FINAL

2013 Annual Summary Report
Operable Unit No. 2 (Groundwater)
Former Nebraska Ordnance Plant, Mead, Nebraska

Contract No. W912DQ-13-D-3000, Task Order 0002

June 2014

US Army Corps of Engineers ®
Kansas City District

FINAL
2013 ANNUAL SUMMARY REPORT
FORMER NEBRASKA ORDNANCE PLANT
MEAD, NEBRASKA

U.S. Army Corps of Engineers
Kansas City District

Contract No. W912DQ-13-D-3000
Task Order 0002

June 2014

TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION 1-1
- 1.1 OBJECTIVES 1-2
- 1.2 SITE DESCRIPTION 1-3
- 1.3 SITE BACKGROUND 1-4
- 1.4 SITE HISTORY AND OPERATION 1-5
- 1.5 SCOPE OF WORK 1-5
- 1.6 2013 SAMPLING EVENT SUMMARY REPORTS 1-5
- 1.7 GRAPHICAL PRESENTATION 1-6
- 1.8 STATISTICAL ANALYSIS 1-7

2.0 PHYSICAL SETTING 2-1
- 2.1 SOILS AND GEOLOGY 2-1
- 2.2 SITE HYDROGEOLOGY 2-1

3.0 SUMMARY OF 2013 GROUNDWATER MONITORING WELL SAMPLING EVENTS 3-1
- 3.1 BACKGROUND OF THE MONITORING WELL PROGRAM 3-1
- 3.2 MODIFICATIONS TO THE GROUNDWATER MONITORING WELL NETWORK 3-2
- 3.3 FIELD SAMPLING 3-2
- 3.4 ANALYTICAL RESULTS FOR THE 2013 MONITORING WELL SAMPLING EVENTS 3-3
  - 3.4.1 Baseline Monitoring Well Analytical Results 3-4
  - 3.4.2 Perimeter Monitoring Well Analytical Results for the 2013 Monitoring Events 3-4
  - 3.4.3 Compliance Monitoring Well Analytical Results for the 2013 Sampling Events 3-6
  - 3.4.4 Interior Load Line 1 Plume Monitoring Well Analytical Results for the 2013 Sampling Events 3-6
  - 3.4.5 Interior Load Line 2 and Load Line 3 Plume Monitoring Well Analytical Results for the 2013 Sampling Events 3-10
  - 3.4.6 Interior Load Line 4 Plume Monitoring Well Analytical Results for the 2013 Sampling Events 3-14
  - 3.4.7 Monitoring Wells Associated with Focused Extraction Well Analytical Results for the 2013 Sampling Events 3-17
  - 3.4.8 Sidegradient and Downgradient Monitoring Wells Analytical Results for the 2013 Sampling Events 3-18

4.0 SUMMARY OF 2013 WATER SUPPLY WELL SAMPLING EVENTS 4-1
- 4.1 BACKGROUND OF THE WATER SUPPLY SAMPLING PROGRAM 4-1
- 4.2 FIELD SAMPLING 4-2
- 4.3 ANALYTICAL RESULTS FOR THE 2013 WATER SUPPLY WELL SAMPLING EVENTS 4-3

Section **Page**

4.4 GRAPHICAL PRESENTATION OF TCE AND RDX WATER SUPPLY WELL DATA 4-4
4.5 WATER SUPPLY WELL SUMMARY 4-4

5.0 SUMMARY OF 2013 ALTERNATE WATER SUPPLY PROGRAM 5-1
5.1 BACKGROUND OF THE ALTERNATE WATER SUPPLY PROGRAM 5-1
5.2 FIELD ACTIVITIES 5-1
5.3 GRANULAR ACTIVATED CARBON TREATMENT SYSTEM MAINTENANCE 5-1

6.0 OPERATION AND MAINTENANCE SUMMARY 6-1
6.1 BACKGROUND OF THE GROUNDWATER TREATMENT PLANT SYSTEMS 6-1
6.1.1 Main Groundwater Treatment Plant 6-1
6.1.2 Load Line 1 Groundwater Treatment Plant 6-1
6.1.3 Advanced Oxidation Process Groundwater Treatment Plant 6-2
6.1.4 Load Line 4 Groundwater Treatment Plant 6-2
6.2 SUMMARY OF 2013 ACTIVITIES FOR THE MAIN GROUNDWATER TREATMENT PLANT 6-2
6.2.1 Extraction Well Flow Rates and Groundwater Pumping Level Elevations 6-3
6.2.2 Step-Drawdown Pumping Tests for Extraction Wells 6-4
6.2.3 Operation and Maintenance of the Main Groundwater Treatment Plant 6-5
6.2.3.1 Effluent Flow 6-5
6.2.3.2 Granular Activated Carbon Vessels 6-6
6.2.3.3 Main Groundwater Treatment Plant Shutdowns 6-6
6.2.4 Analytical Sampling at the Main Groundwater Treatment Plant 6-6
6.2.4.1 Extraction Wells Associated with the Main Groundwater Treatment Plant (EW-1R, EW-4, EW-7, EW-9, and FEW-14) 6-7
6.2.4.2 Main Groundwater Treatment Plant Influent 6-7
6.2.4.3 Granular Activated Carbon Vessels 6-8
6.2.4.4 Main Groundwater Treatment Plant Effluent 6-8
6.2.5 Solids Waste Disposal 6-9
6.3 SUMMARY OF 2013 ACTIVITIES FOR THE LOAD LINE 1 GROUNDWATER TREATMENT PLANT 6-9
6.3.1 Extraction Well Flow Rates 6-9
6.3.2 Operation and Maintenance of the Load Line 1 Groundwater Treatment Plant 6-10
6.3.3 Analytical Sampling at Load Line 1 Groundwater Treatment Plant 6-10
6.3.3.1 Water Sampling at Load Line 1 Groundwater Treatment Plant 6-10

Section **Page**

6.3.3.2 Air Sampling at Load Line 1 Groundwater Treatment Plant 6-11
6.3.4 Load Line 1 Groundwater Treatment Plant Shutdowns 6-11
6.4 SUMMARY OF 2013 ACTIVITIES FOR THE ADVANCED OXIDATION PROCESS GROUNDWATER TREATMENT PLANT 6-11
6.4.1 Extraction Well Flow Rates 6-12
6.4.2 Operation and Maintenance of the Advanced Oxidation Process Groundwater Treatment Plant 6-12
6.4.3 Analytical Sampling at the Advanced Oxidation Process Groundwater Treatment Plant 6-12
6.4.4 Advanced Oxidation Process Groundwater Treatment Plant Shutdown 6-13
6.5 SUMMARY OF 2013 ACTIVITIES FOR THE LOAD LINE 4 GROUNDWATER TREATMENT PLANT 6-13
6.5.1 Extraction Well Flow Rates 6-14
6.5.2 Operation and Maintenance of the Load Line 4 Groundwater Treatment Plant 6-14
6.5.3 Analytical Sampling at Load Line 4 Groundwater Treatment Plant .. 6-14
6.5.3.1 Water Analytical Sampling at Load Line 4 Groundwater Treatment Plant 6-15
6.5.3.2 Air Analytical Sampling at Load Line 4 Groundwater Treatment Plant 6-15
6.5.4 Load Line 4 Groundwater Treatment Plant Shutdowns 6-16
6.6 GROUNDWATER CIRCULATION WELL (GCW-01) ACTIVITIES 6-16
6.7 GENERAL MAINTENANCE SUMMARY 6-16
6.7.1 Groundwater Levels 6-17
6.7.2 Groundwater Treatment Plant Safety 6-17

7.0 OPTIMIZATION AT THE FORMER NEBRASKA ORDNANCE PLANT 7-1
7.1 VALUE ENHANCEMENT OPTIONS EVALUATED AND IMPLEMENTED IN 2013 7-1
7.2 VALUE ENHANCEMENT OPTIONS EVALUATED IN 2013 7-2

8.0 SUMMARY 8-1
8.1 SUMMARY OF GROUNDWATER MONITORING WELL PROGRAM 8-1
8.2 SUMMARY OF WATER SUPPLY WELL SAMPLING 8-2
8.3 SUMMARY OF THE OPERATION AND MAINTENANCE PROGRAM 8-2
8.4 2013 GROUNDWATER MONITORING PROGRAM AND OPERATION AND MAINTENANCE PROGRAM DATA VALIDATION 8-3

9.0 REFERENCES 9-1

LIST OF TABLES

Table 1.1 Final Target Groundwater Cleanup Goals

Table 2.1 Water Level Measurements 2013
Table 2.2 Potentiometric Surface Directions and Gradients
Table 2.3 Monitoring Well Cluster Vertical Groundwater Flow Directions
Table 2.4 2013 Vertical Gradient Directions and Values, March 2013 and August 2013

Table 3.1 2013 Baseline Monitoring Well Sample Results
Table 3.2 2013 Perimeter Monitoring Well Sample Results
Table 3.3 2013 Compliance Monitoring Well Sample Results
Table 3.4 2013 Load Line l Interior Plume Monitoring Well Sample Results
Table 3.5 2013 Load Line 2 and Load Line 3 Interior Plume Monitoring Well Sample Results
Table 3.6 2013 Load Line 4 Interior Plume Monitoring Well Sample Results
Table 3.7 2013 Monitoring Wells Associated with Focused Extraction Wells Sample Results
Table 3.8 2013 Sidegradient and Downgradient Monitoring Well Sample Results

Table 4.1 2013 TCE and RDX Pre-Treatment and Post-Treatment Results for Residential GAC Units
Table 4.2 2013 Water Supply Well Sample Results

Table 5.1 2013 Alternate Water Supply Maintenance Activities

Table 6.1 Groundwater Treatment Plant and Extraction Well Operation and Maintenance Activity Frequencies
Table 6.2 Percent Uptime of Groundwater Treatment Plants in 2013
Table 6.3 Average Extraction Well Flow Rates and Operational Set Point Flow Rates for 2013
Table 6.4 Specific Capacities of Active Extraction Wells
Table 6.5 Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
Table 6.6 GAC Vessel Backwashing Summary for 2013
Table 6.7 Shutdowns and Startups for the Main Groundwater Treatment Plant and Associated Extraction Wells in 2013
Table 6.8 Main Groundwater Treatment Plant and Associated Extraction 2013 Monthly Influent and Effluent Analytical Results
Table 6.9 2013 Monthly Discharge Volumes for the Groundwater Treatment Plants
Table 6.10 Load Line 1 Groundwater Treatment Plant 2013 Monthly Influent, Effluent and Air Emissions Analytical Data
Table 6.11 Operational Activities and Shutdowns for Load Line 1 Groundwater Treatment Plant and Associated Extraction Wells in 2013
Table 6.12 Advanced Oxidation Process Groundwater Treatment Plant and FEW-11 2013 Monthly Influent and Effluent Analytical Results
Table 6.13 Operational Activities and Shutdowns of the AOP GTP in 2013

Table 6.14 Load Line 4 Groundwater Treatment Plant 2013 Monthly Influent, Effluent and Air Emissions Analytical Data
Table 6.15 Operational Activities and Shutdowns of Load Line 4 Treatment Plant in 2013
Table 6.16 Groundwater Circulation Well GCW-0l 2013 Monthly Influent and Effluent Analytical Data
Table 6.17 Groundwater Circulation Well GCW-0l Operation and Maintenance Activities in 2013
Table 6.18 Routine Operation and Maintenance Activities for 2013
Table 6.19 Miscellaneous Operation and Maintenance Activities for 2013

Table 7.1 2013 Optimization Activities

LIST OF FIGURES

Figure 1.1 Site Location Map
Figure 1.2 Site Layout

Figure 2.1 Cross Section Locations
Figure 2.2a Geologic Cross Section A-A'
Figure 2.2b Geologic Cross Section B-B'
Figure 2.3 Monitoring Well Depth Intervals and Designations
Figure 2.4 Potentiometric Surface of the Intermediate Zone - March 2013 and August 2013
Figure 2.5 Potentiometric Surface of the Intermediate Zone - August 2012 and 2013
Figure 2.6 Vertical Gradients

Figure 3.1 TCE Concentration Range for Monitoring Wells - 2013 Sampling Events
Figure 3.2 RDX Concentration Range for Monitoring Wells - 2013 Sampling Events
Figure 3.3 2013 Baseline Monitoring Wells
Figure 3.4 Perimeter and Compliance Monitoring Wells Sampled During 2013
Figure 3.5 Interior LL1 Plume Monitoring Wells Sampled During 2013
Figure 3.6 Interior LL2 and LL3 Plume Monitoring Wells Sampled During 2013
Figure 3.7 LL4/Atlas Missile Area/Landfill Interior Plume Monitoring Wells Sampled During 2013
Figure 3.8 Monitoring Wells Associated with Focused Extraction Wells Sampled During 2013
Figure 3.9 Sidegradient and Downgradient Monitoring Wells Sampled During 2013

Figure 4.1 TCE Concentration Range for Water Supply Wells - 2013 Sampling Events
Figure 4.2 RDX Concentration Range for Water Supply Wells - 2013 Sampling Events

Figure 6.1 Combined Groundwater Treatment Plant Flows for Years 2006 through 2013
Figure 6.2 Average Monthly Extraction Well Flow Rates for 2013

LIST OF APPENDICES
(Provided on CD Only)

Appendix A	Concentration Trend Charts
	A.1 - Perimeter Monitoring Wells
	A.2 - Compliance Monitoring Wells
	A.3 - Load Line 1 Interior Plume Monitoring Wells
	A.4 - Load Line 2 and Load Line 3 Interior Plume Monitoring Wells
	A.5 - Load Line 4 Interior Plume Monitoring Wells
	A.6 - Monitoring Wells associated with Focused Extraction Wells
	A.7 - Upgradient, Sidegradient, and Downgradient Monitoring Wells
	A.8 - Water Supply Wells
Appendix B	Statistical Charts
Appendix C	Summary of Results from the 2013 Monitoring Well Sampling Events
Appendix D	Quality Control Summary Report Fourth Quarter 2013 Groundwater Monitoring Program Sampling Events
Appendix E	Quality Control Summary Report Fourth Quarter 2013 Water Supply Well Sampling Event
Appendix F	Quality Control Summary Report Fourth Quarter 2013 Operation and Maintenance Sampling Events
Appendix G	2013 Data Quality Assessment Report
Appendix H	Process Flow Data for the Main Groundwater Treatment Plant
Appendix I	Monthly and Annual Flow Summary for the Main Groundwater Treatment Plant
Appendix J	2013 Main Groundwater Treatment Plant Sludge Profile
Appendix K	Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Appendix L	Monthly Flow Summary for Advanced Oxidation Process Groundwater Treatment Plant
Appendix M	Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Appendix N	Groundwater Circulation Well GCW-0l Operational Data
Appendix O	Analytical Results Summary for Monitoring Wells Surrounding Groundwater Circulation Well GCW-0l
Appendix P	Concentration Trend Charts for Extraction Wells

LIST OF ACRONYMS AND ABBREVIATIONS

AMA	Atlas Missile Area
AOP	Advanced Oxidation Process
ARDC	Agricultural Research and Development Center
AWS	Alternate Water Supply (Program)
btoc	below top of casing
CENWK	U.S. Army Corps of Engineers, Northwestern Division, Kansas City District
COC	contaminant of concern
ECC	Environmental Chemical Corporation
EPA	U.S. Environmental Protection Agency
EW	extraction well
FEW	focused extraction well
ft	feet
GAC	granular activated carbon
GCW	groundwater circulation well
GMP	Groundwater Monitoring Program
gpm	gallons per minute
GTP	groundwater treatment plant
HiPOx™	HiPOx™ Advanced Oxidation Systems
IDT	Intelligent Design Technologies, Inc.
J	estimated
lbs	pounds
LL	load line
MCL	maximum contaminant level
μg/L	micrograms per liter
mg/L	milligrams per liter
MS/MSD	matrix spike/matrix spike duplicate
MW	monitoring well
NDEQ	Nebraska Department of Environmental Quality
NOP	Nebraska Ordnance Plant
NPDES	National Pollutant Discharge Elimination System
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
OU	operable unit

PEL	Permissible Exposure Limit
QC	quality control
QCSR	Quality Control Summary Report
QSR	Quarterly Summary Report
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
RI	remedial investigation
ROD	Record of Decision
SW-846	Solid Waste-846
TNT	2,4,6-trinitrotoluene
TB	trip blank
TCE	trichloroethene
TO-15	Toxic Organic-15 (EPA analytical method)
TOC	total organic carbon
TSS	total suspended solids
UNFL	University of Nebraska-Lincoln Field Laboratory
USACE	U.S. Army Corps of Engineers
UV	ultraviolet
VE	value enhancement
VOC	volatile organic compound
VPGAC	vapor phase granular activated carbon
WSW	water supply well

This page was intentionally left blank.

FINAL
2013 ANNUAL SUMMARY REPORT
FORMER NEBRASKA ORDNANCE PLANT, MEAD, NEBRASKA

1.0 INTRODUCTION

This *2013 Annual Summary Report* discusses: (1) sampling events for groundwater monitoring wells (MW), water supply wells (WSWs), and surface water samples; (2) sampling conducted under the alternate water supply (AWS) program; (3) water level monitoring; and (4) Operation and Maintenance (O&M) activities conducted at the former Nebraska Ordnance Plant (NOP) (the Site) during calendar year 2013. Historical data and information prior to 2013 are presented in various documents including the *Supplemental Remedial Investigation/Feasibility Study, Operable Unit No. 1* (USACE, 1992); the *Remedial Investigation Report, Operable Unit No. 2 (Groundwater)* (USACE, 1993a); the *Additional Field Investigation Report Operable Unit No. 2 (Groundwater)* (USACE, 1993b); and a series of Groundwater Monitoring Program (GMP) and O&M Annual Reports from 2000 through 2012. First, Second, and Third Quarter data from 2013 are presented in the Quarterly Summary Reports (QSRs). A summary of Fourth Quarter data is included in this 2013 Annual Report in Appendix D. Quality Control Summary Reports (QCSR) were produced quarterly during 2013 and are discussed in Section 3.0 through Section 6.0.

This report contains the following Appendices (on compact disk):

- Appendix A contains the concentration trend charts presenting the historical detections of trichloroethene (TCE) and hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) for each well location;
- Appendix B contains the statistical charts, discussion of statistical evaluations, and 2013 results of statistical analysis table;
- Appendix C contains the summary of results from the 2013 MW sampling events;
- Appendix D contains the QCSR for the Fourth Quarter 2013 Groundwater Monitoring Program Sampling Events;
- Appendix E contains the QCSR for the Fourth Quarter 2013 WSW Sampling Event;
- Appendix F contains the QCSR for the Fourth Quarter 2013 Operation and Maintenance Sampling Events;
- Appendix G contains the 2013 Data Quality Assessment Report;
- Appendix H contains the process flow data for the Main Groundwater Treatment Plant (GTP);
- Appendix I contains the monthly and annual flow summary for the Main GTP;
- Appendix J contains the 2013 Main GTP sludge profile;
- Appendix K contains the monthly flow summary for Load Line (LL) 1 GTP;
- Appendix L contains the monthly flow summary for Advanced Oxidation Process (AOP) GTP;

- Appendix M contains the monthly flow summary for LL4 GTP;
- Appendix N contains the Groundwater Circulation Well (GCW)-01 operational data;
- Appendix O contains the analytical results summary for MWs surrounding GCW-01; and
- Appendix P contains the extraction well concentration trending data.

1.1 OBJECTIVES

The objectives of the GMP and O&M activities were established in the *Site-Wide Work Plan* (USACE, 2013b), which includes the Field Sampling Plan. The objectives consist of the following:

- Monitor and evaluate potential changes in the concentrations of contaminants of concern (COCs), as shown in Table 1.1, and defined in the *Record of Decision, Operable Unit No. 2, Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 1996);
- Monitor and evaluate the concentration of COCs in groundwater plumes;
- Provide data for evaluating whether the plume(s) are being contained by the groundwater extraction well network; and
- Treat and discharge extracted groundwater to meet applicable standards.

The 2013 O&M activities for the Main, LL1, AOP, and LL4 GTPs were performed in accordance with the Operable Unit (OU) 2 Record of Decision (ROD) and implemented in accordance with the following Site groundwater remediation site-specific plans and management tools:

- *Operation and Maintenance Manual, Remedial Design Groundwater Treatment (OU2), Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2002);*
- *Revised Operation and Maintenance Manual, Main Groundwater Treatment Plant, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2013r);*
- *Revised Operation and Maintenance Manual Load Line 1 Groundwater Treatment Plant, Remedial Design Groundwater Treatment (OU2), Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2011b);*
- *Revised Operation and Maintenance Manual Load Line 1 Groundwater Treatment Plant, Remedial Design Groundwater Treatment (OU2), Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2013p);*
- *Operation And Maintenance Manual EW-11 Advanced Oxidation Process, Groundwater Treatment Facility, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2008);*
- *Revised Operation and Maintenance Manual FEW-11 Advanced Oxidation Process, Groundwater Treatment Plant, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2013o);*

- *Revised Final Operation and Maintenance Manual Load Line 4 Focused Extraction System Groundwater Treatment Plant Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska, (USACE, 2011d);*
- *Revised Operation and Maintenance Manual Load Line 4 Focused Extraction System Groundwater Treatment Plant Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska, (USACE, 2013q); and*
- *Site-Wide Work Plan which includes the Accident Prevention Plan and the Sampling and Analysis Plan, Support Services, Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2013b).*

1.2 SITE DESCRIPTION

The Site is located south and east of Mead and west of Omaha, Nebraska, in Saunders County. Figure 1.1 depicts the location of the Site. The Site encompasses approximately 17,250 acres, 8,650 acres of which is owned by the University of Nebraska-Lincoln. The University operates an Agricultural Research and Development Center (ARDC) on the property that includes facilities for research in forestry, dairy, cattle, swine, crop production, agronomy, entomology, and the environment. Other portions of the Site are owned by Department of Defense for use by the Nebraska National Guard and Army Reserves. Private ownership accounts for the remaining portions of the Site. The privately owned land is utilized for primary residences, pasture, and crop production, as well as light industry located near the northern end of the site. Adjacent land use is primarily agricultural.

The Site is nearly flat, with a few gentle slopes. Surface water drainage within the eastern portion of the Site is generally to the southeast, toward Johnson Creek and the Lower Platte North Natural Resources District Reservoir. In the western portion of the Site, surface water drains to the southeast, via Silver Creek.

The groundwater treatment programs at the Site are:

- O&M of the Main GTP treats contaminated groundwater from active extraction wells ([EW]-1R, EW-4, EW-7, EW-9, and focused extraction wells [FEW]-11 and FEW-14);
- O&M of the LL1 GTP treats TCE-contaminated groundwater from EW-12 and EW-17;
- O&M of the AOP GTP pre-treats TCE-contaminated groundwater from FEW-11, prior to final polishing at the Main GTP;
- O&M of the LL4 GTP treats TCE-contaminated groundwater from FEW-15; and
- O&M of one groundwater circulation well (GCW-01) treats TCE-contaminated groundwater.

The treatment capacities of the Main, LL1, AOP, and LL4 GTPs are 3,000 gallons per minute (gpm), 600 gpm, 600 gpm, and 500 gpm, respectively. The Main GTP and the LL1 GTP are containment system components and the AOP GTP and LL4 GTP are focused extraction system components. The GCW-01 treatment system is a focused extraction system component

with an actual treatment capacity of 22 gpm. The O&M treatment components are discussed further in Section 6.0.

1.3 SITE BACKGROUND

The Site was placed on the U.S. Environmental Protection Agency (EPA) National Priorities List of Superfund sites in August 1990 because contamination was identified in groundwater and soils at concentrations that posed a potential risk to public health, welfare, and the environment. The Site covers a large area with different types of contamination in various media as shown on Figure 1.2.

