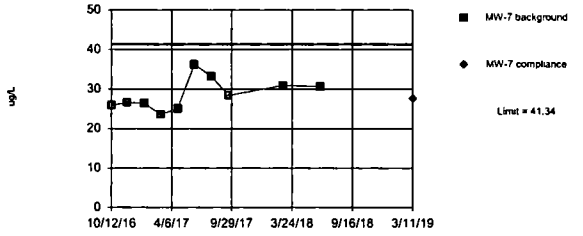
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=28.67, Std Dev.=3.987, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9444, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Lithium Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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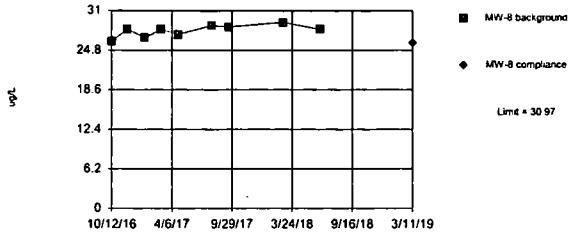
Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=27 8, Std Dev.=0 9314, n=9 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 9451, critical = 0.764. Kappa = 3 401 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found.

Constituent: Lithium Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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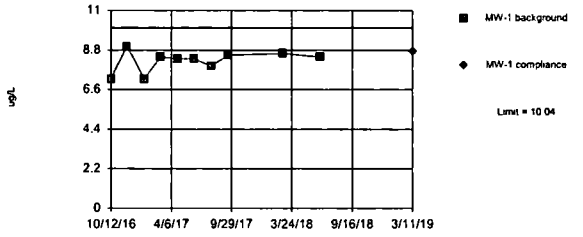

Background Data Summary: Mean=8 18, Std. Dev.=0 5846, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8727, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Molybdenum Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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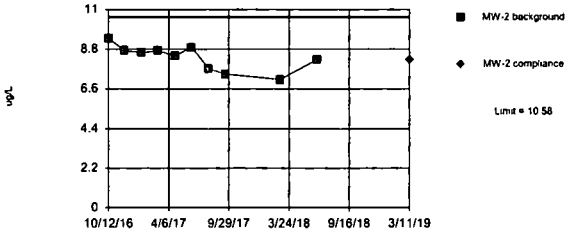
Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.31, Std. Dev.=0.7156, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0 954, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

Constituent: Molybdenum Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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

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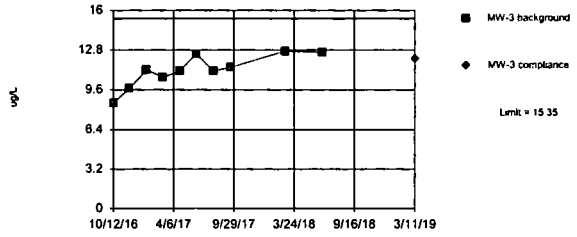
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=11.14, Std. Dev.=1.326, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9184, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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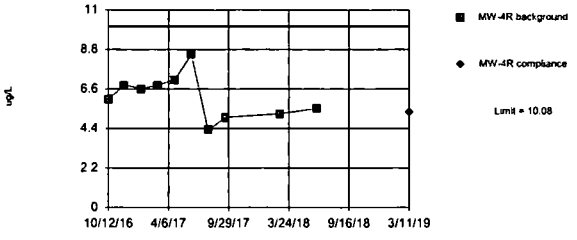
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6 18, Std. Dev.=1.227, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9705, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Molybdenum Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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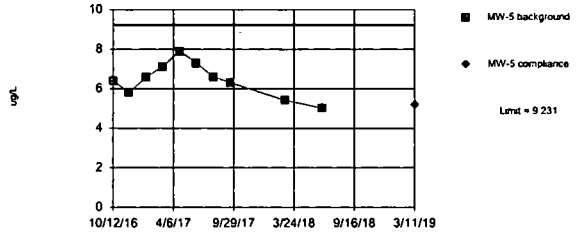
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.44, Std. Dev.=0 8784, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 983, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132) Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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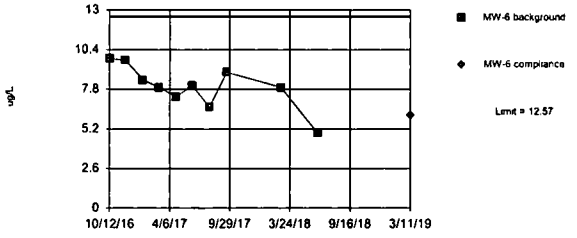
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.94, Std. Dev.=1.458, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test Shapiro Wilk @alpha = 0.01, calculated = 0.9391, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 Dixon's outlier test was performed on the background data. No background outliers were found

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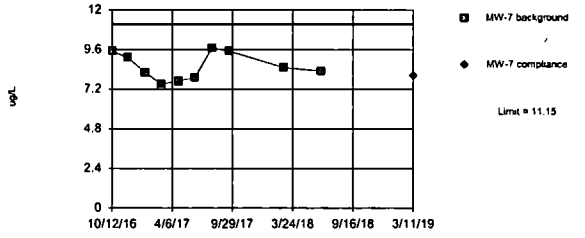
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.59, Std. Dev.=0.8062, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9168, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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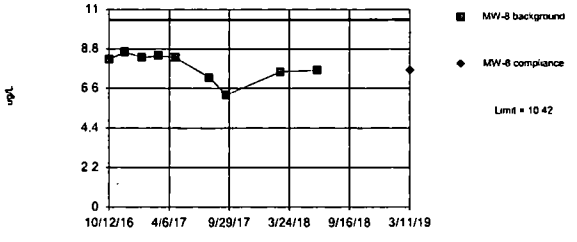
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.811, Std. Dev.=0.7672, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8723, critical = 0.764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. No background outliers were found.

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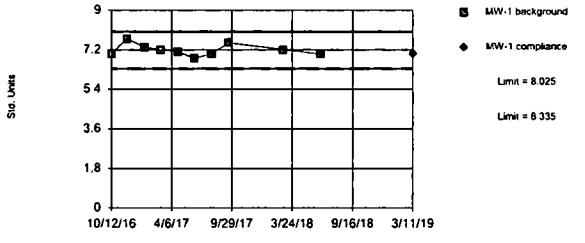
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.18, Std. Dev.=0.2658, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9414, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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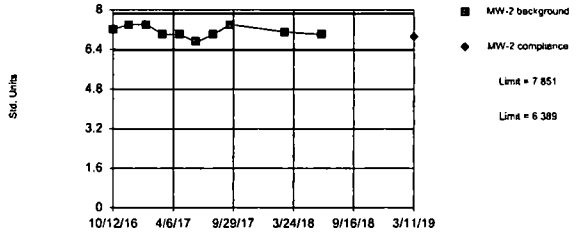
Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.12, Std Dev.=0.23, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8807, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: pH Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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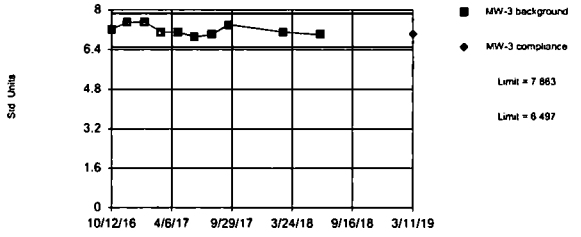
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.18, Std. Dev.=0.215, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.885, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: pH Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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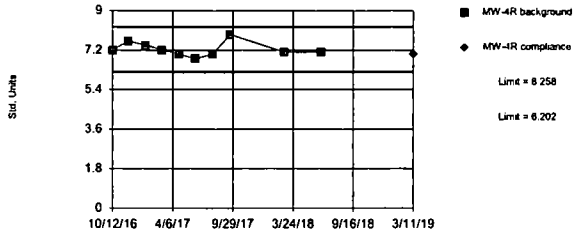
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary Mean=7 23, Std. Dev.=0.3234, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9204, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: pH Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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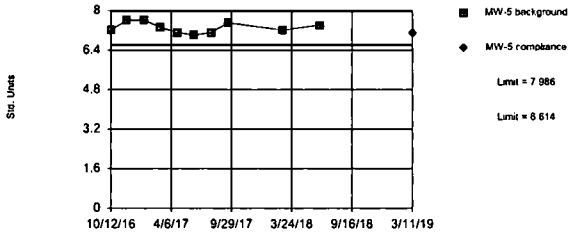
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.3, Std Dev.=0 216, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9241, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

Constituent: pH Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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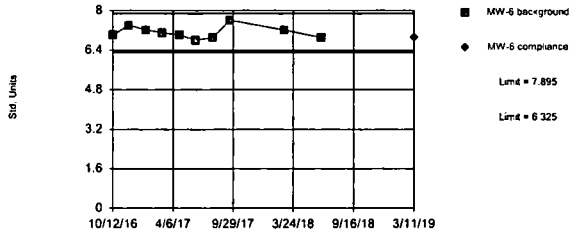
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.11, Std. Dev.=0.247, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9348, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: pH Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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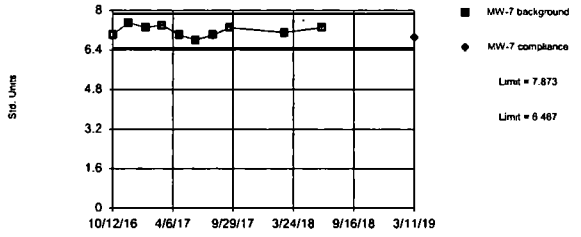
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.17, Std. Dev.=0.2214, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9355, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found

Constituent: pH Analysis Run 4/25/2019 7.27 PM View: Intrawell Prediction Limits

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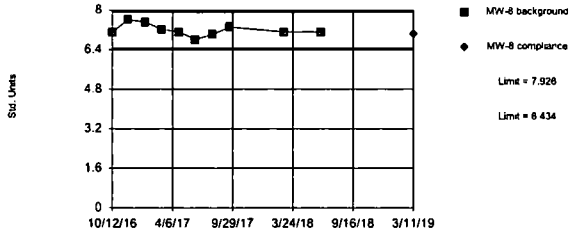
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.18, Std. Dev.=0.2348, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 9288, critical = 0 781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132) Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: pH Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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

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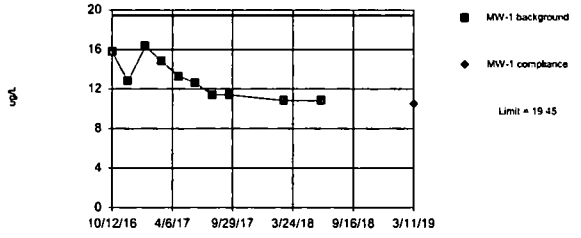
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=13, Std. Dev.=2.029, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0 8985, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Selenium [total] Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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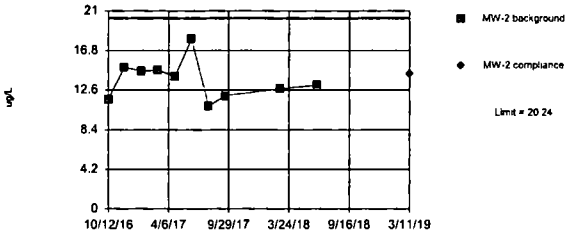
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=13 66, Std. Dev.=2.07, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9461, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found.

Constituent: Selenium [total] Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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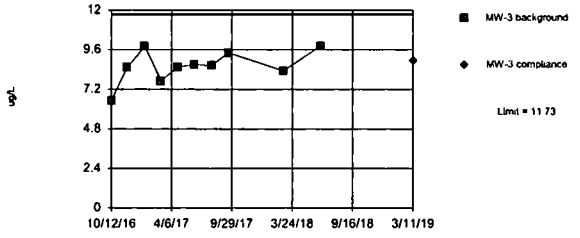
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.58, Std Dev.=0.992, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9165, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. Dixon's outlier test was performed on the background data. No background outliers were found.

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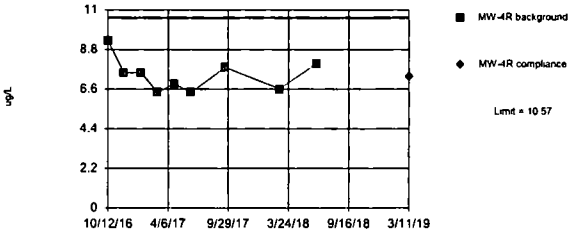
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.378, Std. Dev =0.9378, n=9. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0 903, critical = 0.764. Kappa = 3.401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Selenium [total] Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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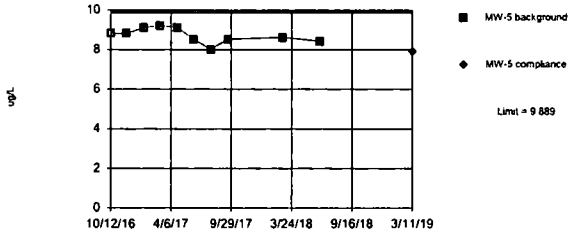
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.7, Std. Dev.=0.3742, n=10. Insufficient data to test for seasonality. data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9458, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Selenium [total] Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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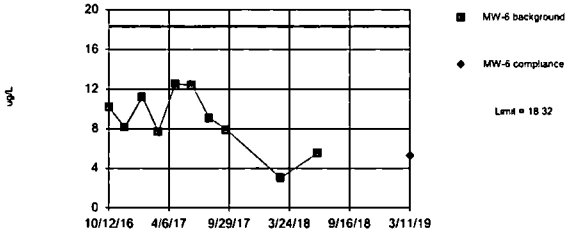
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8 76, Std. Dev.=3.009, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.949, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. Dixon's outlier test was performed on the background data. No background outliers were found.

Constituent: Selenium [total] Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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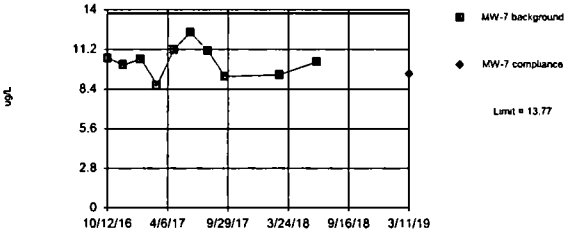
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary. Mean=10.36, Std. Dev.=1 073, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9769, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Selenium [total] Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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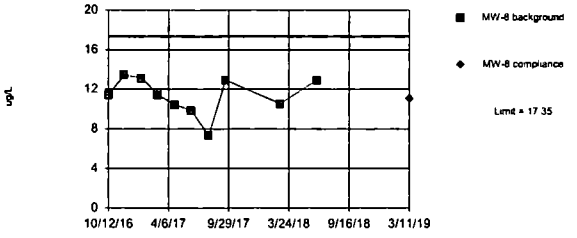

Background Data Summary: Mean=11 31, Std. Dev.=1.9, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9028, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583 Dixon's outlier test was performed on the background data. No background outliers were found.

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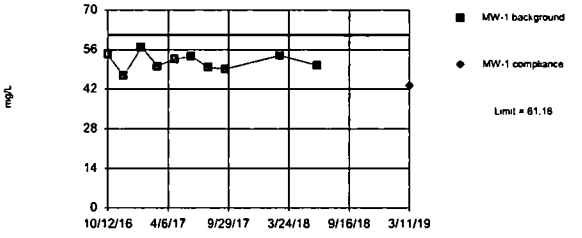
Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=51.63, Std. Dev.=2.999, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9727, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132) Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

Constituent: Sulfate Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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

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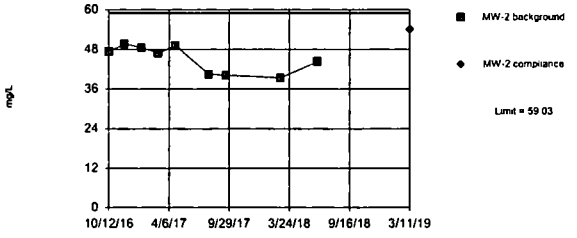
Within Limit

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 = 3 401 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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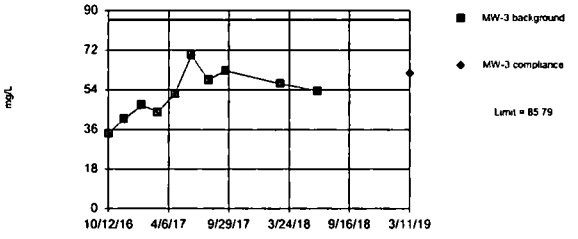
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=51.88, Std. Dev.=10.67, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9935, critical = 0 781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

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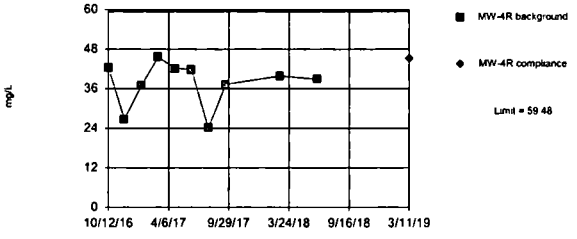
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=37.53, Std. Dev.=6.906, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8478, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified.

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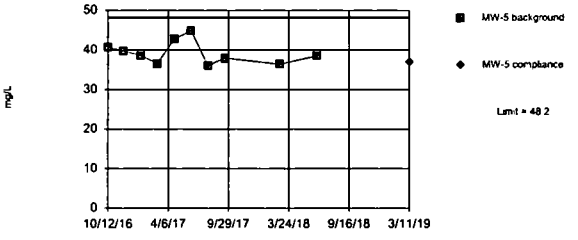
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=39.12, Std. Dev.=2.859, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 9135, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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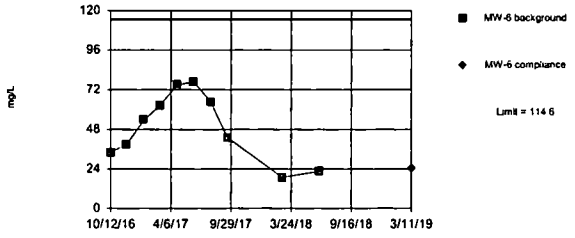
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=48 84, Std. Dev.=20 69, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9417, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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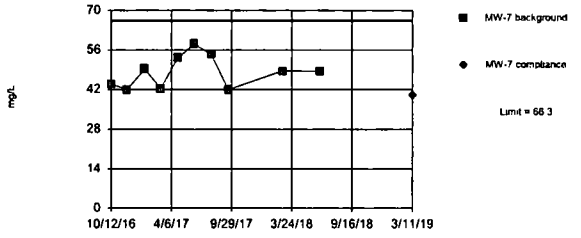
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=48.14, Std. Dev.=5.715, n=10. Insufficient data to test for seasonality. data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9073, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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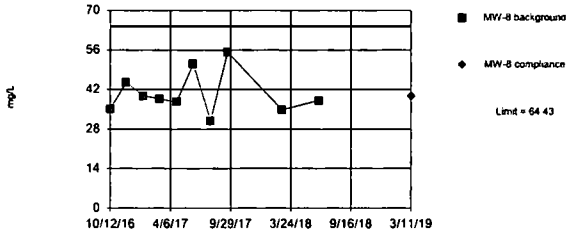
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary. Mean=40.48, Std. Dev.=7.538, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9039, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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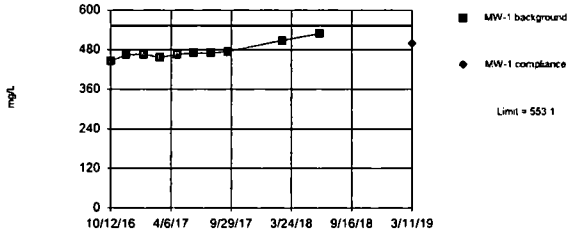
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=474, Std. Dev.=24.9, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8317, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified.

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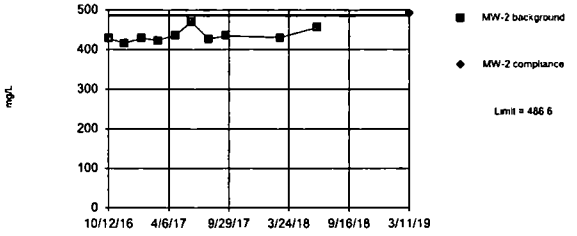
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=434.9, Std. Dev.=16.26, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 8566, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified.

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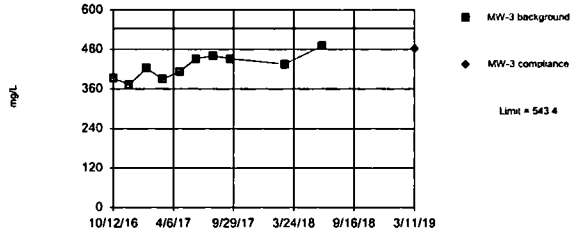
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=427 4, Std Dev.=36 49, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0 971, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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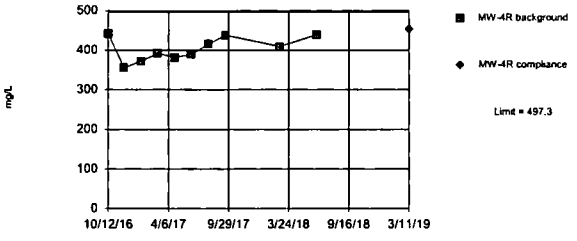
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=402.6, Std. Dev.=29.8, n=10. Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.931, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

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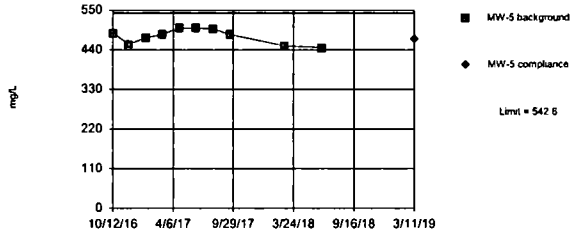
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=477, Std. Dev.=20 65, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.8913, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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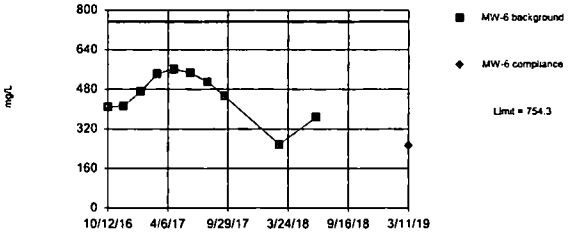
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=451.7, Std. Dev.=95.24, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0 9297, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583 Dixon's outlier test was performed on the background data No background outliers were found.

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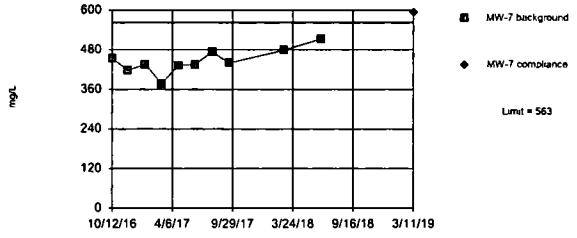
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=445, Std Dev.=37.14, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9661, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132) Report alpha = 0 0003583 EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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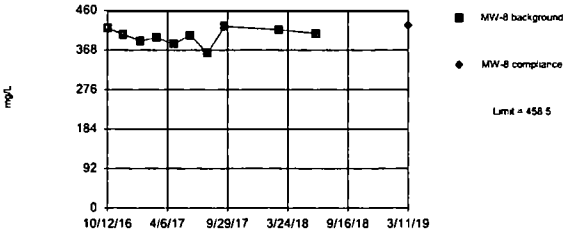
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=399.1, Std. Dev.=18.69, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0 01, calculated = 0.9407, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0 0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found.

Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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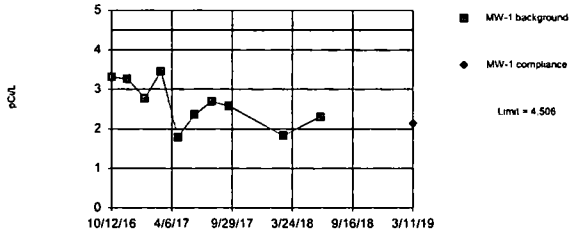
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.63, Std. Dev.=0 5903, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0.937, critical = 0 781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's) No background outliers were found.

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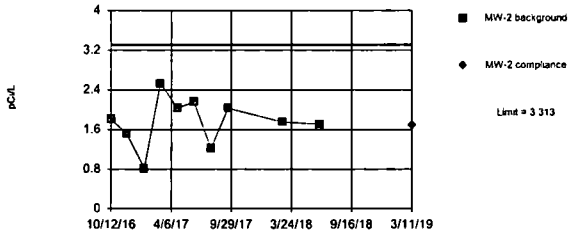
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary Mean=1.755, Std. Dev.=0.4903, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0.9723, critical = 0.781 Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. No background outliers were found.

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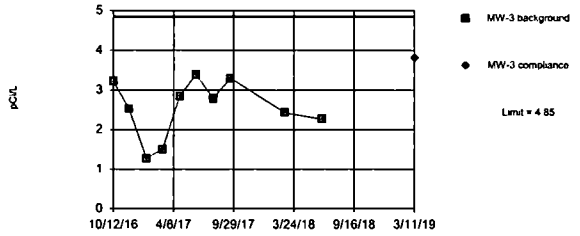
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary. Mean=2.554, Std. Dev.=0 7226, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9177, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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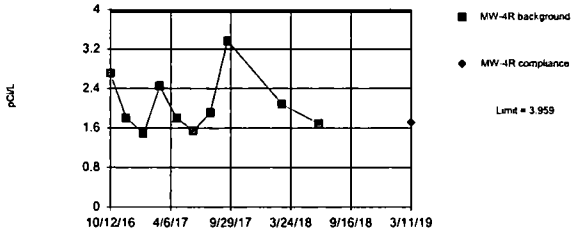
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2 076, Std. Dev.=0 5924, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0.8741, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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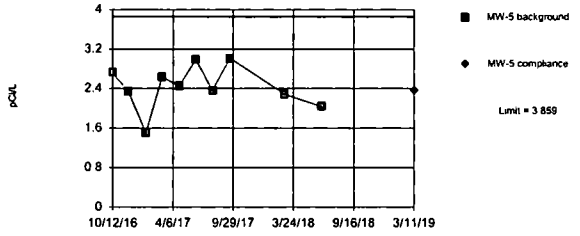
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2 428, Std Dev =0 4504, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.01, calculated = 0.945, critical = 0.781. Kappa = 3 178 (c=21, w=7, 1 of 2, event alpha = 0 05132). Report alpha = 0.0003583. Dixon's outlier test was performed on the background data. No background outliers were found.

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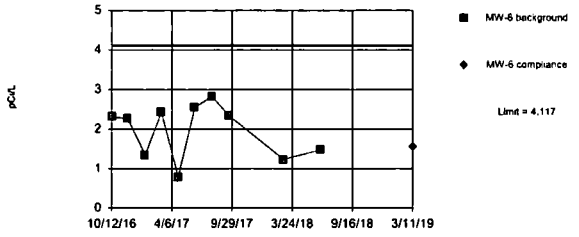
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary. Mean=1.952, Std. Dev.=0.6812, n=10 Insufficient data to test for seasonality: data were not deseasonalized Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8997, critical = 0.781 Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132) Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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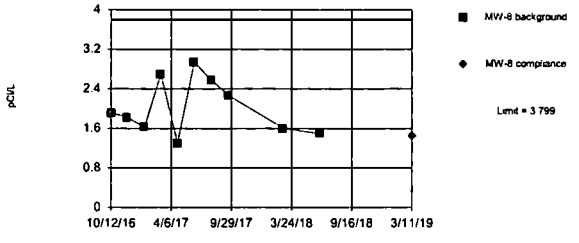
Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.019, Std. Dev.=0.5602, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.929, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

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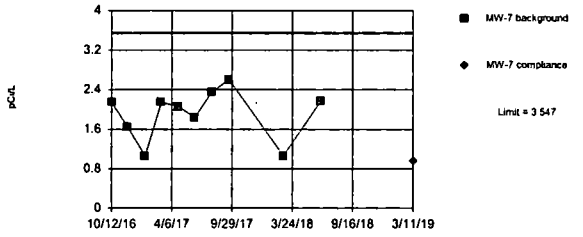
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.904, Std. Dev.=0.5171, n=10 Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8953, critical = 0.781. Kappa = 3.178 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.0003583. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found

Constituent: Total Radium Analysis Run 4/25/2019 7:27 PM View: Intrawell Prediction Limits

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

B.3 Interwell Prediction Limits

Interwell Prediction Limit

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 7:39 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Arsenic [total] (ug/L)	MW-1	5.155	3/11/2019	3.9	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-7	551.5	3/11/2019	135	No	11	MW-4R	27.27	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-8	551.5	3/11/2019	161	No	11	MW-4R	27.27	No	0.000...	Param 1 of 2
Calcium (mg/L)	**MW-1**	**98.01**	**3/11/2019**	**105**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	**MW-2**	**98.01**	**3/11/2019**	**109**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	**MW-3**	**98.01**	**3/11/2019**	**98.2**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	MW-5	98.01	3/11/2019	92.7	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-6	98.01	3/11/2019	49.2	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	**MW-7**	**98.01**	**3/11/2019**	**104**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	MW-8	98.01	3/11/2019	85.4	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-1	50.66	3/11/2019	19	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-2	50.66	3/11/2019	14.6	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-3	50.66	3/11/2019	34	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-5	50.66	3/11/2019	29.8	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-6	50.66	3/11/2019	27	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-7**	**50.66**	**3/11/2019**	**119**	**Yes**	**10**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Chloride (mg/L)	MW-8	50.66	3/11/2019	26.4	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	**MW-1**	**1.058**	**3/11/2019**	**1.5**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Fluoride (mg/L)	**MW-2**	**1.058**	**3/11/2019**	**1.1**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Fluoride (mg/L)	MW-3	1.058	3/11/2019	0.83	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	**MW-5**	**1.058**	**3/11/2019**	**1.1**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Fluoride (mg/L)	MW-6	1.058	3/11/2019	0.53	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-7	1.058	3/11/2019	0.85	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-8	1.058	3/11/2019	0.86	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-1	33.49	3/11/2019	30.8	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-2	33.49	3/11/2019	31.7	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-3	33.49	3/11/2019	28.6	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-5	33.49	3/11/2019	28.5	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-6	33.49	3/11/2019	15.1	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-7	33.49	3/11/2019	27.6	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-8	33.49	3/11/2019	25.9	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-1	9.694	3/11/2019	8.7	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-2	9.694	3/11/2019	8.2	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	**MW-3**	**9.694**	**3/11/2019**	**12.1**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Molybdenum (ug/L)	MW-5	9.694	3/11/2019	5.2	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-6	9.694	3/11/2019	6.1	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-7	9.694	3/11/2019	8	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-8	9.694	3/11/2019	7.6	No	11	MW-4R	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-1	8.156	3/11/2019	7	No	11	MW-4R	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-2	8.156	3/11/2019	6.9	No	11	MW-4R	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-3	8.156	3/11/2019	7	No	11	MW-4R	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-5	8.156	3/11/2019	7.1	No	11	MW-4R	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-6	8.156	3/11/2019	6.9	No	11	MW-4R	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-7	8.156	3/11/2019	6.9	No	11	MW-4R	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-8	8.156	3/11/2019	7	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	**MW-1**	**10.13**	**3/11/2019**	**10.5**	**Yes**	**10**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Selenium [total] (ug/L)	**MW-2**	**10.13**	**3/11/2019**	**14.3**	**Yes**	**10**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Selenium [total] (ug/L)	MW-3	10.13	3/11/2019	8.9	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-5	10.13	3/11/2019	7.9	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-6	10.13	3/11/2019	5.3	No	10	MW-4R	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 4/25/2019, 7:39 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	%NDs	Transform	Alpha	Method
Selenium [total] (ug/L)	MW-7	10.13	3/11/2019	9.5	No	10	MW-4R	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	**MW-8**	**10.13**	**3/11/2019**	**11**	**Yes**	**10**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Sulfate (mg/L)	MW-1	59.1	3/11/2019	43.1	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-2	59.1	3/11/2019	54	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	**MW-3**	**59.1**	**3/11/2019**	**61.2**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Sulfate (mg/L)	MW-5	59.1	3/11/2019	36.8	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-6	59.1	3/11/2019	24.3	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-7	59.1	3/11/2019	39.9	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-8	59.1	3/11/2019	39.5	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	503.3	3/11/2019	498	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-2	503.3	3/11/2019	492	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-3	503.3	3/11/2019	481	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-5	503.3	3/11/2019	469	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-6	503.3	3/11/2019	253	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-7**	**503.3**	**3/11/2019**	**592**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-8	503.3	3/11/2019	425	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-1	3.768	3/11/2019	2.12	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-2	3.768	3/11/2019	1.69	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	**MW-3**	**3.768**	**3/11/2019**	**3.81**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Total Radium (pCi/L)	MW-5	3.768	3/11/2019	2.36	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-6	3.768	3/11/2019	1.54	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-7	3.768	3/11/2019	0.953	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-8	3.768	3/11/2019	1.44	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-2	5.155	3/11/2019	4	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-3	5.155	3/11/2019	3.4	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-5	5.155	3/11/2019	4.8	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-6	5.155	3/11/2019	2.9	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-7	5.155	3/11/2019	3.9	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-8	5.155	3/11/2019	2.8	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	**MW-1**	**144.2**	**3/11/2019**	**147**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Barium [total] (ug/L)	MW-2	144.2	3/11/2019	108	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	**MW-3**	**144.2**	**3/11/2019**	**191**	**Yes**	**11**	**MW-4R**	**0**	**No**	**0.000...**	Param 1 of 2
Barium [total] (ug/L)	MW-5	144.2	3/11/2019	121	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-6	144.2	3/11/2019	92.1	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-7	144.2	3/11/2019	136	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-8	144.2	3/11/2019	142	No	11	MW-4R	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-1	551.5	3/11/2019	140	No	11	MW-4R	27.27	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-2	551.5	3/11/2019	132	No	11	MW-4R	27.27	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-3	551.5	3/11/2019	100	No	11	MW-4R	27.27	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-5	551.5	3/11/2019	129	No	11	MW-4R	27.27	No	0.000...	Param 1 of 2

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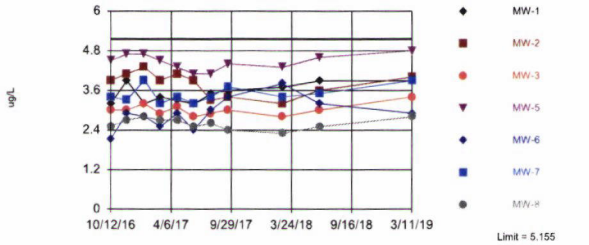
Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=3.973, Std. Dev.=0.3927, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9699, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Arsenic [total] Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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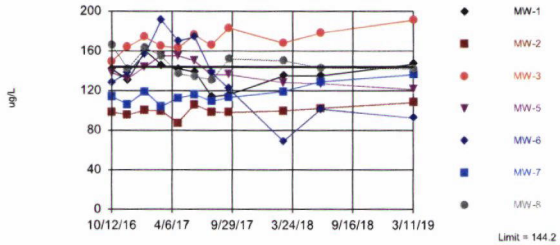
Exceeds Limit: MW-1, MW-3

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=120.5, Std. Dev.=7.853, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9818, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Barium [total] Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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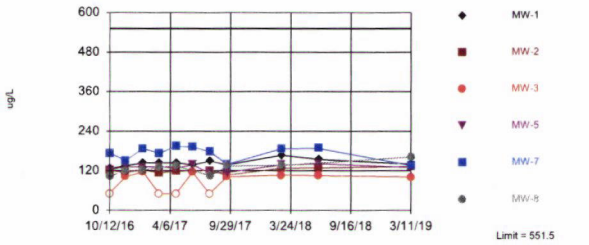
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (after Aitchison`s Adjustment): Mean=169.5, Std. Dev.=126.9, n=11, 27.27% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9025, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 6 points to limit. Assumes 1 future value. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Boron Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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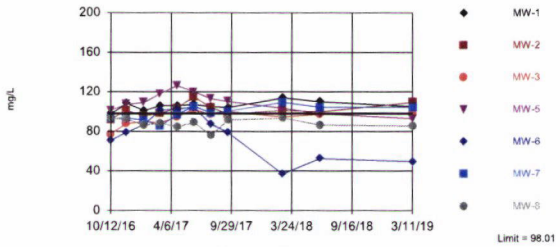
Exceeds Limit: MW-1, MW-2, MW-3, MW-7

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=84.11, Std. Dev.=4.619, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9554, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Calcium Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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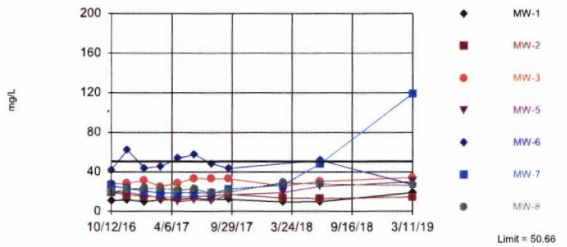
Exceeds Limit: MW-7

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=21.89, Std. Dev.=9.21, n=10. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8176, critical = 0.781. Kappa = 3.124 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Chloride Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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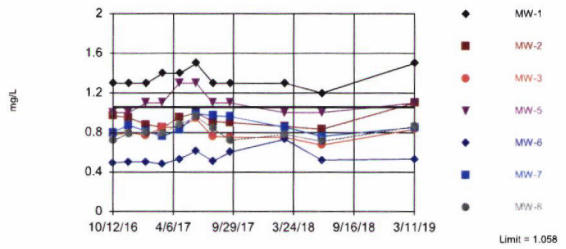
Exceeds Limit: MW-1, MW-2, MW-5

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.8473, Std. Dev.=0.06987, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.934, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Fluoride Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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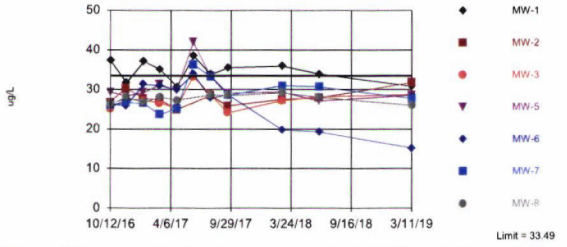
Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=25.95, Std. Dev.=2.503, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.958, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Lithium Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

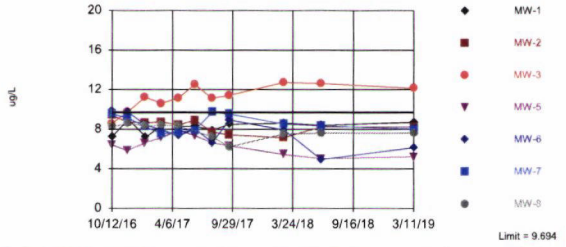
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers, UG

Exceeds Limit: MW-3

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=6.1, Std. Dev.=1.194, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9605, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Molybdenum Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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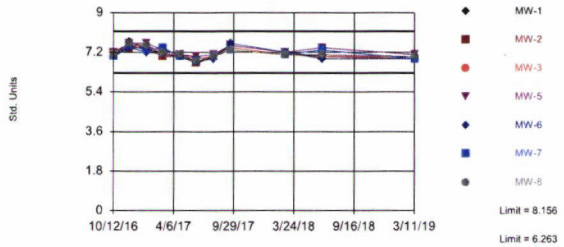
Within Limits

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.209, Std. Dev.=0.3145, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8951, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0001792. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: pH Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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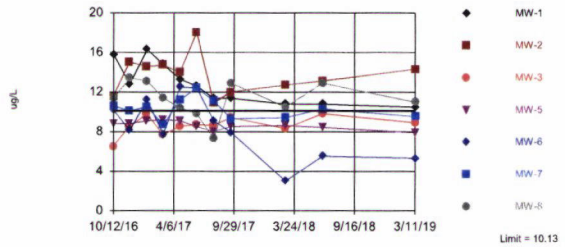
Exceeds Limit: MW-1, MW-2, MW-8

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.37, Std. Dev.=0.8845, n=10. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9085, critical = 0.781. Kappa = 3.124 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Selenium [total] Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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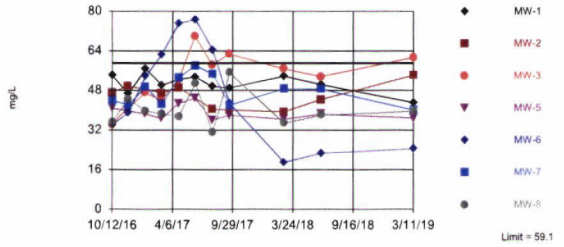
Exceeds Limit: MW-3

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=38.22, Std. Dev.=6.938, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8446, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. Distribution was found to be non-normal after removal of suspect values, so outliers could not be indentified.

Constituent: Sulfate Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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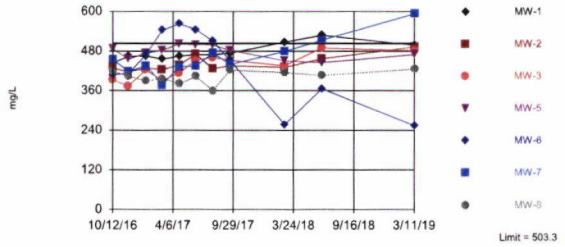
Exceeds Limit: MW-7

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=407.1, Std. Dev.=31.96, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9444, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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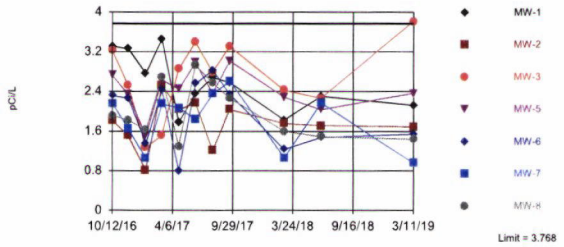
Exceeds Limit: MW-3

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=2.042, Std. Dev.=0.5734, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8482, critical = 0.792. Kappa = 3.01 (c=21, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Individual comparison alpha = 0.0003583. Comparing 7 points to limit. EPA 1989 outlier screening was performed on the background data (to establish suspected outliers for Dixon's/Rosner's). No background outliers were found.

Constituent: Total Radium Analysis Run 4/25/2019 7:36 PM View: Interwell Prediction Limits

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

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

Trend Test

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 7:50 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Arsenic [total] (ug/L)	MW-1	0.3476	29	31	No	11	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-2	-0.3242	-19	-31	No	11	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-3	0	-1	-31	No	11	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-4R (bg)	0	1	31	No	11	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-5	0	-3	-31	No	11	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-6	0.3802	26	31	No	11	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-7	0.1297	17	31	No	11	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-8	-0.1297	-12	-31	No	11	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-1	-5.09	-9	-31	No	11	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-2	3.289	18	31	No	11	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	**MW-3**	**12.91**	**35**	**31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Barium [total] (ug/L)	MW-4R (bg)	5.794	20	31	No	11	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-5	-10.2	-27	-31	No	11	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-6	-30.29	-22	-31	No	11	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-7	10.43	26	31	No	11	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-8	-9.955	-20	-31	No	11	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-1	8.774	23	31	No	11	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-2	5.817	19	27	No	10	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-3	0	7	31	No	11	36.36	n/a	n/a	0.02	NP
Boron (ug/L)	MW-4R (bg)	-13.81	-6	-31	No	11	27.27	n/a	n/a	0.02	NP
Boron (ug/L)	MW-5	4.011	9	31	No	11	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-7	0	-1	-31	No	11	0	n/a	n/a	0.02	NP
Boron (ug/L)	**MW-8**	**18.51**	**27**	**23**	**Yes**	**9**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	MW-1	3.14	13	31	No	11	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2	4.451	20	31	No	11	0	n/a	n/a	0.02	NP
Calcium (mg/L)	**MW-3**	**8.449**	**33**	**31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	MW-4R (bg)	1.492	6	31	No	11	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	-6.354	-13	-31	No	11	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	-17.18	-13	-31	No	11	0	n/a	n/a	0.02	NP
Calcium (mg/L)	**MW-7**	**7.338**	**32**	**31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	MW-8	-1.49	-11	-31	No	11	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-1	0.7449	13	31	No	11	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2	-1.782	-21	-27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3	2.07	19	31	No	11	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4R (bg)	8.177	23	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	4.148	9	31	No	11	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	-3.871	-5	-27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7	7.005	13	31	No	11	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-8	2.341	15	31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-1	0	2	31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2	-0.05935	-10	-31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3	-0.01807	-14	-31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4R (bg)	0.02801	6	31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	0	2	31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.02491	27	31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7	0.01867	5	31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-8	0	1	31	No	11	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-1	-1.862	-11	-31	No	11	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-2	0.6134	8	27	No	10	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-3	0.6535	11	31	No	11	0	n/a	n/a	0.02	NP

Trend Test

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 7:50 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Lithium (ug/L)	MW-4R (bg)	0.722	15	31	No	11	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-5	-0.3318	-8	-31	No	11	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-6	-4.726	-23	-31	No	11	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-7	2.593	15	31	No	11	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-8	0.8732	10	27	No	10	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-1	0.2292	20	31	No	11	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-2	-0.7449	-31	-31	No	11	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	**MW-3**	**1.84**	**36**	**31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Molybdenum (ug/L)	MW-4R (bg)	-0.6068	-10	-31	No	11	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-5	-0.7477	-20	-31	No	11	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	**MW-6**	**-1.903**	**-34**	**-31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Molybdenum (ug/L)	MW-7	-0.4056	-4	-31	No	11	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-8	-0.509	-17	-27	No	10	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-1	-0.09932	-14	-31	No	11	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-2	-0.1197	-18	-31	No	11	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-3	-0.1233	-24	-31	No	11	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-4R (bg)	-0.09932	-16	-31	No	11	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-5	-0.1022	-12	-31	No	11	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-6	-0.09932	-14	-31	No	11	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-7	-0.06218	-11	-31	No	11	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-8	-0.1246	-20	-31	No	11	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	**MW-1**	**-2.537**	**-45**	**-31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Selenium [total] (ug/L)	MW-2	-0.3067	-5	-31	No	11	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-3	0.5959	21	31	No	11	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-4R (bg)	-0.09335	-5	-27	No	10	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-5	-0.4078	-28	-31	No	11	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-6	-2.448	-25	-31	No	11	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-7	-0.3687	-7	-31	No	11	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-8	-0.6166	-13	-31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-1	-2.62	-15	-31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2	-2.041	-11	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3	11.55	31	31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4R (bg)	0.149	1	31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	-1.316	-16	-31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-10.57	-7	-31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7	-0.553	-5	-31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-8	-0.09335	-1	-31	No	11	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-1**	**31.25**	**45**	**31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	MW-2	19.96	28	31	No	11	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-3**	**47.76**	**36**	**31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	MW-4R (bg)	37.34	29	31	No	11	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-7.449	-14	-31	No	11	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	-81.39	-15	-31	No	11	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-7**	**57.24**	**33**	**31**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	MW-8	7.849	11	31	No	11	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-1	-0.6043	-29	-31	No	11	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-2	-0.04977	-6	-31	No	11	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-3	0.3466	9	31	No	11	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-4R (bg)	-0.04789	-5	-31	No	11	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-5	-0.1341	-6	-31	No	11	0	n/a	n/a	0.02	NP

Trend Test

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/25/2019, 7:50 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Radium (pCi/L)	MW-6	-0.1659	-3	-31	No	11	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-7	-0.02517	-1	-31	No	11	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-8	-0.2139	-17	-31	No	11	0	n/a	n/a	0.02	NP

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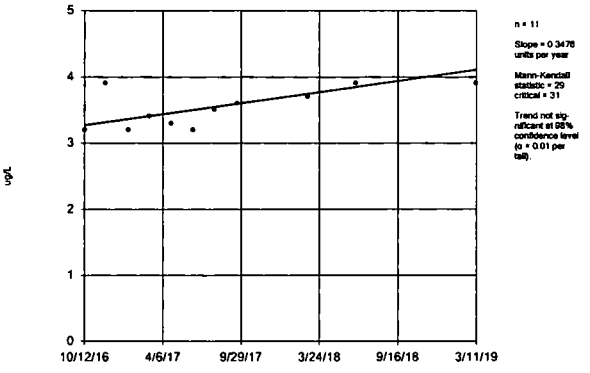
Sen's Slope Estimator

MW-1



Constituent: Arsenic [total] Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

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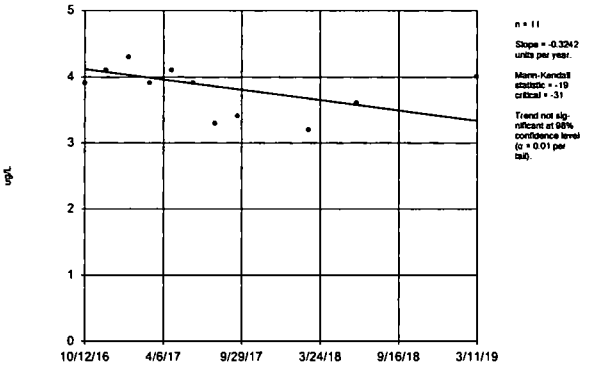
Sen's Slope Estimator

MW-2



Constituent: Arsenic [total] Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

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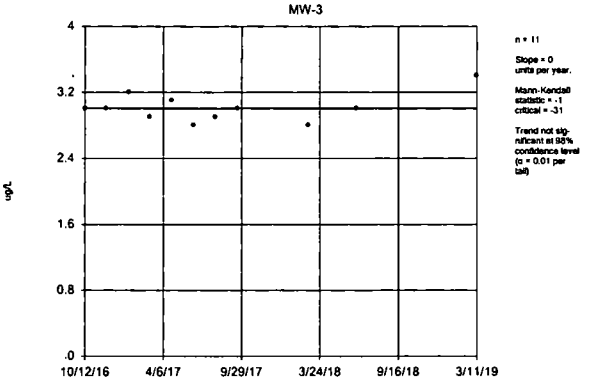
Sen's Slope Estimator

MW-3



Constituent: Arsenic [total] Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

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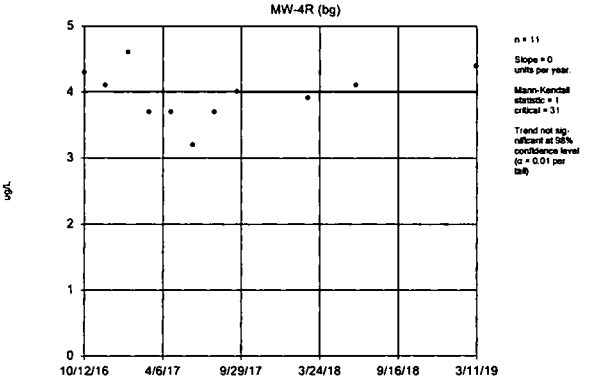
Sen's Slope Estimator

MW-4R (bg)



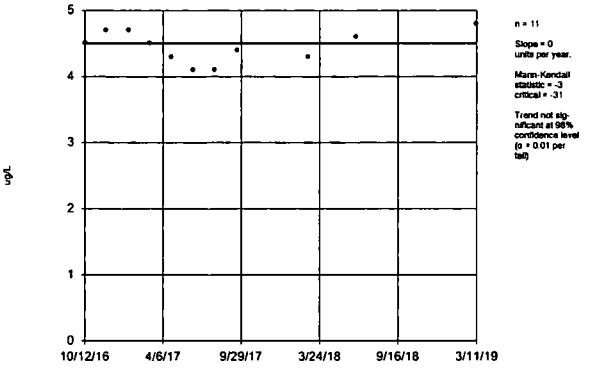
Constituent: Arsenic [total] Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



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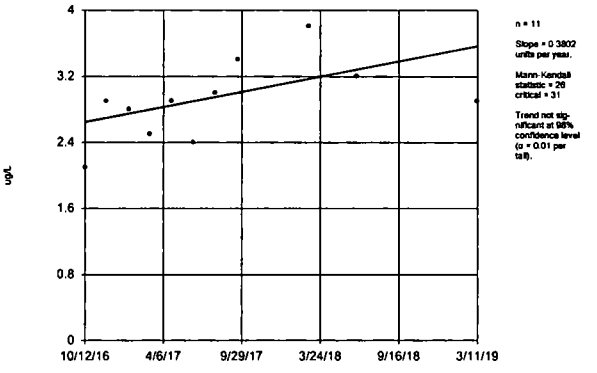
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



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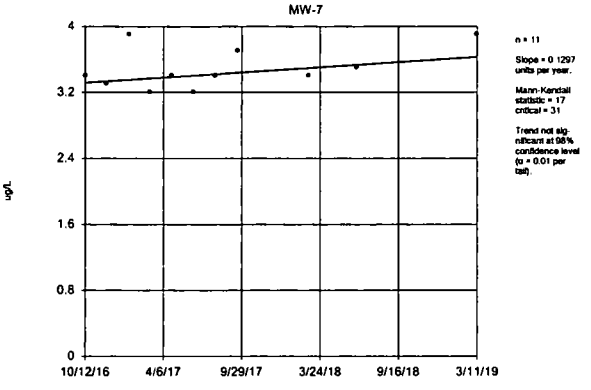
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



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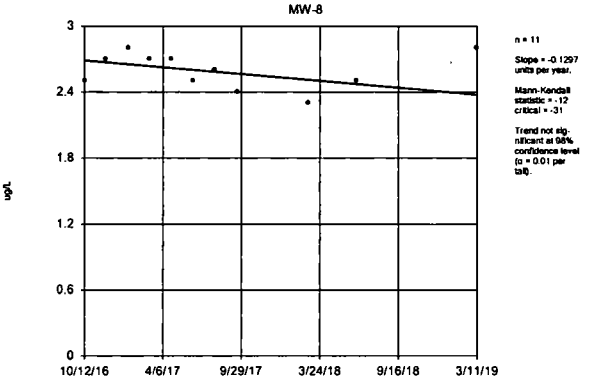
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



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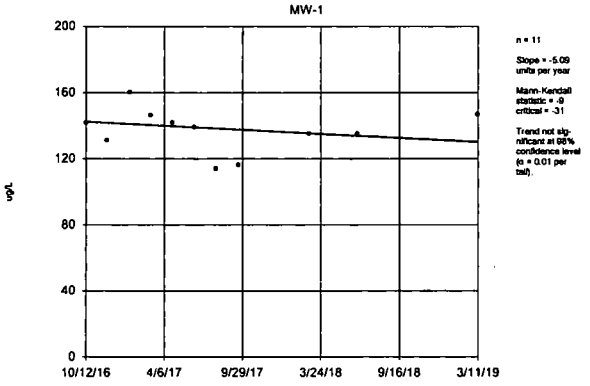
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



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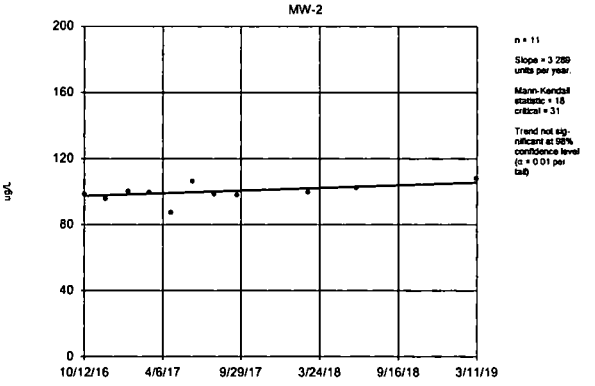
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



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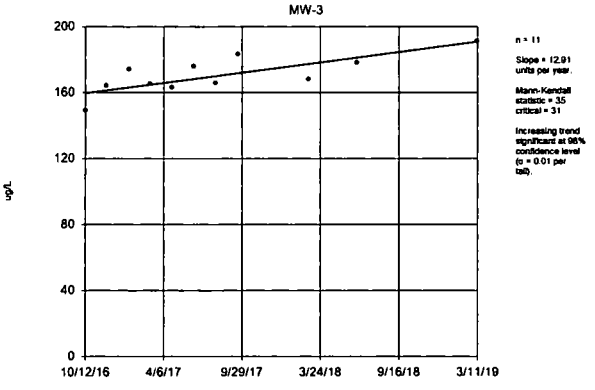
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



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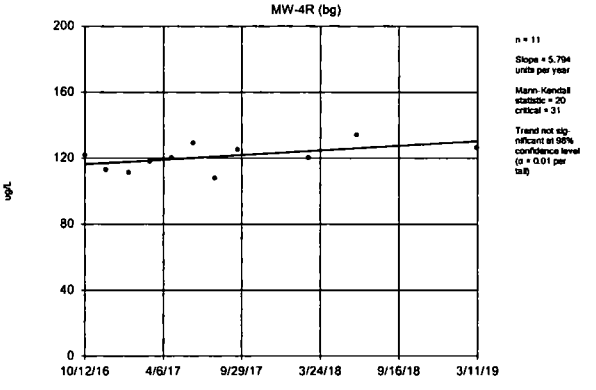
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



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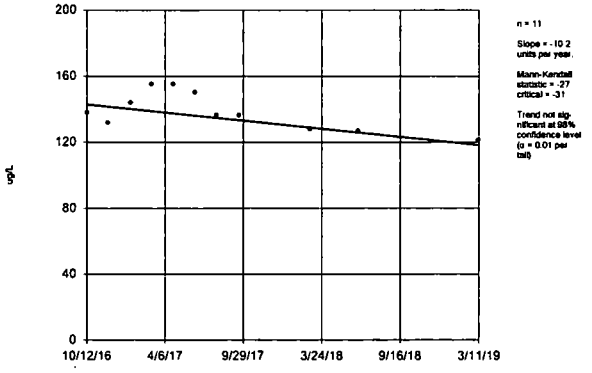
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



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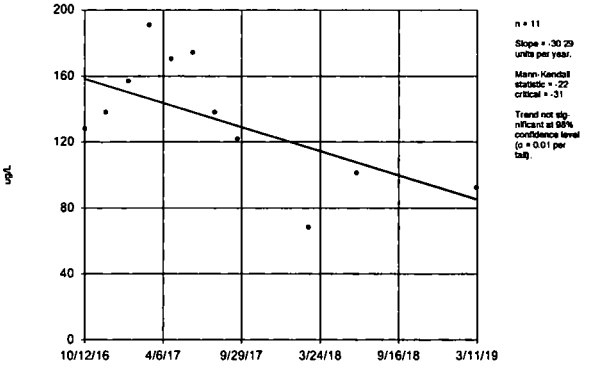
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



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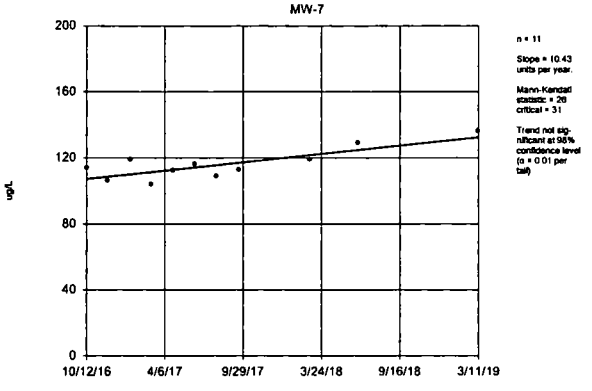
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



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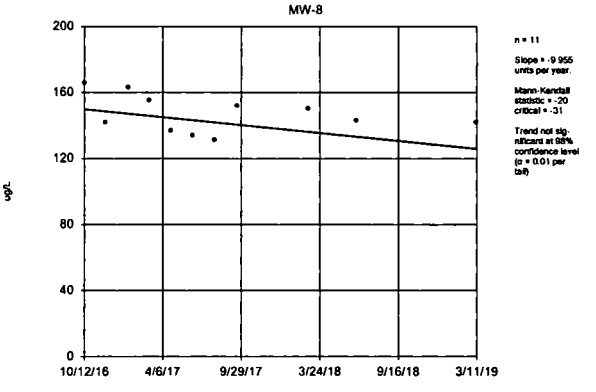
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



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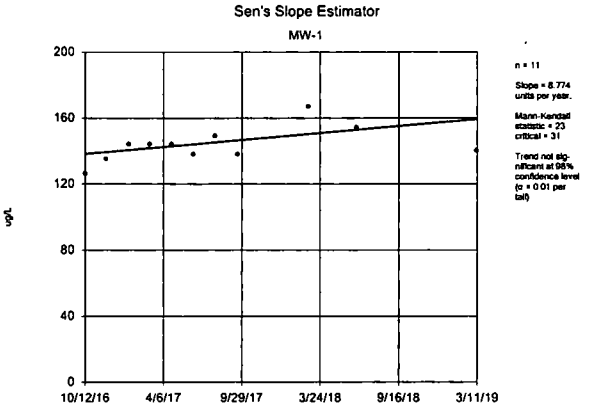
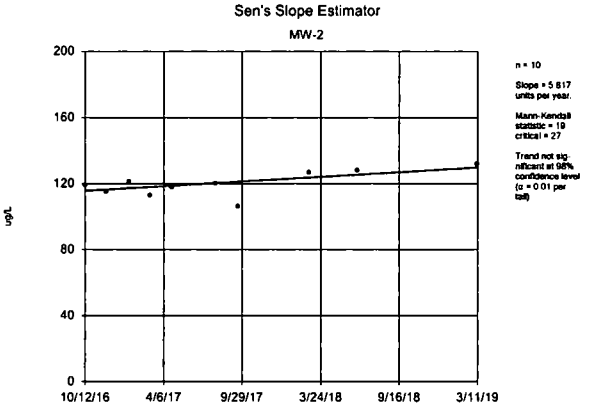
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



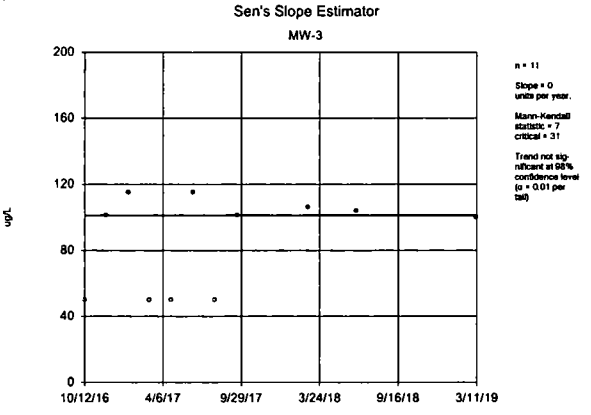
Constituent. Boron Analysis Run 4/25/2019 7:45 PM View: TREND TEST
Fremont Dept. of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Boron Analysis Run 4/25/2019 7:45 PM View: TREND TEST
Fremont Dept. of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



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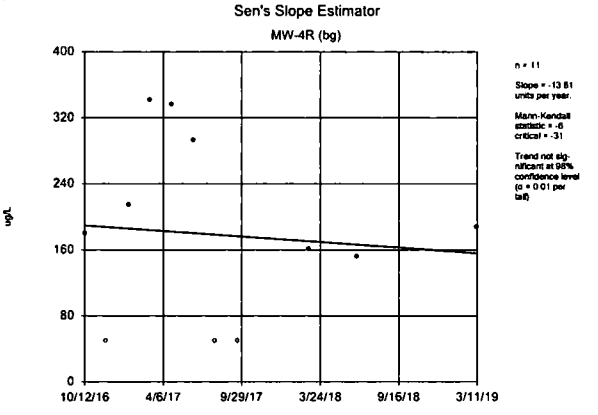
Fremont Dept. of Utilities Client. SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG
Hollow symbols indicate censored values



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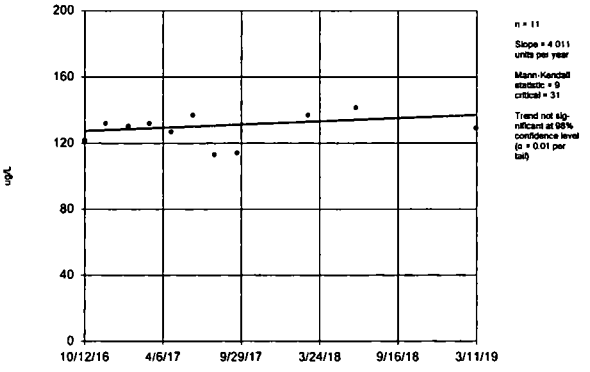
Fremont Dept. of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



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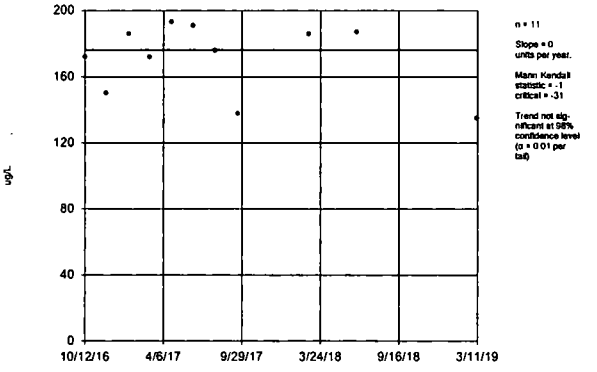
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



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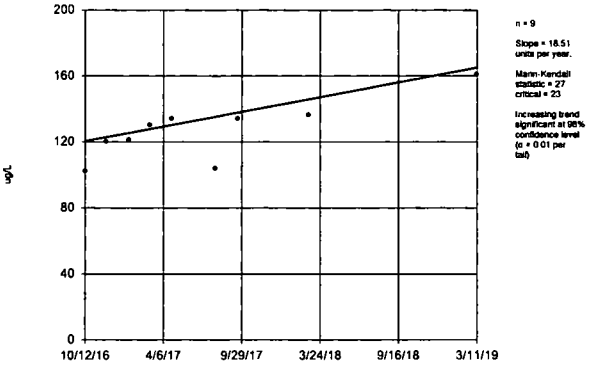
Fremont Dept. of Utilities Client. SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



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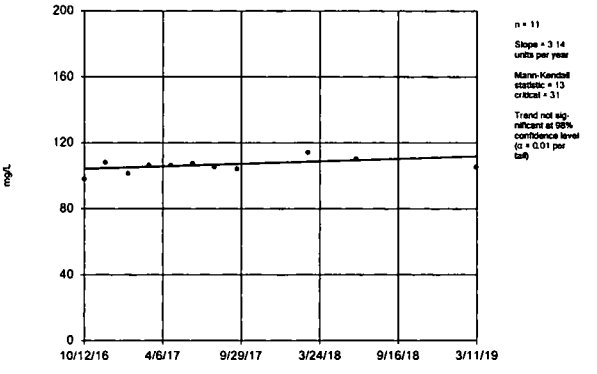
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



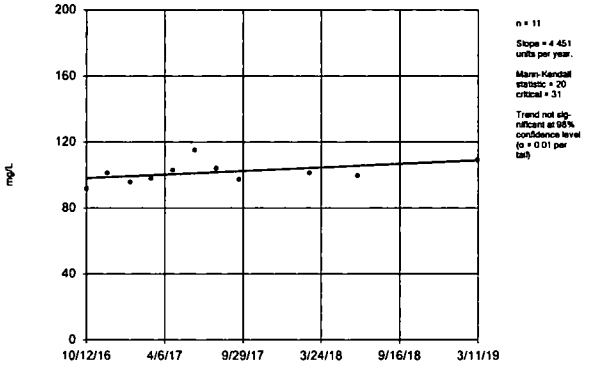
Constituent: Calcium Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



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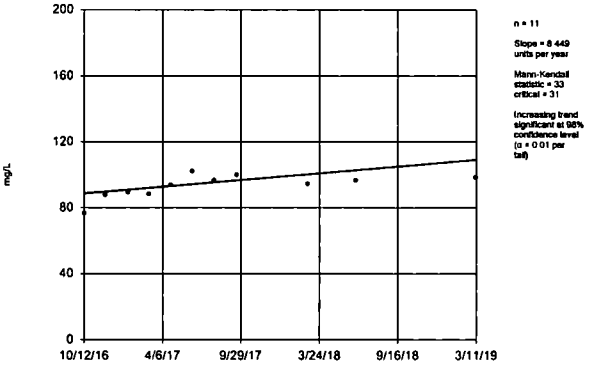
Fremont Dept of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



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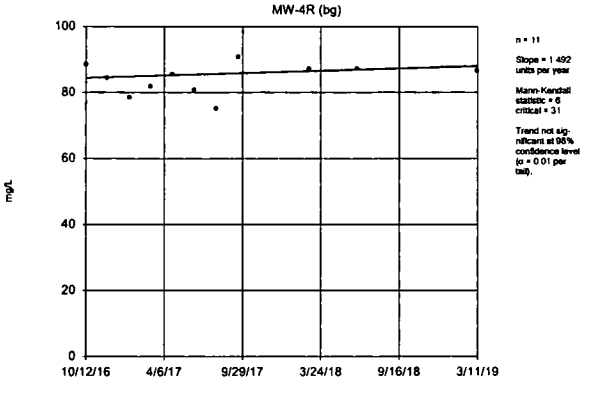
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



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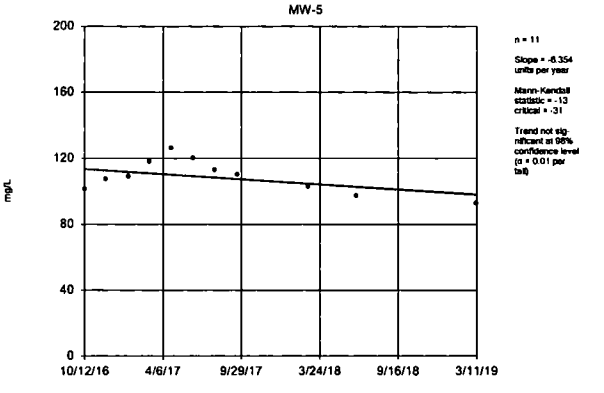
Fremont Dept. of Utilities Client: SCS Engineers Data. Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



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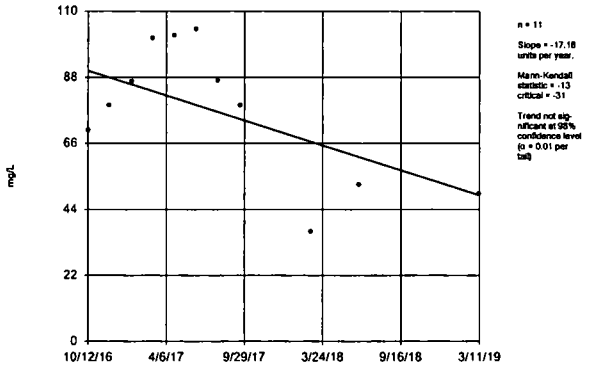
Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



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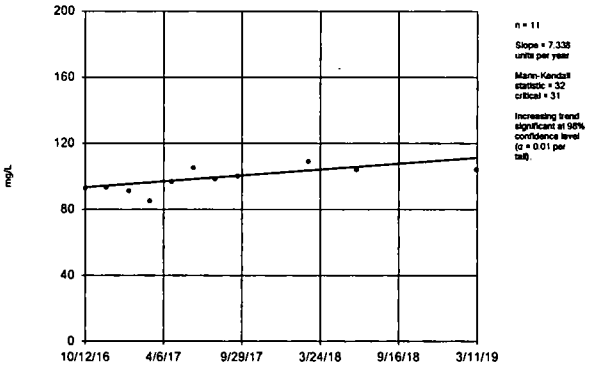
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



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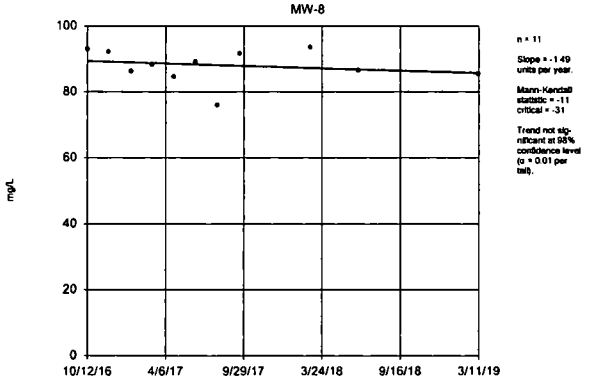
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



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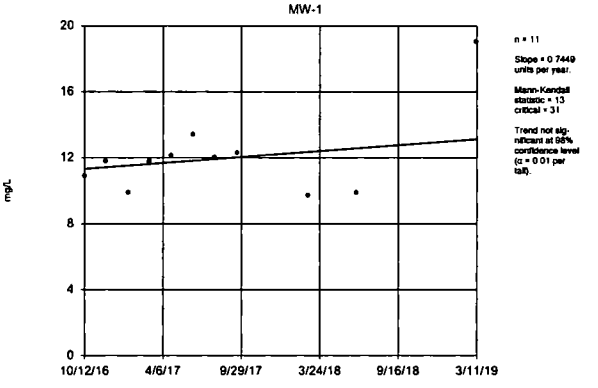
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



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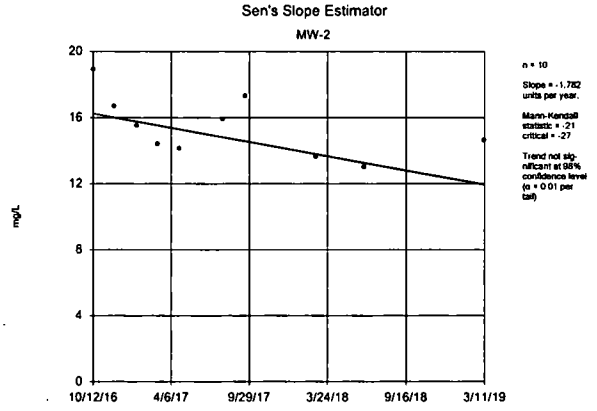
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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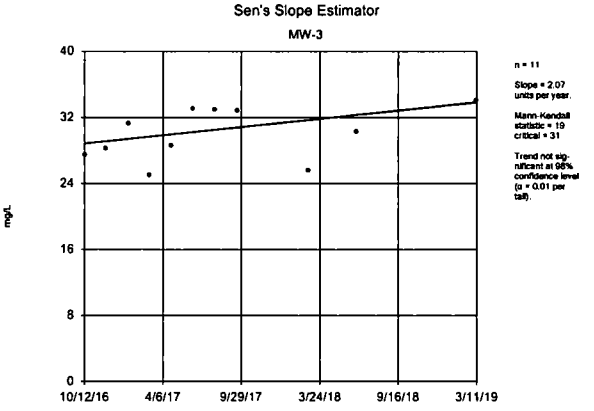
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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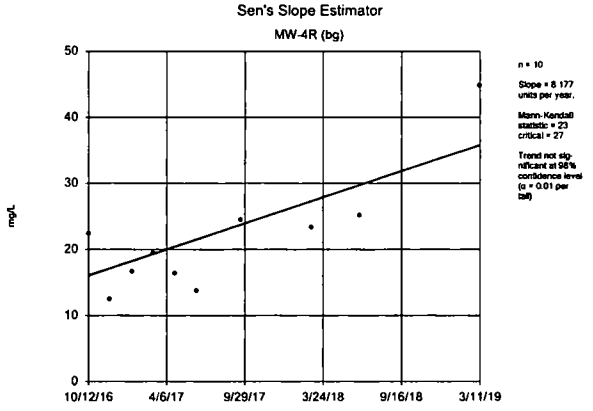
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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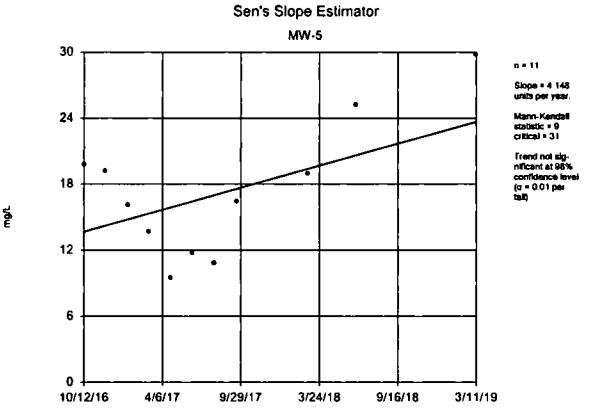
Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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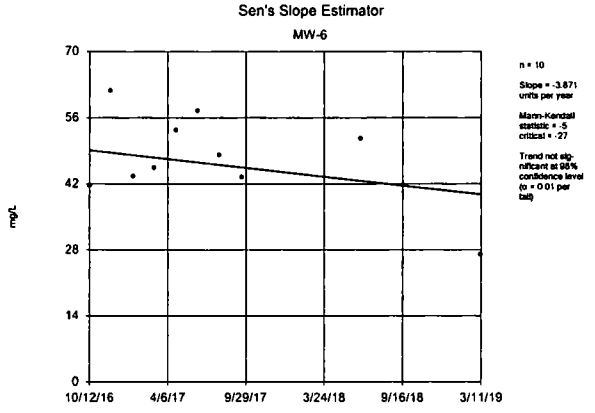
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG



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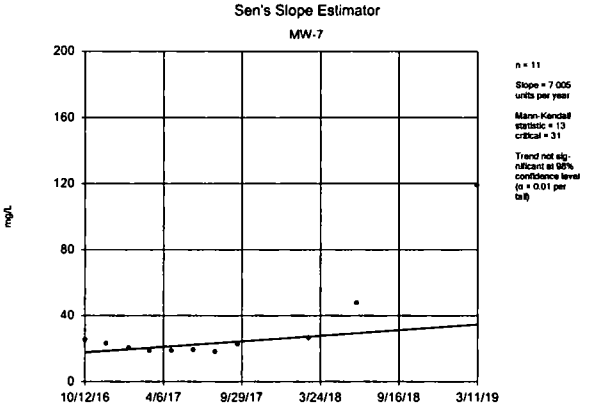
Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG



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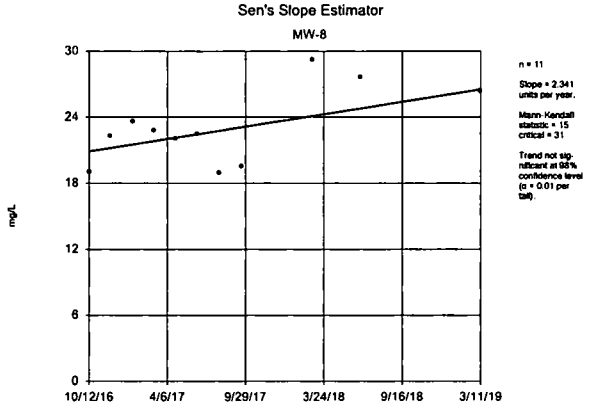
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG



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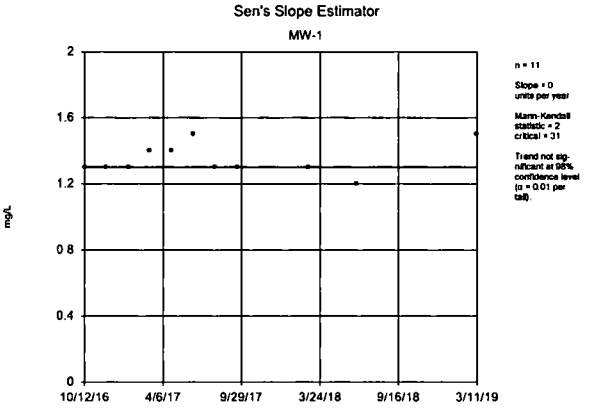
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

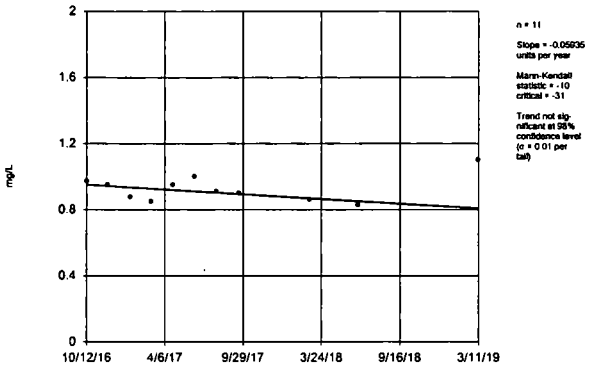


Constituent: Fluoride Analysis Run 4/25/2019 7:45 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



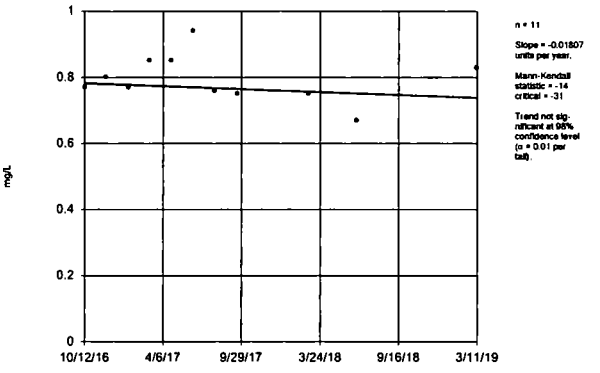
Constituent: Fluoride Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



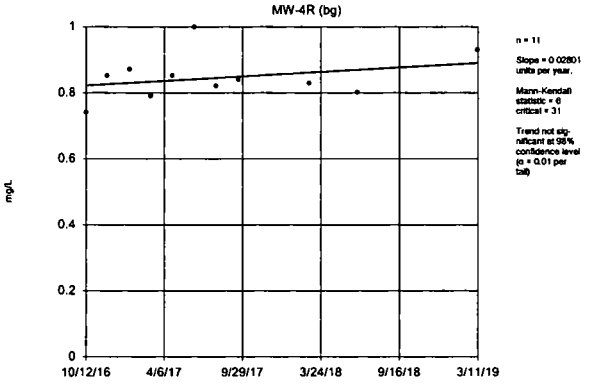
Constituent: Fluoride Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



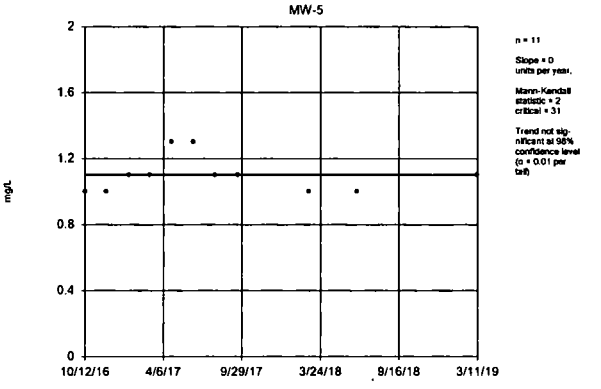
Constituent: Fluoride Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

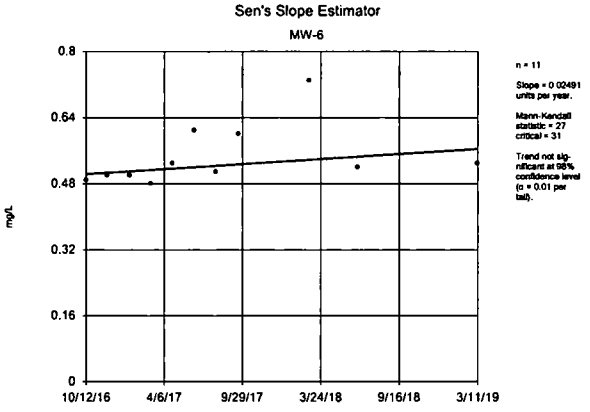
MW-5



Constituent: Fluoride Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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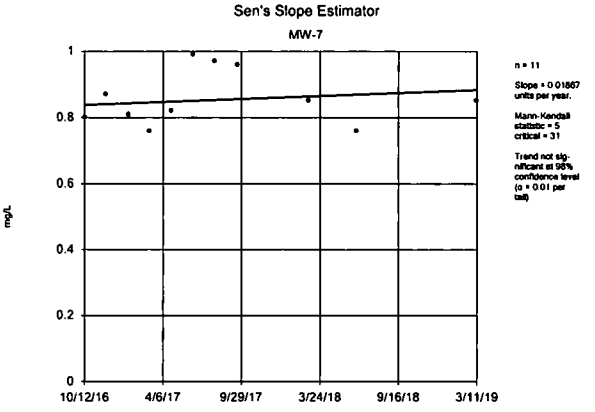
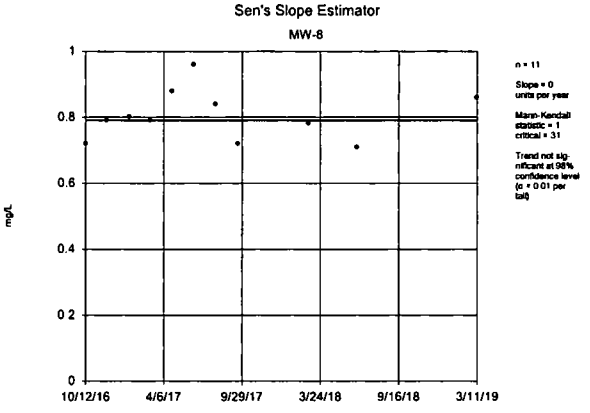
Fremont Dept of Utilities Client SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Fluoride Analysis Run 4/25/2019 7:45 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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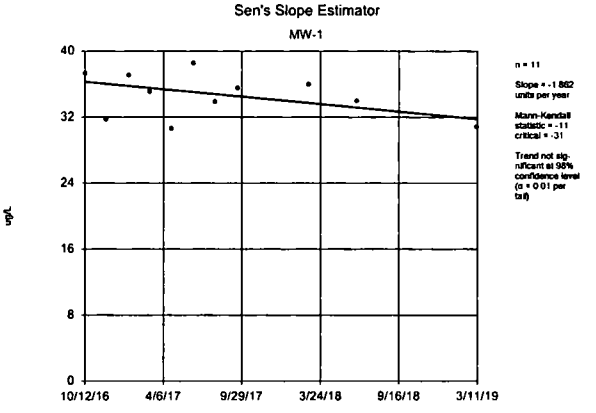
Fremont Dept. of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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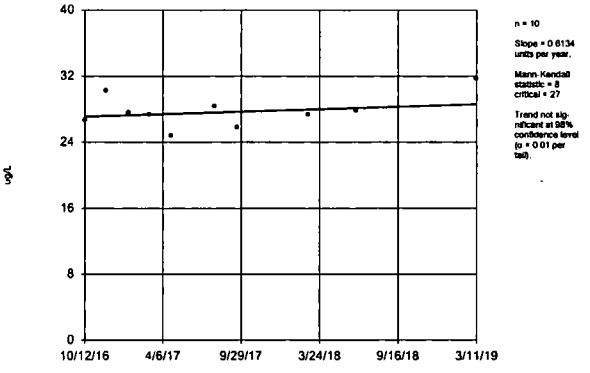
Fremont Dept of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



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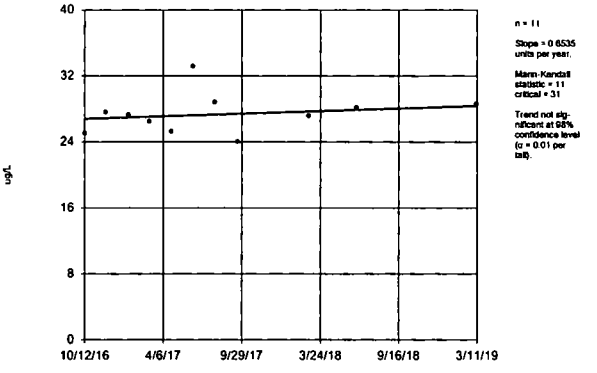
Fremont Dept of Utilities Client. SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



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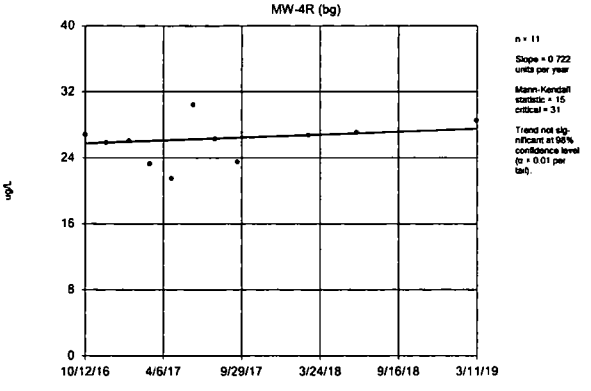
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



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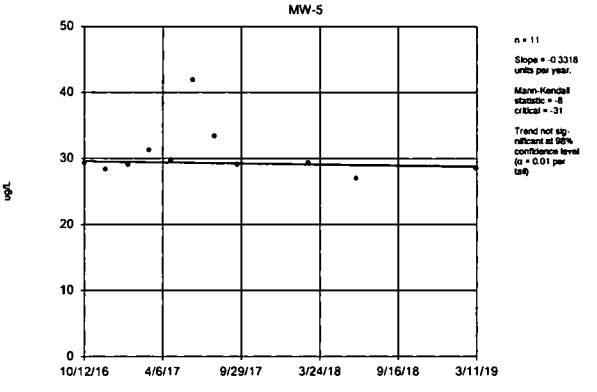
Fremont Dept of Utilities Client SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



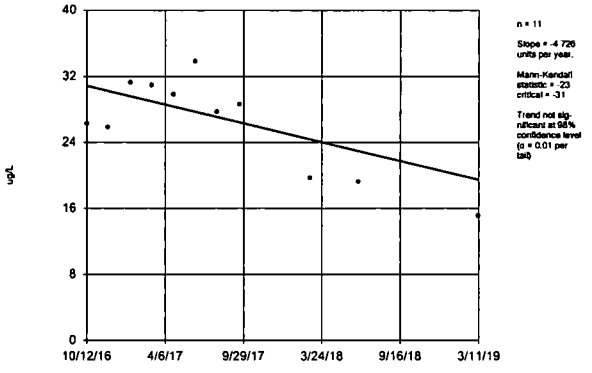
Constituent: Lithium Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-6



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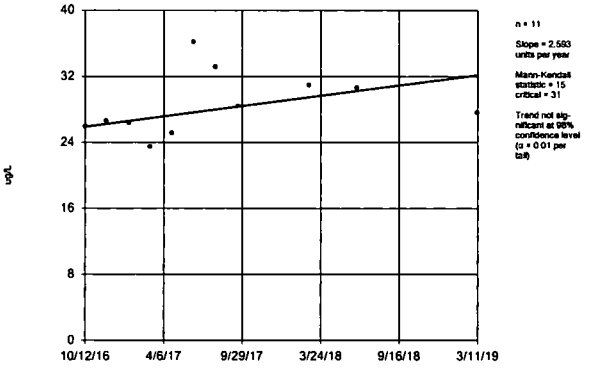
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-7



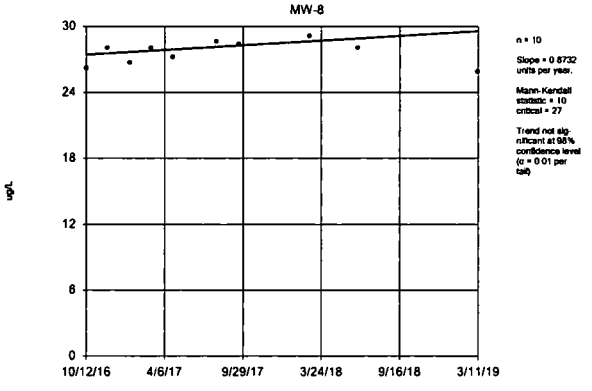
Constituent: Lithium Analysis Run 4/25/2019 7:45 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

MW-8



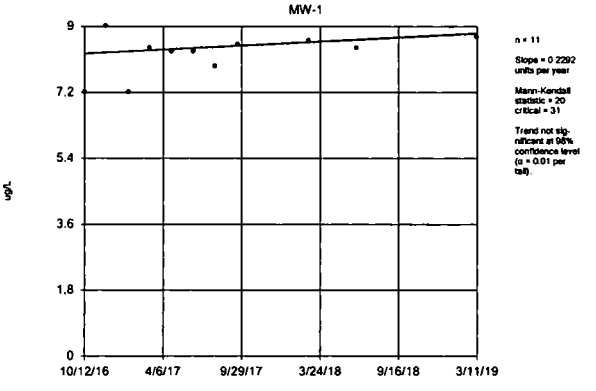
Constituent: Lithium Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers, UG

Sen's Slope Estimator

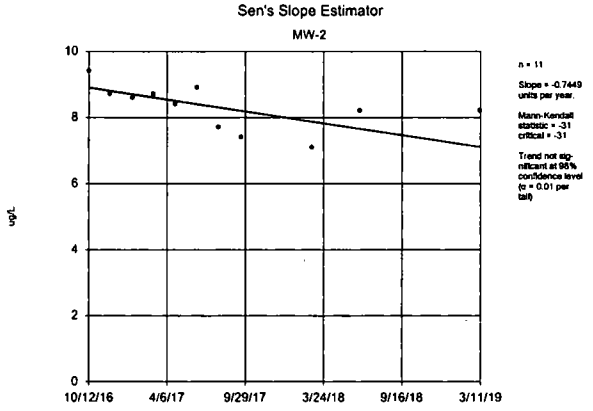
MW-1



Constituent: Molybdenum Analysis Run 4/25/2019 7:46 PM View: TREND TEST

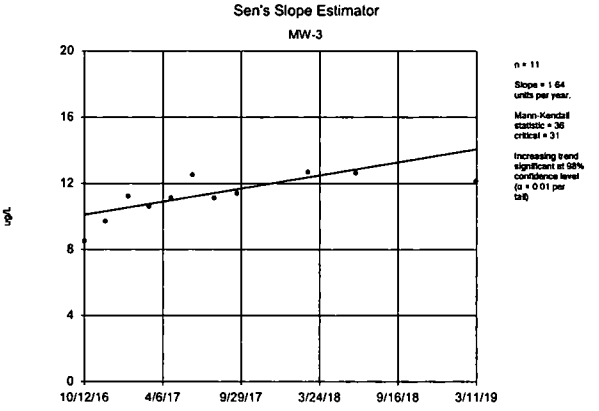
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Molybdenum Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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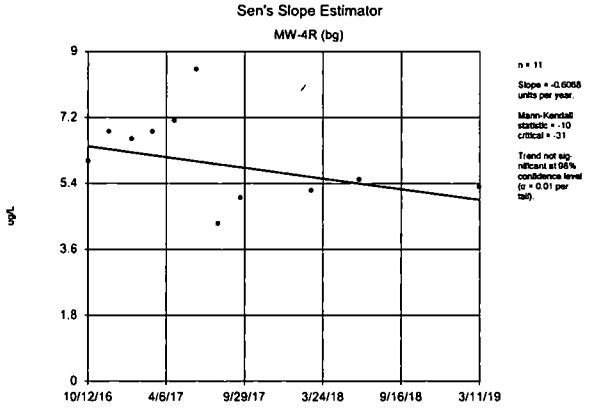
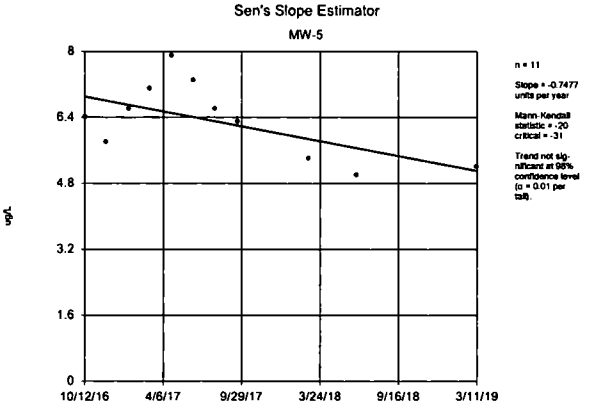
Fremont Dept of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Molybdenum Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

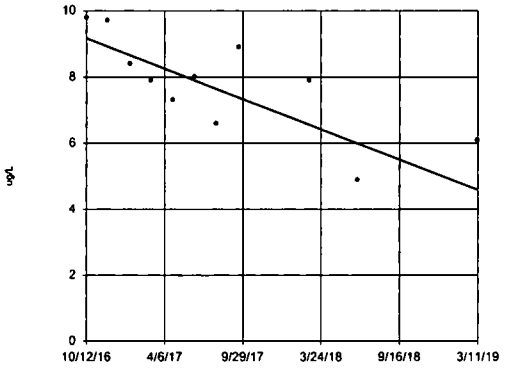


Constituent: Molybdenum Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



n = 11

Slope = -1.903 units per year.

Mann-Kendall statistic = -34 critical = -31

Decreasing trend significant at 98% confidence level (α = 0.01 per tail)

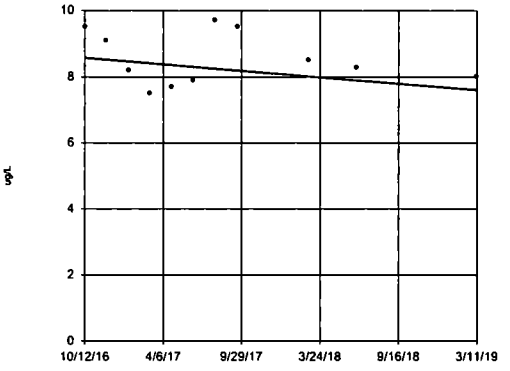
Constituent: Molybdenum Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



n = 11

Slope = -0.4058 units per year

Mann-Kendall statistic = -4 critical = -31

Trend not significant at 98% confidence level (α = 0.01 per tail)

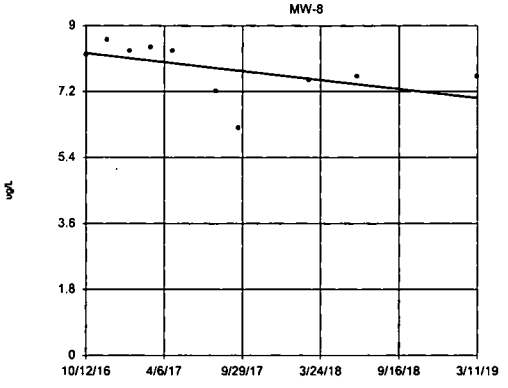
Constituent: Molybdenum Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



n = 10

Slope = -0.509 units per year.

Mann-Kendall statistic = -17 critical = -27

Trend not significant at 98% confidence level (α = 0.01 per tail).

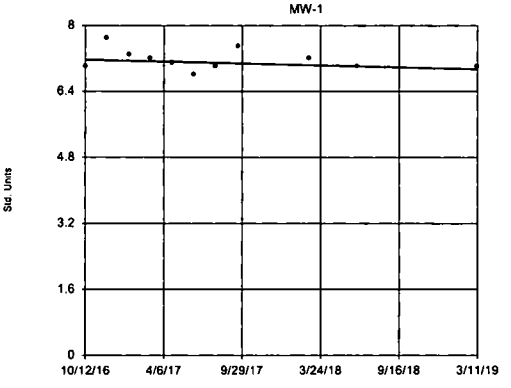
Constituent: Molybdenum Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



n = 11

Slope = -0.09932 units per year.

Mann-Kendall statistic = -14 critical = -31

Trend not significant at 98% confidence level (α = 0.01 per tail).

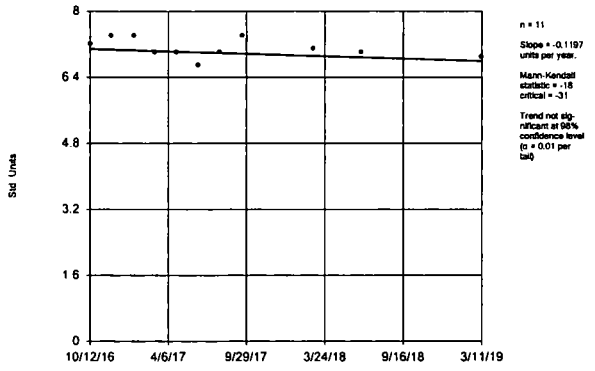
Constituent: pH Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



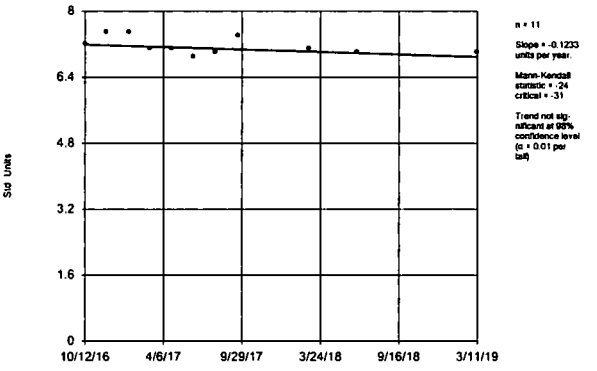
Constituent: pH Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



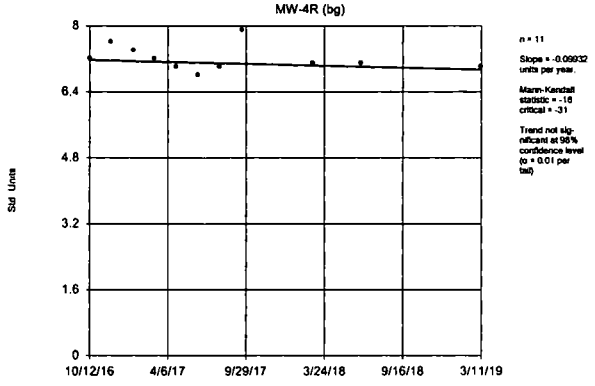
Constituent: pH Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



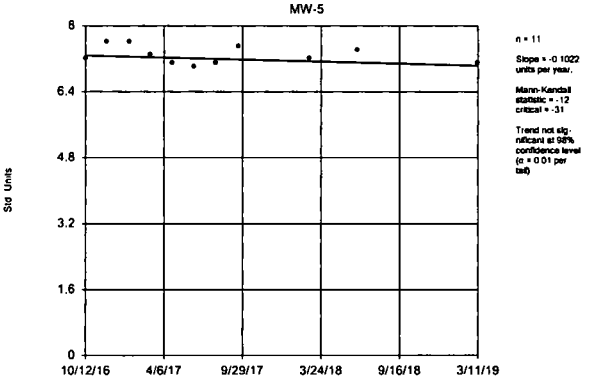
Constituent: pH Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



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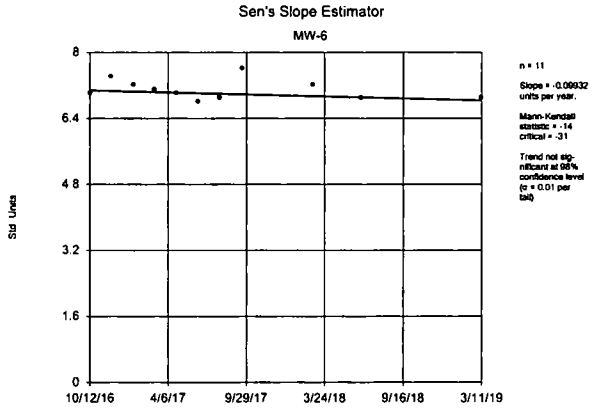
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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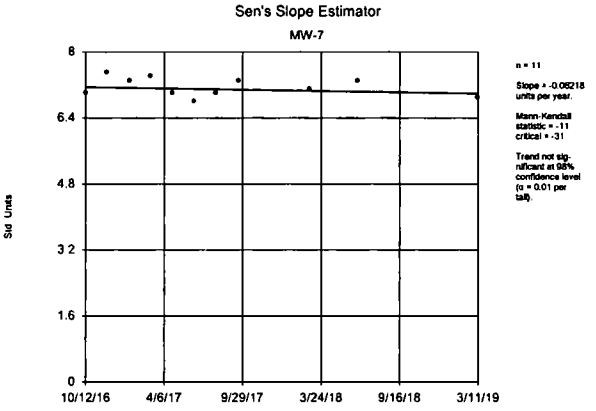
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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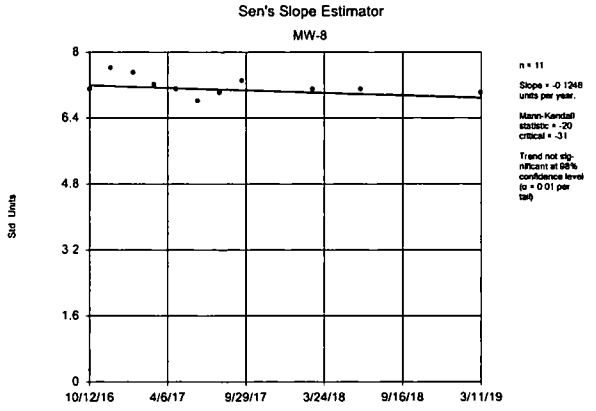
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



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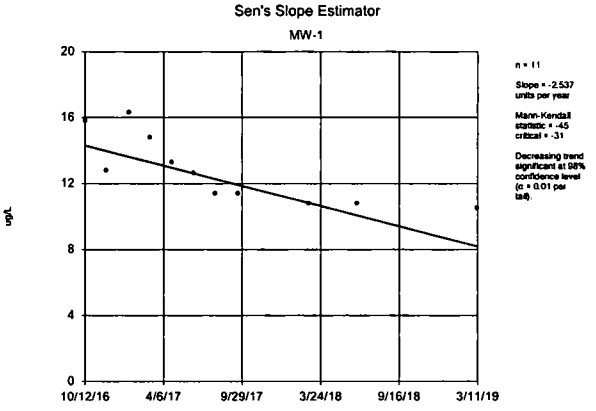
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

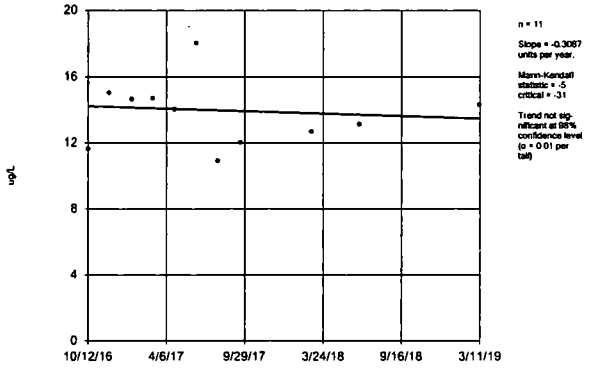


Constituent: Selenium [total] Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



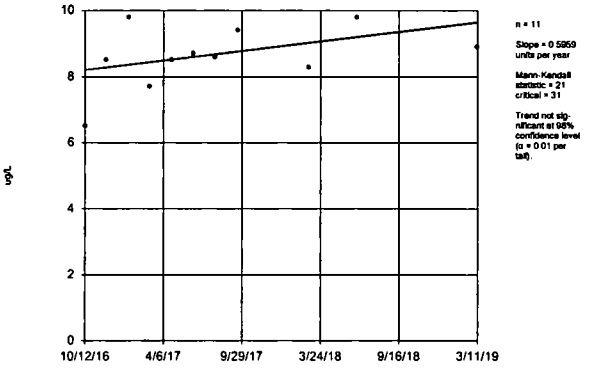
Constituent: Selenium [total] Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



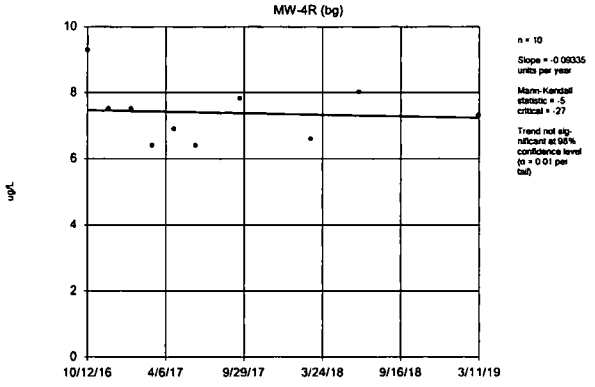
Constituent: Selenium [total] Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



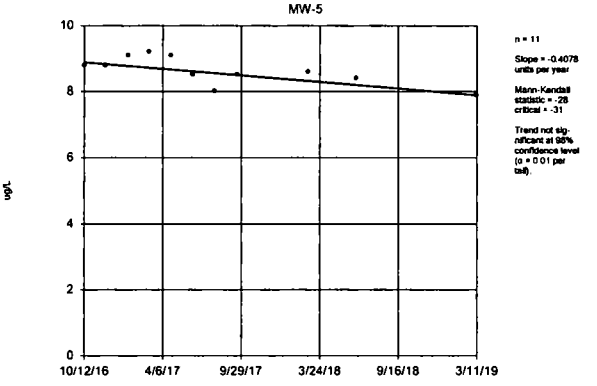
Constituent: Selenium [total] Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



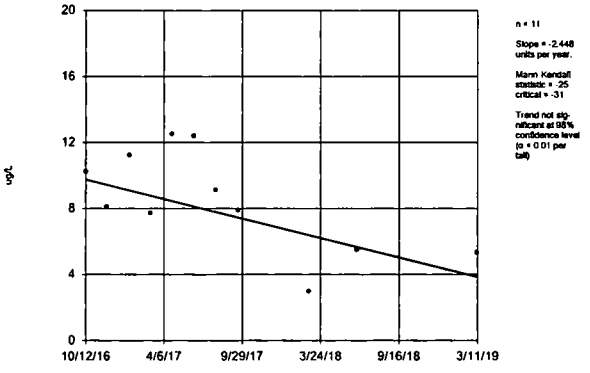
Constituent: Selenium [total] Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



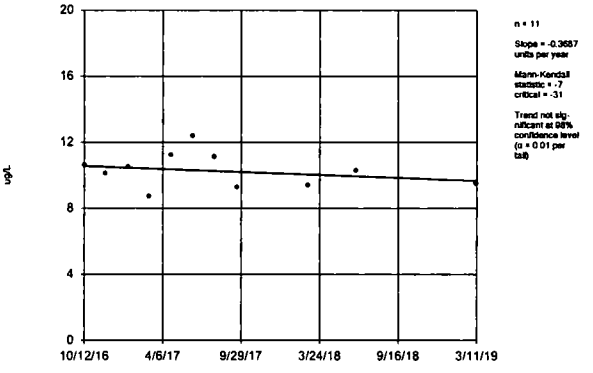
Constituent: Selenium [total] Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



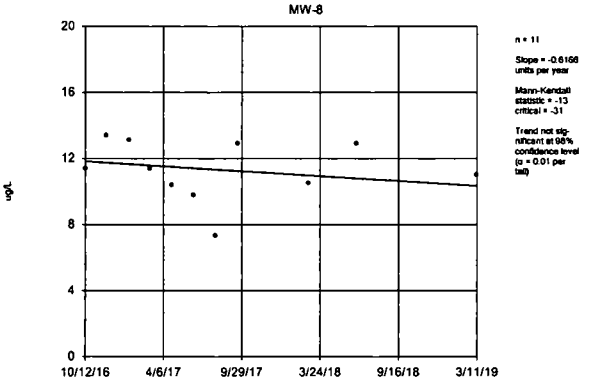
Constituent: Selenium [total] Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



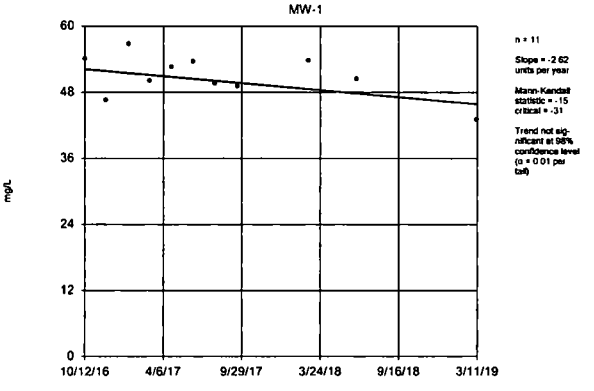
Constituent: Selenium [total] Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



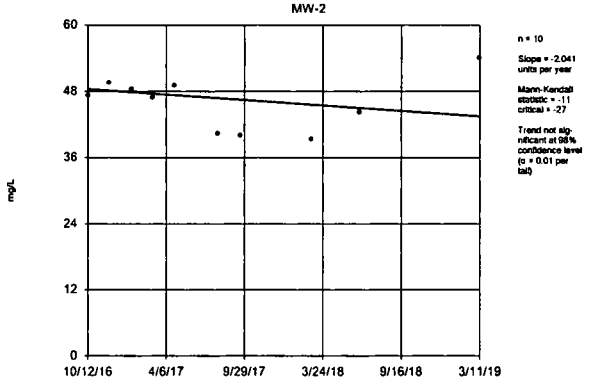
Constituent: Sulfate Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



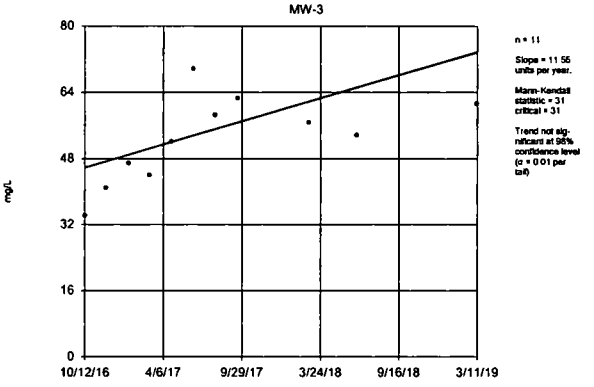
Constituent: Sulfate Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



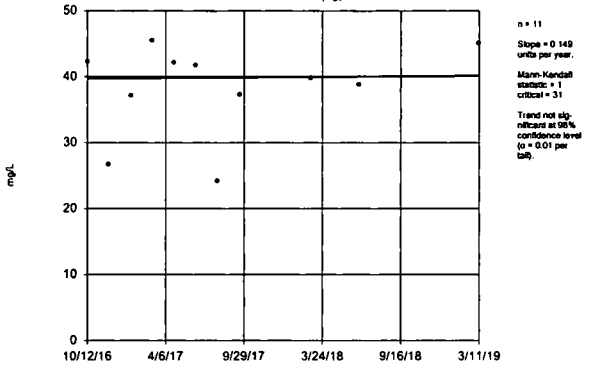
Constituent: Sulfate Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



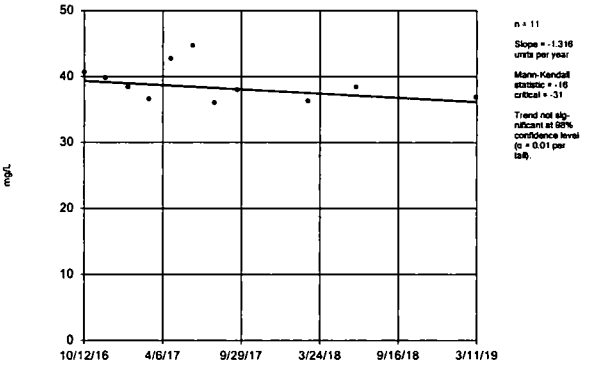
Constituent: Sulfate Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-5



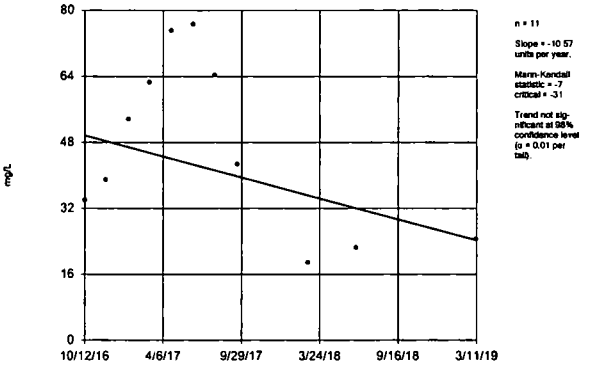
Constituent: Sulfate Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



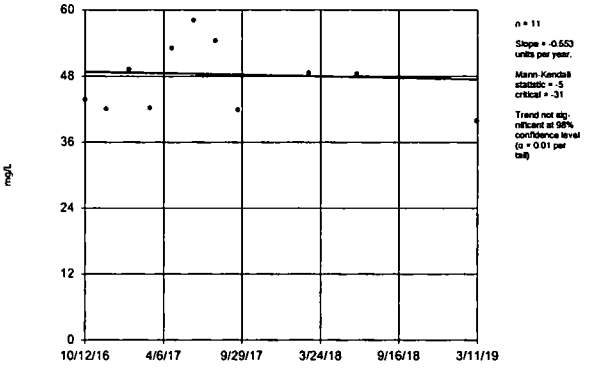
Constituent: Sulfate Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



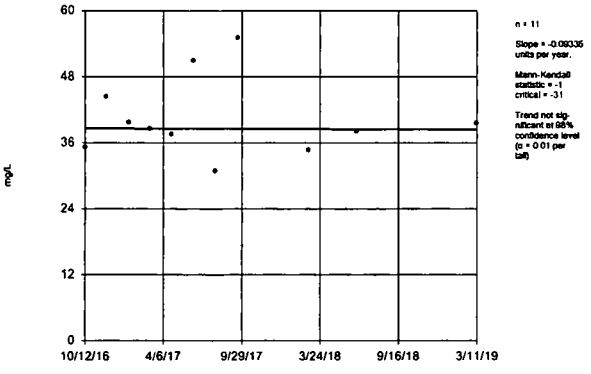
Constituent: Sulfate Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



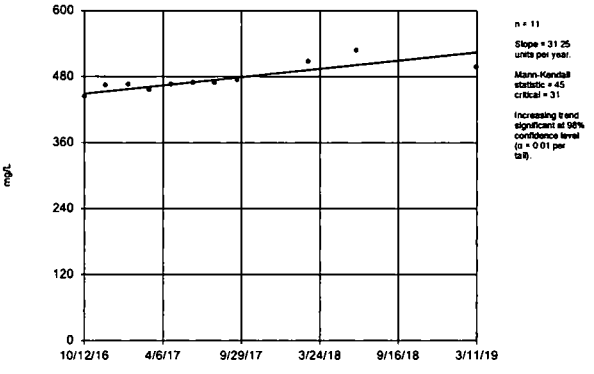
Constituent: Sulfate Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

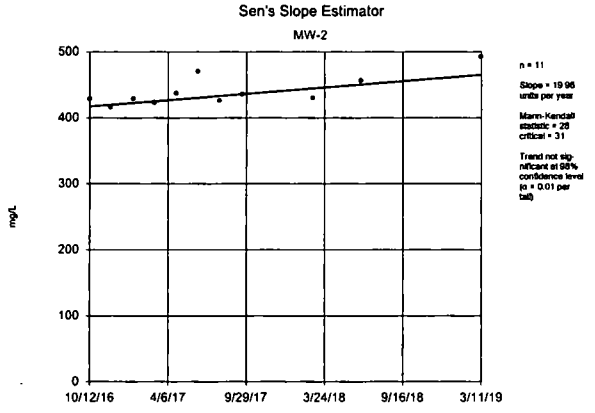
MW-1



Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:46 PM View: TREND TEST

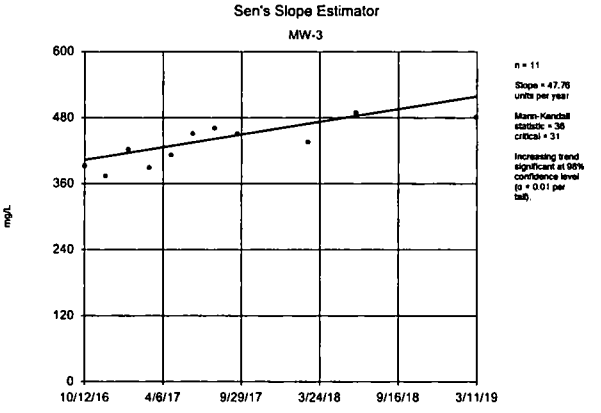
Fremont Dept. of Utilities Client: SCS Engineers Data. Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



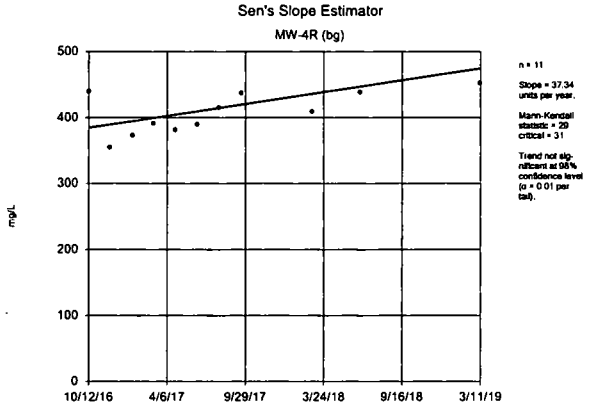
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



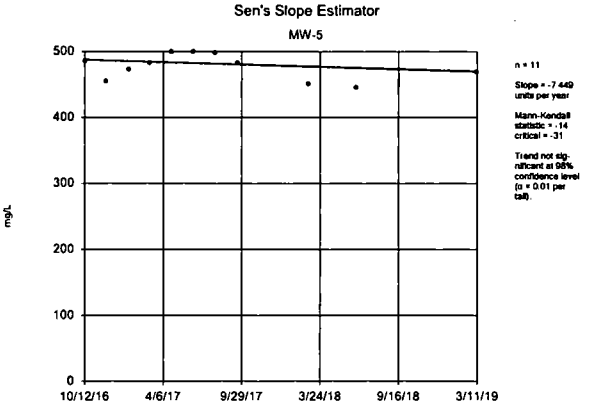
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG



Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

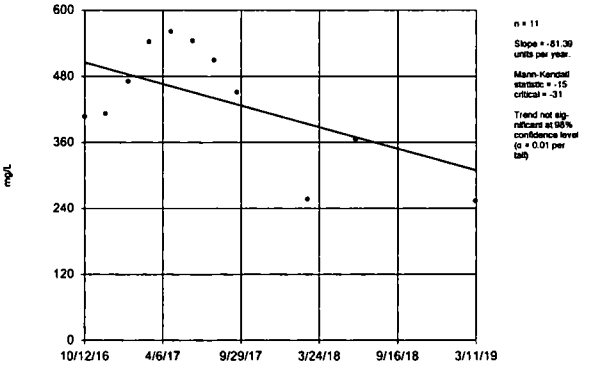


Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-6



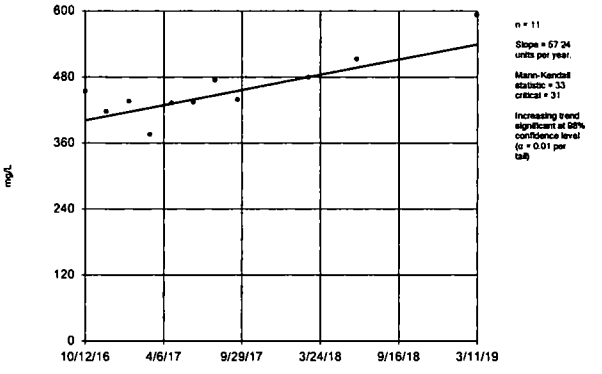
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-7



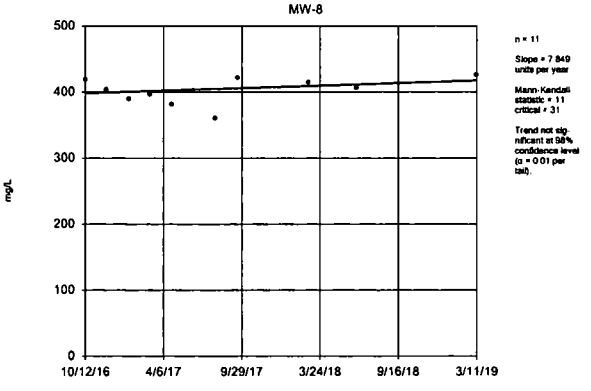
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-8



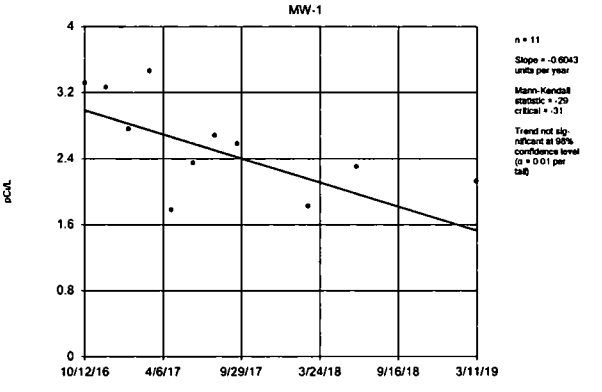
Constituent: Total Dissolved Solids Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-1



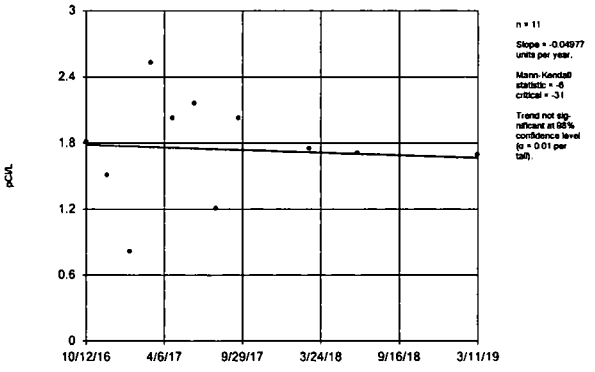
Constituent: Total Radium Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-2



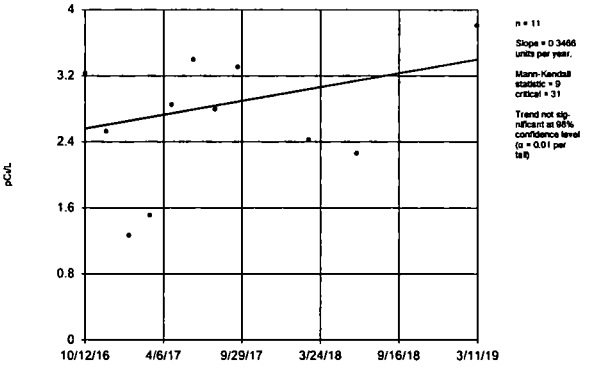
Constituent: Total Radium Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-3



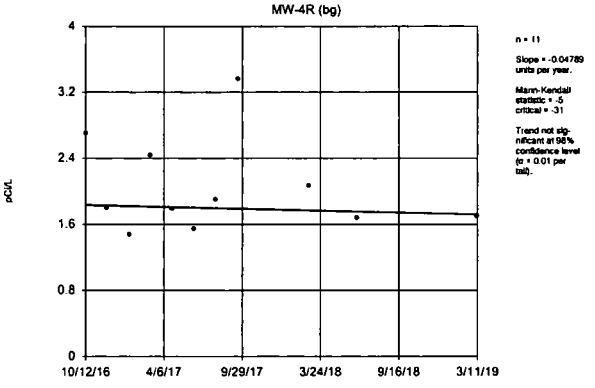
Constituent: Total Radium Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

MW-4R (bg)



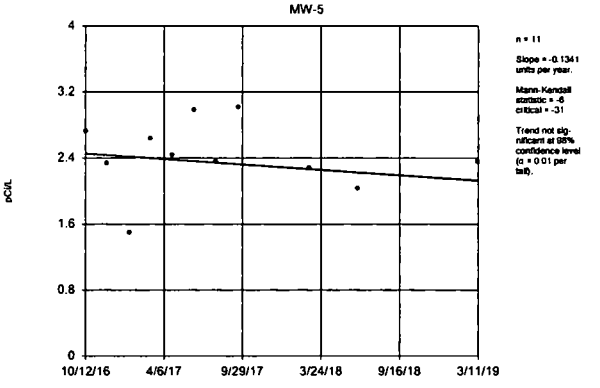
Constituent: Total Radium Analysis Run 4/25/2019 7:46 PM View: TREND TEST

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

Sanitas™ v 9.6.12 Sanitas software licensed to SCS Engineers UG

Sen's Slope Estimator

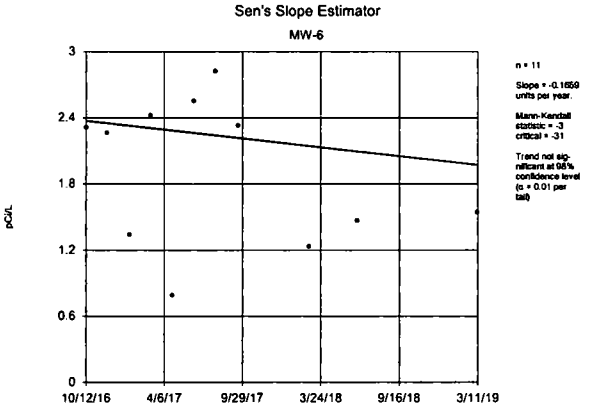
MW-5



Constituent: Total Radium Analysis Run 4/25/2019 7:46 PM View: TREND TEST

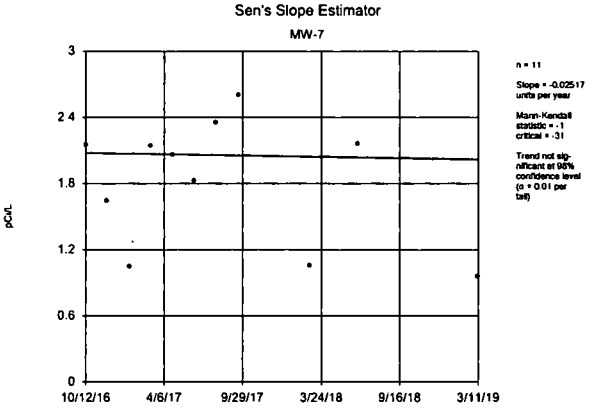
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



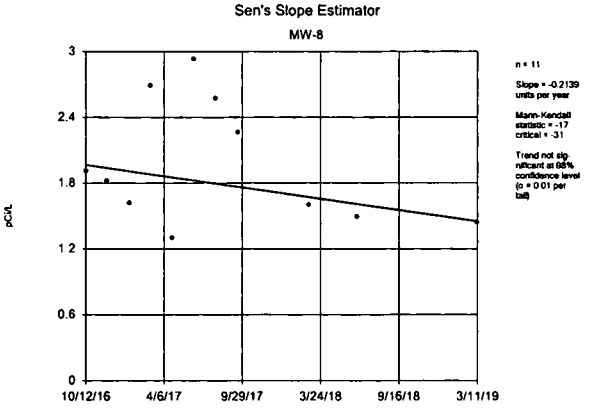
Constituent: Total Radium Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept of Utilities Client SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Total Radium Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept of Utilities Client. SCS Engineers Data Fremont Department of Utilities Groundwater

Sanitas™ v 9 6 12 Sanitas software licensed to SCS Engineers UG



Constituent: Total Radium Analysis Run 4/25/2019 7:46 PM View: TREND TEST
Fremont Dept. of Utilities Client: SCS Engineers Data Fremont Department of Utilities Groundwater

B.5 Confidence Interval Analysis

Confidence Interval

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/26/2019, 12:01 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Arsenic [total] (ug/L)	MW-1	3.769	3.285	10	No	11	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-2	4.092	3.489	10	No	11	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-3	3.156	2.863	10	No	11	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-4R (bg)	4.3	3.646	10	No	11	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-5	4.653	4.256	10	No	11	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-6	3.293	2.507	10	No	11	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-7	3.689	3.275	10	No	11	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-8	2.728	2.454	10	No	11	0	No	0.01	Param.
Barium [total] (ug/L)	MW-1	148.1	125.9	2000	No	11	0	No	0.01	Param.
Barium [total] (ug/L)	MW-2	103.8	94.84	2000	No	11	0	No	0.01	Param.
Barium [total] (ug/L)	MW-3	180.1	161.2	2000	No	11	0	No	0.01	Param.
Barium [total] (ug/L)	MW-4R (bg)	127.1	114	2000	No	11	0	No	0.01	Param.
Barium [total] (ug/L)	MW-5	147.9	128.8	2000	No	11	0	No	0.01	Param.
Barium [total] (ug/L)	MW-6	165.7	103.3	2000	No	11	0	No	0.01	Param.
Barium [total] (ug/L)	MW-7	124	108.1	2000	No	11	0	No	0.01	Param.
Barium [total] (ug/L)	MW-8	156.3	137.3	2000	No	11	0	No	0.01	Param.
Boron (ug/L)	MW-1	152.5	134.6	196.7	No	11	0	No	0.01	Param.
Boron (ug/L)	MW-2	126.8	113	196.7	No	10	0	No	0.01	Param.
Boron (ug/L)	MW-3	115	50	196.7	No	11	36.36	No	0.006	NP (Cohens/xfrm)
Boron (ug/L)	MW-4R (bg)	274.4	81.07	196.7	No	11	27.27	No	0.01	Param.
Boron (ug/L)	MW-5	136.1	121	196.7	No	11	0	No	0.01	Param.
Boron (ug/L)	MW-7	188.6	155.1	196.7	No	11	0	x^2	0.01	Param.
Boron (ug/L)	MW-8	144.2	109.5	196.7	No	9	0	No	0.01	Param.
Calcium (mg/L)	**MW-1**	**109.4**	**102.2**	**87.26**	**Yes**	**11**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-2**	**106.7**	**96.02**	**87.26**	**Yes**	**11**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	MW-3	99.1	87.1	87.26	No	11	0	No	0.01	Param.
Calcium (mg/L)	MW-4R (bg)	87.96	80.26	87.26	No	11	0	No	0.01	Param.
Calcium (mg/L)	**MW-5**	**117.2**	**100.4**	**87.26**	**Yes**	**11**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	MW-6	95.91	57.94	87.26	No	11	0	No	0.01	Param.
Calcium (mg/L)	**MW-7**	**104.1**	**92.02**	**87.26**	**Yes**	**11**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	MW-8	91.95	83.56	87.26	No	11	0	No	0.01	Param.
Chloride (mg/L)	MW-1	13.4	9.7	250	No	11	0	No	0.006	NP (normality)
Chloride (mg/L)	MW-2	17.03	13.77	250	No	10	0	No	0.01	Param.
Chloride (mg/L)	MW-3	32.54	27.31	250	No	11	0	No	0.01	Param.
Chloride (mg/L)	MW-4R (bg)	29.2	14.42	250	No	10	0	sqrt(x)	0.01	Param.
Chloride (mg/L)	MW-5	22.51	12.23	250	No	11	0	No	0.01	Param.
Chloride (mg/L)	MW-6	55.93	38.65	250	No	10	0	No	0.01	Param.
Chloride (mg/L)	MW-7	47.9	18	250	No	11	0	No	0.006	NP (normality)
Chloride (mg/L)	MW-8	25.93	20.2	250	No	11	0	No	0.01	Param.
Fluoride (mg/L)	MW-1	1.421	1.268	4	No	11	0	ln(x)	0.01	Param.
Fluoride (mg/L)	MW-2	0.9925	0.8621	4	No	11	0	No	0.01	Param.
Fluoride (mg/L)	MW-3	0.8537	0.7353	4	No	11	0	No	0.01	Param.
Fluoride (mg/L)	MW-4R (bg)	0.9055	0.789	4	No	11	0	No	0.01	Param.
Fluoride (mg/L)	MW-5	1.3	1	4	No	11	0	No	0.006	NP (normality)
Fluoride (mg/L)	MW-6	0.61	0.48	4	No	11	0	No	0.006	NP (normality)
Fluoride (mg/L)	MW-7	0.9264	0.79	4	No	11	0	No	0.01	Param.
Fluoride (mg/L)	MW-8	0.8683	0.7408	4	No	11	0	No	0.01	Param.
Lithium (ug/L)	MW-1	36.78	32.33	40	No	11	0	No	0.01	Param.
Lithium (ug/L)	MW-2	29.58	26	40	No	10	0	No	0.01	Param.
Lithium (ug/L)	MW-3	29.44	25.34	40	No	11	0	No	0.01	Param.

Confidence Interval

Fremont Dept of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/26/2019, 12:01 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Lithium (ug/L)	MW-4R (bg)	28.04	23.87	40	No	11	0	No	0.01	Param.
Lithium (ug/L)	MW-5	33.4	27	40	No	11	0	No	0.006	NP (normality)
Lithium (ug/L)	MW-6	31.04	21.32	40	No	11	0	No	0.01	Param.
Lithium (ug/L)	MW-7	31.74	25.41	40	No	11	0	No	0.01	Param.
Lithium (ug/L)	MW-8	28.56	26.66	40	No	10	0	No	0.01	Param.
Molybdenum (ug/L)	MW-1	8.708	7.747	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-2	8.866	7.734	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-3	12.3	10.15	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-4R (bg)	7.095	5.105	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-5	7.088	5.566	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-6	9.015	6.531	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-7	9.191	7.882	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-8	8.438	7.142	100	No	10	0	No	0.01	Param.
pH (Std. Units)	MW-1	7.41	6.917	8.5	No	11	0	No	0.005	Param.
pH (Std. Units)	MW-2	7.318	6.882	8.5	No	11	0	No	0.005	Param.
pH (Std. Units)	MW-3	7.365	6.962	8.5	No	11	0	No	0.005	Param.
pH (Std. Units)	MW-4R (bg)	7.51	6.909	8.5	No	11	0	No	0.005	Param.
pH (Std. Units)	MW-5	7.486	7.078	8.5	No	11	0	No	0.005	Param.
pH (Std. Units)	MW-6	7.323	6.859	8.5	No	11	0	No	0.005	Param.
pH (Std. Units)	MW-7	7.361	6.93	8.5	No	11	0	No	0.005	Param.
pH (Std. Units)	MW-8	7.383	6.945	8.5	No	11	0	No	0.005	Param.
Selenium [total] (ug/L)	MW-1	14.5	11.05	50	No	11	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-2	15.36	12.07	50	No	11	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-3	9.397	7.821	50	No	11	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-4R (bg)	8.159	6.581	50	No	10	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-5	8.985	8.27	50	No	11	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-6	10.98	5.913	50	No	11	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-7	11.16	9.406	50	No	11	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-8	12.79	9.778	50	No	11	0	No	0.01	Param.
Sulfate (mg/L)	MW-1	54.05	47.66	250	No	11	0	No	0.01	Param.
Sulfate (mg/L)	MW-2	50.21	41.61	250	No	10	0	No	0.01	Param.
Sulfate (mg/L)	MW-3	61.48	43.97	250	No	11	0	No	0.01	Param.
Sulfate (mg/L)	MW-4R (bg)	43.66	33.2	250	No	11	0	x^2	0.01	Param.
Sulfate (mg/L)	MW-5	41.24	36.58	250	No	11	0	No	0.01	Param.
Sulfate (mg/L)	MW-6	64.09	29.13	250	No	11	0	No	0.01	Param.
Sulfate (mg/L)	MW-7	52.36	42.42	250	No	11	0	No	0.01	Param.
Sulfate (mg/L)	MW-8	46.36	34.43	250	No	11	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1	496.8	455.6	500	No	11	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-2	470	416	500	No	11	0	No	0.006	NP (normality)
Total Dissolved Solids (mg/L)	MW-3	464.1	400.4	500	No	11	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-4R (bg)	433.7	380.5	500	No	11	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-5	492.7	459.8	500	No	11	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-6	524	343.3	500	No	11	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-7	505.5	411.2	500	No	11	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-8	417.6	385.3	500	No	11	0	No	0.01	Param.
Total Radium (pCi/L)	MW-1	3.068	2.1	5	No	11	0	No	0.01	Param.
Total Radium (pCi/L)	MW-2	2.137	1.362	5	No	11	0	No	0.01	Param.
Total Radium (pCi/L)	MW-3	3.321	2.016	5	No	11	0	No	0.01	Param.
Total Radium (pCi/L)	MW-4R (bg)	2.481	1.587	5	No	11	0	sqrt(x)	0.01	Param.
Total Radium (pCi/L)	MW-5	2.778	2.065	5	No	11	0	No	0.01	Param.

Confidence Interval

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 4/26/2019, 12:01 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Total Radium (pCi/L)	MW-6	2.463	1.366	5	No	11	0	No	0.01	Param.
Total Radium (pCi/L)	MW-7	2 291	1.344	5	No	11	0	No	0.01	Param.
Total Radium (pCi/L)	MW-8	2.433	1.5	5	No	11	0	No	0.01	Param.

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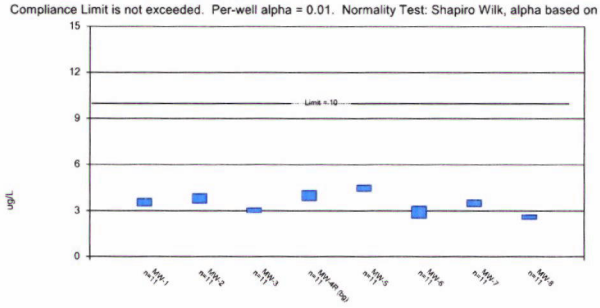
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic [total] Analysis Run 4/26/2019 12:00 PM View: Confidence Intervals

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

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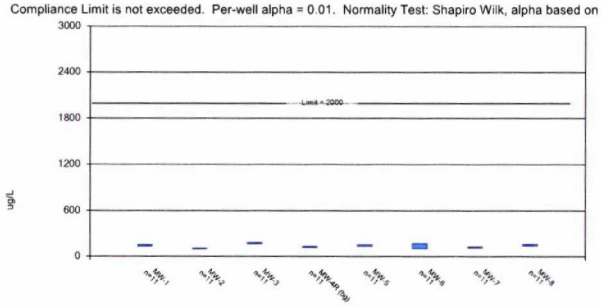
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium [total] Analysis Run 4/26/2019 12:00 PM View: Confidence Intervals

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

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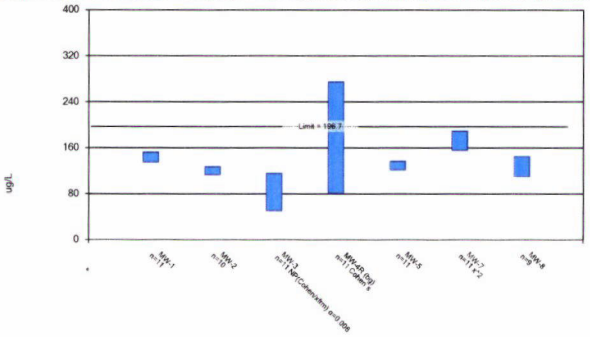
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron Analysis Run 4/26/2019 12:00 PM View: Confidence Intervals

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

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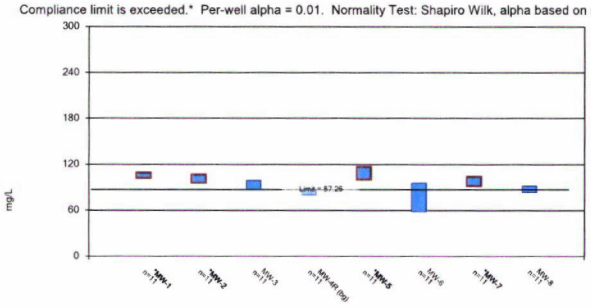
Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium Analysis Run 4/26/2019 12:00 PM View: Confidence Intervals

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

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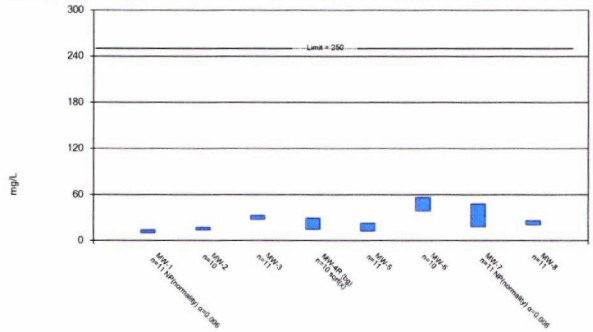
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chloride Analysis Run 4/26/2019 12:00 PM View: Confidence Intervals

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

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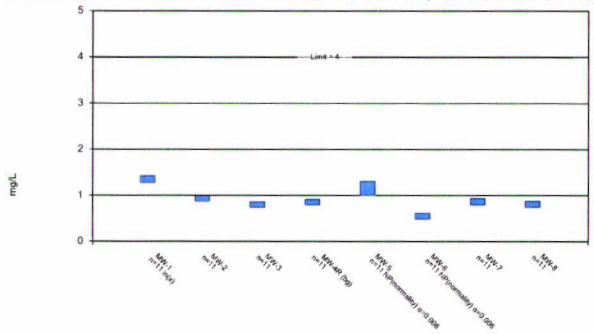
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 4/26/2019 12:00 PM View: Confidence Intervals

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

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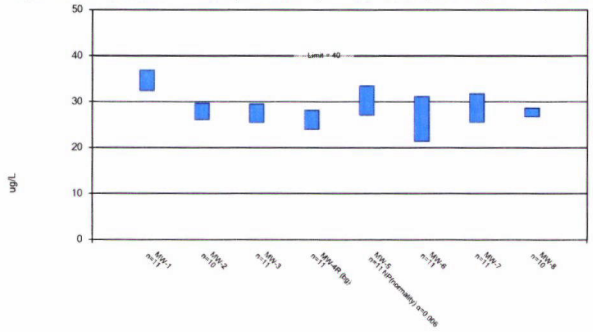
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 4/26/2019 12:00 PM View: Confidence Intervals

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

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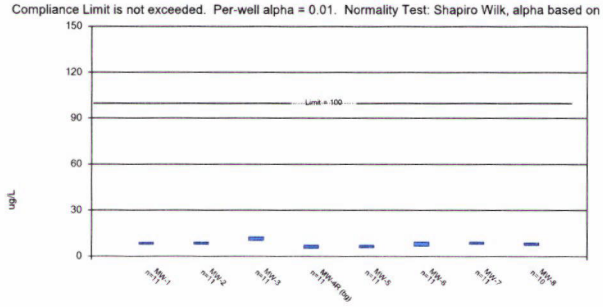
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum Analysis Run 4/26/2019 12:01 PM View: Confidence Intervals

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

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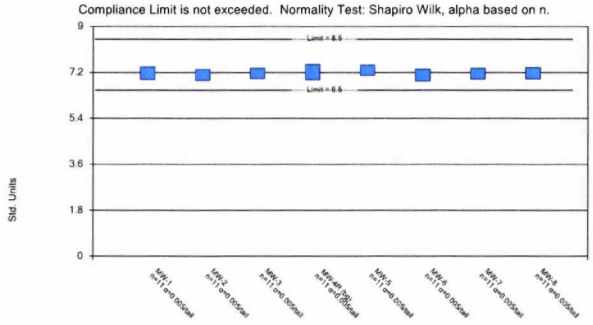
Parametric Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: pH Analysis Run 4/26/2019 12:01 PM View: Confidence Intervals

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

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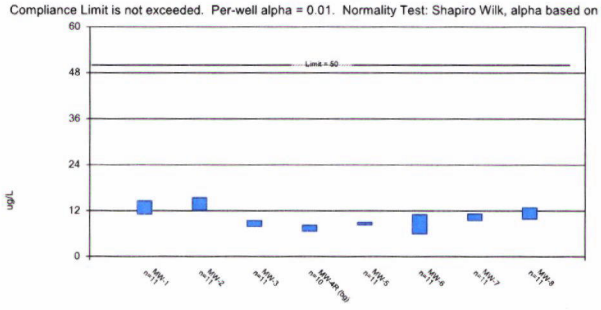
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium [total] Analysis Run 4/26/2019 12:01 PM View: Confidence Intervals

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

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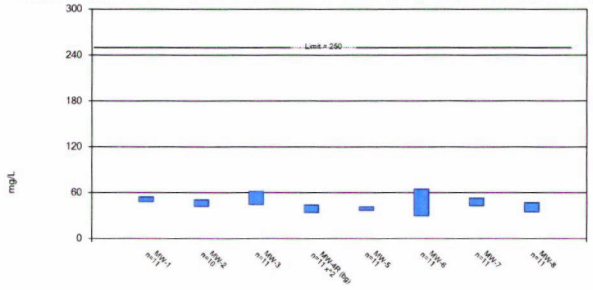
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 4/26/2019 12:01 PM View: Confidence Intervals

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

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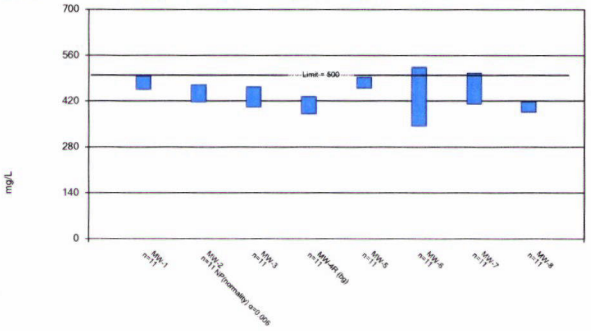
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Total Dissolved Solids Analysis Run 4/26/2019 12:01 PM View: Confidence Intervals

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

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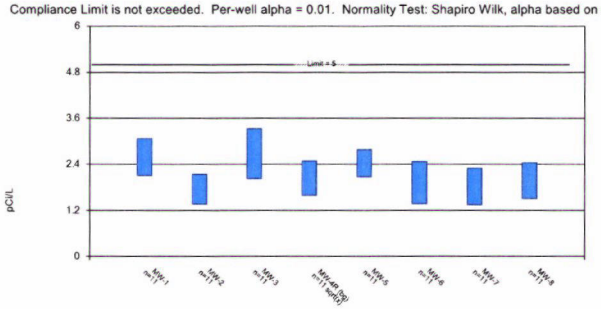
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Total Radium Analysis Run 4/26/2019 12:01 PM View: Confidence Intervals

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

A2 August 2019 Groundwater Monitoring Program Report

FREMONT
Department of Utilities

Operated by the
Board for Public Works

400 EAST MILITARY AVENUE P.O. BOX 1468 FREMONT, NE 68025

October 28, 2019

RECEIVED

OCT 30 2019

NE Dept of Environment and Energy
By: _____DEE182_____

State of Nebraska
Department of Environmental Quality
Remediation Section

Attn:
Nancy Harris
Groundwater Geologist
Waste Management Division
Suite 400, The Atrium
1200 N. Street
P.O. Box 98922
Lincoln, NE 68509-8922

Dear Ms. Harris:

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 13, 2019. If you have any questions concerning this report please feel free to call or email Tony Sedlacek.

Sincerely,

Tony Sedlacek

Tony Sedlacek
Environmental Engineering Technician
Lon D. Wright Power Plant
Fremont Department of Utilities
2701 E. 1st St
Fremont, NE 68025
Phone (402) 727-2651
Fax (402) 727-2640
tony.sedlacek@fremontne.gov

Enclosures

2019006949

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Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60311879001	**MW-1**	Water	08/13/19 11:02	08/14/19 06:25
60311879002	**MW-2**	Water	08/13/19 11:53	08/14/19 06:25
60311879003	**MW-3**	Water	08/13/19 11:28	08/14/19 06:25
60311879004	**MW-4R**	Water	08/13/19 08:36	08/14/19 06:25
60311879005	**MW-5**	Water	08/13/19 09:08	08/14/19 06:25
60311879006	**MW-6**	Water	08/13/19 09:41	08/14/19 06:25
60311879007	**MW-7**	Water	08/13/19 12:16	08/14/19 06:25
60311879008	**MW-8**	Water	08/13/19 10:09	08/14/19 06:25
60311879009	**DUPLICATE**	Water	08/13/19 23:59	08/14/19 06:25

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60311879001	MW-1	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	JDS, MGS	3	PASI-K
60311879002	MW-2	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60311879003	MW-3	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60311879004	MW-4R	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60311879005	MW-5	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60311879006	MW-6	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60311879007	MW-7	EPA 6010	EMR	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60311879008	**MW-8**	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60311879009	**DUPLICATE**	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JLH	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	MGS	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60311878001	MW-1	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60311878002	MW-2	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60311878003	MW-3	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60311878004	MW-4R	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60311878005	MW-5	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60311878006	MW-6	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60311878007	MW-7	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60311878008	MW-8	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60311878009	DUPLICATE	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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Lenexa, KS 66219
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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: MW-1 **Lab ID: 60311879001** Collected: 08/13/19 11:02 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**126**	ug/L	100	1	08/19/19 09:27	08/19/19 17:17	7440-42-8	
Calcium	**99.9**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:17	7440-70-2	
Lithium	**28.2**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:17	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7440-36-0	
Arsenic	**3.8**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7440-38-2	
Barium	**113**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:23	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:23	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7439-92-1	
Molybdenum	**7.2**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7439-98-7	
Selenium	**7.7**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**484**	mg/L	10.0	1		08/16/19 13:36		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		08/16/19 11:58		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**30.4**	mg/L	5.0	5		08/23/19 11:54	16887-00-6	
Fluoride	**1.2**	mg/L	0.20	1		08/23/19 05:46	16984-48-8	
Sulfate	**35.7**	mg/L	5.0	5		08/23/19 11:54	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: MW-2 **Lab ID: 60311879002** Collected: 08/13/19 11:53 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**138**	ug/L	100	1	08/19/19 09:27	08/19/19 17:22	7440-42-8	
Calcium	**121**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:22	7440-70-2	
Lithium	**31.7**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:22	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7440-36-0	
Arsenic	**4.0**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7440-38-2	
Barium	**112**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:29	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:29	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7439-92-1	
Molybdenum	**7.6**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7439-98-7	
Selenium	**13.9**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:11	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**602**	mg/L	10.0	1		08/19/19 10:19		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		08/16/19 12:01		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**18.1**	mg/L	1.0	1		08/23/19 12:44	16887-00-6	
Fluoride	**0.99**	mg/L	0.20	1		08/23/19 12:44	16984-48-8	
Sulfate	**69.1**	mg/L	5.0	5		08/23/19 13:18	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: MW-3 **Lab ID: 60311879003** Collected: 08/13/19 11:28 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	08/19/19 09:27	08/19/19 17:25	7440-42-8	
Calcium	**99.4**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:25	7440-70-2	
Lithium	**25.0**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:25	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7440-38-2	
Barium	**184**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:31	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:31	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7439-92-1	
Molybdenum	**12.6**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7439-98-7	
Selenium	**8.0**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**499**	mg/L	10.0	1		08/19/19 10:19		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		08/16/19 12:04		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**41.3**	mg/L	5.0	5		08/23/19 14:09	16887-00-6	
Fluoride	**0.66**	mg/L	0.20	1		08/23/19 13:52	16984-48-8	
Sulfate	**58.4**	mg/L	5.0	5		08/23/19 14:09	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: MW-4R **Lab ID: 60311879004** Collected: 08/13/19 08:36 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**210**	ug/L	100	1	08/19/19 09:27	08/19/19 17:27	7440-42-8	
Calcium	**84.1**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:27	7440-70-2	
Lithium	**23.6**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:27	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7440-36-0	
Arsenic	**3.8**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7440-38-2	
Barium	**133**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:33	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:33	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7439-92-1	
Molybdenum	**8.1**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7439-98-7	
Selenium	**7.4**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:33	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**427**	mg/L	10.0	1		08/19/19 10:19		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		08/16/19 12:24		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**24.2**	mg/L	5.0	5		08/23/19 15:16	16887-00-6	
Fluoride	**0.89**	mg/L	0.20	1		08/23/19 14:25	16984-48-8	
Sulfate	**36.6**	mg/L	5.0	5		08/23/19 15:16	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: MW-5 **Lab ID: 60311879005** Collected: 08/13/19 09:08 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**125**	ug/L	100	1	08/19/19 09:27	08/19/19 17:29	7440-42-8	
Calcium	**98.7**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:29	7440-70-2	
Lithium	**24.8**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:29	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7440-36-0	
Arsenic	**4.4**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7440-38-2	
Barium	**119**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:35	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:35	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7439-92-1	
Molybdenum	**4.8**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7439-98-7	
Selenium	**6.7**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:35	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**460**	mg/L	5.0	1		08/19/19 10:19		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		08/16/19 12:27		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**35.0**	mg/L	5.0	5		08/23/19 15:49	16887-00-6	
Fluoride	**0.98**	mg/L	0.20	1		08/23/19 15:33	16984-48-8	
Sulfate	**41.2**	mg/L	5.0	5		08/23/19 15:49	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: MW-6 **Lab ID: 60311879006** Collected: 08/13/19 09:41 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	ND	ug/L	100	1	08/19/19 09:27	08/19/19 17:31	7440-42-8	
Calcium	**36.8**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:31	7440-70-2	
Lithium	**11.6**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:31	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7440-36-0	
Arsenic	**2.8**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7440-38-2	
Barium	**61.2**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:37	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:37	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7439-92-1	
Molybdenum	**4.7**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7439-98-7	
Selenium	**2.6**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**260**	mg/L	10.0	1		08/19/19 10:19		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		08/16/19 12:31		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**19.0**	mg/L	1.0	1		08/23/19 16:06	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	1		08/23/19 16:06	16984-48-8	
Sulfate	**12.7**	mg/L	1.0	1		08/23/19 16:06	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: MW-7 **Lab ID: 60311879007** Collected: 08/13/19 12:16 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**154**	ug/L	100	1	08/19/19 09:27	08/19/19 17:37	7440-42-8	
Calcium	**113**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:37	7440-70-2	
Lithium	**28.8**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:37	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7440-36-0	
Arsenic	**3.5**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7440-38-2	
Barium	**128**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:43	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:43	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7439-92-1	
Molybdenum	**8.3**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7439-98-7	
Selenium	**11.7**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:43	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**637**	mg/L	10.0	1		08/19/19 10:20		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		08/16/19 12:34		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**87.2**	mg/L	5.0	5		08/23/19 16:57	16887-00-6	
Fluoride	**0.82**	mg/L	0.20	1		08/23/19 16:40	16984-48-8	
Sulfate	**59.7**	mg/L	5.0	5		08/23/19 16:57	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: MW-8 **Lab ID: 60311879008** Collected: 08/13/19 10:09 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**142**	ug/L	100	1	08/19/19 09:27	08/19/19 17:39	7440-42-8	
Calcium	**93.3**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:39	7440-70-2	
Lithium	**24.4**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:39	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7440-36-0	
Arsenic	**2.5**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7440-38-2	
Barium	**142**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:45	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:45	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7439-92-1	
Molybdenum	**6.8**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7439-98-7	
Selenium	**12.4**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**478**	mg/L	10.0	1		08/19/19 10:20		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		08/16/19 12:36		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**36.3**	mg/L	5.0	5		08/23/19 17:31	16887-00-6	
Fluoride	**0.72**	mg/L	0.20	1		08/23/19 17:14	16984-48-8	
Sulfate	**41.1**	mg/L	5.0	5		08/23/19 17:31	14808-79-8	

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ANALYTICAL RESULTS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

Sample: DUPLICATE **Lab ID: 60311879009** Collected: 08/13/19 23:59 Received: 08/14/19 06:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	**145**	ug/L	100	1	08/19/19 09:27	08/19/19 17:41	7440-42-8	
Calcium	**109**	mg/L	0.20	1	08/19/19 09:27	08/19/19 17:41	7440-70-2	
Lithium	**29.1**	ug/L	10.0	1	08/19/19 09:27	08/19/19 17:41	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7440-36-0	
Arsenic	**3.6**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7440-38-2	
Barium	**130**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7440-39-3	
Beryllium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:47	7440-41-7	
Cadmium	ND	ug/L	0.50	1	08/16/19 10:09	08/19/19 16:47	7440-43-9	
Chromium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7440-47-3	
Cobalt	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7440-48-4	
Lead	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7439-92-1	
Molybdenum	**8.5**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7439-98-7	
Selenium	**11.8**	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7782-49-2	
Thallium	ND	ug/L	1.0	1	08/16/19 10:09	08/19/19 16:47	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	08/15/19 15:40	08/19/19 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**633**	mg/L	10.0	1		08/19/19 10:20		
9040 pH	Analytical Method: EPA 9040							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		08/16/19 12:41		H6
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**82.4**	mg/L	5.0	5		08/23/19 18:38	16887-00-6	
Fluoride	**0.82**	mg/L	0.20	1		08/23/19 17:47	16984-48-8	
Sulfate	**56.6**	mg/L	5.0	5		08/23/19 18:38	14808-79-8	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: MW-1 **Lab ID: 60311878001** Collected: 08/13/19 11:02 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.18 ± 0.533 (0.159) C:NA T:84%**	pCi/L	09/04/19 15:50	13982-63-3	
Radium-228	EPA 904.0	**0.993 ± 0.440 (0.703) C:74% T:83%**	pCi/L	08/29/19 15:43	15262-20-1	
Total Radium	Total Radium Calculation	**2.17 ± 0.973 (0.862)**	pCi/L	09/05/19 13:43	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: MW-2 **Lab ID: 60311878002** Collected: 08/13/19 11:53 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.01 ± 0.635 (0.834)** **C:NA T:81%**	pCi/L	09/04/19 15:50	13982-63-3	
Radium-228	EPA 904.0	**1.29 ± 0.443 (0.594)** **C:90% T:83%**	pCi/L	08/29/19 15:43	15262-20-1	
Total Radium	Total Radium Calculation	**2.30 ± 1.08 (1.43)**	pCi/L	09/05/19 13:43	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: MW-3 **Lab ID: 60311878003** Collected: 08/13/19 11:28 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.27 ± 0.550 (0.156) C:NA T:83%**	pCi/L	09/04/19 15:50	13982-63-3	
Radium-228	EPA 904.0	**2.12 ± 0.669 (0.853) C:74% T:77%**	pCi/L	08/29/19 15:43	15262-20-1	
Total Radium	Total Radium Calculation	**3.39 ± 1.22 (1.01)**	pCi/L	09/05/19 13:43	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: MW-4R **Lab ID: 60311878004** Collected: 08/13/19 08:36 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.906 ± 0.554 (0.680)** **C:NA T:80%**	pCi/L	09/04/19 15:37	13982-63-3	
Radium-228	EPA 904.0	**2.13 ± 0.661 (0.855)** **C:74% T:85%**	pCi/L	08/29/19 15:40	15262-20-1	
Total Radium	Total Radium Calculation	**3.04 ± 1.22 (1.54)**	pCi/L	09/05/19 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: MW-5 **Lab ID: 60311878005** Collected: 08/13/19 09:08 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.596 ± 0.468 (0.651)** **C:NA T:80%**	pCi/L	09/04/19 15:37	13982-63-3	
Radium-228	EPA 904.0	**2.28 ± 0.676 (0.839)** **C:72% T:89%**	pCi/L	08/29/19 15:40	15262-20-1	
Total Radium	Total Radium Calculation	**2.88 ± 1.14 (1.49)**	pCi/L	09/05/19 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: MW-6 **Lab ID: 60311878006** Collected: 08/13/19 09:41 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.813 ± 0.620 (0.882) C:NA T:80%**	pCi/L	09/04/19 15:37	13982-63-3	
Radium-228	EPA 904.0	**0.245 ± 0.339 (0.726) C:73% T:87%**	pCi/L	08/29/19 15:41	15262-20-1	
Total Radium	Total Radium Calculation	**1.06 ± 0.959 (1.61)**	pCi/L	09/05/19 13:43	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: MW-7 **Lab ID: 60311878007** Collected: 08/13/19 12:16 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.75 ± 0.783 (0.820) C:NA T:74%**	pCi/L	09/04/19 15:50	13982-63-3	
Radium-228	EPA 904.0	**1.10 ± 0.475 (0.736) C:73% T:76%**	pCi/L	08/29/19 15:43	15262-20-1	
Total Radium	Total Radium Calculation	**2.85 ± 1.26 (1.56)**	pCi/L	09/05/19 13:43	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: MW-8 **Lab ID: 60311878008** Collected: 08/13/19 10:09 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.39 ± 0.834 (1.14)** **C:NA T:70%**	pCi/L	09/04/19 15:37	13982-63-3	
Radium-228	EPA 904.0	**1.73 ± 0.548 (0.684)** **C:78% T:80%**	pCi/L	08/29/19 15:43	15262-20-1	
Total Radium	Total Radium Calculation	**3.12 ± 1.38 (1.82)**	pCi/L	09/05/19 13:43	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

Sample: DUPLICATE **Lab ID: 60311878009** Collected: 08/13/19 23:59 Received: 08/14/19 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.774 ± 0.638 (0.963)** **C:NA T:85%**	pCi/L	09/04/19 15:50	13982-63-3	
Radium-228	EPA 904.0	**1.45 ± 0.538 (0.768)** **C:77% T:76%**	pCi/L	08/29/19 15:43	15262-20-1	
Total Radium	Total Radium Calculation	**2.22 ± 1.18 (1.73)**	pCi/L	09/05/19 13:43	7440-14-4	

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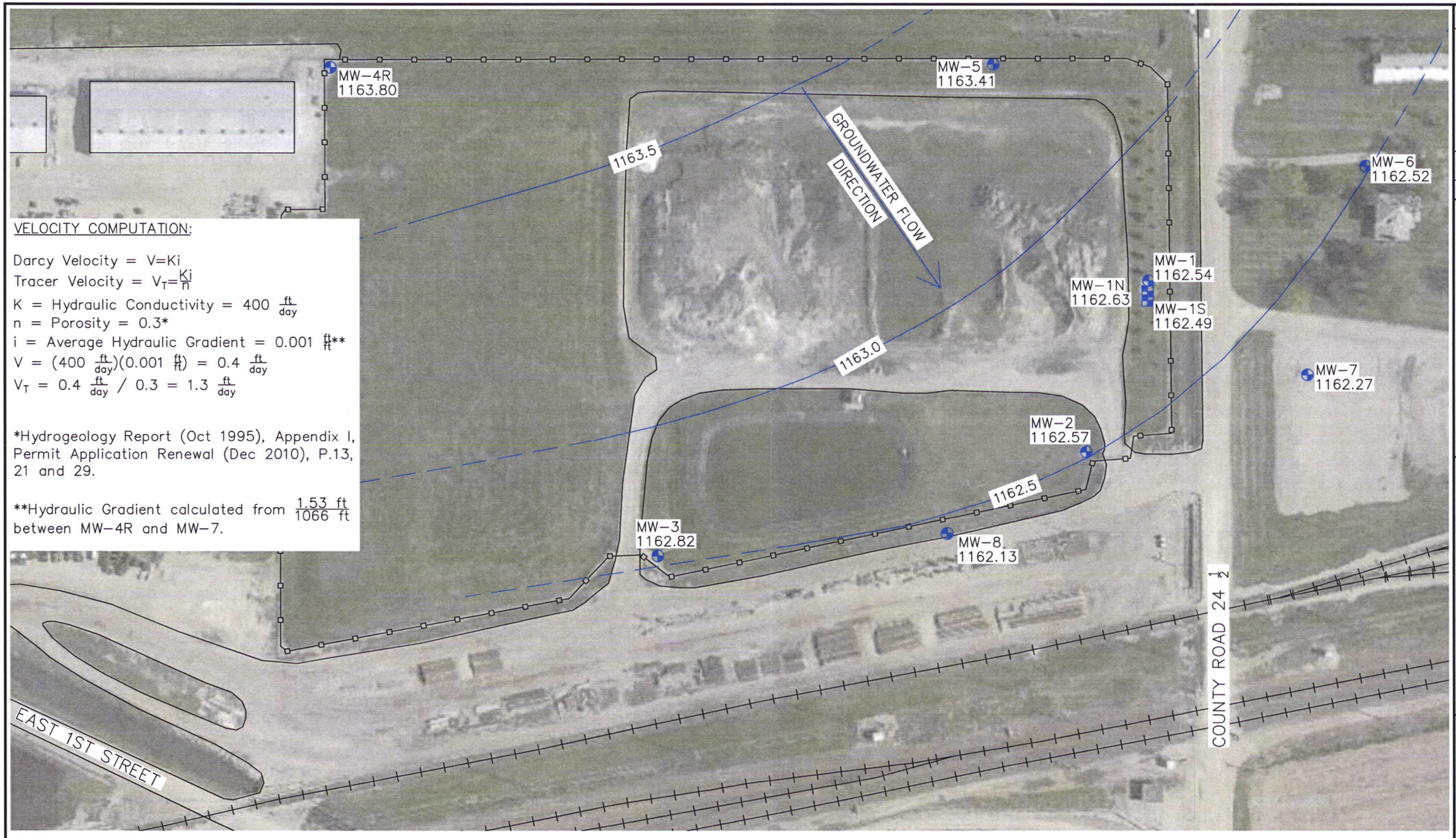

VELOCITY COMPUTATION:

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 $\frac{1.53\ ft}{1066\ ft}$ between MW-4R and MW-7.

LEGEND

- RAILROAD TRACKS
- FENCE
- MONITORING WELL
- PIEZOMETER
- ESTIMATED POTENTIOMETRIC CONTOUR
- POTENTIOMETRIC CONTOUR
- 1161.00 FEET ABOVE MEAN SEA LEVEL

NOTES:

1. DEPTHS TO GROUNDWATER MEASURED 8/13/2019.
2. GROUNDWATER DATA FROM MW-1N AND MW-1S WERE NOT USED IN THE CALCULATION OF GROUNDWATER CONTOURS.

100 0 100 200

SCALE SCALE IS APPROXIMATE FEET

REV.	DATE	CK. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

SHEET TITLE: POTENTIOMETRIC CONTOUR MAP

PROJECT TITLE: 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) 884-6202 FAX: (402) 884-6203

PROJ. NO. 27219066.00 | DWN. BY: ZEM | Q/A RVW BY: CJ
DSN. BY: KB | CHK. BY: CJ | PROJ. MGR: BRS

CADD FILE: Q3 GROUNDWATER CONTOURS.DWG

DATE: 8/19/19

FIGURE NO. 1

T:\27219045.00\Data and Calculations\3Q2019 GW\DWG\Q3 Groundwater Contours.dwg Aug 19, 2019 - 8:21am Layout Name: 11x17 By: 4277zem

3. Field Activity Summary

Field Data Sheet

Project Name: FDU GW Sampling
Project Location: Fremont, NE
Project Number: 27219045.00

Monitoring Point: MW-1
Date(s): 08/13/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 77 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad: OK
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Total Depth: 29.00 feet below TOC
Static Water Level: 18.38 feet below TOC
Date/Time Measured: 08/13/19 10:42 — TD - SWL: 10.62 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 08/13/19
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: 10.62 x 10 = 106.2 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 20.96 — pH 7.12 — ORP 127
Sp. Cond. 0.741 — Turbidity 1.1 — DO 4.98
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)
10:56	200	200	20.04	7.06	140	0.763	0.0	5.36	18.38
10:59	800	|	19.54	7.03	145	0.752	0.0	5.07	18.38
11:02	1400	|	19.26	7.02	135	0.735	0.0	5.02	18.38

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 08/13/19 11:02
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump Hand (circle one)
Sample Parameters: Temp (°C) 19.26 — pH 7.02 — ORP 135
Sp. Cond. 0.735 — Turbidity 0.0 — DO 5.02
Water Level 18.38 (feet below TOC)

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

WL for 1-S: 19.28
WL for 1-N: 19.30

Electronic Form Completed By: _____ **Date:** _____

Field Data Sheet

Project Name: FDU GW Sampling
Project Location: Fremont, NE
Project Number: 27219045.00

Monitoring Point: MW-2
Date(s): 08/13/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J Warth — 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: OK
Casing: \
Protective Casing: \
Reference Mark/Identification: \

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 08/13/19 11:37

Total Depth: 28.00 feet below TOC
Static Water Level: 14.89 feet below TOC
TD - SWL: 13.11 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 08/13/19
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: 13.11 x 10 = 131.1 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 18.32 pH 7.18 ORP 122
Sp. Cond. 0.688 Turbidity 0.0 DO 5.71
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)
11:47	300	200	16.00	6.98	130	0.702	0.0	5.24	14.89
11:50	900	|	15.36	6.94	135	0.704	0.0	4.36	14.89
11:53	1500		15.11	6.99	139	0.702	0.0	4.16	14.89

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 08/13/19 11:53
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump Hand (circle one)
Sample Parameters: Temp (°C) 15.11 pH 6.49 ORP 139
Sp. Cond. 0.702 Turbidity 0.0 DO 4.16
Water Level 14.89 (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: 27219045.00

Monitoring Point: MW-3
Date(s): 08/13/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 78 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad: OK
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Total Depth: 28.00 feet below TOC
Static Water Level: 15.99 feet below TOC
Date/Time Measured: 08/13/19 11:13 — TD - SWL: 12.01 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 08/13/19
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: 12.01 x 10 = 120.1 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 23.48 — pH 7.19 — ORP 121
Sp. Cond. 0.662 — Turbidity 0.0 — DO 3.99
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)
11:22	300	200	20.69	7.00	131	0.670	0.0	3.61	15.99
11:25	900		20.07	6.97	133	0.664	0.0	3.58	15.99
11:28	1500		19.68	6.96	135	0.656	0.0	3.88	15.99

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 08/13/19 11:28
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump Hand (circle one)
Sample Parameters: Temp (°C) 19.68 — pH 6.96 — ORP 135
Sp. Cond. 0.656 — Turbidity 0.0 — DO 3.88
Water Level 15.99 (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: 27219045.00.

Monitoring Point: MW-4R
Date(s): 08/13/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 70 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad: OK
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 08/13/19 08:17
Total Depth: 28.00 feet below TOC
Static Water Level: 14.49 feet below TOC
TD - SWL: 13.51 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 08/13/19
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: 13.51 x 10 = 135.1 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 17.45 pH 7.53 ORP 159
Sp. Cond. 0.618 Turbidity 0.0 DO 6.16
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)
08:30	300	200	15.35	7.01	151	0.631	0.0	5.61	14.49
08:33	900		14.23	6.93	148	0.587	0.0	5.86	14.49
08:36	1500		13.88	6.90	147	0.569	0.0	5.84	14.49

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 08/13/19 08:36
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump Hand (circle one)
Sample Parameters: Temp (°C) 13.88 pH 6.90 ORP 147
Sp. Cond. 0.569 Turbidity 0.0 DO 5.84
Water Level 14.49 (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: 27219045.00

Monitoring Point: MW-5
Date(s): 08/13/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions

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

Well Observations

Well Pad: OK
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 08/13/19 08:52

Total Depth: 28.00 feet below TOC
Static Water Level: 14.65 feet below TOC
TD - SWL: 13.35 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 08/13/19
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: 13.35 X 10 = 133.5 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 16.72 pH 7.03 ORP 136
Sp. Cond. 0.601 Turbidity 0.0 DO 4.76
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)
09:02	300	200	16.36	6.99	138	0.614	0.0	4.56	14.65
09:05	900	|	15.23	6.98	139	0.607	0.0	4.35	14.65
09:08	1500	|	14.91	6.96	139	0.602	0.0	4.32	14.65

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 08/13/19 09:08
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump Hand (circle one)
Sample Parameters: Temp (°C) 14.91 pH 6.96 ORP 139
Sp. Cond. 0.602 Turbidity 0.0 DO 4.32
Water Level 14.65 (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: 27219045.00

Monitoring Point: MW - 6
Date(s): 08/13/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J Waeth — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 73 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad: OK
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 08/13/19 09:24

Total Depth: 28.00 feet below TOC
Static Water Level: 15.26 feet below TOC
TD - SWL: 12.74 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 08/13/19
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: 12.74 x 10 = 127.4 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 17.10 — pH 6.94 — ORP 128
Sp. Cond. 0.440 — Turbidity 4.3 — DO 6.85
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)
09:32	300	200	15.50	6.84	133	0.430	0.6	6.26	15.26
09:35	900		14.22	6.82	137	0.353	0.0	5.92	15.26
09:38	1500		13.92	6.79	140	0.337	0.0	5.54	15.26
09:41	2100		13.80	6.82	141	0.339	0.0	5.78	15.26

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 08/13/19 09:41
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump Hand (circle one)
Sample Parameters: Temp (°C) 13.80 — pH 6.82 — ORP 141
Sp. Cond. 0.339 — Turbidity 0.0 — DO 5.78
Water Level 15.26 (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: 27219045.00

Monitoring Point: MW-7
Date(s): 08/13/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 83 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad: OK
Casing:
Protective Casing:
Reference Mark/Identification:

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 08/13/19 12:02

Total Depth: 28.00 feet below TOC
Static Water Level: 15.08 feet below TOC
TD - SWL: 12.92 water column (ft.)

Purging Activities

Purged By: B Stephens — Purge Date: 08/13/19
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: 12.92 x 10 = 129.2 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 17.62 — pH 6.93 — ORP 126
Sp. Cond. 0.854 — Turbidity 2.0 — DO 4.64
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)
12:10	300	200	15.44	6.93	131	0.830	0.0	4.81	15.08
12:13	900		13.93	6.94	135	0.798	0.0	4.54	15.08
12:16	1500		13.46	6.92	144	0.796	0.0	4.37	15.08

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 08/13/19 12:16
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump Hand (circle one)
Sample Parameters: Temp (°C) 13.46 — pH 6.92 — ORP 144
Sp. Cond. 0.796 — Turbidity 0.0 — DO 4.37
Water Level 15.08 (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: 27219045.00

Monitoring Point: MW - 8
Date(s): 08/13/19

Field Team Members

Name: B. Stephens — Affiliation: SCS Engineers
Name: J. Warth — Affiliation: SCS Engineers

Weather Conditions

Mean Temp: 75 °F (Mean) — Wind Direction: (N) S E (W) (circle two if needed)
Precipitation: (None) Light Heavy — Sky: Cloudy (Sunny) Partly

Well Observations

Well Pad: OK
Casing: |
Protective Casing: |
Reference Mark/Identification: |

Locks	Yes	No
Protective Casing	X	
Well		X

Groundwater Level Measurements

Date/Time Measured: 08/13/19 09:54

Total Depth: 28.00 feet below TOC
Static Water Level: 15.41 feet below TOC
TD - SWL: 12.59 water column (ft.)