Cleanup activities were organized into the following three OUs:

- OU1 Soils - encompasses the upper 4 feet (ft) of soil contaminated with explosive compounds;
- OU2 Groundwater - includes groundwater contaminated with volatile organic compounds (VOCs) and explosive compounds; soil contaminated with explosive compounds, which could be a source of explosive compound contamination for groundwater and which does not meet the OU1 excavation criteria; and
- OU3 Landfill and other unidentified disposal areas and areas potentially impacted by ordnance and explosive compounds - includes a former on-site landfill and areas of waste not previously identified.

The Site GMP and O&M focuses on contaminated groundwater included under OU2. No further action for soil contaminated with explosive compounds is required for OU2 as discussed within the *Five-Year Review, Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 2009). The U.S. Army Corps of Engineers (USACE) Northwestern Division, Kansas City District (CENWK), EPA, and Nebraska Department of Environmental Quality (NDEQ) selected the Final Target Groundwater Cleanup Goals for OU2 in the ROD (USACE, 1996). Table 1.1 presents the Final Target Groundwater Cleanup Goals.

EPA and CENWK signed the ROD for the containment and remediation of contaminated groundwater at the Site in 1997. The horizontal extent of the TCE and RDX contaminant plumes were defined in the ROD by measuring the TCE and RDX concentrations at MW clusters where TCE and RDX exceeded the associated Final Target Groundwater Cleanup Goals of 5 micrograms per liter (μg/L) and 2 μg/L, respectively. The TCE and RDX concentrations in groundwater were determined from samples collected at MW clusters installed throughout the Site.

The groundwater contaminant plumes identified at the Site are:

- TCE plume within LL1;
- TCE plume within LL2;
- TCE plume within LL3;

- TCE plume within LL4 (includes the Landfill and Atlas Missile Area [AMA]);
- Explosive compounds plume within LL1;
- Explosive compounds plume within LL2;
- Explosive compounds plume within LL3; and
- Explosive compounds plume within LL4.

Section 2.3 describes the migration of these contaminant plumes, which is primarily dictated by the south and southeast directions of groundwater flow.

1.4 SITE HISTORY AND OPERATION

Section 1.1 of the *Site-Wide Work Plan* (USACE, 2013b) presents the Site history and operations. The *Remedial Investigation Report* (USACE, 1993a) presents more details on the physical setting of the Site.

1.5 SCOPE OF WORK

The GMP for 2013 included groundwater sampling and water level measurements from select groundwater MWs, and WSWs and reporting these results on a quarterly basis; and summarizing the results in this report. The 2013 GMP is presented in tables and figures, which were approved by the NDEQ and EPA in Appendix L of the Final 2013 Site-Wide Work Plan dated April 2, 2013 (USACE, 2013b). In addition, AWS support was completed, in accordance with the requirements of the ROD, and is discussed in Section 5.0. Figure 1.2 shows the locations of the groundwater MWs, WSWs, and AWS wells sampling locations associated with the Site.

All extracted groundwater was treated on site using granular activated carbon (GAC) adsorption, AOP, or air stripping. Treated groundwater was properly disposed of through surface discharge or beneficial reuse.

1.6 2013 SAMPLING EVENT SUMMARY REPORTS

QSRs present validated analytical results for the GMP sampling events and include the QCSRs. The QCSRs present detailed results of the data validation for the sampling events, including data qualifiers, sample collection summaries, data summary tables, and completeness calculations. Each QCSR contains appendices for the sample chain of custody records; field sampling documents, water quality parameter forms (for O&M), daily field logbook pages, data validation qualifiers reference sheet; and the complete analytical laboratory report (on a compact disk) for the associated GMP, WSW, and O&M sampling events.

Each QCSRs also includes a table that identifies the following:

- Quality control (QC) split (field duplicate) samples;
- Matrix spike/matrix spike duplicate (MS/MSD) samples;
- Trip blank (TB) samples;

- A cross-reference between laboratory identification numbers and field sample identification numbers;
- Sample Delivery Group numbers;
- Dates of sample collection and sample receipt by the laboratory; and
- Requested analyses.

Results from the 2013 MW, WSW, and surface water sampling events were presented in the following reports:

- *Quarterly Summary Report First Quarter 2013 Sampling Events, Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2013e);*
- *Quarterly Summary Report Second Quarter 2013 Sampling Events, Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2013l); and*
- *Quarterly Summary Report Third Quarter 2013 Sampling Events, Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska (USACE, 2013n).*

The Fourth Quarter 2013 summary is provided as part of this annual report and the Fourth Quarter QCSRs are included in Appendices E, F, and G of this document.

Water samples collected during the 2013 GMP, WSW, and O&M sampling events were shipped to Test America Laboratories, South Burlington, Vermont, Denver, Colorado, and Savannah, Georgia, for analysis. Samples were analyzed for VOCs by the EPA Solid Waste -846 (SW-846) Method 8260B and EPA Drinking Water Method 524.2, explosive compounds were analyzed for by EPA SW-846 Method 8330, total suspended solids (TSS) by Method SM2540D, nitrate by EPA SW-846 Method 9056, metals (iron and manganese) by EPA SW-846 Method 6010B, total organic carbon (TOC) by EPA SW-846 Method 9060 and TCE by EPA Compendium Method Toxic Organic (TO)-15.

QC procedures were performed in accordance with the *Site-Wide Work Plan* (USACE, 2013b). Field duplicate samples were collected to assess field collection precision and the consistency and quality of data produced by the laboratory. Field duplicates were collected at a rate of one per 10 field samples. MS/MSD samples were collected at a rate of one per 20 field samples. Prepared TBs were placed in coolers containing samples designated for VOC analysis to assess the potential for VOC cross-contamination. Sample cooler temperature was determined by measuring the temperature of a field sample at the laboratory with a calibrated infrared thermometer.

1.7 GRAPHICAL PRESENTATION

Historical detections for MWs and WSW locations with four or more sample data points are illustrated in trend charts presented in Appendix A to demonstrate how the concentrations of TCE and RDX have varied over time. Select O&M locations with four or more sample data points are illustrated in trend charts presented in Appendix P. These trend charts are

organized by well type and are integrated into the discussion of detections for each well type in the appropriate sections below.

1.8 STATISTICAL ANALYSIS

In an effort to ensure that analytical results are meaningful and can be used to identify contamination trends for the Site, statistical analyses were conducted to identify trends in concentrations or any significant increases or decreases in TCE or RDX concentrations. Statistical analyses were performed for TCE and RDX results for sampling locations with adequate data using the Sanitas™ Statistical Analysis Program, which was developed by Intelligent Decision Technologies, Inc. (IDT) of Longmont, Colorado (IDT, 2002). Sen's Slope/Mann-Kendall analyses were used to identify increasing or decreasing trends in concentrations; and Intrawell Prediction Limit analyses were performed to determine if there were any significant increases in concentrations exceeding the statistically derived prediction limit for each MW/constituent pair. Significant increases or decreases are based on comparing the 2013 data points individually to the mean calculated based on all previous data for a MW.

Further information regarding the calculations used by these analysis types and statistical charts generated from these analyses are provided in Appendix B.

Table B-1 identifies statistically significant increases using Sen's Slope Estimator/Mann-Kendall Test Trend and Prediction Limit analyses for RDX and TCE detections in groundwater at the Site and is organized by well type. For the Site's statistical evaluation, the Sen's Slope Estimator/Mann-Kendall Test Trend analysis used a one-tailed test with a 97.5 percent prediction interval. No charts were generated for MWs in which all concentrations (TCE and/or RDX) were nondetect or for MWs which were not sampled during 2013. Available historical data were used for the statistical evaluation. A minimum of five data points is necessary to perform the Sanitas™ evaluation. As such, MWs that were installed in November 2012 and the MW-180 cluster installed in 2013 were not included in the evaluation. The results from the statistical analysis for each MW are presented during the evaluation of the analytical results in Section 3.0 for MWs and Section 4.0 for WSWs.

This page was intentionally left blank.

2.0 PHYSICAL SETTING

2.1 SOILS AND GEOLOGY

The geology within the Site consists of cretaceous bedrock, quaternary glacial deposits, and Quaternary alluvial deposits. These are further described in Section 2.2 of the *2012 Groundwater Model Update Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 2013m).

Figure 2.1 presents cross section locations through the Site. Figure 2.2a presents a north-south cross section, and Figure 2.2b presents a west-east cross section through the Site. These figures illustrate the shallow subsurface geology. Shallow groundwater MWs are generally screened in the upper half of the saturated alluvium. Intermediate groundwater MWs are generally screened in the lower half of the saturated alluvium. Deep groundwater MWs are generally screened near the top of the Omadi Formation. Deep groundwater MWs were not installed where 5 ft or more of Omadi Shale comprised the uppermost bedrock unit. "O" MWs are completed in the overbank fines of the Platte River Valley and "E" MWs are completed as a secondary MW within either the shallow or intermediate zones. Figure 2.3 presents the typical MW depth intervals and designations.

2.2 SITE HYDROGEOLOGY

The hydrogeology of the Site consists of three major alluvial aquifers (Todd Valley aquifer, Platte Valley aquifer, and Wahoo Valley aquifer) and one minor aquifer (Uplands aquifer). All four aquifers are underlain by the Omadi Formation, except where the Omadi is absent and the subcrop consists of Pennsylvanian strata near the Ashland well field (Lincoln Water System).

Three aquitards are present at the Site: the Pennsylvanian Shales, the Omadi Shale, and the Platte River aquitard. The aquifers are further discussed in the *2012 Groundwater Model Update* (USACE, 2013m).

An upper fine sand unit (12 ft to 77 ft thick) and a lower sand and gravel unit (17.5 ft to 72 ft thick) divides the water-bearing portions of the Todd Valley deposits. Peoria Loess overlays the upper sand unit in the Todd Valley and ranges in thickness from approximately 4 ft to 23 ft. The unconsolidated material in the Platte River Valley ranges in thickness from 39 ft to 49 ft. Overbank silts and clays ranging from 10 ft to 17 ft thick overlie the Platte River alluvial sands and gravels.

The potentiometric surface of the Todd Valley aquifer slopes toward the south-southeast. A local zone of groundwater discharge is located along the western side of the Platte River floodplain in the southeastern portion of the Site. East of Johnson Creek, the potentiometric surface of the Platte Valley aquifer slopes to the south, approximately parallel to the Platte River Valley. Depths to groundwater in the Platte Valley are as deep as 10 ft below ground surface, although artesian conditions have been observed in some areas.

The depth of groundwater is generally greater to the northwest in the Todd Valley aquifer and decreases to the southeast in the Platte Valley aquifer. In 2013, the depth to groundwater ranged from 71.44 ft below top of casing (btoc) at MW-99B located in the Todd Valley aquifer to 1.53 ft btoc at piezometer PZ-14 located in the Platte Valley aquifer.

During the 2013 monitoring events, water levels were measured and recorded in 348 wells, which included MWs, observation wells, piezometers, extraction wells, and wells gauged by the Lower Platte North Natural Resources District (Table 2.1). The water level data were used to prepare groundwater potentiometric surface contour maps for the intermediate zone of the Site aquifer system. Historically, the shallow and intermediate potentiometric surfaces have exhibited essentially the same flow direction and gradient (southeast); therefore, only the intermediate potentiometric surfaces were produced for this report. The site-wide potentiometric surfaces calculated from the water-level measurements recorded in the intermediate zone in March 2013 and August 2013 are presented on Figure 2.4. The groundwater flow directions and horizontal gradients for March 2013 and August 2013 are presented in Table 2.2 and are similar to historical groundwater flow directions and horizontal gradients.

Groundwater data were contoured using Surfer® by Golden Software using a kriging algorithm. A cone of depression in the water table created around each operating EW was verified by observation well measurements; however, water level measurements in EWs were not considered in plotting the site-wide potentiometric surface because, at the scale of the map, these cones of depression are not observable.

Generally, site-wide groundwater elevations measured in MWs during March 2013 were similar to the March 2012 groundwater elevations. A spatial analysis of the March 2013 data showed a decline in groundwater elevations from 2012 to 2013 in the both the Platte Valley aquifer, which dropped 1.27 ft, and in the Todd Valley aquifer, which dropped 1.95 ft. A comparison of the August 2012 and August 2013 groundwater elevation measurements showed an average site-wide decrease of 1.08 ft in 2013. This is less than the decline of 1.59 ft measured from 2011 to 2012. Figure 2.5 presents a comparison of the August 2012 and August 2013 potentiometric surfaces.

Vertical gradients were calculated from the water levels recorded at Site MW clusters, if either the shallow and intermediate levels were measured or the intermediate and deep water levels were measured during the March 2013 and August 2013 monitoring events. The number of MW clusters for which the vertical gradient was calculated and the associated flow directions are presented in Table 2.3.

Downward flow presents a potential pathway for COCs to migrate into lower portions of an aquifer or into a hydrostratagraphic unit. Upward flow presents a potential for COCs to migrate into upper portions of an aquifer, into an upper hydrostratagraphic unit, or to the surface and, possibly, to nearby creeks. Although the vertical gradient at a particular location is an indication of the potential vertical flow, it is not always a good indicator of the magnitude of vertical flow which is also a function of the hydraulic conductivity of contiguous aquifers.

The vertical gradient ($\boldsymbol{i}_v$) is calculated by dividing the difference in water levels (**Δ**WLs) of two zones by the vertical distance between the centers of the MW screened intervals (h):

$$\boldsymbol{i}_v = {}^{\Delta \mathrm{WLs}}/_{h}$$

MW clusters with vertical gradients that exceeded 0.02 (positive or negative) during the March 2013 and August 2013 monitoring events are presented on Figure 2.6. The vertical gradient values are presented in Table 2.4. A positive vertical gradient indicates downward flow and a negative vertical gradient indicates upward flow as presented in Table 2.4. In some instances, a significant vertical gradient at MW clusters may be caused by pumping of a nearby EW, WSW, or irrigation well.

This page was intentionally left blank.

3.0 SUMMARY OF 2013 GROUNDWATER MONITORING WELL SAMPLING EVENTS

This section presents the background of the GMP, modifications of the well network, groundwater field sample collection activities, and the analytical results for the four 2013 MW sampling events at the Site. Any exceptions to the planned sampling events also are discussed in this section. The results of the four 2013 sampling events are summarized by well type, as defined in the 2013 GMP Plan, Appendix L of the Field Sampling Plan, Attachment 2 of the *Site-Wide Work Plan* (USACE, 2013b). The results of the 2013 statistical analyses and graphical presentation are provided in Appendix B and are discussed in the subsections below. Figures 3.1 and 3.2 present the MW locations with TCE and RDX detections, respectively, from the 2013 sampling events. The contaminant plume depictions shown on all figures in this 2013 annual report generally illustrate the approximate areas of each plume as updated in the *Groundwater Monitoring Program Optimization Investigation Report, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 2012a). The only change made for this annual report is that the leading edge of the LL2 RDX plume was revised based on the analytical results for the investigation conducted in the area of MW-180 discussed in Section 3.4.5.

3.1 BACKGROUND OF THE MONITORING WELL PROGRAM

The groundwater MW network for the Site is shown on Figure 1.2. MW locations were originally established based on regional groundwater flow (generally toward the south and southeast); historical information concerning former operations and disposal practices of the Site; the results of the *Supplemental Remedial Investigation/Feasibility Study, Operable Unit No. 1* (USACE, 1992) soil investigation; and the results of the *Remedial Investigation Report* (USACE, 1993a). Additional MWs have subsequently been installed to provide early detection for nearby residences, assess potential loss of containment around and between EWs, and monitor the Interior Plume. Phase II of a MW network optimization study was recently conducted to further refine the MW network (USACE, 2013c).

In general, MW screen intervals and nomenclature for MWs installed adhere to the following:

- MW-B: Shallow (bottom 10 ft of the Pleistocene fine sand);
- MW-A: Intermediate (bottom 10 ft of the Pleistocene sand and gravel);
- MW-D: Deep (5-ft length near the upper Cretaceous Omadi sandstone [bedrock]);
- MW-O: Completed in the overbank fines of the Platte River Valley; and
- MW-E: Completed as a secondary MW within either the shallow or intermediate zones.

There are a few exceptions to this nomenclature: MW clusters MW-16 through MW-20 follow a different nomenclature system where shallow MWs are designated "C," intermediate MWs are designated “B”, and deep MWs are designated "A".

Sampling of the MWs at the Site was first conducted during the 1992 *Remedial Investigation* (USACE, 1993a). Periodic groundwater monitoring continued from 1992 through 2000 and from 2003 through 2013. Groundwater samples were not collected for analysis of contaminants between January 2001 and December 2002; only hydraulic data were collected from selected groundwater MWs as part of the O&M program. Collection of MW samples resumed in January 2003 as a make-up event for the 2002 GMP.

A complete data review was conducted to evaluate the sample locations, frequency, and analyses proposed for the 2013 GMP. A discussion of the rationale for the resulting sampling locations, frequencies, and analyses is presented in the *Site-Wide Work Plan* (USACE, 2013b). The MWs selected for sampling during 2013, and their sampling frequencies, are listed in the Final 2013 Groundwater Monitoring Program Plan, as an update to the *Site-Wide Work Plan* (USACE, 2013b). Based on the 2013 GMP plan, 295 individual MWs were scheduled to be sampled throughout the Site from 122 MW clusters or locations.

3.2 MODIFICATIONS TO THE GROUNDWATER MONITORING WELL NETWORK

Two new groundwater MWs, MW-180A and MW-180E, were installed in August 2013 in accordance with the *Installation of Load Line 2 Monitoring Well Technical Memorandum, Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 2013i). These two MWs have been incorporated into the 2014 GMP as LL2 Interior Plume wells.

3.3 FIELD SAMPLING

Detailed sampling procedures for the collection of groundwater samples from the MWs are described in the *Site-Wide Work Plan* (USACE, 2013b). The rationale for the sampling frequencies and analyses also are presented in the *Site-Wide Work Plan*. The sampling rationale and associated sample tables included in the *Site-Wide Work Plan* are updated annually. A total of 294 individual MWs were sampled during 2013 for a total of 519 samples. The sampling for 2013 occurred as planned with the following exceptions listed below:

Second Quarter
During the Second Quarter MW-18C could not be sampled because the well was full of roots that prevented the hydrasleeve samplers from reaching the groundwater. The roots were removed later in the year. No further attempt to sample MW-18C, which is sampled annually, was made in 2013.

Fourth Quarter
During the Fourth Quarter, MW-140O was dry and could not be sampled. However, this MW was sampled on schedule in the Second Quarter.

3.4 ANALYTICAL RESULTS FOR THE 2013 MONITORING WELL SAMPLING EVENTS

This section presents the analytical results for the MWs sampled in 2013 during the quarterly events. Although seven COCs were identified in the ROD, TCE and RDX were selected as the primary indicator analytes due to their concentration profiles. TCE is the indicator for VOCs in groundwater, and RDX is the indicator for explosives in groundwater. Therefore, the discussion of analytical results primarily is focused on TCE and RDX. TCE and RDX detections are compared to the Final Target Groundwater Cleanup Goals specified in the ROD of 5 μg/L and 2 μg/L, respectively.

Appendix A presents the historical concentration trend charts for all MWs with four or more data points. Sen's Slope/Mann-Kendall analyses were used to identify statistically significant increasing or decreasing trends in TCE and RDX concentrations. Statistically significant is defined as a 98 percent probability that future values will be within a normal distribution of the trend. Section 1.8 discusses the statistical analyses in detail, and the statistical charts are provided in Appendix B. Sections 3.4.2 through 3.4.8 provide further discussion of TCE and/or RDX concentration trends as increasing, decreasing, or no trend based on the 2013 statistical analysis of analytical results. Tables 3.1 through 3.8 and Appendix C provide results for all site-specific compounds for all MWs sampled during 2013. Additional COCs and other site-specific compounds were detected in samples collected during the 2013 sampling events and are discussed in the sections below. Field and QC samples were collected as planned with the exceptions noted in Section 3.3.

The QCSRs identify the type and frequency of QC samples collected for the four Site-Wide 2013 MW sampling events.

Discussion of MW results for COCs are presented in terms of the following categories, as defined in the 2013 GMP Plan:

- Perimeter MWs;
- Compliance MWs;
- Interior Plume MWs within LL1 contaminant plume;
- Interior Plume MWs within the LL2 and LL3 contaminant plumes;
- Interior Plume MWs within the LL4 contaminant plume, which includes the Landfill and AMA areas;
- Focused extraction MWs in the areas surrounding FEW-11, FEW-14, and FEW-15 sites; and
- Sidegradient and Downgradient MWs.

Within each of these categories, analytical results are discussed by the well location numerical designation (e.g. MW-02) and specific wells at a location screened at a particular depth (e.g. MW-02A screened in the intermediate interval).

3.4.1 Baseline Monitoring Well Analytical Results

As part of the Monitoring Well Network Optimization Phase II, 36 MWs were installed and sampled during the Fourth Quarter 2012 (USACE, 2013c). In addition, MW-180A and MW-180E were installed in the Third Quarter 2013. Figure 3.3 presents the baseline MW locations. The rationale for the MWs installed in the Fourth Quarter 2012 is documented in the *Monitoring Well Network Optimization Analysis and Work Plan Phase II* (USACE, 2012c). The rationale for the two MWs installed in 2013 is documented in the *Installation of Load Line 2 Monitoring Well Technical Memorandum, Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 2013i). The results from the new MWs also are incorporated into the appropriate sections of this annual report by well type (for example, MW-145B is an LL2 Interior Plume well, so it is discussed in Section 3.4.5). The analytical results from 2013 Baseline MWs are presented in Table 3.1, with results greater than the Final Target Groundwater Cleanup Goals shaded. It should be noted that in accordance with the 2013 GMP, these wells will be sampled at a frequency dictated by the 2014 GMP rationale, rather than a quarterly baseline sampling regimen.

3.4.2 Perimeter Monitoring Well Analytical Results for the 2013 Monitoring Events

Perimeter MWs monitor contaminant concentrations adjacent to the known extent of the plume boundaries. In 2013, 57 MWs classified as Perimeter MWs were sampled (Figure 3.4).

The analytical results from the 2013 Perimeter MW samples are presented in Table 3.2. Further evaluation of Perimeter MW data will be presented in the 2013 Containment Evaluation Report. No Perimeter MWs had detections of TCE, RDX, or other COCs at concentrations exceeding the Final Target Groundwater Cleanup Goals; however; TCE was reported in two Perimeter MWs at levels below the Final Target Groundwater Cleanup Goals (Table 3.2). These detections are summarized below:

- TCE was reported in the shallow screen interval of MW-80B at 1.4 μg/L during the First Quarter 2013. MW-80B is located south of the LL1 plume. During the Third Quarter 2013, TCE was nondetect in MW-80B.
- During Third Quarter 2013, TCE was reported in the intermediate screen interval, MW-159A at a concentration of 0.16 estimated (J) μg/L. This well was nondetect for TCE in First Quarter 2013. MW-159A is located southeast of the AMA and east of LL4 plume. The TCE degradation compound vinyl chloride also was detected in MW-159A at a concentration of 2.9 μg/L in the First Quarter 2013, which exceeds the Federal Maximum Contaminant Level (MCL) of 2 μg/L. Vinyl chloride is not a site COC and has not historically been attributed to past NOP operations. The vinyl chloride concentration in the Third Quarter 2013 declined to 0.77J μg/L. The presence of vinyl chloride in MW-159A since Fourth Quarter 2011 has remained an isolated detection. In 2012 and 2013, the only other detection of vinyl chloride occurred in an LL3 MW (MW-149A) and a compliance well (MW-98D), at levels below the MCL. Additionally, vinyl chloride was not detected in any WSW in 2012 or 2013. WSW analytical results are discussed in Section 4.0.