Purging Activities

Purged By: B. Stephens — Purge Date: 08/13/19
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: 12.59 x 10 = 125.9 — Min Purge Volume: 150 mL
Initial Parameter Readings: Temp (°C) 18.85 — pH 7.03 — ORP 134
Sp. Cond. 0.601 — Turbidity 18.1 — DO 5.45
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)
10:03	300	200	17.59	6.90	141	0.639	19.5	4.63	15.41
10:06	900	|	16.48	6.89	144	0.641	0.0	3.69	15.41
10:09	1500	|	16.18	6.88	143	0.632	0.0	3.60	15.41

Sampling Activities

Sampled By: B. Stephens — Sample Date/Time: 08/13/19 10:09
Sample Method: Bailer (Dedicated Pump) Non-Dedicated Pump Peristaltic Pump Hand (circle one)
Sample Parameters: Temp (°C) 16.18 — pH 6.88 — ORP 143
Sp. Cond. 0.632 — Turbidity 0.0 — DO 3.60
Water Level 15.41 (feet below TOC)

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

Electronic Form Completed By: _____ **Date:** _____

Project Name: FDN GW Sampling
Project Location: Fremont, NE
Project Number: 27219045.00
Date: 8.13.19
Weather Info: AM - Sunny, Clear, Low 70's, 0-5 mph NW wind
PM - N/A
Personnel Onsite: B. Stephens (SCS)
Equipment Onsite: F-250 (SCS) 90958
Field Equipment: Horiba U-52 → S/N ~~U78335X~~
↳ Calibrated ~~7/25/19~~ 8.9.19
QED MP10 Bladder Pump Controller
↳ S/N 3535
Heron Dipper-T Water Level Meter
Nitrogen Cylinder (#1)
Work Comments/Observations:
08:00 - SCS (Stephens + Wath) arrive onsite at MW-4R.
08:42 - Moved to MW-5.
09:15 - Moved to MW-6.
09:44 - Moved to MW-8.
10:36 - Moved to MW-1.
11:06 - Moved to MW-3.
11:33 - Moved to MW-2.
11:56 - Moved to MW-7.
12:26 - SCS offsite.
End of Log; B. Stephens, Project Scientist

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

QC Batch: 603547 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

METHOD BLANK: 2467809 Matrix: Water
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/19/19 09:55	

LABORATORY CONTROL SAMPLE: 2467810

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.5	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2467811 2467812

Parameter	Units	60311879001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.9	4.8	97	96	75-125	1	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

QC Batch: 603952 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

METHOD BLANK: 2469693 Matrix: Water
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	08/19/19 17:12	
Calcium	mg/L	ND	0.20	08/19/19 17:12	
Lithium	ug/L	ND	10.0	08/19/19 17:12	

LABORATORY CONTROL SAMPLE: 2469694

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	943	94	80-120	
Calcium	mg/L	10	9.9	99	80-120	
Lithium	ug/L	1000	977	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2469695 2469696

Parameter	Units	60311879001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	126	1000	1000	1100	1070	97	95	75-125	2	20	
Calcium	mg/L	99.9	10	10	108	109	82	92	75-125	1	20	
Lithium	ug/L	28.2	1000	1000	1010	993	99	96	75-125	2	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

QC Batch: 603633 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

METHOD BLANK: 2468212 Matrix: Water
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	08/19/19 16:19	
Arsenic	ug/L	ND	1.0	08/19/19 16:19	
Barium	ug/L	ND	1.0	08/19/19 16:19	
Beryllium	ug/L	ND	0.50	08/19/19 16:19	
Cadmium	ug/L	ND	0.50	08/19/19 16:19	
Chromium	ug/L	ND	1.0	08/19/19 16:19	
Cobalt	ug/L	ND	1.0	08/19/19 16:19	
Lead	ug/L	ND	1.0	08/19/19 16:19	
Molybdenum	ug/L	ND	1.0	08/19/19 16:19	
Selenium	ug/L	ND	1.0	08/19/19 16:19	
Thallium	ug/L	ND	1.0	08/19/19 16:19	

LABORATORY CONTROL SAMPLE: 2468213

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	38.9	97	80-120	
Arsenic	ug/L	40	37.9	95	80-120	
Barium	ug/L	40	37.1	93	80-120	
Beryllium	ug/L	40	38.8	97	80-120	
Cadmium	ug/L	40	39.3	98	80-120	
Chromium	ug/L	40	38.9	97	80-120	
Cobalt	ug/L	40	37.4	94	80-120	
Lead	ug/L	40	40.2	101	80-120	
Molybdenum	ug/L	40	38.6	97	80-120	
Selenium	ug/L	40	39.9	100	80-120	
Thallium	ug/L	40	36.7	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2468214 2468215

Parameter	Units	60311879001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	38.2	38.8	94	96	75-125	1	20	
Arsenic	ug/L	3.8	40	40	41.6	42.2	95	96	75-125	1	20	
Barium	ug/L	113	40	40	151	154	95	103	75-125	2	20	
Beryllium	ug/L	ND	40	40	35.9	37.6	90	94	75-125	5	20	
Cadmium	ug/L	ND	40	40	38.0	38.1	95	95	75-125	0	20	
Chromium	ug/L	ND	40	40	39.0	39.5	96	97	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2468214 2468215

Parameter	Units	60311879001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	36.2	36.8	90	92	75-125	2	20	
Lead	ug/L	ND	40	40	41.4	41.7	103	104	75-125	1	20	
Molybdenum	ug/L	7.2	40	40	47.5	47.8	101	101	75-125	1	20	
Selenium	ug/L	7.7	40	40	45.1	46.5	93	97	75-125	3	20	
Thallium	ug/L	ND	40	40	37.9	38.6	95	96	75-125	2	20	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

QC Batch: 603600 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60311879001

METHOD BLANK: 2468106 | Matrix: Water
Associated Lab Samples: 60311879001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	08/16/19 13:31	

LABORATORY CONTROL SAMPLE: 2468107

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	988	99	80-120	

SAMPLE DUPLICATE: 2468108

Parameter	Units	60311641020 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3660	3510	4	10	

SAMPLE DUPLICATE: 2468109

Parameter	Units	60311570002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	7600	7500	1	10	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

QC Batch: 603928 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

METHOD BLANK: 2469645 | Matrix: Water
Associated Lab Samples: 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	08/19/19 10:17	

LABORATORY CONTROL SAMPLE: 2469646

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2469647

Parameter	Units	60311915001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	817	798	2	10	

SAMPLE DUPLICATE: 2469648

Parameter	Units	60311879003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	499	523	5	10	

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

QC Batch: 603366 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

SAMPLE DUPLICATE: 2467308

Parameter	Units	60310480001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.4	8.4	1	10	H6

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QUALITY CONTROL DATA

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

QC Batch: 605015 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

METHOD BLANK: 2473166 Matrix: Water
Associated Lab Samples: 60311879001, 60311879002, 60311879003, 60311879004, 60311879005, 60311879006, 60311879007, 60311879008, 60311879009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/23/19 05:12	
Fluoride	mg/L	ND	0.20	08/23/19 05:12	
Sulfate	mg/L	ND	1.0	08/23/19 05:12	

LABORATORY CONTROL SAMPLE: 2473167

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Fluoride	mg/L	2.5	2.4	97	80-120	
Sulfate	mg/L	5	4.7	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2473168 2473169

Parameter	Units	60311879001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	30.4	25	25	55.7	55.8	101	101	80-120	0	15	
Fluoride	mg/L	1.2	2.5	2.5	3.7	3.7	102	101	80-120	0	15	
Sulfate	mg/L	35.7	25	25	60.6	60.8	100	101	80-120	0	15	

SAMPLE DUPLICATE: 2473170

Parameter	Units	60311879002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	18.1	18.2	0	15	
Fluoride	mg/L	0.99	0.99	0	15	
Sulfate	mg/L	69.1	71.5	3	15	

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Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: City of Fremont/27219045.00
Pace Project No.: 60311879

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.

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TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

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

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

QC Batch: 357417 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60311878001, 60311878002, 60311878003, 60311878004, 60311878005, 60311878006, 60311878007, 60311878008, 60311878009

METHOD BLANK: 1735532 Matrix: Water
Associated Lab Samples: 60311878001, 60311878002, 60311878003, 60311878004, 60311878005, 60311878006, 60311878007, 60311878008, 60311878009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.810 ± 0.490 (0.910) C:70% T:77%	pCi/L	08/29/19 15:39	

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

QC Batch: 357418 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60311878001, 60311878002, 60311878003, 60311878004, 60311878005, 60311878006, 60311878007, 60311878008, 60311878009

METHOD BLANK: 1735533 Matrix: Water
Associated Lab Samples: 60311878001, 60311878002, 60311878003, 60311878004, 60311878005, 60311878006, 60311878007, 60311878008, 60311878009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.396 ± 0.366 (0.533) C:NA T:77%	pCi/L	09/04/19 15:24	

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Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: City of Fremont/27219045.00
Pace Project No.: 60311878

DEFINITIONS

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

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MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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Groundwater Elevation Summary
Fremont Utilities FFCA Monofill
Third Quarter 2019

Well Name	Hydraulic Location	Top of Casing Elevation	Depth to Groundwater (August 2019)	Groundwater Elevation (August 2019)
MW-1	Downgradient	1180.92	18.38	1162.54
MW-1N	Downgradient	1181.93	19.30	1162.63
MW-1S	Downgradient	1181.77	19.28	1162.49
MW-2	Downgradient	1177.46	14.89	1162.57
MW-3	Downgradient	1178.81	15.99	1162.82
MW-4R	Upgradient	1178.29	14.49	1163.80
MW-5	Downgradient	1178.06	14.65	1163.41
MW-6	Downgradient	1177.78	15.26	1162.52
MW-7	Downgradient	1177.35	15.08	1162.27
MW-8	Downgradient	1177.54	15.41	1162.13

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

Page: | of |

Section A Required Client Information:		Section B Required Project Information		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Bret Stephens	Attention:	Bret Stephens
Address:	14755 Grover Street	Copy To:	Rebecca Nelson (rnelson@scsengineers.com)	Company Name:	SCS Engineers
	Omaha NE 68144			Address:	
Email To	bstephens@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	
Phone: 402-938-0327	Fax:	Project Name:	City of Fremont	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:	Standard	Project Number:	27219045.00	Pace Profile #:	9797 Line 1

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

☐ Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Hg	9056 Chloride-Fluoride-Sulfate	2540C TDS	9040 pH							Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																			N	N	N												
1	MW-1	WT	G	xxx	xxx	8.13.19	11:02		3	1		2							x	x	x	x	x	x		BP2U		2	BP3N				001
2	MW-2	WT	G	xxx	xxx	8.13.19	11:53		3	1		2							x	x	x	x	x	x									002
3	MW-3	WT	G	xxx	xxx	8.13.19	11:28		3	1		2							x	x	x	x	x	x									003
4	MW-4R	WT	G	xxx	xxx	8.13.19	08:36		3	1		2							x	x	x	x	x	x									004
5	MW-5	WT	G	xxx	xxx	8.13.19	09:08		3	1		2							x	x	x	x	x	x									005
6	MW-6	WT	G	xxx	xxx	8.13.19	09:41		3	1		2							x	x	x	x	x	x									006
7	MW-7	WT	G	xxx	xxx	8.13.19	12:16		3	1		2							x	x	x	x	x	x									007
8	MW-8	WT	G	xxx	xxx	8.13.19	10:09		3	1		2							x	x	x	x	x	x									008
9	DUPLICATE	WT	G	xxx	xxx	8.13.19	23:59		3	1		2							x	x	x	x	x	x									009
10																																	
11																																	
12																																	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Bret Stephens / SCS	8.13.19	13:30	[signature]	8/14/19	0625	2.1	Y	Y	Y
* Sb-As-Ba-Be-Cd-Cr-Co-Pb-Mo-Se-Tl										

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Bret Stephens					
SIGNATURE of SAMPLER:	Bret Stephens	DATE Signed (MM/DD/YY): 8.13.19				

*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

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Bret Stephens	Attention:	Bret Stephens
Address:	14755 Grover Street	Copy To:	Rebecca Nelson (rnelson@scsengineers.com)	Company Name	SCS Engineers
	Omaha NE 68144			Address:	
Email To:	bstephens@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	
Phone: 402-938-0327	Fax:	Project Name	City of Fremont	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:	Standard	Project Number:	27219045.00	Pace Profile #:	9797 Line 2

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NE

Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	903.1 Radium-226*	904.0 Radium-228*	Total Radium*	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60311878
1	MW-1	WT	G	xxx	xxx	8.13.19	11:02		2			2							x	x	x		28PIN 001
2	MW-2	WT	G	xxx	xxx	8.13.19	11:53		2			2							x	x	x		002
3	MW-3	WT	G	xxx	xxx	8.13.19	11:28		2			2							x	x	x		003
4	MW-4R	WT	G	xxx	xxx	8.13.19	08:36		2			2							x	x	x		004
5	MW-5	WT	G	xxx	xxx	8.13.19	09:08		2			2							x	x	x		005
6	MW-6	WT	G	xxx	xxx	8.13.19	09:41		2			2							x	x	x		006
7	MW-7	WT	G	xxx	xxx	8.13.19	12:16		2			2							x	x	x		007
8	MW-8	WT	G	xxx	xxx	8.13.19	10:09		2			2							x	x	x		008
9	DUPLICATE	WT	G	xxx	xxx	8.13.19	23:59		2			2							x	x	x		009
10																							
11																							
12																							

BS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9508 Loiret Boulevard, Lenexa, KS 66219	BrStr / SCS	8.13.19	13:30	[illegible]	8/14	0625	1.9	Y	Y	Y
*Subcontract Pace PA (2-1L plastic HNO3)							2.1			
							06			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bret Stephes

SIGNATURE of SAMPLER: Br St

DATE Signed (MM/DD/YY): 8.13.19

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*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

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

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

Pace Analytical
www.pacelabs.com

Workorder: 60311878 Workorder Name: City of Fremont/27219045.00 Owner Received Date: 8/14/2019 Results Requested By: 9/6/2019

Report To

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

Subcontract To

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

WO#: 30320225

30320225

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	903.1 Radium-226	904.0 Radium-228 & Total Radium	LAB USE ONLY
1	MW-1	PS	8/13/2019 11:02	60311878001	Water	2	X	X	
2	MW-2	PS	8/13/2019 11:53	60311878002	Water	2	X	X	
3	MW-3	PS	8/13/2019 11:28	60311878003	Water	2	X	X	
4	MW-4R	PS	8/13/2019 08:36	60311878004	Water	2	X	X	
5	MW-5	PS	8/13/2019 09:08	60311878005	Water	2	X	X	
6	MW-6	PS	8/13/2019 09:41	60311878006	Water	2	X	X	
7	MW-7	PS	8/13/2019 12:16	60311878007	Water	2	X	X	
8	MW-8	PS	8/13/2019 10:09	60311878008	Water	2	X	X	
9	DUPLICATE	PS	8/13/2019 23:59	60311878009	Water	2	X	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	H Lahmen/Pace	8.15.19 1700		8-16-19
2				
3				

Comments

Cooler Temperature on Receipt C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

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

Lon D. Wright Power Plant
Statistical Summary of August 2019 Data

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

SCS ENGINEERS

27219045.00 | October 23, 2019

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

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1.2 Compliance Statistical Analysis 1
1.2.1 Time Series Plots 1
1.2.2 Intrawell Prediction Limits 1
1.2.3 Interwell Prediction Limits 2
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1.2.5 Confidence Interval Analysis 3
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Attachments

A Compliance Statistical Analysis
A.1 Time Series Plots
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 December 2018), 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 9.6.23. 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 one or more wells at the site remains in assessment monitoring, each well at the site was sampled and analyzed following assessment monitoring procedures. During the August 2019 event, samples from each well were analyzed for Appendix III and IV constituents. Non-detect Appendix IV results were not included in the statistical analysis but will be placed in the background data set to improve the statistical power if statistical analysis of these constituents becomes necessary in the future. 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 2019 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 analyzed 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 Shaprio-Wilk test for normality or the Ladder of Powers (Helsel & Hirsh, 1992) for transformed data. A parametric prediction limit was constructed

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 2019 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 2019 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 2019 sampling event. Confidence interval analysis is an intrawell test used to compare the compliance data to a fixed numerical limit (compliance limit). The compliance limit is either represented by the groundwater protection standard (GWPS) or derived from the average concentration of the upgradient wells; whichever value is greater will represent the compliance limit. 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. The GWPS was used as the compliance limit for the other constituents analyzed. 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 2019 sampling event are summarized in **Table 1** below.

No intrawell prediction limit exceedances or statistically significant increasing trends were identified for the detected constituents at MW-4R and MW-6. Intrawell exceedances were noted for chloride (MW-1, MW-3, MW-5, and MW-8) and total dissolved solids (MW-8) without corresponding interwell exceedances. Consistent with Section 1.1, MW-1, MW-3, MW-4R, MW-5, MW-6, and MW-8 would not trigger assessment monitoring based on August 2019 results. However, constituents at MW-2 (calcium, sulfate, and total dissolved solids) and MW-7 (chloride and total dissolved solids) were identified with both intrawell and interwell prediction limit exceedances. Only total dissolved solids at both MW-2 and MW-7 had statistically significant increasing trends and exceeded the GWPS. These select constituents at MW-2 and MW-7 were noted as exceedances above background for the August 2019 sampling event.

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 [total] (ug/L)	3.8	No	No	No	No	No
	Barium [total] (ug/L)	113	No	No	No	No	No
	Boron (ug/L)	126	No	No	No	No	No[2]
	Calcium (mg/L)	99.9	No	**Yes**	No	**Yes**	No[2]
	Chloride (mg/L)	30.4	**Yes**	No	No	No	No
	Fluoride (mg/L)	1.2	No	**Yes**	No	No	No
	Lithium (ug/L)	28.2	No	No	No	No	No
	Molybdenum (ug/L)	7.2	No	No	No	No	No
	pH (Std. Units)	7	No	No	No	No	No
	Selenium [total] (ug/L)	7.7	No	No	**Yes, -**	No	No
	Sulfate (mg/L)	35.7	No	No	No	No	No
	Total Dissolved Solids (mg/L)	484	No	No	**Yes, +**	No	No
	Total Radium (pCi/L)	2.17	No	No	No	No	No
MW-2	Arsenic [total] (ug/L)	4	No	No	No	No	No
	Barium [total] (ug/L)	112	**Yes**	No	No	No	No
	Boron (ug/L)	138	No	No	No	No	No[2]
	Calcium (mg/L)	121	**Yes**	**Yes**	No	**Yes**	No[2]
	Chloride (mg/L)	18.1	No	No	No	No	No
	Fluoride (mg/L)	0.99	No	No	No	No	No
	Lithium (ug/L)	31.7	No	No	No	No	No
	Molybdenum (ug/L)	7.6	No	No	**Yes, -**	No	No
	pH (Std. Units)	6.9	No	No	No	No	No
	Selenium [total] (ug/L)	13.9	No	**Yes**	No	No	No
	Sulfate (mg/L)	69.1	**Yes**	**Yes**	No	No	No
	Total Dissolved Solids (mg/L)	602	**Yes**	**Yes**	**Yes, +**	No	Yes
	Total Radium (pCi/L)	2.3	No	No	No	No	No
MW-3	Arsenic [total] (ug/L)	3.2	No	No	No	No	No
	Barium [total] (ug/L)	184	No	**Yes**	**Yes, +**	No	No
	Calcium (mg/L)	99.4	No	**Yes**	**Yes, +**	**Yes**	No[2]
	Chloride (mg/L)	41.3	**Yes**	No	No	No	No
	Fluoride (mg/L)	0.66	No	No	No	No	No
	Lithium (ug/L)	25	No	No	No	No	No
	Molybdenum (ug/L)	12.6	No	**Yes**	**Yes, +**	No	No
	pH (Std. Units)	6.9	No	No	No	No	No

Well	Detected Constituents	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance[1]
	Selenium [total] (ug/L)	8	No	No	No	No	No
	Sulfate (mg/L)	58.4	No	**Yes**	No	No	No
	Total Dissolved Solids (mg/L)	499	No	**Yes**	**Yes, +**	No	No
	Total Radium (pCi/L)	3.39	No	No	No	No	No
MW-4R (bg)	Arsenic [total] (ug/L)	3.8	No	n/a	No	No	No
	Barium [total] (ug/L)	133	No	n/a	No	No	No
	Boron (ug/L)	210	No	n/a	No	No	No[2]
	Calcium (mg/L)	84.1	No	n/a	No	No	No[2]
	Chloride (mg/L)	24.2	No	n/a	No	No	No
	Fluoride (mg/L)	0.89	No	n/a	No	No	No
	Lithium (ug/L)	23.6	No	n/a	No	No	No
	Molybdenum (ug/L)	8.1	No	n/a	No	No	No
	pH (Std. Units)	6.9	No	n/a	No	No	No
	Selenium [total] (ug/L)	7.4	No	n/a	No	No	No
	Sulfate (mg/L)	36.6	No	n/a	No	No	No
	Total Dissolved Solids (mg/L)	427	No	n/a	No	No	No
	Total Radium (pCi/L)	3.04	No	n/a	No	No	No
MW-5	Arsenic [total] (ug/L)	4.4	No	No	No	No	No
	Barium [total] (ug/L)	119	No	No	**Yes, -**	No	No
	Boron (ug/L)	125	No	No	No	No	No[2]
	Calcium (mg/L)	98.7	No	**Yes**	No	**Yes**	No[2]
	Chloride (mg/L)	35	**Yes**	No	No	No	No
	Fluoride (mg/L)	0.98	No	No	No	No	No
	Lithium (ug/L)	24.8	No	No	No	No	No
	Molybdenum (ug/L)	4.8	No	No	No	No	No
	pH (Std. Units)	7	No	No	No	No	No
	Selenium [total] (ug/L)	6.7	No	No	**Yes, -**	No	No
	Sulfate (mg/L)	41.2	No	No	No	No	No
	Total Dissolved Solids (mg/L)	460	No	No	No	No	No
	Total Radium (pCi/L)	2.88	No	No	No	No	No
MW-6	Arsenic [total] (ug/L)	2.8	No	No	No	No	No
	Barium [total] (ug/L)	61.2	No	No	No	No	No
	Calcium (mg/L)	36.8	No	No	No	No	No[2]
	Chloride (mg/L)	19	No	No	No	No	No
	Fluoride (mg/L)	0.42	No	No	No	No	No
	Lithium (ug/L)	11.6	No	No	No	No	No

Well	Detected Constituents	Result	Intrawell Exceedance?	Interwell Exceedance?	Significant Trend?	Confidence Interval Exceedance?	GWPS Exceedance[1]
	Molybdenum (ug/L)	4.7	No	No	**Yes, -**	No	No
	pH (Std. Units)	6.8	No	No	No	No	No
	Selenium [total] (ug/L)	2.6	No	No	**Yes, -**	No	No
	Sulfate (mg/L)	12.7	No	No	No	No	No
	Total Dissolved Solids (mg/L)	260	No	No	No	No	No
	Total Radium (pCi/L)	1.06	No	No	No	No	No
MW-7	Arsenic [total] (ug/L)	3.5	No	No	No	No	No
	Barium [total] (ug/L)	128	No	No	No	No	No
	Boron (ug/L)	154	No	No	No	No	No[2]
	Calcium (mg/L)	113	No	**Yes**	**Yes, +**	**Yes**	No[2]
	Chloride (mg/L)	87.2	**Yes**	**Yes**	No	No	No
	Fluoride (mg/L)	0.82	No	No	No	No	No
	Lithium (ug/L)	28.8	No	No	No	No	No
	Molybdenum (ug/L)	8.3	No	No	No	No	No
	pH (Std. Units)	6.9	No	No	No	No	No
	Selenium [total] (ug/L)	11.7	No	**Yes**	No	No	No
	Sulfate (mg/L)	59.7	No	**Yes**	No	No	No
	Total Dissolved Solids (mg/L)	637	**Yes**	**Yes**	**Yes, +**	No	Yes
	Total Radium (pCi/L)	2.85	No	No	No	No	No
MW-8	Arsenic [total] (ug/L)	2.5	No	No	No	No	No
	Barium [total] (ug/L)	142	No	No	No	No	No
	Boron (ug/L)	142	No	No	**Yes, +**	No	No[2]
	Calcium (mg/L)	93.3	No	No	No	**Yes**	No[2]
	Chloride (mg/L)	36.3	**Yes**	No	No	No	No
	Fluoride (mg/L)	0.72	No	No	No	No	No
	Lithium (ug/L)	24.4	No	No	No	No	No
	Molybdenum (ug/L)	6.8	No	No	No	No	No
	pH (Std. Units)	6.8	No	No	No	No	No
	Selenium [total] (ug/L)	12.4	No	**Yes**	No	No	No
	Sulfate (mg/L)	41.1	No	No	No	No	No
	Total Dissolved Solids (mg/L)	478	**Yes**	No	No	No	No
	Total Radium (pCi/L)	3.12	No	No	No	No	No

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

[2]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.

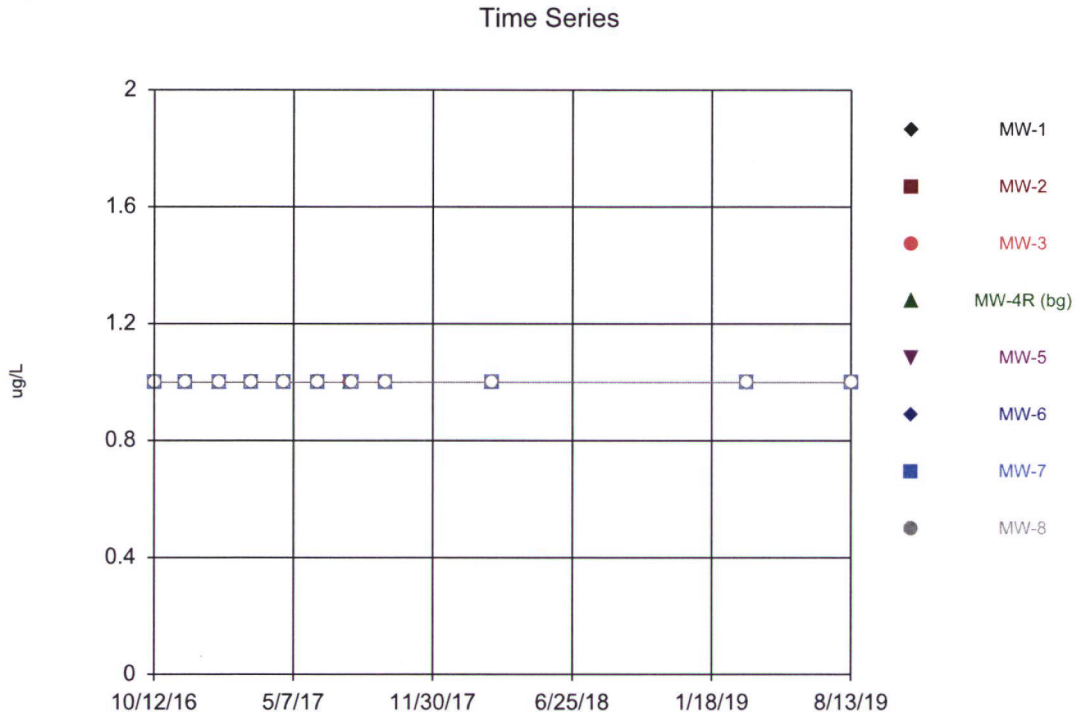
Layne GeoSciences, Inc. 1995. Hydrogeology of Proposed Fossil Fuel Combustion Ash Disposal Site. Prepared for Fremont Department of Utilities and HDR Engineering, Inc.

Sanitas Technologies, Sanitas Statistical Software v 9.6.10 and User Guide

Attachment A. Compliance Statistical Analysis

A.1 Time Series Plots

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.



Constituent: Antimony [total] Analysis Run 10/23/2019 4:54 PM

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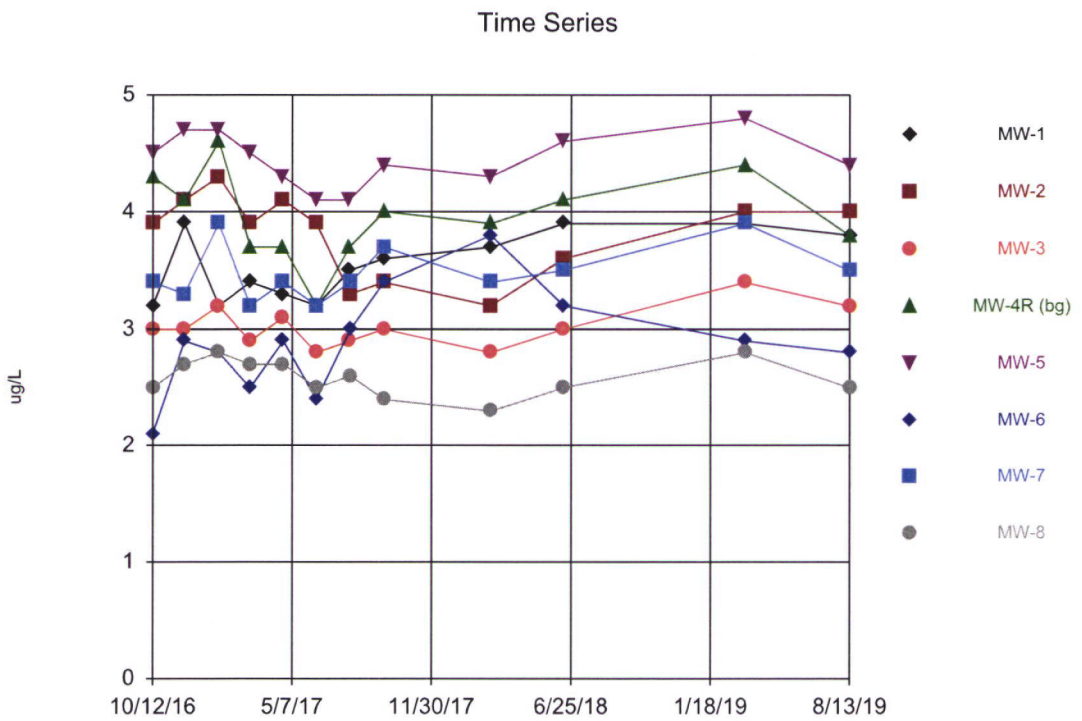
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



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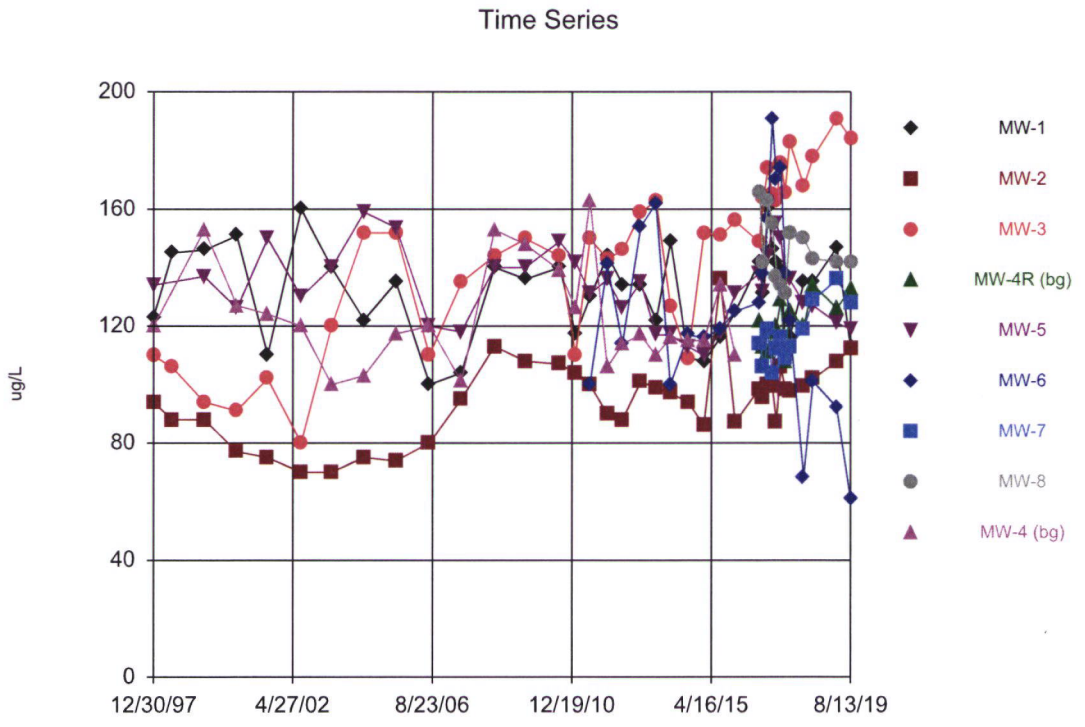

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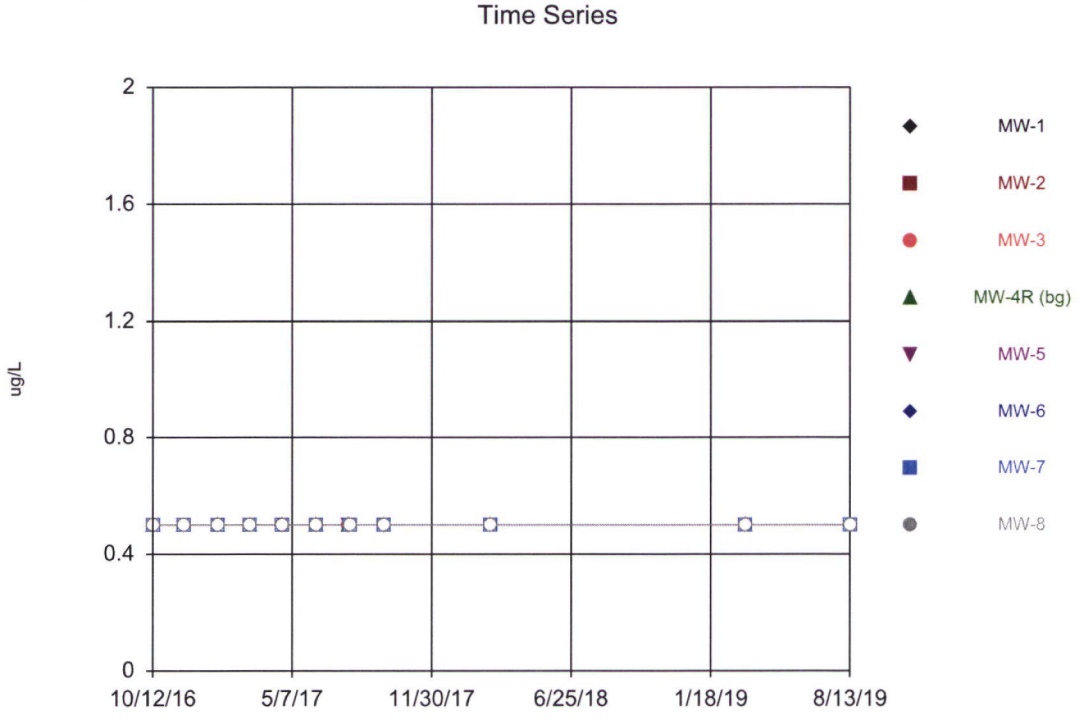

Constituent: BERYLIUM Analysis Run 10/23/2019 4:54 PM

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Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG
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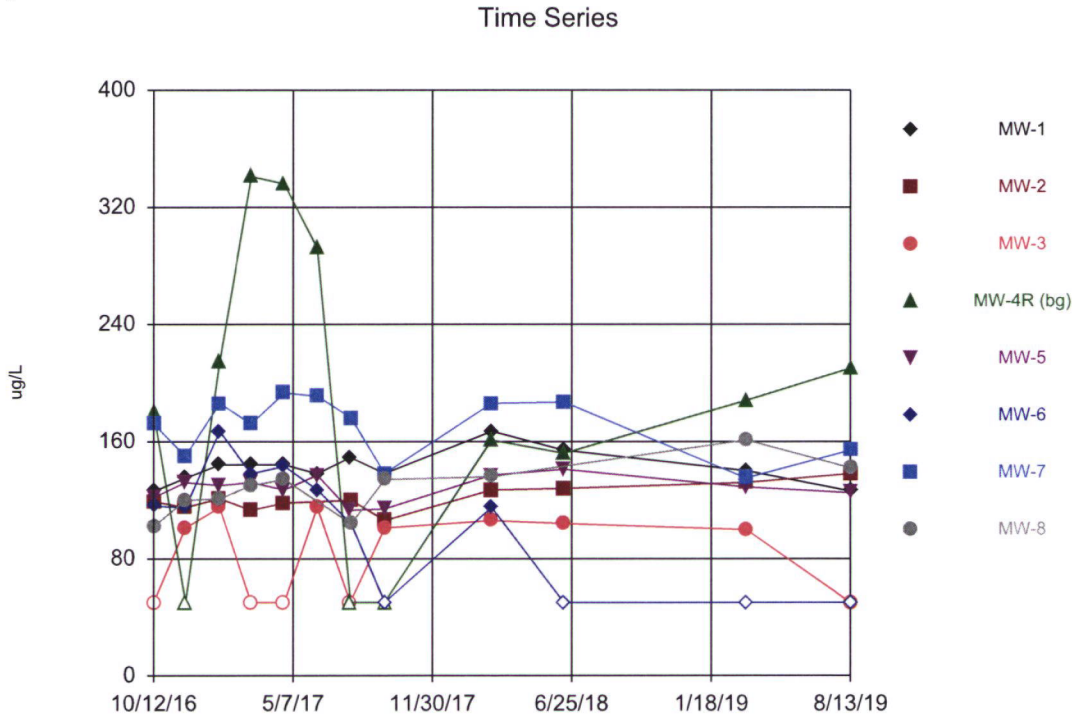

Constituent: Boron Analysis Run 10/23/2019 4:54 PM

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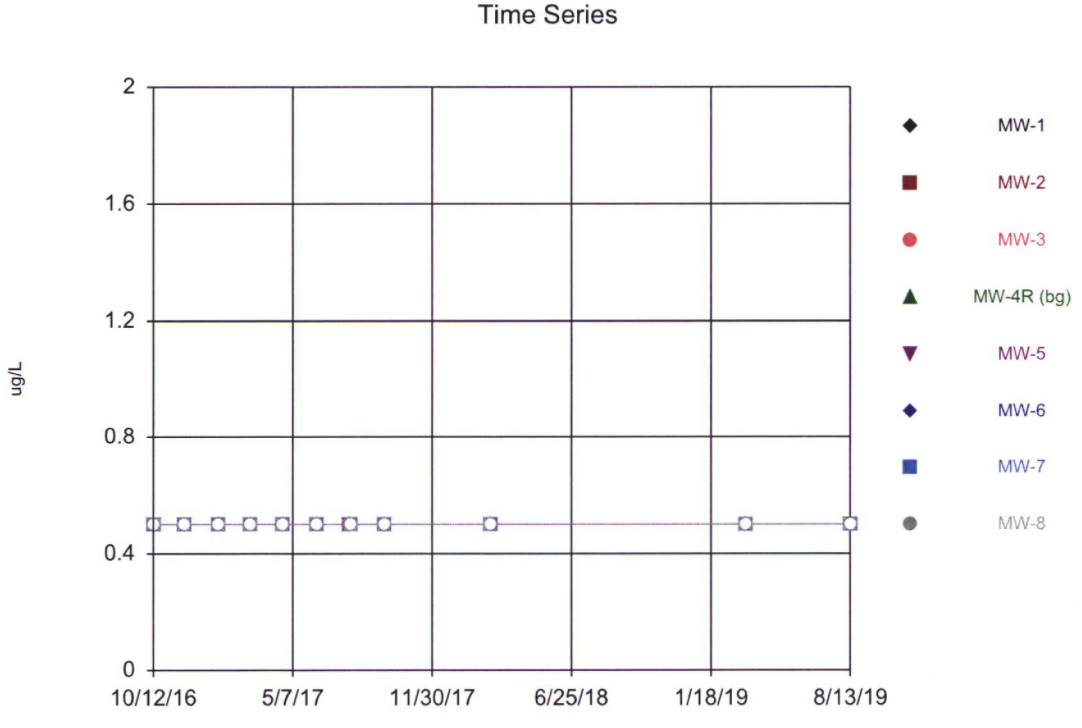

Constituent: Cadmium [total] Analysis Run 10/23/2019 4:54 PM

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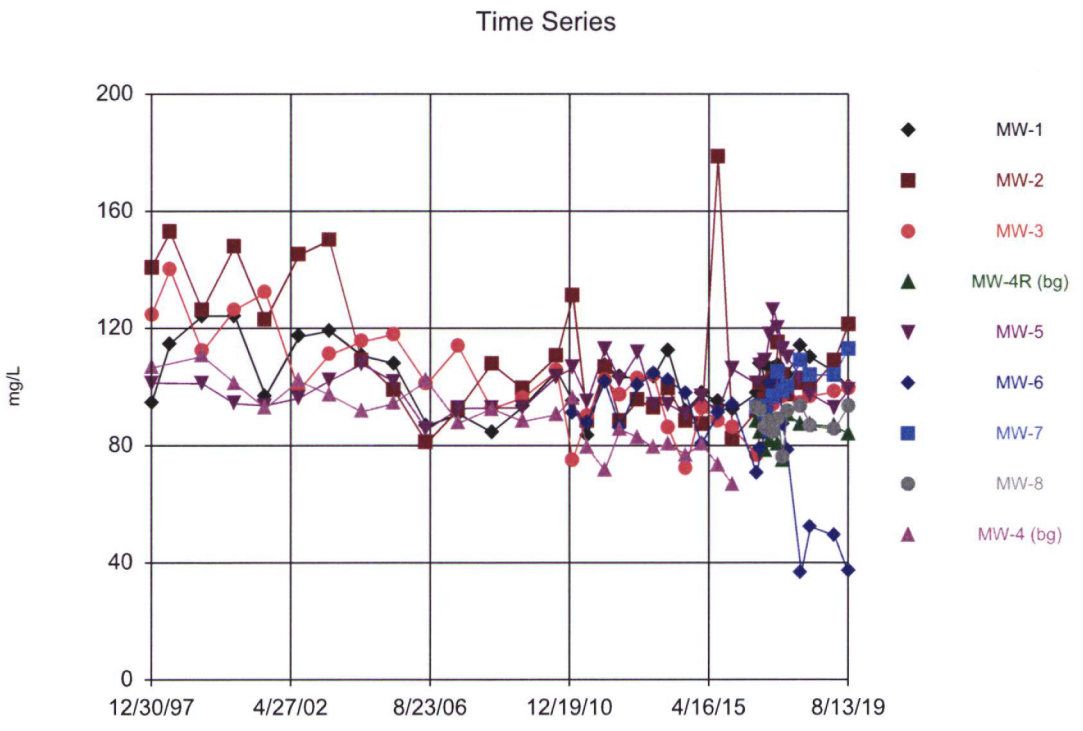

Constituent: Calcium Analysis Run 10/23/2019 4:54 PM

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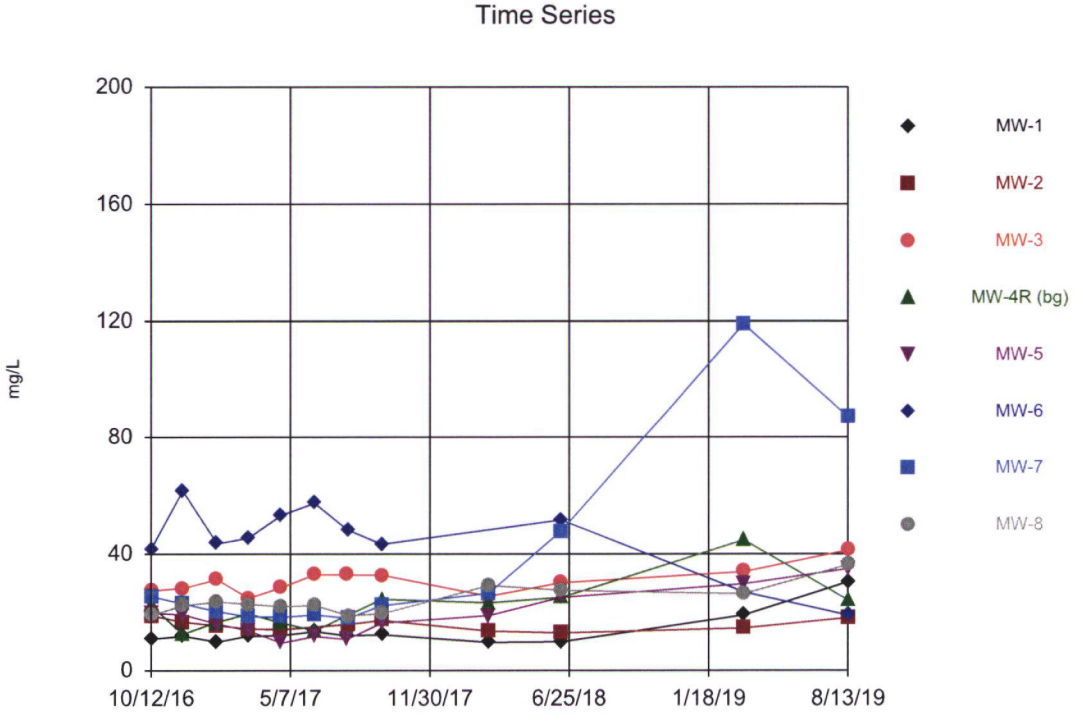

Constituent: Chloride Analysis Run 10/23/2019 4:54 PM

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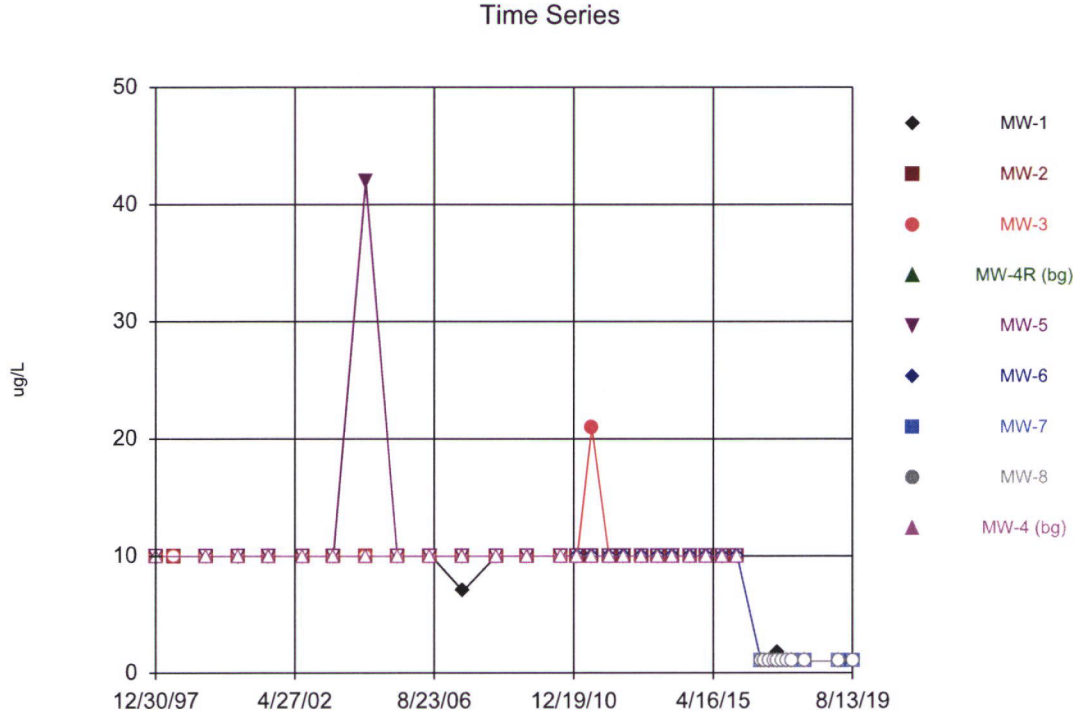

Constituent: Chromium [total] Analysis Run 10/23/2019 4:54 PM

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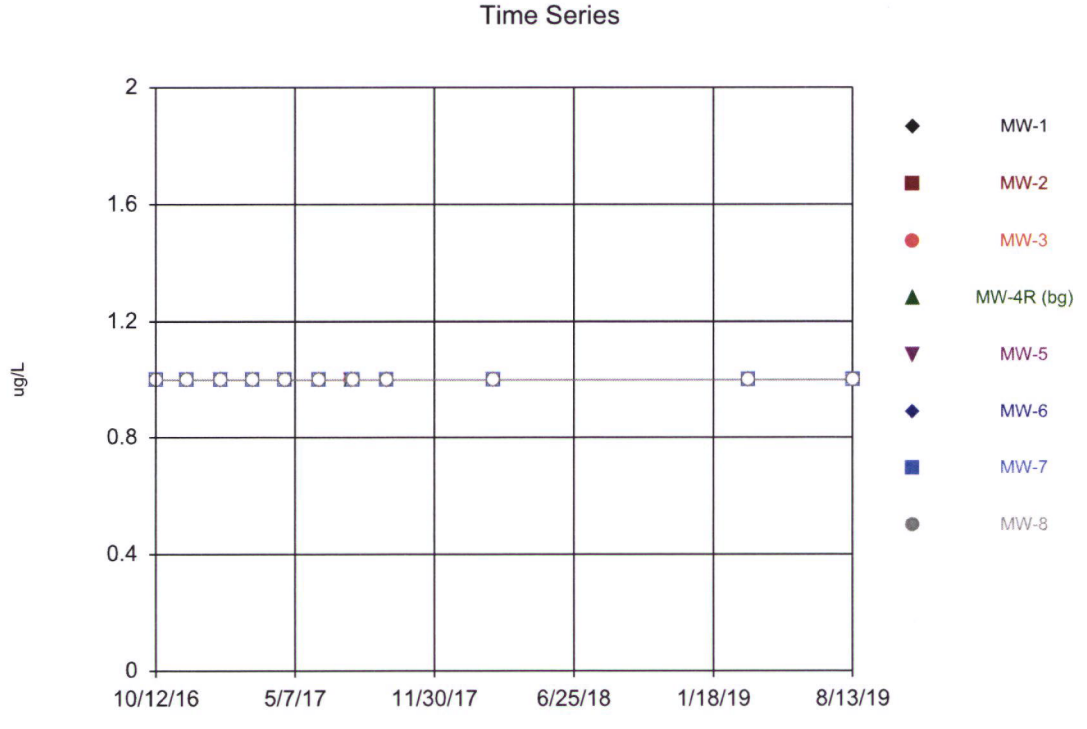
Hollow symbols indicate censored values.



Constituent: Cobalt [total] Analysis Run 10/23/2019 4:54 PM

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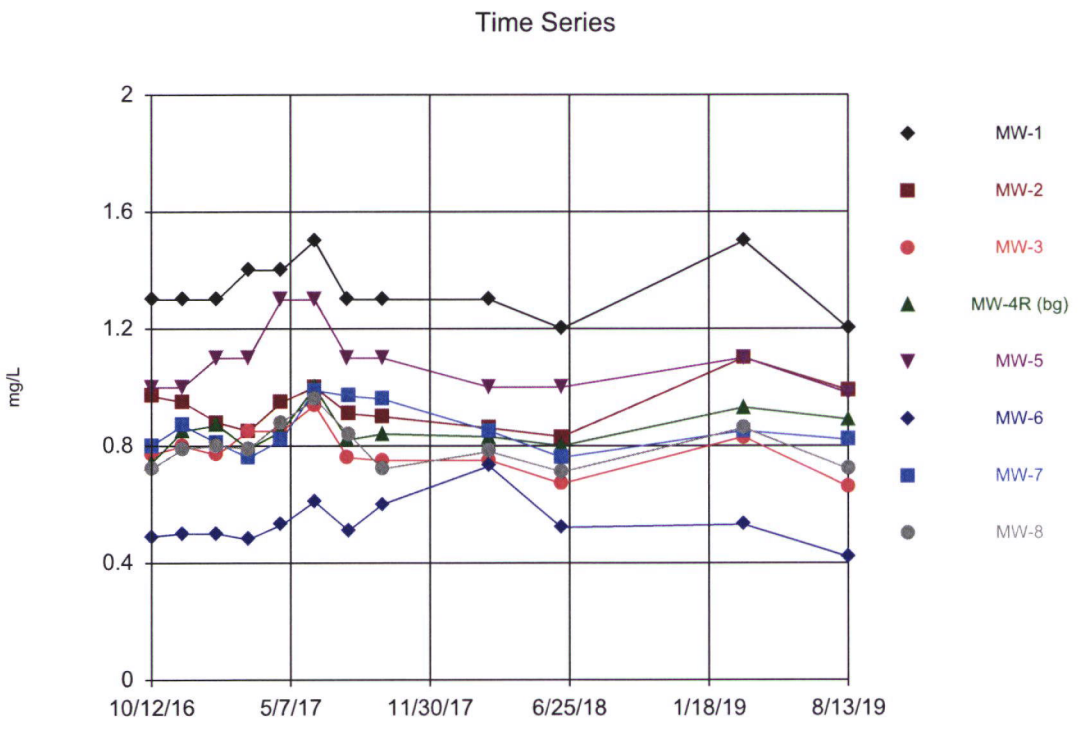

Constituent: Fluoride Analysis Run 10/23/2019 4:54 PM

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Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG
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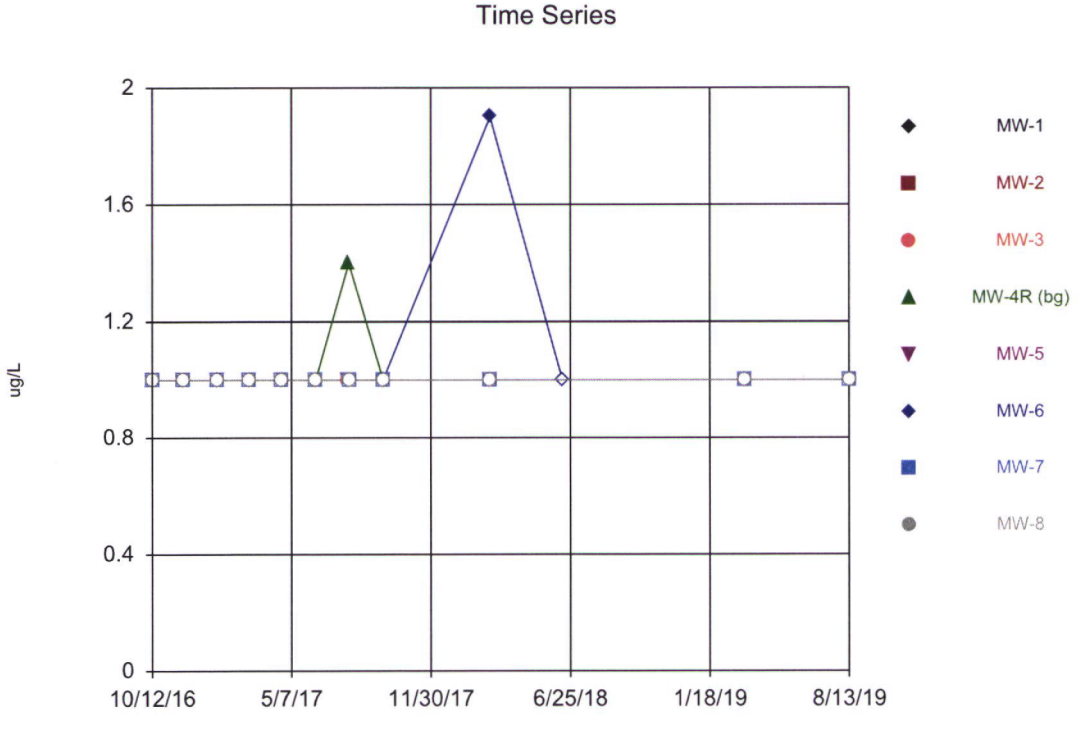

Constituent: Lead [total] Analysis Run 10/23/2019 4:54 PM

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

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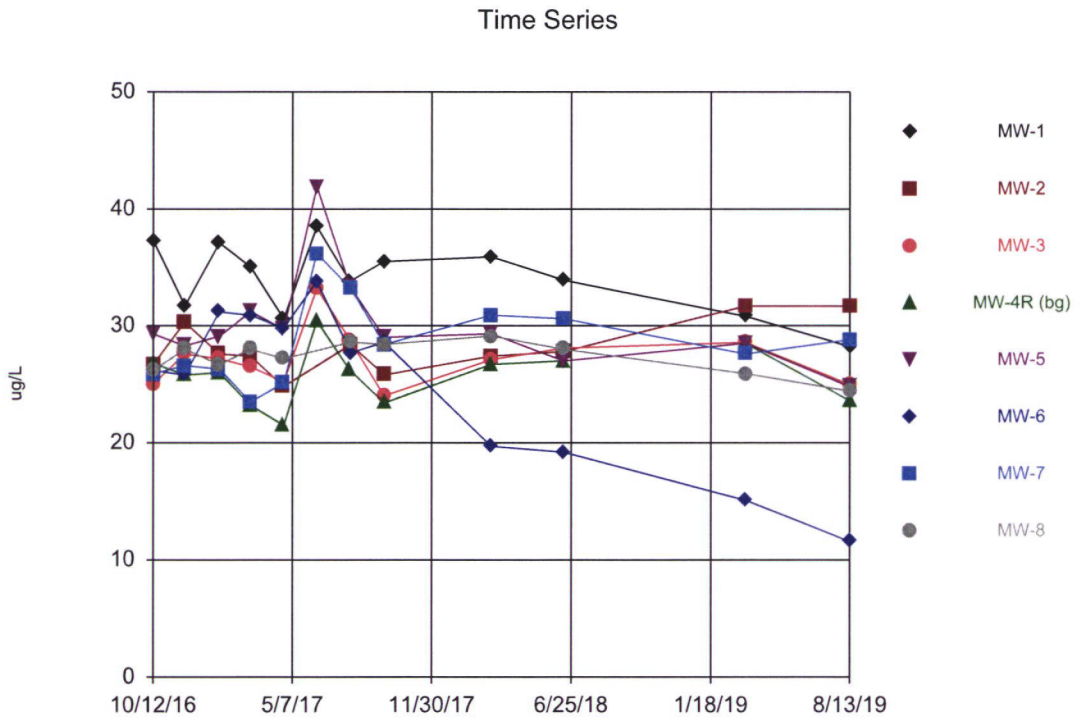

Constituent: Lithium Analysis Run 10/23/2019 4:54 PM

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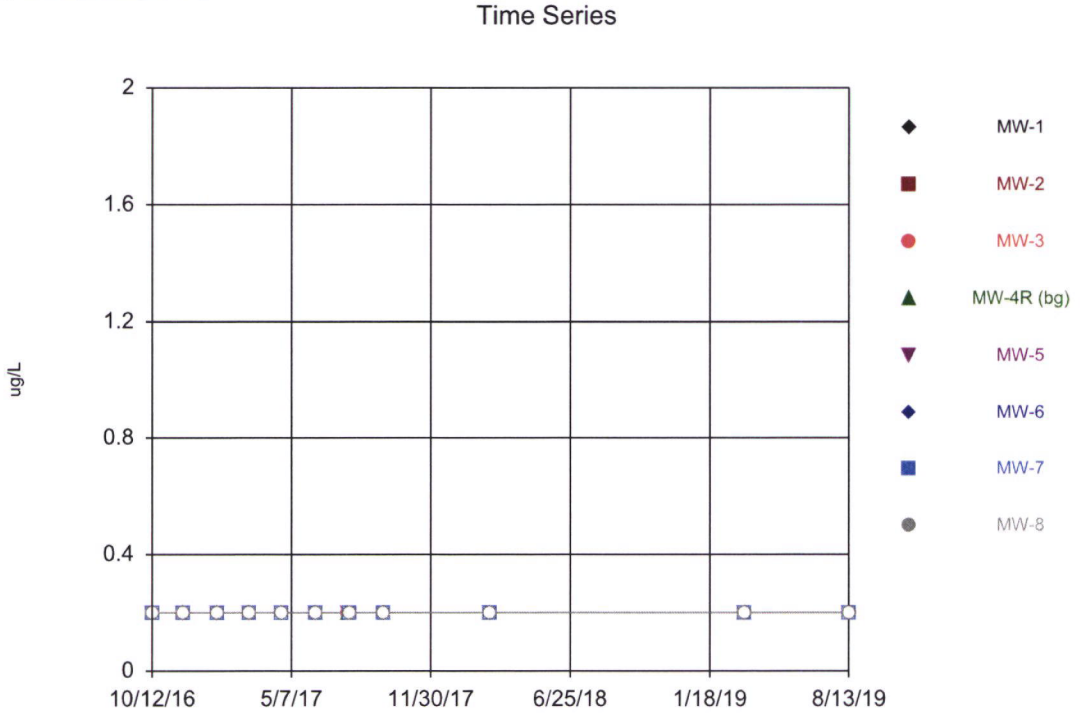

Constituent: Mercury Analysis Run 10/23/2019 4:54 PM

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

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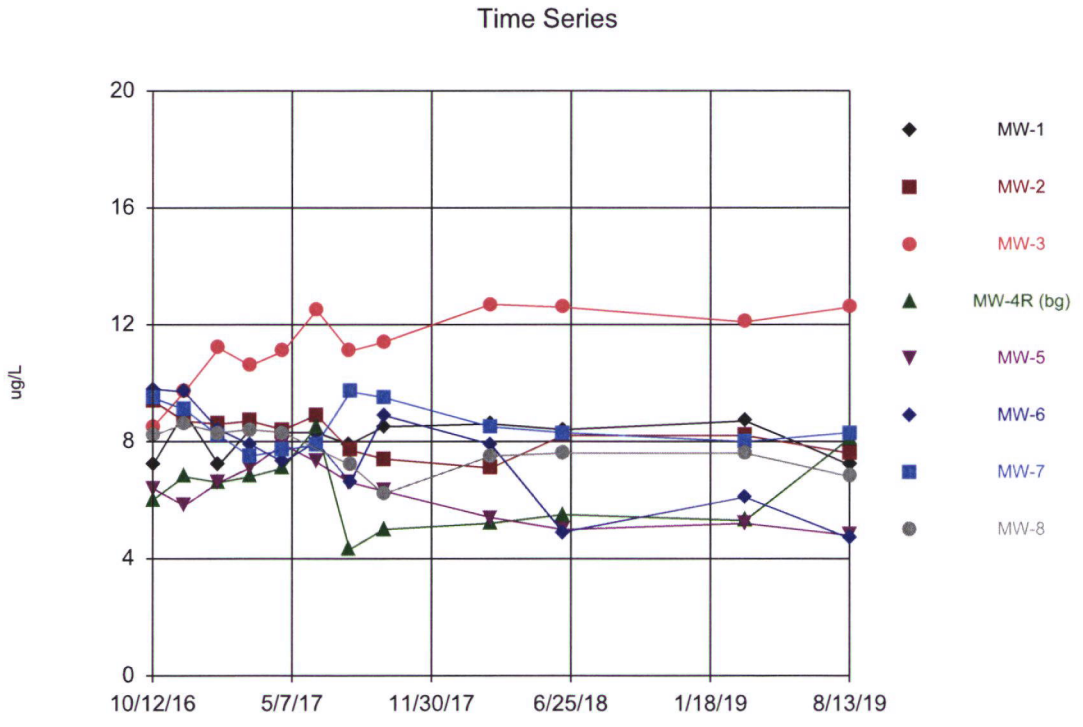

Constituent: Molybdenum Analysis Run 10/23/2019 4:54 PM

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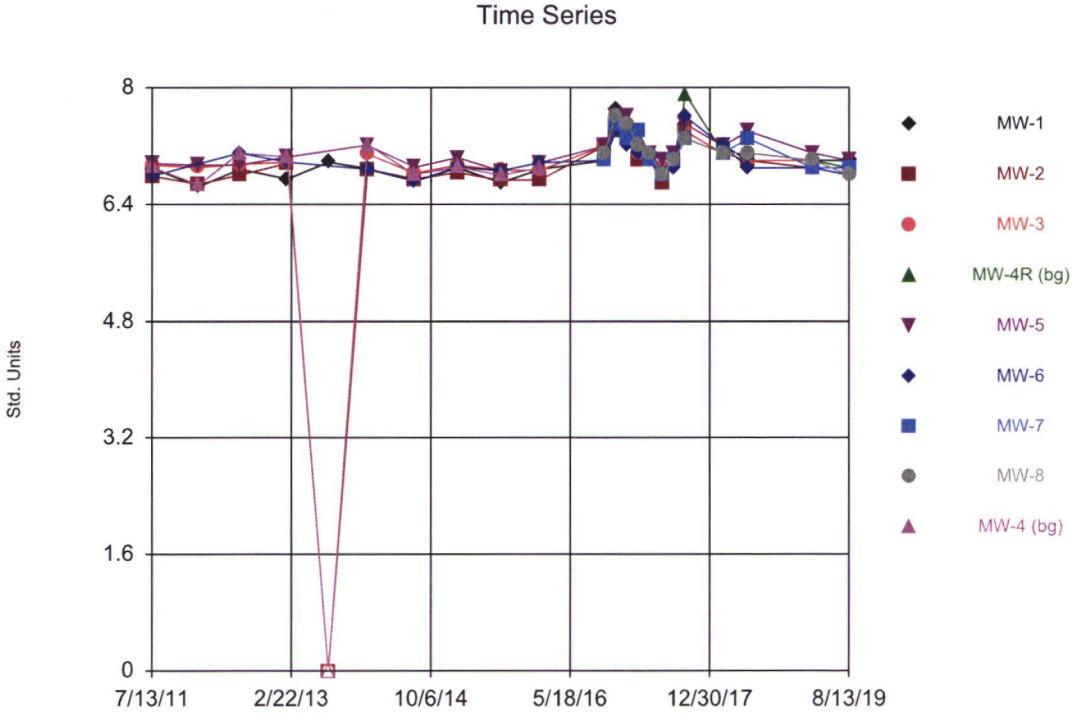

Constituent: pH Analysis Run 10/23/2019 4:54 PM

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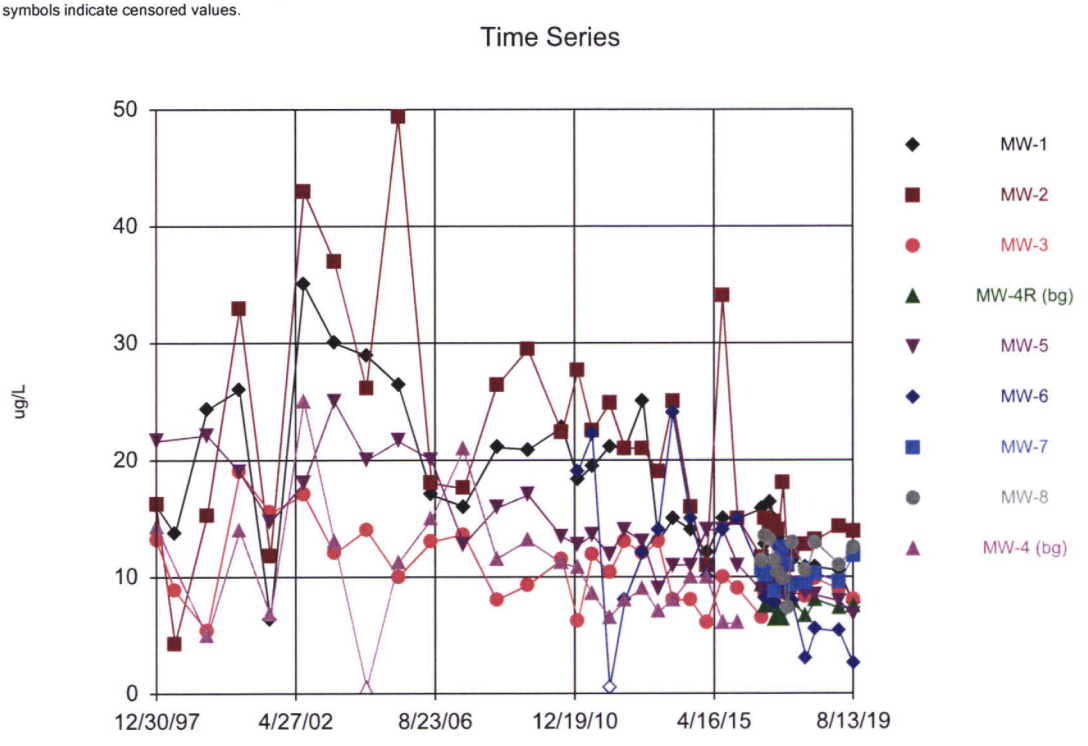

Constituent: Selenium [total] Analysis Run 10/23/2019 4:54 PM

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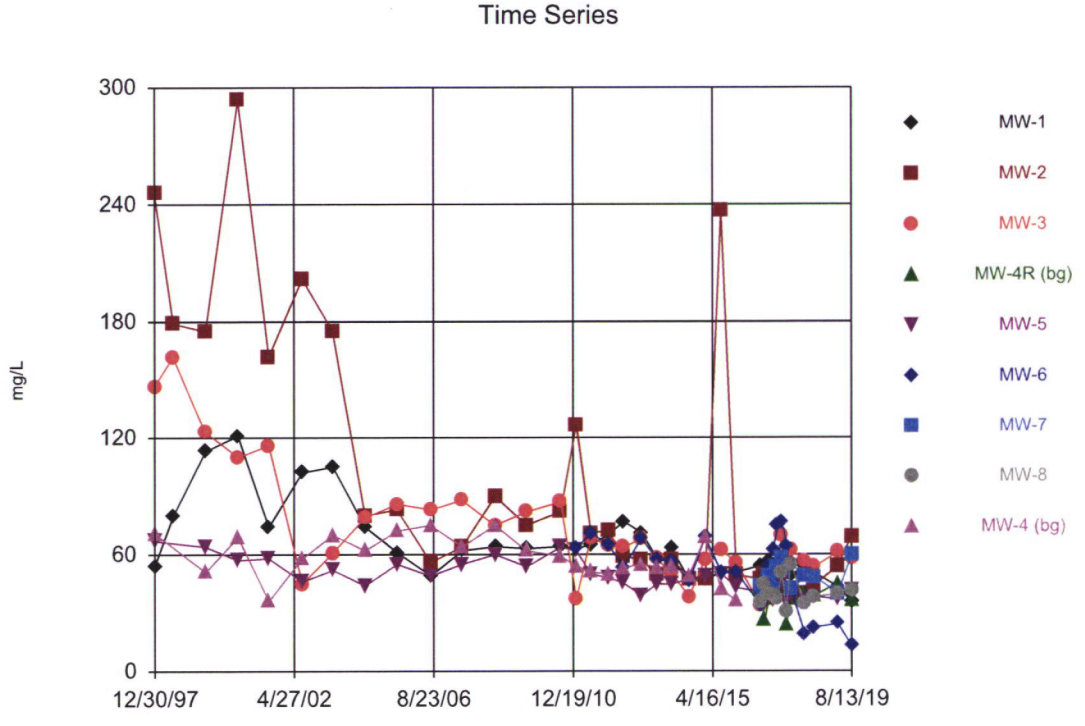

Constituent: Sulfate Analysis Run 10/23/2019 4:54 PM

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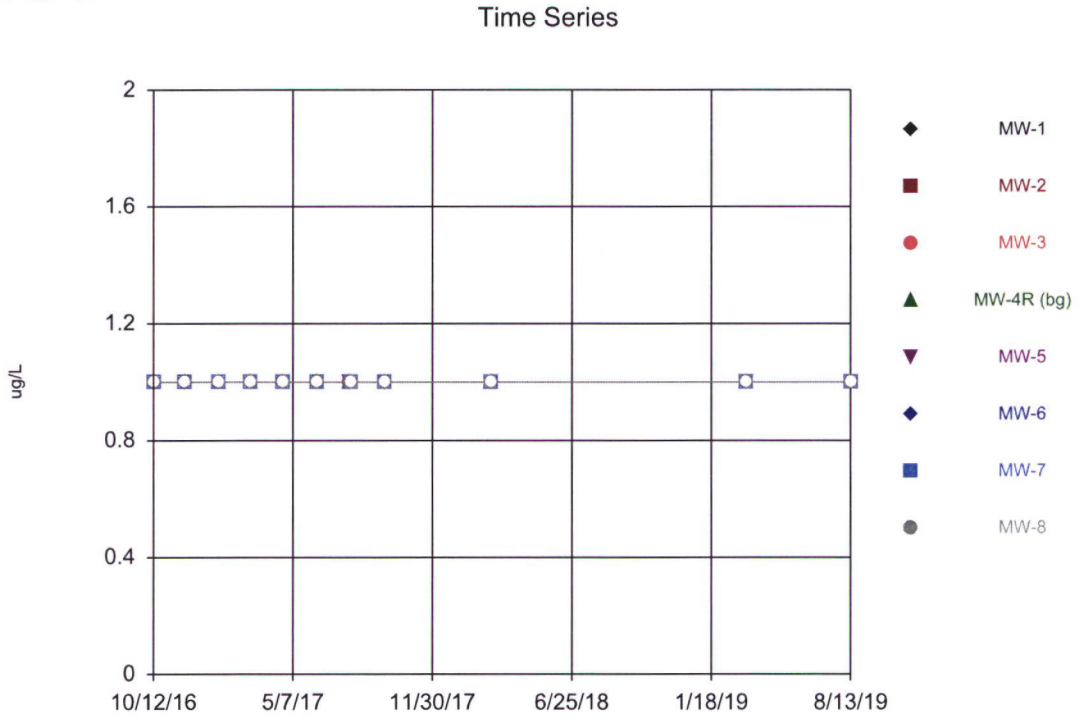

Constituent: Thallium [total] Analysis Run 10/23/2019 4:54 PM

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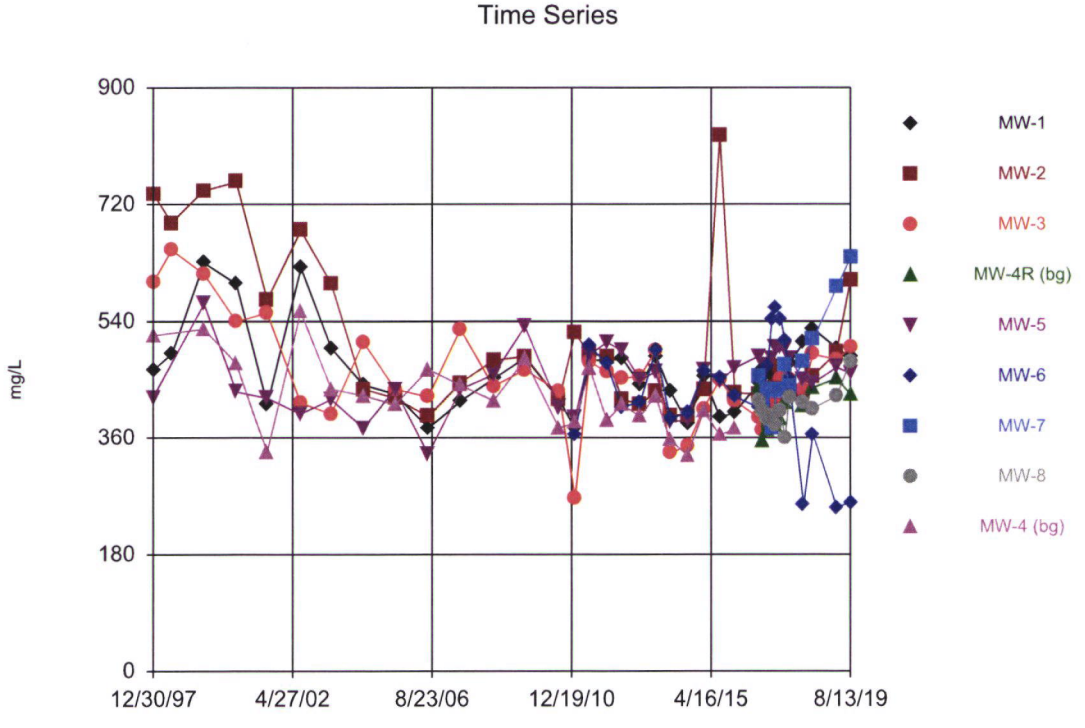

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:55 PM

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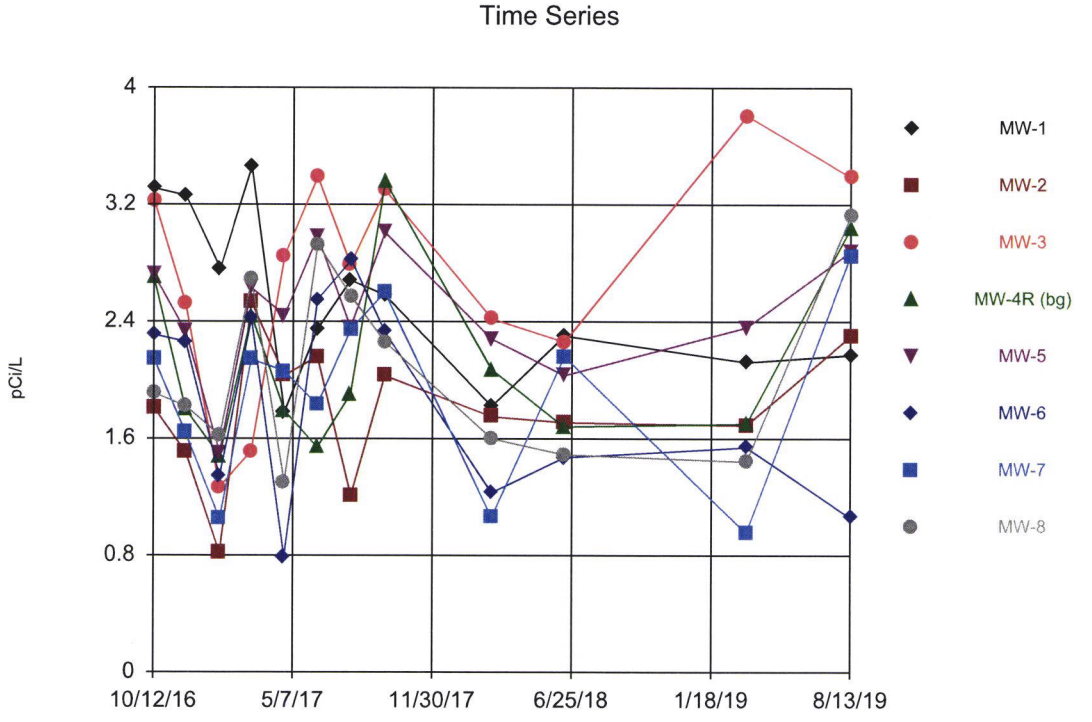

Constituent: Total Radium Analysis Run 10/23/2019 4:55 PM

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 10/23/2019, 4:13 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Arsenic [total] (ug/L)	MW-1	4.265	n/a	8/13/2019	3.8	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-2	4.818	n/a	8/13/2019	4	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-3	3.321	n/a	8/13/2019	3.2	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-4R	5.011	n/a	8/13/2019	3.8	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-5	5.037	n/a	8/13/2019	4.4	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-6	4.291	n/a	8/13/2019	2.8	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-7	4.048	n/a	8/13/2019	3.5	No	10	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-8	3.009	n/a	8/13/2019	2.5	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-1	174.1	n/a	8/13/2019	113	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	**MW-2**	**111.8**	**n/a**	**8/13/2019**	**112**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Barium [total] (ug/L)	MW-3	195.6	n/a	8/13/2019	184	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-4R	142.6	n/a	8/13/2019	133	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-5	169.3	n/a	8/13/2019	119	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-6	241.2	n/a	8/13/2019	61.2	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-7	134.4	n/a	8/13/2019	128	No	10	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-8	180.7	n/a	8/13/2019	142	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-1	175.3	n/a	8/13/2019	126	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-2	138.8	n/a	8/13/2019	138	No	9	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-4R	542	n/a	8/13/2019	210	No	10	30	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-5	155.3	n/a	8/13/2019	125	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-7	226.1	n/a	8/13/2019	154	No	10	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-8	165	n/a	8/13/2019	142	No	8	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-1	118.5	n/a	8/13/2019	99.9	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	**MW-2**	**118**	**n/a**	**8/13/2019**	**121**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	MW-3	113.2	n/a	8/13/2019	99.4	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-4R	97.33	n/a	8/13/2019	84.1	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-5	135.6	n/a	8/13/2019	98.7	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-6	141.2	n/a	8/13/2019	36.8	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-7	117.9	n/a	8/13/2019	113	No	10	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	MW-8	102.7	n/a	8/13/2019	93.3	No	10	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-1**	**14.83**	**n/a**	**8/13/2019**	**30.4**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Chloride (mg/L)	MW-2	21.19	n/a	8/13/2019	18.1	No	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-3**	**37.88**	**n/a**	**8/13/2019**	**41.3**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Chloride (mg/L)	MW-4R	33.45	n/a	8/13/2019	24.2	No	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-5**	**29.69**	**n/a**	**8/13/2019**	**35**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Chloride (mg/L)	MW-6	70.19	n/a	8/13/2019	19	No	9	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-7**	**47.9**	**n/a**	**8/13/2019**	**87.2**	**Yes**	**10**	**0**	**n/a**	**0.01476**	NP (normality) 1 of 2
Chloride (mg/L)	**MW-8**	**32.35**	**n/a**	**8/13/2019**	**36.3**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Fluoride (mg/L)	MW-1	1.561	n/a	8/13/2019	1.2	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-2	1.067	n/a	8/13/2019	0.99	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-3	0.9979	n/a	8/13/2019	0.66	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-4R	1.029	n/a	8/13/2019	0.89	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-5	1.442	n/a	8/13/2019	0.98	No	10	0	x^(1/3)	0.000...	Param 1 of 2
Lithium (ug/L)	MW-7	39.84	n/a	8/13/2019	28.8	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-8	30.57	n/a	8/13/2019	24.4	No	9	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-1	9.818	n/a	8/13/2019	7.2	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-2	10.31	n/a	8/13/2019	7.6	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-3	14.85	n/a	8/13/2019	12.6	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-4R	9.618	n/a	8/13/2019	8.1	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-5	8.9	n/a	8/13/2019	4.8	No	10	0	No	0.000...	Param 1 of 2

Intrawell Prediction Limit

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Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Molybdenum (ug/L)	MW-6	12.03	n/a	8/13/2019	4.7	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-7	10.85	n/a	8/13/2019	8.3	No	10	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-8	10.09	n/a	8/13/2019	6.8	No	9	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-1	7.925	6.435	8/13/2019	7	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-2	7.764	6.476	8/13/2019	6.9	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-3	7.782	6.578	8/13/2019	6.9	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-4R	8.136	6.324	8/13/2019	6.9	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-5	7.905	6.695	8/13/2019	7	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-6	7.802	6.418	8/13/2019	6.8	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-7	7.79	6.55	8/13/2019	6.9	No	10	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-8	7.838	6.522	8/13/2019	6.8	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-1	18.68	n/a	8/13/2019	7.7	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-2	19.46	n/a	8/13/2019	13.9	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-3	11.36	n/a	8/13/2019	8	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-4R	10.17	n/a	8/13/2019	7.4	No	9	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-5	9.748	n/a	8/13/2019	6.7	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-6	17.19	n/a	8/13/2019	2.6	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-7	13.37	n/a	8/13/2019	11.7	No	10	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-8	16.63	n/a	8/13/2019	12.4	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-1	60.03	n/a	8/13/2019	35.7	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	**MW-2**	**57.26**	**n/a**	**8/13/2019**	**69.1**	**Yes**	**9**	**0**	**No**	**0.000...**	Param 1 of 2
Sulfate (mg/L)	MW-3	81.77	n/a	8/13/2019	58.4	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-4R	56.87	n/a	8/13/2019	36.6	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-5	47.13	n/a	8/13/2019	41.2	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-6	106.8	n/a	8/13/2019	12.7	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-7	64.15	n/a	8/13/2019	59.7	No	10	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-8	61.59	n/a	8/13/2019	41.1	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	543.7	n/a	8/13/2019	484	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-2**	**480.4**	**n/a**	**8/13/2019**	**602**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-3	529.6	n/a	8/13/2019	499	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-4R	486.1	n/a	8/13/2019	427	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-5	534.8	n/a	8/13/2019	460	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-6	718.5	n/a	8/13/2019	260	No	10	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-7**	**549**	**n/a**	**8/13/2019**	**637**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-8**	**451.4**	**n/a**	**8/13/2019**	**478**	**Yes**	**10**	**0**	**No**	**0.000...**	Param 1 of 2
Total Radium (pCi/L)	MW-1	4.283	n/a	8/13/2019	2.17	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-2	3.129	n/a	8/13/2019	2.3	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-3	4.578	n/a	8/13/2019	3.39	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-4R	3.735	n/a	8/13/2019	3.04	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-5	3.689	n/a	8/13/2019	2.88	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-6	3.86	n/a	8/13/2019	1.06	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-7	3.352	n/a	8/13/2019	2.85	No	10	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-8	3.588	n/a	8/13/2019	3.12	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-6	0.7656	n/a	8/13/2019	0.42	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-7	1.1	n/a	8/13/2019	0.82	No	10	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-8	1.018	n/a	8/13/2019	0.72	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-1	41.91	n/a	8/13/2019	28.2	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-2	31.99	n/a	8/13/2019	31.7	No	9	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-3	34.45	n/a	8/13/2019	25	No	10	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-4R	32.66	n/a	8/13/2019	23.6	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 10/23/2019, 4:13 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Lithium (ug/L)	MW-5	41.9	n/a	8/13/2019	24.8	No	10	0	n/a	0.01476	NP (normality) 1 of 2
Lithium (ug/L)	MW-6	40.67	n/a	8/13/2019	11.6	No	10	0	No	0.000...	Param 1 of 2

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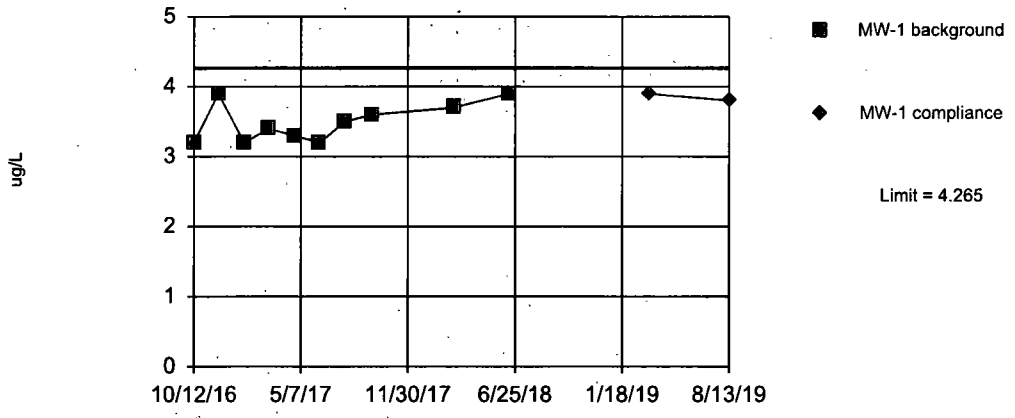
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.49, Std. Dev.=0.2767, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8827, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:10 PM

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

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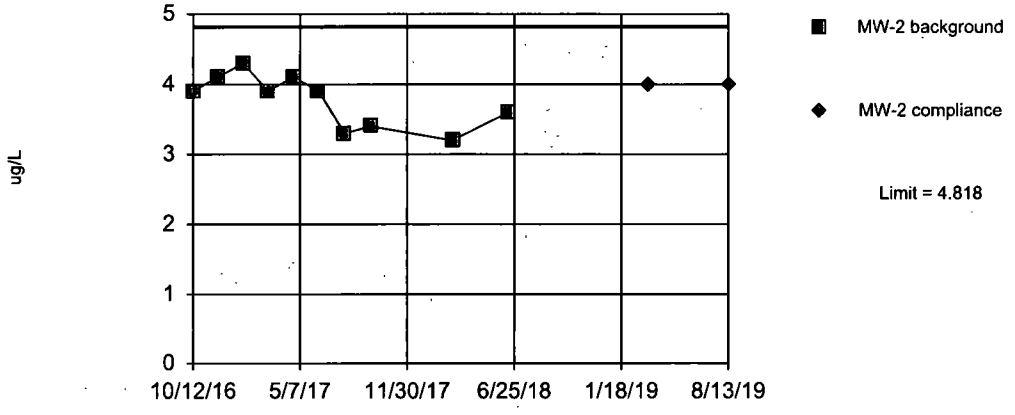
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.77, Std. Dev.=0.3743, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.927, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:10 PM

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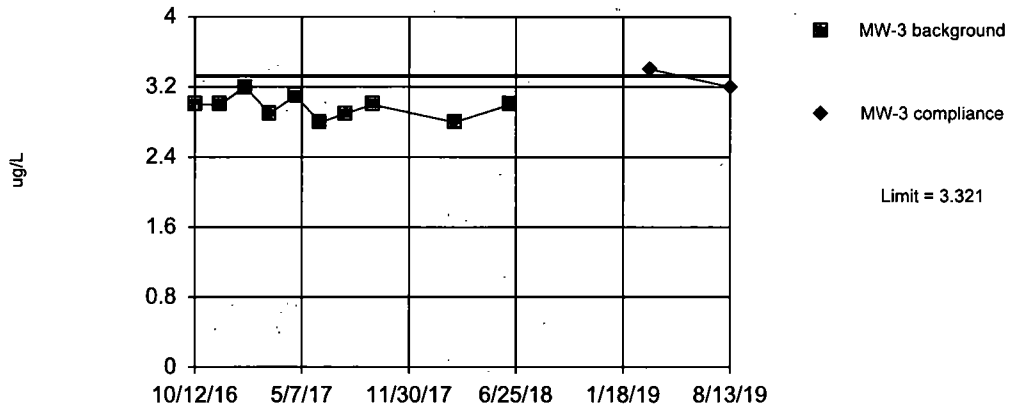
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.97, Std. Dev.=0.1252, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9291, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:10 PM

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

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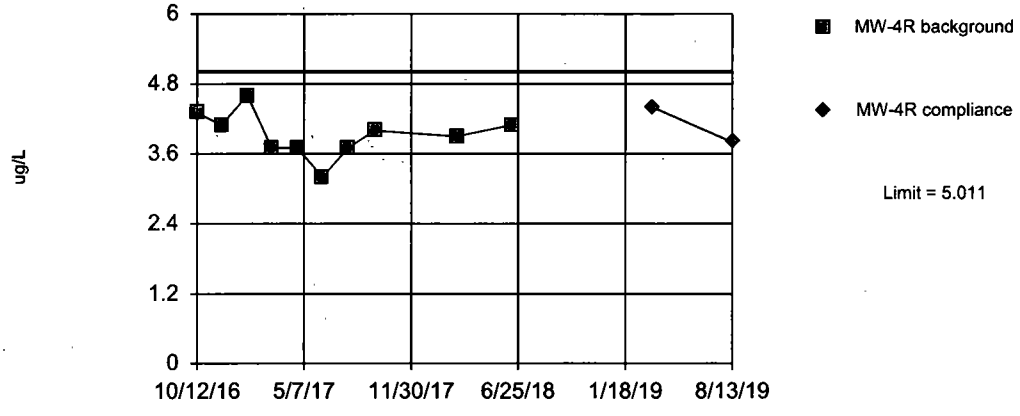
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.93, Std. Dev.=0.386, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9683, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:10 PM

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

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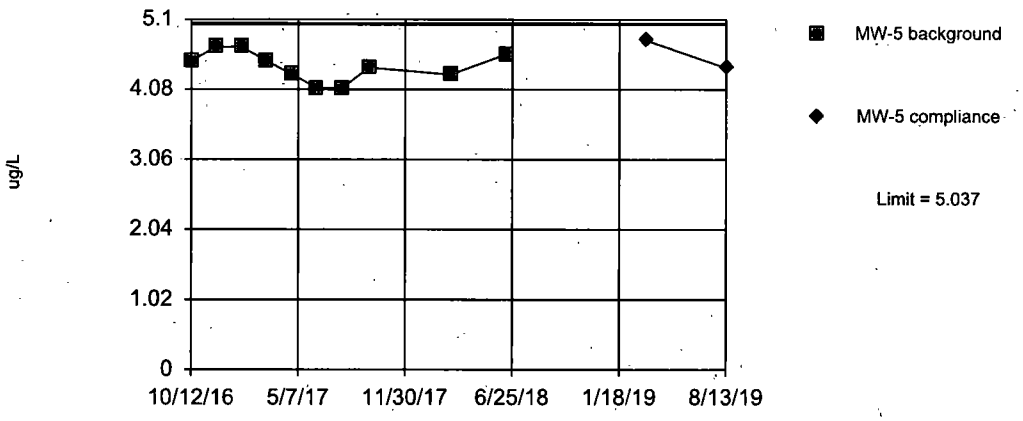
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=4.42, Std. Dev.=0.2201, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9234, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:10 PM

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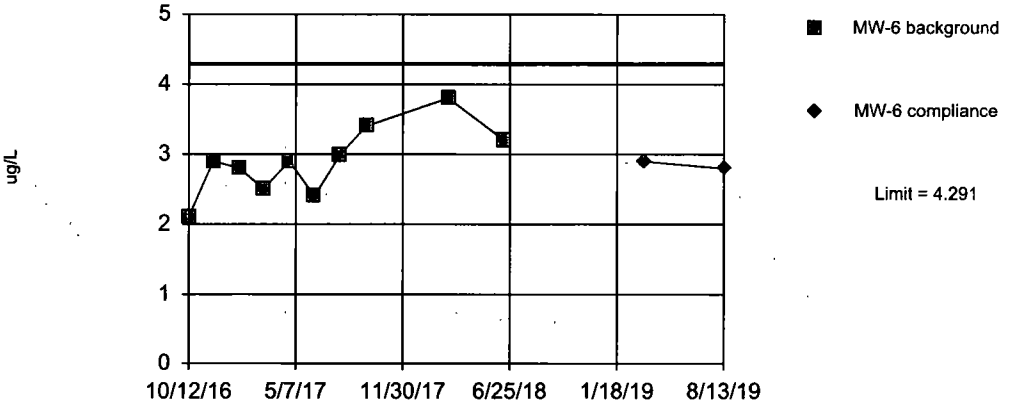
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.9, Std. Dev.=0.4967, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9854, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:10 PM

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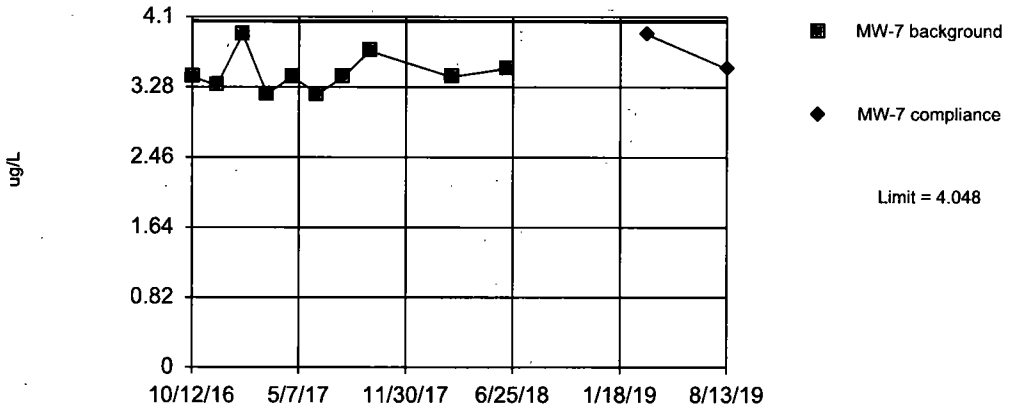
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.44, Std. Dev.=0.2171, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.875, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:10 PM

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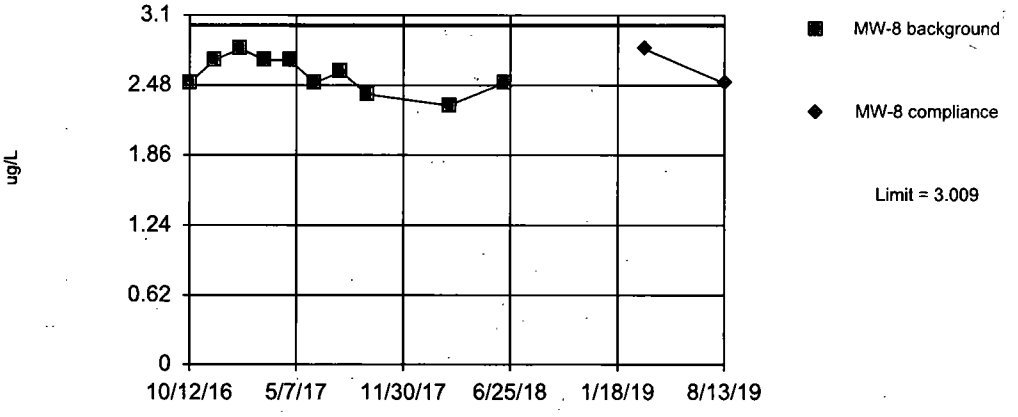
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.57, Std. Dev.=0.1567, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9449, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:10 PM

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

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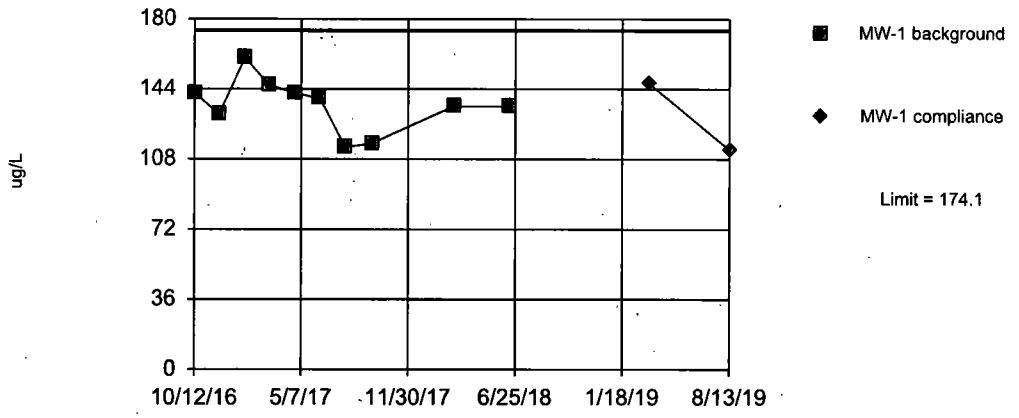
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=136, Std. Dev.=13.61, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9422, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Barium [total] Analysis Run 10/23/2019 4:10 PM

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

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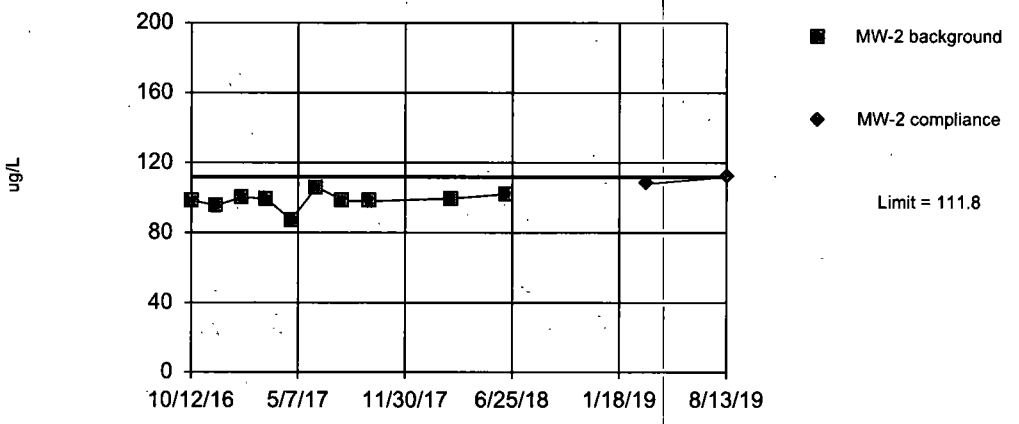
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=98.45, Std. Dev.=4.784, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8827, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Barium [total] Analysis Run 10/23/2019 4:10 PM

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

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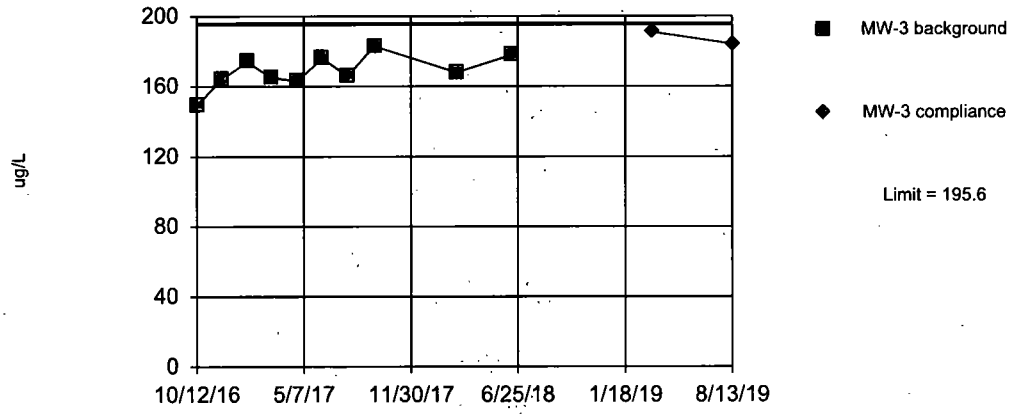
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=168.6, Std. Dev.=9.64, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9508, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Barium [total] Analysis Run 10/23/2019 4:10 PM

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

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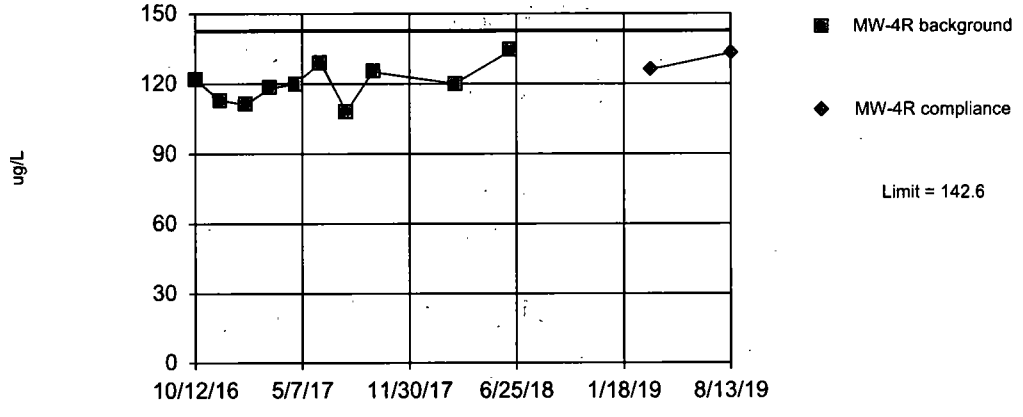
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=120, Std. Dev.=8.055, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9784, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Barium [total] Analysis Run 10/23/2019 4:10 PM

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

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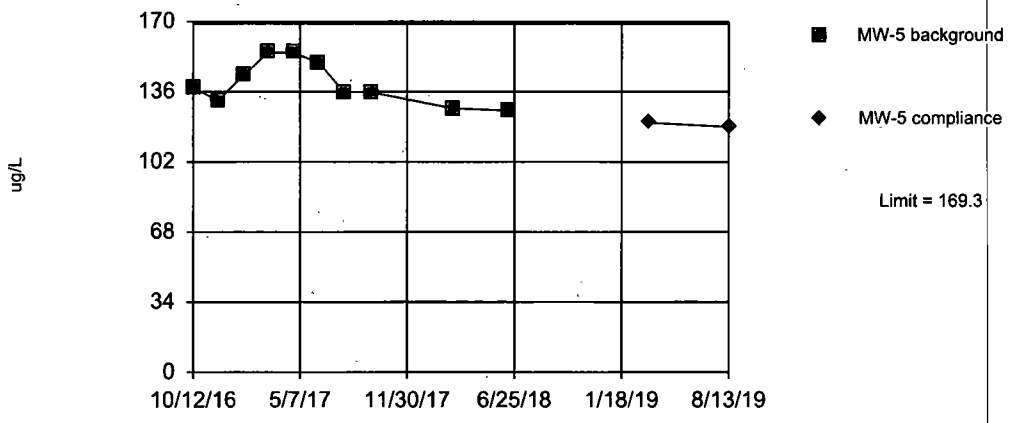
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=140.1, Std. Dev.=10.43, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9113, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Barium [total] Analysis Run 10/23/2019 4:10 PM

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

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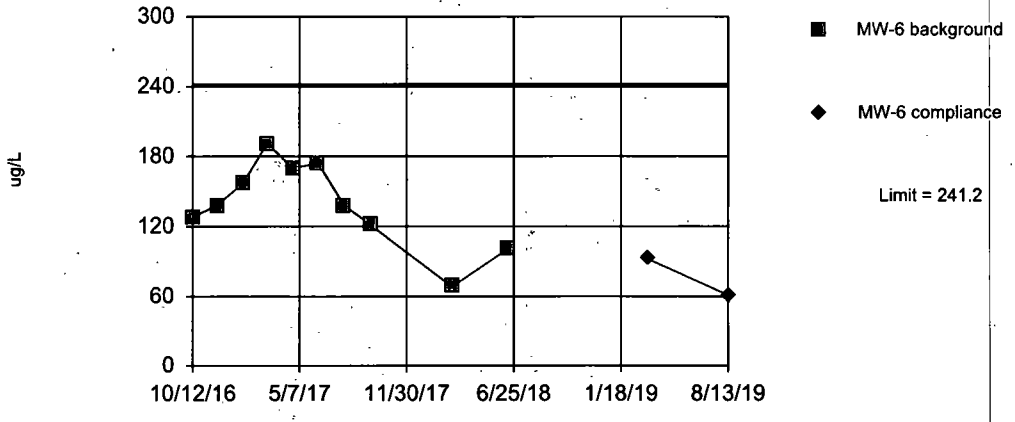
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=138.7, Std. Dev.=36.6, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9715, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Barium [total] Analysis Run 10/23/2019 4:10 PM

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

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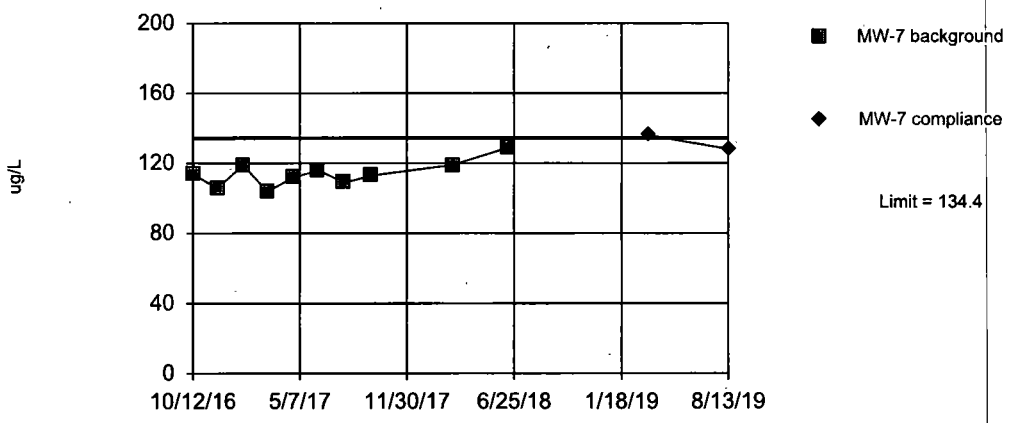
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=114.1, Std. Dev.=7.249, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.959, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Barium [total] Analysis Run 10/23/2019 4:10 PM

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

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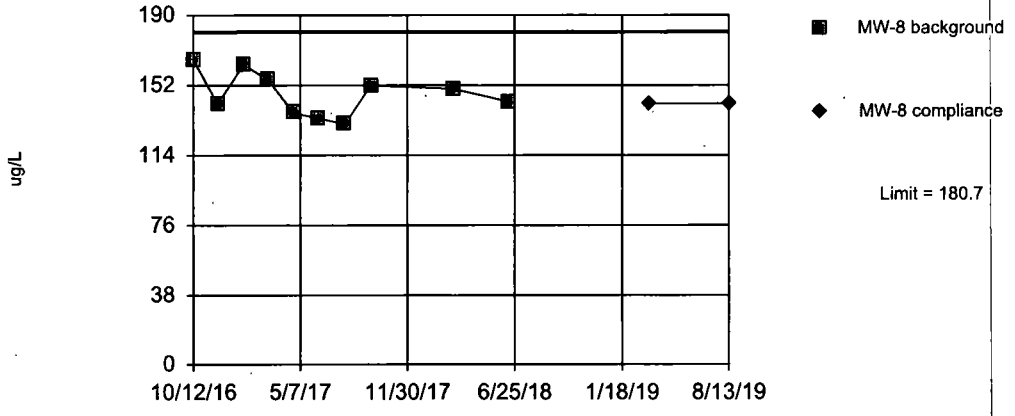
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=147.3, Std. Dev.=11.93, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9563, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Barium [total] Analysis Run 10/23/2019 4:10 PM

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

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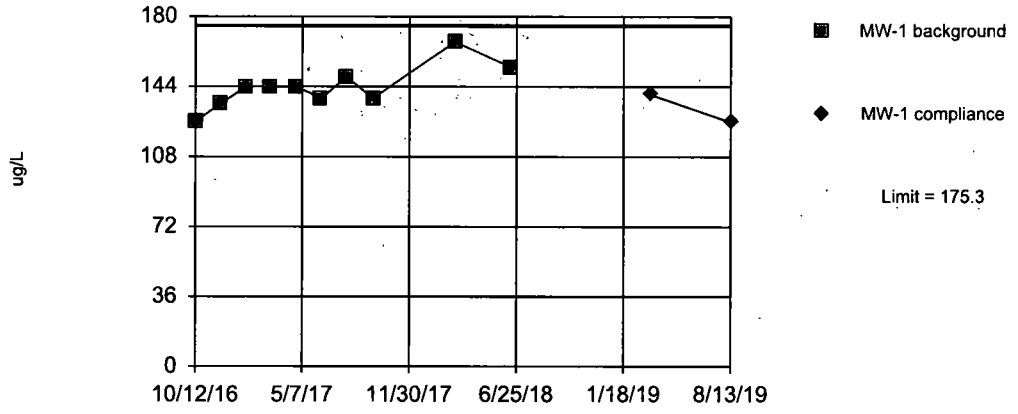
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=143.9, Std. Dev.=11.21, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9555, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Boron Analysis Run 10/23/2019 4:10 PM

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

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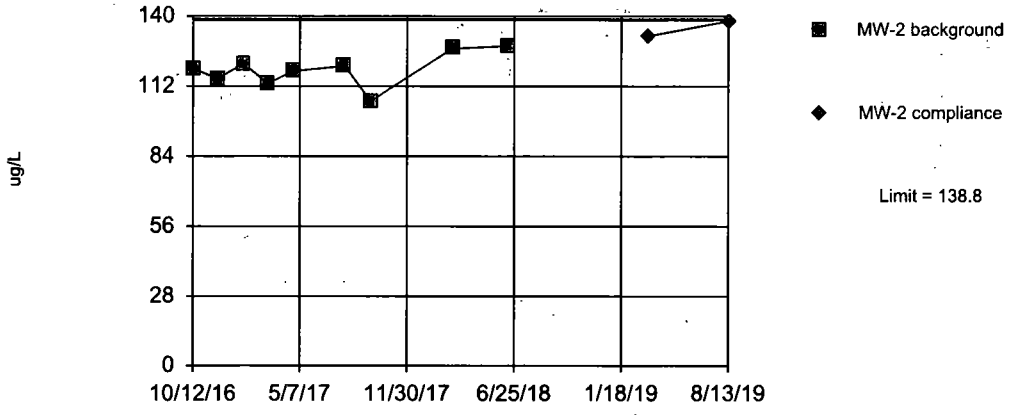
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=118.6, Std. Dev.=6.803, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9618, critical = 0.764. Kappa = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Boron Analysis Run 10/23/2019 4:10 PM

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

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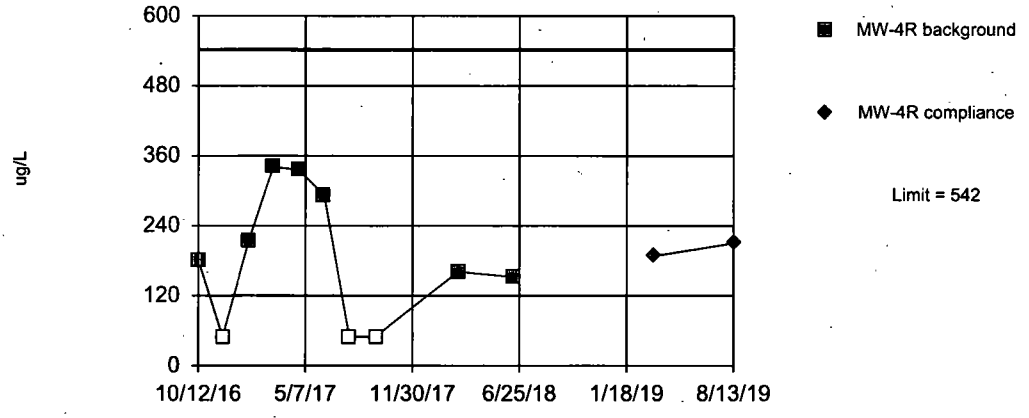
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (after Aitchison's Adjustment): Mean=167.6, Std. Dev.=133.7, n=10, 30% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8919, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Boron Analysis Run 10/23/2019 4:10 PM

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

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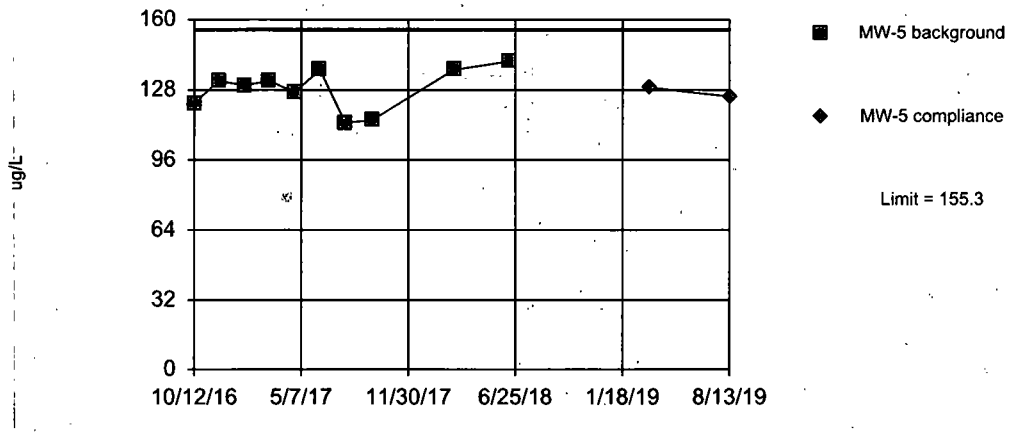
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=128.5, Std. Dev.=9.56, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9223, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Boron Analysis Run 10/23/2019 4:10 PM

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

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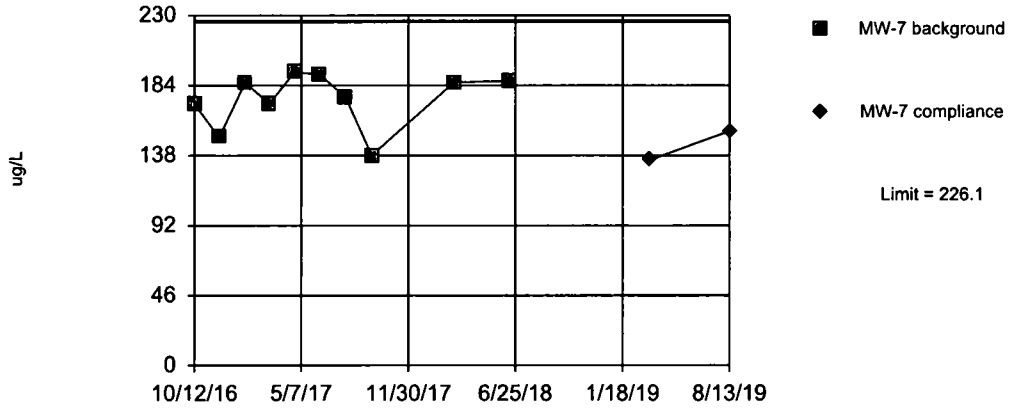
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=175.1, Std. Dev.=18.19, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8521, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Boron Analysis Run 10/23/2019 4:10 PM

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

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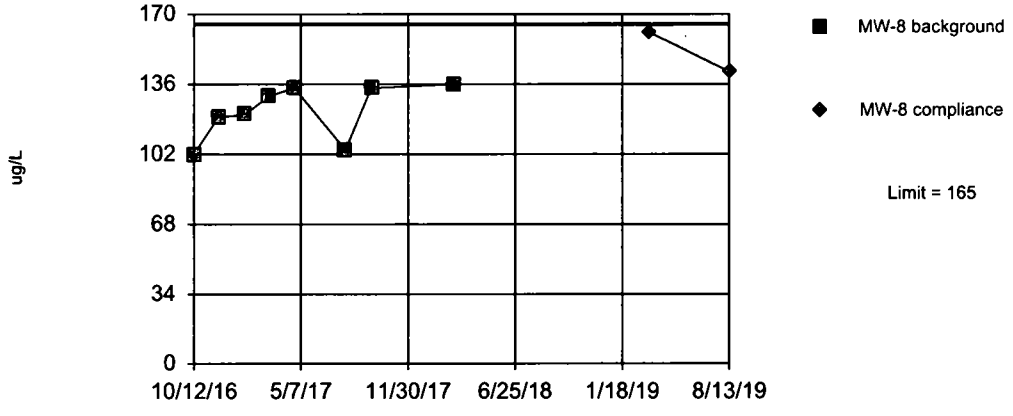
Within Limit

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 = 3.145 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Boron Analysis Run 10/23/2019 4:10 PM

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

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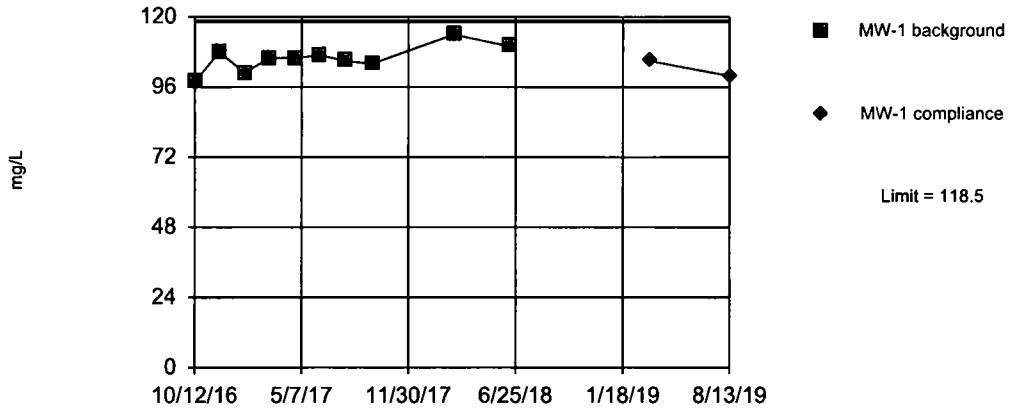
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=105.9, Std. Dev.=4.518, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9799, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Calcium Analysis Run 10/23/2019 4:10 PM

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

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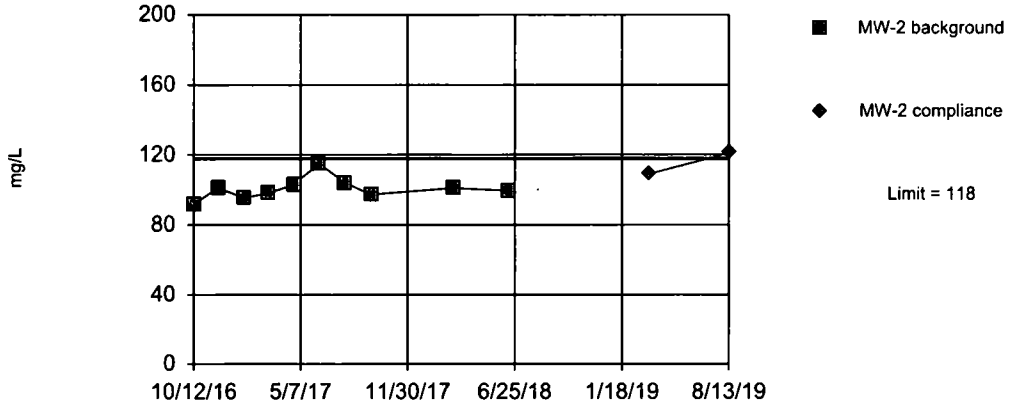
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=100.6, Std. Dev.=6.214, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9079, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Calcium Analysis Run 10/23/2019 4:10 PM

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

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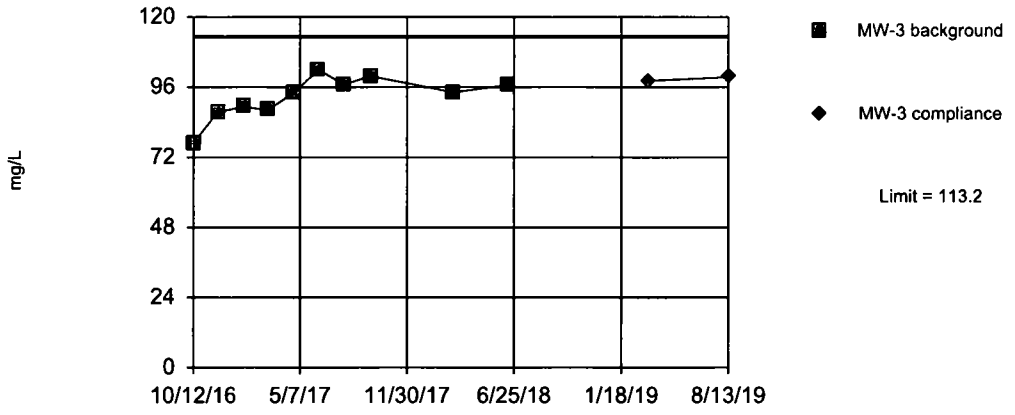
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=92.59, Std. Dev.=7.372, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9298, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Calcium Analysis Run 10/23/2019 4:10 PM

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

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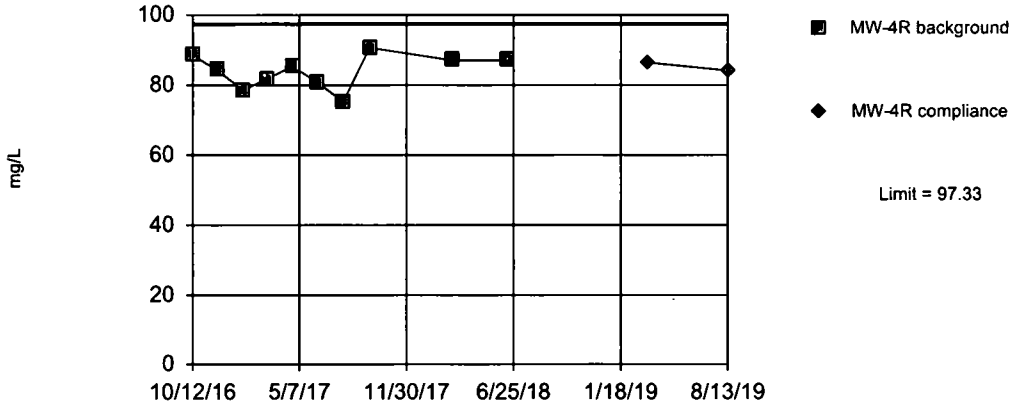
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=83.88, Std. Dev.=4.802, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9683, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Calcium Analysis Run 10/23/2019 4:10 PM

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

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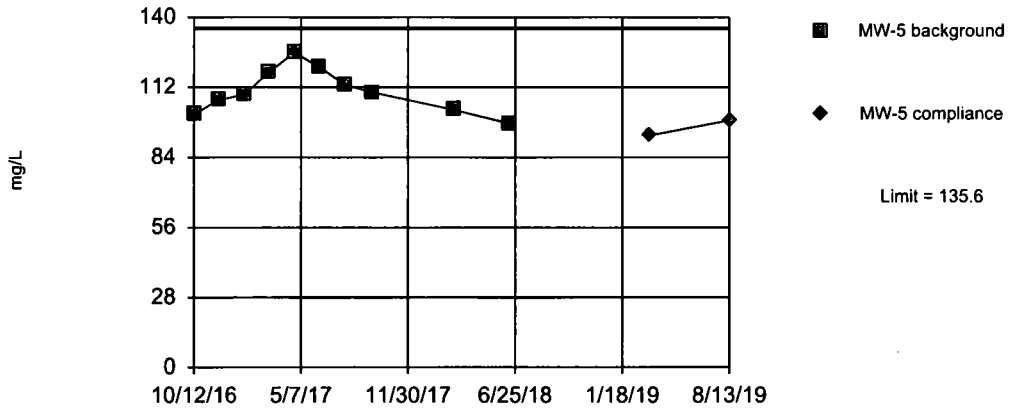
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=110.4, Std. Dev.=8.98, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9787, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Calcium Analysis Run 10/23/2019 4:10 PM

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

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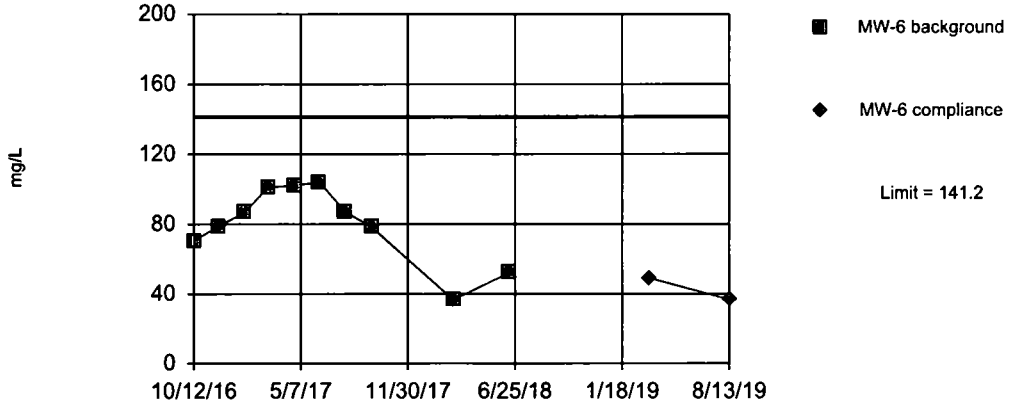
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=79.7, Std. Dev.=21.97, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9128, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Calcium Analysis Run 10/23/2019 4:10 PM

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

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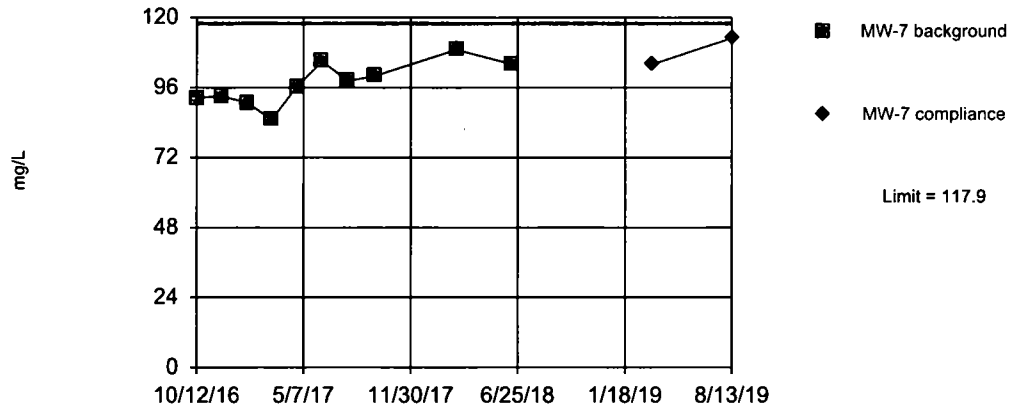
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=97.44, Std. Dev.=7.317, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9838, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Calcium Analysis Run 10/23/2019 4:10 PM

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

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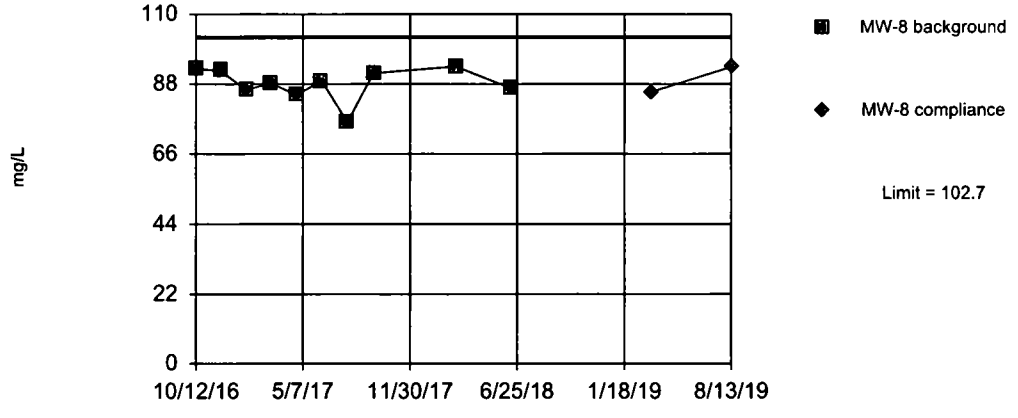
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=87.99, Std. Dev.=5.239, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8801, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Calcium Analysis Run 10/23/2019 4:10 PM

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

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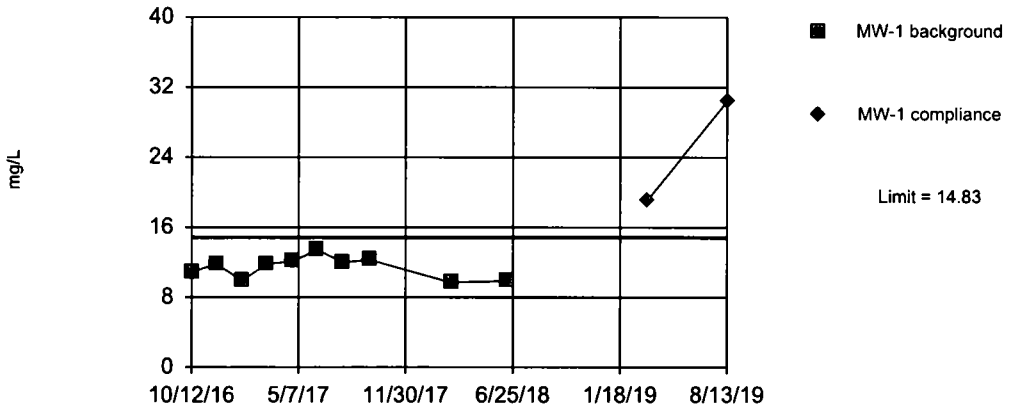
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=11.38, Std. Dev.=1.23, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9094, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Chloride Analysis Run 10/23/2019 4:10 PM

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

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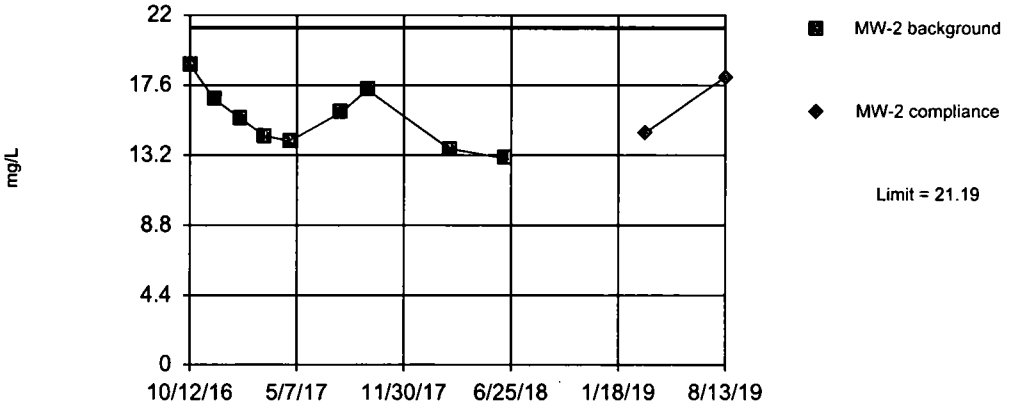
Within Limit

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 = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Chloride Analysis Run 10/23/2019 4:10 PM

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

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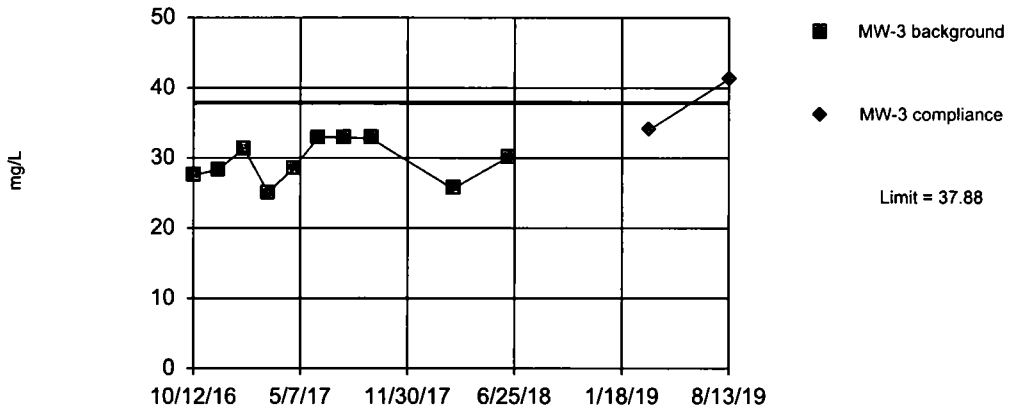
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=29.52, Std. Dev.=2.984, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9142, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Chloride Analysis Run 10/23/2019 4:10 PM

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

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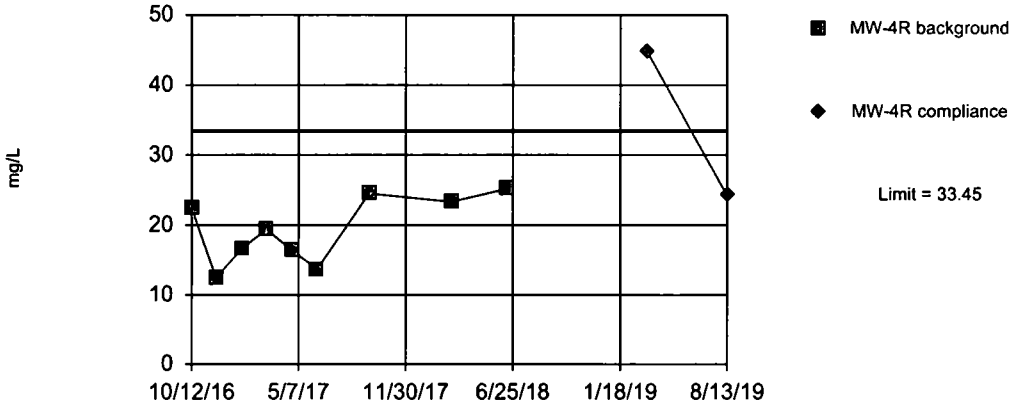
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=19.34, Std. Dev.=4.746, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9211, critical = 0.764. Kappa = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Chloride Analysis Run 10/23/2019 4:10 PM

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

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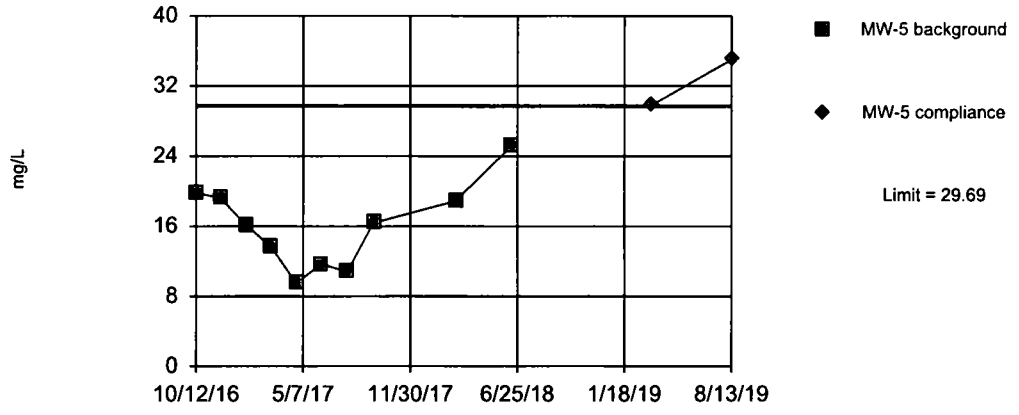
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=16.13, Std. Dev.=4.84, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9601, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Chloride Analysis Run 10/23/2019 4:10 PM

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

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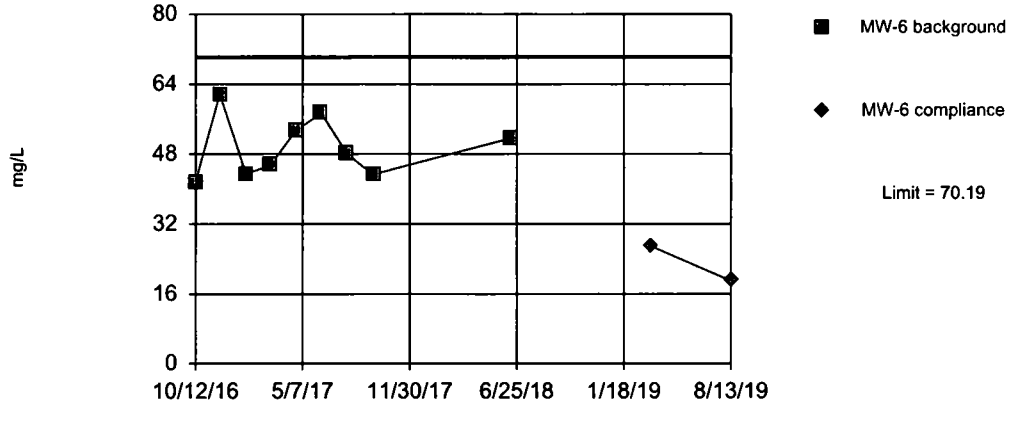
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=49.54, Std. Dev.=6.944, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9293, critical = 0.764. Kappa = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Chloride Analysis Run 10/23/2019 4:10 PM

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

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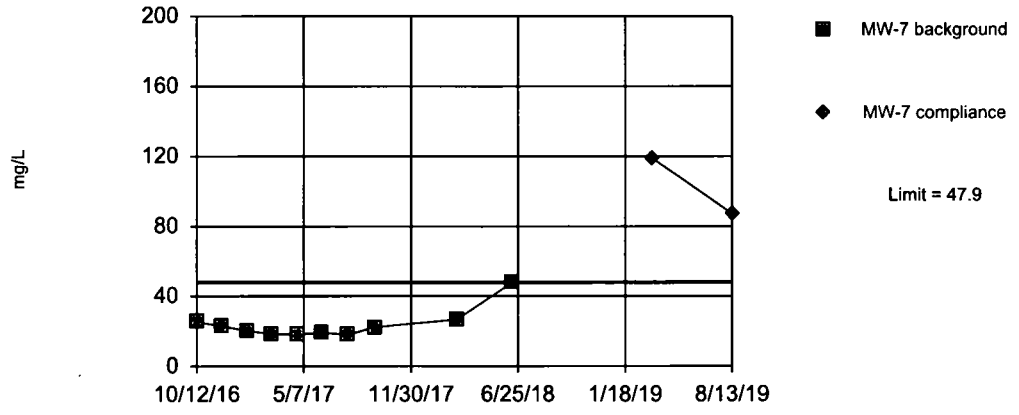
Exceeds Limit

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). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Chloride Analysis Run 10/23/2019 4:10 PM

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

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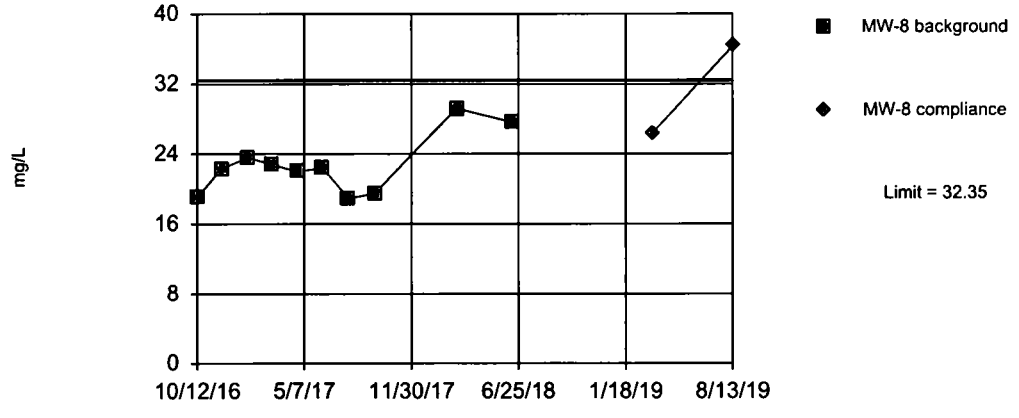
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=22.73, Std. Dev.=3.435, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.89, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Chloride Analysis Run 10/23/2019 4:10 PM

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

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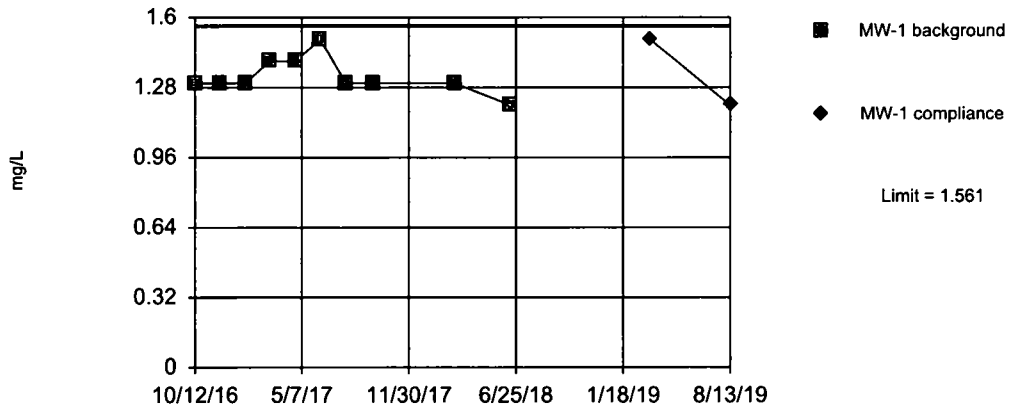
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.33, Std. Dev.=0.08233, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8409, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Fluoride Analysis Run 10/23/2019 4:10 PM

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

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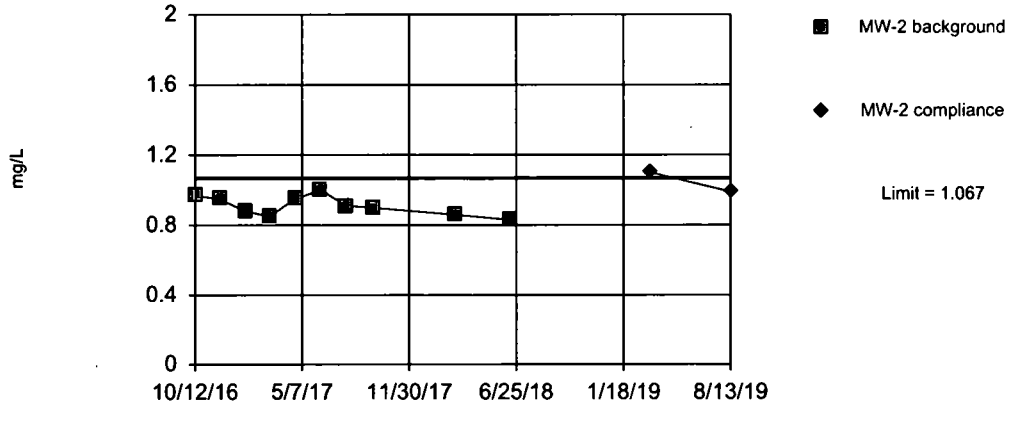
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.91, Std. Dev.=0.05617, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.962, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Fluoride Analysis Run 10/23/2019 4:10 PM

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

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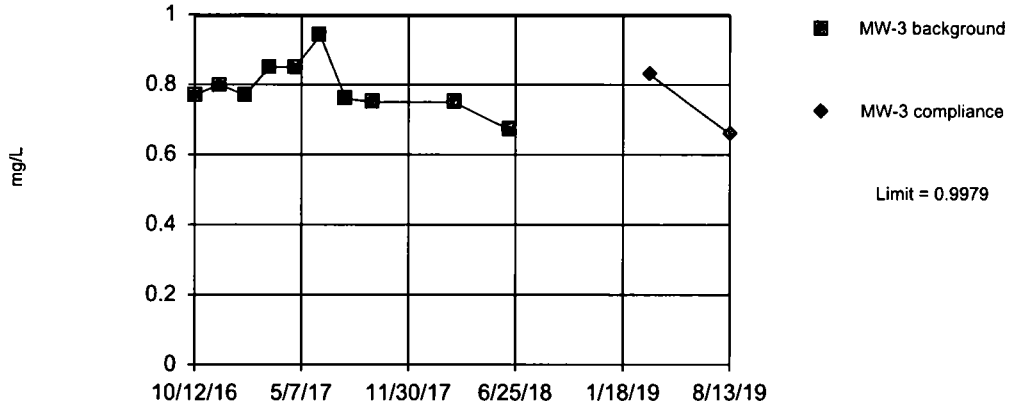
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.791, Std. Dev.=0.07385, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9344, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Fluoride Analysis Run 10/23/2019 4:10 PM

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

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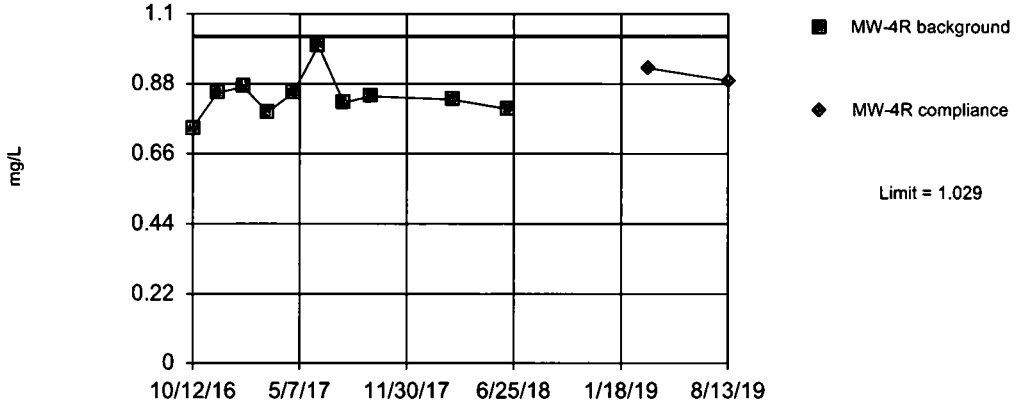
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.839, Std. Dev.=0.06773, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8772, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Fluoride Analysis Run 10/23/2019 4:10 PM

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

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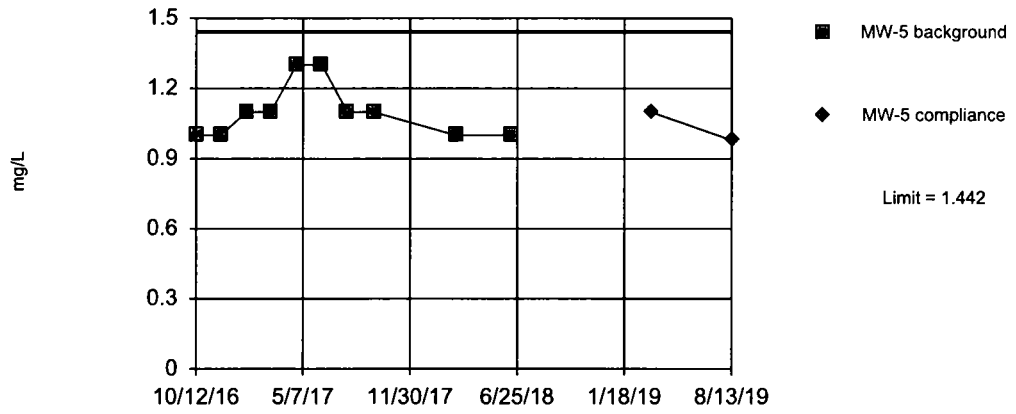
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=1.031, Std. Dev.=0.03519, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7826, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Fluoride Analysis Run 10/23/2019 4:10 PM

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

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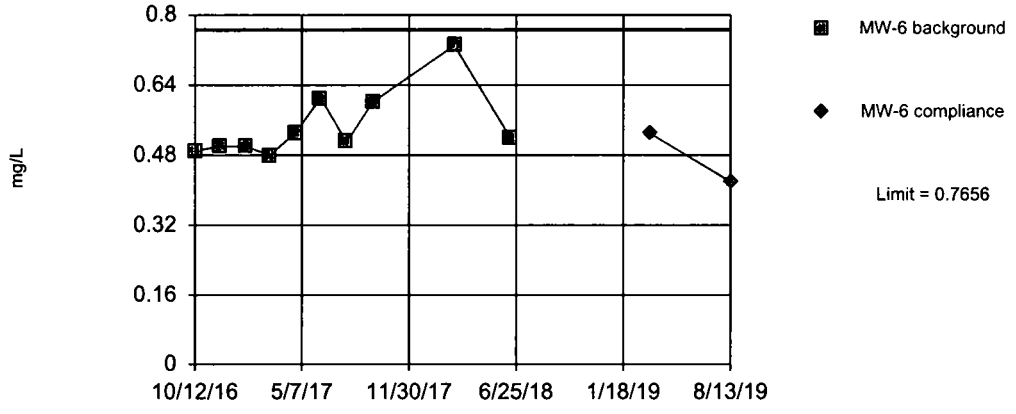
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.547, Std. Dev.=0.07804, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7927, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Fluoride Analysis Run 10/23/2019 4:10 PM

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

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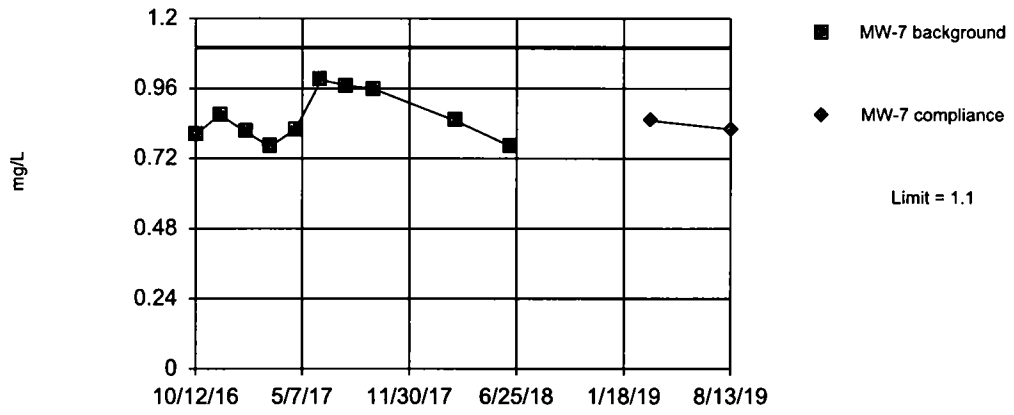
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.859, Std. Dev.=0.08621, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8894, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Fluoride Analysis Run 10/23/2019 4:10 PM

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

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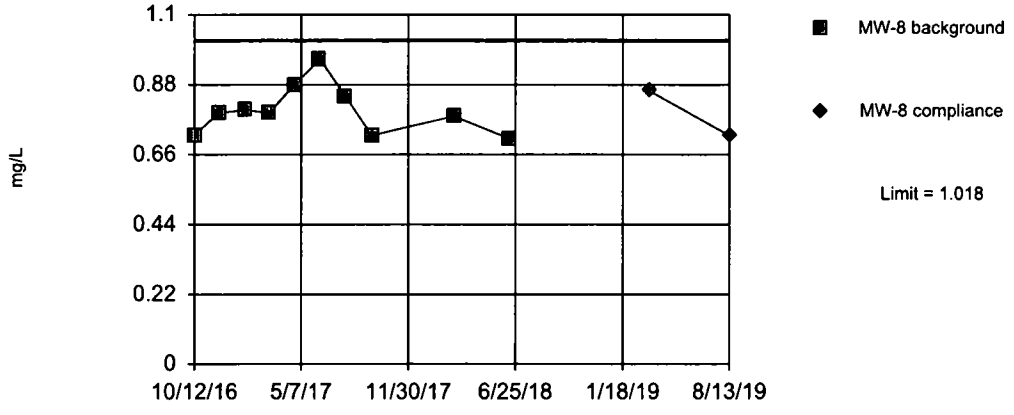
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.799, Std. Dev.=0.07824, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.913, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Fluoride Analysis Run 10/23/2019 4:10 PM

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

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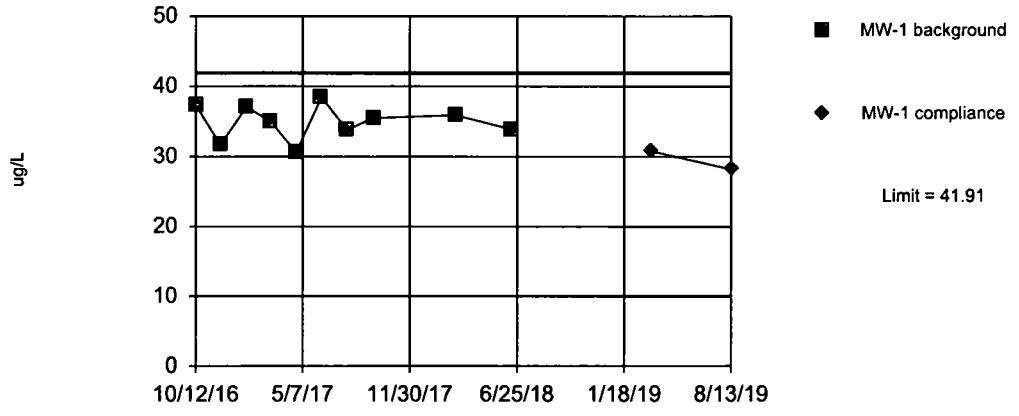
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=34.93, Std. Dev.=2.491, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9666, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Lithium Analysis Run 10/23/2019 4:10 PM

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

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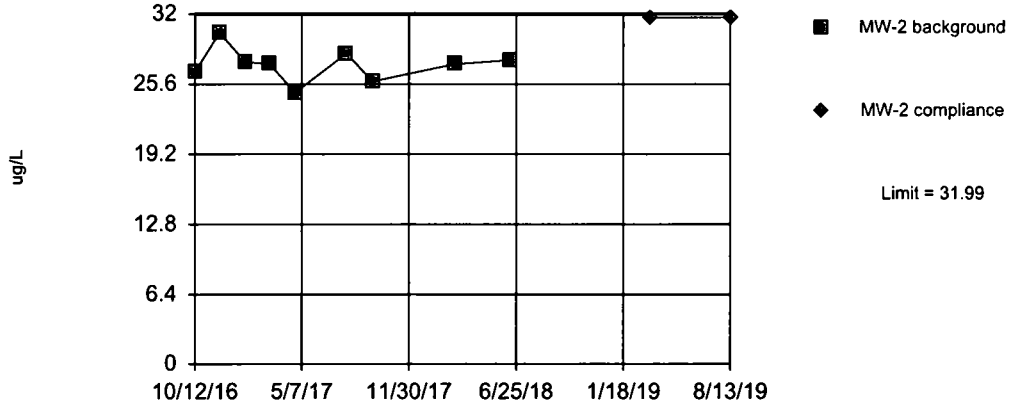
Within Limit

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 = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Lithium Analysis Run 10/23/2019 4:10 PM

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

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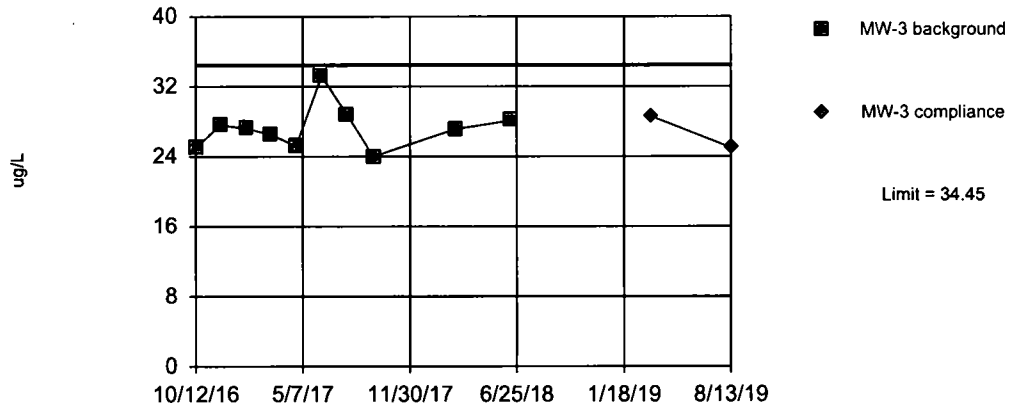
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=27.27, Std. Dev.=2.562, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8998, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Lithium Analysis Run 10/23/2019 4:10 PM

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

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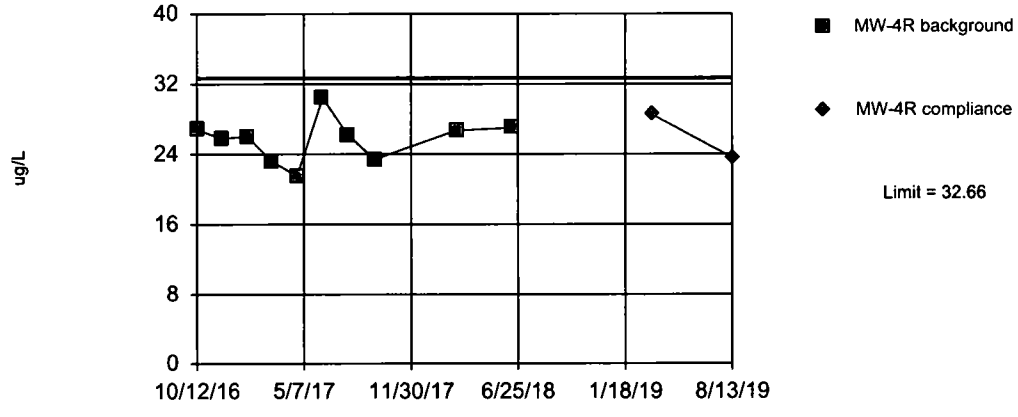
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=25.7, Std. Dev.=2.484, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9349, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Lithium Analysis Run 10/23/2019 4:10 PM

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

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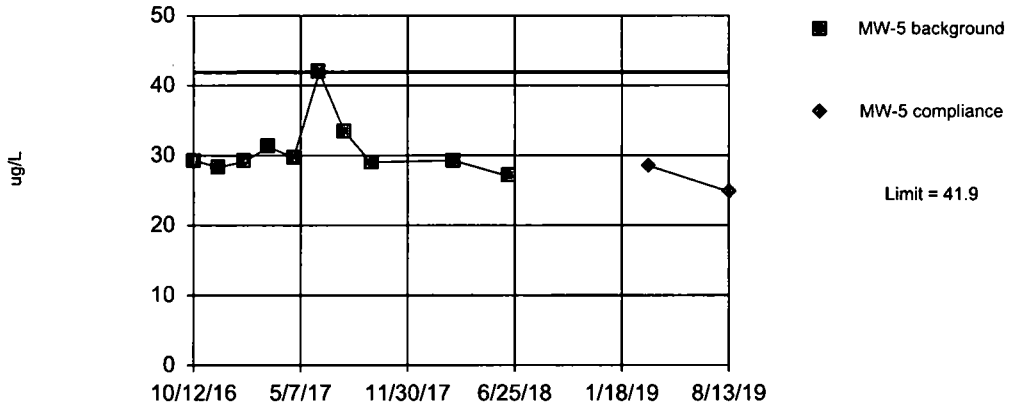
Within Limit

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). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Lithium Analysis Run 10/23/2019 4:10 PM

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

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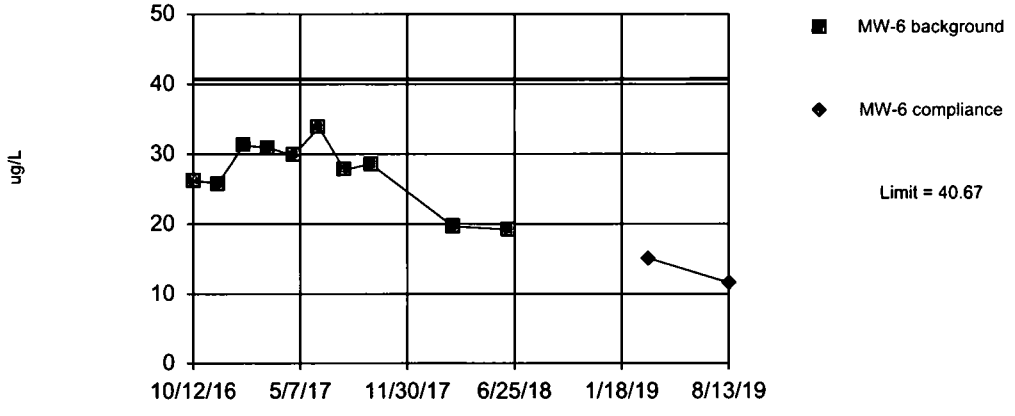
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=27.29, Std. Dev.=4.777, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9183, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Lithium Analysis Run 10/23/2019 4:10 PM

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

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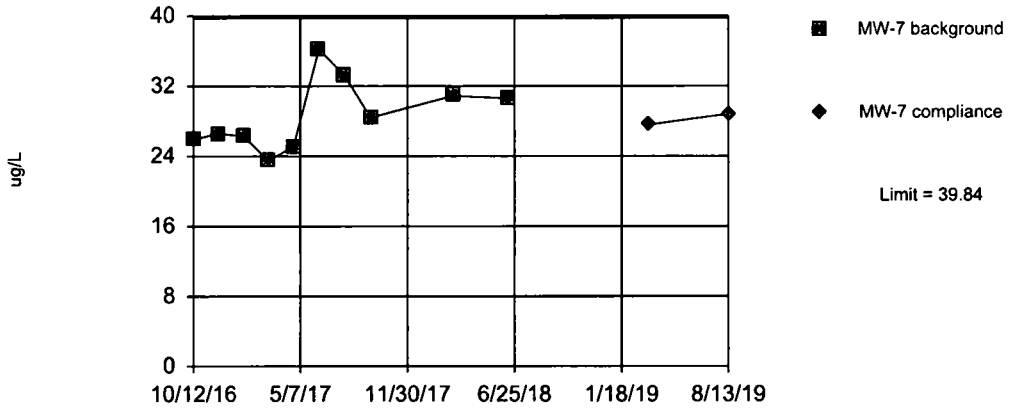
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=28.67, Std. Dev.=3.987, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9444, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Lithium Analysis Run 10/23/2019 4:10 PM

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

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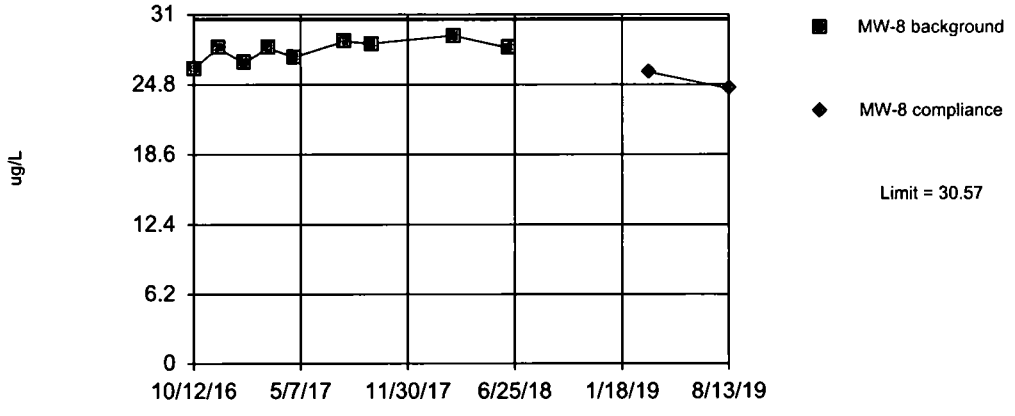
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=27.8, Std. Dev.=0.9314, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9451, critical = 0.764. Kappa = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Lithium Analysis Run 10/23/2019 4:10 PM

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

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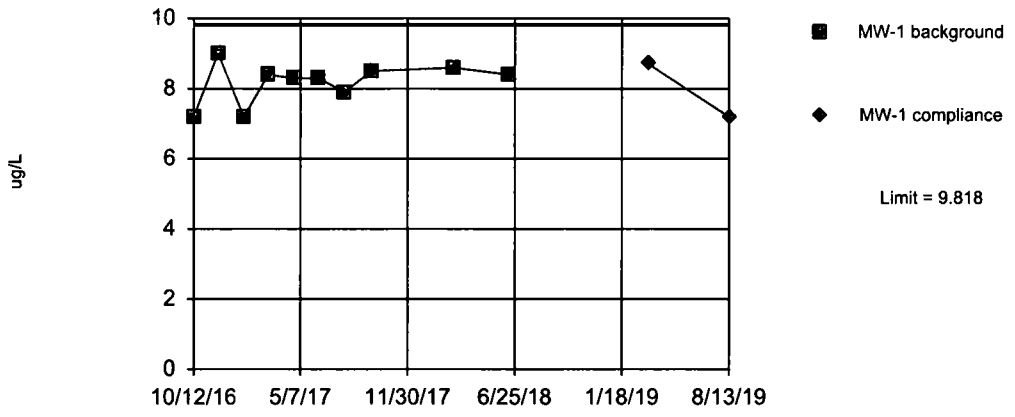
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.18, Std. Dev.=0.5846, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8727, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Molybdenum Analysis Run 10/23/2019 4:10 PM

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

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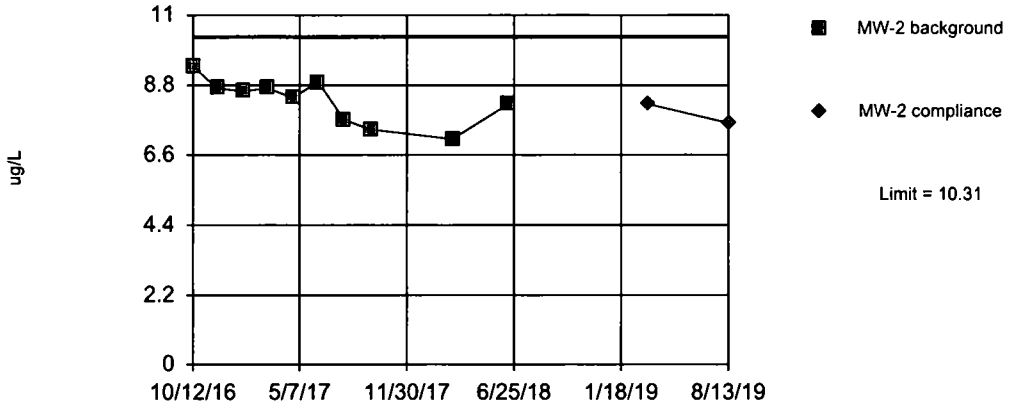
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.31, Std. Dev.=0.7156, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.954, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Molybdenum Analysis Run 10/23/2019 4:10 PM

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

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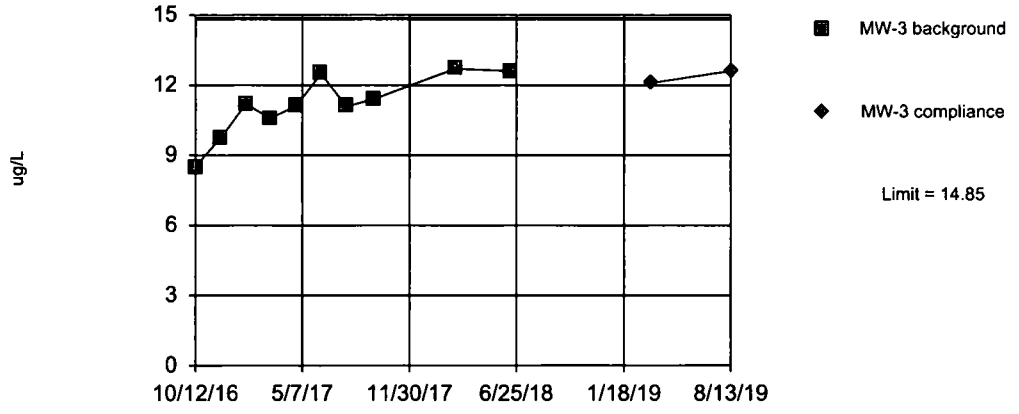
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=11.14, Std. Dev.=1.326, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9184, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Molybdenum Analysis Run 10/23/2019 4:10 PM

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

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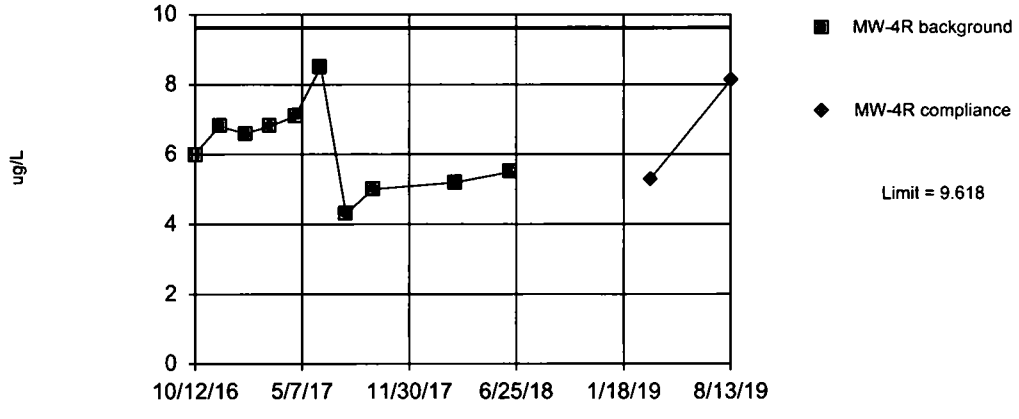
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.18, Std. Dev.=1.227, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9705, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Molybdenum Analysis Run 10/23/2019 4:10 PM

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

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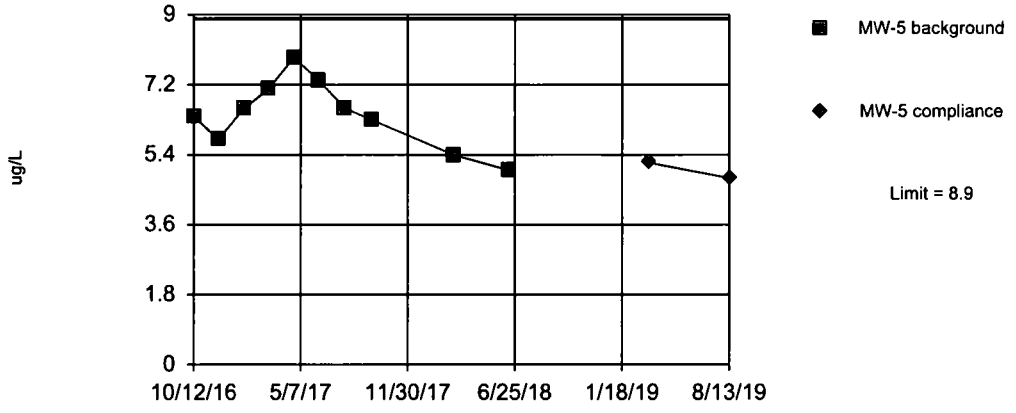
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.44, Std. Dev.=0.8784, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.983, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Molybdenum Analysis Run 10/23/2019 4:10 PM

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

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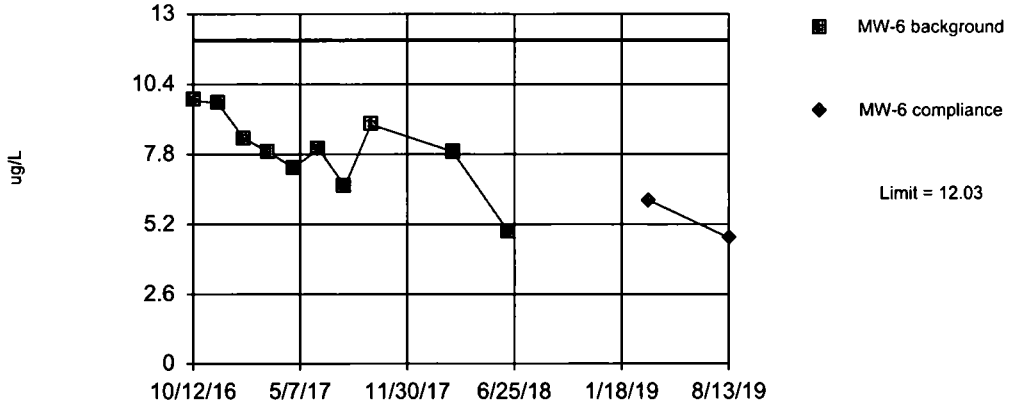
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.94, Std. Dev.=1.458, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9391, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Molybdenum Analysis Run 10/23/2019 4:10 PM

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

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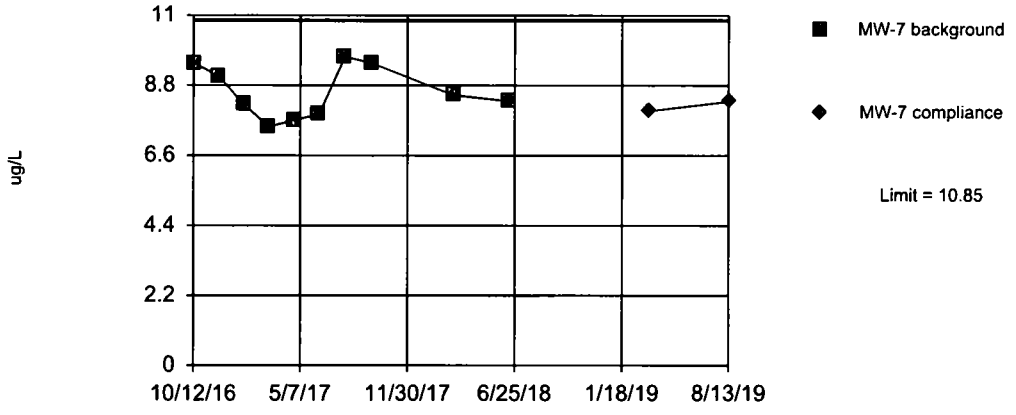
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.59, Std. Dev.=0.8062, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9168, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Molybdenum Analysis Run 10/23/2019 4:11 PM

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

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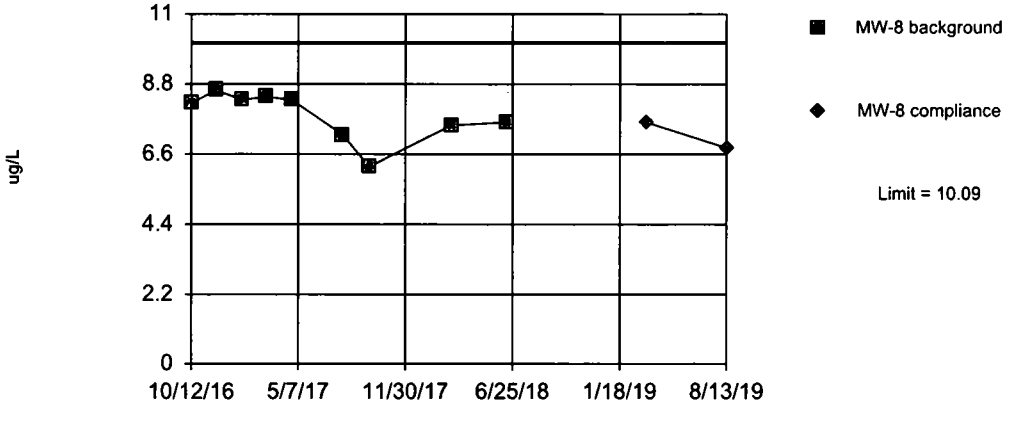
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.811, Std. Dev.=0.7672, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8723, critical = 0.764. Kappa = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Molybdenum Analysis Run 10/23/2019 4:11 PM