At the Perimeter MW locations, 12 had RDX detected in at least one quarter in 2013: one south of the LL4 plume, five south of the LL2 plume, and six south of the LL3 plume. Concentration trend charts for all Perimeter MWs are located in Appendix A. These RDX detections are incorporated into the discussion below:

- RDX was detected in five Perimeter MWs south of the LL2 plume: MW-83A, MW-83B, MW-84A, MW-84B, and MW-95D. These wells, except for MW-84B (shallow interval), had RDX detections in both the First and Third Quarters during their semiannual sampling in 2013. RDX detections in MW-83A (intermediate screen interval) were 0.21J μg/L and 0.29J μg/L in the First and Third Quarters, respectively. MW-83B had RDX detections of 0.14J μg/L and 0.12J μg/L in the First and Third Quarters, respectively. RDX concentrations in MW-83B are decreasing (Appendix A). RDX concentrations in MW-83A generally show declining levels, but there is no statistically significant decreasing trend (Appendix B). MW-84A had RDX detections of 0.24J μg/L and 0.22J μg/L in the intermediate screen interval (A) and 0.13J μg/L and nondetect in the shallow screen interval (B) during the First and Third Quarters respectively. MW-84A RDX concentrations are generally declining (Appendix A). No trend can be derived from the MW-84B RDX dataset because RDX has been detected in this well only twice since it was installed in 2005. In MW-95D, the deep screen interval, RDX detections were 0.089J μg/L in the First Quarter and 0.16J μg/L in the Third Quarter. RDX concentrations in MW-95D show no trend and generally are stable. No RDX detections have been reported in MW-95A (intermediate screen interval) and MW-95B (shallow screen interval) since 2009.
- RDX was detected in six Perimeter MWs south of the LL3 plume: MW-35A, MW-35B, MW-85A, MW-85B, MW-118A, and MW-118B. With the exception of MW-35B, which only had an RDX detection in the First Quarter 2013, the remaining five wells had RDX detections in both the first and third quarters during their semiannual sampling in 2013. The highest RDX concentrations were observed in MW-85B in the shallow screen interval at 1.1 μg/L in the First Quarter and 1.0 μg/L and Third Quarter 2013. This represents a decrease in RDX concentrations from 2012. RDX detections in MW-85A (intermediate interval), were 0.72 μg/L in the First Quarter and 0.67 μg/L in the Third Quarter. The MW-35A (intermediate) and MW-35B (shallow) RDX concentrations ranged from nondetect to 0.084J μg/L in the 2013 sampling events. No trend is apparent in the MW-35A and MW-35B datasets. In 2013, MW-118A (intermediate) and MW-118B (shallow) well RDX detections ranged from 0.59 μg/L to 0.79 μg/L. MW-118B RDX concentrations decreased in 2013, but overall there is a statistically significant increasing trend in RDX concentrations (Appendix B). RDX concentrations in MW-118A concentrations are stable from 2012 to 2013.
- MW-114D, the deep screen interval at the MW-114 location south of the LL4 plume, had an RDX detection of 0.073J μg/L in the First Quarter 2013. MW-114D has had only one other RDX detection, in the Third Quarter 2007 at 0.15J μg/L. This location will continue to be monitored during 2014 for any changes in contaminant concentrations.

3.4.3 Compliance Monitoring Well Analytical Results for the 2013 Sampling Events

Compliance MWs are located downgradient of the defined groundwater contamination plumes. These MWs help verify hydraulic containment of the plumes, as required by the ROD. A total of 33 Compliance MWs were sampled in 2013. Figure 3.4 presents the locations of the Compliance MWs and Table 3.3 presents the analytical results from the 2013 Compliance MWs sampled. Further evaluation of Compliance MW data will be presented in the 2013 Annual Containment Evaluation Report submitted under separate cover. None of the Compliance MWs had detections exceeding the Final Target Groundwater Cleanup Goals.

During the 2013 quarterly sampling events, none of the Compliance MWs sampled were reported to contain TCE at detectable levels. However, four Compliance MWs located south of the LL3 plume had RDX detections. Hydraulic containment of the plumes, as required by the ROD, is verified with no detects in Compliance wells above the Final Target Groundwater Cleanup Goals. The RDX detections are discussed below:

- MW-86D (deep interval) is sampled on an annual basis during the First Quarter sampling event. RDX was reported at a concentration of 0.59 μg/L in First Quarter 2013; a decline from 1.3 μg/L in First Quarter 2012. Previously, RDX detections in MW-86D had ranged between 1.3 μg/L and 1.7 μg/L since the well was first sampled in 2007 (Appendix A). MW-86A, the intermediate screen interval, and MW-86B, the shallow screen interval, were both nondetect in 2013. This is consistent with the lack of RDX detections in these two wells in 2012.
- RDX was detected at MW-100 in the shallow (B), intermediate (A), and deep (D) screen intervals. MWs at MW-100 also are sampled annually during the First Quarter. RDX detections ranged between 0.082J μg/L and 0.10 μg/L with the concentrations decreasing with depth. Results in the A and B intervals show an overall statistically significant decreasing trend in RDX concentrations from the 2007 initial sampling through 2013 (Appendix B). The deep interval shows generally decreasing concentrations from 2011 through 2013 (Appendix A).

3.4.4 Interior Load Line 1 Plume Monitoring Well Analytical Results for the 2013 Sampling Events

The Interior Plume MWs within the LL1 contaminant plumes are evaluated to monitor changes within the contaminant plumes and to identify any significant increases in contaminant concentrations upgradient of the containment extraction wells. In 2013, 35 LL1 Interior Plume MWs were sampled in 2013. Figure 3.5 presents the locations of the LL1 Interior Plume MWs. Table 3.4 presents the groundwater sample results from the LL1 Interior Plume MWs sampled in 2013. A discussion of the detections and increasing or decreasing trends is presented below:

- MW-02 is hydraulically upgradient of FEW-11 and is sampled to monitor potential increases in TCE concentrations due to groundwater extraction at FEW-11. MW-02 is sampled annually in the Second Quarter. The effects of pumping FEW-11 could

potentially shift the plume to the east at its upgradient end (Figure 3.5). MW-02A, the intermediate screen interval, had a TCE detection of 140 μg/L in the Second Quarter 2013; an increase from the 79 μg/L in Second Quarter 2012. TCE was detected at 100 μg/L in MW-02B, the shallow screen interval during the First Quarter 2013; an increase from the 25 μg/L TCE result from 2012. RDX was detected in MW-2A at 0.16 μg/L and in MW-02B 5.2 μg/L in Second Quarter 2013. As shown in the Appendix A trend charts, these concentrations represent increases from the 2012 RDX detections. MW-2B was nondetect for RDX in 2012.

- MW-127 is located on the western side of the plume upgradient of MW-02. This location is monitored annually in the Second Quarter to assess concentrations at the far upgradient end of the plume. The wells at this location were sampled annually in the Second Quarter 2013. MW-127A (intermediate interval), MW-127B (lower shallow interval), and MW-127E (upper shallow interval) had TCE concentrations ranging from 11 μg/L to 69 μg/L. The highest concentration was observed in MW-127B. The TCE concentrations in these wells show an overall decreasing trend, although the 2013 concentrations were slightly higher than in 2012 (Appendix B). RDX was detected in MW-127B and MW-127E at concentrations of 0.31 μg/L and 5.6 μg/L, respectively, in Second Quarter 2013. Additionally, both wells had 2,4,6-trinitrotoluene (TNT) detections above the Final Target Groundwater Cleanup Goal of 2 μg/L during 2013. As with TCE, RDX levels are generally declining in MW-127B and MW-127E, although the decreases are not statistically significant (Appendix B). Contaminant concentrations at this location are expected to decrease as the plume moves downgradient from this area.
- MW-03 is located hydraulically upgradient of FEW-11, and is sampled annually in the Second Quarter to monitor RDX concentrations on the eastern edge of the upgradient end of the LL1 plume. MW-03A, the intermediate screen interval, had a RDX detection of 2.3 μg/L in the Second Quarter 2013. MW-03B, the shallow screen interval, had a RDX detection of 0.43 μg/L. These detections represent decreasing RDX concentrations from 2012.
- MW-21 is located in the northern portion of the VOC plume and the central portion of the RDX plume. This location is sampled in the Second and Fourth Quarter to monitor changes in TCE and RDX concentrations that may result from pumping of FEW-11 located downgradient (Figure 1.2). MW-21B, the shallow screen interval, had was reported to contain TCE at 72 μg/L and 84 μg/L and RDX detections of 9.6 μg/L and 9.5 μg/L during the Second and Fourth Quarters, respectively (Table 3.4). MW-21B exhibited a statistically significant decreasing trend in TCE concentrations (Appendix B). TCE concentrations in MW-21B were similar in the same quarter in both 2012 and 2013, with higher concentrations in the Second Quarter than in the Fourth Quarter. This is displayed in the trend charts in Appendix A. The RDX detection in MW-21B is consistent with previous results and there is no discernible trend. TCE also was detected in MW-21A, the intermediate screen interval, at 6.7 μg/L and 11 μg/L during the Second and Fourth Quarters respectively; and in MW-21D, the deep screen interval, at 24 μg/L and 70 μg/L during the same events (Table 3.4). MW-21A concentrations show a decline from 2012 to 2013 TCE concentrations in the same quarters (Second and Fourth). MW-21D TCE detections show a statistically significant

increasing trend (Appendix B). Both wells show the same higher TCE concentrations in the Second Quarter than in the Fourth Quarter, which also was observed in the MW-2B dataset. Both MW-21A and MW-21D were nondetect for RDX in 2013, which is consistent with previous results.

- MW-126 is located in the vicinity of MW-21 for similar monitoring purposes, but farther upgradient. This location is sampled annually in the Second Quarter. TCE was detected in MW-126A (intermediate interval), MW-126B (shallow interval), and MW-126D (deep interval) at concentrations of 5,600 μg/L, 7,500 μg/L, and 200 μg/L respectively, during their annual sampling in Second Quarter 2013. TCE concentrations decreased with screen depth. The trend charts in Appendix A show that TCE concentrations generally have been declining in all three wells since 2009. However, there is insufficient data to indicate a statistically significant decreasing trend in MW-126A, MW-126B, and MW-126D. The shallow well, MW-126B, is the only well in which RDX was detected in 2013. The MW-126B RDX concentration in Second Quarter 2013 was 19 μg/L, which is an increase from the concentration of 14 μg/L reported in Second Quarter 2012.
- MW-24 is hydraulically upgradient of FEW-11. This location is sampled in the Second and Fourth Quarters to monitor TCE and RDX concentrations north of FEW-11 (Figure 1.2). RDX concentrations in MW-24B (shallow interval) in 2013 were 15 μg/L in the Second Quarter, and 14 μg/L in the Fourth Quarter (Table 3.4). These RDX detections are generally consistent with those observed since 2011 in MW-24B. MW-24A (intermediate interval) was nondetect for RDX in 2013, which is consistent with previous results. MW-24A, had TCE detections of 640 μg/L in the Second Quarter and 180 μg/L in the Fourth Quarter 2013. This is a steep decline in TCE levels within the 2013 sampling events, after increasing from 500 μg/L in Third Quarter 2012. TCE concentrations increased slightly at MW-24B compared to 2012, with TCE detections of 27 μg/L during the Second Quarter and 24 μg/L during the Third Quarter of 2013.
- MW-141 and MW-161 also are situated in the central portion of the LL1 plume, but hydraulically upgradient of MW-24, to monitor TCE and RDX concentrations (Figure 3.5). MW-141 is sampled in the Second and Fourth Quarter. MW-161 was still in the baseline sampling program in 2013 and was sampled in the First, Second, and Third Quarters. MW-141A (intermediate interval), MW-141B (upper shallow interval), MW-141E (lower shallow interval), MW-161A, and MW-161B had TCE detections ranging from 5,000 μg/L to 13,000 μg/L in 2013. The highest concentration of 13,000 μg/L was observed in MW-161A in Third Quarter 2013. The MW-161 wells were installed in 2012, and the limited datasets do not show consistent trends in RDX or TCE concentrations. In MW-141B and MW-141E, TCE concentrations overall are declining, although they increased from 2012 to 2013 (Appendix A). There is no trend in the MW-141A dataset, which historically has had wide fluctuations in TCE concentrations (Appendix A). MW-141B, MW-141E, and MW-161B, all in the shallower screened interval, have had detections of RDX above the Final Target Groundwater Cleanup Goal at concentrations ranging from 6.6 μg/L to 64 μg/L. There is no trend in the RDX concentrations in MW-141B, MW-141E, and MW-161B (Appendix A).

- MW-124 and MW-125 are sampled in the Second and Fourth Quarters to monitor TCE and RDX within the center of the LL1 plume (Figure 3.5). In 2013, TCE concentrations in the wells at these locations ranged from 53 μg/L to 13,000 μg/L, with the highest concentration in MW-124B screened in the shallow interval. TCE concentrations are generally decreasing in MW-124B, MW-124D (deep interval), and MW-125A (intermediate interval). TCE concentrations in MW-124B show a statistically significant decline. RDX concentrations range from nondetect to 26 μg/L in the MW-124 and MW-125 wells. The highest concentration was observed in MW-124B. However, RDX levels in shallow interval wells MW-124B (26 μg/L) and MW-125B (11 μg/L), are generally decreasing. These decreases likely are the result of the influence of pumping at FEW-11. MW-124A was reported to contain RDX at 2.3 μg/L in Second Quarter 2013, although this well has consistently shown RDX levels below 0.5 μg/L. The Fourth Quarter 2013 RDX concentration in MW-124A was 0.49 μg/L. Deep wells MW-124D and MW-125D have consistently RDX concentrations below 0.5 μg/L, or are nondetect.
- MW-90 is sampled in the Second and Fourth Quarters to monitor TCE and RDX concentrations within the LL1 plume upgradient of EW-12 and the new EW-17. In MW-90B (shallow interval), TCE detections were 52J μg/L during the Second Quarter and 120 μg/L in the Fourth Quarters. At MW-90A (intermediate interval) TCE detections were 550 μg/L during the Second Quarter and 360 μg/L in the Fourth Quarters. MW-90D (deep interval), had TCE detections of 280 μg/L during the Second Quarter and 260 μg/L in the Fourth Quarter. MW-90 is located upgradient of EW-12 and EW-17, and increasing contaminant concentrations are expected as the plume migrates downgradient toward these EWs. MW-90A and MW-90D, the two deeper zones, show a statistically significant increasing trend in TCE levels (Appendix B). TCE concentrations in MW-90B (shallow interval) in the Second Quarter 2013 show a continued decline in TCE concentrations that began in 2011 (Appendix A). However, concentrations increased between the Second and Fourth Quarter 2013 sampling events. EW-17 was installed between the Second and Fourth Quarters of 2013 to provide additional groundwater containment east of EW-12. The concentration trends observed at MW-90 before the startup of EW-17 may be altered as the plume reacts to the influence of pumping of EW-17. RDX was detected in all three MW-90 wells at concentrations ranging from 0.13J μg/L to 0.62 μg/L during the Second and Fourth Quarters of 2013. MW-90B shows a statistically significant increasing trend in RDX concentrations (Appendix B).
- MW-142 and MW-160 are located upgradient of MW-90, EW-12, and EW-17 to monitor TCE and RDX concentrations in the southern (downgradient) portion of the LL1 TCE plume (Figure 3.5). MW-142 is sampled in the Second and Fourth Quarter. The MW-160 well cluster was newly installed in November 2012, and was sampled in the First, Second, and Third Quarters in 2013 as part of the baseline sampling program. MW-142E is screened in the upper intermediate interval and MW-142A is screened in the lower intermediate interval. Both wells were sampled in the Second and Fourth Quarters of 2013, had TCE concentrations ranging from 54.0 μg/L to 1,900 μg/L (Table 3.4). The highest TCE concentrations are observed in MW-142A in the lower intermediate screened interval. In MW-160B (shallow interval) the highest

TCE concentration was 250 μg/L reported in the Second Quarter, while in MW-160A (intermediate interval) the highest concentration was 2,100 μg/L in the First Quarter. The trend of higher TCE concentrations in the deeper of the two zones is consistent with the MW-142 dataset. TCE concentrations in both MW-142A and MW-142E increased in 2013 after decreasing from Fourth Quarter 2012 to Second Quarter 2013. RDX concentrations also increased in MW-142A and MW-142E in 2013. RDX concentrations in MW-142E were nondetect in the Second Quarter and 6.6J μg/L in the Fourth Quarter. RDX concentrations in MW-160A and MW-160B ranged from 0.65J μg/L to 1.9 μg/L over the three quarters that they were sampled in 2013 (Table 3.4).

3.4.5 Interior Load Line 2 and Load Line 3 Plume Monitoring Well Analytical Results for the 2013 Sampling Events

The LL2 and LL3 Interior Plume MWs are evaluated to monitor changes within the plumes and to identify any significant increases in contaminant concentrations upgradient of the containment EWs. A total of 30 LL2 Interior Plume MWs and 17 LL3 Interior Plume MWs were sampled in 2013. Figure 3.6 presents the locations of the LL2 and LL3 Interior Plume MWs. Groundwater sample results from the LL2 and LL3 Interior Plume MWs are presented in Table 3.5. Sixteen of the MWs within the LL2 Interior Plume, and eight MWs within the LL3 Interior Plume, were installed in November 2012 and were sampled according to the Baseline sampling regimen as discussed in Section 3.4.1.

As noted in Table 3.5, TCE was not detected in 2013 in the sampled LL2 wells. Additionally, TCE was not detected above its Final Target Groundwater Cleanup Goal of 5 μg/L in the two LL3 wells in which it was detected.

The following increases or decreases in RDX concentrations were noted within the LL2 Interior Plume MWs:

- MW-04B is sampled biennially to monitor the shallow interval at the northwestern edge of the LL2 plume at the upgradient end (Figure 3-6). RDX concentrations in MW-04B have increased since 2009 from 0.79 μg/L to 13.0 μg/L in First Quarter 2013.
- MW-65B, sidegradient from MW-04B toward the east side of the RDX plume, has shown declining RDX concentrations from 2011 through 2013 (Appendix A). This reduction is expected as the plume moves downgradient. MW-65B was sampled in Second Quarter 2013. MW-144, MW-145, and MW-171 are sampled to monitor concentration trends and LL2 plume movement in the northern portion of the plume (Figure 3.6). MW-144 and MW-145 are sampled in the Second and Fourth Quarter. MW-171 was still in the baseline sampling program in 2013 and was sampled in the First, Second, and Third Quarters. The highest RDX detections ranged from 96 μg/L to 120 μg/L, and were detected in upper intermediate screened interval wells MW-144E and MW-145E, and shallow interval well MW-171B (Table 3.5). MW-144E RDX concentrations show an increasing trend from 2011 through 2013. Although newer wells MW-171A (intermediate interval) and MW-171B have a limited

dataset, the initial trend in these wells is generally decreasing RDX concentrations from their installation in November 2012 through 2013 (Appendix A).

- Wells MW-164, MW-165, MW-162, MW163 (installed in November 2012) and existing well MW-32 form a west-to-east transect across the LL2 RDX plume to monitor RDX concentrations as the plume moves downgradient toward EWs EW-7 and EW-9. MW-32 is sampled annually in the Second Quarter. The other four well locations were still in the baseline sampling program in 2013 and were sampled in the First, Second, and Third Quarters. MW-32B and MW-165B monitor the shallow screened interval. MW-165B, located in the center of the plume had the highest RDX concentrations at 170 μg/L in all three quarters it was sampled. MW-32B at the eastern margin of the plume had an RDX concentration of 5.9 μg/L during its annual sampling in Second Quarter 2013. MW-32B shows a statistically significant increasing RDX trend (Appendix B). Wells MW-162A and MW-164A (both screened in the intermediate interval on the western half of the transect) had RDX concentrations ranging from 63 μg/L to 80 μg/L. Wells MW-32A and MW-163A (both screened in the intermediate interval on the eastern half of the transect), had lower RDX concentrations ranging from 6.8 μg/L to 15 μg/L. MW-32A shows no trend. MW-162A, MW-163A, and MW-164A all increased in 2013; however, the datasets for these wells are limited because they were installed in November 2012. MW-32D is screened in the deep interval on the eastern margin of the plume. Its 2013 RDX, was reported in MW-32D at 5.8 μg/L. MW-32D has a statistically significant increasing RDX trend (Appendix B). Increases in concentrations along this eastern portion of the transect are expected as the high concentration portion of the plume moves downgradient. Contaminant trends will continue to be monitored to determine if changes to the containment system are necessary.
- Wells MW-166, MW-167, and MW-168 (installed in November 2012) form another west-to-east transect across the RDX plume downgradient of the MW-164 to MW-32 transect (Figure 3.6). These well locations were still in the baseline sampling program in 2013 and were sampled in the First, Second, and Third Quarters. MW-166B, MW-167B, and MW-168B (shallow interval) had RDX concentrations ranging from 0.12J μg/L to 16 μg/L 2013. The highest RDX concentration was observed in MW-167B in the center of the plume, as was expected. The RDX concentrations in wells MW-166B and MW-168B were below the Final Target Groundwater Cleanup Goal of 2 μg/L. Wells MW-166A, MW-167A, and MW-168A (intermediate interval) had RDX concentrations ranging from 7.3 μg/L to 76 μg/L (Table 3.5). The highest RDX concentrations were observed in MW-166A on the western margin of the plume. The MW-166A RDX concentrations increased slightly throughout the 2013 sampling events, but the dataset is limited. Looking at trends between the two zones, it is apparent that the higher RDX concentrations reside in the intermediate zone along this transect.
- MW-29 is sampled to monitor the small, isolated western portion of the LL2 RDX plume. No trend was identified in MW-29A, the intermediate screened interval; however, RDX detections remain above the Final Target Groundwater Cleanup Goals at 2.6 μg/L during 2013.

- Wells MW-169 and MW-170 (installed in November 2012) are the closest upgradient wells to EW-9 and EW-7, respectively (Figure 3.6). These well locations were still in the baseline sampling program in 2013 and were sampled in the First, Second, and Third Quarters. These wells monitor RDX concentrations near the downgradient end of the plume in the area of the EWs. The highest RDX concentrations were detected in MW-169B (shallow interval) at concentrations ranging from 48 μg/L to 55 μg/L in the three 2013 sampling events at this location (Table 3.5). MW-169 is located upgradient of EW-9. RDX concentrations at intermediate interval well MW-169A were 12 μg/L to 13 μg/L in 2013. Both datasets show generally stable concentrations throughout 2013. Intermediate interval MW-170A also had generally stable RDX concentrations ranging from 5.3 μg/L to 6.1 μg/L.
- MW-180, installed in August 2013, monitors the leading edge of the LL2 plume between EW-7 and EW-9 (Figure 3.6). RDX was detected in MW-180E (upper intermediate interval) and MW-180A (lower intermediate interval) at concentrations of 56 μg/L and 33 μg/L, respectively, in the Fourth Quarter; the only time they were sampled in 2013. These results indicate that RDX has moved downgradient of the EWs at concentrations exceeding the Final Target Groundwater Cleanup Goal of 2 μg/L. In 2013, direct-push groundwater sampling defined the extent of contamination southeast of EW-7 and EW-9 (Figure 3.6). An additional groundwater extraction well, EW-18, is planned to be installed to capture this contamination and maintain containment.

The following increases or decreases were noted within the LL3 Interior Plume MWs:

- MW-143 and MW-148 are sampled in the Second Quarter to monitor RDX concentrations in the core of the northern, upgradient portion of the plume (Figure 3.6). RDX was detected in the shallow-interval wells, MW-143B and MW-148B, at concentrations of 16 μg/L and 36 μg/L, respectively (Table 3.5). RDX concentrations in both MW-143B and MW-148B increased from 2012 to 2013. New well MW-148A (intermediate interval) contained RDX at concentrations ranging from nondetect to 0.91 μg/L during its Baseline sampling in 2013. The highest RDX concentrations for these well locations are at the upgradient end of the plume in the shallow zone, as expected.
- MW-149, MW-150, and MW-175 monitor the center of the RDX plume downgradient from MW-143. MW-149 is monitored the Second Quarter, MW-150 is monitored in the Second and Fourth Quarters, and MW-175 was monitored in the First, Second, and Third Quarters as part of the baseline sampling program for new wells. RDX was detected in wells MW-150B and MW-175B (shallow interval) at concentrations ranging from 2.3 μg/L to 13 μg/L. The higher concentrations were observed in MW-150B, which is the most downgradient of these three well locations (Figure 3.6). The MW-150B dataset shows fluctuations in the RDX concentrations and no sustained trend (Appendix B). These contaminant fluctuations are not unexpected as the plume is drawn downgradient toward FEW-14. The limited MW-175B dataset shows declining RDX concentrations since it was first sampled in December 2012 (Appendix A). Wells MW-149A, MW-150A, and MW-175A (intermediate interval), had RDX detections

ranging from 1.5 μg/L to 24 μg/L (Table 3.5). The highest RDX detection was observed in MW-149A, the most upgradient of these three wells. RDX concentrations in MW-149A have been increasing since 2011, while MW-150A (located farther downgradient) shows generally decreasing levels of RDX, though not statistically significant (Appendix B). MW-175A, located between MW-149 and MW-150, exhibits stable RDX concentrations of around 8.5 μg/L. It should be noted that TCE was detected in MW-150A and MW-150B, located downgradient of the smaller TCE plume at LL3, at levels below its Final Target Groundwater Cleanup Goal of 5 μg/L during Fourth Quarter 2013. The MW-150 wells have had sporadic low-level TCE detections during previous sampling events.