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

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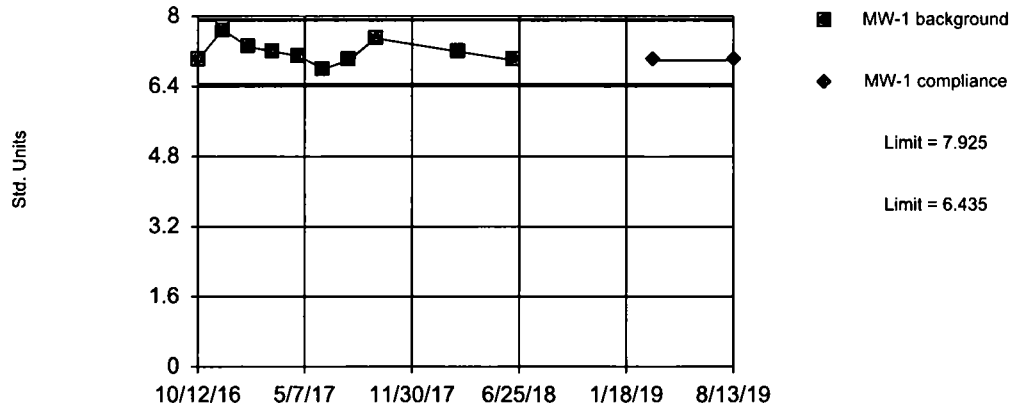
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.18, Std. Dev.=0.2658, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9414, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: pH Analysis Run 10/23/2019 4:11 PM

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

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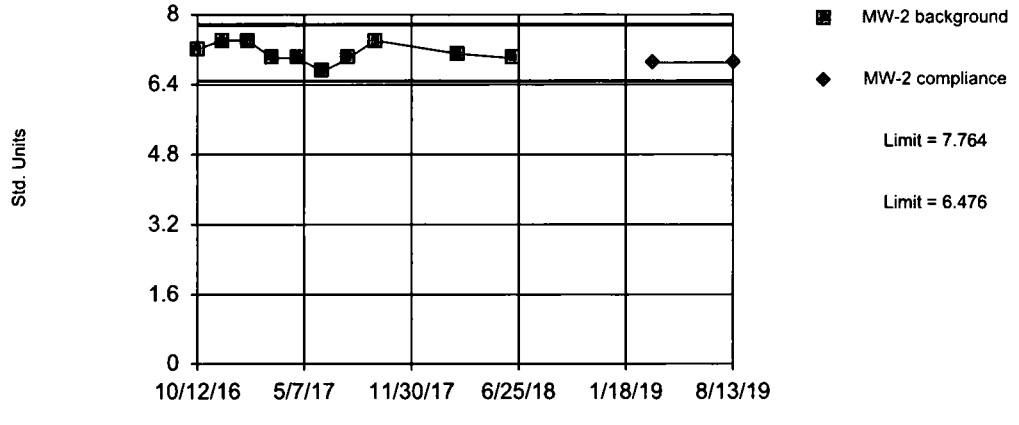
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.12, Std. Dev.=0.23, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8807, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: pH Analysis Run 10/23/2019 4:11 PM

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

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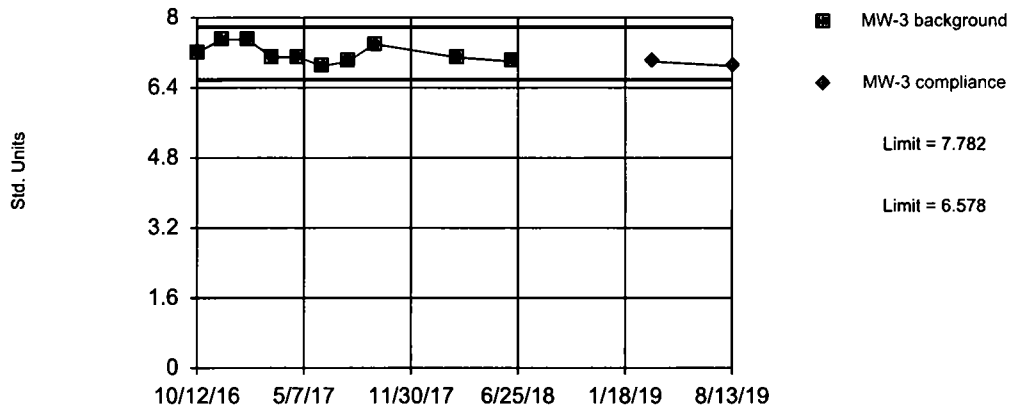
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.18, Std. Dev.=0.215, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.885, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: pH Analysis Run 10/23/2019 4:11 PM

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

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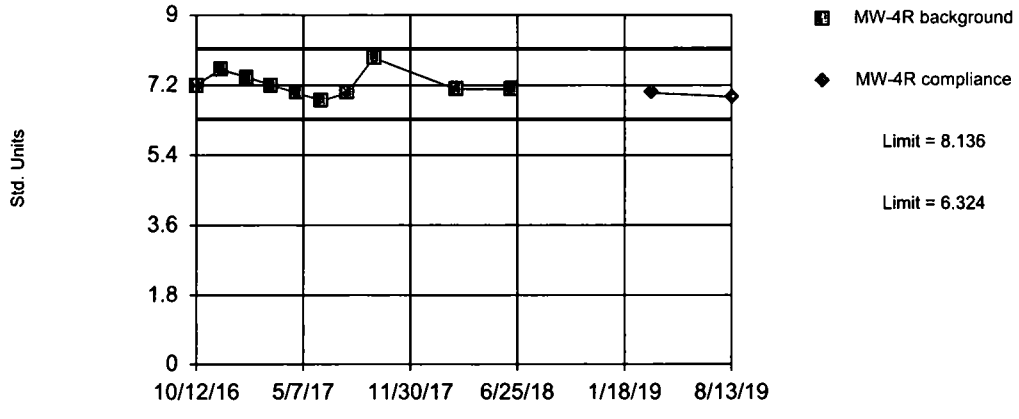
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.23, Std. Dev.=0.3234, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9204, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: pH Analysis Run 10/23/2019 4:11 PM

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

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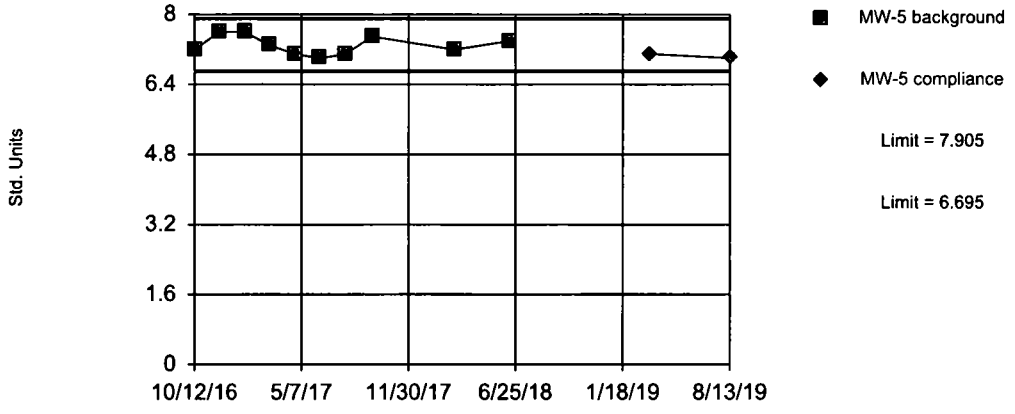
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.3, Std. Dev.=0.216, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9241, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: pH Analysis Run 10/23/2019 4:11 PM

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

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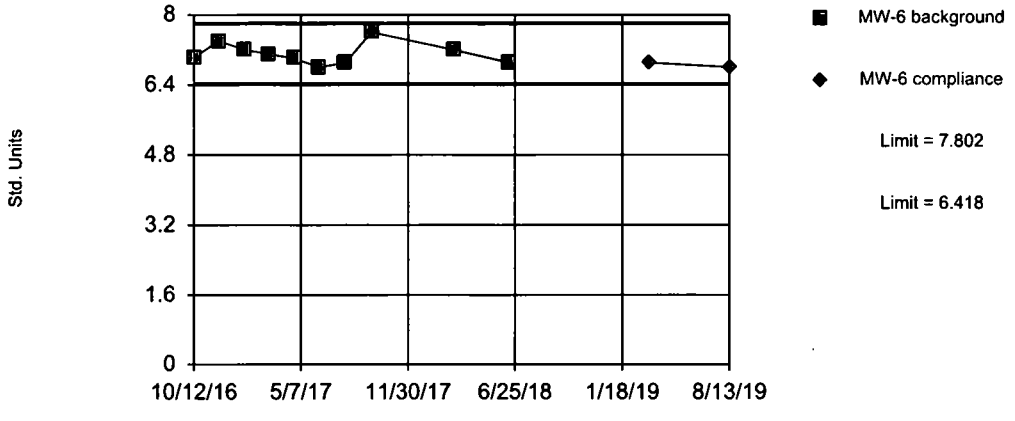
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.11, Std. Dev.=0.247, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9348, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: pH Analysis Run 10/23/2019 4:11 PM

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

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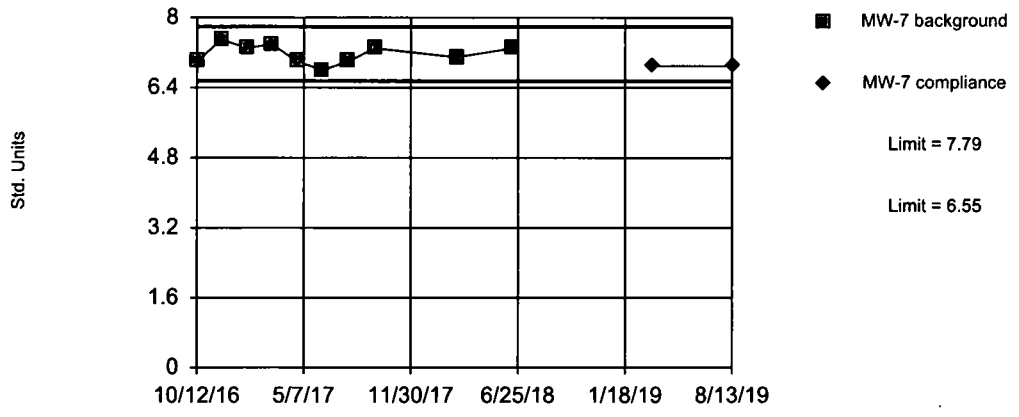
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.17, Std. Dev.=0.2214, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9355, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: pH Analysis Run 10/23/2019 4:11 PM

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

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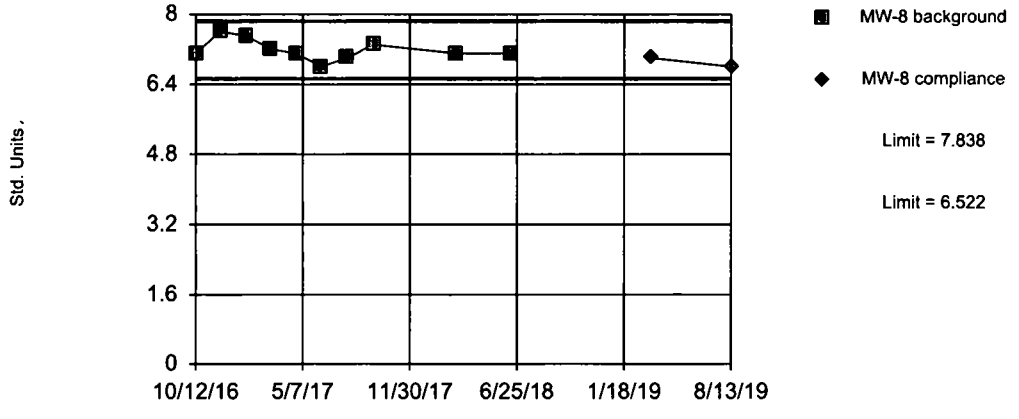
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.18, Std. Dev.=0.2348, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9288, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: pH Analysis Run 10/23/2019 4:11 PM

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

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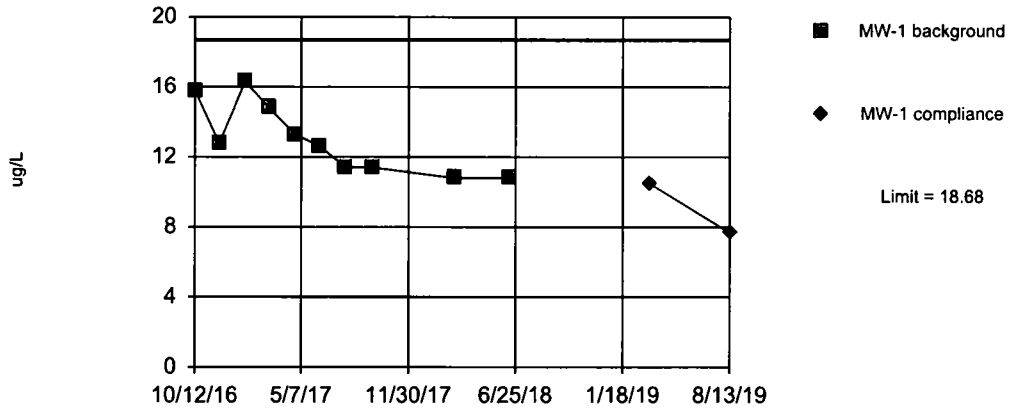
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=13, Std. Dev.=2.029, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8985, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:11 PM

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

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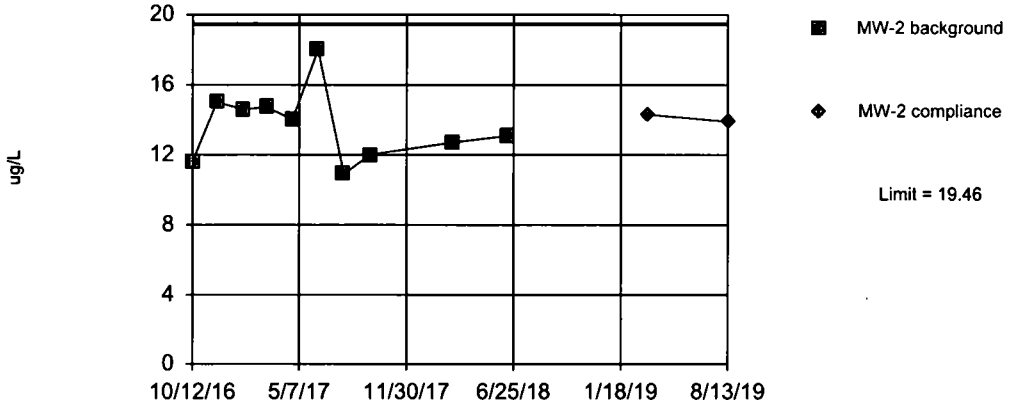
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=13.66, Std. Dev.=2.07, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9461, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:11 PM

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

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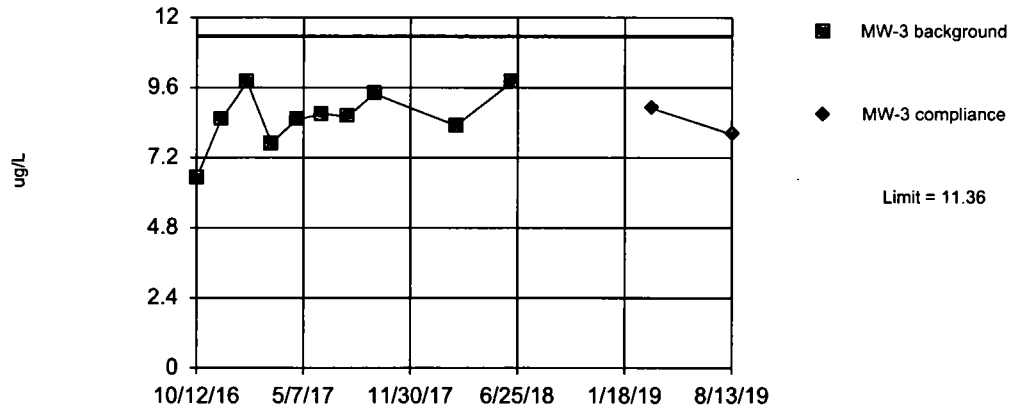
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.58, Std. Dev.=0.992, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9165, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:11 PM

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

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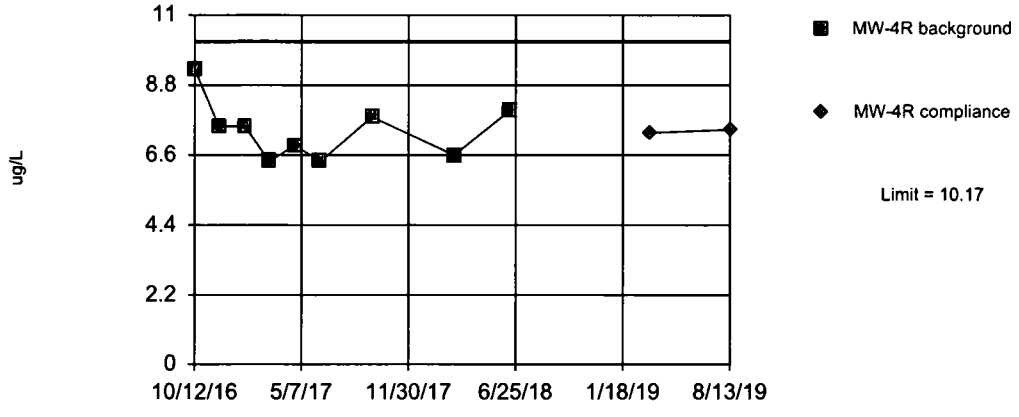
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.378, Std. Dev.=0.9378, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.903, critical = 0.764. Kappa = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:11 PM

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

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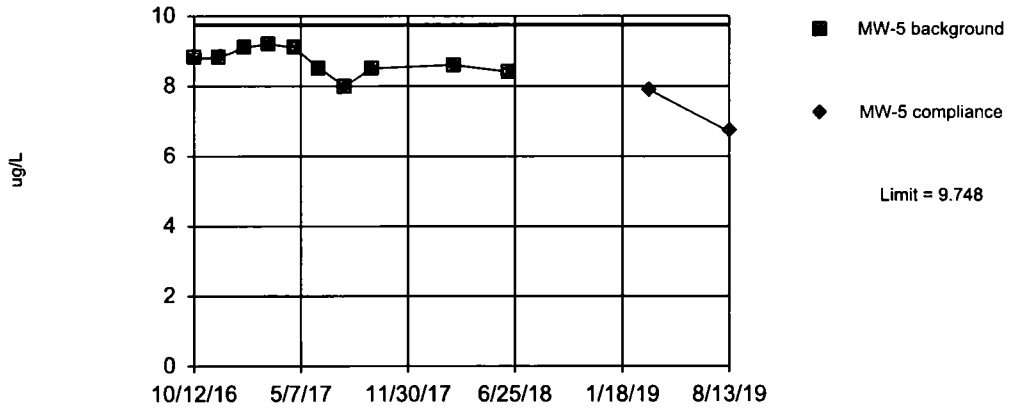
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.7, Std. Dev.=0.3742, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9468, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:11 PM

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

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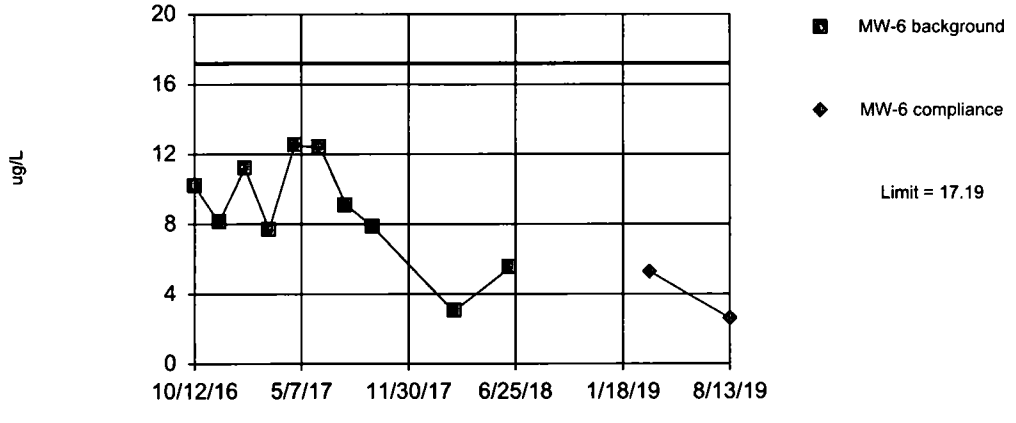
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=8.76, Std. Dev.=3.009, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.949, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:11 PM

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

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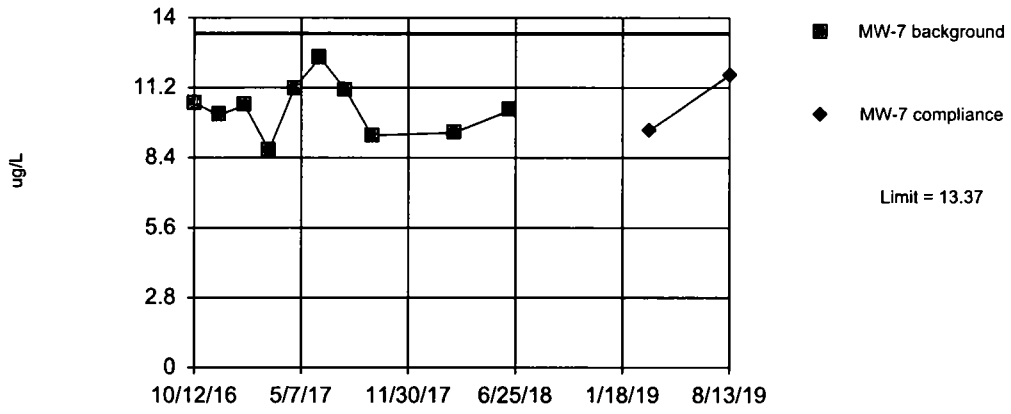
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=10.36, Std. Dev.=1.073, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9769, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:11 PM

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

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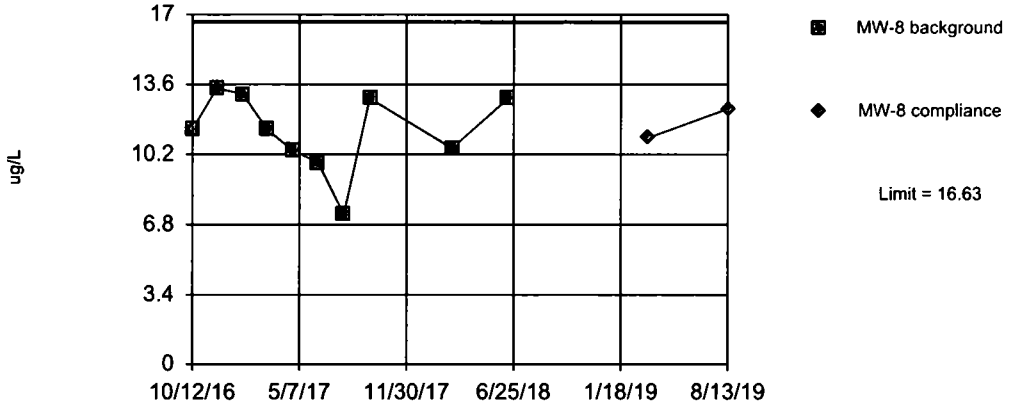
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=11.31, Std. Dev.=1.9, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9028, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:11 PM

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

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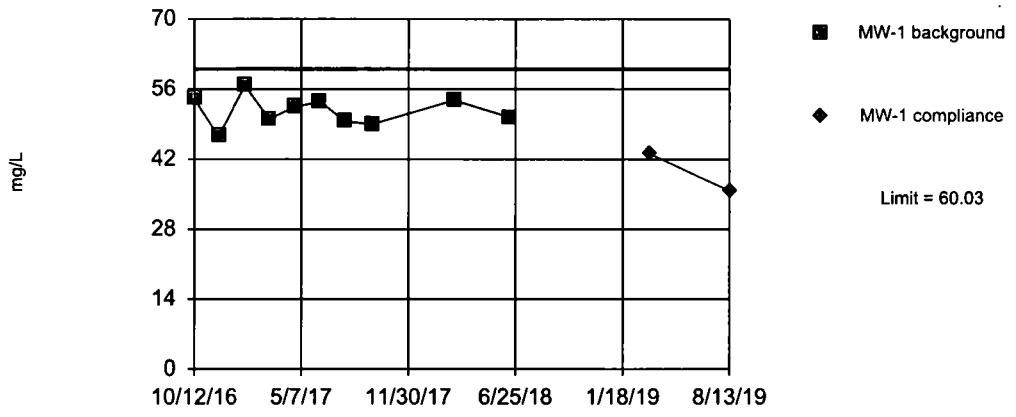
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=51.63, Std. Dev.=2.999, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9727, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Sulfate Analysis Run 10/23/2019 4:11 PM

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

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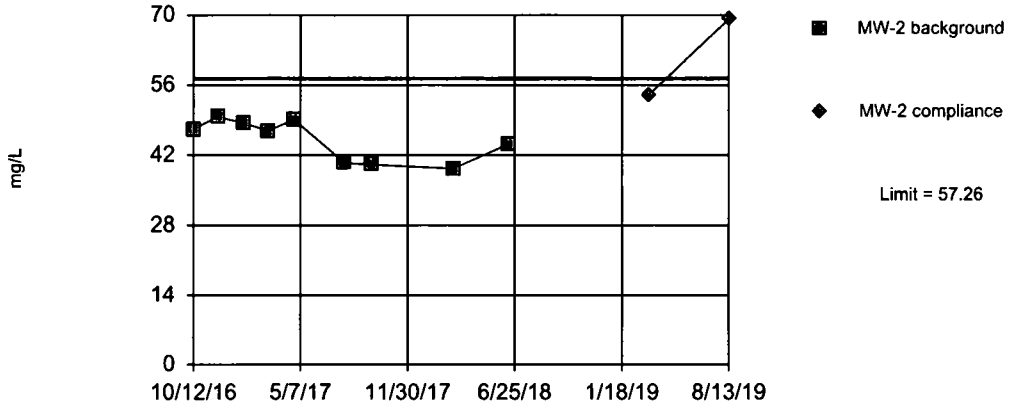
Exceeds Limit

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 = 2.973 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Sulfate Analysis Run 10/23/2019 4:11 PM

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

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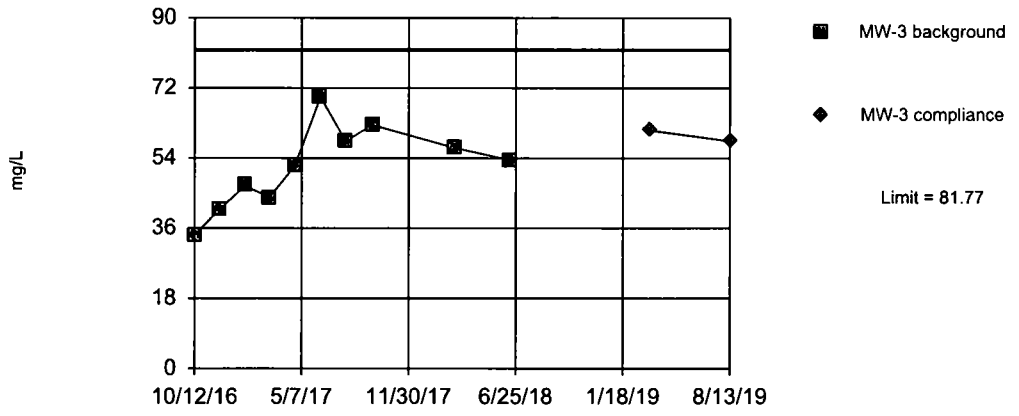
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=51.88, Std. Dev.=10.67, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9935, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Sulfate Analysis Run 10/23/2019 4:11 PM

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

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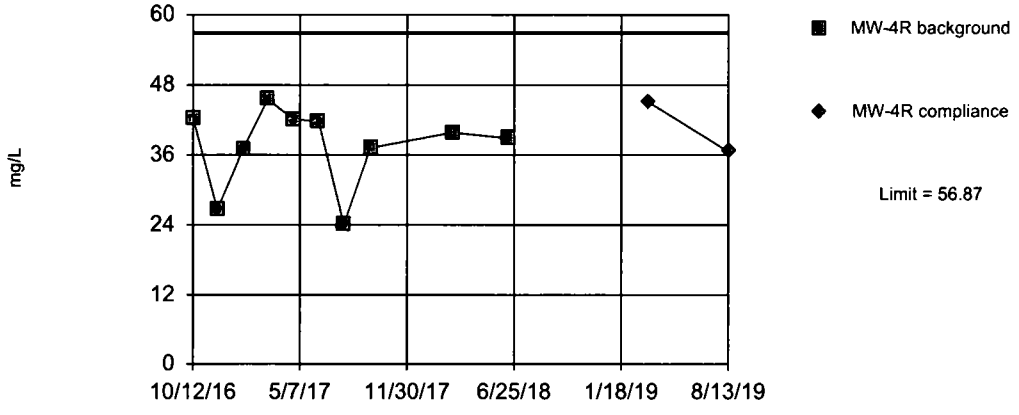
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=37.53, Std. Dev.=6.906, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8478, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Sulfate Analysis Run 10/23/2019 4:11 PM

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

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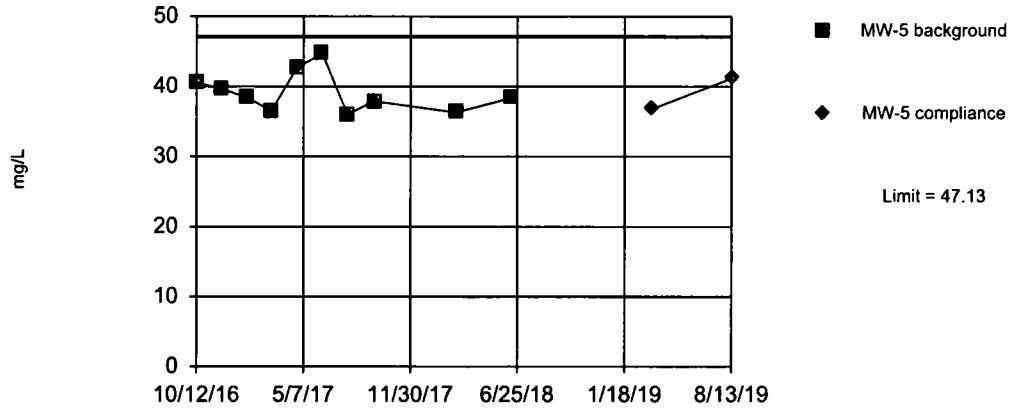
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=39.12, Std. Dev.=2.859, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9135, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Sulfate Analysis Run 10/23/2019 4:11 PM

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

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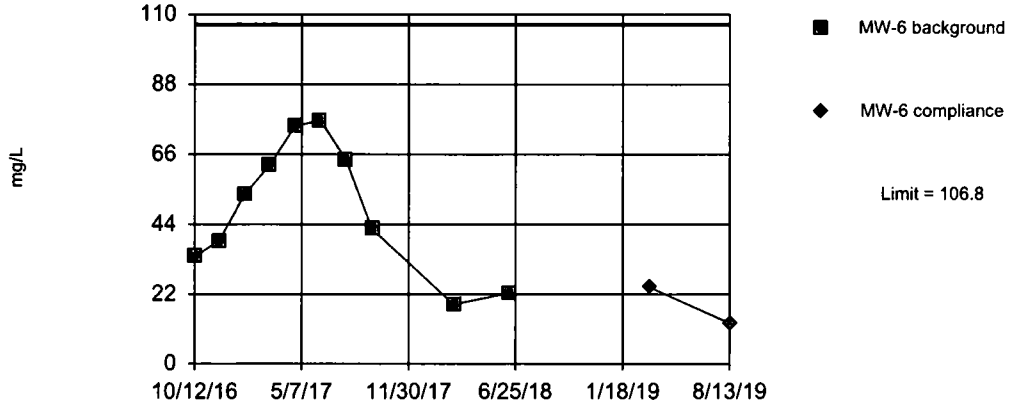
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=48.84, Std. Dev.=20.69, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9417, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Sulfate Analysis Run 10/23/2019 4:11 PM

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

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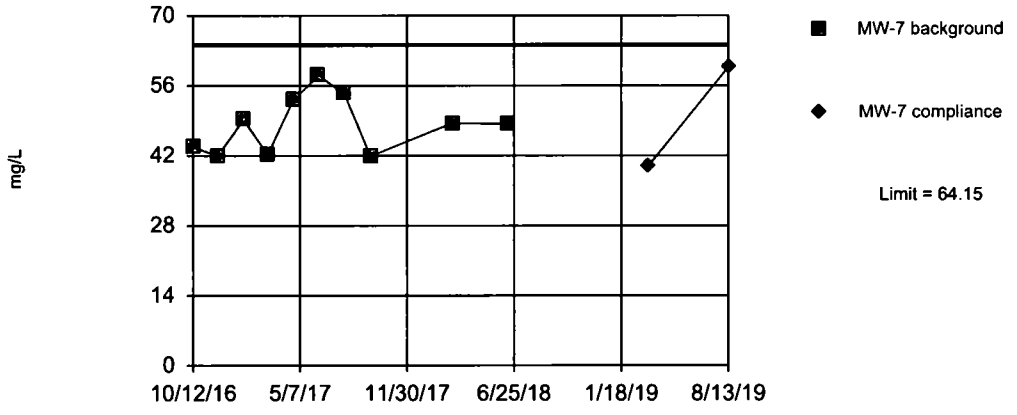
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=48.14, Std. Dev.=5.715, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9073, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Sulfate Analysis Run 10/23/2019 4:11 PM

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

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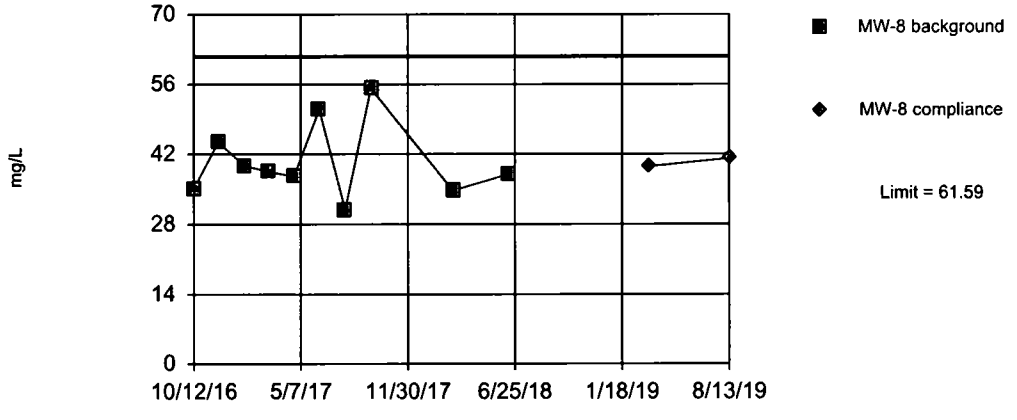
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=40.48, Std. Dev.=7.538, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9039, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Sulfate Analysis Run 10/23/2019 4:11 PM

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

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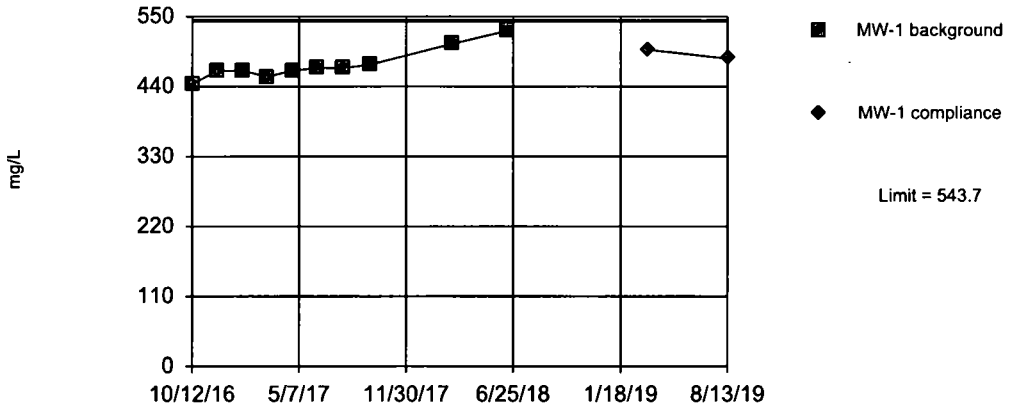
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=474, Std. Dev.=24.9, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8317, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:11 PM

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

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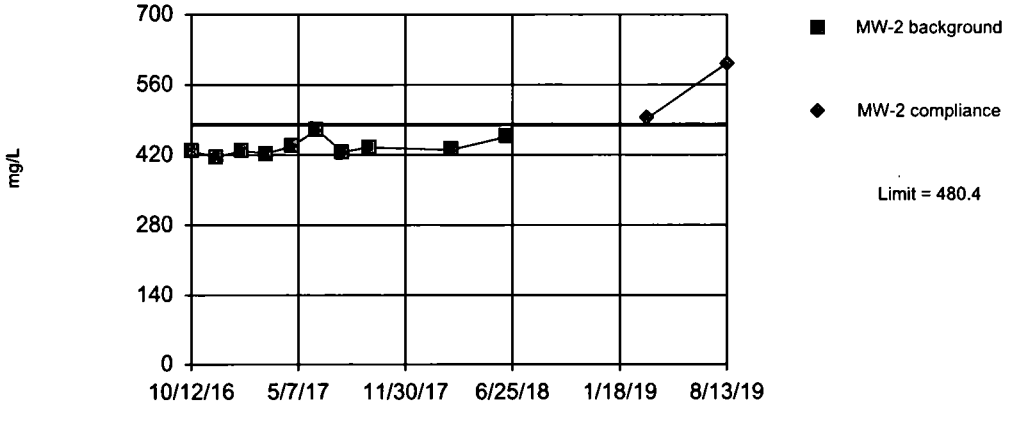
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=434.9, Std. Dev.=16.26, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8566, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:11 PM

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

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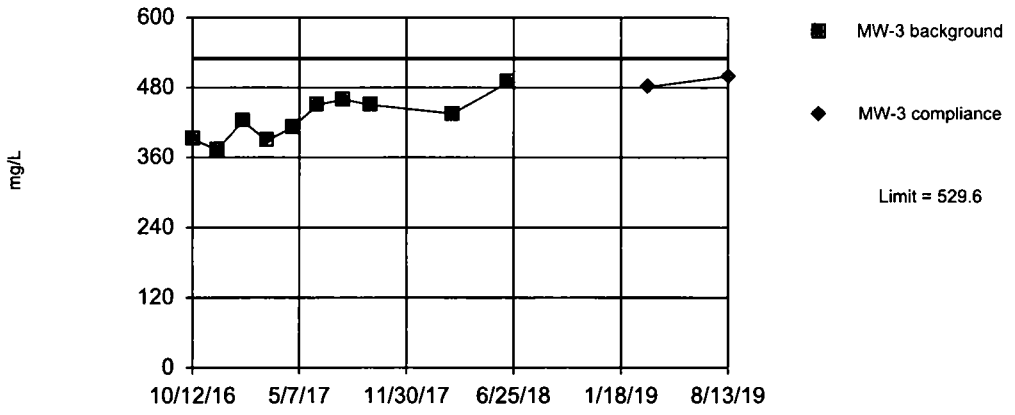
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=427.4, Std. Dev.=36.49, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.971, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:11 PM

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

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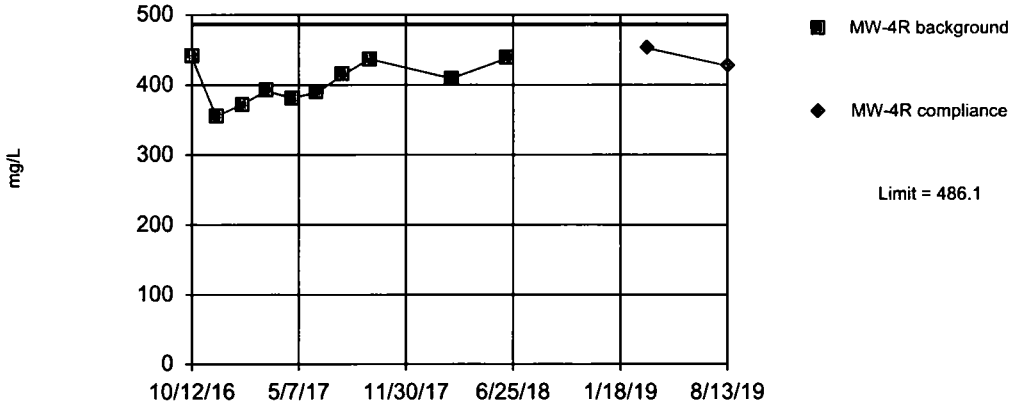
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=402.6, Std. Dev.=29.8, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.931, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:11 PM

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

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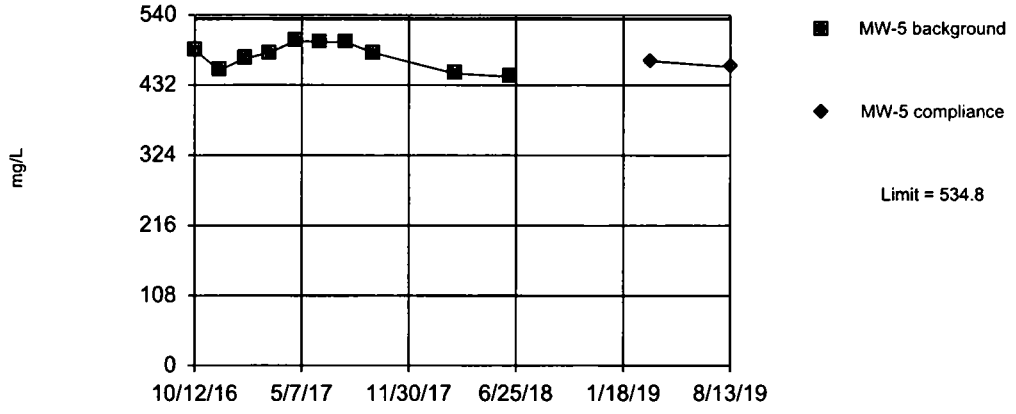
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=477, Std. Dev.=20.65, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8913, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:11 PM

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

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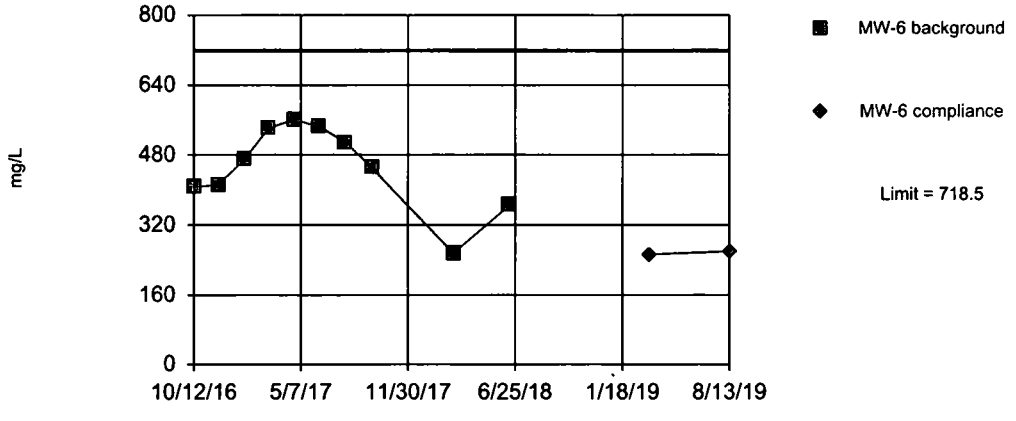
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=451.7, Std. Dev.=95.24, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:11 PM

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

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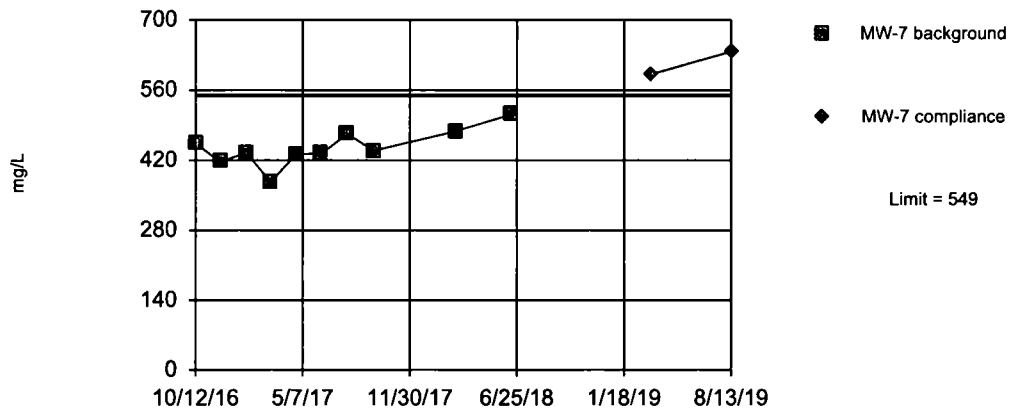
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=445, Std. Dev.=37.14, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9661, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:11 PM

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

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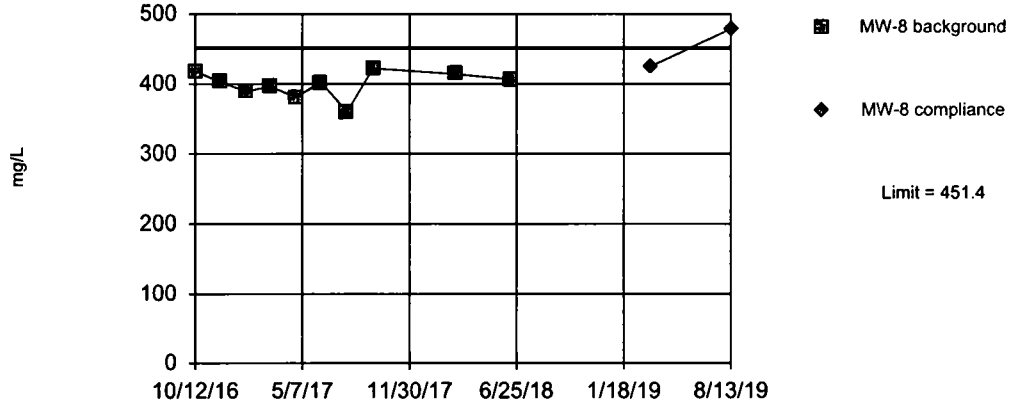
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=399.1, Std. Dev.=18.69, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9407, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:11 PM

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

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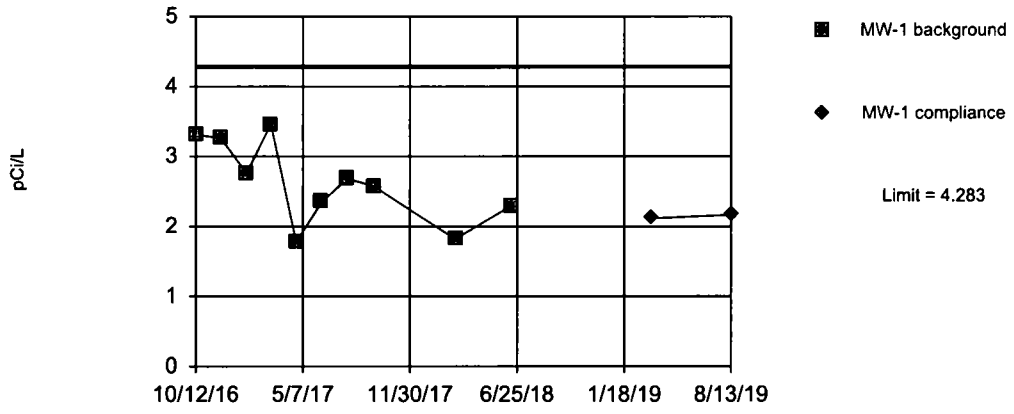
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.63, Std. Dev.=0.5903, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.937, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Radium Analysis Run 10/23/2019 4:11 PM

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

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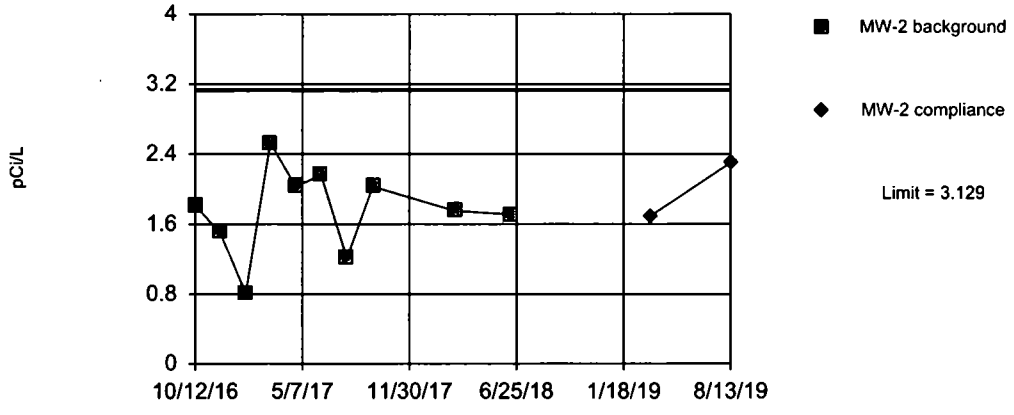
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.755, Std. Dev.=0.4903, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9723, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Radium Analysis Run 10/23/2019 4:11 PM

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

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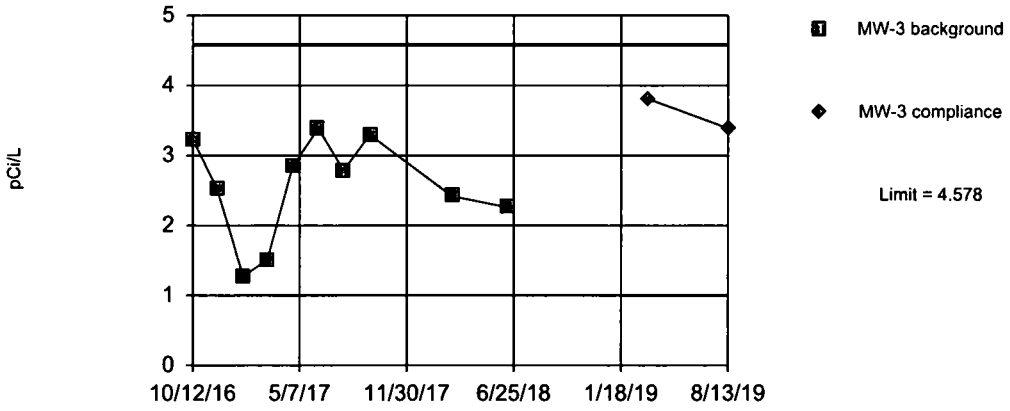
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.554, Std. Dev.=0.7226, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9177, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Radium Analysis Run 10/23/2019 4:11 PM

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

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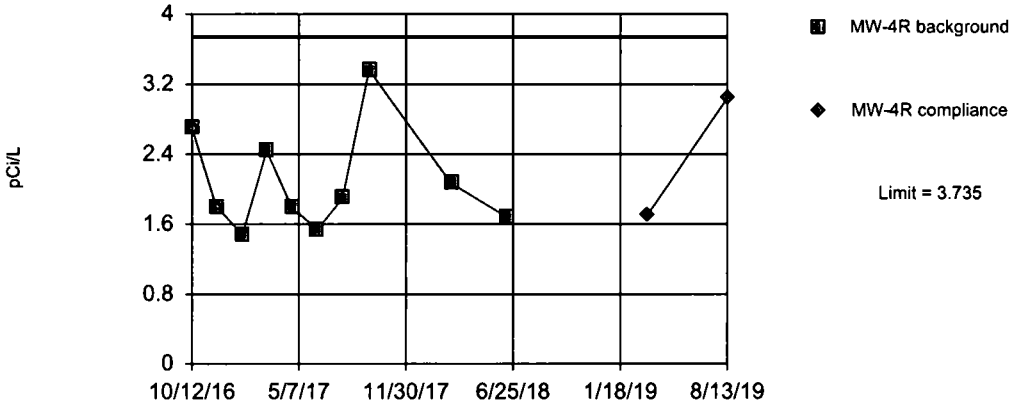
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.076, Std. Dev.=0.5924, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8741, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Radium Analysis Run 10/23/2019 4:11 PM

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

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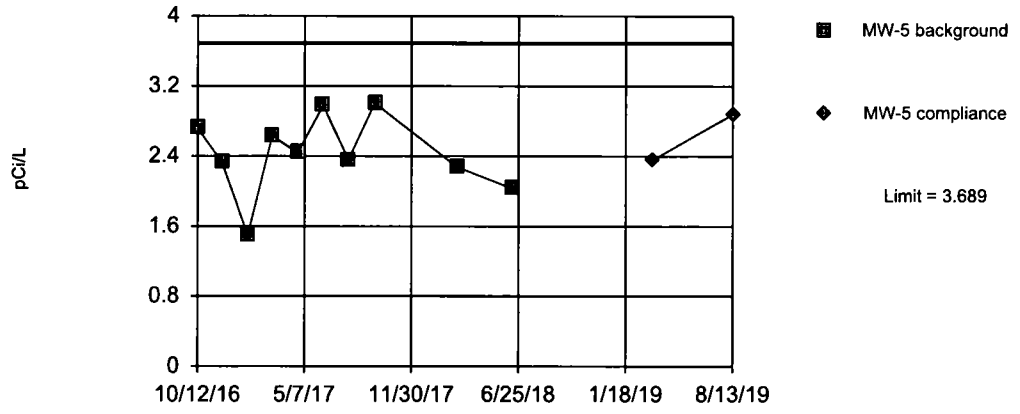
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.428, Std. Dev.=0.4504, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.945, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Radium Analysis Run 10/23/2019 4:11 PM

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

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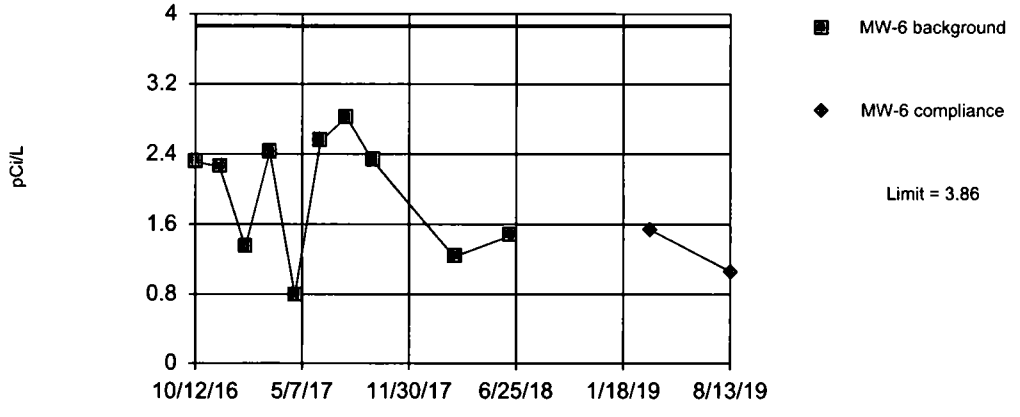
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.952, Std. Dev.=0.6812, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8997, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Radium Analysis Run 10/23/2019 4:11 PM

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

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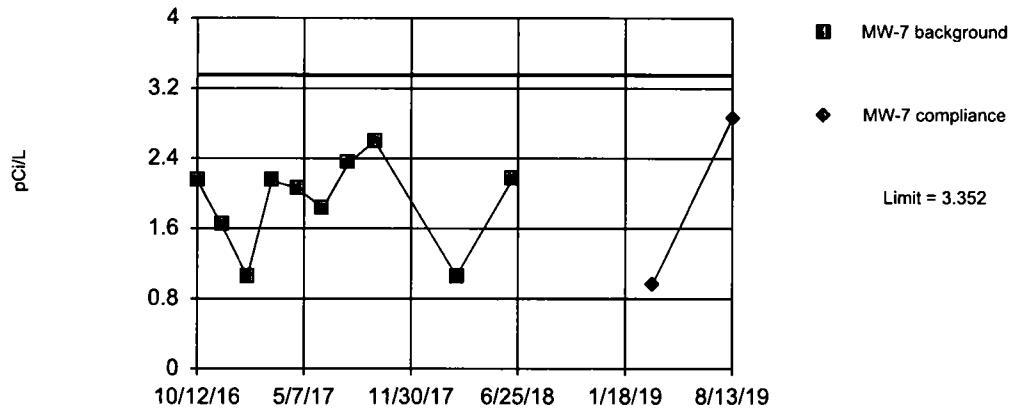
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.904, Std. Dev.=0.5171, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8953, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Radium Analysis Run 10/23/2019 4:11 PM

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

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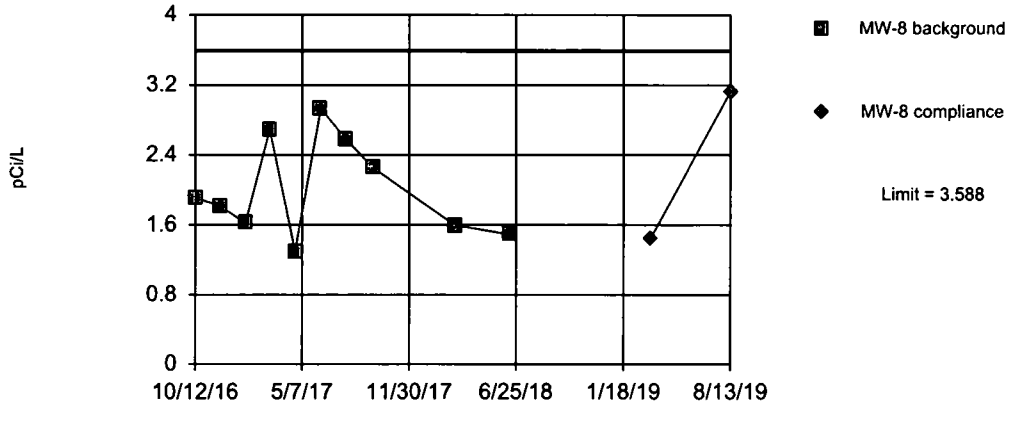
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=2.019, Std. Dev.=0.5602, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.929, critical = 0.781. Kappa = 2.801 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007632.

Constituent: Total Radium Analysis Run 10/23/2019 4:11 PM

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 10/23/2019, 4:49 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Arsenic [total] (ug/L)	MW-1	4.938	n/a	8/13/2019	3 8	No	12	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-2	4.938	n/a	8/13/2019	4	No	12	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-3	4.938	n/a	8/13/2019	3.2	No	12	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-5	4.938	n/a	8/13/2019	4.4	No	12	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-6	4.938	n/a	8/13/2019	2 8	No	12	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-7	4.938	n/a	8/13/2019	3.5	No	12	0	No	0.000...	Param 1 of 2
Arsenic [total] (ug/L)	MW-8	4.938	n/a	8/13/2019	2.5	No	12	0	No	0.000 ..	Param 1 of 2
Barium [total] (ug/L)	MW-1	143.1	n/a	8/13/2019	113	No	12	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-2	143.1	n/a	8/13/2019	112	No	12	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	**MW-3**	**143.1**	**n/a**	**8/13/2019**	**184**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Barium [total] (ug/L)	MW-5	143.1	n/a	8/13/2019	119	No	12	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-6	143.1	n/a	8/13/2019	61.2	No	12	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-7	143.1	n/a	8/13/2019	128	No	12	0	No	0.000...	Param 1 of 2
Barium [total] (ug/L)	MW-8	143.1	n/a	8/13/2019	142	No	12	0	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-1	488.4	n/a	8/13/2019	126	No	12	25	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-2	488.4	n/a	8/13/2019	138	No	12	25	No	0 000...	Param 1 of 2
Boron (ug/L)	MW-5	488.4	n/a	8/13/2019	125	No	12	25	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-7	488.4	n/a	8/13/2019	154	No	12	25	No	0.000...	Param 1 of 2
Boron (ug/L)	MW-8	488.4	n/a	8/13/2019	142	No	12	25	No	0.000...	Param 1 of 2
Calcium (mg/L)	**MW-1**	**95.54**	**n/a**	**8/13/2019**	**99.9**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	**MW-2**	**95.54**	**n/a**	**8/13/2019**	**121**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	**MW-3**	**95.54**	**n/a**	**8/13/2019**	**99.4**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	**MW-5**	**95.54**	**n/a**	**8/13/2019**	**98.7**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	MW-6	95.54	n/a	8/13/2019	36.8	No	12	0	No	0.000...	Param 1 of 2
Calcium (mg/L)	**MW-7**	**95.54**	**n/a**	**8/13/2019**	**113**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Calcium (mg/L)	MW-8	95.54	n/a	8/13/2019	93.3	No	12	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-1	45.65	n/a	8/13/2019	30.4	No	11	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-2	45.65	n/a	8/13/2019	18.1	No	11	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-3	45.65	n/a	8/13/2019	41.3	No	11	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-5	45.65	n/a	8/13/2019	35	No	11	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	MW-6	45.65	n/a	8/13/2019	19	No	11	0	No	0.000...	Param 1 of 2
Chloride (mg/L)	**MW-7**	**45.65**	**n/a**	**8/13/2019**	**87.2**	**Yes**	**11**	**0**	**No**	**0.000...**	Param 1 of 2
Chloride (mg/L)	MW-8	45.65	n/a	8/13/2019	36.3	No	11	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	**MW-1**	**1.027**	**n/a**	**8/13/2019**	**1.2**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Fluoride (mg/L)	MW-2	1.027	n/a	8/13/2019	0.99	No	12	0	No	0.000 ..	Param 1 of 2
Fluoride (mg/L)	MW-3	1.027	n/a	8/13/2019	0.66	No	12	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-5	1.027	n/a	8/13/2019	0.98	No	12	0	No	0.000 .	Param 1 of 2
Fluoride (mg/L)	MW-6	1.027	n/a	8/13/2019	0.42	No	12	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-7	1.027	n/a	8/13/2019	0.82	No	12	0	No	0.000...	Param 1 of 2
Fluoride (mg/L)	MW-8	1.027	n/a	8/13/2019	0.72	No	12	0	No	0.000 .	Param 1 of 2
Lithium (ug/L)	MW-1	32.2	n/a	8/13/2019	28 2	No	12	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-2	32.2	n/a	8/13/2019	31.7	No	12	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-3	32.2	n/a	8/13/2019	25	No	12	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-5	32.2	n/a	8/13/2019	24.8	No	12	0	No	0.000 .	Param 1 of 2
Lithium (ug/L)	MW-6	32.2	n/a	8/13/2019	11.6	No	12	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-7	32.2	n/a	8/13/2019	28.8	No	12	0	No	0.000...	Param 1 of 2
Lithium (ug/L)	MW-8	32.2	n/a	8/13/2019	24.4	No	12	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-1	9.579	n/a	8/13/2019	7.2	No	12	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-2	9.579	n/a	8/13/2019	7.6	No	12	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	**MW-3**	**9.579**	**n/a**	**8/13/2019**	**12.6**	**Yes**	**12**	**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 10/23/2019, 4:49 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Molybdenum (ug/L)	MW-5	9.579	n/a	8/13/2019	4.8	No	12	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-6	9.579	n/a	8/13/2019	4.7	No	12	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-7	9.579	n/a	8/13/2019	8.3	No	12	0	No	0.000...	Param 1 of 2
Molybdenum (ug/L)	MW-8	9.579	n/a	8/13/2019	6.8	No	12	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-1	7.995	6.371	8/13/2019	7	No	12	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-2	7.995	6.371	8/13/2019	6.9	No	12	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-3	7.995	6.371	8/13/2019	6.9	No	12	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-5	7.995	6.371	8/13/2019	7	No	12	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-6	7.995	6.371	8/13/2019	6.8	No	12	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-7	7.995	6.371	8/13/2019	6.9	No	12	0	No	0.000...	Param 1 of 2
pH (Std. Units)	MW-8	7.995	6.371	8/13/2019	6.8	No	12	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-1	9.628	n/a	8/13/2019	7.7	No	11	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	**MW-2**	**9.628**	**n/a**	**8/13/2019**	**13.9**	**Yes**	**11**	**0**	**No**	**0.000...**	Param 1 of 2
Selenium [total] (ug/L)	MW-3	9.628	n/a	8/13/2019	8	No	11	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-5	9.628	n/a	8/13/2019	6.7	No	11	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	MW-6	9.628	n/a	8/13/2019	2.6	No	11	0	No	0.000...	Param 1 of 2
Selenium [total] (ug/L)	**MW-7**	**9.628**	**n/a**	**8/13/2019**	**11.7**	**Yes**	**11**	**0**	**No**	**0.000...**	Param 1 of 2
Selenium [total] (ug/L)	**MW-8**	**9.628**	**n/a**	**8/13/2019**	**12.4**	**Yes**	**11**	**0**	**No**	**0.000...**	Param 1 of 2
Sulfate (mg/L)	MW-1	55.29	n/a	8/13/2019	35.7	No	12	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	**MW-2**	**55.29**	**n/a**	**8/13/2019**	**69.1**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Sulfate (mg/L)	**MW-3**	**55.29**	**n/a**	**8/13/2019**	**58.4**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Sulfate (mg/L)	MW-5	55.29	n/a	8/13/2019	41.2	No	12	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	MW-6	55.29	n/a	8/13/2019	12.7	No	12	0	No	0.000...	Param 1 of 2
Sulfate (mg/L)	**MW-7**	**55.29**	**n/a**	**8/13/2019**	**59.7**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Sulfate (mg/L)	MW-8	55.29	n/a	8/13/2019	41.1	No	12	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-1	489.2	n/a	8/13/2019	484	No	12	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-2**	**489.2**	**n/a**	**8/13/2019**	**602**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-3**	**489.2**	**n/a**	**8/13/2019**	**499**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-5	489.2	n/a	8/13/2019	460	No	12	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-6	489.2	n/a	8/13/2019	260	No	12	0	No	0.000...	Param 1 of 2
Total Dissolved Solids (mg/L)	**MW-7**	**489.2**	**n/a**	**8/13/2019**	**637**	**Yes**	**12**	**0**	**No**	**0.000...**	Param 1 of 2
Total Dissolved Solids (mg/L)	MW-8	489.2	n/a	8/13/2019	478	No	12	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-1	3.729	n/a	8/13/2019	2.17	No	12	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-2	3.729	n/a	8/13/2019	2.3	No	12	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-3	3.729	n/a	8/13/2019	3.39	No	12	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-5	3.729	n/a	8/13/2019	2.88	No	12	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-6	3.729	n/a	8/13/2019	1.06	No	12	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-7	3.729	n/a	8/13/2019	2.85	No	12	0	No	0.000...	Param 1 of 2
Total Radium (pCi/L)	MW-8	3.729	n/a	8/13/2019	3.12	No	12	0	No	0.000...	Param 1 of 2

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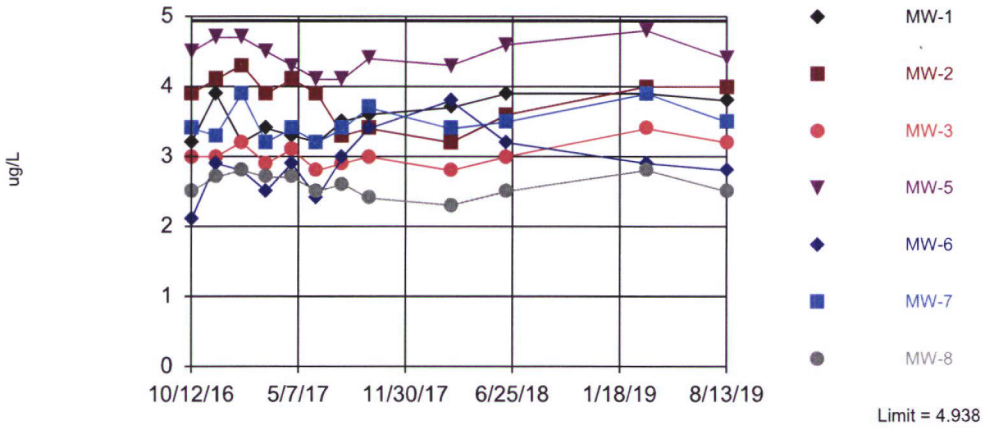
Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=3.958, Std. Dev.=0.3777, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9707, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:47 PM

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

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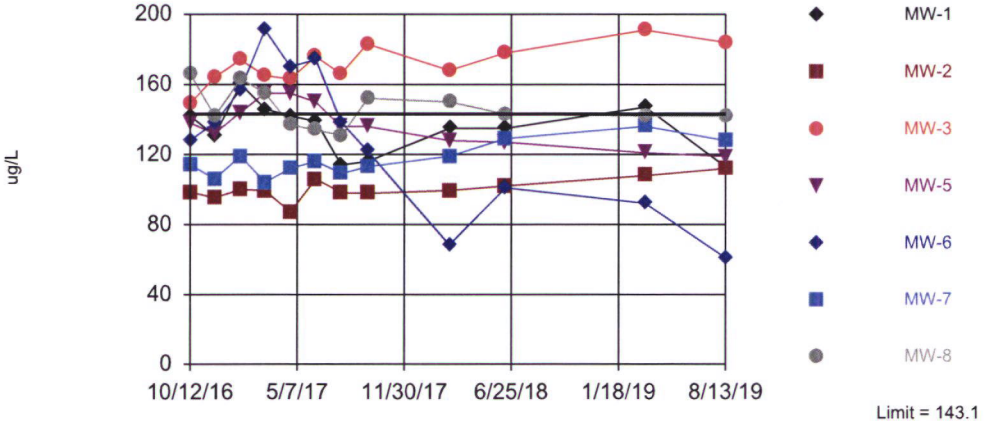
Exceeds Limit: MW-3

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=121.6, Std. Dev.=8.306, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9674, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Barium [total] Analysis Run 10/23/2019 4:47 PM

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

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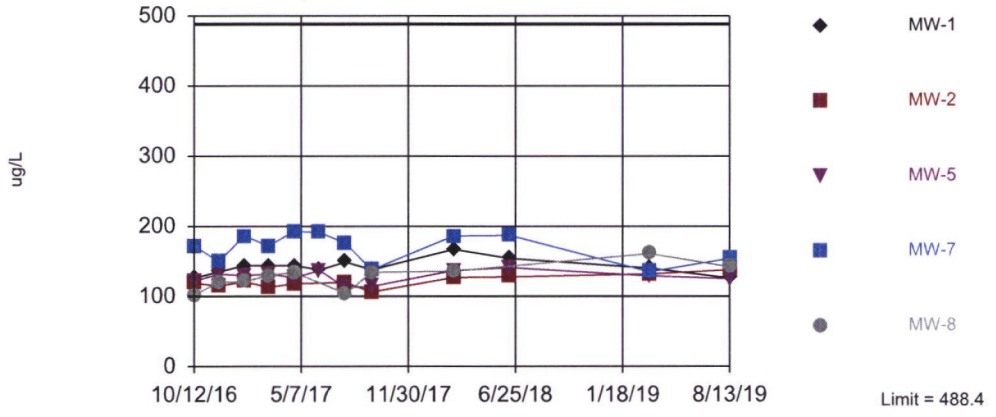
Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (after Aitchison`s Adjustment): Mean=172.8, Std. Dev.=121.6, n=12, 25% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9118, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 5 points to limit.

Constituent: Boron Analysis Run 10/23/2019 4:47 PM

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

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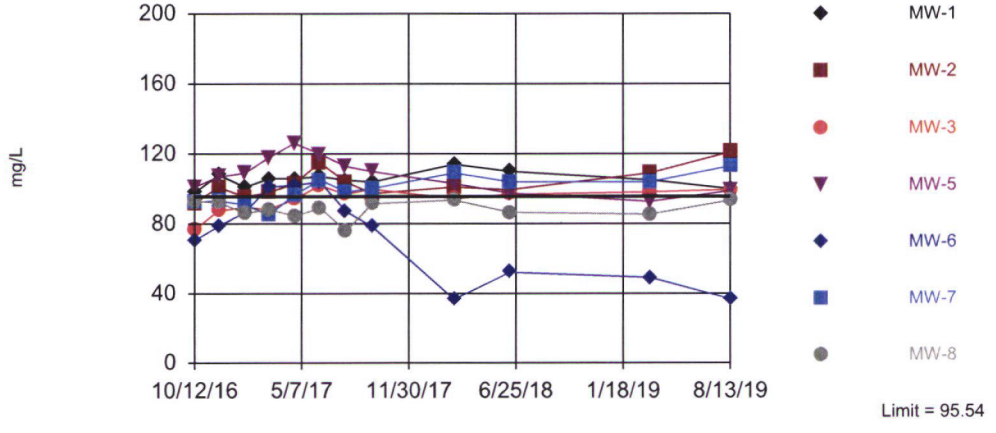
Exceeds Limit: MW-1, MW-2, MW-3, MW-5, MW-7

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=84.11, Std. Dev.=4.404, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9621, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Calcium Analysis Run 10/23/2019 4:47 PM

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

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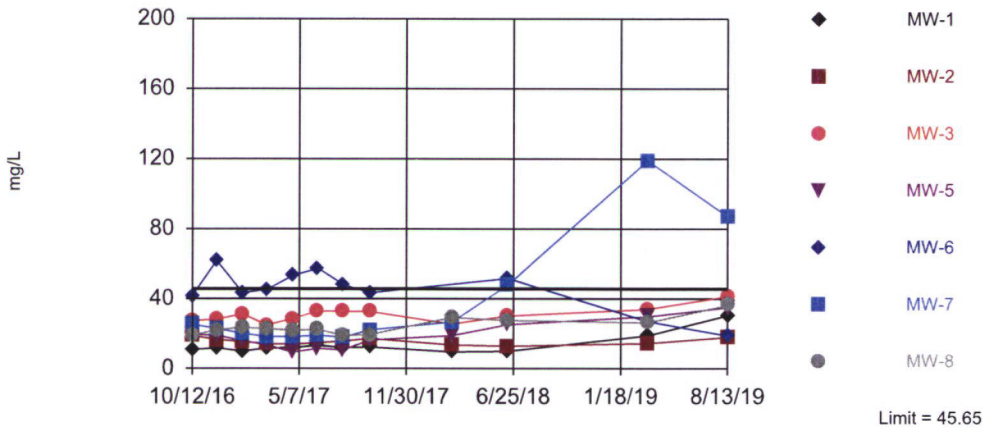
Exceeds Limit: MW-7

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=22.1, Std. Dev.=8.765, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8185, critical = 0.792. Kappa = 2.687 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Chloride Analysis Run 10/23/2019 4:47 PM

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

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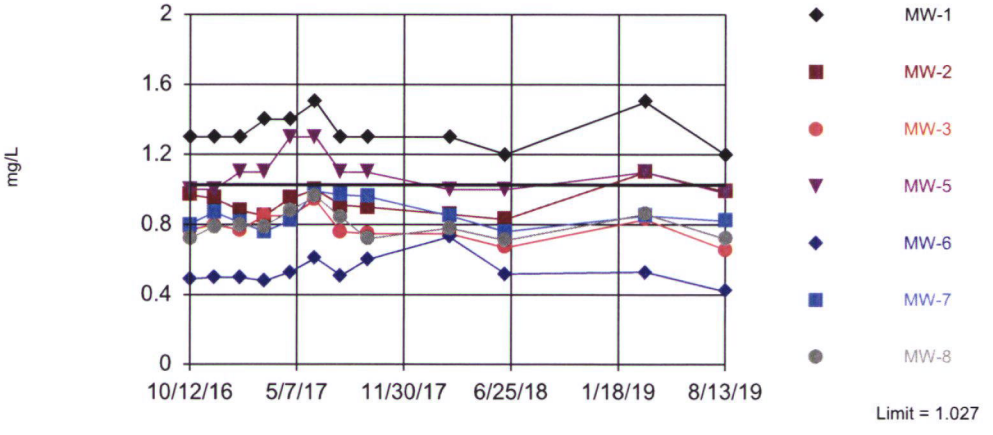
Exceeds Limit: MW-1

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=0.8508, Std. Dev.=0.06775, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9594, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Fluoride Analysis Run 10/23/2019 4:47 PM

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

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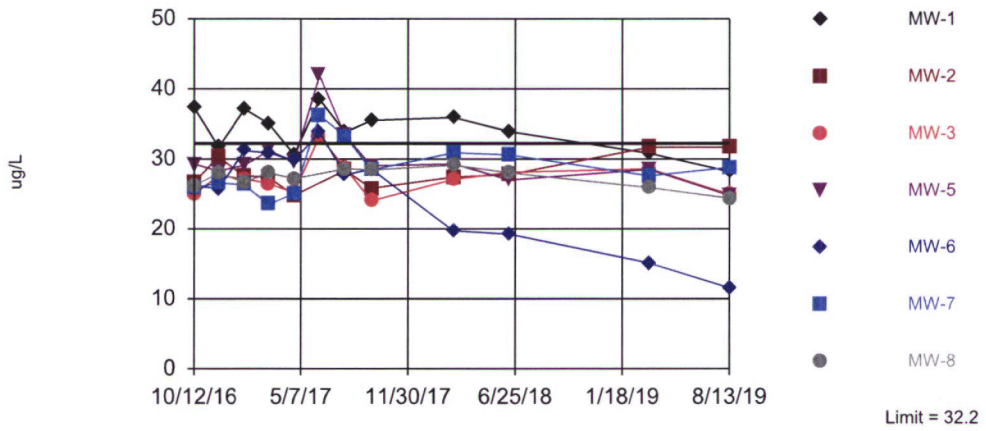
Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=25.76, Std. Dev.=2.481, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9631, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Lithium Analysis Run 10/23/2019 4:47 PM

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

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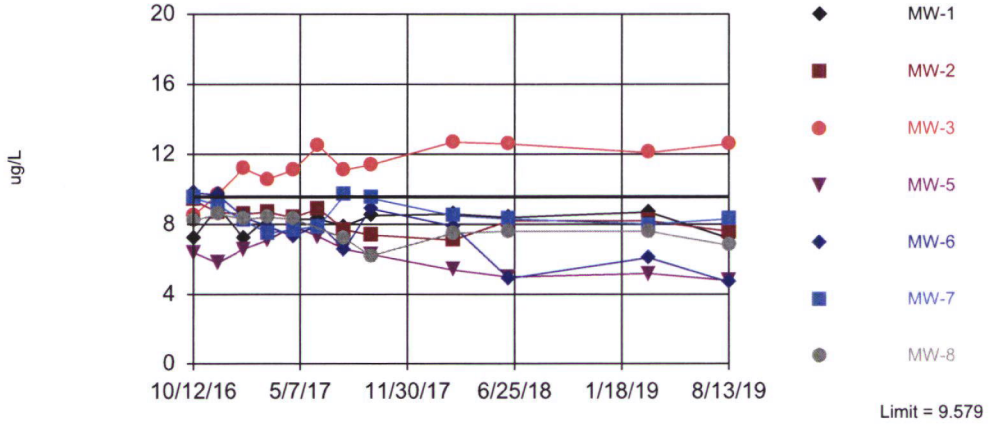
Exceeds Limit: MW-3

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=6.267, Std. Dev.=1.277, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9617, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Molybdenum Analysis Run 10/23/2019 4:47 PM

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

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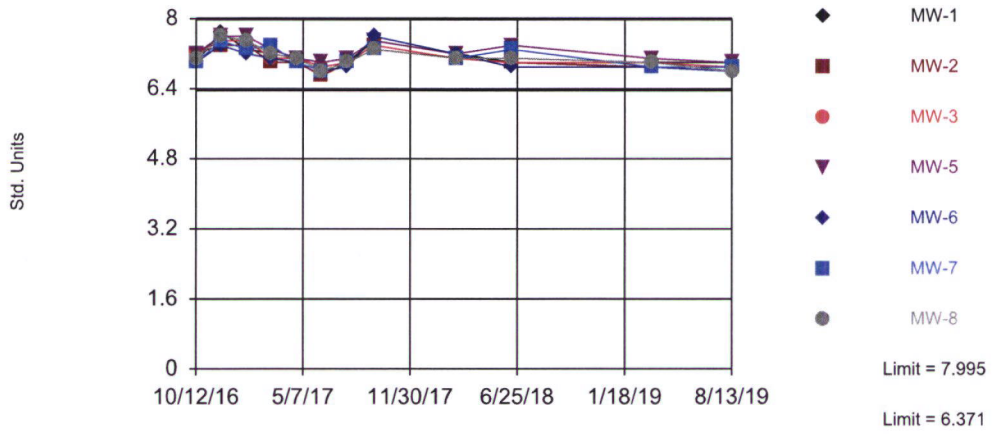
Within Limits

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.183, Std. Dev.=0.3129, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0003816. Comparing 7 points to limit.

Constituent: pH Analysis Run 10/23/2019 4:47 PM

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

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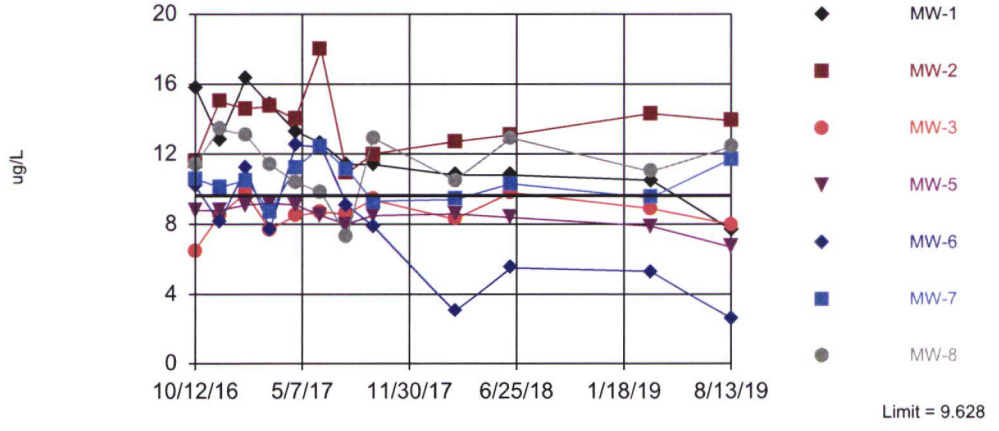
Exceeds Limit: MW-2, MW-7, MW-8

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=7.373, Std. Dev.=0.8392, n=11. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9058, critical = 0.792. Kappa = 2.687 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Selenium [total] Analysis Run 10/23/2019 4:47 PM

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

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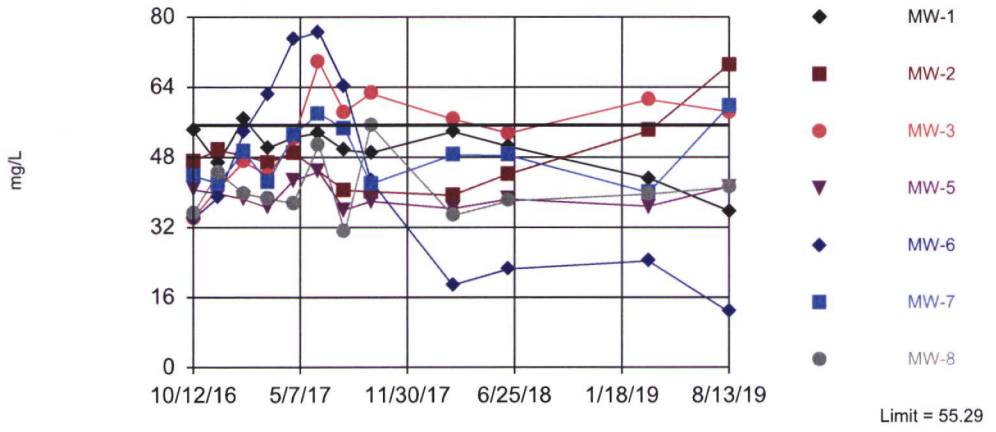
Exceeds Limit: MW-2, MW-3, MW-7

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=38.08, Std. Dev.=6.632, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8612, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Sulfate Analysis Run 10/23/2019 4:47 PM

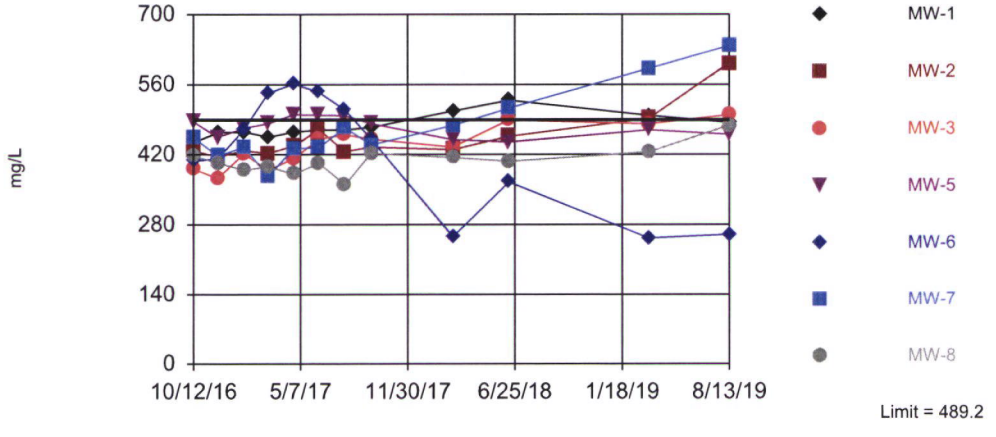
Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Exceeds Limit: MW-2, MW-3, MW-7

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=408.8, Std. Dev.=31.01, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9489, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

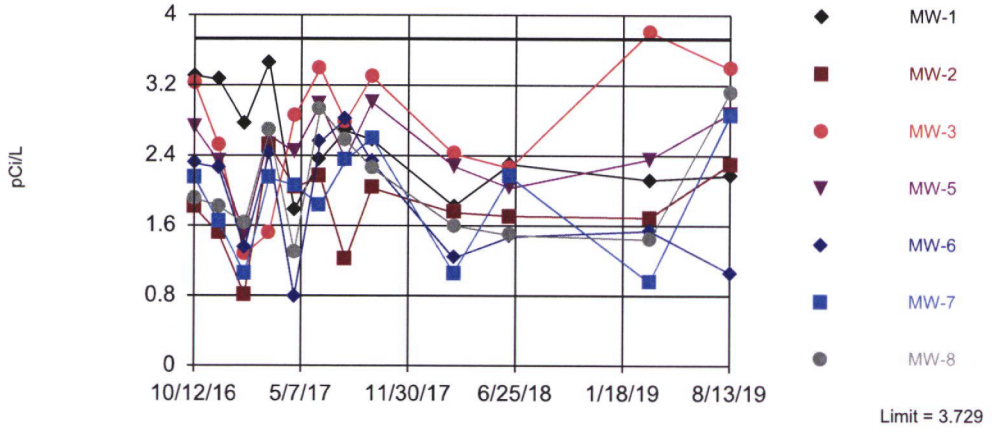
Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:47 PM

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

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary: Mean=2.125, Std. Dev.=0.618, n=12. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8718, critical = 0.805. Kappa = 2.595 (c=23, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002288. Individual comparison alpha = 0.0007632. Comparing 7 points to limit.

Constituent: Total Radium Analysis Run 10/23/2019 4:47 PM

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 10/23/2019, 4:35 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Arsenic [total] (ug/L)	MW-1	0.2624	34	35	No	12	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-2	-0.1284	-15	-35	No	12	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-3	0	7	35	No	12	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-4R (bg)	0	-2	-35	No	12	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-5	-0.01763	-5	-35	No	12	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-6	0.2742	22	35	No	12	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-7	0.07705	21	35	No	12	0	n/a	n/a	0.02	NP
Arsenic [total] (ug/L)	MW-8	-0.08441	-16	-35	No	12	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-1	-6.396	-20	-35	No	12	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-2	4.241	29	35	No	12	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	**MW-3**	**9.659**	**44**	**35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Barium [total] (ug/L)	MW-4R (bg)	5.973	29	35	No	12	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	**MW-5**	**-9.139**	**-38**	**-35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Barium [total] (ug/L)	MW-6	-34.87	-33	-35	No	12	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-7	8.804	33	35	No	12	0	n/a	n/a	0.02	NP
Barium [total] (ug/L)	MW-8	-7.261	-23	-35	No	12	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-1	4.643	13	35	No	12	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-2	7.449	29	31	No	11	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-4R (bg)	-0.7791	-3	-35	No	12	25	n/a	n/a	0.02	NP
Boron (ug/L)	MW-5	1.061	4	35	No	12	0	n/a	n/a	0.02	NP
Boron (ug/L)	MW-7	-4.621	-6	-35	No	12	0	n/a	n/a	0.02	NP
Boron (ug/L)	**MW-8**	**15.39**	**34**	**27**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	MW-1	0.7278	4	35	No	12	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-2	5.658	31	35	No	12	0	n/a	n/a	0.02	NP
Calcium (mg/L)	**MW-3**	**5.325**	**40**	**35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	MW-4R (bg)	0.7527	3	35	No	12	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-5	-6.245	-20	-35	No	12	0	n/a	n/a	0.02	NP
Calcium (mg/L)	MW-6	-18.43	-22	-35	No	12	0	n/a	n/a	0.02	NP
Calcium (mg/L)	**MW-7**	**7.284**	**43**	**35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	MW-8	-0.2318	-2	-35	No	12	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-1	2.246	24	35	No	12	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-2	-0.9651	-13	-31	No	11	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-3	3.418	30	35	No	12	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-4R (bg)	4.839	27	31	No	11	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-5	5.55	20	35	No	12	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-6	-7.97	-15	-31	No	11	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-7	10.22	22	35	No	12	0	n/a	n/a	0.02	NP
Chloride (mg/L)	MW-8	4.074	26	35	No	12	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-1	0	-8	-35	No	12	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-2	-0.01015	-3	-35	No	12	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-3	-0.03945	-25	-35	No	12	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-4R (bg)	0.02719	13	35	No	12	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-5	0	-9	-35	No	12	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-6	0.01455	16	35	No	12	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-7	0.001948	3	35	No	12	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	MW-8	-0.00...	-6	-35	No	12	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-1	-2.136	-22	-35	No	12	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-2	1.497	17	31	No	11	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-3	0.3502	3	35	No	12	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-4R (bg)	0.4861	10	35	No	12	0	n/a	n/a	0.02	NP

Trend Test

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 10/23/2019, 4:35 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Lithium (ug/L)	MW-5	-0.8076	-19	-35	No	12	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-6	-5.545	-34	-35	No	12	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-7	1.548	18	35	No	12	0	n/a	n/a	0.02	NP
Lithium (ug/L)	MW-8	0	0	31	No	11	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-1	0.1177	11	35	No	12	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	**MW-2**	**-0.6617**	**-38**	**-35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Molybdenum (ug/L)	**MW-3**	**1.336**	**44**	**35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Molybdenum (ug/L)	MW-4R (bg)	-0.09217	-1	-35	No	12	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-5	-0.7694	-31	-35	No	12	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	**MW-6**	**-1.768**	**-45**	**-35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Molybdenum (ug/L)	MW-7	-0.1152	-4	-35	No	12	0	n/a	n/a	0.02	NP
Molybdenum (ug/L)	MW-8	-0.5843	-25	-31	No	11	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-1	-0.08904	-19	-35	No	12	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-2	-0.09584	-26	-35	No	12	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-3	-0.1215	-34	-35	No	12	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-4R (bg)	-0.1144	-25	-35	No	12	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-5	-0.1232	-22	-35	No	12	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-6	-0.1112	-24	-35	No	12	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-7	-0.07034	-19	-35	No	12	0	n/a	n/a	0.02	NP
pH (Std. Units)	MW-8	-0.1496	-30	-35	No	12	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	**MW-1**	**-2.527**	**-56**	**-35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Selenium [total] (ug/L)	MW-2	-0.2357	-6	-35	No	12	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-3	0.2926	14	35	No	12	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-4R (bg)	-0.03895	-5	-31	No	11	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	**MW-5**	**-0.5763**	**-39**	**-35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Selenium [total] (ug/L)	**MW-6**	**-2.717**	**-36**	**-35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Selenium [total] (ug/L)	MW-7	0.1131	2	35	No	12	0	n/a	n/a	0.02	NP
Selenium [total] (ug/L)	MW-8	-0.2682	-10	-35	No	12	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-1	-4.031	-26	-35	No	12	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-2	-1.007	-1	-31	No	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-3	8.723	35	35	No	12	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-4R (bg)	-0.3464	-6	-35	No	12	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-5	-0.7472	-9	-35	No	12	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-6	-11.71	-18	-35	No	12	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-7	2.71	6	35	No	12	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	MW-8	0.521	4	35	No	12	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-1**	**19.8**	**50**	**35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	**MW-2**	**26.31**	**39**	**35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	**MW-3**	**44.77**	**47**	**35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	MW-4R (bg)	31.74	32	35	No	12	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-5	-7.449	-19	-35	No	12	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	MW-6	-85.99	-22	-35	No	12	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	**MW-7**	**72.2**	**44**	**35**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Total Dissolved Solids (mg/L)	MW-8	13.79	22	35	No	12	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-1	-0.4024	-34	-35	No	12	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-2	0.0717	3	35	No	12	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-3	0.3081	17	35	No	12	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-4R (bg)	0.09718	4	35	No	12	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-5	0.006573	1	35	No	12	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-6	-0.3357	-12	-35	No	12	0	n/a	n/a	0.02	NP

Trend Test

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 10/23/2019, 4:35 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Total Radium (pCi/L)	MW-7	0.1889	10	35	No	12	0	n/a	n/a	0.02	NP
Total Radium (pCi/L)	MW-8	-0.08835	-6	-35	No	12	0	n/a	n/a	0.02	NP

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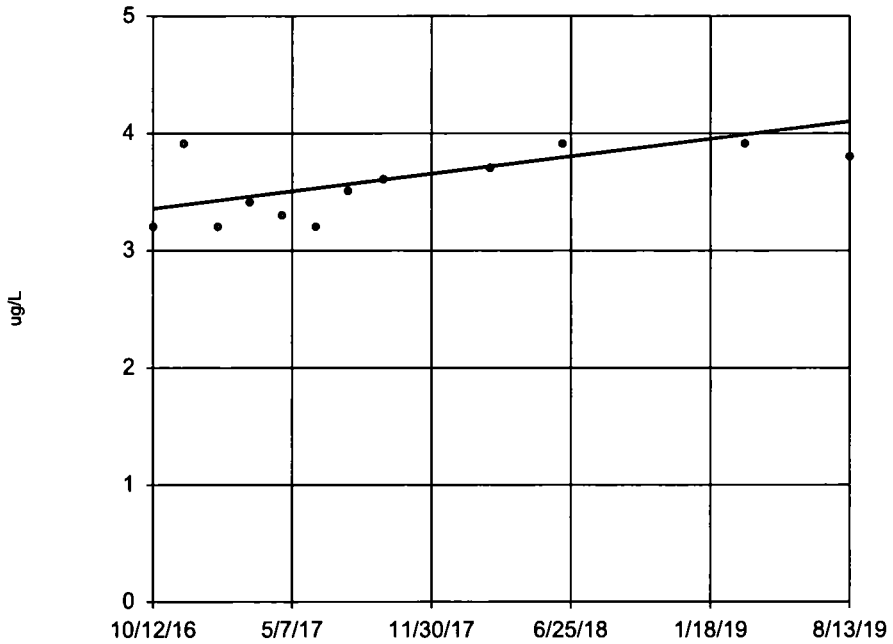
Sen's Slope Estimator

MW-1



n = 12

Slope = 0.2624 units per year.

Mann-Kendall statistic = 34 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:33 PM

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

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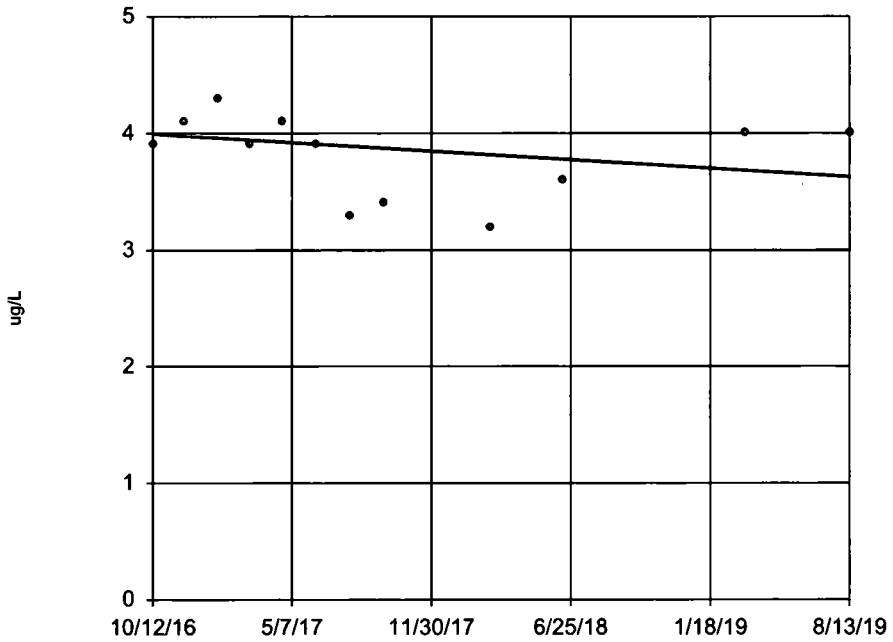
Sen's Slope Estimator

MW-2



n = 12

Slope = -0.1284 units per year.

Mann-Kendall statistic = -15 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:33 PM

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

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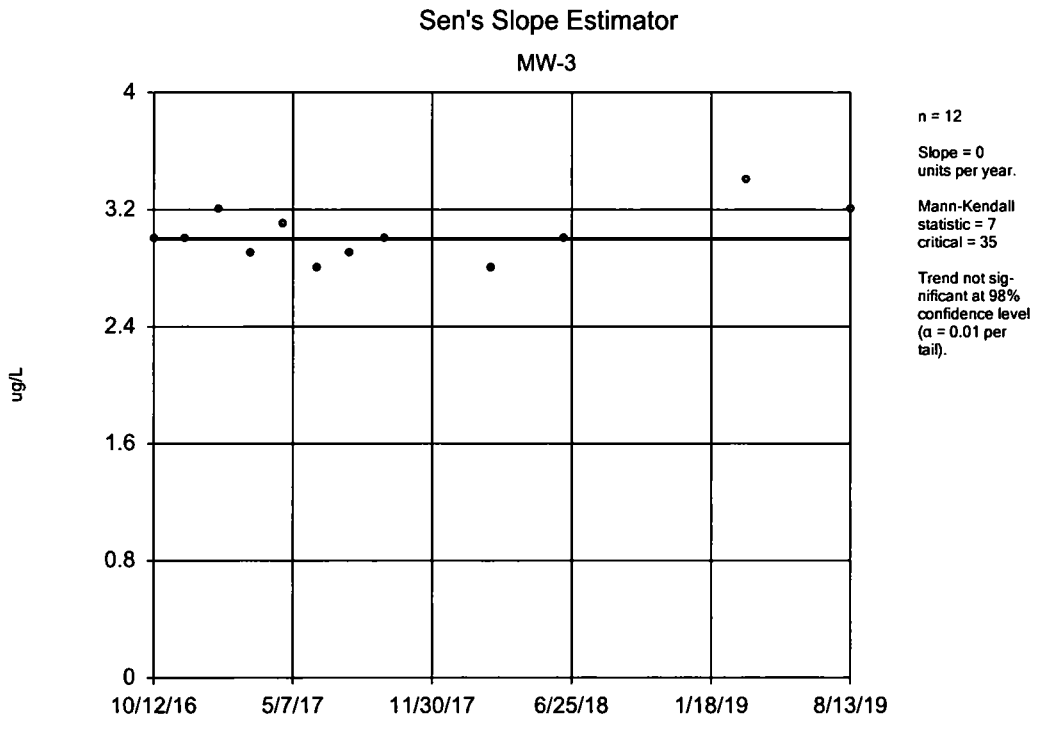

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:33 PM

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

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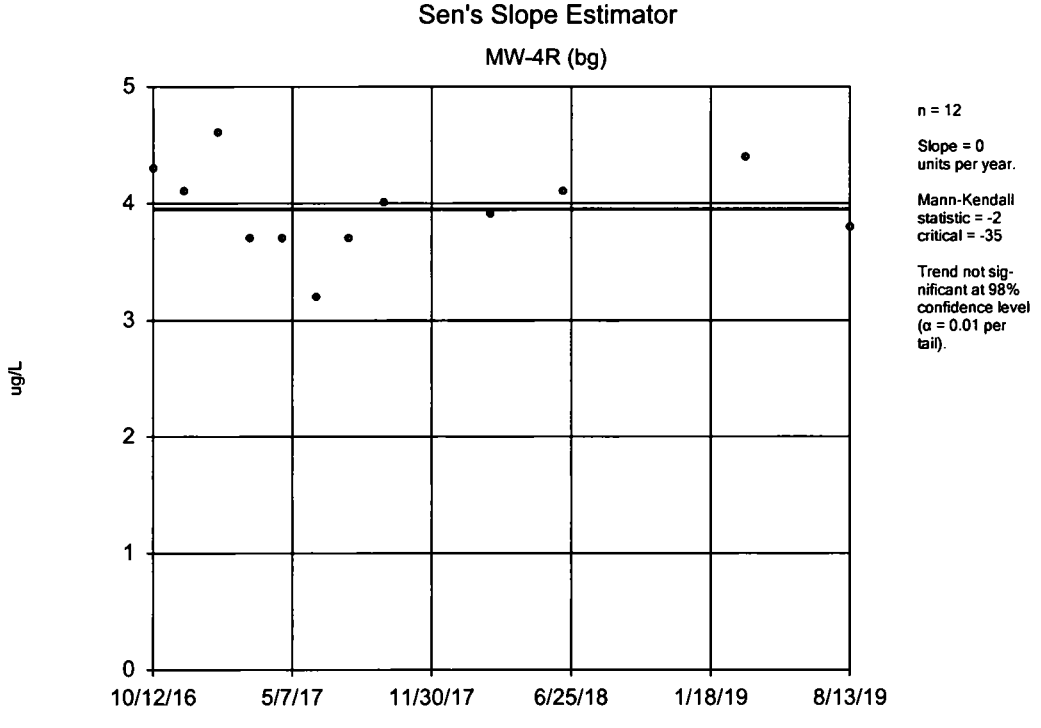

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:33 PM

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

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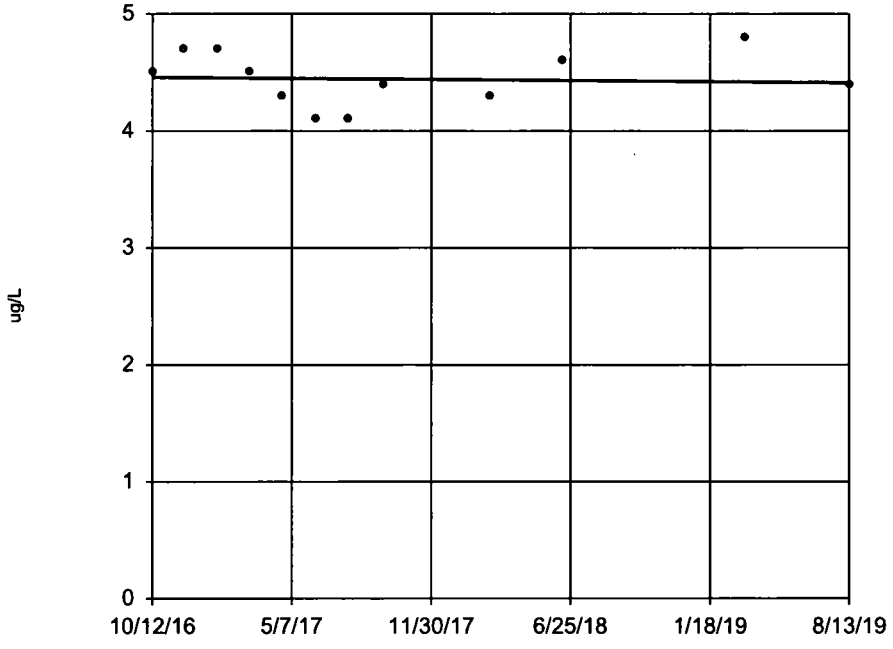
Sen's Slope Estimator

MW-5



n = 12

Slope = -0.01763 units per year.

Mann-Kendall statistic = -5
critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:33 PM

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

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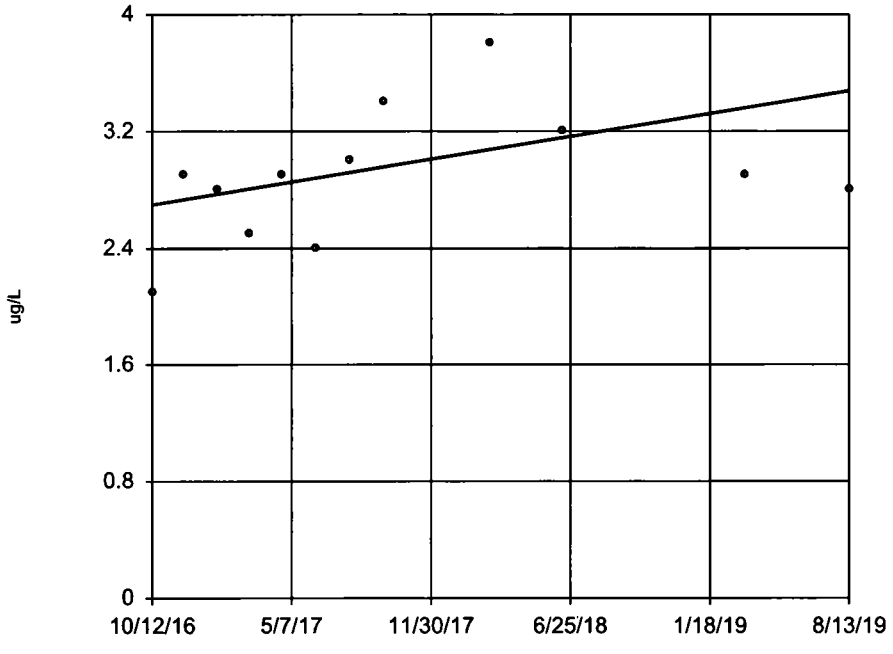
Sen's Slope Estimator

MW-6



n = 12

Slope = 0.2742 units per year.

Mann-Kendall statistic = 22
critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:33 PM

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

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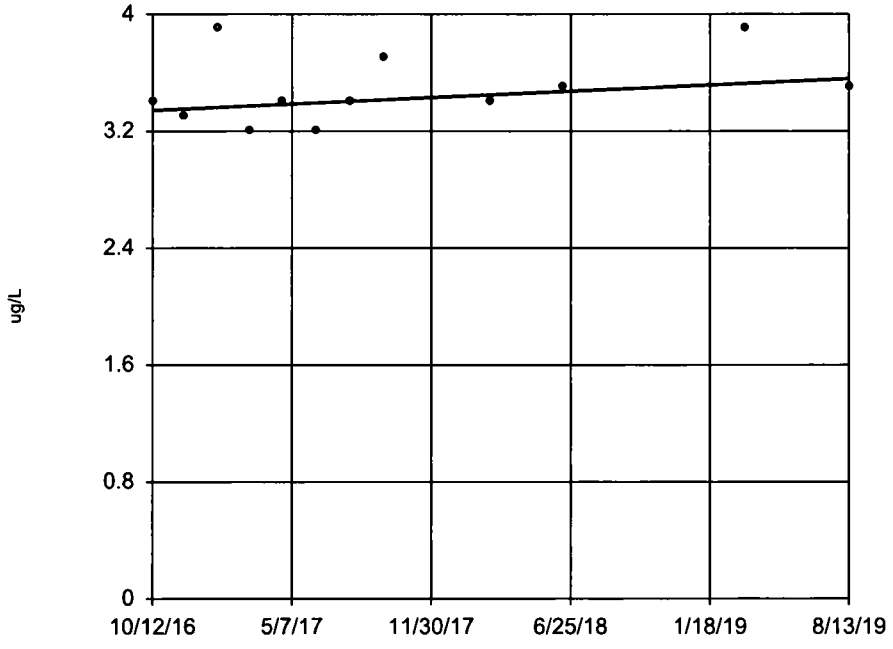
Sen's Slope Estimator

MW-7



n = 12

Slope = 0.07705 units per year.

Mann-Kendall statistic = 21 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:33 PM

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

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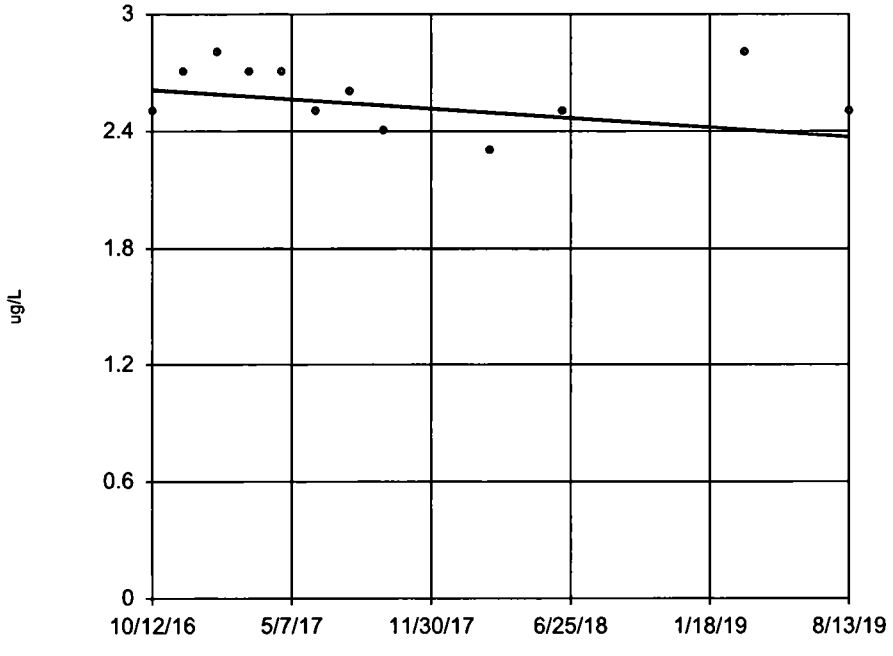
Sen's Slope Estimator

MW-8



n = 12

Slope = -0.08441 units per year.

Mann-Kendall statistic = -16 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Arsenic [total] Analysis Run 10/23/2019 4:33 PM

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

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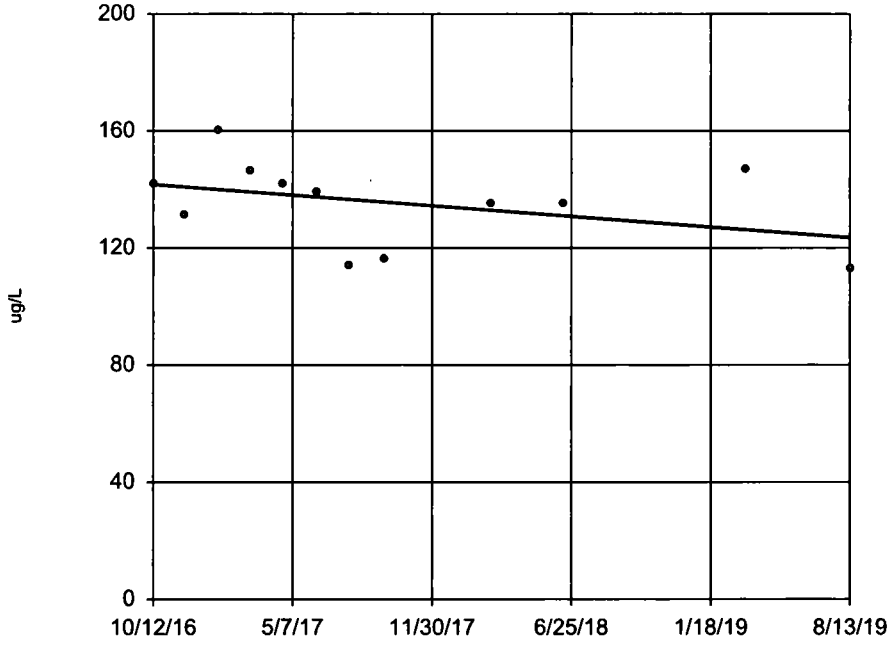
Sen's Slope Estimator

MW-1



n = 12

Slope = -6.396 units per year.

Mann-Kendall statistic = -20 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Barium [total] Analysis Run 10/23/2019 4:33 PM

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

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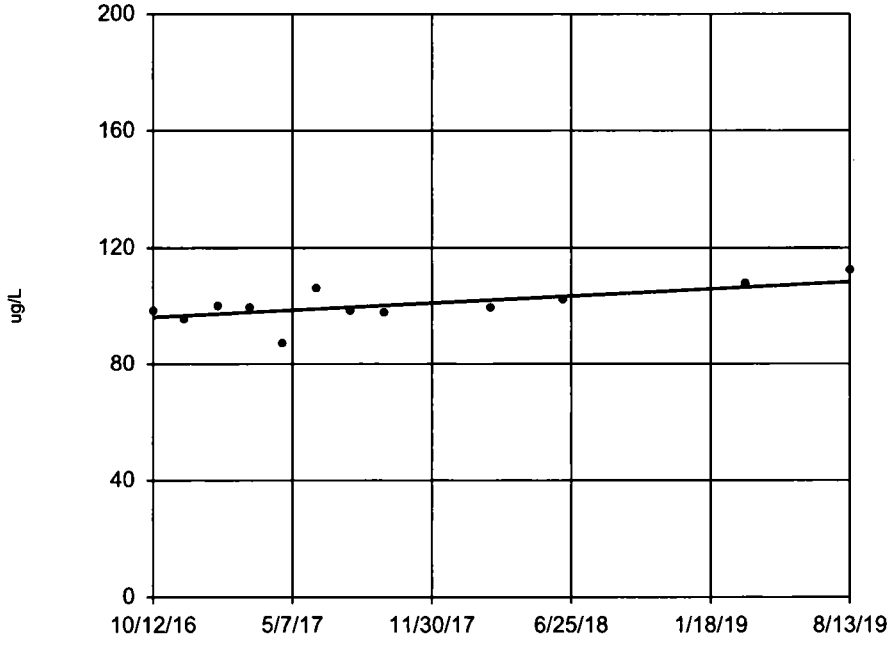
Sen's Slope Estimator

MW-2



n = 12

Slope = 4.241 units per year.

Mann-Kendall statistic = 29 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Barium [total] Analysis Run 10/23/2019 4:33 PM

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

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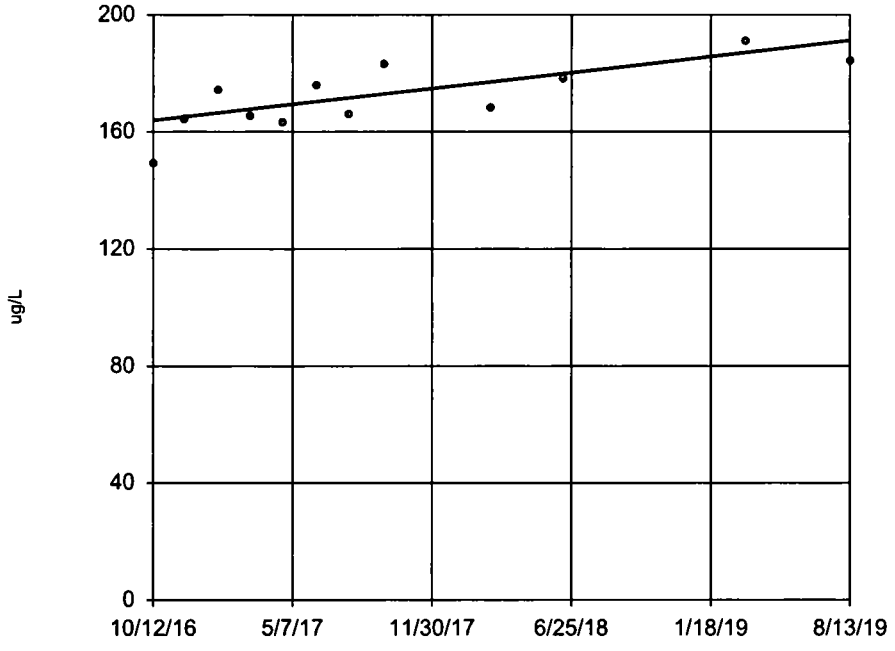
Sen's Slope Estimator

MW-3



n = 12

Slope = 9.659 units per year.

Mann-Kendall statistic = 44 critical = 35

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Barium [total] Analysis Run 10/23/2019 4:33 PM

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

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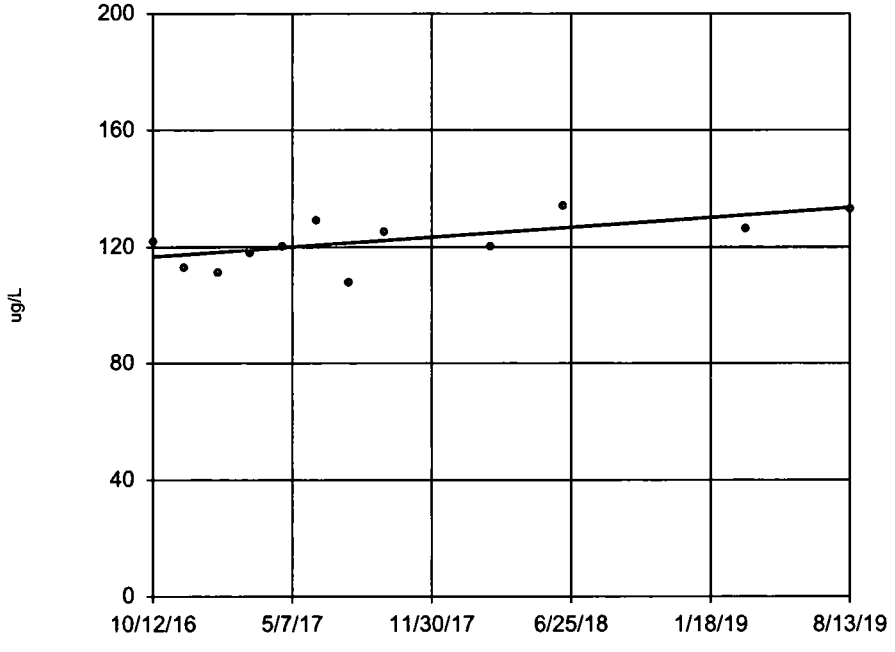
Sen's Slope Estimator

MW-4R (bg)



n = 12

Slope = 5.973 units per year.

Mann-Kendall statistic = 29 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

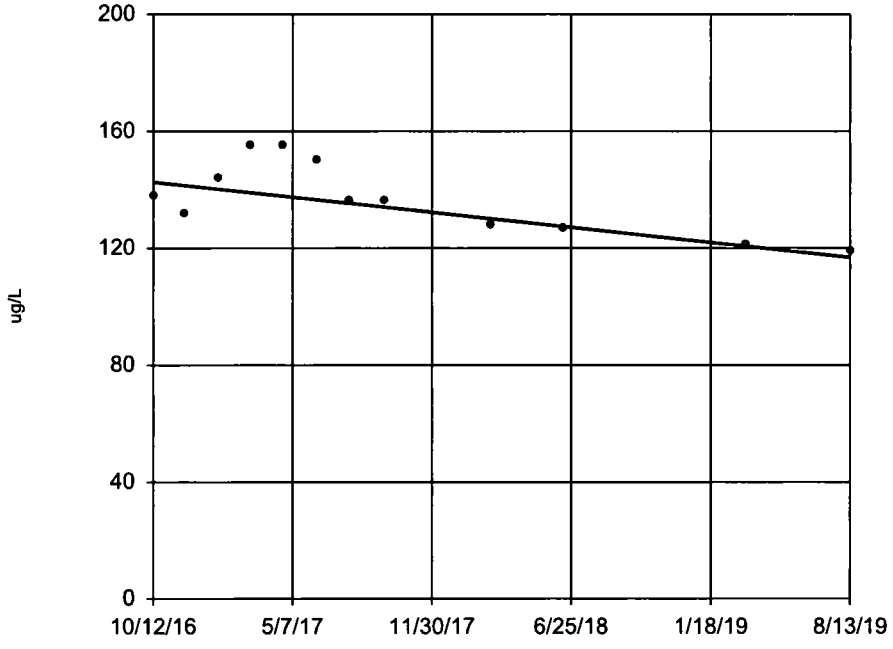
Constituent: Barium [total] Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-5



n = 12

Slope = -9.139 units per year.

Mann-Kendall statistic = -38 critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

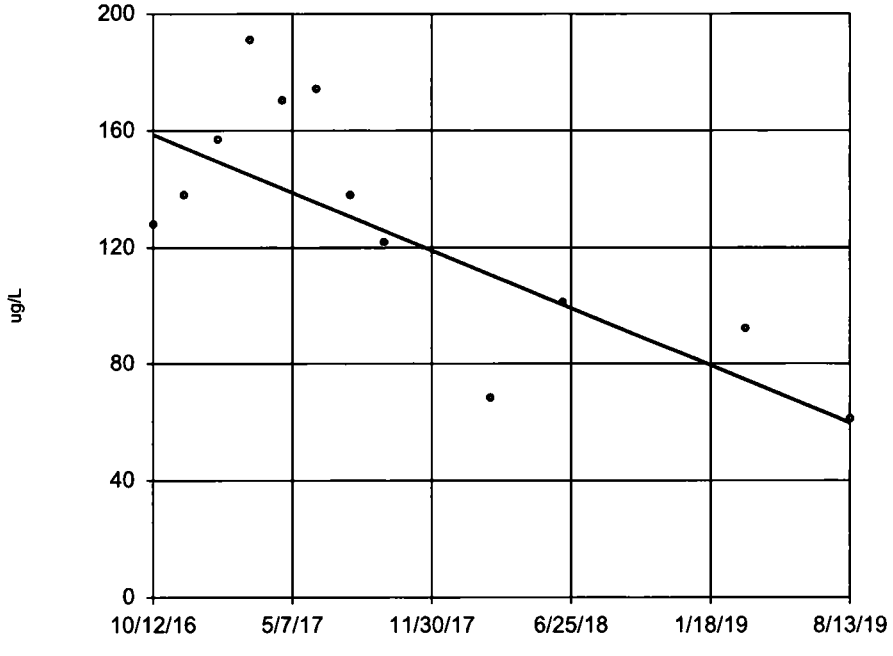
Constituent: Barium [total] Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-6



n = 12

Slope = -34.87 units per year.

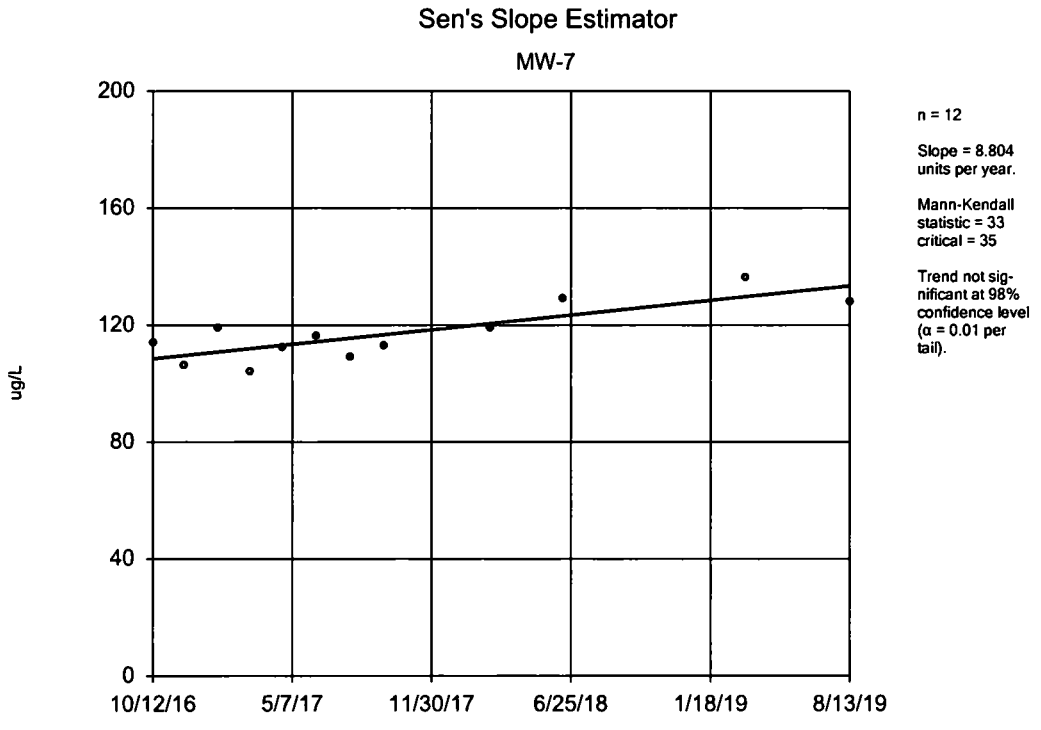
Mann-Kendall statistic = -33 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Barium [total] Analysis Run 10/23/2019 4:33 PM

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

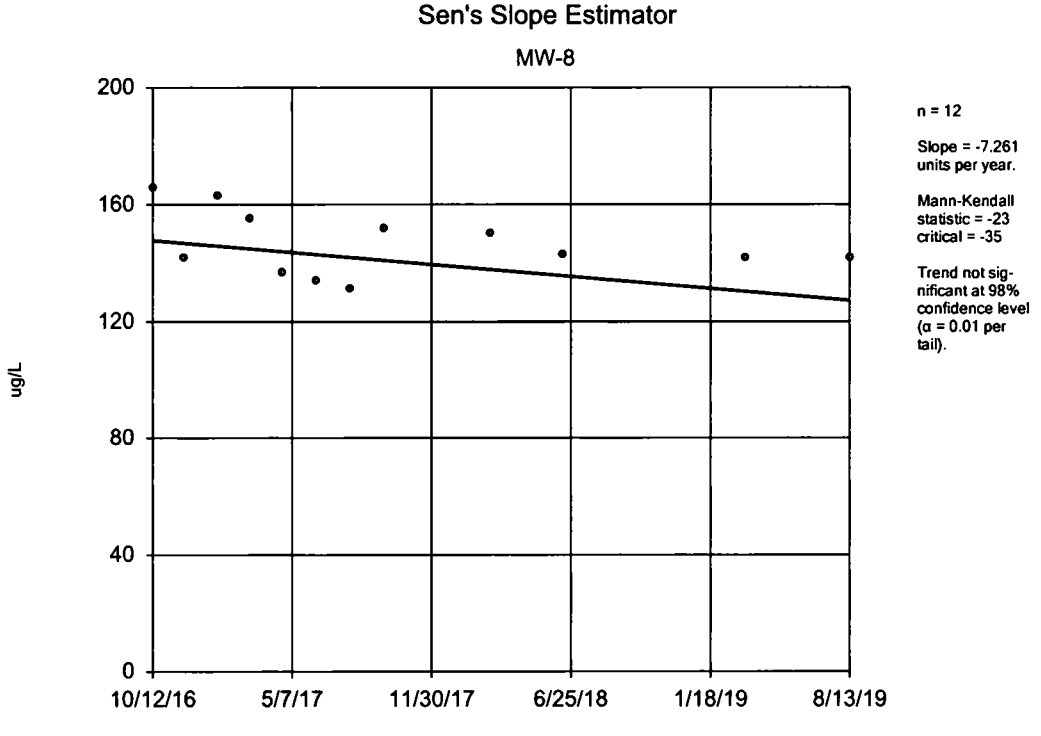
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Barium [total] Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



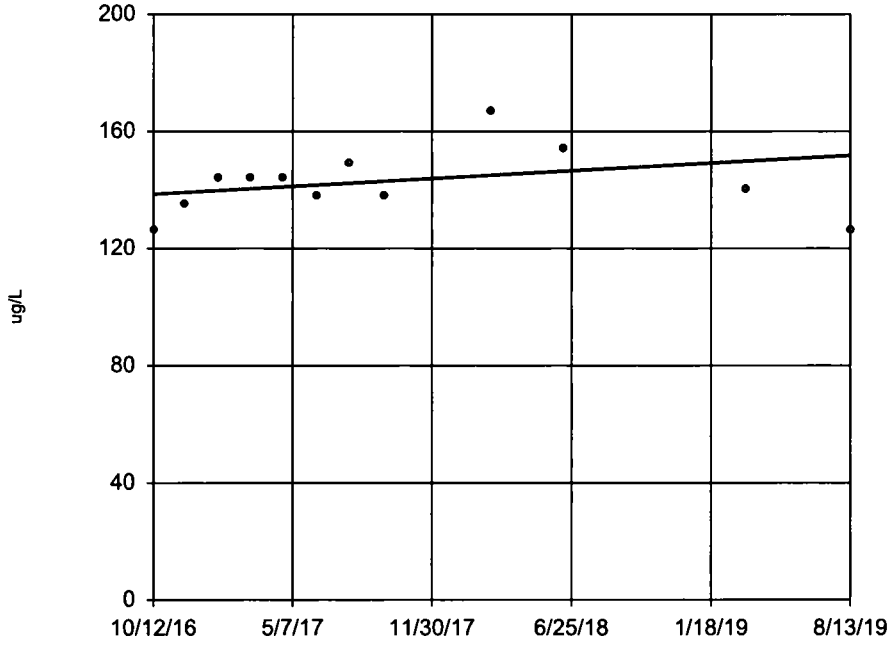
Constituent: Barium [total] Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-1



n = 12

Slope = 4.643 units per year.

Mann-Kendall statistic = 13 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

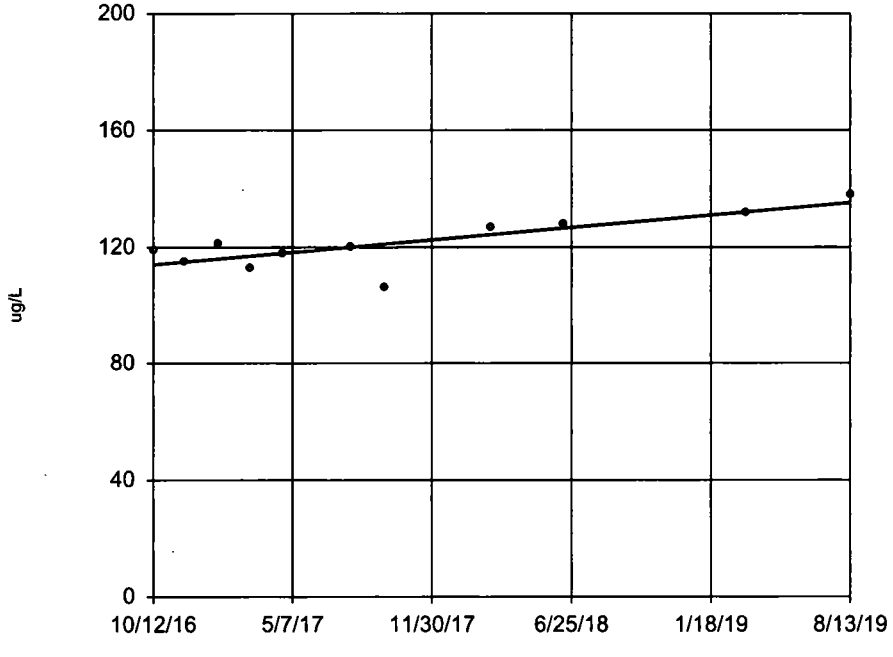
Constituent: Boron Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-2



n = 11

Slope = 7.449 units per year.

Mann-Kendall statistic = 29 critical = 31

Trend not significant at 98% confidence level (α = 0.01 per tail).

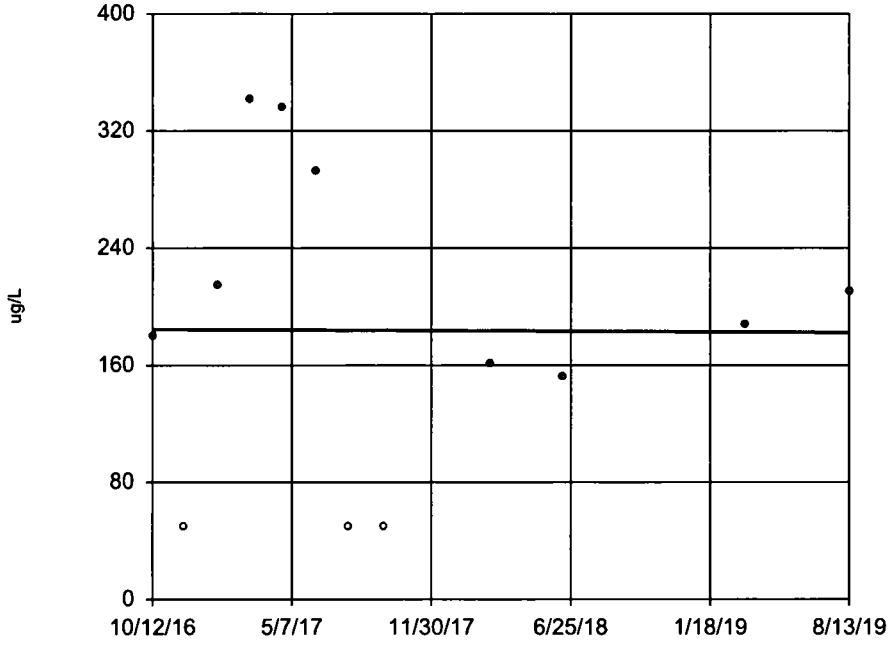
Constituent: Boron Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-4R (bg)



n = 12

Slope = -0.7791 units per year.

Mann-Kendall statistic = -3 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

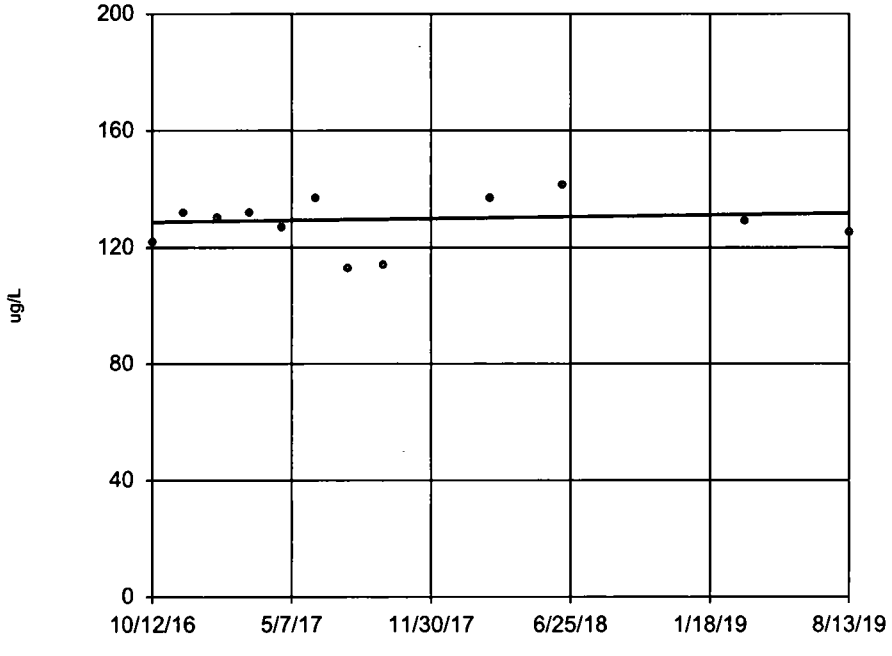
Constituent: Boron Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-5



n = 12

Slope = 1.061 units per year.

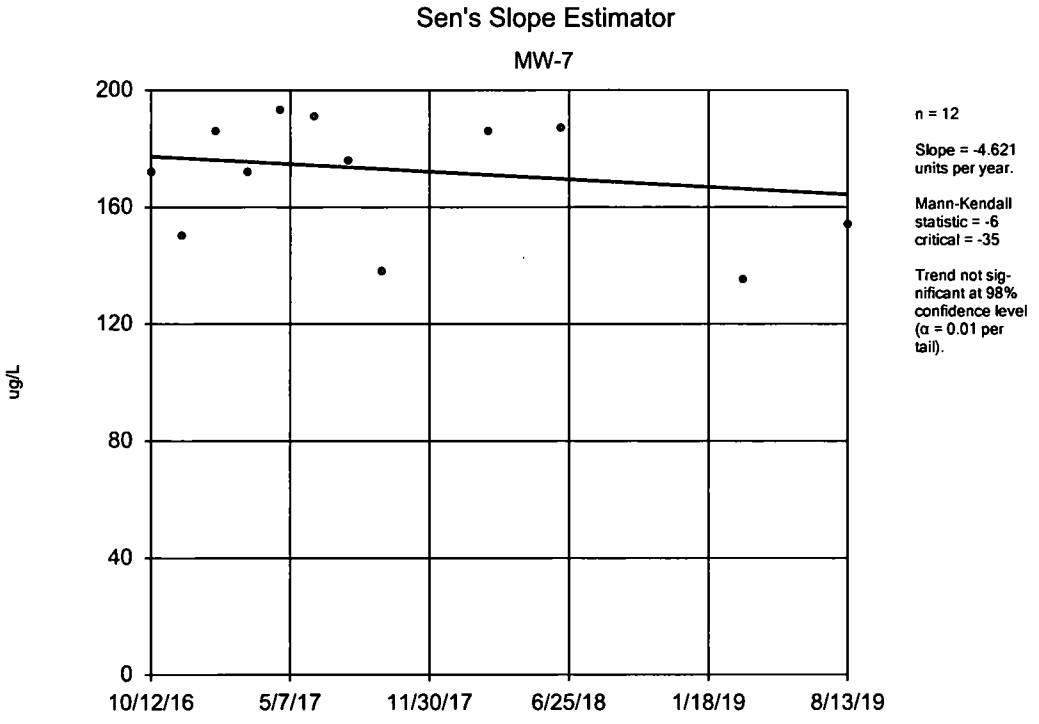
Mann-Kendall statistic = 4 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Boron Analysis Run 10/23/2019 4:33 PM

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

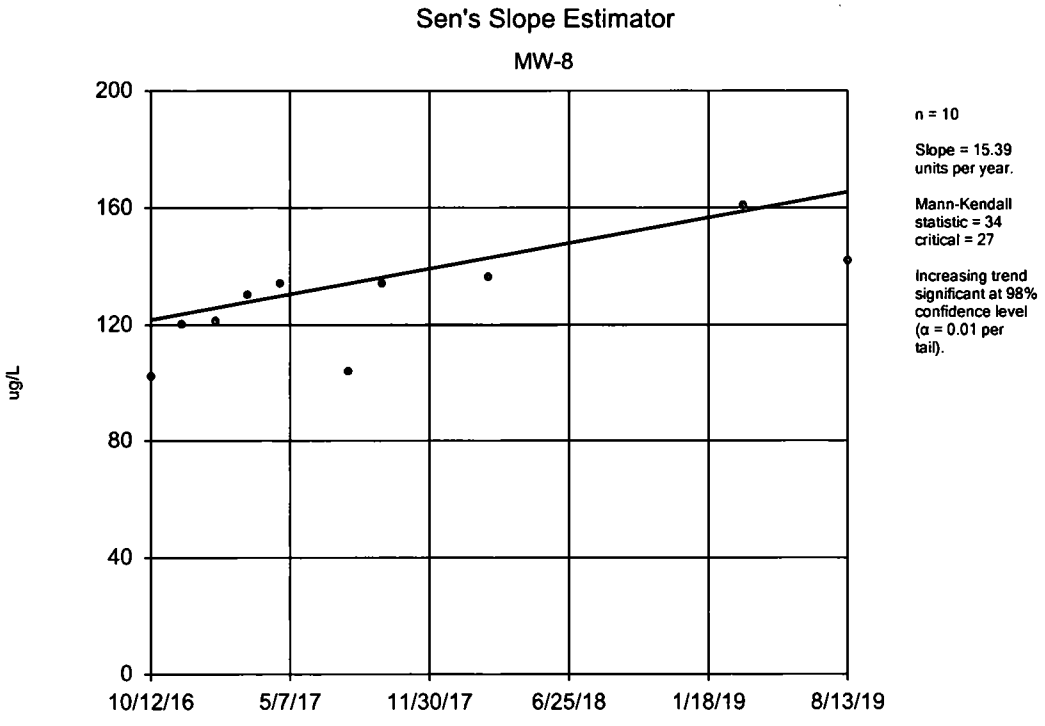
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Boron Analysis Run 10/23/2019 4:33 PM

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

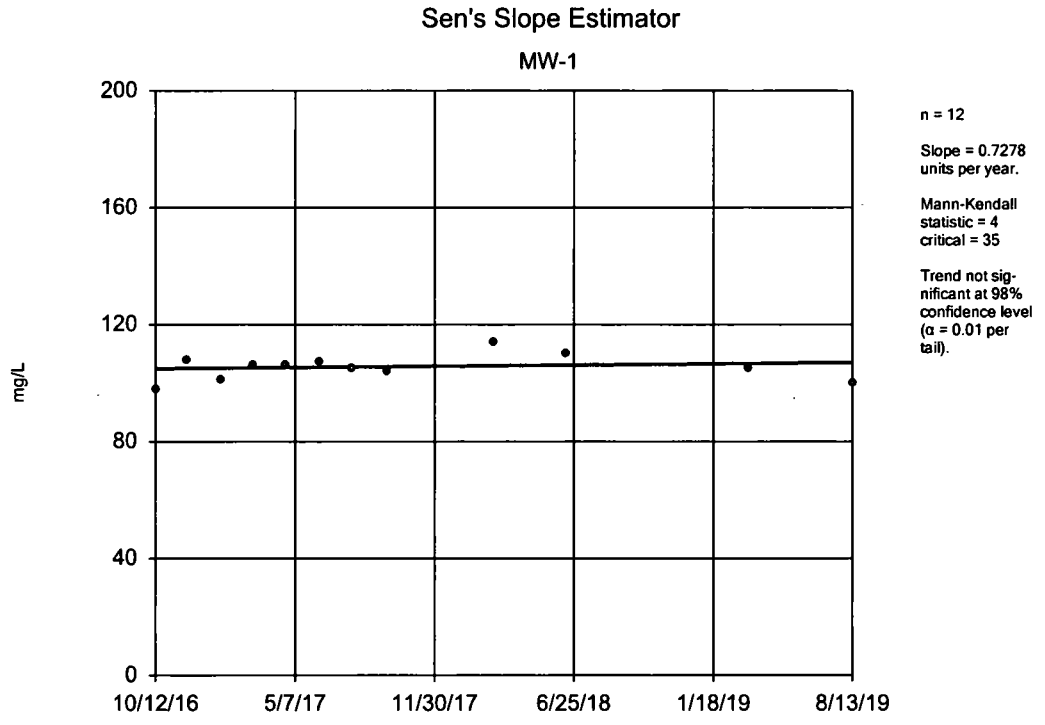
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Boron Analysis Run 10/23/2019 4:33 PM

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

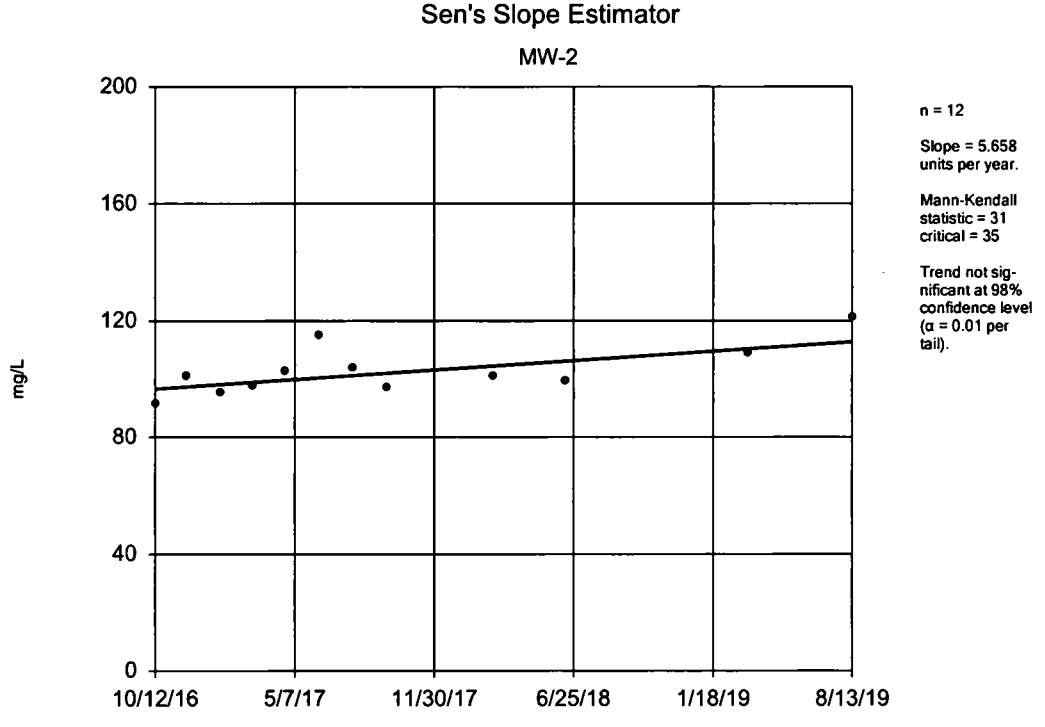
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Calcium Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



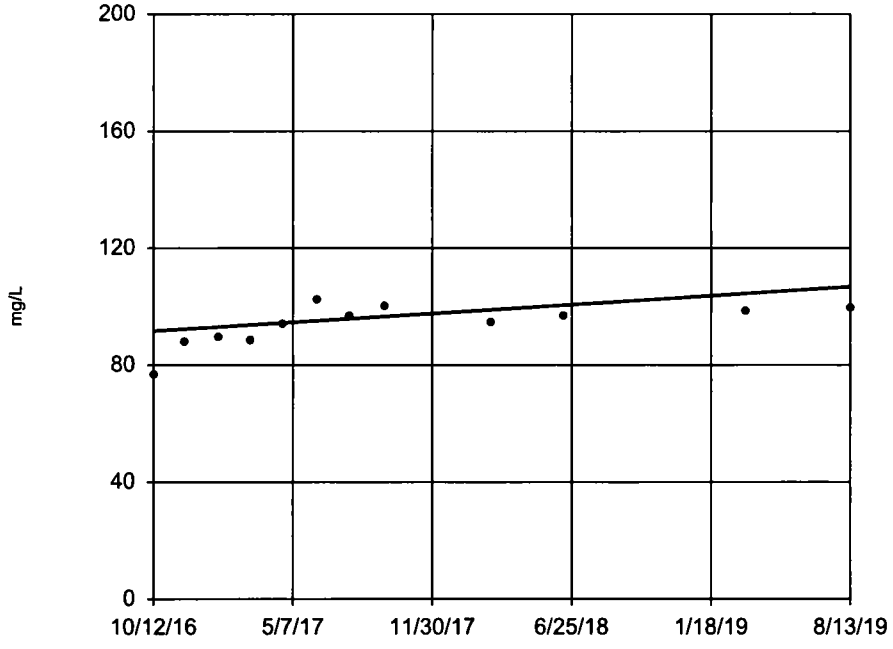
Constituent: Calcium Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-3



n = 12

Slope = 5.325 units per year.

Mann-Kendall statistic = 40 critical = 35

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

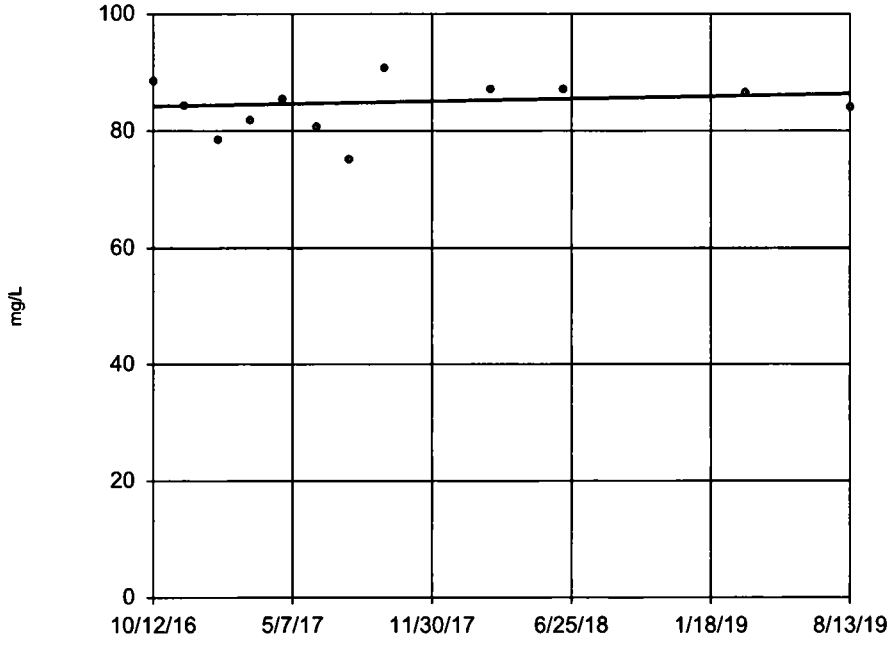
Constituent: Calcium Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-4R (bg)



n = 12

Slope = 0.7527 units per year.

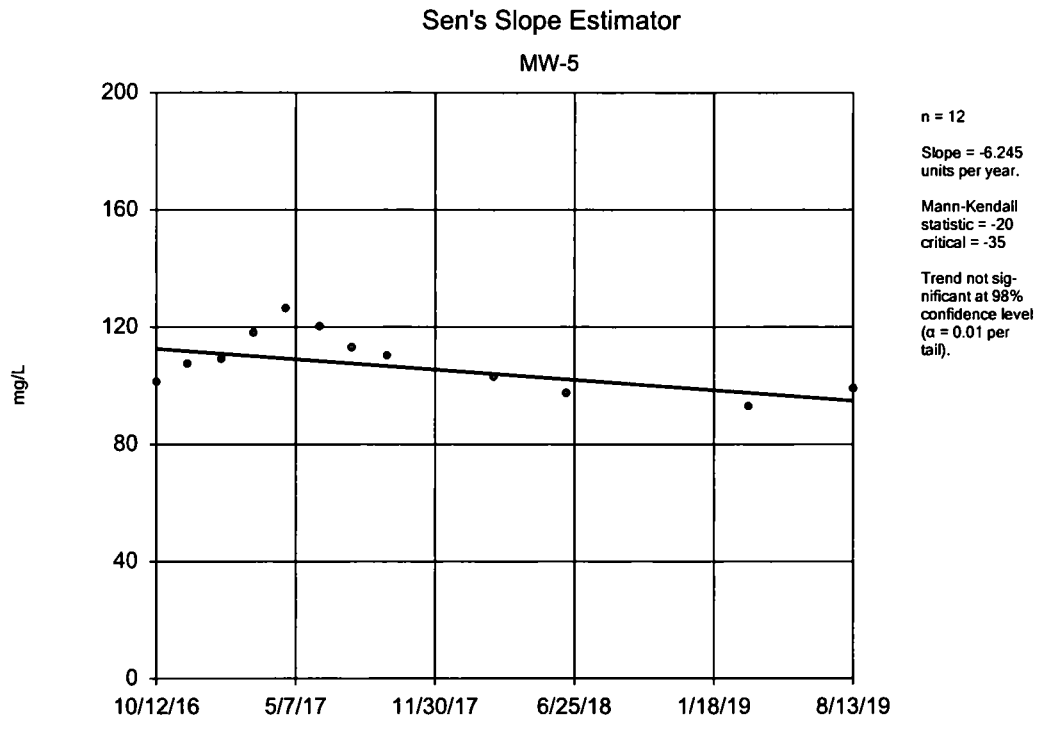
Mann-Kendall statistic = 3 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 10/23/2019 4:33 PM

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

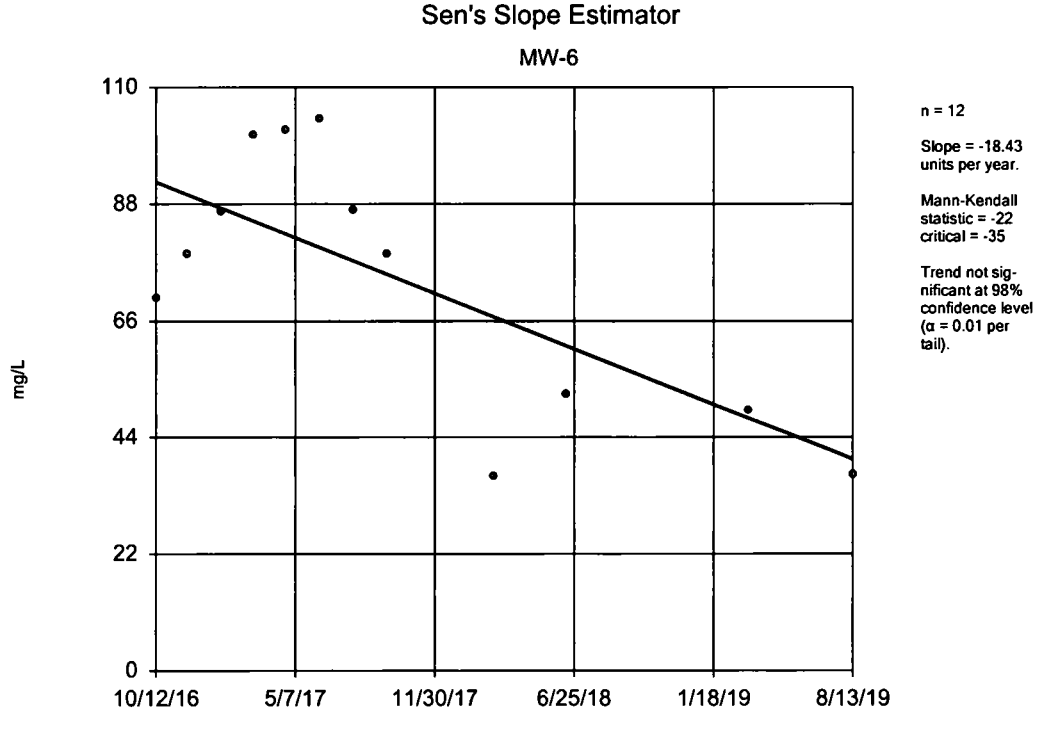
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Calcium Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



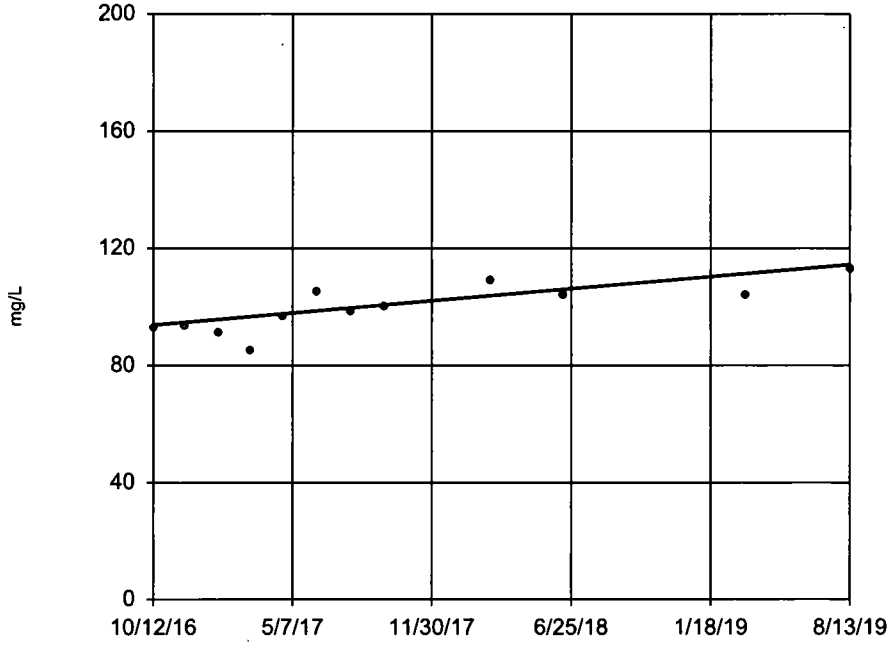
Constituent: Calcium Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-7



n = 12

Slope = 7.284 units per year.

Mann-Kendall statistic = 43 critical = 35

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

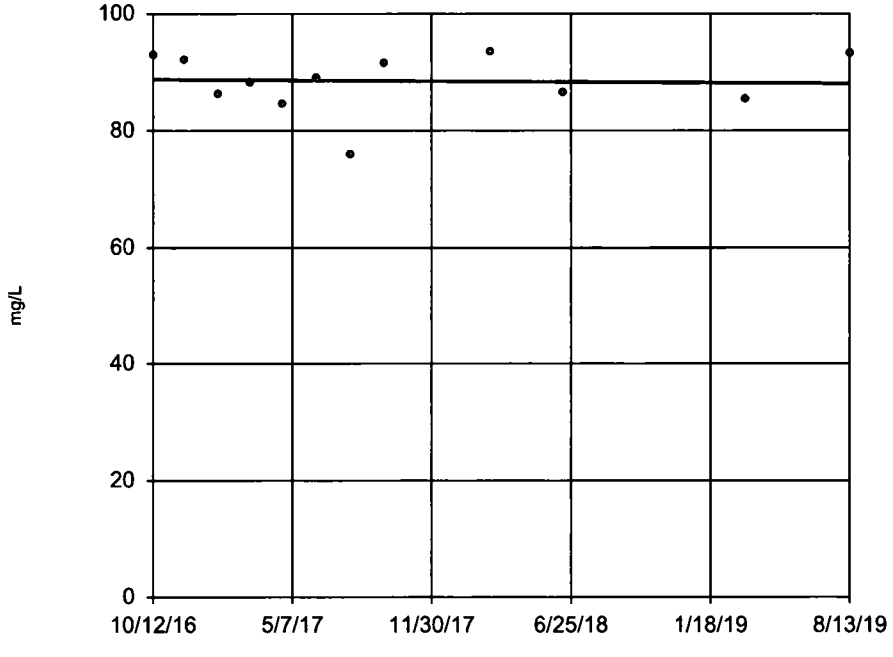
Constituent: Calcium Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-8



n = 12

Slope = -0.2318 units per year.

Mann-Kendall statistic = -2 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

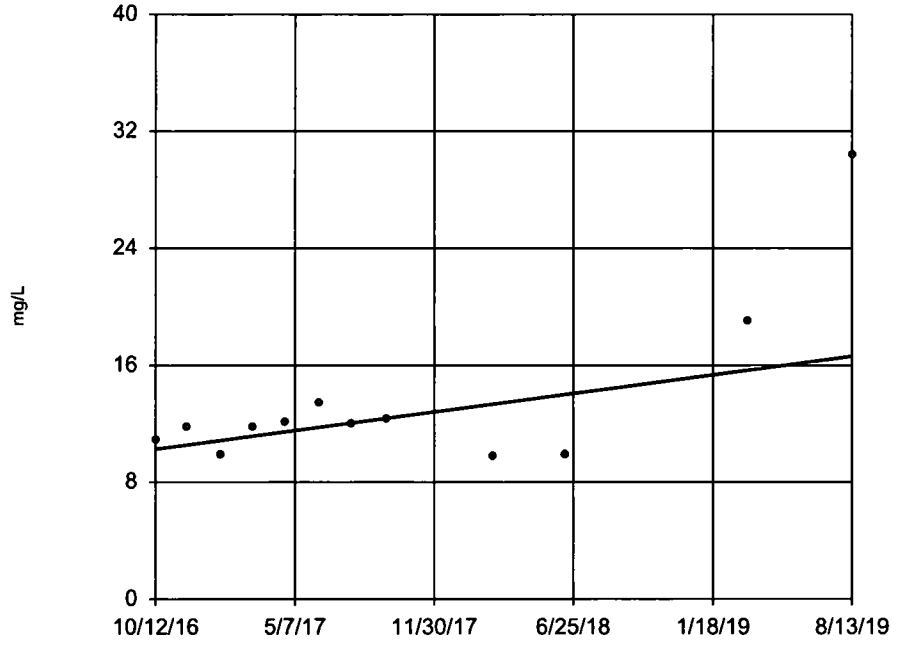
Constituent: Calcium Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-1



n = 12

Slope = 2.246 units per year.

Mann-Kendall statistic = 24 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

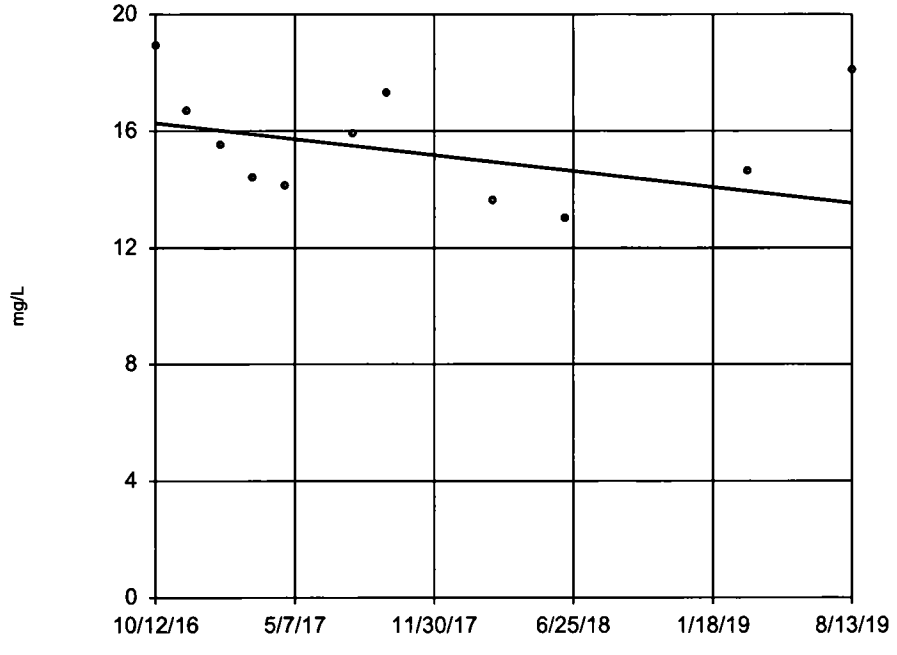
Constituent: Chloride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-2



n = 11

Slope = -0.9651 units per year.

Mann-Kendall statistic = -13 critical = -31

Trend not significant at 98% confidence level (α = 0.01 per tail).

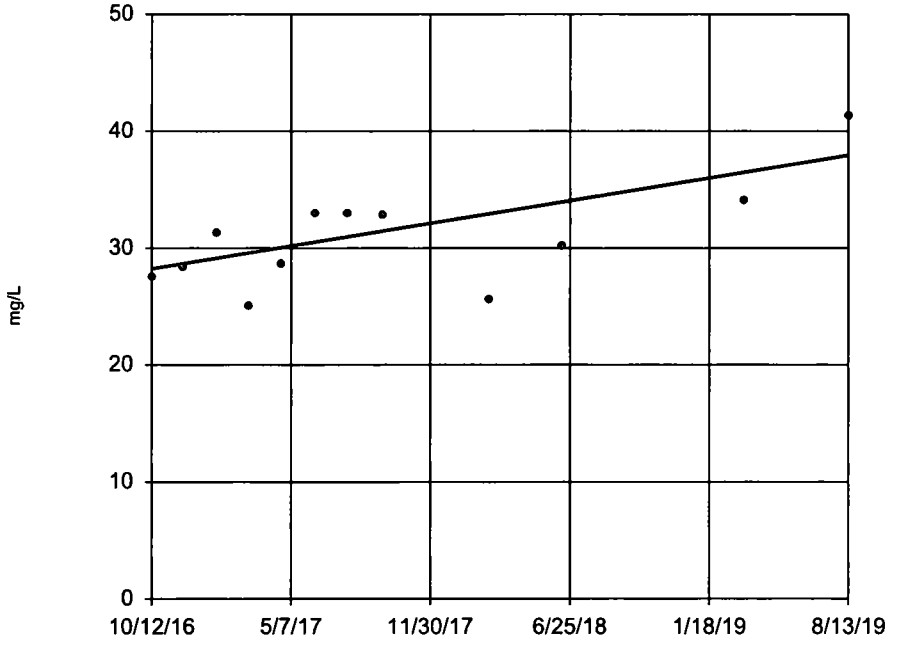
Constituent: Chloride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-3



n = 12

Slope = 3.418 units per year.

Mann-Kendall statistic = 30 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

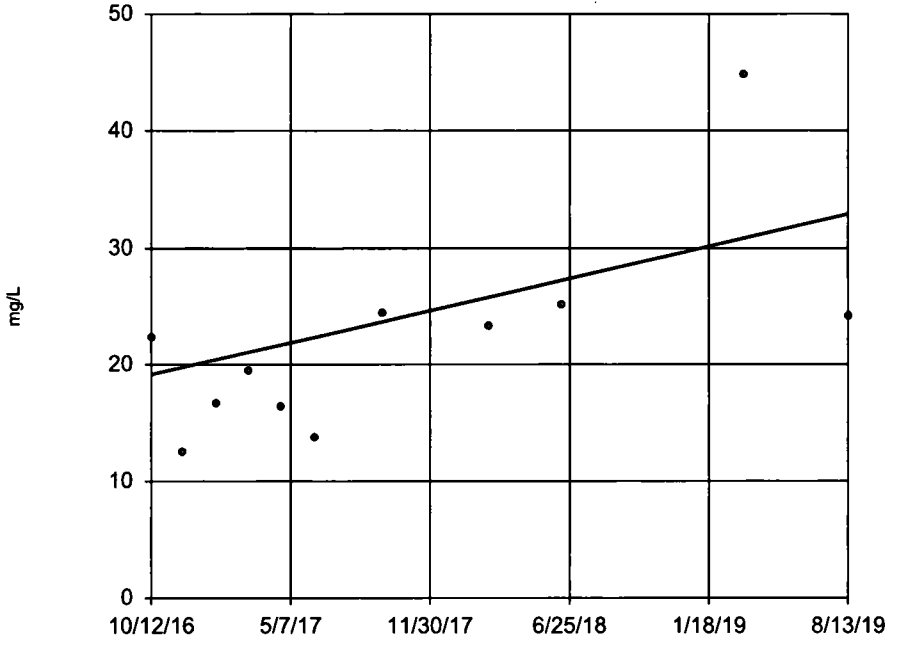
Constituent: Chloride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-4R (bg)



n = 11

Slope = 4.839 units per year.

Mann-Kendall statistic = 27 critical = 31

Trend not significant at 98% confidence level (α = 0.01 per tail).

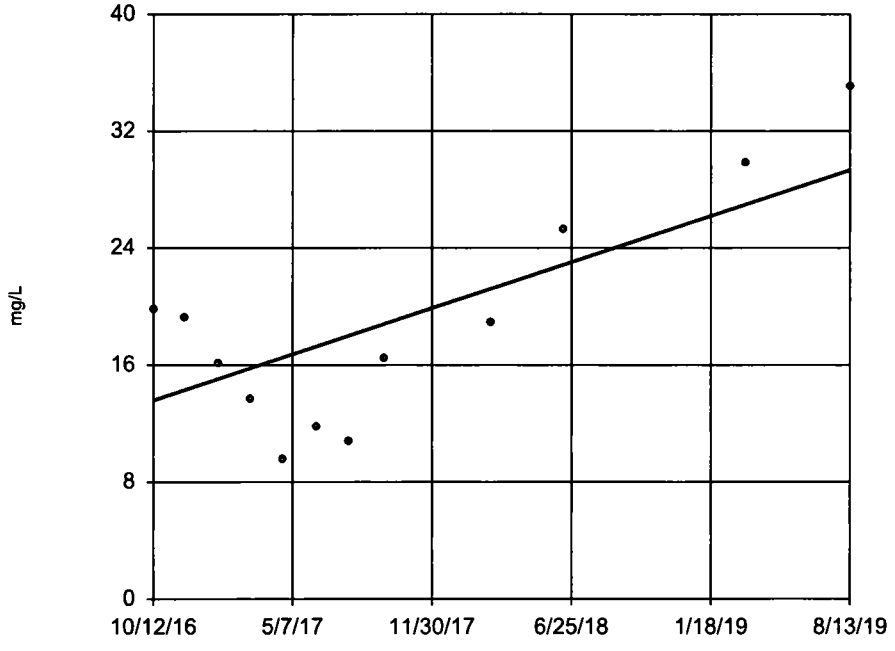
Constituent: Chloride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-5



n = 12

Slope = 5.55 units per year.

Mann-Kendall statistic = 20 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

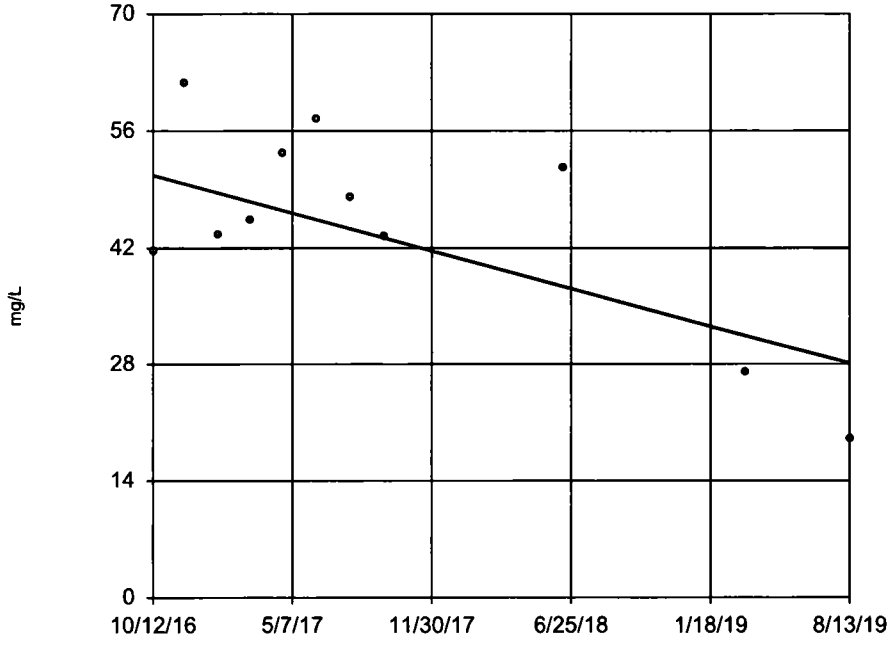
Constituent: Chloride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-6



n = 11

Slope = -7.97 units per year.

Mann-Kendall statistic = -15 critical = -31

Trend not significant at 98% confidence level (α = 0.01 per tail).

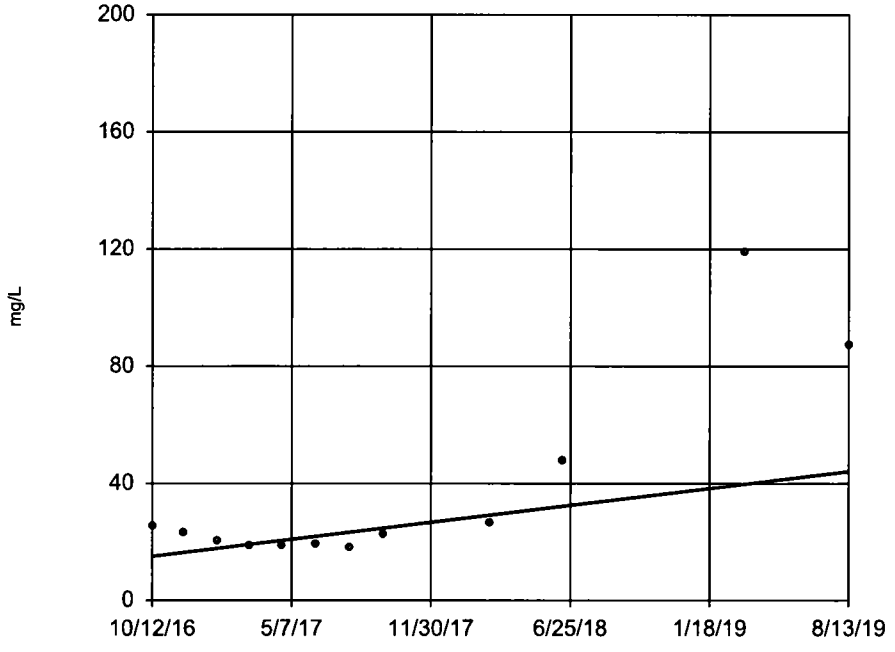
Constituent: Chloride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-7



n = 12

Slope = 10.22 units per year.

Mann-Kendall statistic = 22 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

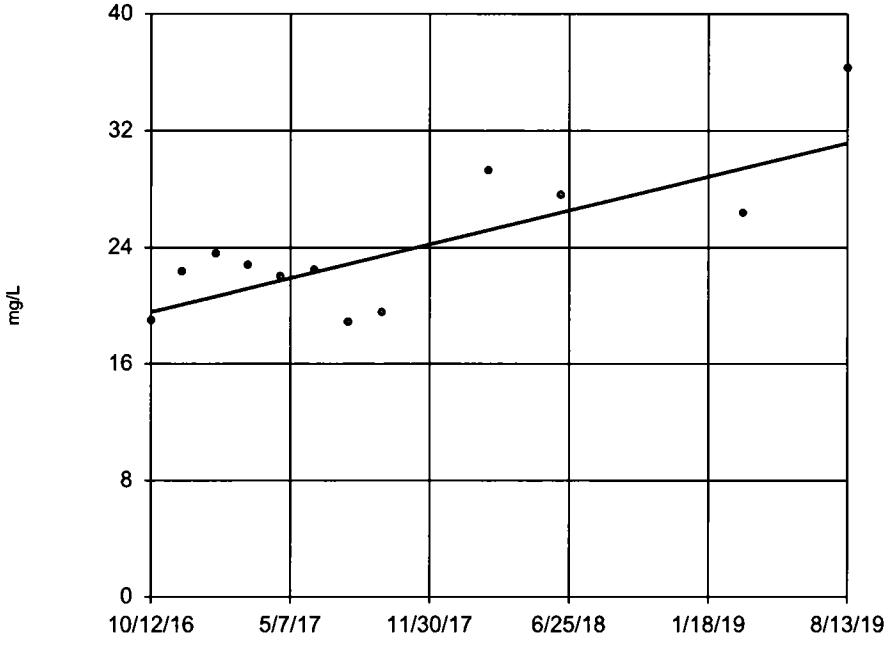
Constituent: Chloride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-8



n = 12

Slope = 4.074 units per year.

Mann-Kendall statistic = 26 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

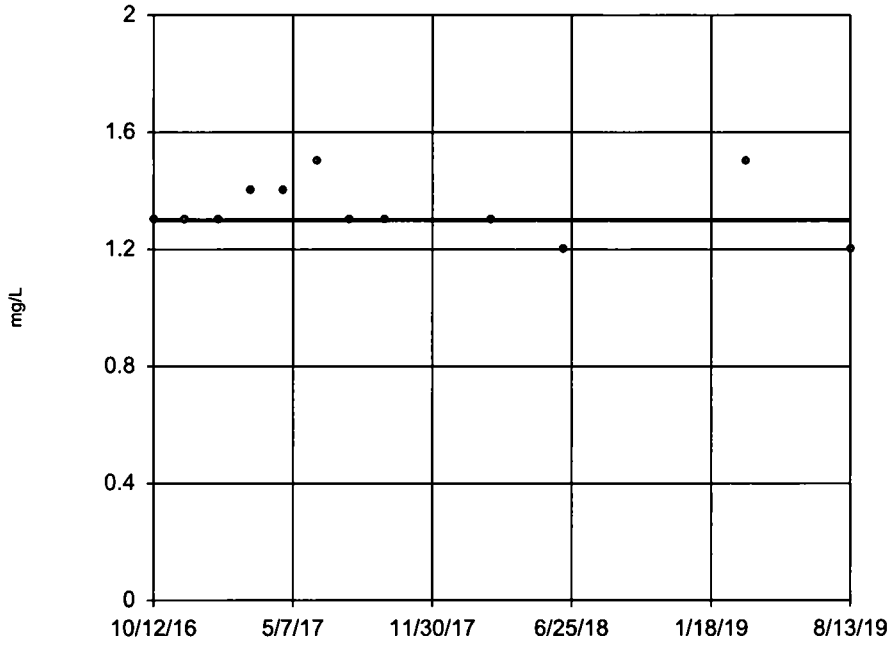
Constituent: Chloride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-1



n = 12

Slope = 0 units per year.