- MW-99 is sampled to monitor RDX concentrations on the eastern margin of the plume at the downgradient end (Figure 3.6). RDX concentrations show a statistically significant decreasing trend in the shallow interval well MW-99B (Appendix B). MW-99B had a steady concentration of 1.4 μg/L in 2012 and 2013. RDX was detected in MW-99A (intermediate interval) at 0.47 μg/L, which decreased from 0.68 μg/L in Second Quarter of 2012, and continues the decline of RDX in this well (Appendix A). Only MW-99D, the deep screen interval at this location, has a RDX concentration above the Final Target Groundwater Cleanup Goals of 2.0 μg/L. RDX was reported in MW-99D at 3.3 μg/L in Second Quarter 2013, which is an increase from 2.7 μg/L in the same period of 2012 (Table 3.5). However, MW-99D shows a statistically significant overall decreasing trend in RDX levels (Appendix B). Decreasing concentrations are expected at the MW-99 location due to the absence of RDX in groundwater upgradient from this well.
- MW-172 and MW-173 are sampled to monitor RDX concentrations at the downgradient end of the plume between FEW-11 and EW-4 (Figure 3.6). The MWs at these locations were installed in November 2012, and were sampled in the First, Second, and Third Quarters of 2013. The only well screened in the shallow interval is MW-172B, in which RDX was detected in at concentrations ranging from 1.6 μg/L to 2.8 μg/L in 2013. The limited MW-172B dataset shows decreasing RDX concentrations since it was first sampled in December 2012 (Appendix A). RDX detections in MW-172A and MW-173A ranged from 3.2 μg/L to 7.0 μg/L during the three quarters each well was sampled in 2013. The limited datasets for these well show that MW-172A RDX concentrations have decreased slightly from 2012, while MW-173A RDX levels show no trend (Appendix A).
- MW-130 is sampled in the Second Quarter to monitor groundwater southeast of the LL3 RDX Plume, downgradient of EW-4. The RDX detections in all well screen intervals of MW-130 were below the Final Target Groundwater Cleanup Goal of 2 μg/L during the 2013 sampling event. RDX concentrations of 1.2 μg/L, 0.38 μg/L, and 0.16 J μg/L were observed in the intermediate (A), shallow (B), and deep (D) intervals, respectively. RDX concentrations increased slightly for MW-130A and MW-130D from 2012 to 2013, but overall remained consistent with historical detections. Decreasing concentrations are expected at this location due to the operation of EW-3.

3.4.6 Interior Load Line 4 Plume Monitoring Well Analytical Results for the 2013 Sampling Events

The LL4 Interior Plume wells are sampled to monitor changes within the plumes and to identify any significant increases in contaminant concentrations upgradient of the containment extraction wells. The LL4 plume also includes the AMA and Landfill. A total of 66 Interior Plume MWs were sampled in 2013 during the quarterly sampling events. Figure 3.7 presents the locations of the LL4 Interior Plume MWs, and analytical results are presented in Table 3.6. Additional discussion of detections and increasing or decreasing trends is incorporated into the discussion below:

- MW locations MW-40, MW-72, MW-78, MW-136, MW-137, MW-138, and MW-139 are sampled for TCE to monitor the upgradient end of the AMA plume. These wells are located in the center of the plume. VOC concentrations in the nine upper shallow (E) and lower shallow (B) interval wells ranged from 17.0 μg/L to 4,900 μg/L (Table 3.6) in 2013. The highest concentration was observed in MW-137E. Overall the TCE concentration in MW-137E has been increasing since Fourth Quarter 2012. Seven of the nine shallow wells exhibited increasing TCE concentrations from 2012 to 2013. TCE concentrations decreased in MW-72B and MW-136E. The decreasing trend in MW-136E is statistically significant (Appendix B).

  TCE concentrations in the seven intermediate interval (A) wells ranged from nondetect to 350 μg/L. The highest concentration was observed in MW-137A in Second Quarter 2013. TCE also was detected in MW-137A above the Final Target Groundwater Cleanup Goal in the Fourth Quarter 2013 but at a much lower concentration of 20 μg/L. Based on the analytical data for the shallow and intermediate intervals, the highest TCE concentrations in the upgradient area of the interior LL4 plume in the AMA are present in the shallow-screened interval (Table 3.6). TCE was detected in the deep interval well MW-136D in this northern portion of the plume at concentrations of 140 μg/L in the Second Quarter and 200 μg/L in the Fourth Quarter. These detections show an increase in TCE levels. TCE concentrations are expected to decrease in the long term at these AMA plume locations due to the operation of FEW-15.
- MW-09 is sampled in the Second and Fourth Quarter to monitor the downgradient portion of the AMA TCE plume before it comingles with RDX from LL4 and TCE and RDX from the Landfill (Figure 3.7). TCE concentrations in MW-09B (shallow interval), MW-09A (intermediate interval), and MW-09D (deep interval) ranged from 38 μg/L to 480 μg/L over the 2013 reporting period (Table 3.6). The highest concentration was detected in MW-09D in Second Quarter. In general, TCE concentrations increased with depth at this location. TCE concentrations generally have decreased in all three screened intervals since 2011, which is expected as FEW-15 removes contaminated groundwater upgradient of this location (Appendix A).
- MW-42 is sampled in the Second and Fourth Quarter to monitor the LL4 RDX plume and inside the western edge of the TCE plume. TCE concentrations in MW-42B (shallow interval) MW-42A (intermediate interval), and MW-42D (deep interval) ranged from nondetect to 120 μg/L in 2013. The highest TCE concentration was

observed in MW-42D. In general, TCE concentrations increased with depth at this location. As shown in Appendix A, TCE levels in MW-42A and MW-42B have been declining since 2011. However, there remains a statistically significant upward trend in TCE concentrations at MW-42A and MW-42B (Appendix B). In 2013, RDX concentrations in MW-42A and MW-42D ranged from 2.9 μg/L to 3.5 μg/L, exceeding the Final Target Groundwater Cleanup Goal of 2 μg/L. RDX levels show a statistically significant upward trend in MW-42D, and no trend in MW-42A (Appendix B).

- MW-157 and MW-176 monitor for the leading edge of the LL4 RDX plume; MW-157 also monitors the southwest margin of the TCE plume (Figure 3.7). MW-157 is sampled in the Second and Fourth Quarter. MW-176 was installed in November 2012, and was sampled in the First, Second, and Third Quarters as part of the baseline sampling program. MW-157B (shallow interval) showed stable TCE detections below 1 μg/L; while MW-157A (intermediate interval) exhibited fluctuating TCE concentrations that remain above the Final Target Groundwater Cleanup Goal of 5 μg/L. TCE detections in MW-176B (shallow interval) and MW-176A (intermediate interval), which lies closer to the center of the TCE plume, ranged between 100 μg/L and 810 μg/L (Table 3.6). TCE concentrations in the intermediate intervals were higher increased than in the shallow intervals. RDX was not detected in any of the wells at locations MW-157 or MW-176 at concentrations above the Final Target Groundwater Cleanup Goal of 2 μg/L. This data indicates that the leading edge of the RDX plume continues to lie north of the MW-157 location, as it has since 2011. MW-176 was installed in November 2012 and, therefore, the dataset associated with the well is limited. However, overall the dataset is generally consistent with recent results reported for MW-157.
- MW-18 and nearby MW-178 monitor the eastern margins of the Landfill plume for both TCE and RDX (Figure 3.7). MW-18 is sampled in the Second Quarter. MW-178 was installed in November 2012, and was sampled in the First, Second, and Third Quarters as part of the baseline sampling program. TCE and RDX concentrations in MW-18B (shallow interval) and MW-18A (intermediate interval) are either nondetect or stable at levels below their respective Final Target Groundwater Cleanup Goals. At MW-178B, installed in November 2012, the four sampling events that have been conducted show increasing concentrations for both RDX and TCE at this shallow-screened MW (Appendix A).
- MW-152B is sampled in the Second Quarter to monitor the shallow-screened interval on the western margin of the Landfill plume for both TCE and RDX. TCE concentrations have decreased since 2011. RDX concentrations have been stable between 1 μg/L and 1.5 μg/L (Appendix A).
- MW-43 is sampled in the Second Quarter to monitor the eastern margin of the AMA/LL4 TCE plume near where it comingles with the TCE plume downgradient from the Landfill area (Figure 3.7). This well location also monitors the potential southwestward shift of the RDX plume originating from the Landfill. TCE concentrations in MW-43B (shallow interval) are stable at around 2 μg/L, while RDX levels increased to 3.5 μg/L during 2013, which exceeds the Final Target Groundwater Cleanup Goal of 2 μg/L. TCE concentrations continued to increase in MW-43A

(intermediate interval), but decreased in MW-43D (deep interval) from 2012 to 2013. RDX has consistently been nondetect in MW-43A and MW-43D. Overall, the data indicate the TCE contamination is migrating to the lower portion of the aquifer as discussed in the *Aquifer Characterization Report Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 2011a).

- MW-44 and MW-155 are sampled in the Second Quarter, except new well MW-155B that was sampled in the First, Second, and Third Quarters of 2013 for the baseline sampling program. These wells are sampled to monitor the center of the LL4 TCE plume (Figure 3.7). There is no discernible trend for MW-44B (shallow interval) or for MW-44A (intermediate interval) as indicated by Appendix A and Appendix B, respectively. MW-44D (deep interval) shows an increase in TCE levels from 2012 to 2013. All three MW-44 wells have consistently been nondetect for RDX. TCE concentrations in MW-155B (shallow interval) and MW-155A (upper intermediate interval), and MW-155E (lower intermediate interval), ranged from 120 μg/L to 940 μg/L in 2013. The highest TCE concentration was detected in MW-155A. MW-155B shows decreasing TCE concentrations over the four sampling events conducted at that location since it was installed in November 2012 (Appendix A). MW-155B and MW-155E show no consistent trend. RDX concentrations in the MW-155 wells have been below 0.75 μg/L since they were installed in November 2012. It is expected that the higher TCE levels observed at MW-155 will eventually be mirrored in MW-44 as the TCE plume migrates downgradient.
- MW-109 is sampled to monitor the LL4 plume concentration near Johnson Creek. TCE and RDX data show increasing concentrations in MW-109B (shallow interval) and MW-109A (intermediate interval) since 2011 (Appendix A).
- MW-111 is monitored in the Second Quarter to evaluate the eastern side of the LL4 TCE plume between Johnson Creek and Clear Creek (Figure 3.7). TCE detections in MW-111B (shallow interval) show a statistically significant decreasing trend (Appendix B). At MW-111A (intermediate interval), TCE has been increasing since 2011 (Appendix A). RDX in the MW-111A (shallow screen interval) had been decreasing, but increased slightly from nondetect in 2012 to 0.23J μg/L in 2013 (Table 3.6). RDX levels in both wells remain below the Final Target Groundwater Cleanup Goal of 2 μg/L.
- MW-104 is sampled in the Second and Fourth Quarters to monitor the concentration and location of the AMA plume axis in the Platte Valley. TCE was detected in MW-104B (shallow interval) at a concentration of 620 μg/L in 2013; TCE concentrations have increased in this well since 2011. TCE was detected in MW-104A at 320 μg/L, which is down from 350 μg/L in 2012. RDX levels in both MW-104B and MW-104A remained below 2 μg/L in 2013 (Table 3.6). The overburden well, MW-104O, was nondetect for TCE and RDX in both 2012 and 2013. TCE levels at this location are predicted to increase as the AMA TCE plume migrates downgradient toward EW-1R.
- MW-105 is sampled in the Second and Fourth Quarters to monitor concentrations within the AMA TCE plume immediately upgradient of EW-1R (Figure 3-7). TCE concentrations in MW-105B (shallow interval) and the intermediate interval well

MW-105A increased in 2012 through 2013 (Appendix A). The overall TCE trend in MW-105B is decreasing concentrations (Appendix B). The overburden well, MW-105O, had a low detection of TCE of 0.15J μg/L in 2013, after being nondetect since 2010. RDX has not been detected at the MW-105 location. TCE and RDX concentrations can be expected to fluctuate at this location as the plume is pull towards EW-1R. Heterogeneous concentrations caused by the variable influx of contamination entering the saturated zone are commonly observed in contaminated groundwater plumes.

3.4.7 Monitoring Wells Associated with Focused Extraction Well Analytical Results for the 2013 Sampling Events

A total of 27 MWs sampled in 2013 were classified as being associated with FEWs FEW-11, FEW-14, and FEW-15. These MWs are sampled to evaluate concentrations of RDX and/or TCE in the vicinity of the respective FEWs. Figure 3.8 presents the locations of the MWs associated with FEWs. Sampling data from the FEWs is used to evaluate well performance and identify any significant increases in contaminant concentrations in the vicinity of these FEWs.

Groundwater sample results for the FEW MWs are presented in Table 3.7. The FEW performance evaluation will be presented in the 2013 Annual Containment Evaluation Report. No modifications to the containment system are deemed necessary based on increases or decreases in contaminant concentration at these monitoring locations.

The following trends in TCE and RDX concentrations were noted in the MWs (MW-119, MW-120, MW-121, MW-122, and MW-123) sampled in the Second and Fourth Quarters of 2013 that are associated with FEW-11 located within the LL1 plume:

- MW-120 is the nearest well to the south of FEW-11 (Figure 3.8). The highest concentrations of TCE were in the shallow (B) and upper intermediate (E) screen intervals at MW-120 where the concentrations ranged from 690 μg/L to 12,000 μg/L in 2013 (Table 3.7). TCE levels were highest in MW-120E (upper intermediate interval), and decreased with depth. TCE concentrations are generally declining in all intervals; this is expected because FEW-11 is approximately 200 ft upgradient of this location. However, these TCE level declines are not yet statistically significant trends (Appendix B). The highest 2013 RDX concentrations in MWs associated with FEW-11 also were observed in MW-120B and MW-120E at concentrations ranging from 6.8 μg/L to 9.6 μg/L. RDX concentrations in MW-120B and MW-120E show no statistically significant trend (Appendix B). However, MW-120E RDX concentrations have generally increased since 2011 (Appendix A).
- TCE concentrations in MW-122A show an overall decreasing trend in, but increased to 330 μg/L in Fourth Quarter 2013 (Appendix C).
- The statistical analysis specifically identified decreasing concentration trends for TCE in the intermediate screen interval for MW-121A and MW-123A and the shallow

screen intervals MW-121B and MW-123B. RDX concentrations are also decreasing in MW-121B.

The following trends in TCE and RDX concentrations were noted in the MWs (MW-128 and MW-131) sampled in the Second and Fourth Quarters of 2013 that are associated with LL3 plume FEW-14:

- MW-128B (shallow interval) and MW-128A (intermediate interval) showed declines in RDX concentrations through 2011, and in 2012 and 2013, have generally stabilized below 0.5 μg/L (Table 3.7).
- MW-131B (shallow interval) shows a statistically significant decreasing trend in RDX concentrations (Appendix B). The 2013 RDX detections in MW-131A of 3.0 μg/L in both the Second and Fourth Quarter 2013, were the highest RDX levels detected in an FEW-11 MW during 2013.

The following trends in TCE concentrations were noted in the MWs (MW-133, MW-134, and MW-135) sampled in the Second and Fourth Quarters of 2013 that are associated with LL4 plume FEW-15:

- The highest concentrations for TCE in MWs associated with FEW-15 were detected in MW-135D (deep interval) at concentrations of 930 μg/L in the Second Quarter and 660 μg/L in the Fourth Quarters (Table 3.7). TCE concentrations in MW-135B (shallow interval) and MW-135A (intermediate interval) ranged from 130 μg/L to 240J μg/L in 2013. MW-135 is located immediately downgradient of FEW-15 to the southeast. TCE concentrations are decreasing in MW-135A and MW-135D, but are increasing in MW-135B since 2012 (Appendix A). However, statistical analysis of the MW-135B data shows an overall statistically significant decreasing trend in TCE concentrations (Appendix B).
- MW-133B (shallow interval) exhibited a statistically significant increasing TCE trend in 2013 (Appendix B).
- The TCE data for the intermediate (A) and deep wells (D) at MW-133 and MW-134 show generally decreasing TCE levels in 2013 (Appendix A). The MW-133D trend was noted as statistically significant (Appendix B).

3.4.8 Sidegradient and Downgradient Monitoring Wells Analytical Results for the 2013 Sampling Events

A total of 32 MWs sampled in 2013 were classified as Sidegradient or Downgradient MWs. These MWs are used to evaluate concentrations of RDX and/or TCE adjacent to the contaminant plumes as defined by their Final Target Groundwater Cleanup Goals. Figure 3.9 shows the locations of these MWs, and groundwater sample results from the 2013 sampling are presented in Table 3.8. A discussion of detections and contaminant trends is incorporated into the discussion below:

- MW-08 is sampled in Second Quarter to monitor the area sidegradient to the west of the LL4 plume. In 2013, MW-8B (shallow interval) had a detection of TCE (0.15J μg/L) for the first time. MW-8A (intermediate interval) has been nondetect for TCE since 1995. MW-08B continued to show a decreasing trend for RDX during 2013 (Appendix B).
- MW-25 is sampled in the Second Quarter to monitor the area sidegradient of the LL1 plume at the upgradient end where the two lobes of the plume are situated (Figure 3.9). MW-25B (shallow interval) shows and overall increasing concentrations of TCE, although it is not a statistically significant trend (Appendix B). MW-25A (intermediate interval) has been nondetect for TCE since 2010 and MW-25D (deep interval) has been nondetect for TCE since 2011.
- MW-33 monitors the eastern side of the LL3 RDX plume. The RDX concentration in MW-33B (shallow interval) have been declining, and it was nondetect in 2013 (Appendix A). The RDX concentration in MW-33A (intermediate interval) was 0.79 μg/L in 2013. RDX levels in MW-33A show a statistically significant decreasing trend (Appendix B).
- MW-89 is located along the southwestern edge of the LL1 TCE plume and monitors the possible westward shift of the TCE plume axis and migration of higher concentrations of contaminants into the Wahoo Valley aquifer upgradient of EW-12. TCE concentrations in MW-89B (shallow interval), MW-89A (lower intermediate interval), and MW-89D (deep interval) all declined from 2012 to 2013. MW-89B has an overall statistically significant increasing trend in TCE concentrations (Appendix B). The TCE concentration in MW-89A was 8.9 μg/L in 2013, which exceeded the Final Target Groundwater Cleanup Goal of 5 μg/L. TCE levels in MW-89B and MW-89D during 2013 were below the Final Target Groundwater Cleanup Goal. At MW-89E (lower intermediate interval) TCE has continued to increase since 2011, with TCE detected at 390 μg/L in Second Quarter 2013 (Table 3-8). Increasing TCE concentrations in MW-89 are likely due to plume migration. TCE was predicted to increase in the MW-89 area based on the *2012 Groundwater Model Update* (USACE, 2013m).
- MW-91 monitors the southeastern margin of the LL1 TCE plume for a possible eastward shift of the plume now that EW-17, installed in 2013, is operating (Figure 3.9). MW-91A (shallow interval) had a detection of TCE at 0.16 J μg/L. This is the first TCE detection in MW-91A since First Quarter 2011.
- MW-129 is located downgradient of LL3 to monitor for migration of the RDX plume. Since 2011, RDX concentrations in MW-129A (intermediate interval) have been increasing, and this increasing trend continued in 2013 (Appendix C). RDX levels in MW-129B (shallow interval) decreased slightly from 2012 to 2013. RDX concentrations in both wells are below the Final Target Groundwater Cleanup Goal of 2 μg/L Table 3.8. The deep interval well, MW-129D, has been nondetect for RDX since 2009.
- MW-31 and MW-174 monitor for RDX between the LL2 and LL3 plumes (Figure 3.9). MW-31B (shallow interval) had an RDX concentration of 1.5 μg/L in First Quarter 2013, which is a decrease from 2.2 μg/L in Fourth Quarter 2011.

MW-31A has not had a detection of RDX; however, TCE was detected at 0.21J μg/L and 0.22J μg/L in this well in 2011 and 2013, respectively. MW-31, which is sampled biennially, is associated with the eastern perimeter of the LL2 plume in the vicinity of TCE-contaminated groundwater. MW-174B (shallow interval) and MW-174A (intermediate interval) are associated with the LL3 RDX plume and were installed in November 2012. In the four baseline samples collected from MW-174B 2012 and 2013, RDX has been detected at concentrations between 1.0 μg/L and 1.2 μg/L. RDX concentrations in MW-174A also are below the Final Target Groundwater Cleanup Goal of 2 μg/L.

- MW-179A (intermediate interval) and MW-179B (shallow interval), located at the toe of the TCE plume, have been nondetect for TCE in since they were installed in November 2012. This well cluster was newly installed in November 2012, and was sampled in the First, Second, and Third Quarters in 2013 as part of the baseline sampling program.

4.0 SUMMARY OF 2013 WATER SUPPLY WELL SAMPLING EVENTS

This section presents the background on the WSW sampling program, field sampling procedures, and a summary of the analytical results for the 2013 quarterly WSW sampling events. Additionally, a graphical presentation of the WSW results is presented in Appendix A. A list of the WSW locations, the planned and actual sample collection, and analyses for the four 2013 WSW sampling events are presented in the 2013 WSW QCSRs provided in the QSRs. Appendix E contains the QCSR for the Fourth Quarter 2013 WSW sampling event.

4.1 BACKGROUND OF THE WATER SUPPLY SAMPLING PROGRAM

Results of remedial investigations (RIs) at the Site revealed the presence of groundwater contamination in redeveloped areas of the former NOP that is currently owned primarily by University of Nebraska-Lincoln Field Laboratory (UNFL) and private landowners (USACE, 1993a and 1993b). UNFL utilizes a majority of the former NOP property as their agricultural research and development center. The privately owned land is utilized for residences, pasture, crop production, and light industry. A baseline risk assessment completed during the RIs indicated the potential for impacts to human health. The ROD identifies major components of the selected remedy, including the monitoring of groundwater elevations and water quality, and requires that an alternate potable water supply be provided to local groundwater users whose water supply at any point contained RDX and/or TCE exceeding the Lifetime Health Advisory Level and/or the MCL. The MCLs and Lifetime Health Advisory Level are the same as the Final Target Groundwater Cleanup Goals for TCE of 5 μg/L and RDX of 2 μg/L (Section 1.3).

Procedures were implemented to ensure that residents with private WSWs located in the vicinity of the Site would not consume groundwater with RDX and/or TCE exceeding the associated Final Target Groundwater Cleanup Goals. As required by the ROD, the residential groundwater quality is regularly monitored in the vicinity of the Site to protect individual well owners.

As part of the WSW sampling program, any new residences or water users who may be impacted by potential groundwater contamination associated with the Site and may require inclusion in the WSW program are identified through the following activities performed throughout the year:

- Survey of the State of Nebraska Well Registry Database for any new potable water wells in the vicinity of the Site;
- A review of the Building Permit Applications submitted to the Saunders County Building Department; and
- Regular visual inspections of the local area to determine if any new potable water wells have been installed.

During preparation of this annual report copies of the State of Nebraska Well Registry Database survey results and the Saunders County Building Department Building Permit

Applications for 2013 that identify new wells for possible inclusion in the WSW sampling program have been reviewed. Documents containing any residential information are not presented in this report due to privacy concerns.

A reconnaissance of the area was performed during 2013 quarterly MW and WSW sampling events. The reconnaissance was conducted throughout the Site and intended to identify new construction sites or activities that may indicate the installation of new potable water wells. The reconnaissance focused particularly within the known groundwater contaminant plumes, and one mile downgradient and sidegradient of the groundwater contaminant plume boundaries. Based on these searches, no new WSWs were added to the program in 2013.

During 2013, 70 WSWs were monitored on the Site, or within close proximity to the Site. Figures 4.1 and 4.2 show the sample locations. Since December 1993 site-wide WSW monitoring has generally been performed at least semiannually. In 2013, WSW sampling was conducted predominantly during the First Quarter and Third Quarter sampling events. The WSW wells are located within one mile of the groundwater contaminant plume boundaries (wells exceeding the Final Target Groundwater Cleanup Goals) along the east and south boundaries. WSWs are grouped into two general categories: (1) domestic and university supply wells, and (2) domestic supply wells with GAC units. No university water supply locations are equipped with GAC units. Domestic and university supply wells are sampled at a location convenient to the owner, which is either an interior faucet, an outside spigot, or at the wellhead.

Domestic WSWs WSW-52A, WSW-52C, WSW-53, and WSW-54 are equipped with GAC units and are sampled semiannually. Samples are collected from sampling ports located after the primary carbon treatment vessel prior to the secondary carbon treatment vessel to monitor the effectiveness of the treatment units (discussed in Section 5.0). Samples are also collected from sampling ports before the primary treatment vessel to monitor groundwater contaminant levels before treatment. Samples collected before the primary carbon treatment vessel have a "-B" in the sample name. For example, sample "WSW-52A" is collected after treatment, and sample "WSW-52A-B" is collected before treatment. TCE and RDX pre-treated and post-treatment results are shown in Table 4.1.

Water for university facilities located on the Site is supplied through a distribution system fed by a network of wells (UNFL wells). These wells are operated by the University of Nebraska-Lincoln at various times of the year depending on the need for water to conduct routine operations, to irrigate, and to water livestock.

4.2 FIELD SAMPLING

Detailed sampling and quality assurance procedures for the collection of groundwater samples from WSWs were performed in accordance with the *Site-Wide Work Plan* (USACE, 2013b). Sampling rationale and selection tables, included in the *Site-Wide Work Plan*, are updated annually. The sampling for 2013 occurred as planned with the following exceptions:

First Quarter
Wells UNFL-12, UNFL-23, WSW-75, WSW-97, WSW-114, and WSW-116, were listed on the sampling schedule but were not sampled as planned. The water was turned off at UNFL-12 and UNFL-23. The WSW-75, WSW-97, WSW-114, and WSW-116 sampling locations were not accessible to the field crew; therefore, samples could not be obtained from these locations.

Third Quarter
Wells WSW-116, UNFL-12, and UNFL-23 were listed on the sampling schedule but were not sampled as planned. The water was turned off at the UNFL-12 and UNFL-23 sampling locations. The WSW-116 sampling location was not accessible to the field crew; therefore, samples could not be obtained from this location.

There were no deviations from the sampling plan during the Second and Fourth Quarters 2013.

4.3 ANALYTICAL RESULTS FOR THE 2013 WATER SUPPLY WELL SAMPLING EVENTS

This section presents the analytical results from the WSWs for the four 2013 quarterly events. Detections of RDX and TCE are compared to the Final Target Groundwater Cleanup Goals. Four quarterly QCSRs list the planned and actual sampling and analysis activities for the 2013 WSW sampling events. Figure 4.1 shows the WSWs sampled during 2013 and Figure 4.2 presents the detected TCE and RDX results. The 2013 WSW results, including additional site-specific compounds, are presented in Table 4.2.

RDX was detected above its Final Target Groundwater Cleanup Goal of 2 μg/L in the pre-treatment samples collected from WSW-53-B (First and Third Quarters 2013) and WSW-54-B (First Quarter 2013) at concentrations ranging from 2.3 μg/L to 6.2 μg/L. The RDX concentration in the pre-treatment sample at WSW-54-B was 2.0 μg/L in the Third Quarter 2013 (Table 4.2). The RDX concentration in WSW-50B was 2.0 μg/L in the First Quarter 2013, but declined to 1.7 μg/L in Third Quarter 2013. RDX was reported at detectable levels in WSW-29, WSW-29A, WSW-50B, WSW-51, WSW-51A, WSW-100, and pretreatment sample WSW-52A-B; however all concentrations were below the Final Target Groundwater Cleanup Goal.

TCE was detected above its Final Target Groundwater Cleanup Goal of 5 μg/L in the pre-treatment sample WSW-52C-B at location WSW-52C at concentrations of 130 μg/L in the First Quarter and 160 μg/L in the Third Quarter of 2013. TCE also was detected below the Final Target Groundwater Cleanup Goal in WSW-51, WSW-51A, and pretreatment samples from WSW-53-B and WSW-54-B during the First and Third Quarters 2013.

All WSWs where detections exceeded the associated Final Target Groundwater Cleanup Goals for TCE and RDX are currently provided a potable water supply as part of the AWS program.

4.4 GRAPHICAL PRESENTATION OF TCE AND RDX WATER SUPPLY WELL DATA

TCE and RDX historical data are graphically presented in Appendix A for WSWs sampled during the 2013 sampling events that have four or more data points. The graphs presented in Appendix A show how the concentrations of TCE and RDX have varied over time for each of the presented WSWs. The RDX and TCE concentrations statistical analysis charts are provided in Appendix B.

4.5 WATER SUPPLY WELL SUMMARY

During 2013, WSWs were sampled to assess the quality of drinking water supply of residents within the Site and surrounding area as part of the regularly scheduled WSW sampling events, and to assess the quality of drinking water supplies in an area extending approximately one mile south and east (downgradient and cross gradient, respectively) beyond the extent of the contaminant plumes.

Figures 4.1 and 4.2 present the WSW locations and TCE and RDX detections, respectively.

The following WSWs (all located approximately 2 miles southeast of the LL4 structures) had detections above the Final Target Groundwater Cleanup Goals for TCE of 5 μg/L or RDX of 2 μg/L:

- WSW-52C-B is located within the TCE plume boundary. TCE was detected in the pre-treatment samples collected before the GAC unit from WSW-52C-B in the First and Third Quarter 2013 sampling events at 130 μg/L and 160 μg/L, respectively. Since 2009, TCE concentrations in WSW-52C-B have ranged between 120 μg/L and 160 μg/L. Treated samples from WSW-52C were nondetect for TCE during the First and Third Quarter 2013 WSW sampling events. RDX has not been detected in this WSW since 2003.
- RDX was detected in the pre-treatment samples collected before the GAC unit from WSW-53-B during the First Quarter and Third Quarter 2013 WSW sampling events at 6.2 μg/L and 6.0 μg/L, respectively. TCE also was detected in the pre-treatment samples collected before the GAC unit from WSW-53-B at 2.1 μg/L in both the First and Third Quarter 2013. These detections do not exceed the TCE Final Target Groundwater Cleanup Goal of 5 μg/L. TCE and RDX concentrations in pre-treatment sample WSW-53-B have been declining since 2010 (Appendix A). Treated samples from WSW-53 were nondetect for both TCE and RDX during the First and Third Quarter 2013.
- RDX was detected in the pre-treatment sample collected before the GAC unit from WSW-54-B at 2.3 μg/L during the First Quarter 2013. In Third Quarter 2013, the RDX detection in WSW-54-B was 2.0 μg/L. TCE was detected in the pre-treatment samples collected before the GAC unit from WSW-54-B during the First and Third Quarter 2013 at 4.4 μg/L and 4.3 µg/L, respectively. These detections do not exceed the TCE Final Target Groundwater Cleanup Goal of 5 μg/L. TCE and RDX

concentrations in WSW-54-B are both declining (Appendix A). Treated samples from WSW-54 were nondetect for both TCE and RDX during the First and Third Quarter 2013 WSW sampling events.

Additional discussion of detections above the Final Target Groundwater Cleanup Goals and other increasing or decreasing trends is incorporated into the discussion below:

- TCE had been detected in WSW-51A over the TCE Final Target Groundwater Cleanup Goal of 5 μg/L in 2012, and had generally shown increasing concentrations (Appendix A). However, in First Quarter and Third Quarter 2013 TCE concentrations declined to 4.6 μg/L and 4.7 μg/L, respectively. RDX levels, which had shown an increasing trend since 2008, also showed a decline during the 2013 sampling events (Appendix A). RDX concentrations remain below the Final Target Groundwater Cleanup Goal of 2 μg/L.
- There were no other increasing TCE trends in any WSW locations sampled in 2013.
- RDX concentrations have been decreasing in WSW-29 starting in 2012; although the statistical analysis indicates no significant trend is present because of the historically variable concentrations (Appendix B).
- RDX levels in WSW-52A-B show a decreasing trend overall, but increased slightly in 2013 (Appendix B).
- RDX is generally increasing in WSW-29A and WSW-51 (Appendix A). RDX levels in WSW-100 and WSW-50B do not show consistent trends (Appendix B).

This page was intentionally left blank.

5.0 SUMMARY OF 2013 ALTERNATE WATER SUPPLY PROGRAM

This section presents the background and 2013 efforts for the AWS program. Well owners included in the AWS are provided with either bottled potable water or GAC units to treat the water from their potable water wells. Field samples are collected from these locations as part of the WSW sampling program described in Section 4.0. A list of the AWS sampling locations along with the planned and actual sample collection, and analyses for the four 2013 WSW sampling events, are presented in the 2013 WSW QCSRs.

5.1 BACKGROUND OF THE ALTERNATE WATER SUPPLY PROGRAM

In accordance with the requirements of the ROD, local groundwater users whose potable water supply at any time exceeded the Final Target Groundwater Cleanup Goals for RDX or TCE are provided with bottled potable water or GAC units to treat the water from their potable wells, based on the preference of the resident. Concentrations of TCE and RDX in treated and pre-treated groundwater at the residences are monitored as part of the WSW Program discussed in Section 4.0. These results are further discussed in Section 4.5. A total of six residences are part of the AWS program and are associated with WSW-50B, WSW-51A, WSW-52A, WSW-52C, WSW-53, and WSW-54. GAC treatment vessels are present at the residences associated with WSW-52A, WSW-52C, WSW-53, and WSW-54. Section 5.3 below documents the GAC treatment unit replacement for the affected well owners. Bottled water is provided to residences associated with WSW-51A, and WSW-50B.

Analytical results from the 2013 WSW sampling events indicated that the residential GAC treatment units effectively treated TCE- and RDX-impacted groundwater used for drinking water supplies (Table 4.1). The concentration of TCE is reduced to less than the MCL for TCE (5 μg/L), and the concentration of RDX is reduced to less than the Lifetime Health Advisory Level for RDX (2 μg/L).

5.2 FIELD ACTIVITIES

The GAC treatment systems are maintained and sampled in accordance with the *Site-Wide Work Plan* (USACE, 2013b). Sampling ports are located before the primary vessel in the influent line and between the primary and secondary vessels at each system. Semiannual water samples are collected from these sampling ports to provide pre-treatment and post-treatment TCE and RDX analytical results. Pre-treatment and post-treatment water sample results are used to verify that each system is performing to specifications. TCE and RDX pre-treatment and post-treatment results are shown in Table 4.1.

5.3 GRANULAR ACTIVATED CARBON TREATMENT SYSTEM MAINTENANCE

To minimize the potential for bacterial fouling and possible premature breakthrough, the AWS program has established a maintenance program in which the GAC vessels are replaced annually (or sooner, if RDX or TCE is detected in the GAC-treated sample). Vessels may be changed more frequently based on the contaminant concentrations and water throughput volumes.

Several replacement carbon vessels are stored at the Main GTP to facilitate response to any GAC system problem and scheduled maintenance activities. The schedule of GAC vessel replacements and other maintenance activities completed in 2013 is presented in Table 5.1.

6.0 OPERATION AND MAINTENANCE SUMMARY

This section presents the summary of 2013 O&M activities, field sample collection activities, and the analytical results for the GTPs, EWs and FEWs. A summary of general O&M activities and the frequency at which they are conducted at the GTPs is provided in Table 6.1.

6.1 BACKGROUND OF THE GROUNDWATER TREATMENT PLANT SYSTEMS

The GTPs at the Site were constructed to treat extracted groundwater from the former NOP using GAC adsorption, AOP, and/or air stripping. Currently, there are four GTPs designated as the Main GTP, the LL1 GTP, the LL4 GTP, and the AOP GTP. From June to December 2013, a pilot study was conducted using AOP ultraviolet (UV) treatments systems to treat extracted RDX-contaminated groundwater at the wellhead using UV photolysis. The AOP UV treatment systems were installed at EW-4, EW-7, EW-9, FEW-11, and FEW-14. The treatment systems are described in the following subsections.

6.1.1 Main Groundwater Treatment Plant

The Main GTP was originally constructed between 1997 and 1998 to process 600 gpm of contaminated groundwater from two extraction wells (EW-1 and EW-8). Between April 2000 and January 2002, the treatment capacity of the Main GTP was expanded by 2,400 gpm, for a total installed capacity of 3,000 gpm. The construction activities conducted between April 2000 and January 2002 included the installation of nine additional EWs (EW-2 to EW-7, EW-9, EW-10, and FEW-11) and the associated piping and controls. O&M of the original Main GTP began in 1998 when EW-1 and EW-8 came online. O&M of the expanded Main GTP began in February 2002 after the successful completion of the performance tests. FEW-14 and EW-16 were installed in April and May 2009 and brought online in June 2009.

Currently, the Main GTP receives extracted groundwater from five EWs (EW-1R, EW-4, EW-7, EW-9, FEW-14), and the pre-treated effluent from the AOP GTP. The Main GTP treats contaminated water using liquid-phase GAC which is then discharged to either Wahoo Creek and/or Clear Creek. During the summer months, treated groundwater is available at several locations for beneficial reuse from the effluent line to Clear Creek. As part of the AOP UV treatment pilot study, contaminated groundwater from EW-4, EW-7, EW-9, and FEW-14 is pre-treated using UV photolysis before being conveyed to the Main GTP for final polishing during prove out of the UV technology. Contaminated groundwater from FEW-11 also is pre-treated for RDX contamination through UV photolysis, conveyed to the AOP GTP for TCE treatment, and is then sent to the Main GTP for final polishing.

6.1.2 Load Line 1 Groundwater Treatment Plant

The LL1 GTP was constructed between October 2005 and January 2006. The LL1 GTP consists of a 5-tray, low-profile air stripper and a vapor phase granular activated carbon (VPGAC) to treat groundwater contaminated with TCE. The treatment system is housed in a steel building 46 ft long and 40 ft wide. Originally the system was designed for a total flow rate between 600 gpm and 750 gpm from two EWs: EW-12 and EW-13. The building was

built to allow for future expansion with a second, similar treatment system. Plant startup occurred between January 8 and 11, 2006, with EW-12 online. EW-13 could not produce sufficient flow (yielding only 50 gpm) and was not connected to the LL1 GTP. In May 2013, a replacement well, EW-17, was brought online.

6.1.3 Advanced Oxidation Process Groundwater Treatment Plant

The AOP GTP receives extracted groundwater from FEW-11. The AOP GTP is designed to reduce TCE concentrations in contaminated groundwater to less than 10 μg/L prior to final polishing at the Main GTP. The AOP treatment system includes modified discharge piping and a submersible pump at FEW-11 to accommodate the design flow rate of 600 gpm; influent/effluent piping connections to the existing influent pipeline (between FEW-11 and the Main GTP) to divert the flow from FEW-11 through the AOP treatment facility; and the process equipment necessary to reduce the concentration of TCE in the contaminated groundwater from FEW-11. The AOP system consists of a HiPOx™ Advanced Oxidation Systems (HiPOx™) reactor skid, where the reaction of peroxone with TCE occurs. In addition to the HiPOx™ skid, the system is supported by a hydrogen peroxide skid, an air compressor, a pressure swing adsorption oxygen system, and an ozone generator. Beginning in October 2013, an AOP UV treatment system was installed to treat RDX-contaminated water at FEW-11 as part of a pilot study. The UV system for FEW-11 is installed in the former pump house of EW-5. Following AOP UV treatment for RDX through UV photolysis, the water is then conveyed to the AOP GTP for TCE treatment with HiPOx™.

6.1.4 Load Line 4 Groundwater Treatment Plant

The LL4 GTP was constructed between September 2009 and April 2010. O&M of the LL4 GTP began on August 29, 2010. TCE-contaminated groundwater is treated using a low-profile air stripper and VPGAC. The original system was designed as a 5-tray system but was later modified to a 6-tray system with the capability to handle flow rates of 500 gpm to 600 gpm from one focused extraction well (FEW-15). The building was constructed to allow for future expansion with a second similar treatment system, if needed. The LL4 GTP discharges directly to Wahoo Creek or is diverted to the Main GTP for further polishing. During 2013, all the water from the LL4 GTP discharged directly to Wahoo Creek with the exception of the month of November, when all water was directed to the Main GTP for additional treatment as a precaution during packer testing of FEW-15 to ensure that treatment objectives were being met.

6.2 SUMMARY OF 2013 ACTIVITIES FOR THE MAIN GROUNDWATER TREATMENT PLANT

The Main GTP processed 700,094,000 gallons of contaminated water during 2013 (Table 6.9). The average operating flow rate was 1,918,000 gallons per day (1,330 gpm). The Main GTP has processed 12,276,970,000 gallons since plant startup in February 2002. The Main GTP extraction wells, EW-1R, EW-4, EW-7, EW-9, FEW-11 (AOP), and FEW-14 were online for part or all of 2013. EW-2, EW-5, EW-8, and EW-10 were previously shut down as they were no longer needed to contain the contaminant plumes. Based on

recommendations from the 2012 Containment Evaluation (2012h, USACE), EW-3, EW-6, and EW-16 were shut down in January 2013 (USACE, 2013h,). In 2013, the Main GTP operated with an uptime efficiency of 97 percent (see Table 6.2).

Based on monthly influent and effluent sample analytical data from the Main GTP, the total amounts of TCE and RDX removed at the Main GTP in 2013 were 5.4 pounds (lbs) and 22.8 lbs, respectively (USACE, 2014c). The amounts of TCE and RDX removed from groundwater since startup in February 2002 to December 2013 are 382 lbs and 271 lbs, respectively.

To calculate the mass of a contaminant that has been removed through treatment, the following equation is used:

Amount of TCE/RDX Removed (pounds) = Influent TCE/RDX Concentration (μg/L) x Volume Treated (gallons) x 3.785 liters per gallon x 1E-09 kilograms per microgram x 2.204 pounds per kilogram

Appendix H contains daily process flow data for EWs that supplied extracted groundwater to the Main GTP for 2013. Appendix I provides a summary of the monthly influent flows to the Main GTP, discharge totals, and the monthly discharge totals to Wahoo Creek and Clear Creek. The flow meter readings from the extraction wells are independent from the flow meter readings from the Main GTP effluent tank. The monthly flow meter readings from the EWs are added together to generate the monthly flow rate from the wells as a group. Discrepancies between total influent and effluent rates are likely based on the arrangement of storage tanks, influent pumps, and effluent pump configurations. Figure 6.1 provides a monthly summary of both influent and effluent flow totals since startup of the Main GTP in 2002. Flows from the LL1 GTP, the LL4 GTP, and the AOP GTPs from 2006 to 2013 also are shown on Figure 6.1.

6.2.1 Extraction Well Flow Rates and Groundwater Pumping Level Elevations

In 2013, the operating EWs associated with the Main GTP were EW-1R, EW-4, EW-7, EW-9, and FEW-14. The average monthly flow rates of the EWs are presented on Figure 6.2. The Main GTP influent flow also includes the AOP GTP effluent, which is treated water from FEW-11 that is conveyed to the Main GTP. The combined average monthly flows from these sources represent the total monthly operational flow rate for the Main GTP. The total operational flow rate for the Main GTP system varied between 1,512 gpm to 1,620 gpm during, except in November and December as discussed below.

In November 2013, the average influent flow rate of EWs to the Main GTP was 975 gpm. The decreased rate was because the Main GTP was offline for 215 hours for the following:

- Well rehabilitation activities at EW-1R, EW-7, EW-9 and FEW-11;
- High differential pressures caused by high solids in extracted water from well rehabilitation;

- Installation of exterior piping tie-ins of EWs with AOP UV treatment systems to Wahoo Creek and Clear Creek;
- Installation of piping associated with connecting EW-1R to LL4 GTP; and
- Packer testing at FEW-11 and FEW-15.

In December 2013, the average influent flow rate of EWs to the Main GTP was 1,170 gpm. A lower operational rate occurred in December because of the following:

- Installation of solar panels at the Main GTP/AOP GTP, and
- High differential pressures in the Main GTP from operation of FEW-11/AOP GTP post-rehabilitation event.

EW flow rates were measured daily at each control system panel located in the pump house of each EW. The groundwater elevations and EW flow rates were recorded daily from the controls computer located at the Main GTP. These operational values are presented in Appendix H. Table 6.3 summarizes the operational set point flow rate and the runtime average actual flow rate as well as the uptime for each EW and FEW during 2013. The runtime average flow rate is the actual flow rate of the wells while they were running. The well uptime along with the runtime average flow rate is used to determine the adjusted average annual flow rate which represents the average flow rate of the well over the course of the entire year. These values are presented in Table 6.3. The average monthly flow rates for each EW from 2013 are depicted on Figure 6.2.

6.2.2 Step-Drawdown Pumping Tests for Extraction Wells

As part of the EW maintenance program, step-drawdown pumping tests (step tests) were performed on all operating EWs in 2013 to assess the specific capacity of each well and the need for redevelopment/rehabilitation. Review of EW operational flow rates and pumping water levels with respect to the top of the well screen were also considered to determine potential rehabilitation needs. The *2012 Annual Summary Report, Operable Unit No. 2 (Groundwater)*, *Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 2013d) recommended that rehabilitation of several wells be completed in 2013. Redevelopment/rehabilitation of EW-1R, EW-7, EW-9, and FEW-11, were conducted in 2013. More information on the 2013 well rehabilitation can be found within the appropriate well rehabilitation memorandum. EW-12 was rehabbed as recommended in the *2012 Extraction Well Rehabilitation Activities and Results Memorandum* dated February 20, 2013 (USACE, 2013a). EW-1R, EW-7, EW-9, and FEW-11 were rehabbed as recommended in the *2013 Former Nebraska Ordnance Plant Extraction Well Rehabilitation Memorandum* dated September 23, 2013 (USACE, 2013j).

A summary of specific capacities for each operational EW through 2013 is provided in Table 6.4. EW-1, EW-3, EW-6, and EW-16 were not active in 2013 and, therefore, were not evaluated. Three EWs (EW-9, FEW-11, and EW-12) indicated a 20 percent or greater decrease in specific capacity from peak capacity before the 2013 rehabilitation activities.

It should be noted that EW-12 was not rehabilitated because its 2013 specific capacity measurement had not decreased significantly from its 2012 post-rehabilitation specific capacity measurement. However, even after being rehabilitated in 2013, EW-9 and FEW-11 still exhibited a significant decrease greater than 20 percent) from peak specific capacity. FEW-11 showed modest improvement following rehabilitation, while EW-9 and EW-12 exhibited minimal to no improvement. Possible causes for this decline in specific capacities include bio-fouling, chemical and biological incrustation, and iron fouling.