Mann-Kendall statistic = -8 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

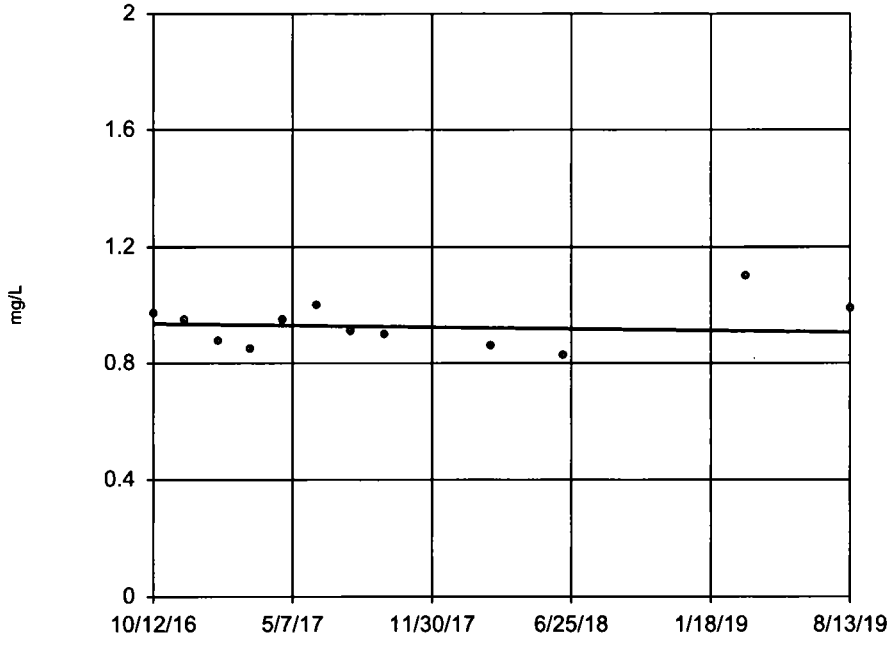
Constituent: Fluoride Analysis Run 10/23/2019 4:33 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-2



n = 12

Slope = -0.01015 units per year.

Mann-Kendall statistic = -3 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

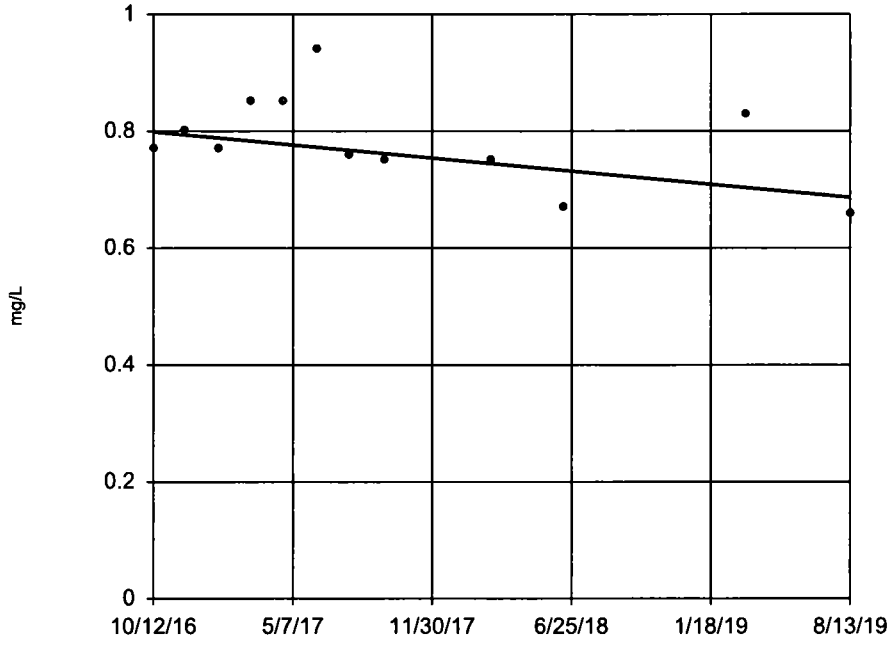
Constituent: Fluoride Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-3



n = 12

Slope = -0.03945 units per year.

Mann-Kendall statistic = -25 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

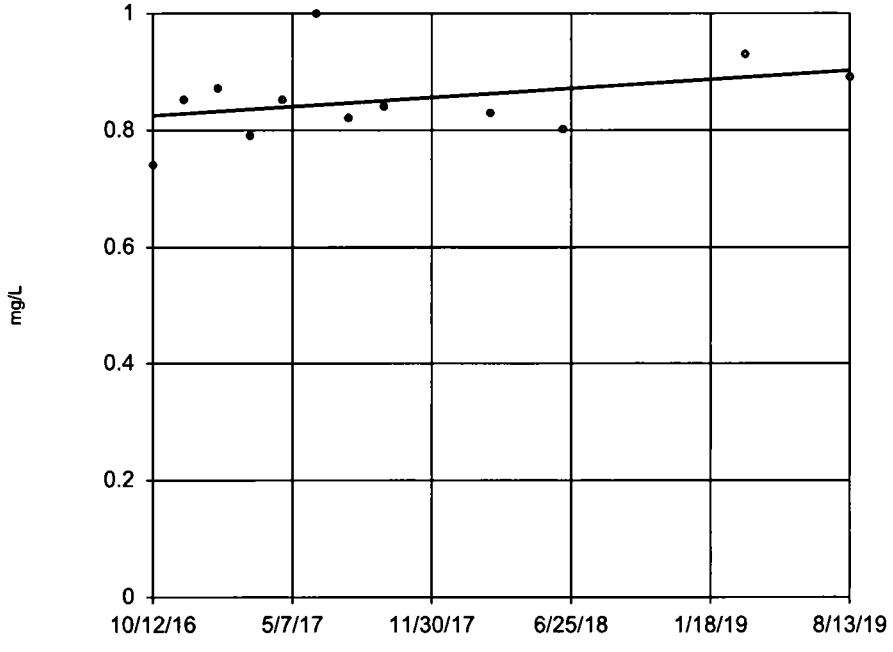
Constituent: Fluoride Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-4R (bg)



n = 12

Slope = 0.02719 units per year.

Mann-Kendall statistic = 13 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

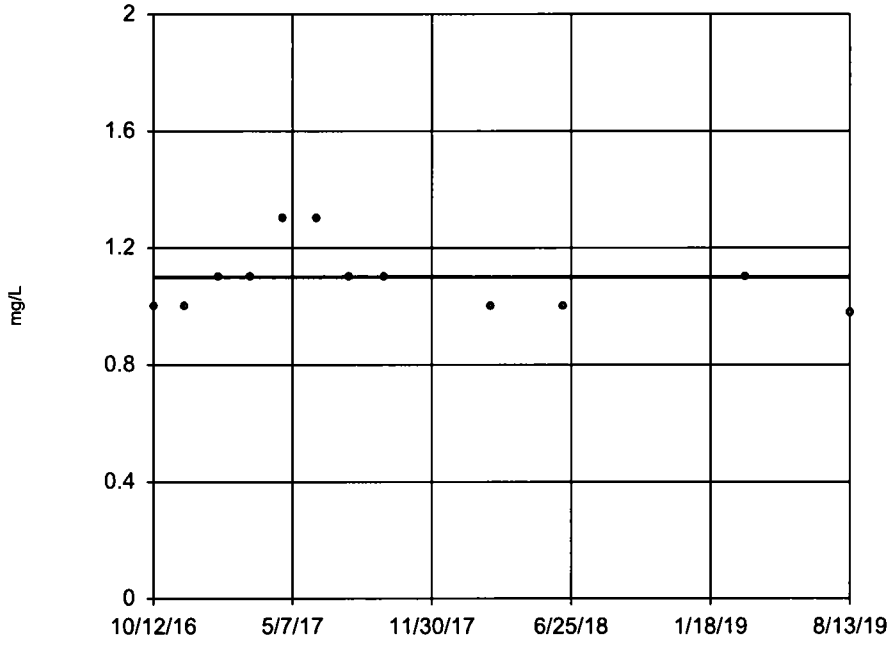
Constituent: Fluoride Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-5



n = 12

Slope = 0
units per year.

Mann-Kendall
statistic = -9
critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

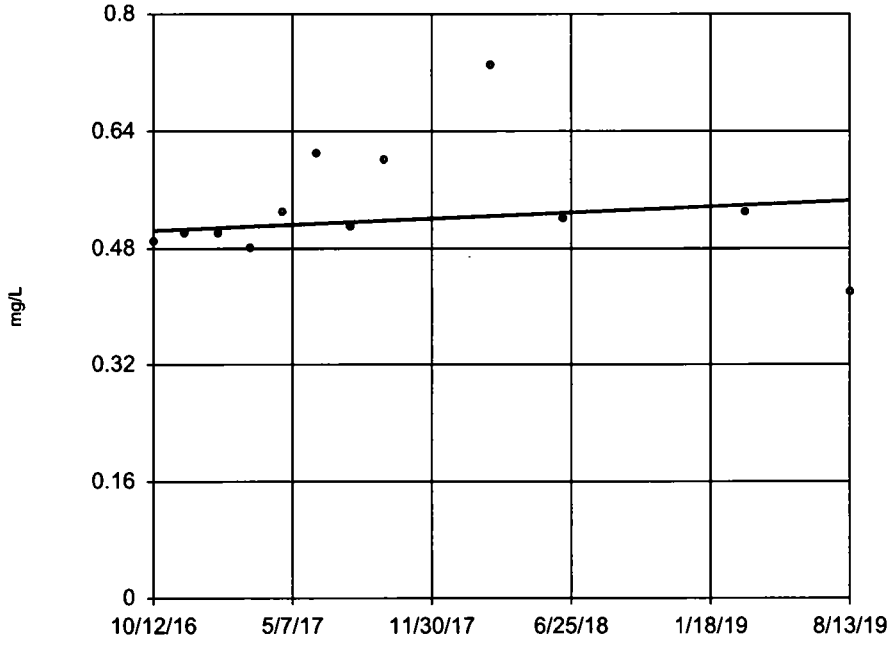
Constituent: Fluoride Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-6



n = 12

Slope = 0.01455
units per year.

Mann-Kendall
statistic = 16
critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

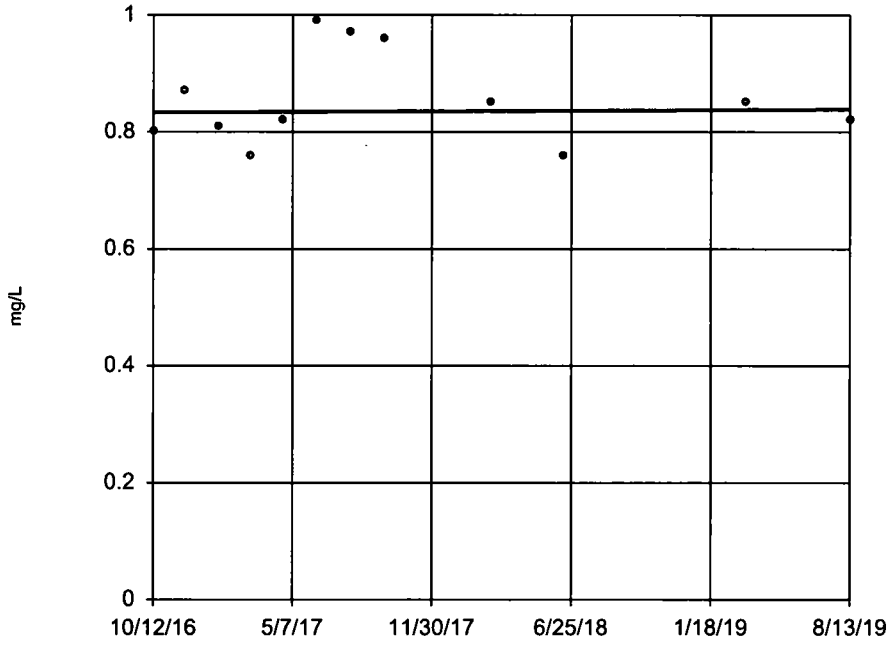
Constituent: Fluoride Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-7



n = 12

Slope = 0.001948 units per year.

Mann-Kendall statistic = 3 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

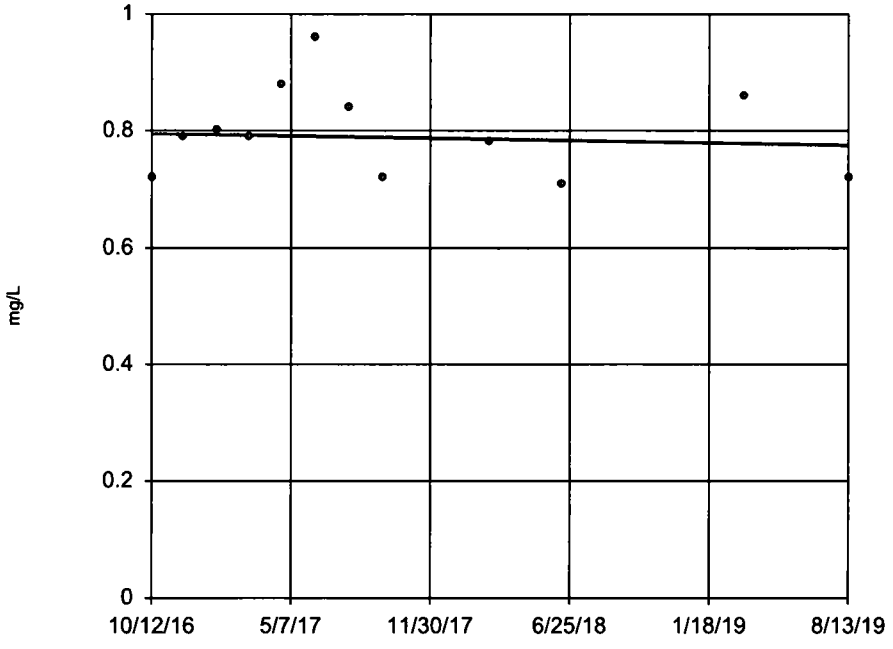
Constituent: Fluoride Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-8



n = 12

Slope = -0.007003 units per year.

Mann-Kendall statistic = -6 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

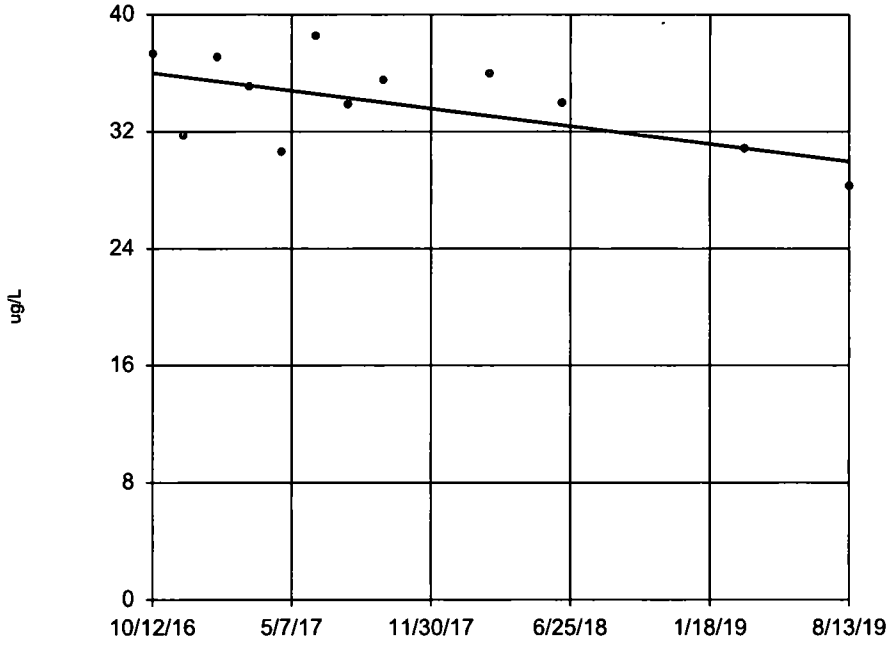
Constituent: Fluoride Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-1



n = 12

Slope = -2.136 units per year.

Mann-Kendall statistic = -22 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

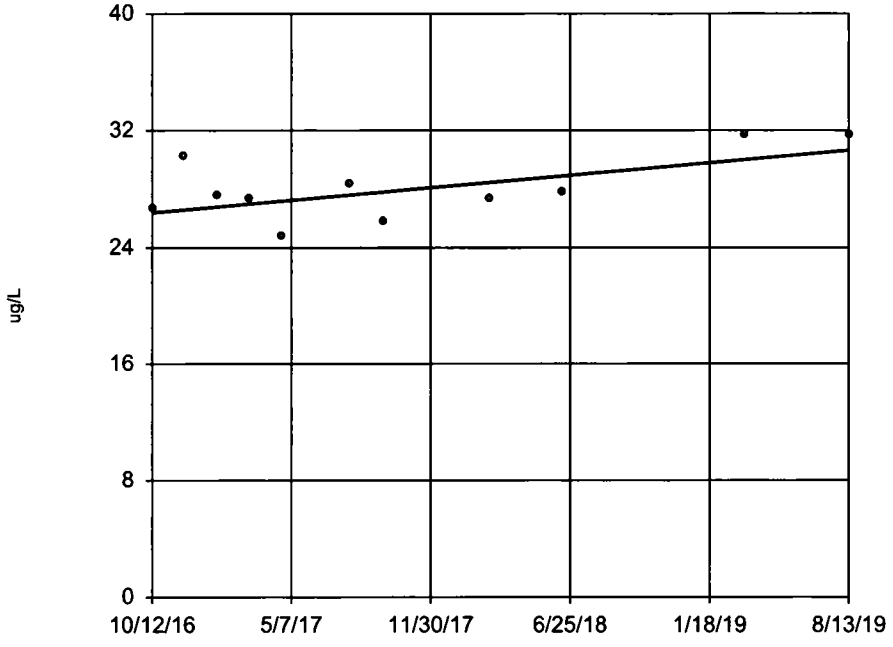
Constituent: Lithium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-2



n = 11

Slope = 1.497 units per year.

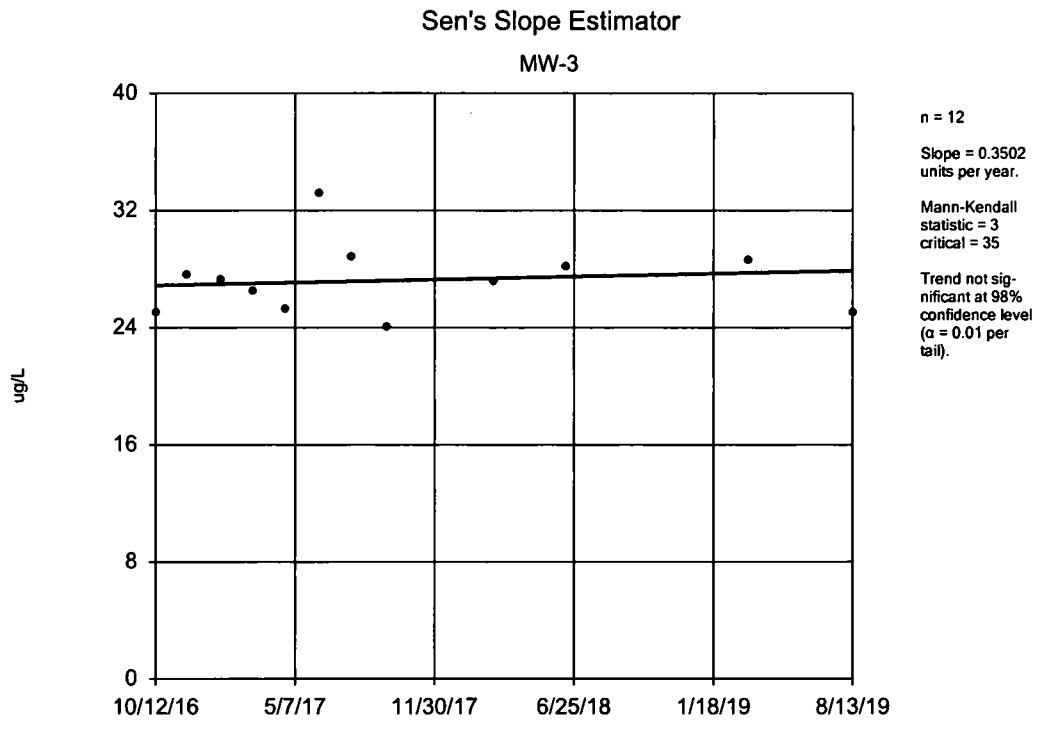
Mann-Kendall statistic = 17 critical = 31

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Lithium Analysis Run 10/23/2019 4:34 PM

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

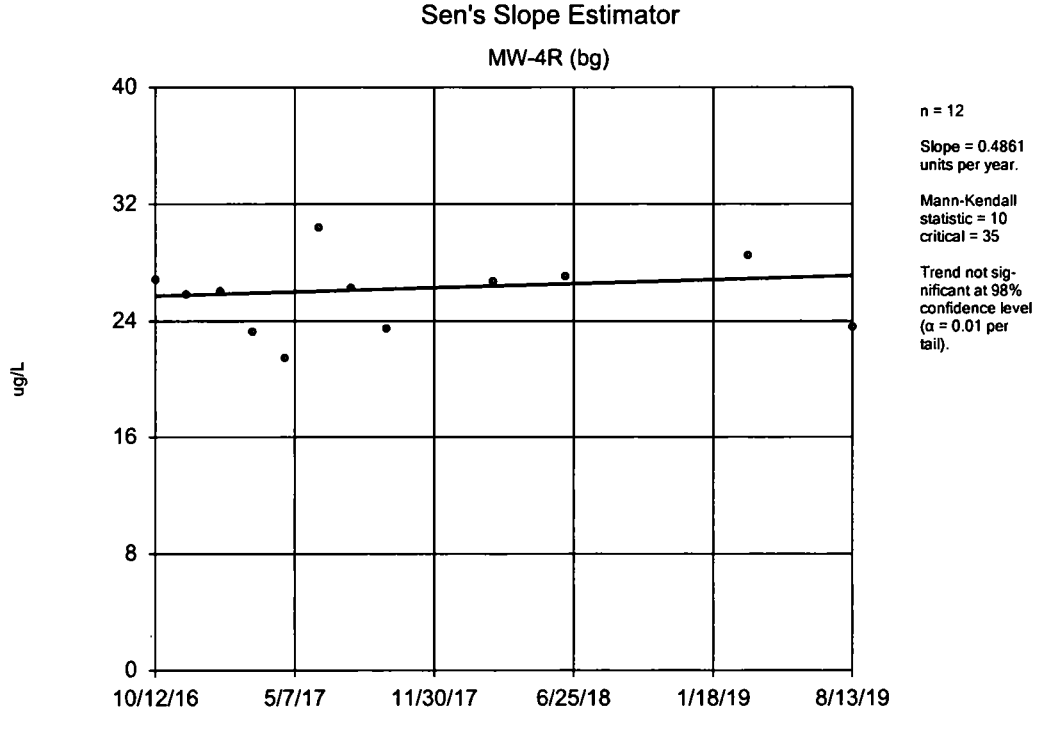
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Lithium Analysis Run 10/23/2019 4:34 PM

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

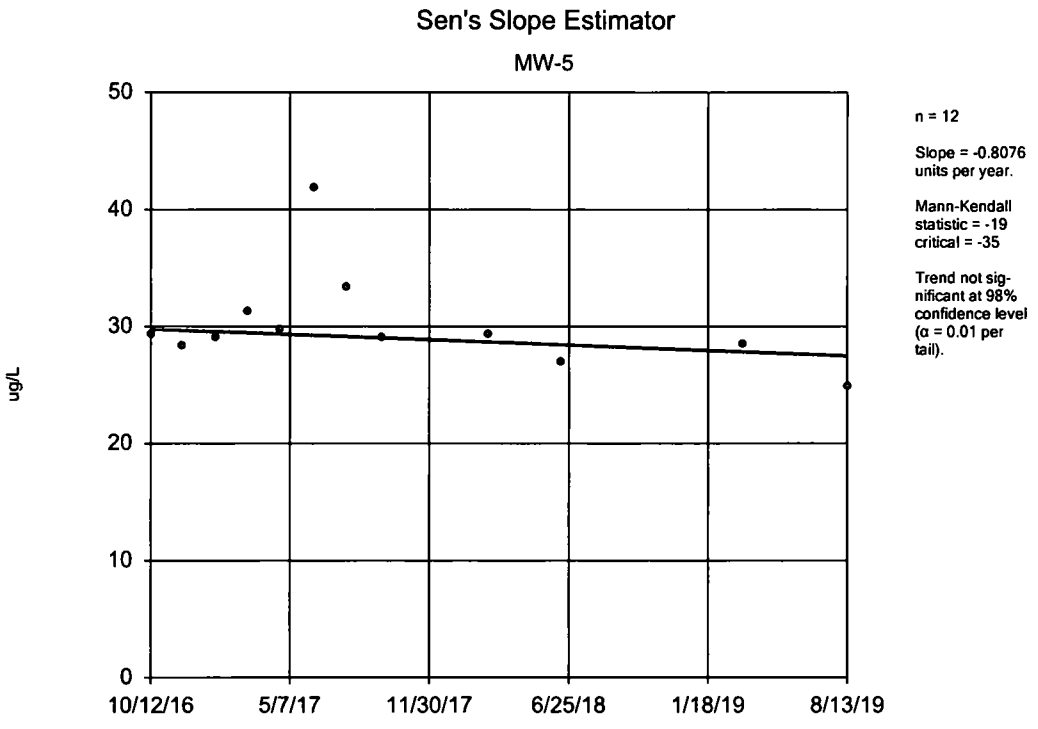
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Lithium Analysis Run 10/23/2019 4:34 PM

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

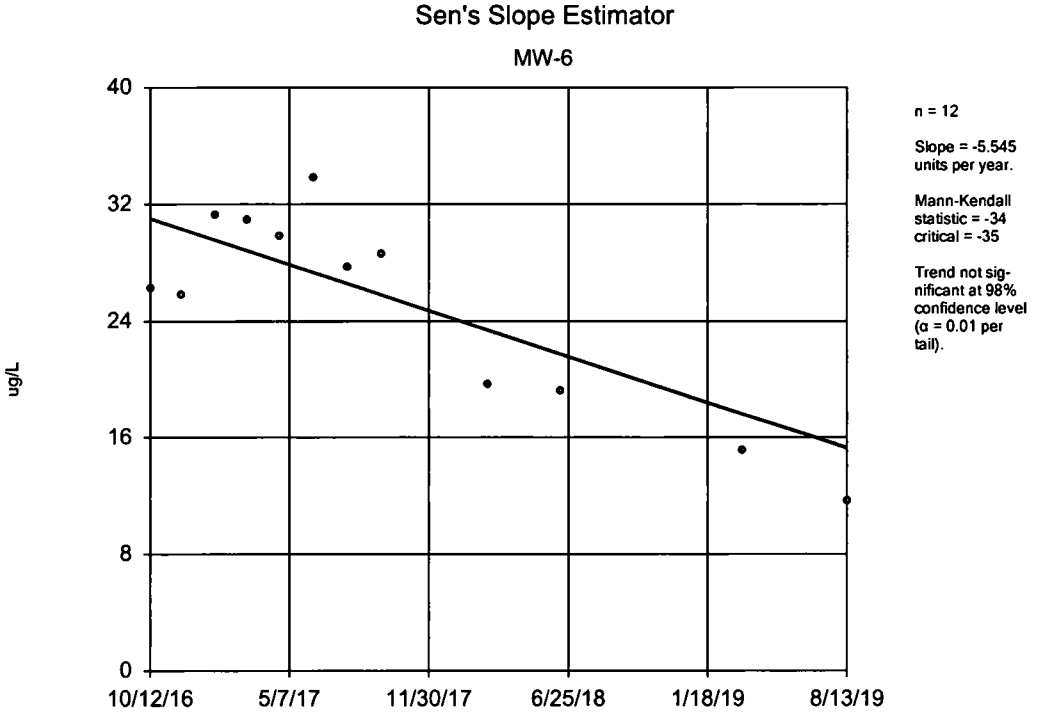
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Lithium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



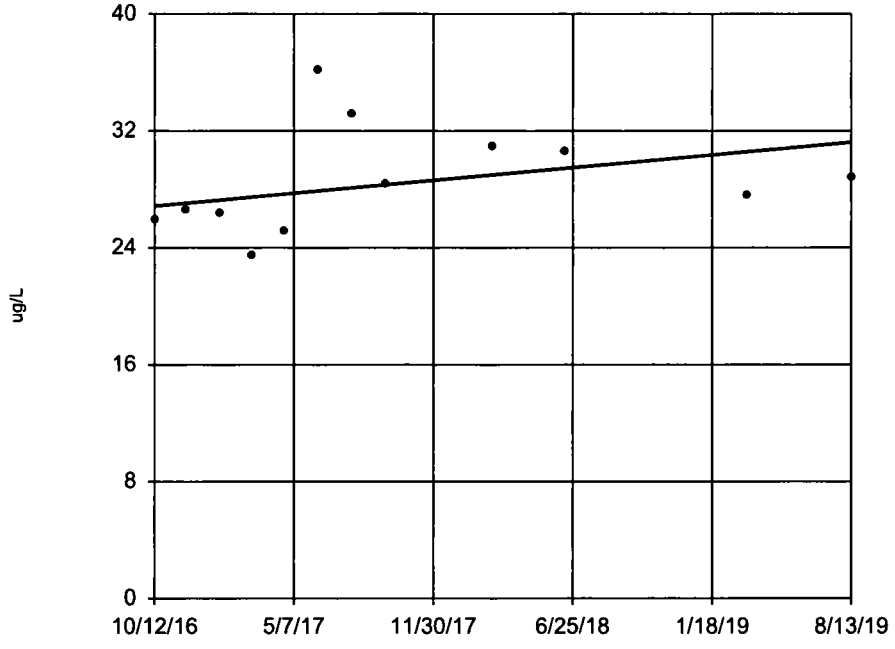
Constituent: Lithium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-7



n = 12

Slope = 1.548 units per year.

Mann-Kendall statistic = 18 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

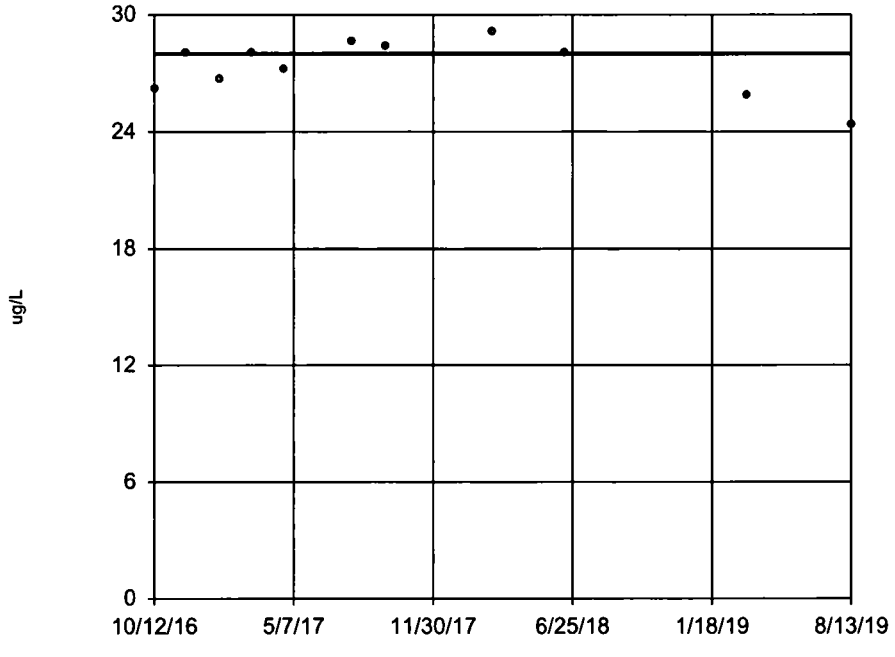
Constituent: Lithium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9 6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-8



n = 11

Slope = 0 units per year.

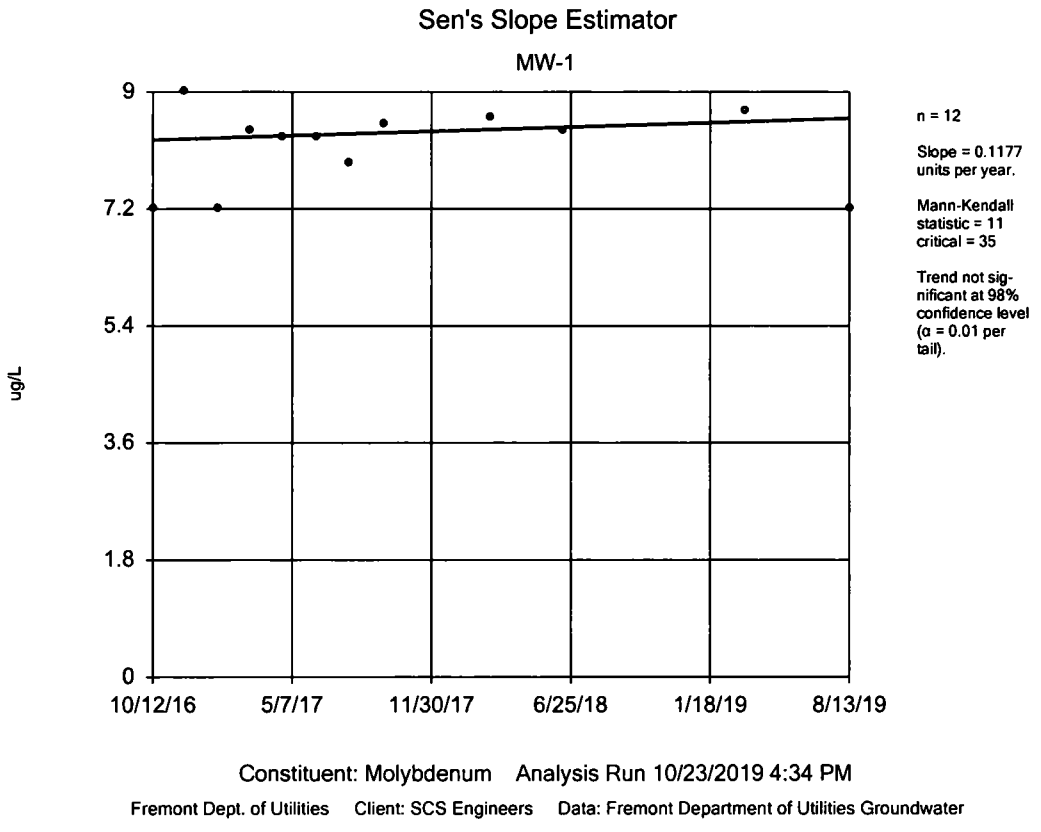
Mann-Kendall statistic = 0 critical = 31

Trend not significant at 98% confidence level (α = 0.01 per tail).

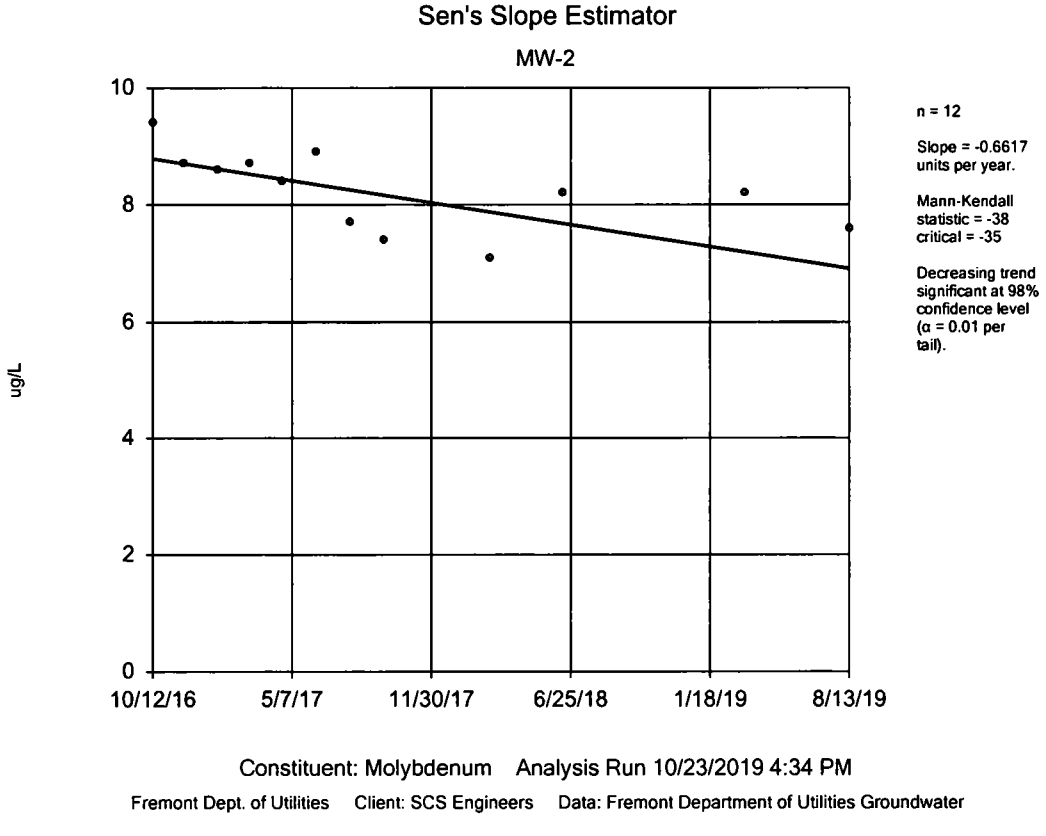
Constituent: Lithium Analysis Run 10/23/2019 4:34 PM

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

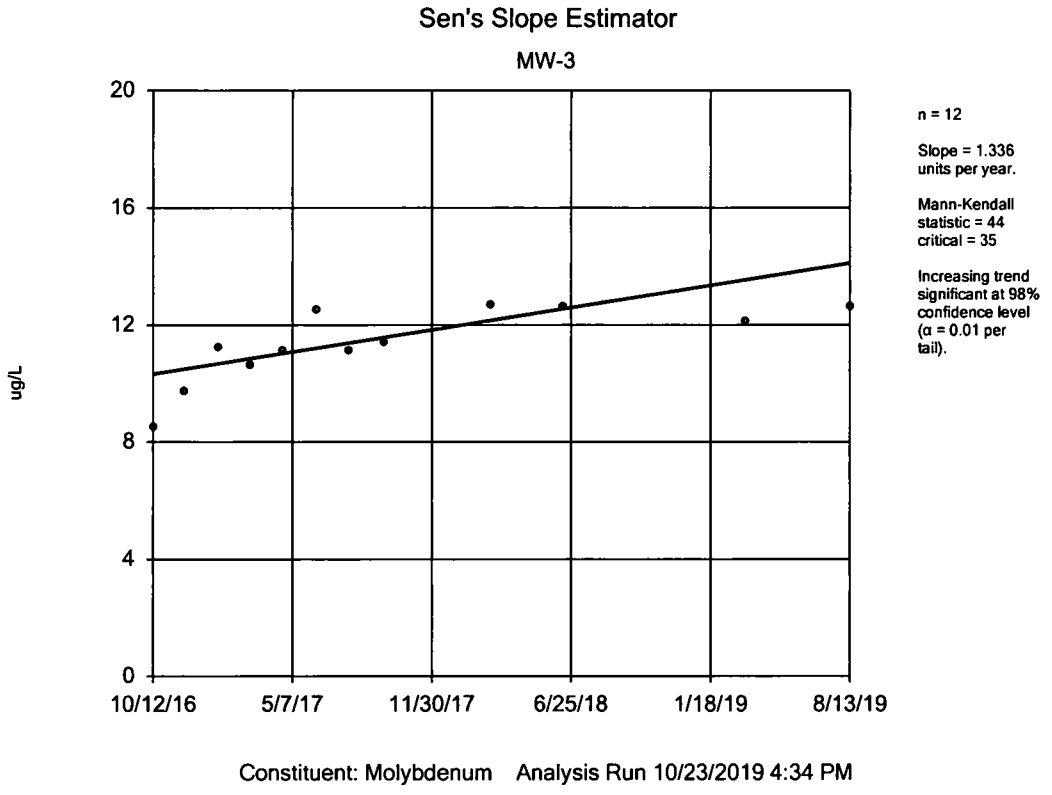
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



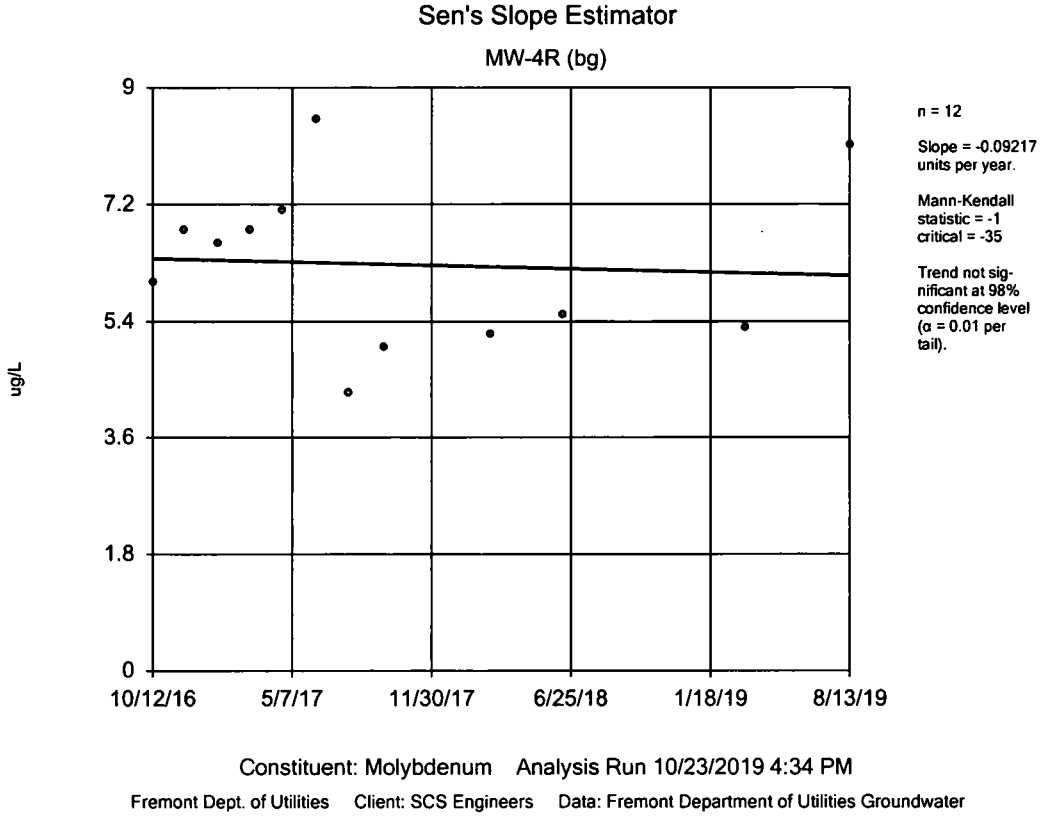
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



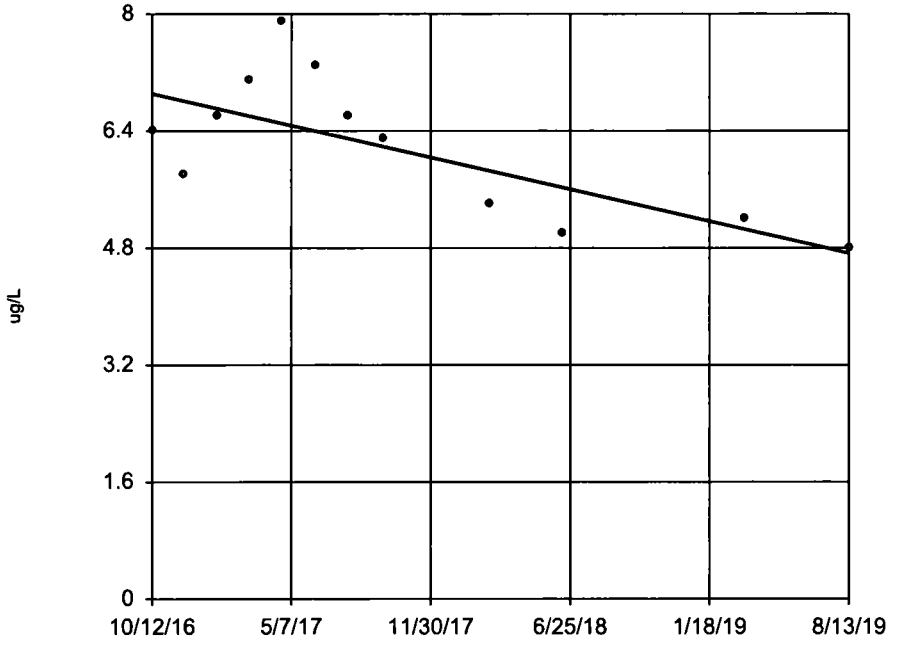
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-5



n = 12

Slope = -0.7694 units per year.

Mann-Kendall statistic = -31 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

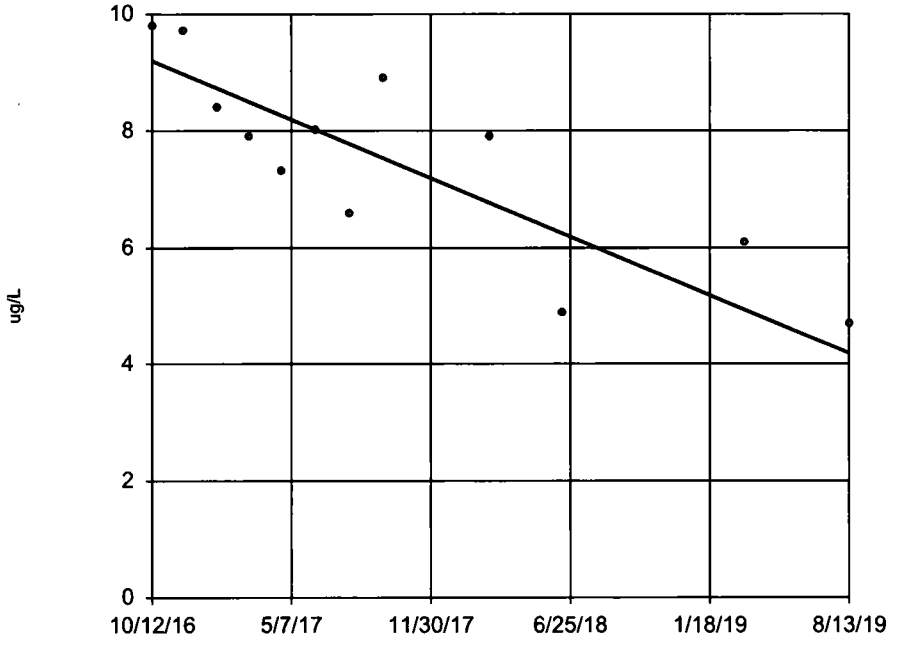
Constituent: Molybdenum Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-6



n = 12

Slope = -1.768 units per year.

Mann-Kendall statistic = -45 critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

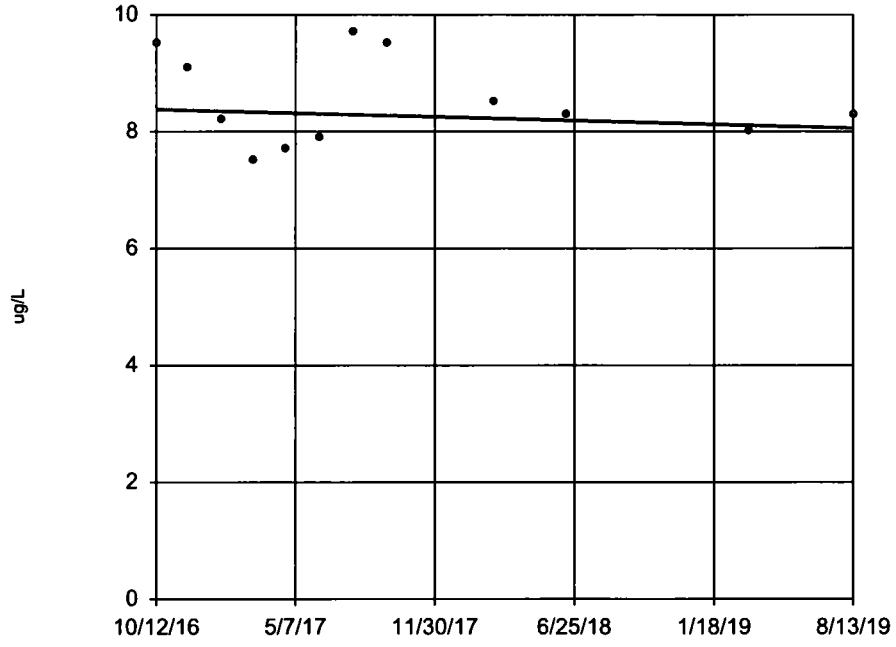
Constituent: Molybdenum Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-7



n = 12

Slope = -0.1152 units per year.

Mann-Kendall statistic = -4 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

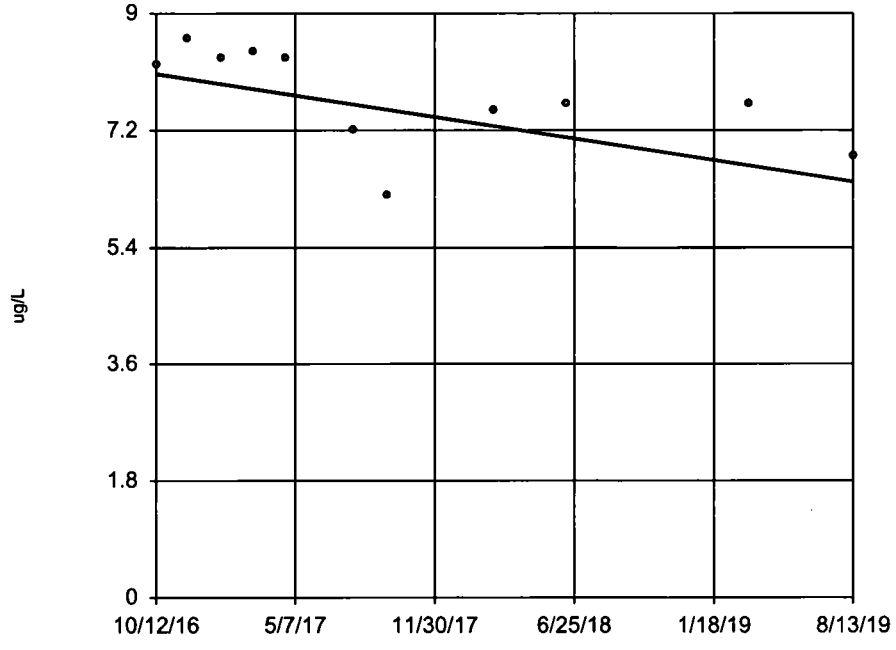
Constituent: Molybdenum Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-8



n = 11

Slope = -0.5843 units per year.

Mann-Kendall statistic = -25 critical = -31

Trend not significant at 98% confidence level (α = 0.01 per tail).

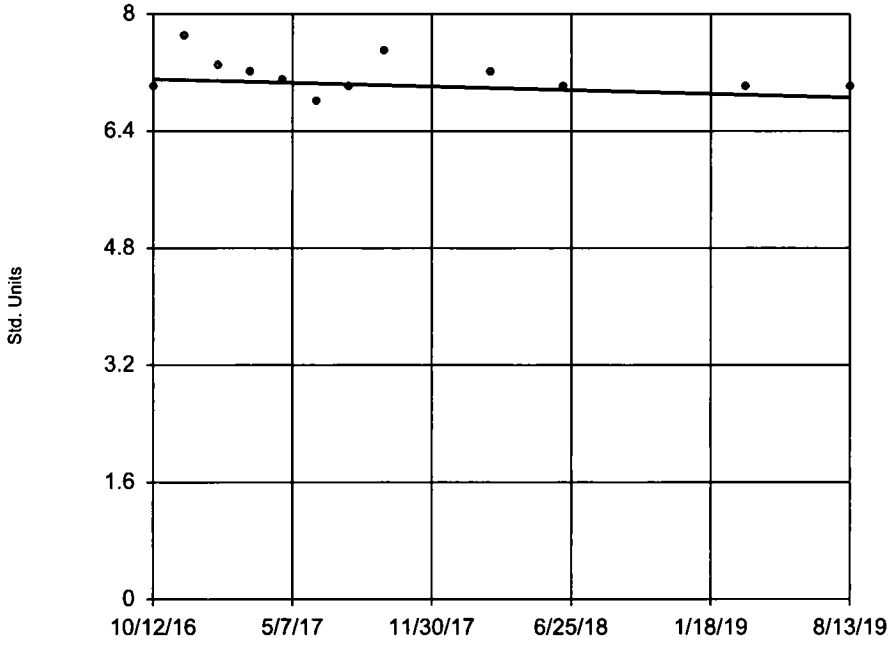
Constituent: Molybdenum Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-1



n = 12

Slope = -0.08904 units per year.

Mann-Kendall statistic = -19 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

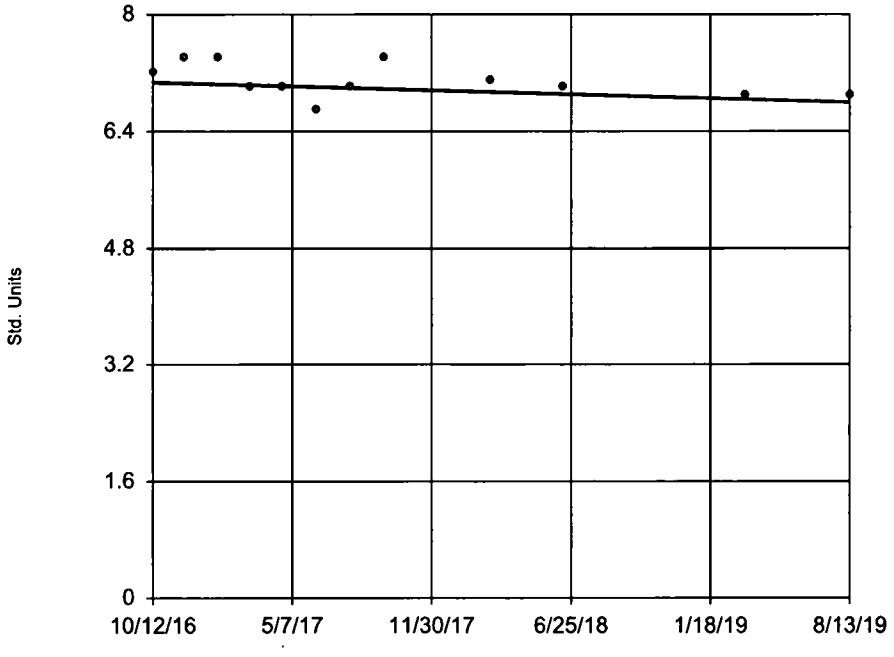
Constituent: pH Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-2



n = 12

Slope = -0.09584 units per year.

Mann-Kendall statistic = -26 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

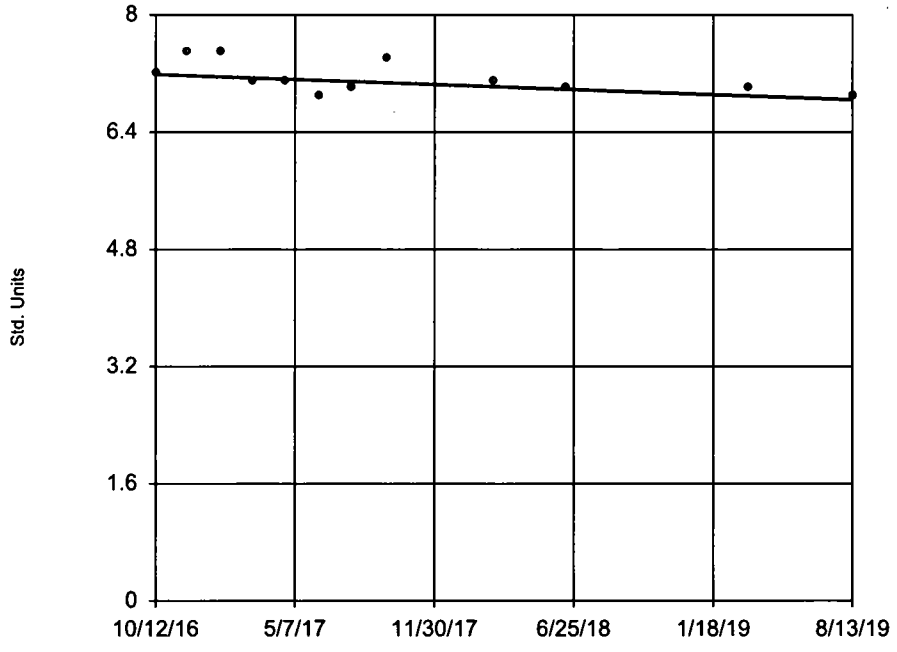
Constituent: pH Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-3



n = 12

Slope = -0.1215 units per year.

Mann-Kendall statistic = -34 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

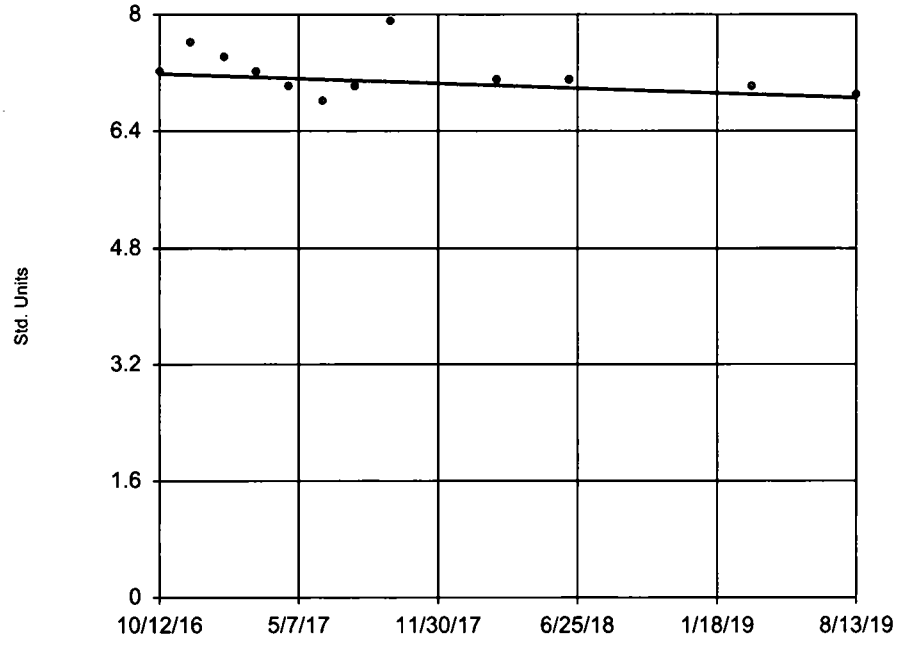
Constituent: pH Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-4R (bg)



n = 12

Slope = -0.1144 units per year.

Mann-Kendall statistic = -25 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

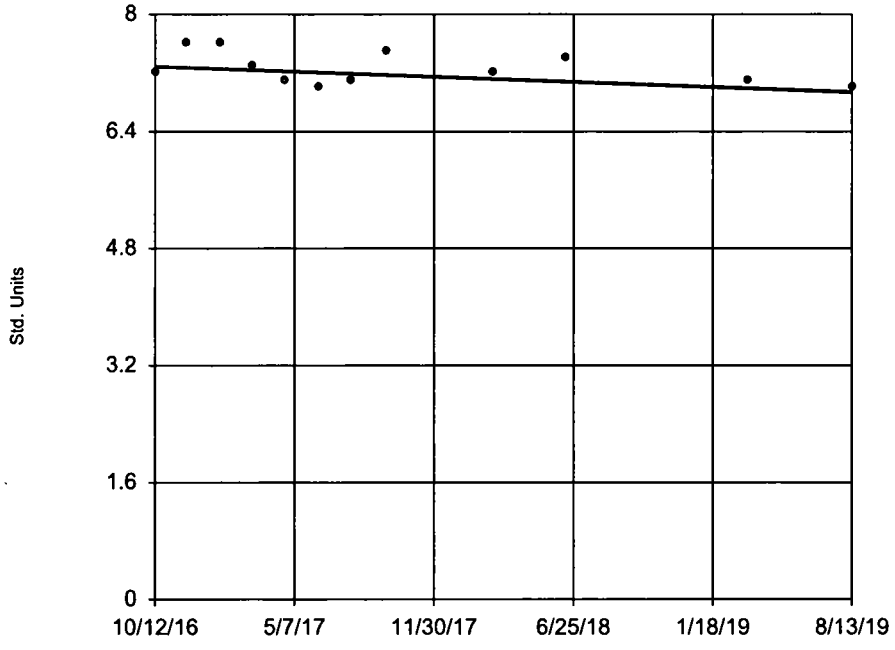
Constituent: pH Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-5



n = 12

Slope = -0.1232 units per year.

Mann-Kendall statistic = -22
critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

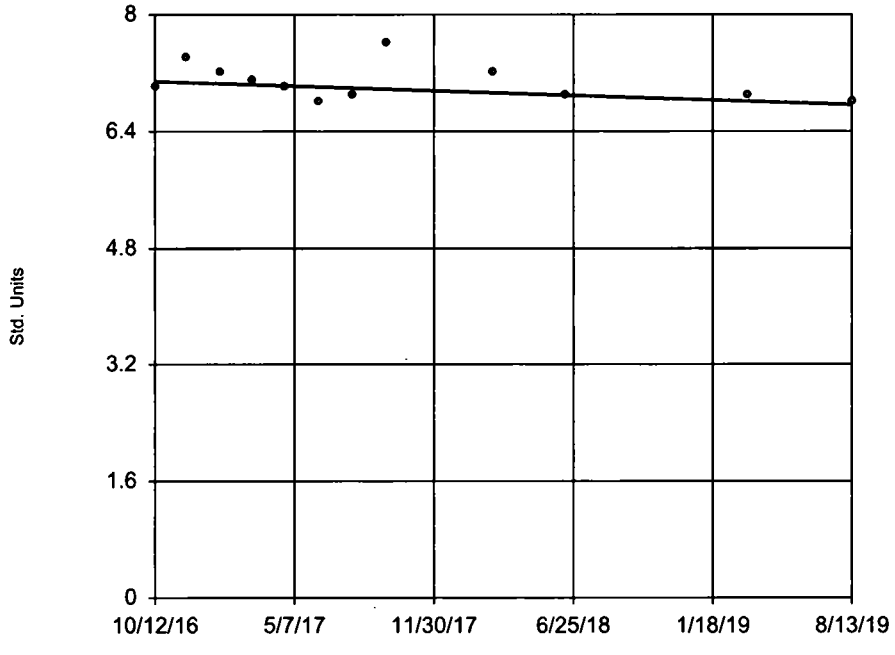
Constituent: pH Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-6



n = 12

Slope = -0.1112 units per year.

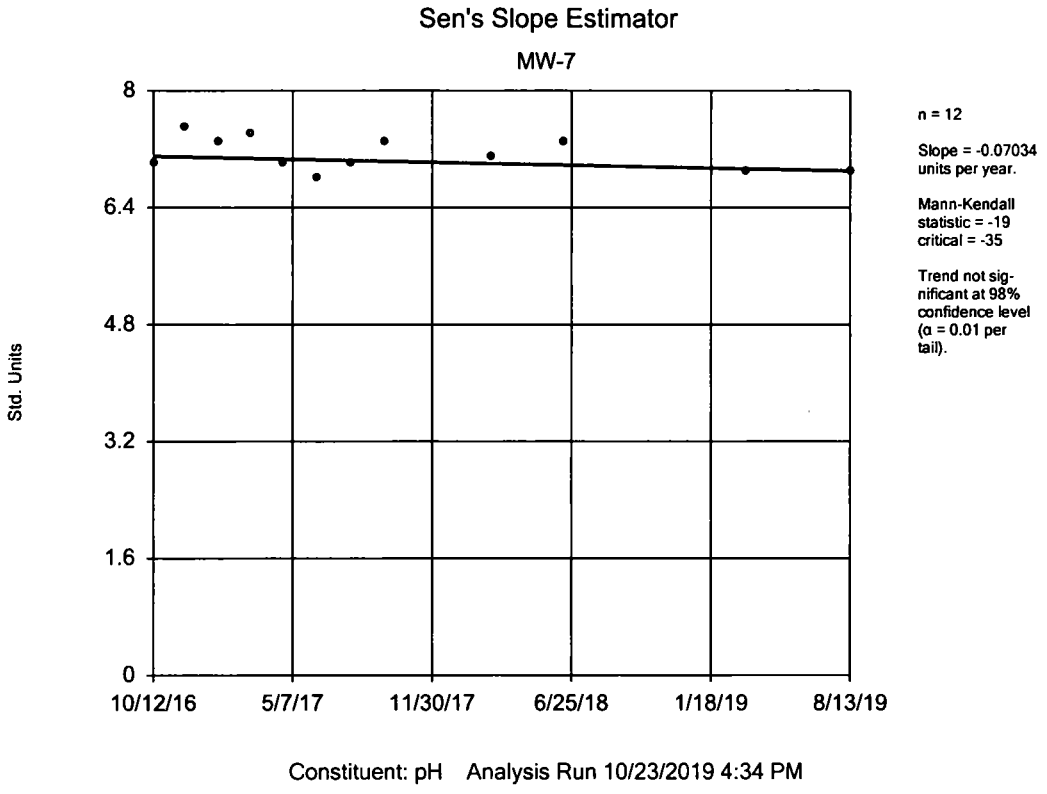
Mann-Kendall statistic = -24
critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

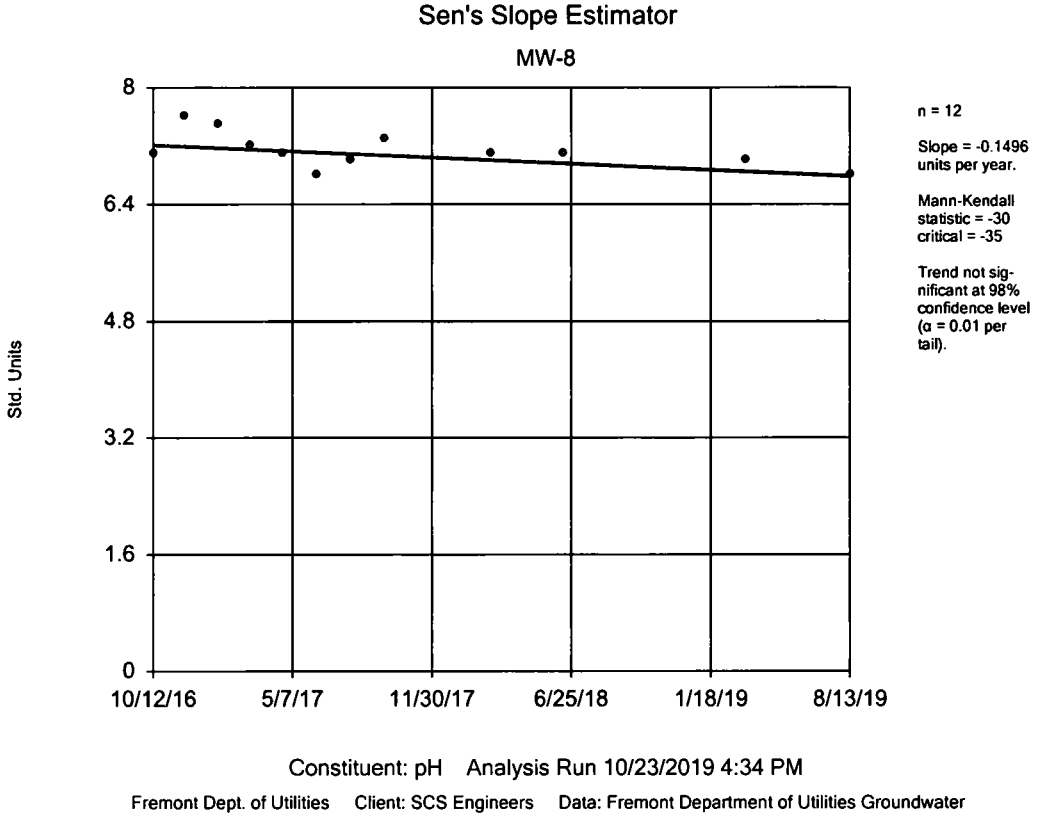
Constituent: pH Analysis Run 10/23/2019 4:34 PM

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

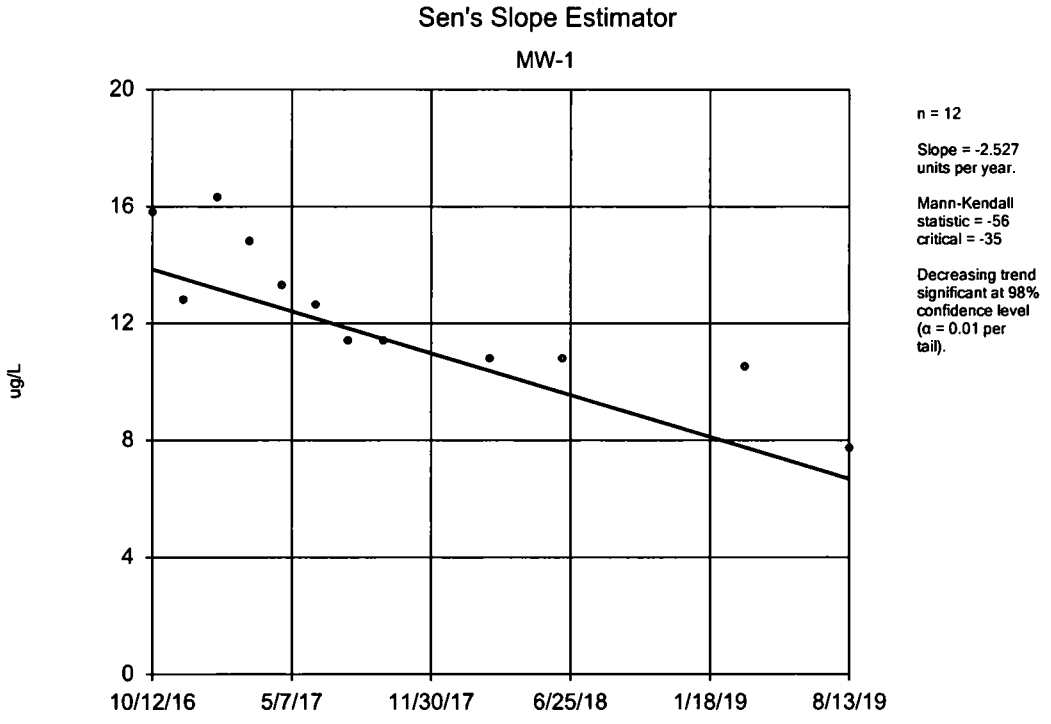
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



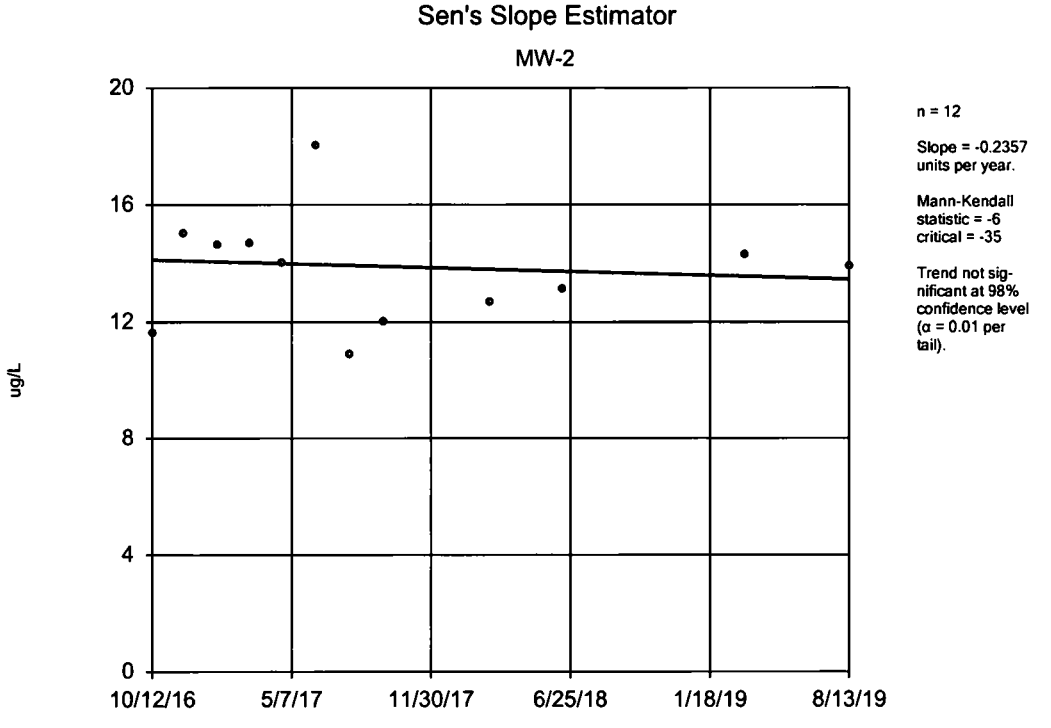
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Selenium [total] Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



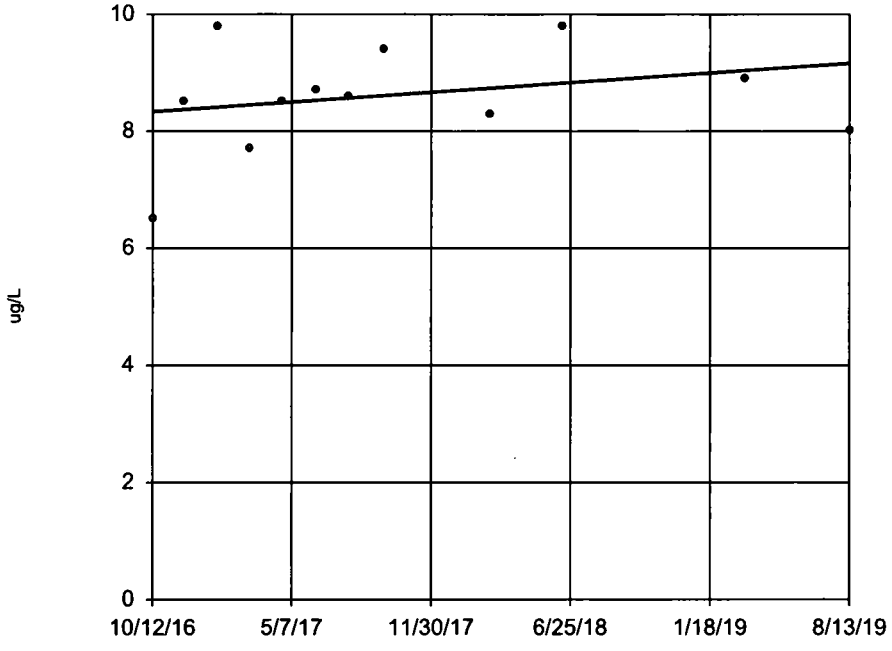
Constituent: Selenium [total] Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-3



n = 12

Slope = 0.2926 units per year.

Mann-Kendall statistic = 14 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

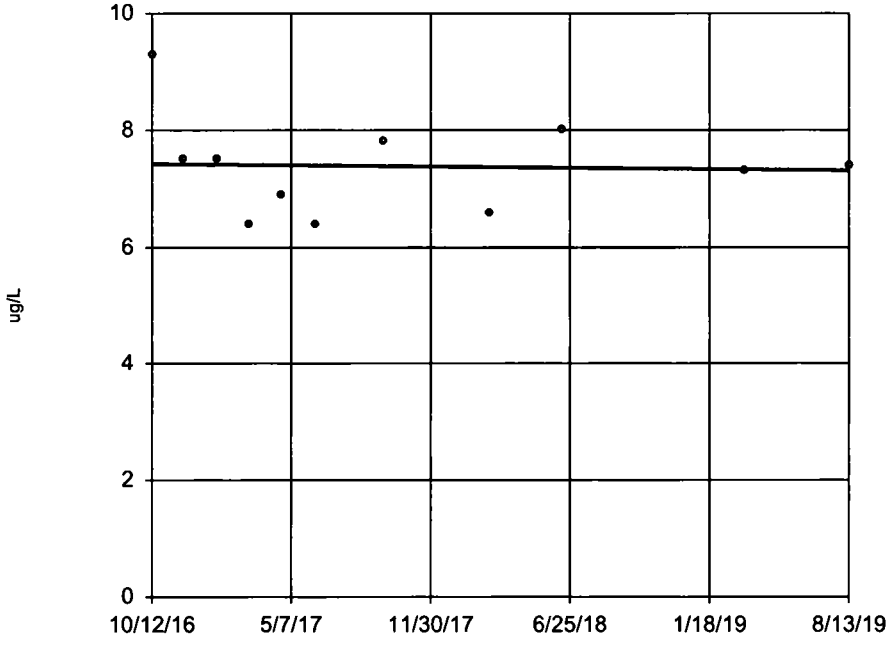
Constituent: Selenium [total] Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-4R (bg)



n = 11

Slope = -0.03895 units per year.

Mann-Kendall statistic = -5 critical = -31

Trend not significant at 98% confidence level (α = 0.01 per tail).

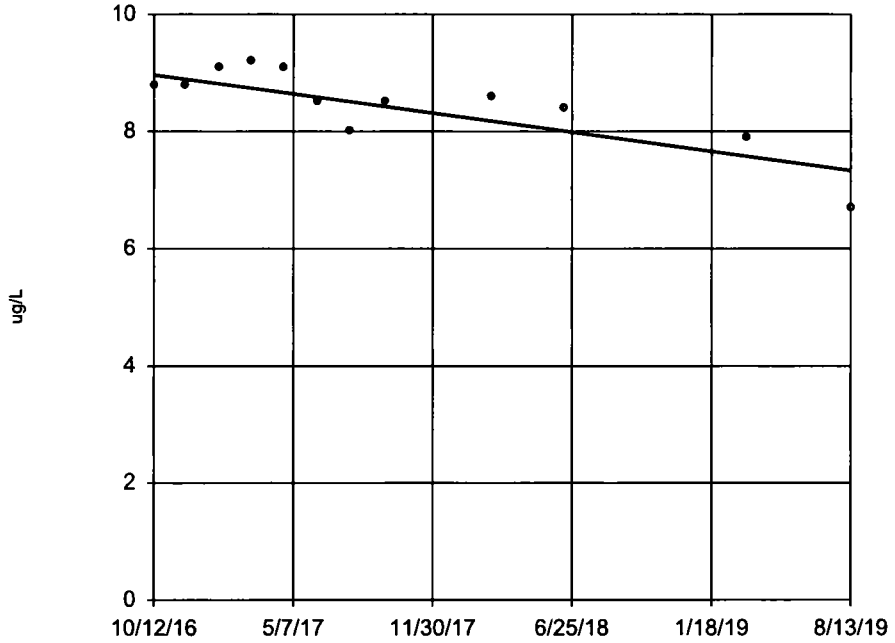
Constituent: Selenium [total] Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-5



n = 12

Slope = -0.5763 units per year.

Mann-Kendall statistic = -39 critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

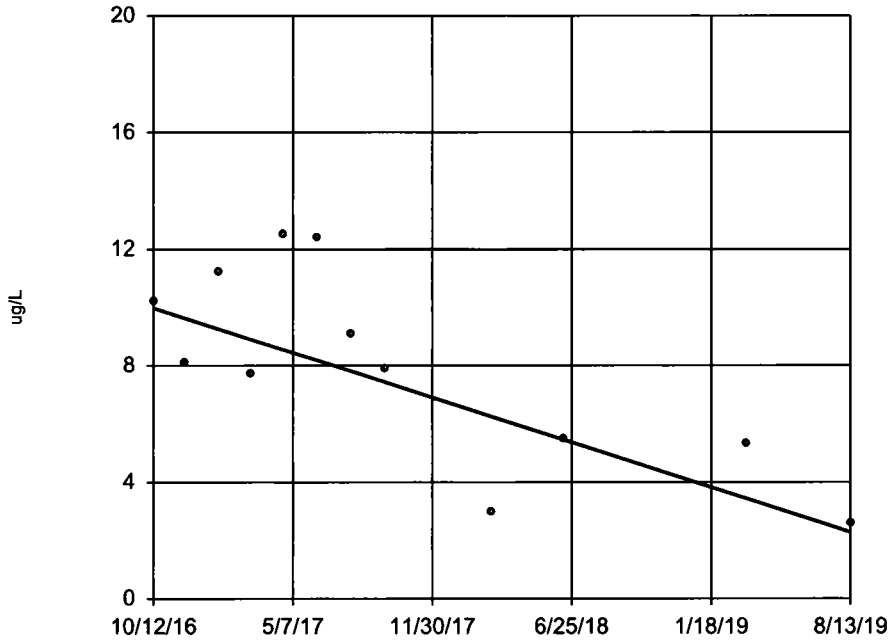
Constituent: Selenium [total] Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-6



n = 12

Slope = -2.717 units per year.