Based on the results of the 2013 rehabilitation efforts, the specific capacity results in Table 6.4, and the operations assessment of each well, redevelopment/rehabilitation activities are recommended for EWs EW-9, EW-12, and FEW-11 in 2014. The September 2013 rehabilitation memorandum (USACE, 2013j) recommended that alternative rehabilitation methods be considered in the future to determine if another method would be more effective at increasing the specific capacity of EWs at the Site. As discussed in the memorandum, it is likely that the decrease in specific capacity is due to fouling in the filter pack or formation adjacent to the filter pack and this fouling is not effectively removed using conventional jetting, surging, and bailing. By systematically using alternative rehabilitation methods at wells that have historically proven to be difficult to improve, such as EW-12, or the wells that showed poor improvement in 2013, such as EW-9 and FEW-11, and comparing the specific capacity results to historical results, the most effective rehabilitation method can be determined. Pre-treatment and post-treatment step drawdown tests are also recommended to evaluate the effectiveness of the well rehabilitation efforts.

The performance of active EWs and FEWs should continue to be assessed annually. Due to overlapping radii of influence, the neighboring EWs should be operated at their typical flow rates to accurately determine the specific capacity of the well under consideration. A summary of significant EW system activities and EW performance for each month is presented in Table 6.5.

6.2.3 Operation and Maintenance of the Main Groundwater Treatment Plant

The Main GTP was operated in accordance with the *Operations and Maintenance Manual, Remedial Design* (USACE, 2002) and the 2013 O&M Manual update (USACE, 2013q), with no exceptions. Appendices I, J, and K and Tables 6.1 through 6.9 provide supporting information as for the operational elements summarized below.

6.2.3.1 <u>Effluent Flow</u>

Appendix H includes process flow data including pressure data for the effluent pumps, effluent discharge data for Wahoo Creek and Clear Creek, and the effluent totalizer readings. On February 11, 2011, a revised National Pollutant Discharge Elimination System (NPDES) Notice of Intent (NOI) General Permit application, NEG700000, for the former NOP facility was submitted to the NDEQ. A revised NPDES General Permit NEG710000 Remediation Site NOI will be submitted in 2014.

6.2.3.2 Granular Activated Carbon Vessels

In 2013, only three of the eight GAC vessels operated during a given month. The operating GAC vessels were backwashed monthly. Spent carbon was removed from GAC vessels 370 and 380 for disposal in February 2013. These two vessels were removed from service and were placed offline. In May 2013, GAC vessels 320, 340, and 360 were also taken off-line for carbon change out in July 2013. These three GAC vessels were not brought back online following the carbon change out. From August 2013 to December 2013, GAC vessels 310, 330, and 350 were operational and were backwashed on a monthly basis. The GAC change out schedule and GAC vessel backwash summary for the Main GTP are presented in Table 6.6.

6.2.3.3 Main Groundwater Treatment Plant Shutdowns

In 2013, the Main GTP was offline for 291 hours. Table 6.7 documents all of the shutdowns that occurred at the Main GTP in 2013. Shutdowns of significant length are discussed below.

In October 2013, the Main GTP was offline for a total of 66 hours. Downtime was the result of well rehabilitation and construction of a pipeline tie-in for the UV treatment system effluent to the Main GTP. The Main GTP and associated EWs also were shut down for high levels in the settling tank.

The Main GTP was offline for 215 hours in November 2013 for rehabilitation of EW-1R, EW-7, EW-9 and FEW-11; construction of exterior piping tie-ins to Wahoo Creek and Clear Creek; construction of piping tie-ins connecting EW-1R to LL4 GTP; packer testing at FEW-11; and high differential pressures caused by well rehabilitation.

6.2.4 Analytical Sampling at the Main Groundwater Treatment Plant

Influent and effluent samples and GAC vessel effluent samples were collected monthly at the Main GTP. The Main GTP influent samples were analyzed for VOCs and explosive compounds on a monthly basis. Annually, these samples were analyzed for TSS, TOC, iron, and manganese. Main GTP effluent samples were analyzed on a monthly basis for VOCs, explosive compounds, and nitrates. These effluent samples also were field tested monthly for pH using a calibrated pH meter. GAC vessel effluent samples were analyzed monthly for VOCs and explosive compounds. All samples were packaged and shipped for laboratory analysis to Test America Laboratories in Denver, Colorado.

Groundwater samples from associated wells (EW-1R, EW-4, EW-7, EW-9, FEW-11/AOP GTP Effluent, and FEW-14) were collected quarterly and tested for VOCs and explosive compounds. The influent and effluent of the wells with pilot study UV treatment systems installed at the wellhead (EW-4, EW-7, EW-9, FEW-11 [at former EW-5 pump house], and FEW-14) had samples collected on a more frequent basis as part of the pilot study and prove-out activities for the UV treatment systems.

The analytical results for TCE and RDX from the Main GTP influent, effluent, GAC, and EW samples are summarized in Table 6.8. Also included on Table 6.8 are the results of the TOC, TSS, iron, manganese, nitrates, and pH sampling from the Main GTP. Table 6.9 includes the monthly effluent volumes from the Main GTP. Three quarterly QCSRs, included within the QSRs, provide detailed validated data and descriptions of the O&M sampling events for 2013 and were submitted separately (USACE, 2013e; USACE, 2013k; and USACE, 2013n). The Fourth Quarter 2013 QCSR for the O&M Program is provided in this document as Appendix F.

6.2.4.1 Extraction Wells Associated with the Main Groundwater Treatment Plant (EW-1R, EW-4, EW-7, EW-9, and FEW-14)

VOCs: TCE was nondetect in the samples for all wells (EW-4, EW-7, and EW-9) except from EW-1R and FEW-14. TCE results ranged from 3.3 μg/L to 3.5 μg/L in EW-1R and from 0.43J μg/L to 0.86J μg/L in FEW-14. These detections are below the cleanup goal for TCE of 5 μg/L. TCE trend charts for EWs are presented in Appendix P.

Explosives: RDX was detected in all EWs. At EW-1R, RDX detections were below the Final Target Groundwater Cleanup Goals of 2 μg/L. RDX concentrations exceeded the cleanup goal in the samples collected from the remaining EWs (EW-4, EW-7, EW-9, and FEW-14). RDX concentrations varied as follows:

- EW-4 ranged from 3.5 μg/L to 3.6 μg/L,
- EW-7 ranged from 7.4 μg/L to 7.8 μg/L,
- EW-9 ranged from 18 μg/L to 20 μg/L, and
- FEW-14 ranged from 4.7 μg/L to 5.2 μg/L.

The four EWs that contained RDX detections above the Final Target Groundwater Cleanup Goal of 2 μg/L had UV treatment systems installed at the wellhead as a pilot study (July to December 2013) to treat RDX through UV photolysis. Following UV treatment at the wellhead, RDX concentrations in the effluent are below the cleanup goal. Details of the UV treatment system pilot study can be found in the *Ultraviolet Photolysis Treatment Pilot Study Implementation Memorandum, Former Nebraska Ordnance Plant, Mead, Nebraska – Extension of VE Idea FI-23* dated July 2, 2013 (USACE, 2013g). Trend charts for RDX concentrations at the EWs (untreated) are presented in Appendix P.

6.2.4.2 Main Groundwater Treatment Plant Influent

VOCs: TCE was detected in the Main GTP influent samples ranging from 0.47J μg/L to 3.5 μg/L. All influent detections were below the cleanup goal of 5 μg/L for TCE. TCE concentrations in the influent are primarily from EW-1R, FEW-11 (AOP GTP effluent), and FEW-14. Other than in October and November, the Main GTP influent concentrations for TCE have been less than 1 μg/L.

Explosives: Detectable concentrations of RDX observed in the Main GTP influent samples throughout 2013 ranged from 0.21J μg/L to 6.7 μg/L. The individual EW sampling results indicate that all operating wells contributed RDX to the influent of the Main GTP. Decreased RDX concentrations in the influent samples for November and December were due to the installation of UV pre-treatment systems at EW-4, EW-7, EW-9, and EW-14 that provide flow to the Main GTP.

TOC: TOC concentration in the June 2013 Main GTP influent sample was 0.81J milligrams per liter (mg/L).

TSS: TSS in the June 2013 plant influent sample was nondetect.

Iron and Manganese: Iron was detected at 120J μg/L and manganese was detected at 33 μg/L in the June 2013 plant influent sample.

6.2.4.3 Granular Activated Carbon Vessels

Concentrations of TCE and RDX were detected in the effluent water samples collected from the GAC vessels. These concentrations were monitored to ensure that the levels of TCE and RDX did not exceed the discharge criteria of 5 μg/L for TCE and 2 μg/L for RDX. No samples exceeded discharge criteria in 2013. In 2012, the GAC vessel configuration was changed from lead/lag (series) to single unit (parallel operation) to maximize carbon usage. Between January and April 2013, influent water at the Main GTP was treated through three GAC vessels (320, 340 and 360). The effluent from each of these GAC vessels was monitored to ensure TCE and RDX concentrations were below the discharge criteria. When the effluent from the GAC vessels approached the discharge criteria (RDX detection of 1.1 μg/L in May 2013), flow was diverted to the other three GAC vessels (310, 330 and 350) in late May 2013. A carbon change out was performed on vessels 320, 340, and 360 in July 2013. GAC vessels 310, 330 and 350 treated all influent water for the Main GTP from July 2013 to December 2013.

6.2.4.4 Main Groundwater Treatment Plant Effluent

VOCs: All TCE detections were below the discharge goal of 5 μg/L, with concentrations in the effluent samples ranging from nondetect to 0.38J μg/L.

Explosives: All RDX detections were below the discharge goal of 2 μg/L, with concentrations in the effluent samples ranging from nondetect to 1.1 μg/L.

Nitrate: Nitrate concentrations were consistent throughout 2013 with an average value of 4.0 mg/L.

pH: An average pH of 7.1 was observed for the effluent in 2013.

6.2.5 Solids Waste Disposal

Spent carbon from the residential GAC vessels at the former NOP was containerized in four 55-gallon drums and transported by Cabot Corporation (formerly Norit) to the Douglas County Landfill on December 11, 2013.

The filter press was not operated in 2013. Therefore, no filter press sludge samples were collected during 2013. The disposal facility, Douglas County Landfill, where the sludge is shipped, indicated that it is not necessary to collect waste profile samples of the residue because the Main GTP process generating the residue had not changed. Concentrations reported in waste profile samples collected during January 2003 are used as baseline data for the residue profile. The sludge profile data are included as Appendix J. The Douglas County permit requires renewal every three years and the next renewal date will be in July 2016.

6.3 SUMMARY OF 2013 ACTIVITIES FOR THE LOAD LINE 1 GROUNDWATER TREATMENT PLANT

The LL1 GTP treated 240,724,800 gallons of water during 2013. The amount of water treated at the LL1 GTP from startup in January 2006 through December 2013 is 1,294,400,000 gallons. The amount of TCE recovered during 2013 was 230 lbs, with approximately 545 lbs recovered from startup in January 2006 through December 2013 (USACE, 2014c). The equation used to calculate the mass recovery of this contaminant is shown in Section 6.2. Further detail on the contaminant removal rates is presented in Table 8 of the monthly O&M reports.

O&M of the LL1 GTP began on February 13, 2006, with EW-12 being the sole influent source. In June of 2013, EW-17 was brought on line as an additional influent well to the LL1 GTP. LL1 GTP uptime for 2013 was 98 percent (Table 6.2). Well uptime for EW-12 and EW-17 in 2013 is provided in Table 6.3. Flow data for the LL1 GTP systems are provided in Appendix K. Analytical data for LL1 GTP and associated EWs is presented in Table 6.10.

6.3.1 Extraction Well Flow Rates

The original design for the LL1 GTP included two EWs (EW-12 and EW-13); however, only EW-12 provided adequate flow to the LL1 GTP. EW-13 was abandoned in 2006. With the installation of EW-17, the LL1 treatment plant is now operating at its design capacity of 500 gpm. EW-12 has an operational flow rate of 275 gpm and EW-17 has an operational flow rate of 375 gpm. Flow rates for EW-12 and EW-17 during 2013 were generally consistent. Including well downtime, the adjusted average annual flow rates for EW-12 and EW-17 were 238 gpm and 326 gpm, respectively. Table 6.3 presents the yearly average flow rates and percent well uptime for EW-12 and EW-17. Specific maintenance activities that occurred in 2013 associated with down time of the wells and/or LL1 GTP are listed in Table 6.11. Additional data associated with flow rates and well elevations is provided in Appendix K. Monthly average flow rates for the EWs are shown on Figure 6.2.

6.3.2 Operation and Maintenance of the Load Line 1 Groundwater Treatment Plant

The LL1 GTP was operated in accordance with the *Revised Operation and Maintenance Manual Load Line 1 Groundwater Treatment Plant* (USACE, 2011b) and the 2013 O&M Manual update (USACE, 2013o), with no exceptions. Appendix K and Tables 6.10 and 6.11 provide supporting information.

6.3.3 Analytical Sampling at Load Line 1 Groundwater Treatment Plant

Influent and effluent water samples and VPGAC air emissions samples at LL1 GTP were sampled during 2013. Monthly and quarterly sampling of the LL1 GTP influent, effluent, and VPGAC emissions provide adequate data to calculate the monthly 30-day air limits.

The 2013 analytical results summary for the LL1 GTP is provided in Table 6.10. Three quarterly QCSRs, included within the QSRs, provide detailed validated data and descriptions of the O&M sampling events for 2013 and were submitted separately (USACE, 2013e; USACE, 2013k; and USACE, 2013m). The Fourth Quarter 2013 QCSR for the O&M Program is provided in this document as Appendix F.

6.3.3.1 Water Sampling at Load Line 1 Groundwater Treatment Plant

LL1 GTP influent and effluent water samples were analyzed monthly for VOCs, pH, and nitrates. Explosives were analyzed on a quarterly basis. Iron, manganese, TSS, and TOC are analyzed annually. The purpose of this sampling was to monitor the efficiency of the LL1 GTP and to verify that project discharge parameters were met, in accordance with the NPDES permit equivalency. Table 6.9 includes the monthly discharge volumes. Table 6.10 summarizes the analytical results for TCE and RDX from the LL1 GTP influent and effluent.

Influent

VOCs: TCE concentrations increased in the LL1 GTP influent, ranging from 100 μg/L to 130 μg/L.

Explosives: RDX concentration in the LL1 GTP influent ranged from nondetect to 0.087J μg/L.

TSS: TSS was not detected in the June 2013 influent samples.

TOC: TOC was detected at 1.9 mg/L in the June 2013 influent sample.

Iron and Manganese: Iron and manganese were nondetect.

Effluent

VOCs: TCE concentrations in the LL1 GTP effluent ranged from nondetect to 0.36J μg/L.

Explosives: RDX concentrations ranged from nondetect to 0.077J μg/L.

Nitrate: Nitrate levels were also consistent throughout 2013 with values of 10 mg/L to 12 mg/L.

pH: pH ranged from 7.3 to 8.3.

6.3.3.2 Air Sampling at Load Line 1 Groundwater Treatment Plant

The air emission criteria were revised in the *LL1 O&M Manual* in April 2011 (USACE, 2011b). Effluent air emissions are monitored to ensure the amount of TCE emitted per year remains below the NDEQ permitted threshold of 5 tons per year for the entire site (includes LL4 GTP air emissions). The emissions from the LL1 GTP VPGAC were sampled quarterly during 2013. The air samples were collected in 1-liter SUMMA® canisters from the discharge stack and analyzed by EPA method TO-15, in accordance with the schedule shown in Table 7.1 of the *LL1 GTP O&M Manual* (USACE, 2011b). Table 6.10 provides the analytical results for LL1 GTP air emissions. LL1 GTP emitted less than 118 pounds of TCE to the atmosphere in 2013. This is well below the NDEQ threshold of 5 tons per year of a single hazardous air pollutant. The amount emitted was calculated based on quarterly effluent TCE air analytical data and the air flow rate through the air stripper. In addition, VPGAC change out criteria was based on effluent TCE concentrations approaching the influent concentrations. No carbon change outs were performed at the LL1 GTP in 2013.

6.3.4 Load Line 1 Groundwater Treatment Plant Shutdowns

In 2013, the LL1 GTP was offline for a total of 184 hours, resulting in an operational efficiency of 98 percent. Major shutdowns were associated start-up activities conducted for EW-17 in June 2013. Table 6.11 documents all of the shutdowns that occurred at the LL1 GTP in 2013.

6.4 SUMMARY OF 2013 ACTIVITIES FOR THE ADVANCED OXIDATION PROCESS GROUNDWATER TREATMENT PLANT

The AOP GTP system was brought online on March 24, 2008. Since startup, the AOP GTP has treated 1,365,817,000 gallons of extracted water from FEW-11. In 2013, the AOP GTP treated 199,621,000 gallons of contaminated water and treated approximately 2,780 pounds of TCE (USACE, 2014c). Further detail on the contaminant removal rates is presented in Table 8 of the monthly O&M reports. The amount of TCE destroyed by the AOP GTP from March 2008 through 2013 is approximately 24,640 pounds. The equation used to calculate mass removal of TCE is shown in Section 6.2.

Both the AOP GTP and FEW-11 had operational efficiencies of 76 percent in 2013. The AOP GTP uptime monthly summary is presented in Table 6.2. Uptime percentage and annual average flow rates for FEW-11 are provided in Table 6.3. The monthly flow summary for the AOP GTP is provided in Appendix L, and analytical results are provided in Table 6.12. A list of O&M activities and updates for the AOP GTP are provided in Table 6.13.

6.4.1 Extraction Well Flow Rates

FEW-11 was included as part of the AOP GTP startup on March 24, 2008. Extracted water from FEW-11 is conveyed to and treated at the AOP GTP. The FEW-11 flow rate was consistent from January to September 2013. Beginning in October, the flow rate fluctuated due to rehabilitation, UV treatment system installation, and packer tests. In November and December 2013, decreased flows occurred as part of the packer evaluation. Appendix L provides a monthly flow summary during 2013. The 2013 monthly average flow rates for FEW-11 are shown in Figure 6.2.

6.4.2 Operation and Maintenance of the Advanced Oxidation Process Groundwater Treatment Plant

The AOP GTP operated in accordance with the *Operation and Maintenance Manual EW-11 Advanced Oxidation Process Groundwater Treatment Facility* (USACE, 2008) and the updated O&M Manual (USACE, 2013n), with no exceptions. Appendix L and Tables 6.12 and 6.13 provide supporting information.

6.4.3 Analytical Sampling at the Advanced Oxidation Process Groundwater Treatment Plant

In accordance with O&M Sampling and Analysis Plan (USACE, 2013n), influent and effluent water samples were collected at the AOP GTP were on a monthly basis in 2013. Analytical results for the AOP GTP influent and effluent samples are presented in Table 6.12. Three QCSRs included within the QSRs provide detailed validated data and descriptions of the O&M sampling events for 2013 and were submitted separately (USACE, 2013c; USACE, 2013e; and USACE, 2013l). The Fourth Quarter 2013 QCSR for O&M is provided in this document as Appendix F.

Influent

VOCs: Influent concentrations of TCE ranged from 1,500 μg/L to 1,900 μg/L during 2013.

Explosives: Influent concentrations of RDX varied between 3.7 μg/L and 4.2 μg/L.

Effluent

VOCs: Effluent concentrations of TCE varied between nondetect and 0.40J μg/L. These detections are well below the AOP design pre-treatment criteria of 10 μg/L and below the project discharge criteria of 5 μg/L for TCE.

Explosives: Effluent concentrations of RDX varied between 3.0 μg/L and 3.3J μg/L. The AOP GTP is not designed to treat RDX contamination. Effluent discharge is conveyed to the Main GTP for additional polishing for RDX contamination.

6.4.4 Advanced Oxidation Process Groundwater Treatment Plant Shutdown

The AOP GTP was offline for a total of 2,100 hours in 2013, operating at an uptime efficiency of 76 percent. Major shutdowns that contributed to this efficiency for the AOP GTP included the following events:

- On May 28, 2013, it was observed that the flow differential between the AOP GTP and FEW-11 line increased to approximately 45 to 50 gpm (differential) compared to normal difference of 25 to 30 gpm. An alarm caused the plant to shut down. The operator re-started the plant and received the same alarm. It was suspected there may be a leak in the FEW-11 line. The operator reduced the flow to 300 gpm and re-started the plant and went to look for a leak along the 6 miles of pipe. A leak was found bubbling outside the AOP line on the influent branch off the main line from FEW-11. The spill was around the 8-inch influent line gate valve. The operator immediately shut down the plant. Environmental Chemical Corporation (ECC) then followed spill reporting procedures by notifying USACE Project Engineer and Assistant Project Manager. The estimated volume of the spill was 2,500 gallons.
- On May 29, 2013, USACE notified NDEQ of the spill incident. The spill was not a reportable spill since the amount of TCE and RDX that were lost were significantly lower than the reportable quantities - 0.032 pounds for TCE compared to reportable quantity of 100 pounds and 0.000079 pounds of RDX compared to no limits. The quantities of contaminants lost were based on influent concentration data and the volume of water spilled. ECC also initiated non-compliance report that was required to be submitted to NDEQ within 5 days of the spill incident. The plant was restarted on May 31, 2013, after the line was excavated and repaired.
- Between July 26 and August 2, 2013, the AOP GTP and FEW-11 were shut down for repair and replacement of the ejector pump.
- Between August 10 and 28, 2013, the AOP GTP was down as part of the cycling operation evaluation.
- Between September 5 and 25, 2013, the AOP GTP was down for the FEW-11 pipeline modification at former EW-5 pump house.
- Between October 28, 2013 and November 8, 2013, the AOP GTP was down for well rehabilitation and pipeline construction for the UV treatment system effluent tie-ins.

Table 6.13 documents all the shutdowns at the AOP GTP in 2013.

6.5 SUMMARY OF 2013 ACTIVITIES FOR THE LOAD LINE 4 GROUNDWATER TREATMENT PLANT

The LL4 GTP treated 186,753,700 gallons of water during 2013. During November 2013, the LL4 GTP was shut down to construct the tie-in of EW-1R to the LL4 GTP. All flow from FEW-15 was directed to the Main GTP for treatment during this time. Since start up in May 2010, the LL4 GTP has treated a total of 805,447,000 gallons (648,425,000 gallons to Wahoo Creek and 157,022,000 gallons to the Main GTP). The amount of TCE removed in 2013 was

581 lbs. Since start up, over 3,240 pounds of TCE have been removed. The mass recovery of this contaminant is calculated using the equation shown in Section 6.2. Monthly discharge volumes are provided in Table 6.9.

In 2013, the LL4 GTP and FEW-15 (the well that provides extracted groundwater to the LL4 GTP) had uptime efficiencies of 77 percent. The LL4 GTP uptime efficiency and down time hours are presented in Table 6.2. Uptime and annual average flow rates for FEW-15 are presented in Table 6.3. Additional flow data for the LL4 GTP system and FEW-15 are provided in Appendix M. Analytical data is presented in Table 6.14. A list of O&M activities and updates to the LL4 GTP configuration is provided in Table 6.15.

6.5.1 Extraction Well Flow Rates

FEW-15 conveys TCE-contaminated groundwater to the LL4 GTP. Appendix M provides a summary of the data recorded during 2013 for FEW-15 flow rates. Flow for FEW-15 during 2013 was consistent from January to August 2013 (455 gpm), which is close to the operational flow rate of 500 gpm. Decreased flow rates were observed in September, October, and November as a result of aquifer step-tests, well rehabilitation, and packer evaluations at FEW-15. The monthly average flow rates for FEW-15 are presented in Figure 6.2. Table 6.3 also shows the yearly average flow rate for FEW-15. The adjusted average annual flow rate for FEW-15 was 357 gpm during 2013 with a runtime average flow rate of 461 gpm (operational set point rate was 500 gpm for 2013).

6.5.2 Operation and Maintenance of the Load Line 4 Groundwater Treatment Plant

The LL4 GTP was operated in accordance with the *Revised Final Operation and Maintenance Manual Load Line 4 Focused Extraction System Groundwater Treatment Plant* (USACE, 2011d) and the 2013 O&M Manual update (USACE, 2013r). Appendix M and Tables 6.14 and 6.15 provide supporting information.

6.5.3 Analytical Sampling at Load Line 4 Groundwater Treatment Plant

In accordance with sampling requirements of the O&M sampling and analysis procedures (USACE, 2013r, LL4 GTP influent and effluent water samples are collected on a monthly basis. To monitor air emissions of TCE, air samples are collected from the VPGAC unit on a quarterly basis. Monthly water sampling of the LL4 GTP influent and effluent provides adequate data to calculate the monthly 30-day limits. The 2013 analytical results summary for the LL4 GTP is provided in Table 6.15. QCSRs provide detailed descriptions of the O&M sampling events for 2013. The Fourth Quarter QCSR is included in this document as Appendix F.

Carbon change out occurs when effluent TCE concentrations approaching 90 percent of the influent TCE concentration. Although air effluent concentrations were less than the predicted influent TCE concentrations, it was determined that there was a high probability that effluent concentrations would equal or exceed the change-out criteria prior to the next set of quarterly data. Therefore, a carbon change out was performed in September 2013 at the LL4 GTP.

6.5.3.1 Water Analytical Sampling at Load Line 4 Groundwater Treatment Plant

The LL4 GTP influent and effluent water samples were analyzed monthly for VOCs with the effluent also analyzed monthly for nitrates and pH. Both the influent and effluent were sampled semiannually for RDX and the influent is sampled annually for nitrates, TSS, TOC, and metals (iron and manganese). The purpose of this sampling was to monitor treatment efficiency and to verify that project discharge parameters were being met, in accordance with NPDES permit equivalency. Table 6.14 summarizes the analytical results for the LL4 GTP influent and effluent.

Influent

VOCs: Results indicated that TCE concentrations in the LL4 GTP influent varied between 240 μg/L to 640 μg/L.

Explosives: Explosive compounds were detected and 0.041J μg/L and 0.046J μg/L.

TSS: There were no detections of TSS in the influent sample.

TOC: TOC was reported at 0.82J mg/L in 2013.

Iron and Manganese: Iron and manganese were not detected in the influent sample.

Effluent

VOCs: TCE sample results from the effluent at LL4 GTP varied between 0.21J μg/L to 0.7J μg/L during the 2013 sampling events, which is below the treatment criteria of 5 μg/L for TCE.

Explosives: The effluent had one detection of explosive compounds at 0.032J μg/L.

Nitrates: Nitrate levels were consistent at 6.8 mg/L to 11 mg/L in 2013.

pH: pH ranged from 7.2 to 8.3

6.5.3.2 Air Analytical Sampling at Load Line 4 Groundwater Treatment Plant

The air emissions criteria were revised in the LL4 O&M manual in September 2012 (USACE, 2013r). Effluent air standards are monitored to ensure the amount of TCE emitted per year remains below the NDEQ permitted threshold of 5 tons per year for the entire site (includes LL1 GTP air emissions). The emissions from the VPGAC were sampled quarterly during 2013. The air samples were collected in 1-liter SUMMA® canisters from the discharge stack and analyzed by EPA method TO-15, in accordance with the schedule shown in Table 7.19 of the LL4 O&M Manual (USACE, 2011d). Table 6.14 provides the analytical results for LL4 GTP air emissions. LL4 GTP had no air emission exceedances in 2013, based on results of the air effluent samples being below the predicted influent concentrations. Approximately 1,255 pounds of TCE were emitted to the atmosphere in 2013. This is well below the NDEQ threshold of 5 tons per year of a single hazardous air pollutant.

6.5.4 Load Line 4 Groundwater Treatment Plant Shutdowns

The LL4 GTP was down a total of 1,986 hours in 2013, which resulted in an uptime efficiency of 77 percent. Major shutdowns at the LL4 GTP that contributed to the reduced uptime included the following:

- Between September 8 and October 2, 2013, the LL4 GTP was shut down for a cycling operation test at FEW-15 and for motor replacement.
- Between November 1 and 13, 2013, FEW-15 and the LL4 GTP were shut down to construct the pipeline to tie-in EW-1R to the LL4 GTP.

Table 6.15 documents all of the shutdowns at the LL4 GTP and FEW-15 in 2013.

6.6 GROUNDWATER CIRCULATION WELL (GCW-01) ACTIVITIES

This section details the GCW-01 operation and related O&M activities in 2013. The original design operational flow rate of GCW-01 is 50 gpm. GCW-01 operated at between approximately 17.47 gpm and 23.34 gpm during 2013, with an average flow rate of 20.9 gpm. During 2013, GCW-01 treated approximately 6,652,078 gallons of groundwater. Since startup, GCW-01 has treated approximately 131,847,464 gallons of groundwater. The average mass of TCE removed by GCW-01 each quarter was approximately 40 pounds, with a total of 160 pounds being removed in 2013. The approximate amount of TCE removed through operation of GCW-01 since the startup in 2000 is approximately 1,260 pounds, based on the average quarterly data since 2004. The mass recovery of TCE is calculated using the equation shown in Section 6.2.

Influent and effluent water samples were collected from the GCW-01 system for VOC analysis on a quarterly basis in 2013. Influent TCE concentrations ranged from 400 μg/L to 480 μg/L. All TCE effluent concentrations ranged from nondetect to 3 μg/L, which are well below the cleanup goal of 5 μg/L. Table 6.16 presents the 2013 analytical results summary for GCW-01. Treatment efficiencies for GCW-01 exceeded 99.2 percent. Appendix O provides the 2013 analytical results summary for MWs surrounding GCW-01. Table 6.17 lists the monthly average flow rates and O&M activities for each month. Operational data for GCW-01 is included in Appendix N.

6.7 GENERAL MAINTENANCE SUMMARY

This section lists the routine and miscellaneous maintenance activities conducted throughout the OU2 system during 2013. Table 6.18 identifies routine maintenance items associated with the former NOP GTP systems and the O&M MW, observation well, EW, and groundwater circulation well networks conducted during 2013. Additional activities that occurred during 2013 are listed in Table 6.19 (some were critical to the O&M of the four GTPs, their associated EWs, and MWs and GCW-01).

6.7.1 Groundwater Levels

Groundwater levels were measured manually twice a year in the EWs, the associated observation wells, and MWs. Groundwater level elevations for FEW-11, EW-12, and FEW-15 (Appendix H, Appendix K, and Appendix M, respectively) were recorded daily from the computer control panel.

6.7.2 Groundwater Treatment Plant Safety

No reportable safety-related incidents occurred in 2013 at any of the GTPs.

This page was intentionally left blank.

7.0 OPTIMIZATION AT THE FORMER NEBRASKA ORDNANCE PLANT

A Value Enhancement (VE) study was conducted in 2009 and 2011 to evaluate alternatives that would improve project processes and/or reduce costs. The VE options that were evaluated in 2013 are summarized in Table 7.1. VE options that were previously evaluated are presented in Table 7.2. The subsection below list VE options that have been implemented and those that were considered but not implemented. Many of the optimization elements implemented have resulted in major cost savings for the former NOP.

7.1 VALUE ENHANCEMENT OPTIONS EVALUATED AND IMPLEMENTED IN 2013

The following optimization elements were evaluated and implemented in 2013:

Install Leak Detection System in Influent System (VE Idea FI-19):

- Flow sensors were installed at each of the GTPs to detect flow differences (greater than 8 percent) between the associated EW and the GTP to indicate if water is being lost from the piping. When the system detects a flow difference above 8 percent, an alarm is sent to the operator and the system is shut down automatically.
- Implementation of this system prevented a major spill in May 2013 at the influent tank that could have resulted in water potentially discharging into waterways and pastures.

Install Solar Panels (VE Idea REC-1):

- Solar array panel systems were installed outside of the Main GTP and the AOP and LL4 GTPs to supplement power at the site. Panels were installed and connected in December 2013. Each system is composed of 100 solar modules with a maximum output of 25 kilowatts (USACE, 2014a).
- An annual estimated cost savings of $1,800 per year is anticipated based on a preliminary solar resource assessment (USACE, 2010). Actual cost savings will be evaluated in 2014 and presented in the 2014 Annual Report.

Install System to Remove RDX Before Water Enters Treatment Plants (VE Idea TG-9):

- The UV treatment pilot study that was conducted at EW-9 from 2010 to 2012 was expanded to include installing UV treatment systems at four additional EWs: EW-4, EW-7, FEW-11, and FEW-14. AOP UV photolysis treatment systems were installed at the EW pump houses except for FEW-11. At this well the equipment was installed at the former pump house of EW-5 because of the size of the system. The UV systems were installed from July to October 2013.
- Extensive performance monitoring and sampling was performed to determine the effectiveness of the AOP UV treatment systems. Average effluent concentrations are

well below the Final Target Groundwater Cleanup Goal for RDX with results of 1.3 μg/L at EW-4, 0.34 μg/L at EW-7, 0.28 μg/L at EW-9, 0.33 μg/L at FEW-11, and 0.18 μg/L at FEW-14. Based on these results, the AOP UV treatment systems are effectively and consistently reducing RDX concentrations to levels that meet treatment goals. It is recommended to implement AOP UV treatment as a standalone technology for remediating RDX in site groundwater with the eventual goal of shutting down the Main GTP in 2014.

- A payback period of 3.2 years is anticipated for full implementation of the UV systems and shutting down the Main GTP. The cost savings over 10 years is anticipated to be approximately $1 million (USACE, 2013g).

Eliminate Air Emissions Control (Carbon Treatment) at LL1 and LL4 GTPs (No VE Idea Number):

- Air emissions control at LL1 and LL4 GTPs have been performed using VPGAC treatment.
- The current and future maximum TCE removal rates were compared to the NDEQ operating permit threshold criteria (50 tons per year for a single hazardous air pollutant) and comparing the maximum TCE air concentrations (prior to air emission control) to the Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) (537,000 micrograms per cubic meter). Results indicated that both the maximum and current removal rates before treatment are well below the NDEQ criteria and OSHA PEL.
- Air emission control (VPGAC treatment) will be removed from operation at both the LL1 and LL4 GTPs after the VPGAC material has been completely spent. Air sampling for TCE will be reduced from a monthly basis to a quarterly basis to monitor actual TCE air emission rates from the air stripper (USACE, 2013f). This will result in an annual savings of over $20,000.

7.2 VALUE ENHANCEMENT OPTIONS EVALUATED IN 2013

Enhance Mass Removal Rates of Contamination at Focused Extraction Wells using Packers to Focus the Zone of Extraction (VE Idea OPR-2):

- The packer evaluation was conducted at FEW-11 and FEW-15 in November and December 2013. At FEW-11, the screened interval was reduced from 45 ft to 10 ft and the pumping rate was reduced from 550 gpm to 253 gpm. At FEW-15, the screened interval was reduced from 30 ft to 7 ft and the pumping rate was reduced from 500 gpm to 230 gpm.
- The study included vertical profiling of the TCE groundwater plume; installing shallow temporary piezometers to monitor aquifer response to pumping rates; placing packers in FEW-11 and FEW-15 to isolate the upper screened interval in the wells; conducting pumping tests with and without the installed packers; hydraulic well testing to assess

the heterogeneity of the aquifer; and collecting groundwater samples during the pumping tests from the packered wells.

- TCE mass removal and mass removal costs were calculated with and without packers for FEW-11 and FEW-15 under operational conditions. The mass removal rate was calculated using the last effluent concentrations obtained while the packers were installed and the measured flow rates. For FEW-11, a reduced screen interval and reduced pumping rate did not result in an increase in TCE mass removal. The cost per pound of TCE removed with the packer installed ($3.19 per pound of TCE removed) is less than half the cost of removing TCE without the packer ($6.59 per pound of TCE removed). However, cost savings would be offset because the remediation time frame would be increased. For FEW-15, reducing both the effective screen length and the pumping rate resulted in a 60 percent increase in the TCE removal at the end of the pumping test. FEW-15 energy costs with a packer were $7.04 per pound of TCE removed compared to $10.98 per pound of TCE removed without the packer. However, a downward trend in the TCE mass removal was observed in later phases of the pumping test with the packer installed at FEW-15. Additional evaluation is recommended to determine the long-term operational results. If the data acquired from a longer test results in an increase in the TCE mass removal rate compared to the baseline at a lower pumping rate, then it is recommended to use the data to generate a 3-D model simulation to determine the time frame for plume cleanup (USACE, 2014b).

Optimize Pumping Rates (VE Idea OPR-3):

- Three operating scenarios were evaluated for FEW-15: Scenario A: FEW-15 cycling 5 days on then 2 days off; Scenario B: FEW-15 cycling 12 days on then 2 days off; and Scenario C: FEW-15 cycling 21 days on then 7 days off. These scenarios were compared to constant rate pumping of FEW-15 as a baseline evaluation.
- Predictive results from the subregional model (evaluation of short-term simulations) and the regional model (evaluation of long-term simulations) indicate that a cycling operational approach for FEW-15 would not contain the northern portion of the plume, would not split the plume, and would not reduce the overall treatment timeframe of the entire plume. Although cycling of FEW-15 has the potential to provide some O&M benefits, these savings would likely be offset by increased long-term operational costs due to an increase in the remedial timeframe of the entire plume (USACE, 2013h).

Use Reinjection Wells at Strategic Locations to Control and Contain Plume (VE Idea TG-13):

- Groundwater flow and transport model simulations were used to evaluate the effectiveness of reinjection of treated groundwater. Groundwater injection wells were added to the baseline Containment Evaluation model and forward simulations were performed. Through trial and error, the number, location, and injection rates of the wells, were modified within reasonable limits to achieve satisfactory results. The total injection rate for all wells could not exceed the available quantity of treated groundwater.

- Model simulations indicated that a minimum of five injection wells would be required to reduce remedial time frames downgradient of FEW-11 at LL1 from 65 years (without injections) to 40 years (with injections) (USACE, 2013k).
- Additional recommendations include reviewing available geochemical data from LL1 GTP effluent, evaluating options to perform a reinjection pilot test using EW-8, preparing a pilot test work plan, evaluating hydraulic parameters for the area, conducting verification modeling, and designing the infrastructure for the five injection wells.

8.0 SUMMARY

The objectives of the GMP and O&M activities were established in the *Site-Wide Work Plan* (USACE, 2013b), which includes the Field Sampling Plan. The objectives consist of the following:

1. To monitor and evaluate potential changes in the concentrations of COCs, as shown on Table 1.1 and defined in the *Record of Decision, Operable Unit No. 2, Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 1996);
2. To monitor and evaluate the concentrations of COCs in groundwater plumes;
3. To provide data for evaluating whether plume(s) are being contained by the groundwater EW network; and
4. Treat and discharge extracted groundwater to meet applicable standards.

Objective 1 was completed with a total of 294 active MWs being sampled during 2013. Appendix A contains the trend charts generated with historical data. Statistically significant changes and trending analysis for TCE and RDX were evaluated and have been summarized in Table B-1 of Appendix B. The statistical analysis indicates statistically significant increases or decreases based on comparison of the 2013 data points individually to the mean calculated using all previous well data concentrations of TCE and RDX.

Objective 2 was completed through monitoring of the Interior Plume MWs, pre-treatment sampling locations from WSWs located within the plumes, and MWs associated with FEWs. Table B-1 presents results for statistically significant increases and trend analysis for TCE and RDX.

Objective 3 was completed through the sampling of Compliance MWs throughout the Site. No Compliance MW detections exceeded the Final Target Groundwater Cleanup Goals during the 2013 MW sampling events. The 2013 Annual Containment Evaluation Report scheduled to be submitted in 2014 will further evaluate these wells to ensure this ROD objective is met.

Objective 4 was completed through the O&M of the four GTPs. Treated groundwater was below applicable standards upon discharge based on regularly scheduled sampling and analysis at the discharge points.

8.1 SUMMARY OF GROUNDWATER MONITORING WELL PROGRAM

Sampling of the groundwater MWs occurred as planned, except as discussed in Section 3.3.

Analytical data from Compliance MWs helped verify hydraulic containment of the plumes, as required by the ROD, since none of these wells had detections exceeding the Final Target Groundwater Cleanup Goals.

Interior Plume MWs are evaluated to monitor changes within the plumes and to identify any increases in contaminant concentrations upgradient of the EW network. Both the trend graphs

in Appendix A and the statistical analyses in Appendix B were examined. Increases in TCE were observed at 14 Interior Plume MW locations. Increases in RDX were observed at 15 MW locations. Decreasing trends in TCE were observed at 29 Interior Plume MW locations. Decreasing trends in RDX were observed in 20 MW locations.

Upgradient, Sidegradient, and Downgradient MWs were sampled to evaluate the associated areas for each of the COCs. RDX was below the Final Target Groundwater Cleanup Goals in all of the upgradient, sidegradient, and downgradient MWs sampled in 2013. TCE detections that exceeded the Final Target Groundwater Cleanup Goals were reported in three MWs (MW-25B, MW-89A, and MW-89E) located within the current boundaries of the LL1 TCE plume. TCE shows an increasing trend at two MW locations. RDX is decreasing at five MW locations. No other trends were observed in the MW dataset.

It should be noted that the above totals deviate from the 2012 annual report totals primarily because of the change in the monitoring network in 2012 when 36 MWs were installed and 47 MWs were abandoned.

8.2 SUMMARY OF WATER SUPPLY WELL SAMPLING

As required by the ROD, procedures were implemented to ensure that residents located in the vicinity of the Site with private WSWs would not consume groundwater with TCE or RDX exceeding the Final Target Groundwater Cleanup Goals. Data searches and visual site reconnaissance were conducted to determine any new residences or water users that may be impacted by the Site. No new WSWs were added to the monitoring program in 2013 based on this evaluation. Sampling of the WSWs occurred as planned, except as discussed in Section 4.2. TCE was detected at or above the Final Target Groundwater Cleanup Goals in pre-treatment samples at WSW-52C-B. RDX was detected above the Final Target Groundwater Cleanup Goals in pre-treatment samples at WSW-53-B and 54-B. Results from the pre-treatment sample collected from WSW-53-B show an overall declining trend for RDX concentrations since 2010. WSW-51A was added to the AWS program due to a detection of TCE above the Final Target Groundwater Cleanup Goal during the Fourth Quarter 2012 sampling event. In 2013, TCE concentrations fell below the Final Target Groundwater Cleanup Goal during both sampling events at WSW-51A. The results from the pre-treatment sample collected from WSW-54-B continue to show a decreasing trend for TCE and RDX. The 2013 results from the pre-treatment sample collected from WSW-52C-B showed an increase of TCE concentrations from 2012. These WSWs each have a GAC unit as part of the AWS, except WSW-51A. WSW-51A and WSW-50B have bottled water provided to the residence. After the GAC treatment, RDX and TCE were not detected in the water, which confirms that the residential GAC treatment units are effective in treating the groundwater used for drinking water.

8.3 SUMMARY OF THE OPERATION AND MAINTENANCE PROGRAM

O&M of the four GTPs and GCW-01 was performed in 2013. Uptimes of more than 95 percent were maintained for the Main GTP and the LL1 GTP. Uptime of 77 percent was achieved for the LL4 GTP. The reduced uptimes at LL4 are due to shutdowns due to a

cycling operation test, motor replacements, and for construction of the UV effluent piping and EW-1R tie-in to the LL4 GTP. Uptime of 76 percent was achieved for the AOP GTP. The lower uptime was due to the shutdown of the AOP GTP and FEW-11 for repair and replacement of the ejector pump, cycling operation evaluation, FEW-11 pipeline modification at the former EW-5 pump house, and for well rehabilitation and pipeline construction for the UV effluent tie-ins.

Energy audit items were implemented in 2013 and some of them continued from 2012 (see Section 7.0).

Effluents from the Main GTP, LL1 GTP, and LL4 GTP were below the discharge criteria for TCE and RDX.

8.4 2013 GROUNDWATER MONITORING PROGRAM AND OPERATION AND MAINTENANCE PROGRAM DATA VALIDATION

A Data Quality Assessment of the 2013 GMP and O&M analytical data is included as Appendix G to this report. In accordance with the *Site-Wide Work Plan* (USACE, 2013b), completeness of the data was assessed. Field duplicate samples were collected at a rate of 1 per 10 samples for the GMP and 1 per quarter for the O&M program to assess field collection precision and the consistency and quality of data produced by the laboratory. MS/MSD samples were collected at a rate of 1 per 20 samples for the GMP and 1 per quarter for the O&M program to determine if the sample matrix had any effect on results. Prepared TBs were placed in each cooler containing samples designated for VOC analysis to assess the potential for cross-contamination. Sample cooler temperature was determined by measuring the temperature of a field sample at the laboratory with a calibrated infrared thermometer. Data from sampling events were validated in accordance with project required criteria and appropriate qualifiers were assigned to data. Data validation for the Site was performed in accordance with the *Mead Validation Guidelines* (USACE, 2007) which includes an evaluation of holding times, a comparison of both field and laboratory duplicate results, a review of TB results, and an evaluation of other QC measurements reported by the laboratory. The QCSRs present the field data completeness and analytical (acceptable data and quality data) completeness percentages for the GMP and O&M sampling events, target goals for completeness percentages, and field and analytical data completeness results for the GMP and O&M sampling events. Target completeness goals for all other 2013 sampling events were met.

This page was intentionally left blank.

9.0 REFERENCES

Intelligent Design Technologies (IDT), 2002. User's Guide for Sanitas™ for Groundwater. March.

U.S. Army Corps of Engineers, (USACE), 1992. *Supplemental Remedial Investigation/Feasibility Study, Operable Unit No. 1, Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by SEC Donohue under Contract No. DACW41-90-D-0009. September.

USACE, 1993a. *Remedial Investigation Report, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by Woodward-Clyde under Contract No. DACA-41-92-C-0023. May.

USACE, 1993b. *Additional Field Investigation Report, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by Woodward-Clyde. October.

USACE, 1996. *Record of Decision, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by Woodward-Clyde under Contract No. DACA41-92-C-0023. April.

USACE, 2002. *Operation and Maintenance Manual, Remedial Design Groundwater Treatment (OU2), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by Environmental Chemical Corporation (ECC). April.

USACE, 2007. *Mead Validation Guidelines*. Prepared by ECC. February.

USACE, 2008. *Operation and Maintenance Manual EW-11 Advanced Oxidation Process Groundwater Treatment Facility, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. August.

USACE, 2009. *Five-Year Review, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by URS Group, Inc. May.

USACE, 2010. *Preliminary Detailed Financial Analysis, Former Nebraska Ordnance Plant, Mead, Nebraska*. March.

USACE, 2011a. *Aquifer Characterization Report Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC and Burns & McDonnell. March.

USACE, 2011b. *Revised Operation and Maintenance Manual Load Line 1 Groundwater Treatment Plant, Remedial Design Groundwater Treatment (OU2), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. April.

USACE, 2011c. *Final Energy Audit Report, Main, Load Line 1, Load Line 4, and Advanced Oxidation Process Groundwater Treatment Plant and Groundwater Extraction Wells Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. June.

USACE, 2011d. *Revised Final Operation and Maintenance Manual Load Line 4 Focused Extraction System Groundwater Treatment Plant Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. September.

USACE, 2012a. *Groundwater Monitoring Program Optimization Investigation Report, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. June.

USACE, 2012b. *Groundwater Model Evaluation of EW-3, EW-6, and EW-16 Technical Memorandum*. Prepared by ECC. September.

USACE, 2012c. *Monitoring Well Network Optimization Analysis and Work Plan, Phase II, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. September.

USACE, 2013a. *2012 Extraction Well Rehabilitation Activities and Results Memorandum. Prepared by ECC*. February.

USACE, 2013b. *Final Site-Wide Work Plan, Support Services, Revision 1, Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. April.

USACE, 2013c. *Monitoring Well Optimization Report, Phase II, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. April.

USACE, 2013d. *2012 Annual Summary Report, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. May.

USACE, 2013e. *Quarterly Summary Report First Quarter 2013 Sampling Events, Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska*. May.

USACE, 2013f. *Eliminating Air Emissions Control (Carbon Treatment) at Load Line 1 and 4 Groundwater Treatment Plants, Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. July.

USACE, 2013g. *Ultraviolet Photolysis Treatment Pilot Study Implementation Memorandum, Former Nebraska Ordnance Plant, Mead, Nebraska – Extension of VE Idea FI-23*. Prepared by ECC. July.