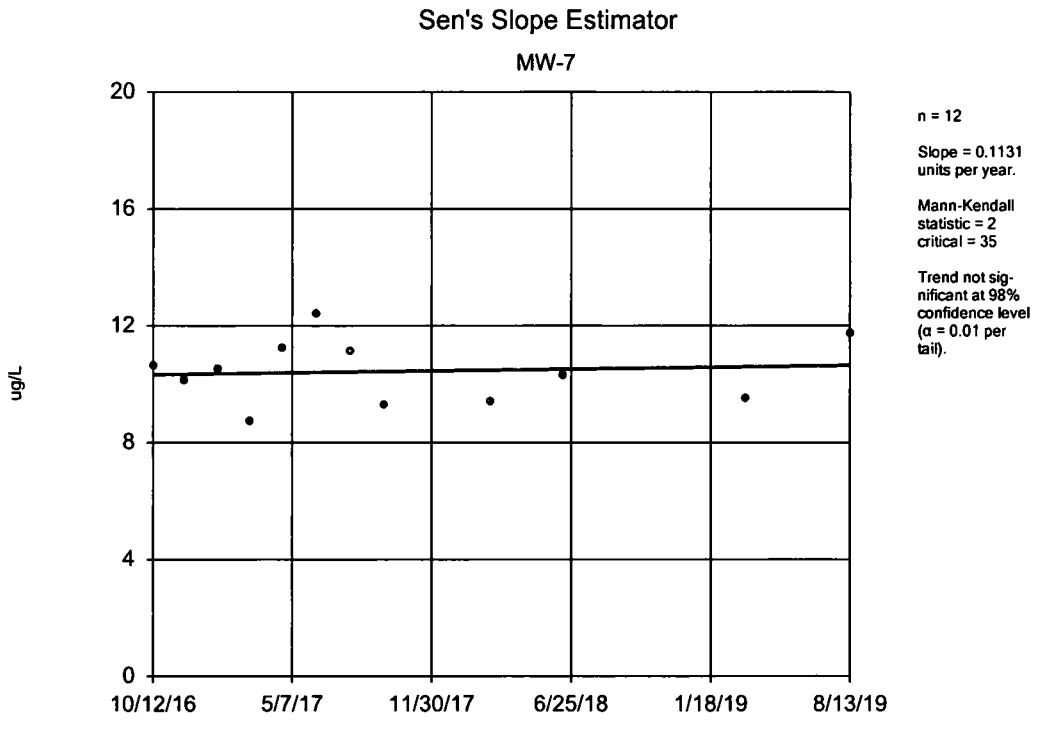
Mann-Kendall statistic = -36 critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Selenium [total] Analysis Run 10/23/2019 4:34 PM

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

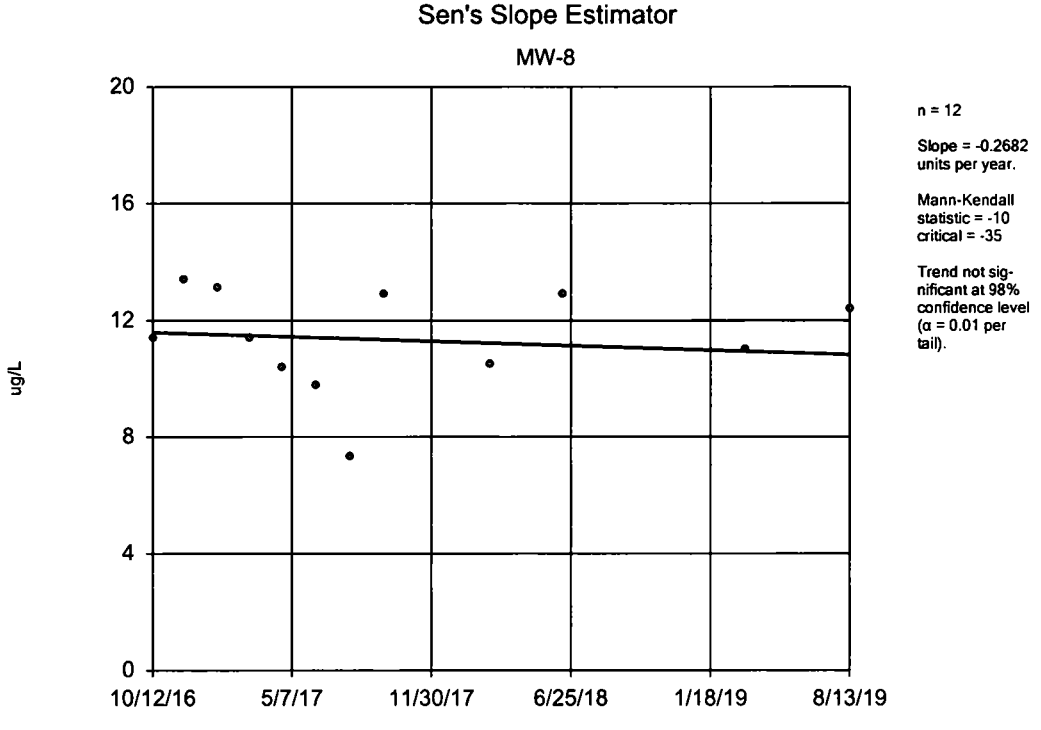
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Selenium [total] Analysis Run 10/23/2019 4:34 PM

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

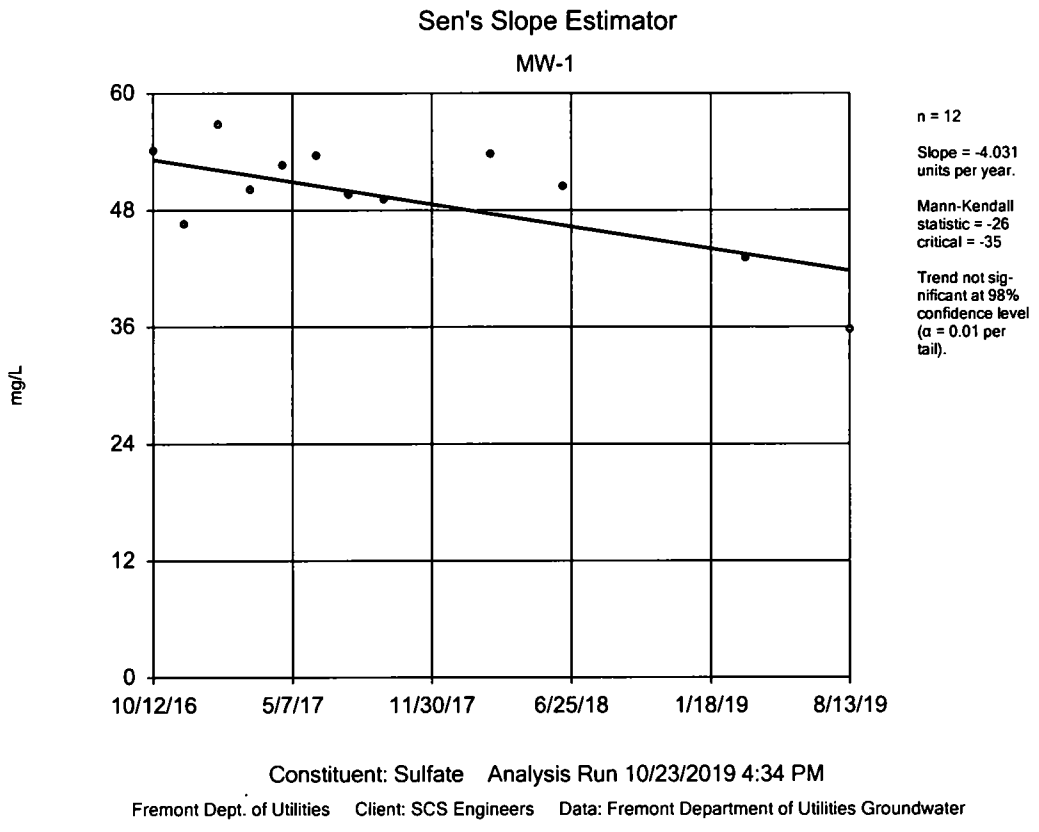
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



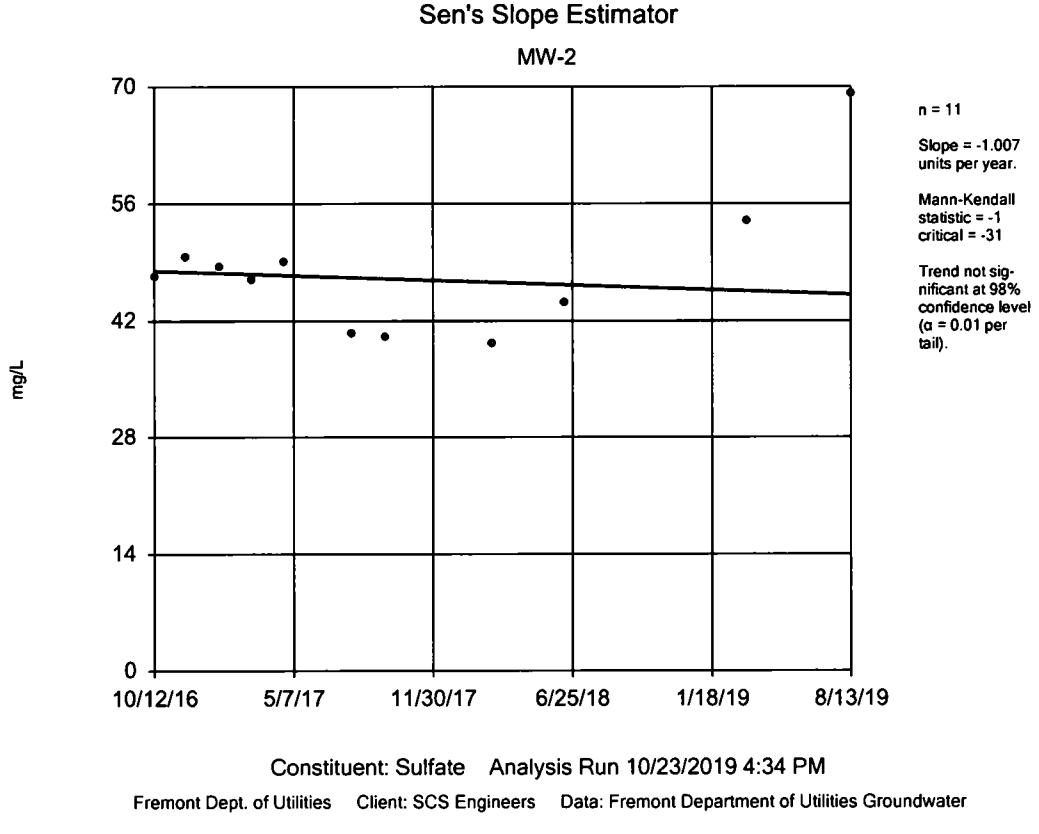
Constituent: Selenium [total] Analysis Run 10/23/2019 4:34 PM

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

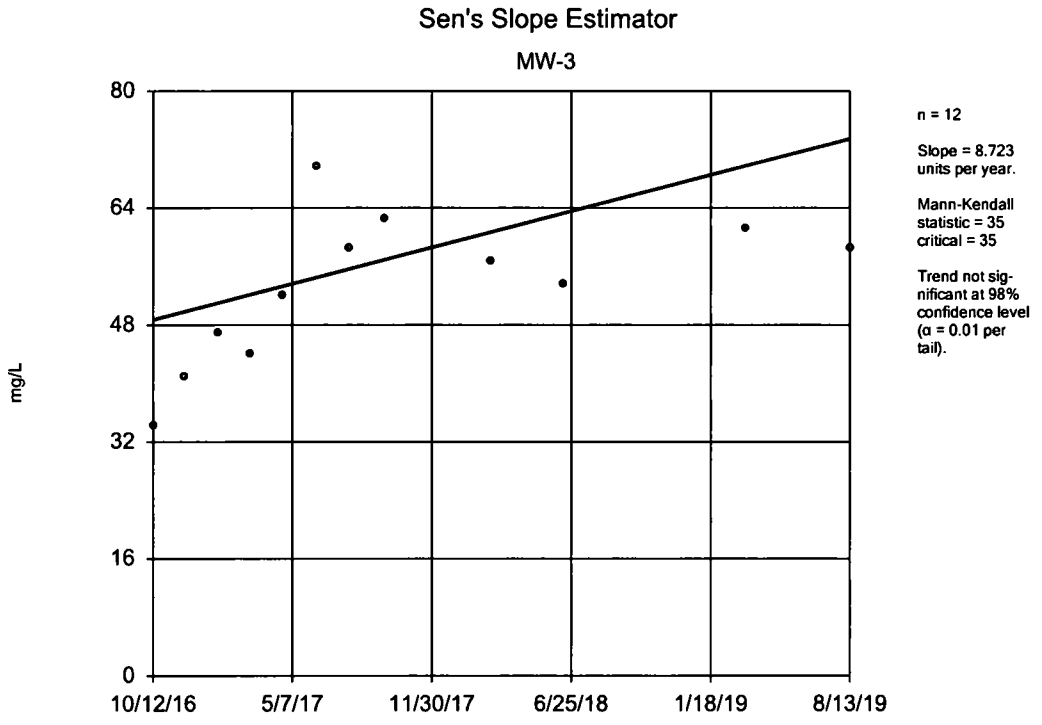
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



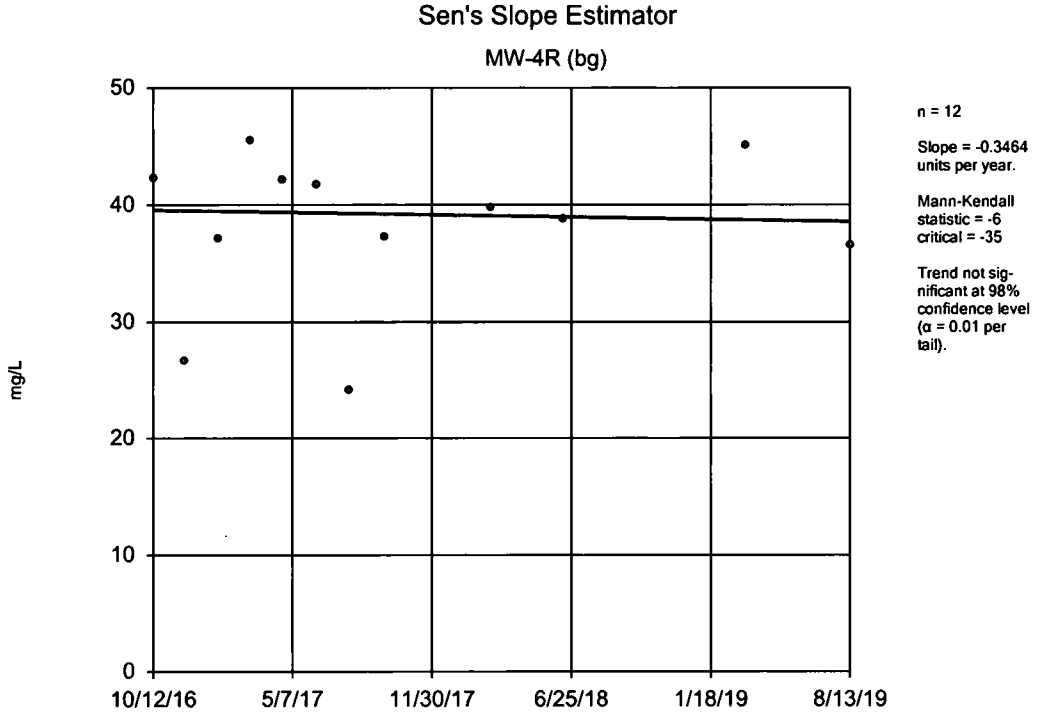
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Sulfate Analysis Run 10/23/2019 4:34 PM

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

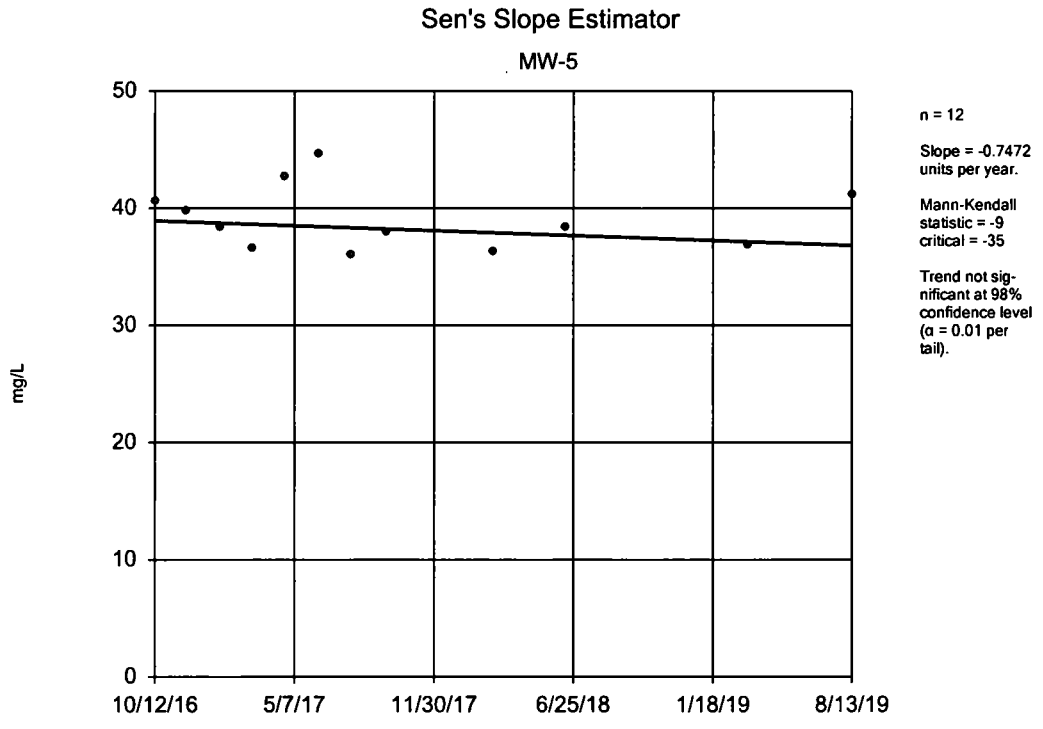
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Sulfate Analysis Run 10/23/2019 4:34 PM

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

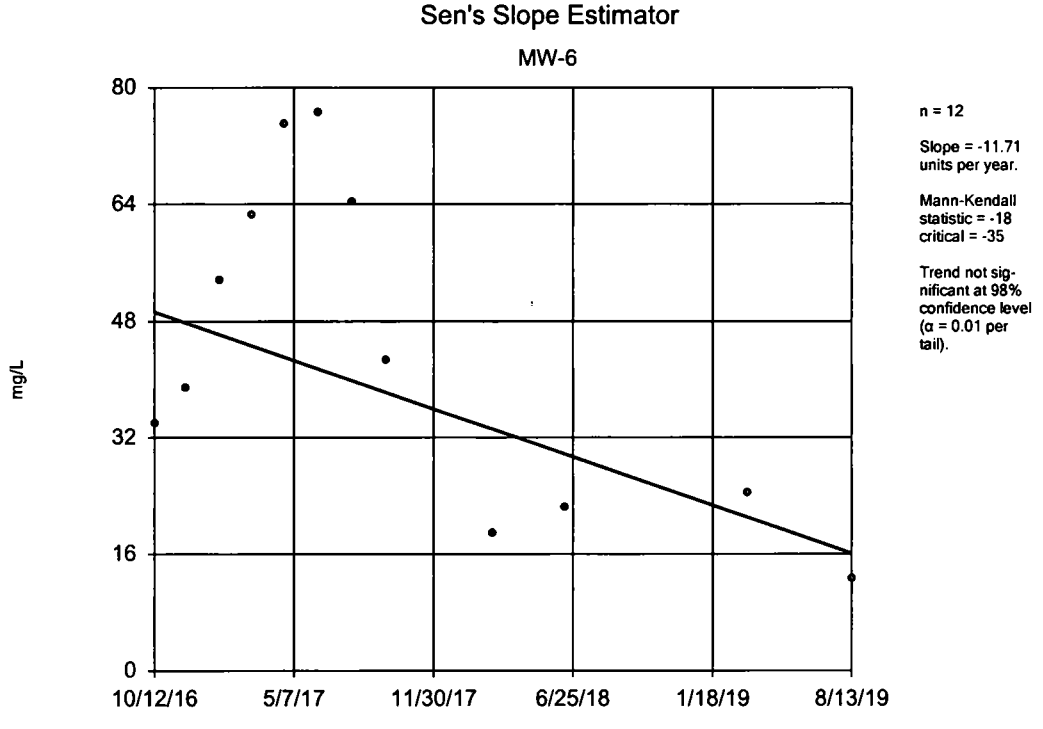
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Sulfate Analysis Run 10/23/2019 4:34 PM

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

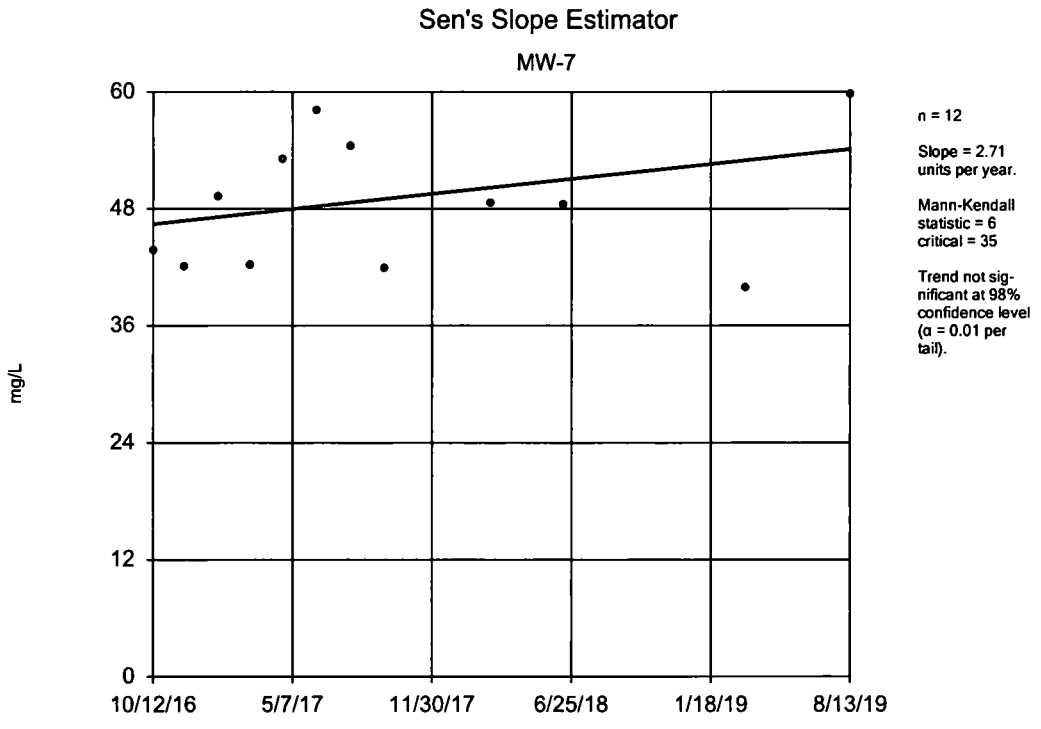
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Sulfate Analysis Run 10/23/2019 4:34 PM

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

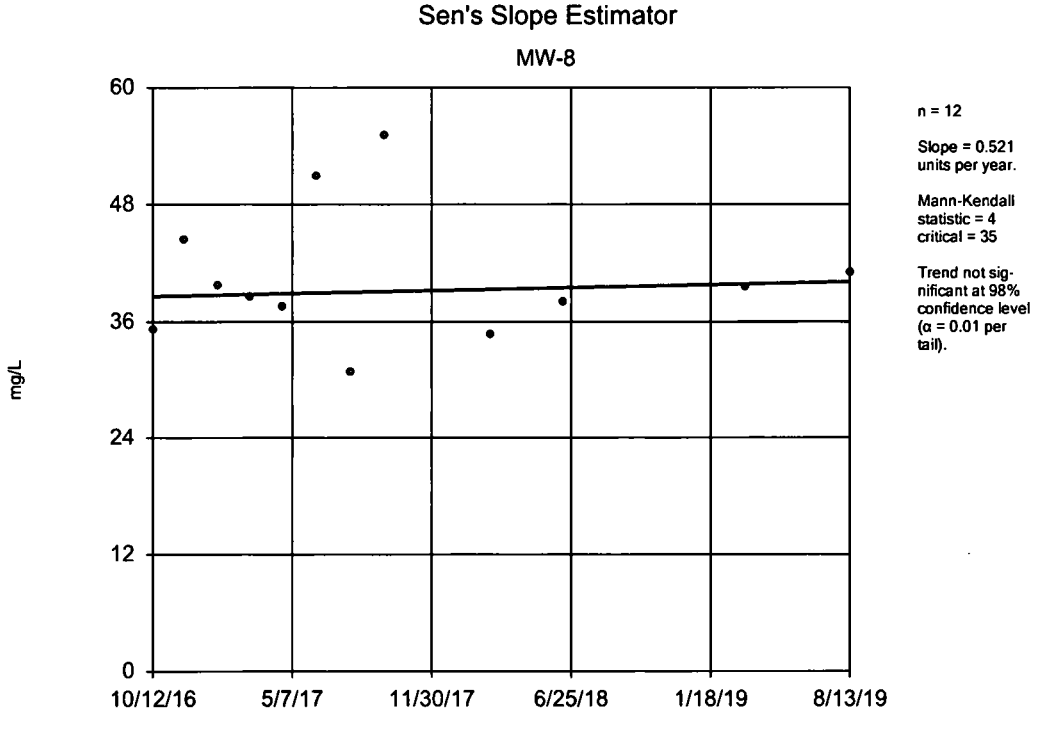
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Sulfate Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



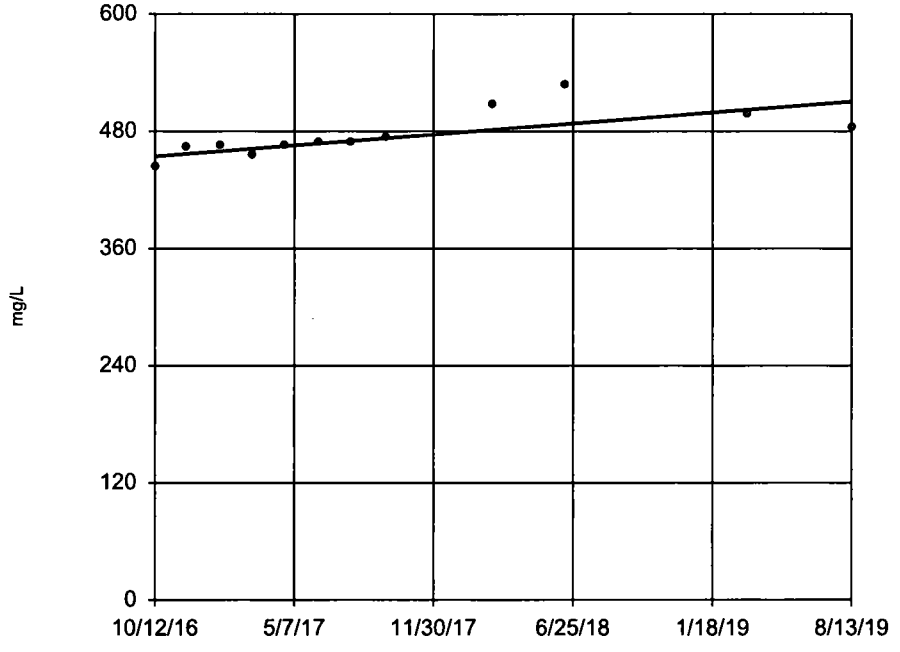
Constituent: Sulfate Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-1



n = 12

Slope = 19.8 units per year.

Mann-Kendall statistic = 50 critical = 35

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

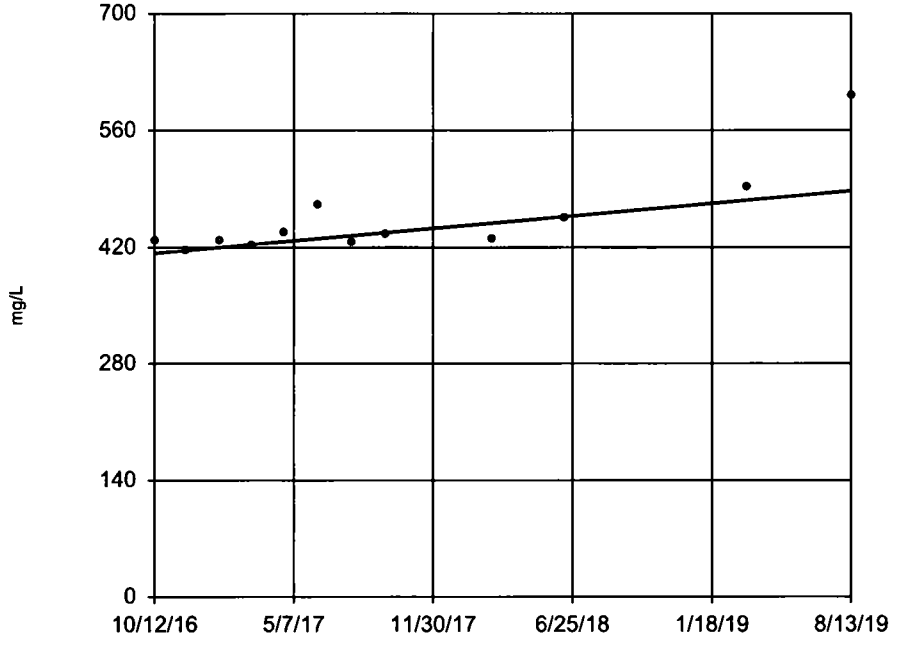
Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-2



n = 12

Slope = 26.31 units per year.

Mann-Kendall statistic = 39 critical = 35

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:34 PM

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

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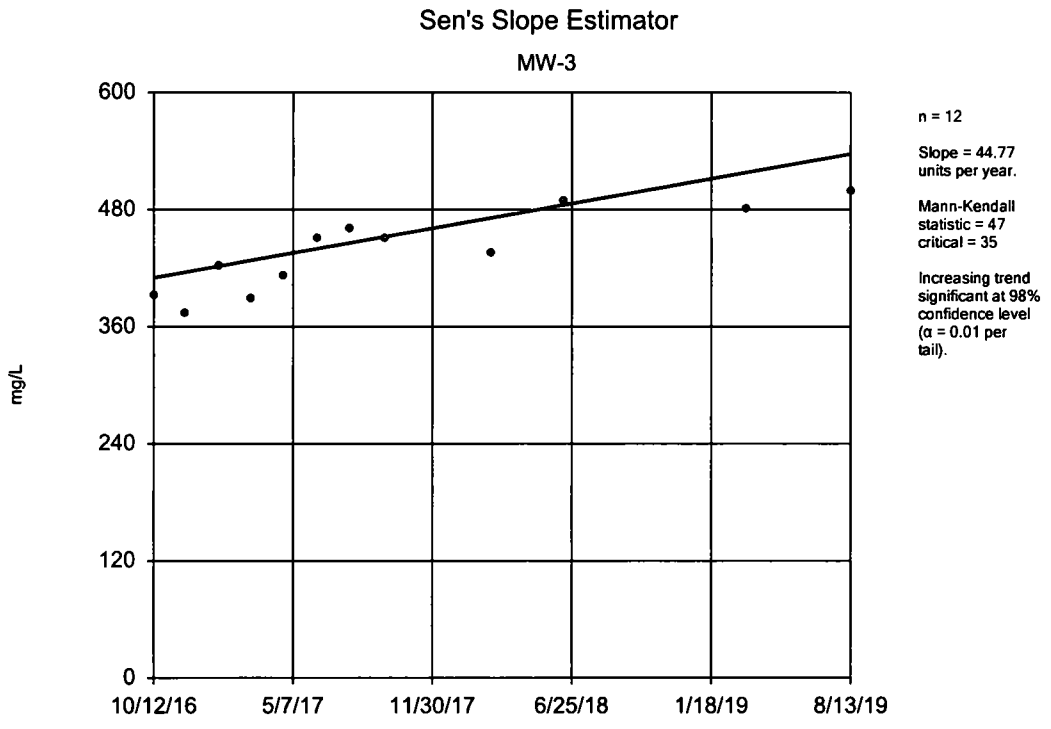
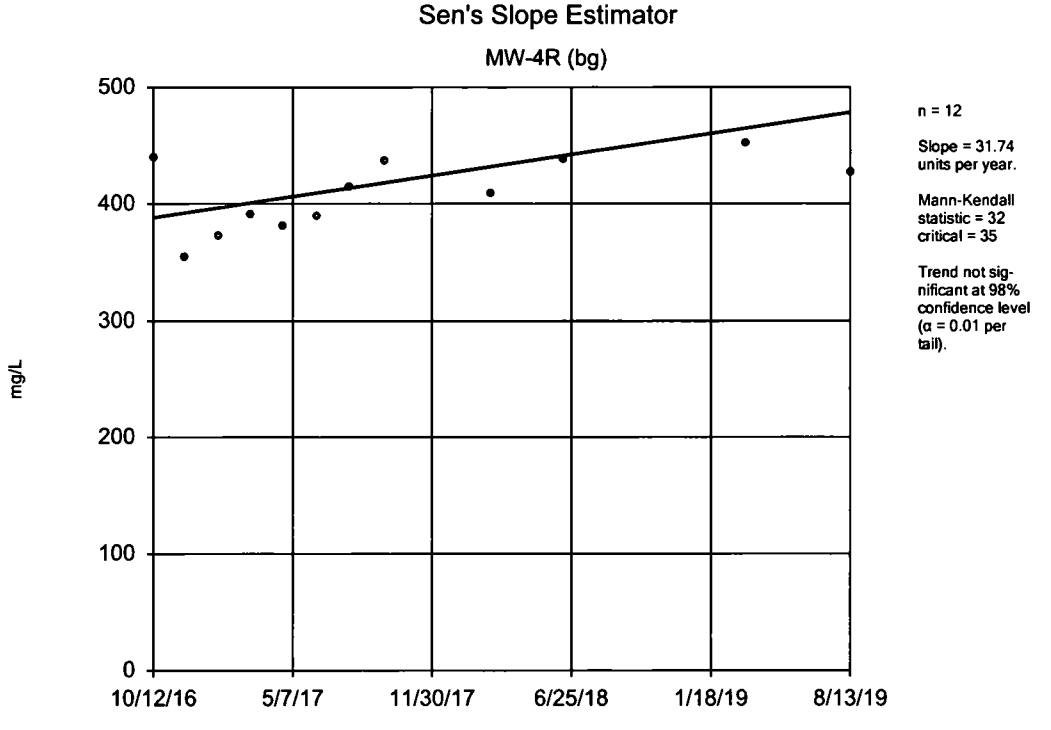


Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:34 PM

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

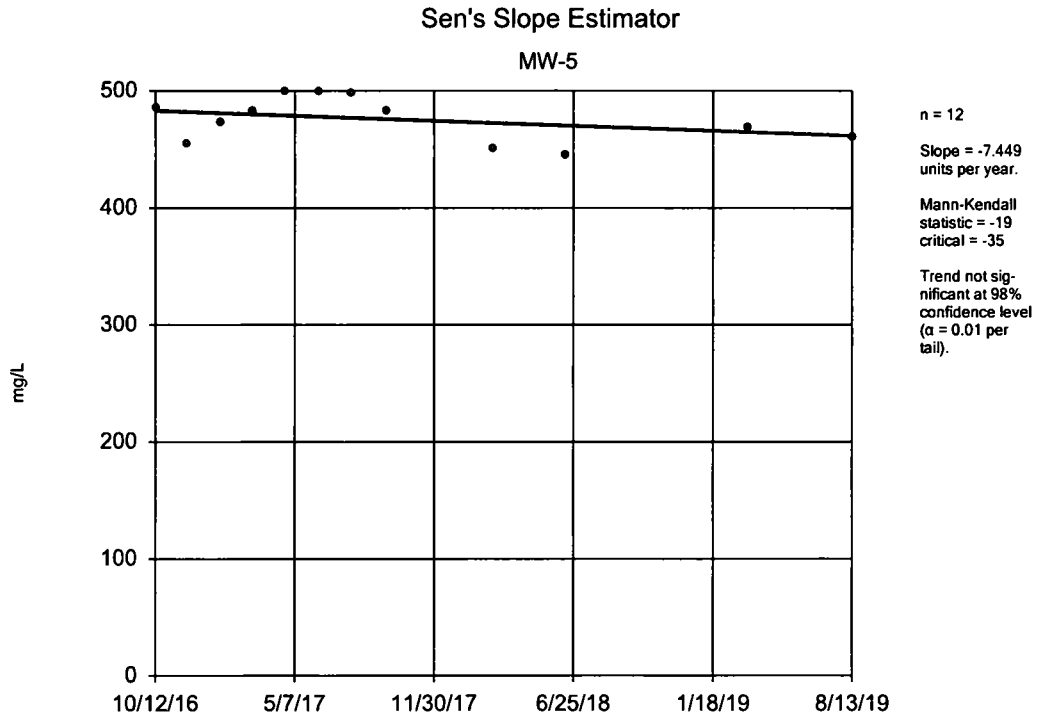
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:34 PM

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

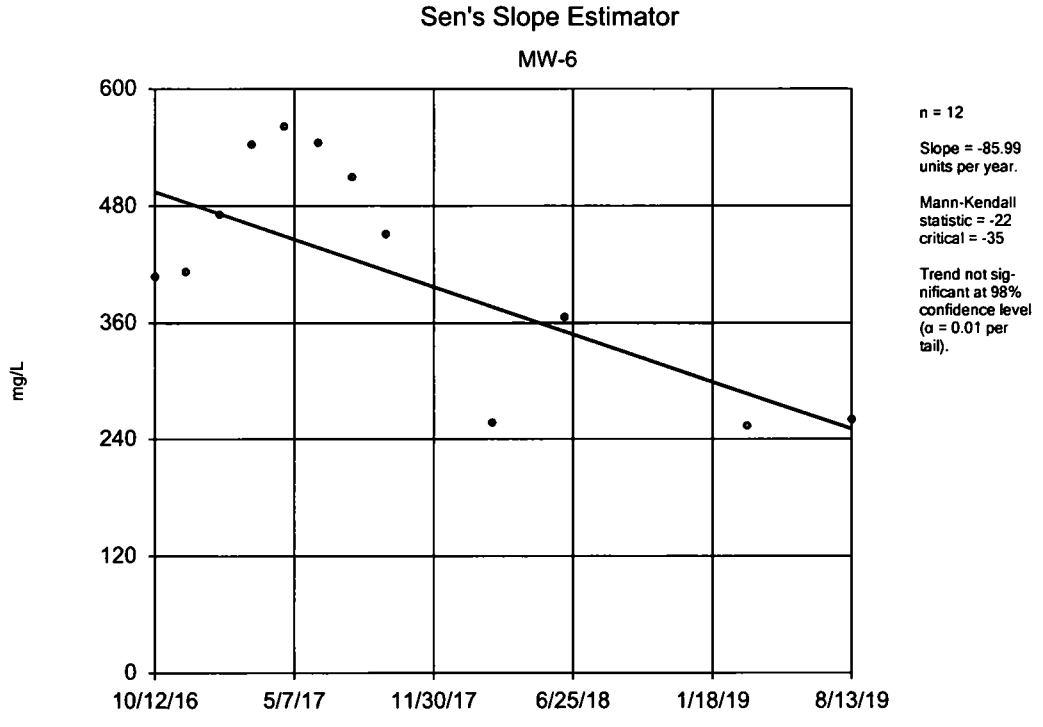
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



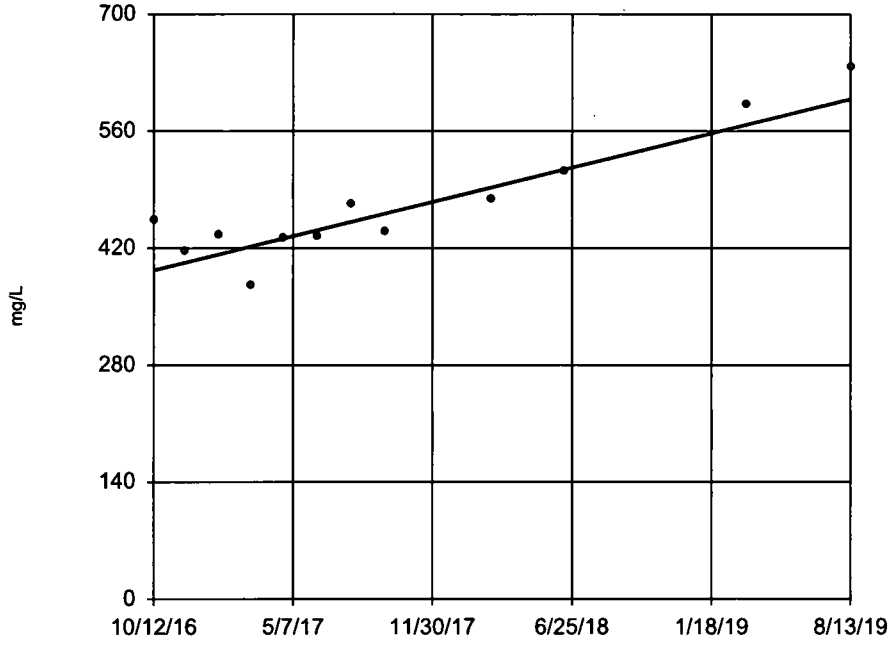
Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-7



n = 12

Slope = 72.2 units per year.

Mann-Kendall statistic = 44 critical = 35

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

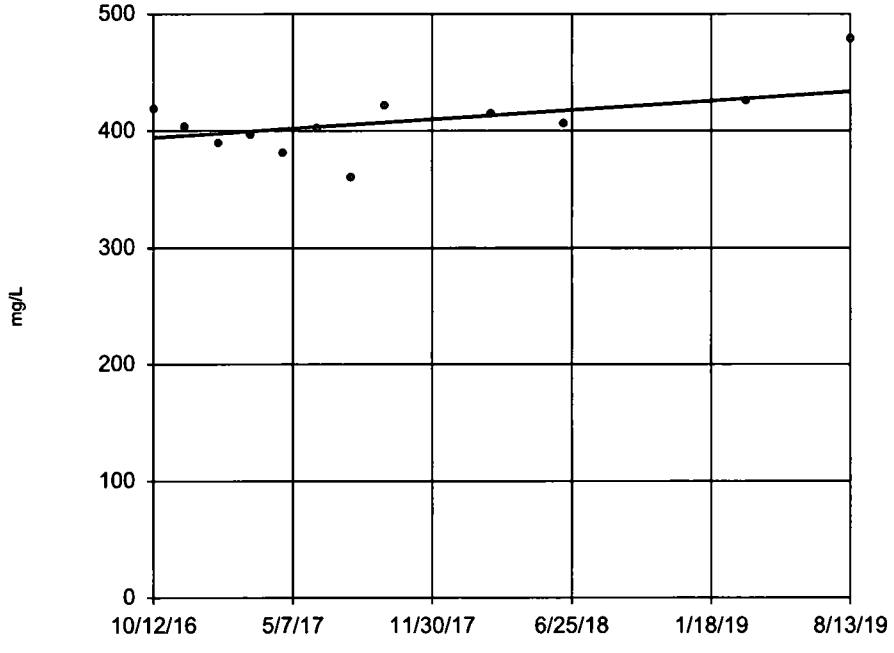
Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-8



n = 12

Slope = 13.79 units per year.

Mann-Kendall statistic = 22 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

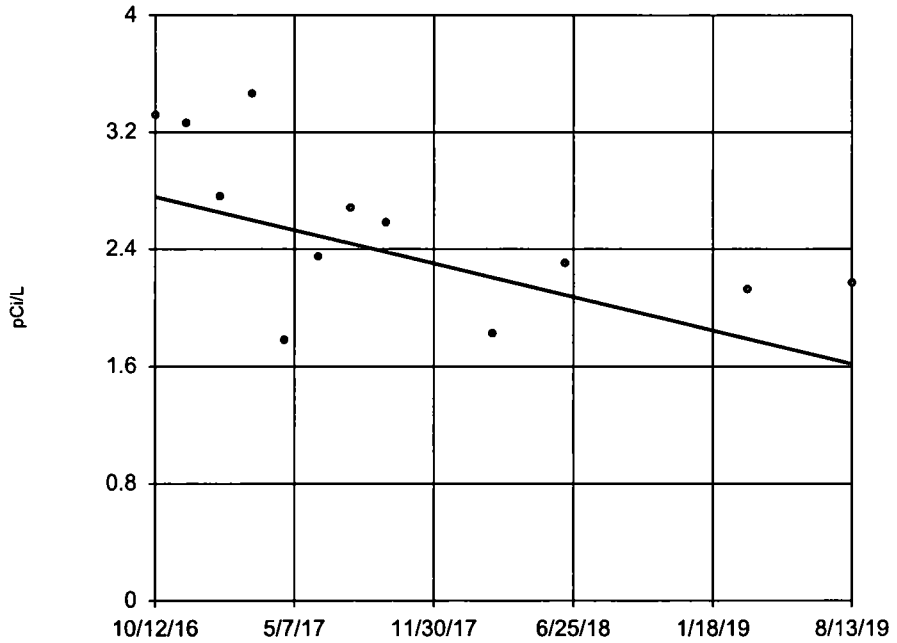
Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-1



n = 12

Slope = -0.4024 units per year.

Mann-Kendall statistic = -34 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

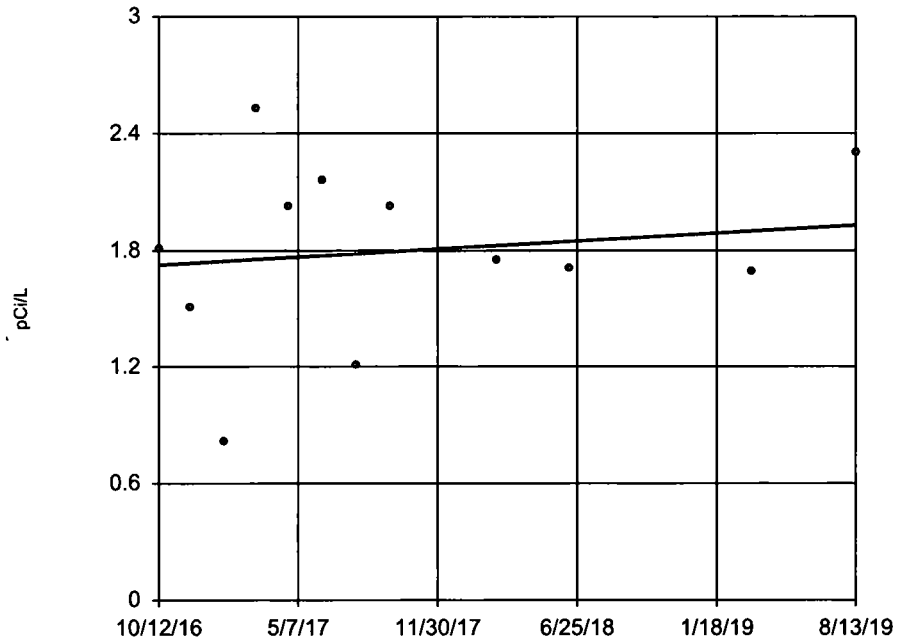
Constituent: Total Radium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-2



n = 12

Slope = 0.0717 units per year.

Mann-Kendall statistic = 3 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Total Radium Analysis Run 10/23/2019 4:34 PM

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

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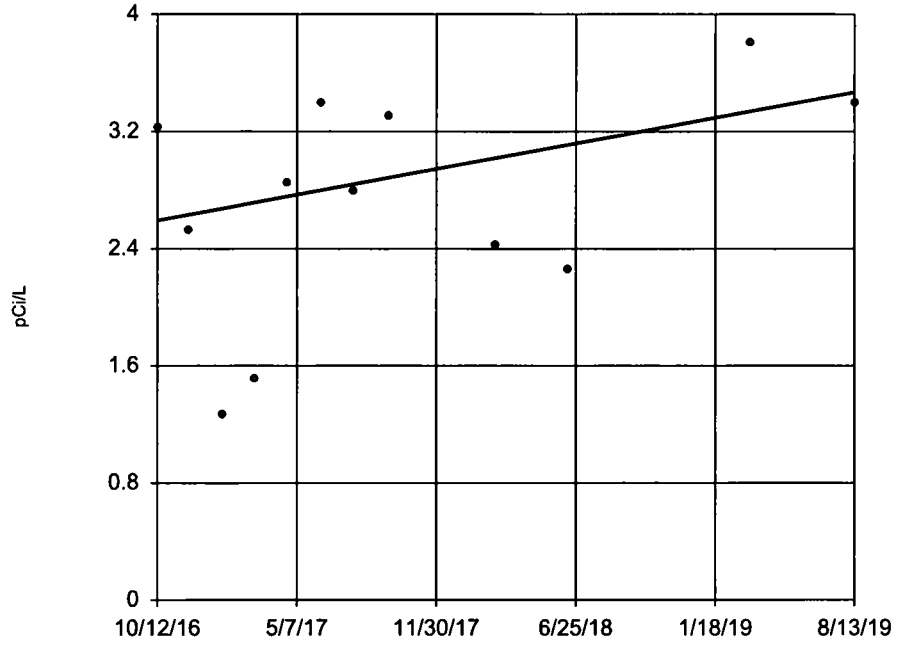
Sen's Slope Estimator

MW-3



n = 12

Slope = 0.3081 units per year.

Mann-Kendall statistic = 17 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

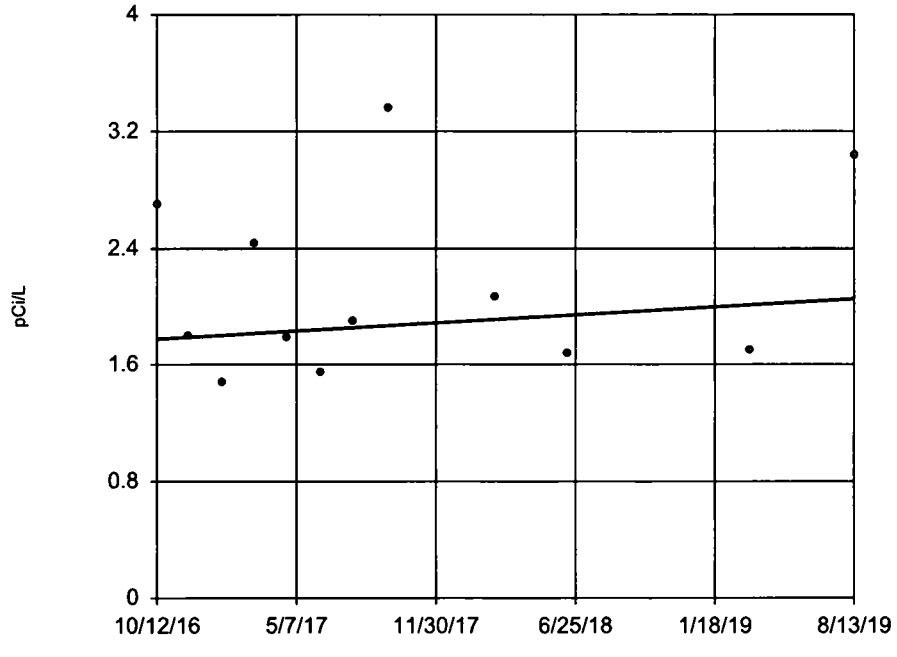
Constituent: Total Radium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-4R (bg)



n = 12

Slope = 0.09718 units per year.

Mann-Kendall statistic = 4 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

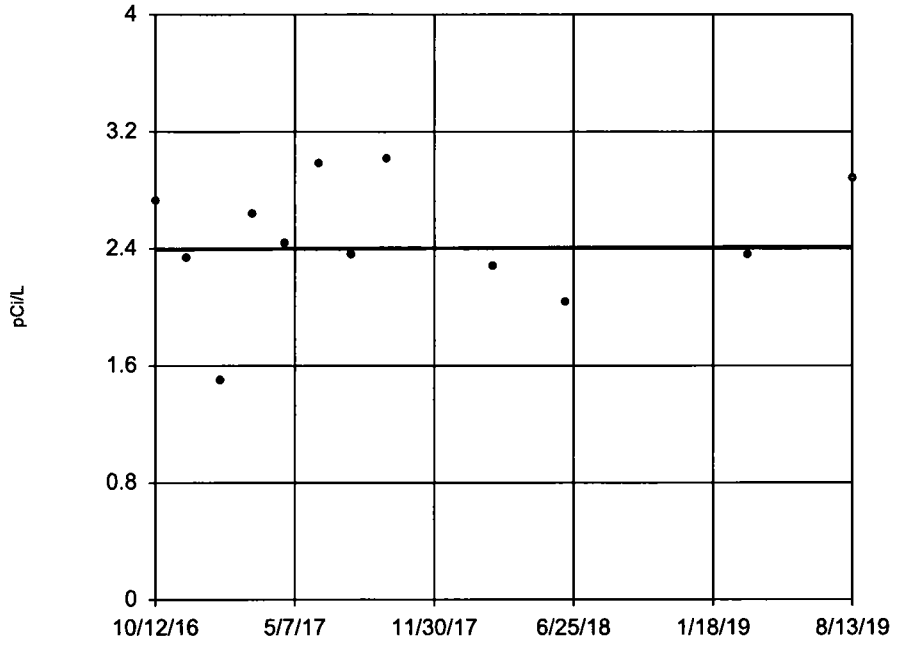
Constituent: Total Radium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-5



n = 12

Slope = 0.006573 units per year.

Mann-Kendall statistic = 1 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

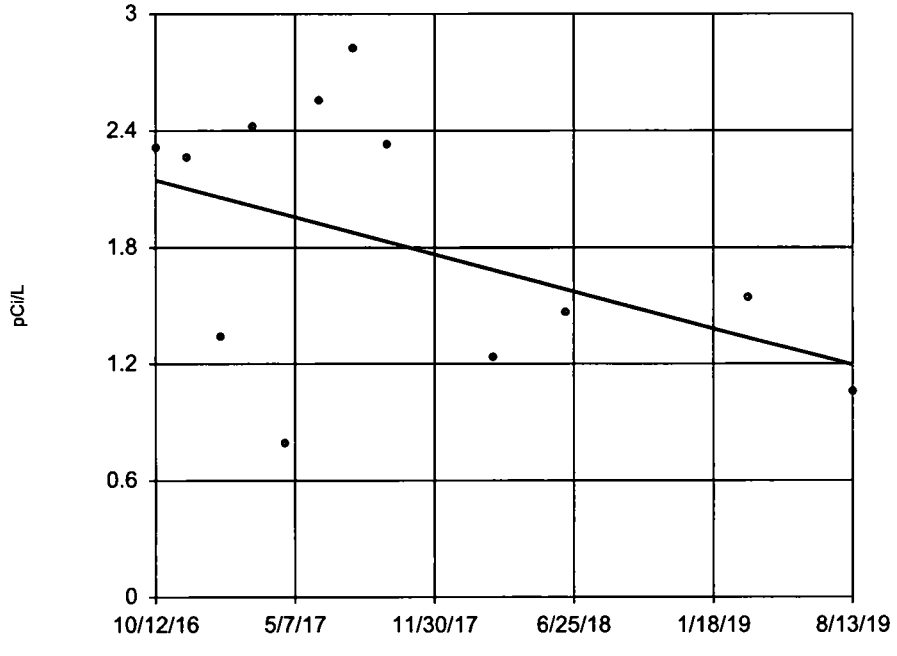
Constituent: Total Radium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

MW-6



n = 12

Slope = -0.3357 units per year.

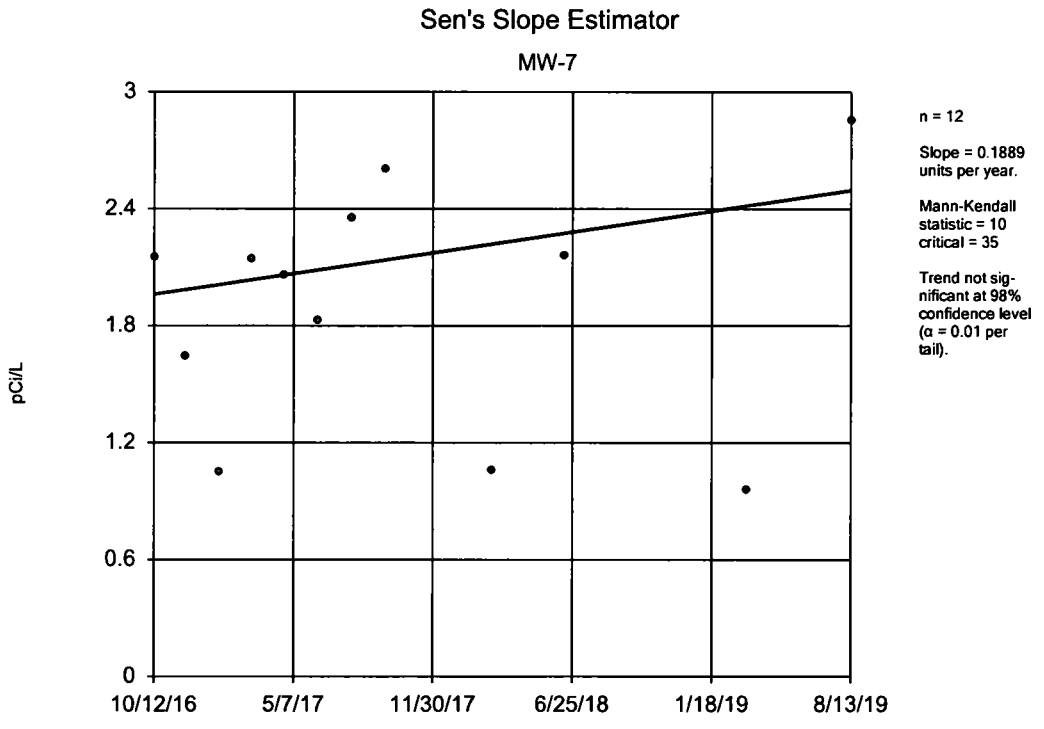
Mann-Kendall statistic = -12 critical = -35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Total Radium Analysis Run 10/23/2019 4:34 PM

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

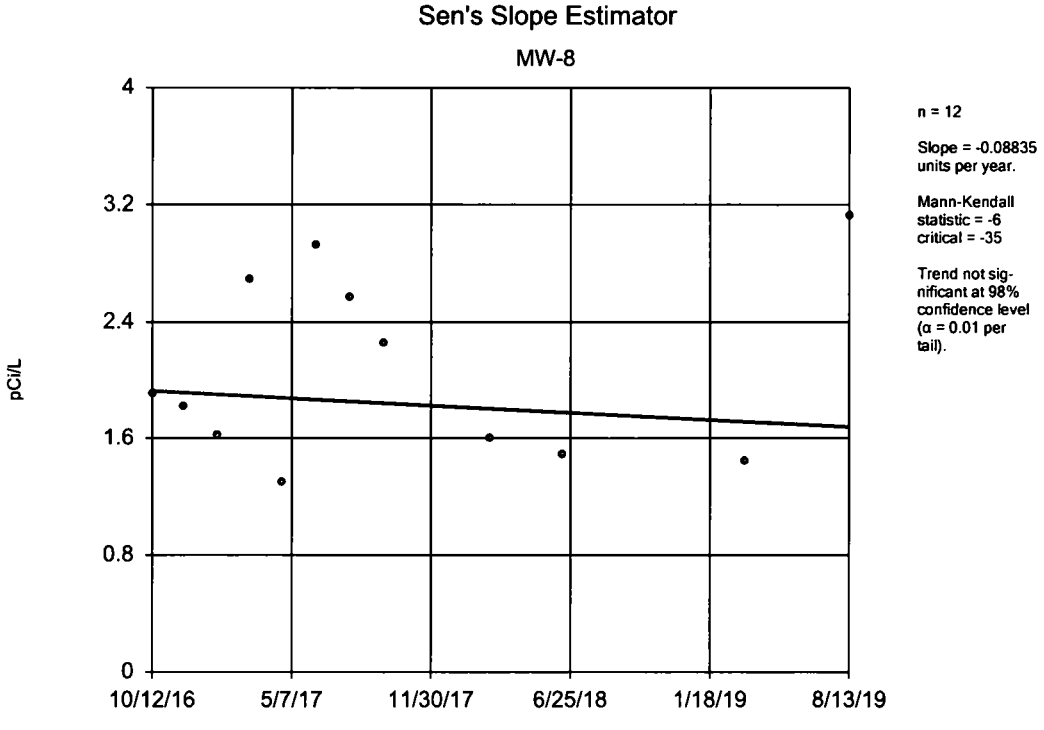
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Total Radium Analysis Run 10/23/2019 4:34 PM

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

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Constituent: Total Radium Analysis Run 10/23/2019 4:34 PM

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 10/23/2019, 4:45 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Arsenic [total] (ug/L)	MW-1	3.776	3.324	10	No	12	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-2	4.083	3.534	10	No	12	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-3	3.163	2.887	10	No	12	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-4R (bg)	4.255	3.662	10	No	12	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-5	4.629	4.271	10	No	12	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-6	3.245	2.538	10	No	12	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-7	3.669	3.298	10	No	12	0	No	0.01	Param.
Arsenic [total] (ug/L)	MW-8	2.708	2.459	10	No	12	0	No	0.01	Param.
Barium [total] (ug/L)	MW-1	146.4	123.6	2000	No	12	0	No	0.01	Param.
Barium [total] (ug/L)	MW-2	105.3	95.43	2000	No	12	0	No	0.01	Param.
Barium [total] (ug/L)	MW-3	180.8	162.7	2000	No	12	0	No	0.01	Param.
Barium [total] (ug/L)	MW-4R (bg)	128.1	115.1	2000	No	12	0	No	0.01	Param.
Barium [total] (ug/L)	MW-5	146.4	127.1	2000	No	12	0	No	0.01	Param.
Barium [total] (ug/L)	MW-6	161	95.82	2000	No	12	0	No	0.01	Param.
Barium [total] (ug/L)	MW-7	124.7	109.5	2000	No	12	0	No	0.01	Param.
Barium [total] (ug/L)	MW-8	155	137.8	2000	No	12	0	No	0.01	Param.
Boron (ug/L)	MW-1	151	133.1	197.8	No	12	0	No	0.01	Param.
Boron (ug/L)	MW-2	129.1	114	197.8	No	11	0	No	0.01	Param.
Boron (ug/L)	MW-4R (bg)	262.5	133.2	197.8	No	12	25	No	0.01	Param.
Boron (ug/L)	MW-5	135.1	121.4	197.8	No	12	0	No	0.01	Param.
Boron (ug/L)	MW-7	186.3	153.7	197.8	No	12	0	No	0.01	Param.
Boron (ug/L)	MW-8	144.1	112.7	197.8	No	10	0	No	0.01	Param.
Calcium (mg/L)	**MW-1**	**108.8**	**101.8**	**84.11**	**Yes**	**12**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-2**	**109.5**	**96.46**	**84.11**	**Yes**	**12**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-3**	**99.19**	**88.06**	**84.11**	**Yes**	**12**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	MW-4R (bg)	87.56	80.65	84.11	No	12	0	No	0.01	Param.
Calcium (mg/L)	**MW-5**	**115.9**	**100.1**	**84.11**	**Yes**	**12**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	MW-6	92.9	54.27	84.11	No	12	0	No	0.01	Param.
Calcium (mg/L)	**MW-7**	**105.7**	**92.91**	**84.11**	**Yes**	**12**	**0**	**No**	**0.01**	**Param.**
Calcium (mg/L)	**MW-8**	**92.18**	**84.25**	**84.11**	**Yes**	**12**	**0**	**No**	**0.01**	**Param.**
Chloride (mg/L)	MW-1	19	9.9	250	No	12	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-2	17.24	14.05	250	No	11	0	No	0.01	Param.
Chloride (mg/L)	MW-3	34.36	27.39	250	No	12	0	No	0.01	Param.
Chloride (mg/L)	MW-4R (bg)	29.4	14.8	250	No	11	0	No	0.01	Param.
Chloride (mg/L)	MW-5	24.94	12.74	250	No	12	0	No	0.01	Param.
Chloride (mg/L)	MW-6	55.16	34.27	250	No	11	0	No	0.01	Param.
Chloride (mg/L)	MW-7	87.2	18.4	250	No	12	0	No	0.01	NP (normality)
Chloride (mg/L)	MW-8	28.12	20.21	250	No	12	0	No	0.01	Param.
Fluoride (mg/L)	MW-1	1.411	1.256	4	No	12	0	No	0.01	Param.
Fluoride (mg/L)	MW-2	0.9927	0.8723	4	No	12	0	No	0.01	Param.
Fluoride (mg/L)	MW-3	0.8446	0.7221	4	No	12	0	No	0.01	Param.
Fluoride (mg/L)	MW-4R (bg)	0.904	0.7977	4	No	12	0	No	0.01	Param.
Fluoride (mg/L)	MW-5	1.3	0.98	4	No	12	0	No	0.01	NP (normality)
Fluoride (mg/L)	MW-6	0.5974	0.4726	4	No	12	0	No	0.01	Param.
Fluoride (mg/L)	MW-7	0.9168	0.7932	4	No	12	0	No	0.01	Param.
Fluoride (mg/L)	MW-8	0.8578	0.7372	4	No	12	0	No	0.01	Param.
Lithium (ug/L)	MW-1	36.49	31.56	40	No	12	0	No	0.01	Param.
Lithium (ug/L)	MW-2	30.01	26.28	40	No	11	0	No	0.01	Param.
Lithium (ug/L)	MW-3	29.11	25.27	40	No	12	0	No	0.01	Param.
Lithium (ug/L)	MW-4R (bg)	27.71	23.81	40	No	12	0	No	0.01	Param.

Confidence Interval

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 10/23/2019, 4:45 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Lithium (ug/L)	MW-5	33.18	26.96	40	No	12	0	x^(1/3)	0.01	Param.
Lithium (ug/L)	MW-6	30.44	19.49	40	No	12	0	No	0.01	Param.
Lithium (ug/L)	MW-7	31.43	25.75	40	No	12	0	No	0 01	Param.
Lithium (ug/L)	MW-8	28.48	26.15	40	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-1	8.632	7.652	100	No	12	0	No	0.01	Param.
Molybdenum (ug/L)	MW-2	8.774	7.709	100	No	12	0	No	0.01	Param.
Molybdenum (ug/L)	MW-3	12.36	10.33	100	No	12	0	No	0.01	Param.
Molybdenum (ug/L)	MW-4R (bg)	7.268	5.265	100	No	12	0	No	0.01	Param.
Molybdenum (ug/L)	MW-5	6.966	5.434	100	No	12	0	No	0.01	Param.
Molybdenum (ug/L)	MW-6	8.831	6.202	100	No	12	0	No	0.01	Param.
Molybdenum (ug/L)	MW-7	9.107	7.927	100	No	12	0	No	0.01	Param.
Molybdenum (ug/L)	MW-8	8.326	7.074	100	No	11	0	No	0.01	Param.
pH (Std. Units)	MW-1	7.375	6.925	8.5	No	12	0	No	0.005	Param.
pH (Std. Units)	MW-2	7.285	6.882	8.5	No	12	0	No	0.005	Param.
pH (Std. Units)	MW-3	7.335	6.949	8.5	No	12	0	No	0.005	Param.
pH (Std. Units)	MW-4R (bg)	7.464	6.903	8.5	No	12	0	No	0.005	Param.
pH (Std. Units)	MW-5	7.455	7.062	8.5	No	12	0	No	0.005	Param.
pH (Std. Units)	MW-6	7.287	6.846	8.5	No	12	0	No	0.005	Param.
pH (Std. Units)	MW-7	7.328	6 922	8.5	No	12	0	No	0.005	Param.
pH (Std. Units)	MW-8	7.351	6 916	8.5	No	12	0	No	0.005	Param.
Selenium [total] (ug/L)	MW-1	14.28	10.42	50	No	12	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-2	15.21	12.26	50	No	12	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-3	9.279	7.837	50	No	12	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-4R (bg)	8.072	6.673	50	No	11	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-5	9.009	7.925	50	No	12	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-6	10.59	5.327	50	No	12	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-7	11.25	9.551	50	No	12	0	No	0.01	Param.
Selenium [total] (ug/L)	MW-8	12.75	10	50	No	12	0	No	0.01	Param.
Sulfate (mg/L)	MW-1	54.07	45.12	250	No	12	0	No	0.01	Param.
Sulfate (mg/L)	MW-2	54.98	41.06	250	No	11	0	No	0.01	Param.
Sulfate (mg/L)	MW-3	61.16	45.24	250	No	12	0	No	0.01	Param.
Sulfate (mg/L)	MW-4R (bg)	43.29	32.88	250	No	12	0	No	0.01	Param.
Sulfate (mg/L)	MW-5	41.26	36.94	250	No	12	0	No	0.01	Param.
Sulfate (mg/L)	MW-6	61.26	26.31	250	No	12	0	No	0.01	Param.
Sulfate (mg/L)	MW-7	53.68	43.16	250	No	12	0	No	0.01	Param.
Sulfate (mg/L)	MW-8	45.81	35.09	250	No	12	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-1	495.4	458.3	500	No	12	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-2	492	423	500	No	12	0	No	0.01	NP (normality)
Total Dissolved Solids (mg/L)	MW-3	470.2	405.5	500	No	12	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-4R (bg)	433.1	384.4	500	No	12	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-5	490.1	459.7	500	No	12	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-6	509.3	329	500	No	12	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-7	531.8	414.7	500	No	12	0	No	0.01	Param.
Total Dissolved Solids (mg/L)	MW-8	430.4	385.2	500	No	12	0	No	0.01	Param.
Total Radium (pCi/L)	MW-1	2.994	2.105	5	No	12	0	No	0.01	Param.
Total Radium (pCi/L)	MW-2	2.165	1.425	5	No	12	0	No	0.01	Param.
Total Radium (pCi/L)	MW-3	3.337	2.12	5	No	12	0	No	0.01	Param.
Total Radium (pCi/L)	MW-4R (bg)	2.61	1.64	5	No	12	0	No	0.01	Param.
Total Radium (pCi/L)	MW-5	2.796	2.124	5	No	12	0	No	0.01	Param.
Total Radium (pCi/L)	MW-6	2.372	1.314	5	No	12	0	No	0.01	Param.

Confidence Interval

Fremont Dept. of Utilities Client: SCS Engineers Data: Fremont Department of Utilities Groundwater Printed 10/23/2019, 4:45 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Total Radium (pCi/L)	MW-7	2.389	1.418	5	No	12	0	No	0.01	Param.
Total Radium (pCi/L)	MW-8	2.556	1.569	5	No	12	0	No	0.01	Param.

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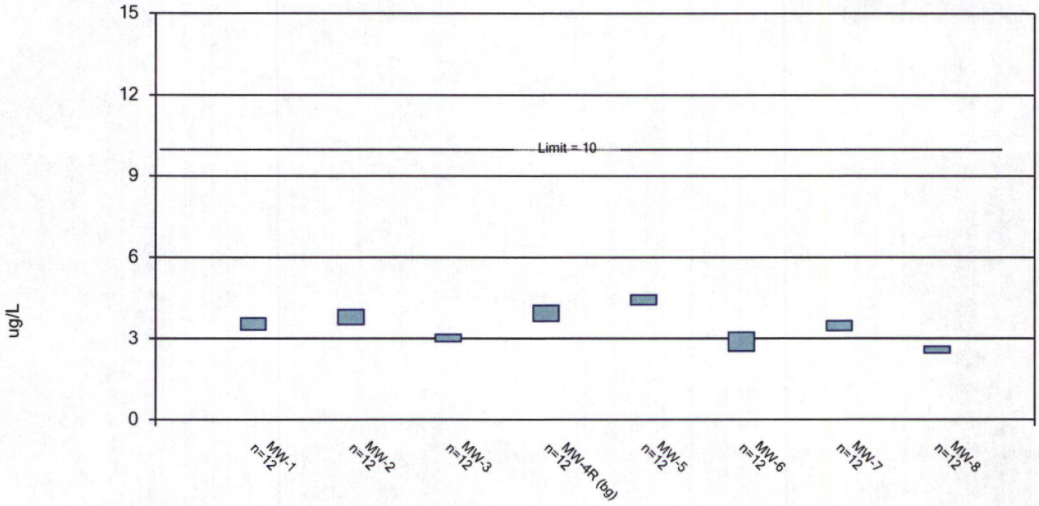
Parametric Confidence Interval

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



Constituent: Arsenic [total] Analysis Run 10/23/2019 4:44 PM

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

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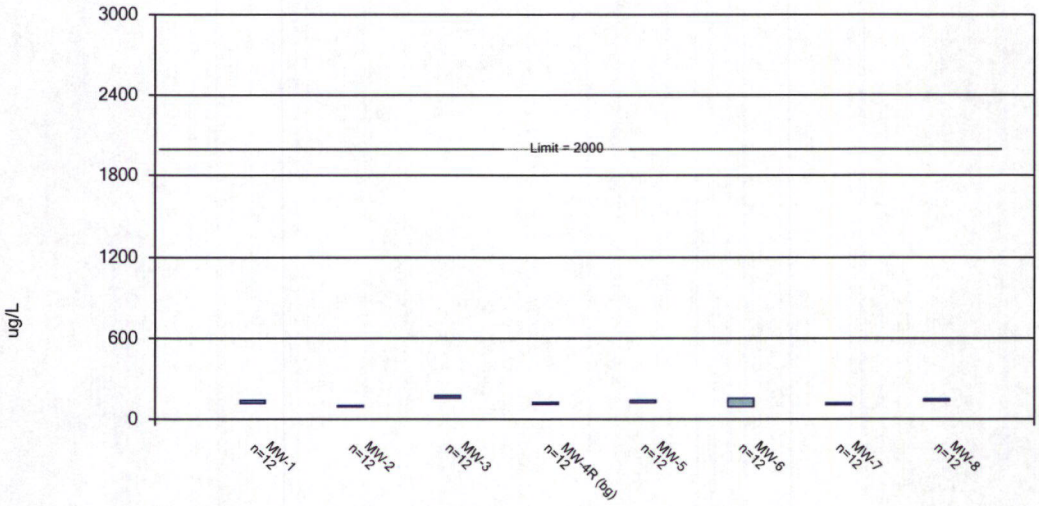
Parametric Confidence Interval

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



Constituent: Barium [total] Analysis Run 10/23/2019 4:44 PM

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

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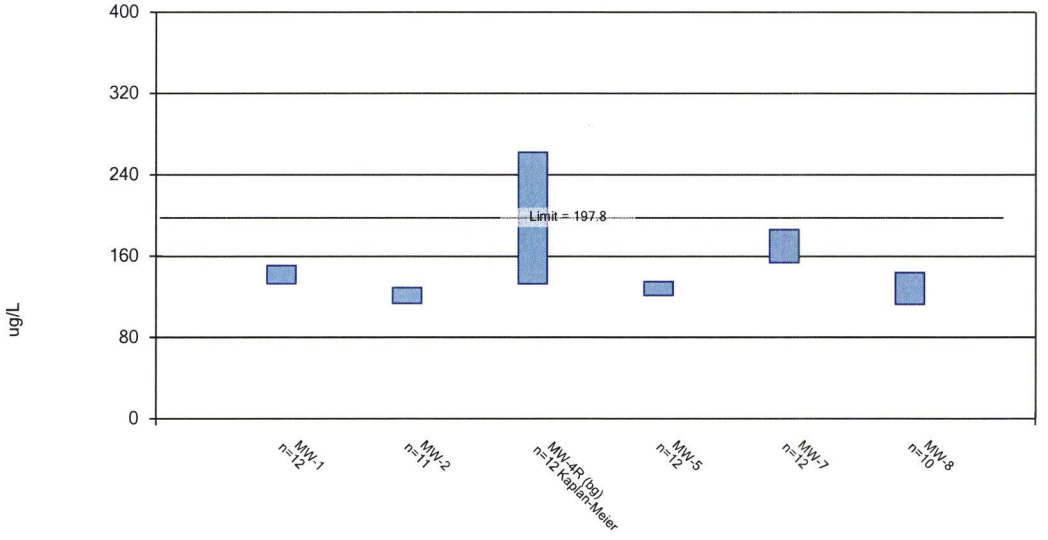
Parametric Confidence Interval

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



Constituent: Boron Analysis Run 10/23/2019 4:44 PM

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

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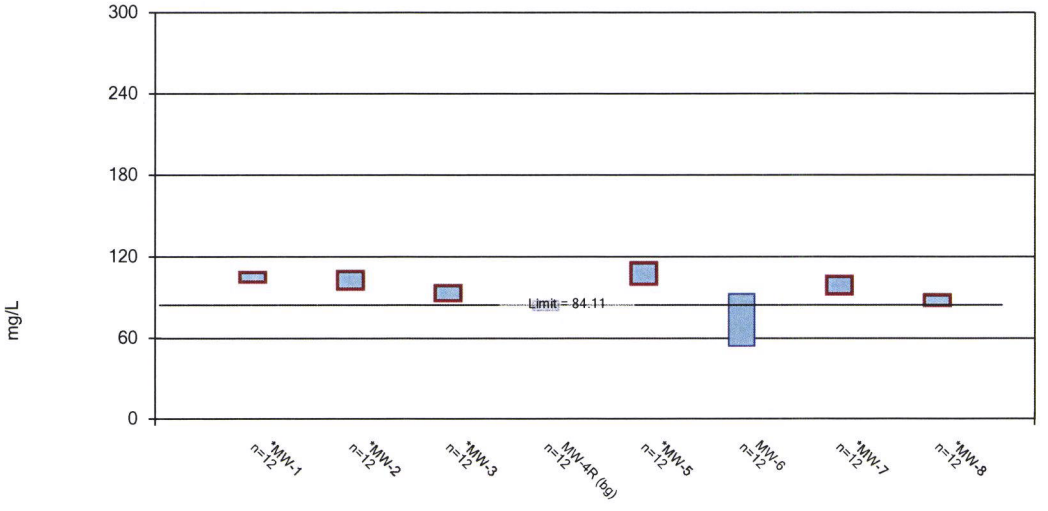
Parametric Confidence Interval

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



Constituent: Calcium Analysis Run 10/23/2019 4:44 PM

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

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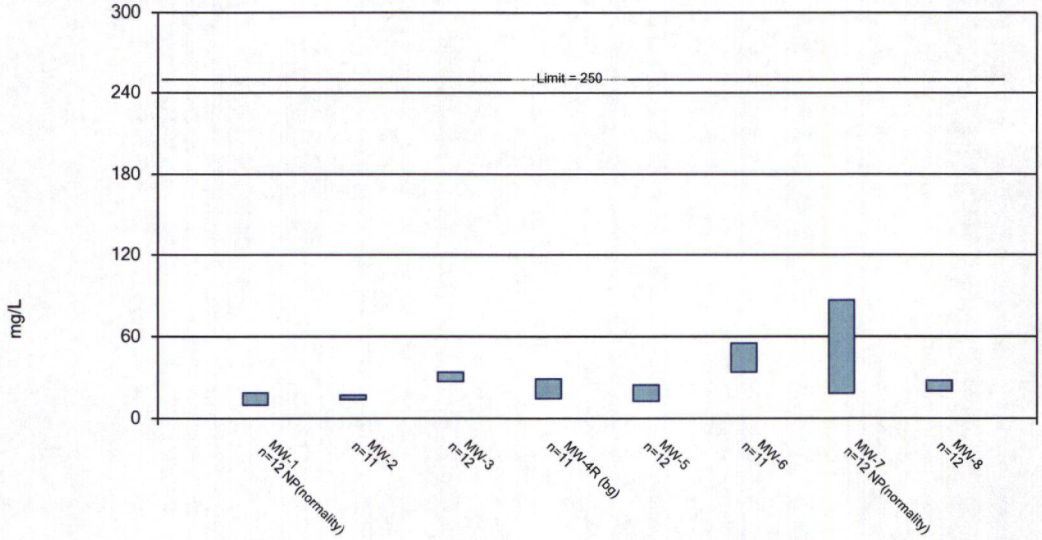
Parametric and Non-Parametric (NP) Confidence Interval

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



Constituent: Chloride Analysis Run 10/23/2019 4:44 PM

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

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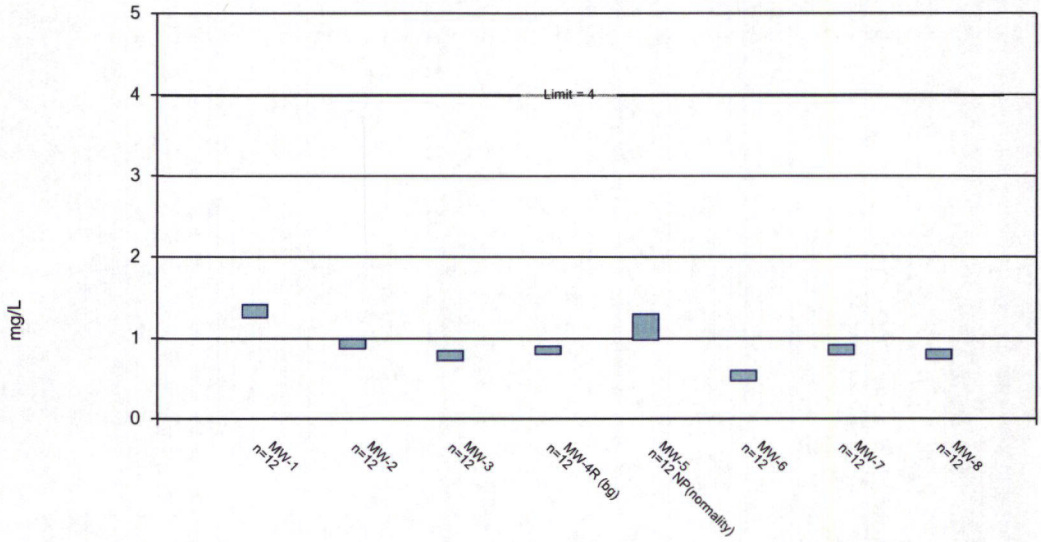
Parametric and Non-Parametric (NP) Confidence Interval

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



Constituent: Fluoride Analysis Run 10/23/2019 4:44 PM

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

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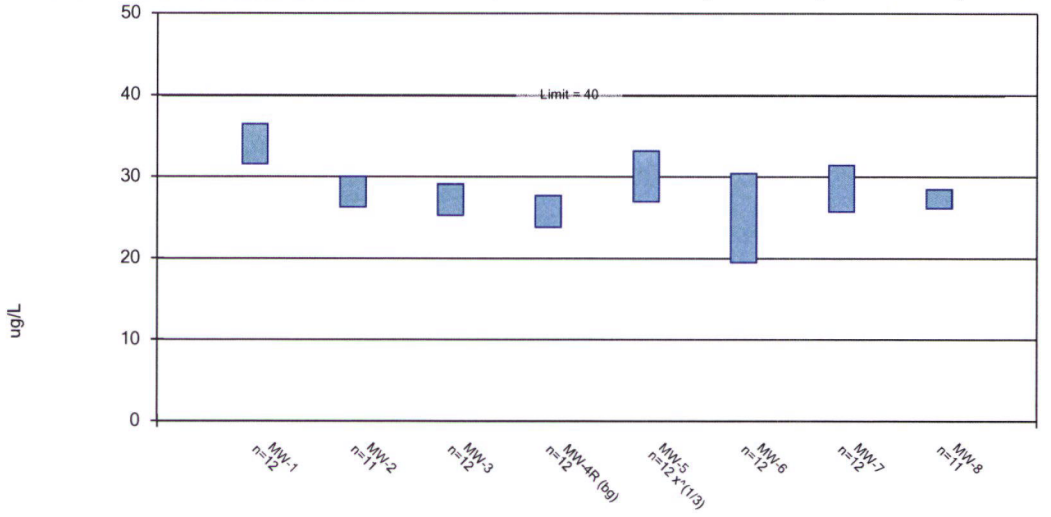
Parametric Confidence Interval

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



Constituent: Lithium Analysis Run 10/23/2019 4:44 PM

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

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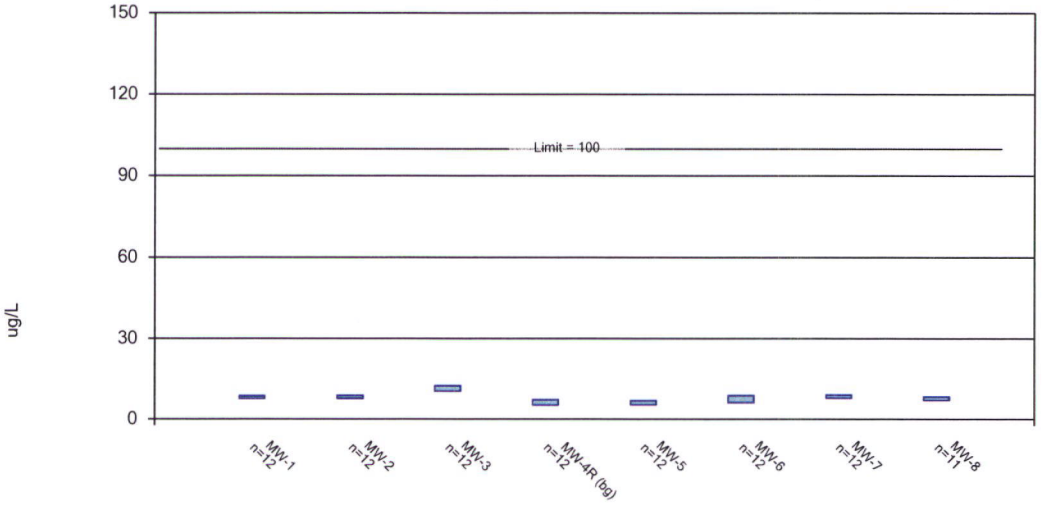
Parametric Confidence Interval

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



Constituent: Molybdenum Analysis Run 10/23/2019 4:44 PM

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

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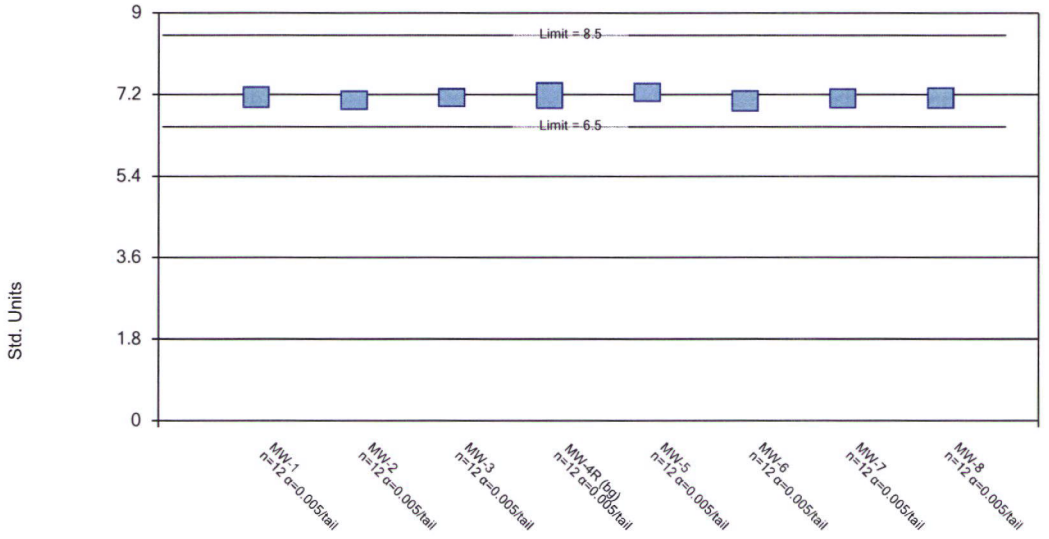
Parametric Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: pH Analysis Run 10/23/2019 4:44 PM

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

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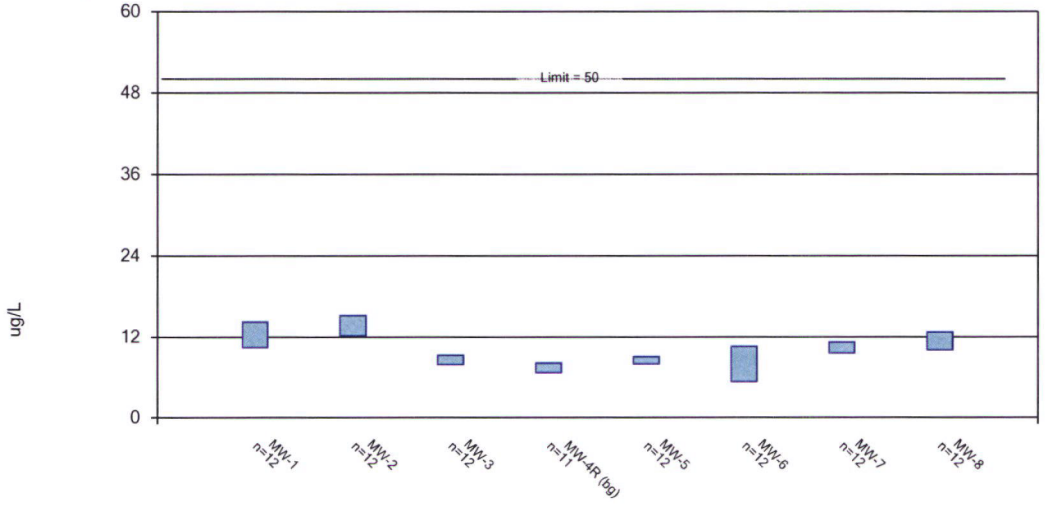
Parametric Confidence Interval

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



Constituent: Selenium [total] Analysis Run 10/23/2019 4:44 PM

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

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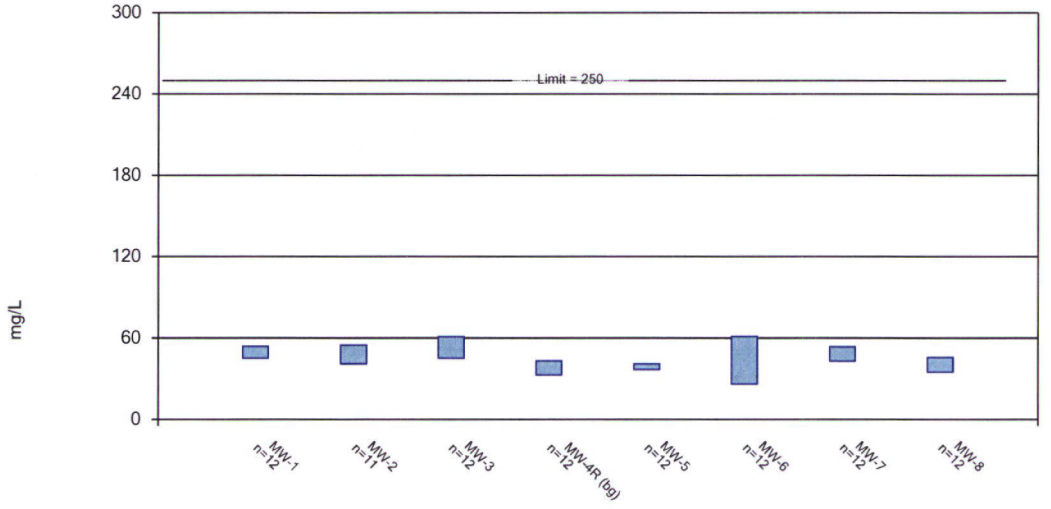
Parametric Confidence Interval

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



Constituent: Sulfate Analysis Run 10/23/2019 4:44 PM

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

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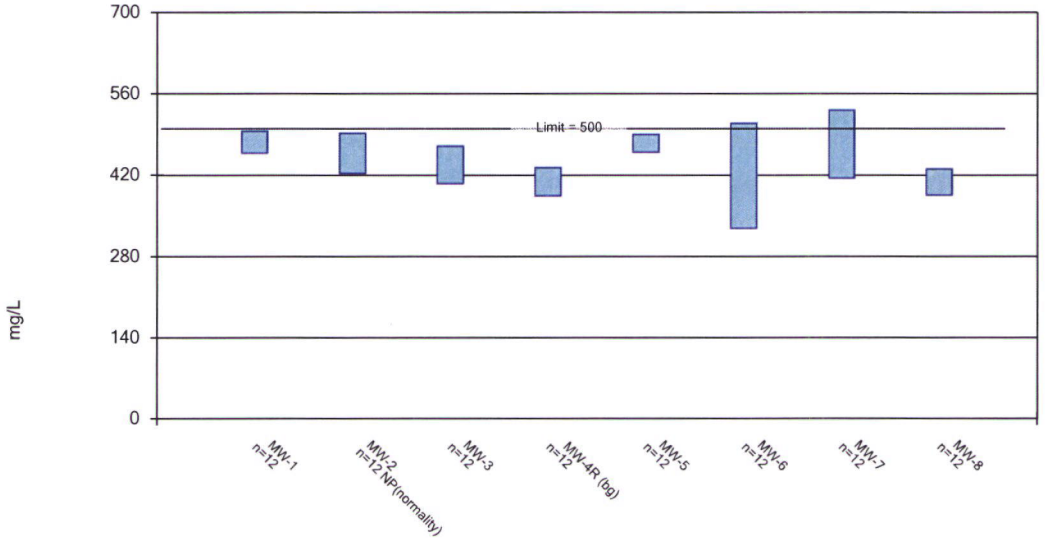
Parametric and Non-Parametric (NP) Confidence Interval

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

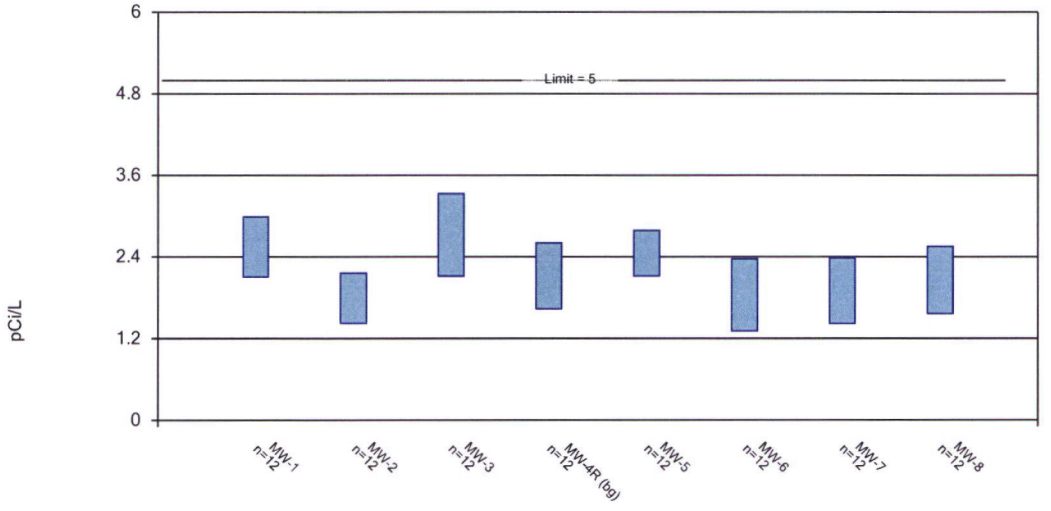


Constituent: Total Dissolved Solids Analysis Run 10/23/2019 4:44 PM

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 10/23/2019 4:44 PM

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