USACE, 2013h. *Value Engineering FEW-15 Cycling Technical Memorandum, Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. July.

USACE, 2013i. I*nstallation of Load Line 2 Monitoring Technical Memorandum, Work, Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. August.

USACE, 2013j. *2013 Former Nebraska Ordnance Plant Extraction Well Rehabilitation Memorandum*. Prepared by ECC. September.

USACE, 2013k. *Quarterly Summary Report Second Quarter 2013 Sampling Events, Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska*. September.

USACE, 2013l. *Value Enhancement Alternative TG-13-Use Reinjection Wells at Strategic Locations to Control and Contain Plume, Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. September.

USACE, 2013m. 2*012 Groundwater Model Update Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska*. October.

USACE, 2013n. *Quarterly Summary Report Third Quarter 2013 Sampling Events, Operable Unit No. 2 (Groundwater) Former Nebraska Ordnance Plant, Mead, Nebraska*. December.

USACE, 2013o. *Revised Operation and Maintenance Manual FEW-11 Advanced Oxidation Process Groundwater Treatment Plant, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. December.

USACE, 2013p. *Revised Operation and Maintenance Manual Load Line 1 Focused Extraction System Groundwater Treatment Plant, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. December.

USACE, 2013q. *Revised Operation and Maintenance Manual Load Line 4 Focused Extraction System Groundwater Treatment Plant, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. December.

USACE, 2013r. *Revised Operation and Maintenance Manual, Main Groundwater Treatment Plant, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. December.

USACE, 2014a. *Completion Memorandum and Transmittal of CD for Documentation of the Solar Array System Installations at the AOP/LL4 Buildings and the Main Treatment Plant Building, Operable Unit No. 2 (Groundwater) for the Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. January.

USACE, 2014b. *Value Enhancement Idea ORP-2 Field Implementation Technical Memorandum, Enhance Mass Removal Rates of Contaminants at Focused Extraction Wells using Packers to Focus the Zone of Extraction, Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. January.

USACE, 2014c. *Monthly Operation, Maintenance and Monitoring Report (#143) Main, Load Line 1, Advanced Oxidation Process, Load Line 4 Groundwater Treatment Plants and Extraction Well UV Systems, Former Nebraska Ordnance Plant, Mead Nebraska*. Prepared by ECC. January.

TABLE(S)

This page was intentionally left blank.

Table 1.1
Final Target Groundwater Cleanup Goals
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Contaminants of Concern	Final Target Groundwater Cleanup Goal (μg/L)
Volatile Organic Compounds	
Methylene chloride	5
1,2-DCP	5
TCE	5
Explosive Compounds	
TNB	0.778
2,4-DNT	1.24
RDX	2
TNT	2

Notes:
Italics - Indicator compounds used to define groundwater contamination at the former Nebraska Ordnance Plant.
1,2-DCP – 1,2-dichloropropane
2,4-DNT – 2,4-dinitrotoluene
RDX – hexahydro-l,3,5-trinitro-1,3,5-triazine
TCE – trichloroethene
TNB – 1,3,5-trinitrobenzene
TNT – 2,4,6-trinitrotoluene
μg/L – micrograms per liter

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
EW-1		1079.43	3/29/13	201	1067.50	8/26/13	NO	NM
EW-1R		1079.32	3/29/13	NO	NM	8/26/13	248	1064.49
EW-3		1150.01	3/29/13	NO	NM	8/26/13	NO	1087.80
EW-4		1148.68	3/29/13	101	1067.80	8/26/13	99	1067.90
EW-6		1147.98	3/29/13	NO	NM	8/26/13	NO	1096.70
EW-7		1148.38	3/29/13	288	1074.80	8/26/13	282	1074.40
EW-9		1154.67	3/29/13	140	1080.70	8/26/13	175	1075.60
EW-10		1150.64	3/29/13	NO	NM	8/26/13	NO	1100.00
FEW-11		1162.77	3/29/13	552	1093.30	8/26/13	0	1114.00
EW-12		1113.72	3/29/13	305	1038.59	8/26/13	275	1042.31
FEW-14		1155.99	3/29/13	248	1083.50	8/26/13	254	1082.10
FEW-15		1169.64	3/29/13	489	1117.10	8/26/13	479	1116.40
EW-16		1146.97	3/29/13	NO	NM	8/26/13	NO	1081.40
EW-17		1113.62	3/29/12	NO	NM	8/26/13	325	NM
MW-02A	Intermediate	1174.77	3/29/13	39.87	1134.90	8/26/13	40.82	1133.95
MW-03A	Intermediate	*	3/29/13	43.17	*	8/26/13	44.33	*
MW-04A	Intermediate	1168.73	3/29/13	37.08	1131.65	8/26/13	37.96	1130.77
MW-05A	Intermediate	1168.12	3/29/13	35.17	1132.95	8/26/13	35.74	1132.38
MW-07A	Intermediate	1164.85	3/29/13	38.97	1125.88	8/26/13	39.80	1125.05
MW-08A	Intermediate	1165.92	3/29/13	49.27	1116.65	8/26/13	50.52	1115.40
MW-09A	Intermediate	1171.46	3/29/13	54.51	1116.95	8/26/13	55.75	1115.71
MW-10A	Intermediate	1150.35	3/29/13	40.94	1109.41	8/26/13	41.55	1108.80
MW-11	Intermediate	1153.22	3/29/13	33.88	1119.34	8/26/13	32.96	1120.26
MW-16B	Intermediate	1188.68	3/29/13	33.51	1155.17	8/26/13	34.74	1153.94
MW-17B	Intermediate	1128.50	3/29/13	8.80	1119.70	8/26/13	9.27	1119.23
MW-18A	Deep	1145.43	3/29/13	44.65	1100.78	8/26/13	47.82	1097.61
MW-18B	Intermediate	1145.57	3/29/13	45.15	1100.42	8/26/13	47.55	1098.02
MW-18C	Shallow	1146.05	NM	NM	NM	8/26/13	43.12	1102.93
MW-19B	Intermediate	1158.59	3/29/13	11.46	1147.13	8/26/13	12.51	1146.08
MW-20B	Intermediate	1160.29	3/29/13	59.87	1100.42	8/26/13	60.59	1099.70

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
MW-21A	Intermediate	1165.63	3/29/13	36.51	1129.12	8/26/13	37.18	1128.45
MW-24A	Intermediate	1163.41	3/29/13	41.38	1122.03	8/26/13	42.56	1120.85
MW-25A	Intermediate	1175.25	3/29/13	44.88	1130.37	8/26/13	46.36	1128.89
MW-27B	Shallow	1176.06	3/29/13	38.64	1137.42	NM	NM	NM
MW-28A	Intermediate	1172.22	3/29/13	51.30	1120.92	8/26/13	51.96	1120.26
MW-29A	Intermediate	1160.06	3/29/13	49.96	1110.10	8/26/13	50.41	1109.65
MW-29B	Shallow	1161.03	3/29/13	50.88	1110.15	8/26/13	51.31	1109.72
MW-31A	Intermediate	1167.38	3/29/13	49.02	1118.36	8/26/13	49.57	1117.81
MW-32A	Intermediate	1154.17	3/29/13	48.74	1105.43	8/26/13	49.17	1105.00
MW-33A	Intermediate	1160.32	3/29/13	52.65	1107.67	8/26/13	53.31	1107.01
MW-34A	Intermediate	1156.79	3/29/13	60.78	1096.01	8/26/13	60.86	1095.93
MW-35A	Intermediate	1139.81	3/29/13	53.83	1085.98	8/26/13	54.16	1085.65
MW-38A	Intermediate	1082.32	3/29/13	7.37	1074.95	8/26/13	9.27	1073.05
MW-40A	Intermediate	1172.09	3/29/13	43.34	1128.75	8/26/13	43.82	1128.27
MW-42A	Intermediate	1146.53	3/29/13	53.89	1092.64	8/26/13	55.25	1091.28
MW-43A	Intermediate	1142.90	3/29/13	46.78	1096.12	8/26/13	48.38	1094.52
MW-44A	Intermediate	1093.66	3/29/13	10.32	1083.34	8/26/13	10.96	1082.70
MW-44B	Shallow	*	3/29/13	11.52	*	8/26/13	12.55	*
MW-44D	Deep	*	3/29/13	9.10	*	8/26/13	9.74	*
MW-46A	Intermediate	1082.70	3/29/13	5.35	1077.35	8/26/13	7.13	1075.57
MW-46B	Shallow	1082.81	3/29/13	5.45	1077.36	8/26/13	7.23	1075.58
MW-46D	Deep	1082.65	3/29/13	5.29	1077.36	8/26/13	7.07	1075.58
MW-53A	Intermediate	1136.36	3/29/13	29.48	1106.88	8/26/13	28.39	1107.97
MW-53B	Shallow	1136.91	3/29/13	27.93	1108.98	8/26/13	31.35	1105.56
MW-56A	Intermediate	1125.96	3/29/13	19.63	1106.33	8/26/13	21.62	1104.34
MW-56B	Shallow	1126.24	3/29/13	17.77	1108.47	8/26/13	18.24	1108.00
MW-57B	Shallow	1196.27	3/29/13	37.81	1158.46	8/26/13	38.96	1157.31
MW-60A	Intermediate	1145.83	3/29/13	55.20	1090.63	8/26/13	56.12	1089.71
MW-61A	Intermediate	1108.96	3/29/13	7.29	1101.67	8/26/13	8.42	1100.54
MW-65A	Intermediate	*	3/29/13	34.46	*	8/26/13	35.09	*

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
MW-66B	Shallow	1163.08	3/29/13	33.69	1129.39	8/26/13	33.92	1129.16
MW-72A	Intermediate	1170.37	3/29/13	41.94	1128.43	8/26/13	42.40	1127.97
MW-73A	Intermediate	1166.95	3/29/13	39.08	1127.87	8/26/13	39.54	1127.41
MW-73B	Shallow	1166.90	3/29/13	39.06	1127.84	8/26/13	39.53	1127.37
MW-74A	Intermediate	1166.94	NM	NM	NM	NM	NM	NM
MW-75A	Intermediate	1167.13	NM	NM	NM	NM	NM	NM
MW-76A	Intermediate	1166.24	NM	NM	NM	NM	NM	NM
MW-77A	Intermediate	1165.73	NM	NM	NM	NM	NM	NM
MW-78A	Intermediate	1165.27	3/29/13	37.26	1128.01	8/26/13	37.76	1127.51
MW-80A	Intermediate	1107.43	3/29/13	8.41	1099.02	8/26/13	9.46	1097.97
MW-80B	Shallow	1107.65	3/29/13	8.62	1099.03	8/26/13	9.71	1097.94
MW-80D	Deep	1107.40	3/29/13	8.35	1099.05	8/26/13	9.39	1098.01
MW-82A	Intermediate	1149.14	3/29/13	50.35	1098.79	8/26/13	50.96	1098.18
MW-83A	Intermediate	1152.41	3/29/13	56.50	1095.91	8/26/13	56.87	1095.54
MW-83B	Shallow	1152.28	3/29/13	56.35	1095.93	8/26/13	56.73	1095.55
MW-83D	Deep	1152.32	3/29/13	56.47	1095.85	8/26/13	56.86	1095.46
MW-84A	Intermediate	1145.34	3/29/13	51.39	1093.95	8/26/13	51.67	1093.67
MW-84B	Shallow	1145.62	3/29/13	51.41	1094.21	8/26/13	51.69	1093.93
MW-84D	Deep	1145.37	3/29/13	51.67	1093.70	8/26/13	51.88	1093.49
MW-85A	Intermediate	1132.58	3/29/13	45.31	1087.27	8/26/13	45.67	1086.91
MW-86A	Intermediate	1114.15	3/29/13	33.26	1080.89	8/26/13	34.50	1079.65
MW-88A	Intermediate	1081.22	3/29/13	7.83	1073.39	8/26/13	9.21	1072.01
MW-89A	Intermediate	1160.99	3/29/13	56.98	1104.01	8/26/13	58.62	1102.37
MW-89E	Intermediate	1157.24	NM	NM	NM	NM	NM	NM
MW-90A	Intermediate	1151.11	3/29/13	46.24	1104.87	8/26/13	48.29	1102.82
MW-91A	Intermediate	1152.04	3/29/13	47.24	1104.80	8/26/13	48.96	1103.08
MW-93A	Intermediate	1124.26	3/29/13	20.82	1103.44	8/26/13	22.77	1101.49
MW-94A	Intermediate	1153.06	3/29/13	48.76	1104.30	8/26/13	49.19	1103.87
MW-95A	Intermediate	1156.81	3/29/13	54.73	1102.08	8/26/13	55.07	1101.74
MW-95B	Shallow	1156.46	3/29/13	54.35	1102.11	8/26/13	55.71	1100.75

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
MW-95D	Deep	1156.82	3/29/13	55.99	1100.83	8/26/13	56.56	1100.26
MW-96A	Intermediate	1148.56	3/29/13	52.54	1096.02	8/26/13	53.14	1095.42
MW-97A	Intermediate	1143.08	3/29/13	49.88	1093.20	8/26/13	50.86	1092.22
MW-97B	Shallow	1143.18	3/29/13	49.95	1093.23	8/26/13	50.90	1092.28
MW-97D	Deep	1143.18	3/29/13	50.00	1093.18	8/26/13	50.51	1092.67
MW-98A	Intermediate	1141.52	3/29/13	51.26	1090.26	8/26/13	52.25	1089.27
MW-99A	Intermediate	1163.04	3/29/13	71.12	1091.92	8/26/13	71.28	1091.76
MW-99B	Shallow	1163.19	3/29/13	71.30	1091.89	8/26/13	71.44	1091.75
MW-99D	Deep	1162.76	3/29/13	70.93	1091.83	8/26/13	71.08	1091.68
MW-100A	Intermediate	1141.18	3/29/13	58.10	1083.08	8/26/13	56.62	1084.56
MW-101A	Intermediate	1107.43	3/29/13	8.74	1098.69	8/26/13	9.74	1097.69
MW-102A	Intermediate	1170.90	3/29/13	36.30	1134.60	8/26/13	37.24	1133.66
MW-103A	Intermediate	1173.58	3/29/13	43.46	1130.12	8/26/13	43.92	1129.66
MW-104A	Intermediate	1081.26	3/29/13	3.17	1078.09	8/26/13	4.04	1077.22
MW-104O	Overburden	1081.69	3/29/13	4.38	1077.31	8/26/13	4.23	1077.46
MW-105A	Intermediate	1079.60	3/29/13	4.77	1074.83	NM	NM	NM
MW-105O	Overburden	1080.04	3/29/13	8.02	1072.02	NM	NM	NM
MW-106A	Intermediate	1118.06	3/29/13	19.99	1098.07	8/26/13	24.12	1093.94
MW-106B	Shallow	1117.98	3/29/13	19.80	1098.18	8/26/13	22.21	1095.77
MW-107A	Intermediate	1135.79	3/29/13	41.30	1094.49	8/26/13	42.93	1092.86
MW-107B	Shallow	1136.72	3/29/13	42.46	1094.26	8/26/13	45.23	1091.49
MW-107D	Deep	1136.35	3/29/13	41.86	1094.49	8/26/13	44.65	1091.70
MW-109A	Intermediate	1086.25	3/29/13	3.73	1082.52	8/26/13	6.22	1080.03
MW-109O	Overburden	1085.88	3/29/13	7.48	1078.40	8/26/13	8.59	1077.29
MW-110A	Intermediate	1094.10	3/29/13	7.48	1086.62	8/26/13	10.47	1083.63
MW-111A	Intermediate	1082.82	3/29/13	5.30	1077.52	8/26/13	6.97	1075.85
MW-111B	Shallow	1082.61	3/29/13	5.05	1077.56	8/26/13	6.65	1075.96
MW-111O	Overburden	1082.48	3/29/13	6.72	1075.76	8/26/13	8.54	1073.94
MW-112A	Intermediate	1082.03	3/29/13	1.87	1080.16	8/26/13	4.36	1077.67
MW-112B	Shallow	1082.02	3/29/13	1.79	1080.23	8/26/13	4.28	1077.74

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
MW-113A	Intermediate	1080.47	3/29/13	1.73	1078.74	8/26/13	3.74	1076.73
MW-113B	Shallow	1080.42	3/29/13	1.70	1078.72	8/26/13	3.69	1076.73
MW-113D	Deep	1080.49	3/29/13	1.78	1078.71	8/26/13	3.80	1076.69
MW-114A	Intermediate	1080.32	3/29/13	4.98	1075.34	8/26/13	6.53	1073.79
MW-115A	Intermediate	1081.67	3/29/13	7.57	1074.10	8/26/13	9.01	1072.66
MW-116A	Intermediate	1080.53	3/29/13	6.64	1073.89	8/26/13	8.13	1072.40
MW-116B	Shallow	1080.49	3/29/13	6.60	1073.89	8/26/13	8.10	1072.39
MW-116D	Deep	1080.46	3/29/13	6.60	1073.86	8/26/13	8.09	1072.37
MW-118A	Intermediate	1143.87	3/29/13	51.92	1091.95	8/26/13	52.10	1091.77
MW-119A	Intermediate	1159.14	3/29/13	44.41	1114.73	8/26/13	44.08	1115.06
MW-120A	Intermediate	1166.32	3/29/13	53.16	1113.16	8/26/13	52.51	1113.81
MW-120E	Intermediate	1166.43	3/29/13	53.29	1113.14	8/26/13	52.63	1113.80
MW-121A	Intermediate	1170.04	3/29/13	55.85	1114.19	8/26/13	54.27	1115.77
MW-122A	Intermediate	1165.76	3/29/13	54.58	1111.18	8/26/13	54.81	1110.95
MW-123A	Intermediate	1168.99	3/29/13	55.27	1113.72	8/26/13	53.08	1115.91
MW-124A	Intermediate	1161.89	3/29/13	42.80	1119.09	8/26/13	42.50	1119.39
MW-124B	Shallow	1161.59	3/29/13	42.80	1118.79	8/26/13	43.29	1118.30
MW-124D	Deep	1161.82	3/29/13	43.51	1118.31	8/26/13	42.86	1118.96
MW-125A	Intermediate	1162.05	3/29/13	46.11	1115.94	8/26/13	44.96	1117.09
MW-126A	Intermediate	1170.87	3/29/13	40.42	1130.45	8/26/13	41.23	1129.64
MW-126D	Deep	1170.26	3/29/13	39.68	1130.58	8/26/13	40.58	1129.68
MW-127A	Intermediate	1168.95	3/29/13	32.46	1136.49	8/26/13	33.69	1135.26
MW-128A	Intermediate	1156.97	3/29/13	62.05	1094.92	8/26/13	62.23	1094.74
MW-129A	Intermediate	1149.77	3/29/13	61.09	1088.68	8/26/13	61.24	1088.53
MW-130A	Intermediate	1145.47	3/29/13	58.59	1086.88	8/26/13	58.84	1086.63
MW-131A	Intermediate	1148.09	3/29/13	56.83	1091.26	8/26/13	57.01	1091.08
MW-131B	Shallow	1147.94	3/29/13	56.66	1091.28	8/26/13	56.81	1091.13
MW-131D	Deep	1148.10	3/29/13	56.79	1091.31	8/26/13	56.96	1091.14
MW-133A	Intermediate	1167.41	3/29/13	46.34	1121.07	8/26/13	46.88	1120.53
MW-133B	Shallow	1167.55	3/29/13	46.32	1121.23	8/26/13	46.85	1120.70

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
MW-133D	Deep	1167.19	3/29/13	46.35	1120.84	8/26/13	46.90	1120.29
MW-134A	Intermediate	1168.44	3/29/13	48.72	1119.72	8/26/13	49.53	1118.91
MW-134B	Shallow	1168.55	3/29/13	48.78	1119.77	8/26/13	49.56	1118.99
MW-134D	Deep	1168.68	3/29/13	48.71	1119.97	8/26/13	49.62	1119.06
MW-135A	Intermediate	1165.77	3/29/13	45.73	1120.04	8/26/13	46.30	1119.47
MW-135B	Shallow	1165.71	3/29/13	45.65	1120.06	8/26/13	46.24	1119.47
MW-135D	Deep	1165.51	3/29/13	44.85	1120.66	8/26/13	45.50	1120.01
MW-136A	Intermediate	1167.96	3/29/13	45.35	1122.61	8/26/13	45.86	1122.10
MW-137A	Intermediate	1166.31	3/29/13	37.91	1128.40	8/26/13	38.36	1127.95
MW-138A	Intermediate	1175.83	3/29/13	43.94	1131.89	8/26/13	44.47	1131.36
MW-139A	Intermediate	1180.32	3/29/13	44.93	1135.39	8/26/13	45.59	1134.73
MW-140A	Intermediate	1092.50	3/29/13	7.56	1084.94	8/26/13	10.78	1081.72
MW-140O	Overburden	1092.60	3/29/13	10.27	1082.33	8/26/13	11.07	1081.53
MW-141A	Intermediate	1162.07	3/29/13	37.73	1124.34	8/26/13	38.21	1123.86
MW-142A	Intermediate	1154.43	3/29/13	47.74	1106.69	8/26/13	49.56	1104.87
MW-143B	Shallow	1155.87	3/29/13	46.21	1109.66	8/26/13	46.74	1109.13
MW-144A	Intermediate	1164.17	3/29/13	40.85	1123.32	8/26/13	41.25	1122.92
MW-145A	Intermediate	1160.75	3/29/13	48.21	1112.54	8/26/13	48.66	1112.09
MW-146A	Intermediate	1148.18	3/29/13	55.00	1093.18	8/26/13	48.77	1099.41
MW-147A	Intermediate	1148.92	3/29/13	50.97	1097.95	8/26/13	51.53	1097.39
MW-148B	Shallow	1160.53	3/29/13	43.94	1116.59	8/26/13	44.63	1115.90
MW-149A	Intermediate	1152.23	3/29/13	46.07	1106.16	8/26/13	46.62	1105.61
MW-150A	Intermediate	1147.59	3/29/13	49.07	1098.52	8/26/13	49.46	1098.13
MW-151A	Intermediate	1158.65	3/29/13	45.50	1113.15	8/26/13	46.79	1111.86
MW-152B	Shallow	1148.37	3/29/13	43.16	1105.21	8/26/13	43.78	1104.59
MW-153A	Intermediate	1146.17	3/29/13	46.71	1099.46	8/26/13	47.65	1098.52
MW-154A	Intermediate	1141.11	3/29/13	48.95	1092.16	8/26/13	49.95	1091.16
MW-154B	Shallow	1141.16	3/29/13	48.44	1092.72	8/26/13	51.19	1089.97
MW-155A	Intermediate	1141.95	3/29/13	48.67	1093.28	8/26/13	50.07	1091.88
MW-156A	Intermediate	1093.89	3/29/13	7.25	1086.64	8/26/13	8.65	1085.24

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
MW-156B	Shallow	1093.96	3/29/13	6.51	1087.45	NM	NM	NM
MW-157A	Intermediate	1102.64	3/29/13	20.12	1082.52	8/26/13	20.88	1081.76
MW-158A	Intermediate	1076.69	3/29/13	3.45	1073.24	8/26/13	4.86	1071.83
MW-158B	Shallow	1076.36	3/29/13	3.15	1073.21	8/26/13	4.53	1071.83
MW-158D	Deep	1076.63	3/29/13	3.47	1073.16	8/26/13	4.84	1071.79
MW-159A	Intermediate	1163.51	3/29/13	51.47	1112.04	8/26/13	52.25	1111.26
MW-160A	Intermediate	1154.35	3/29/13	49.11	1105.24	8/26/13	49.68	1104.67
MW-160B	Shallow	1154.18	3/29/13	49.04	1105.14	8/26/13	49.57	1104.61
MW-161A	Intermediate	1166.48	3/29/13	43.66	1122.82	8/26/13	44.27	1122.21
MW-161B	Shallow	1167.00	3/29/13	43.84	1123.16	8/26/13	44.50	1122.50
MW-162A	Intermediate	1148.90	3/29/13	45.55	1103.35	8/26/13	45.93	1102.97
MW-163A	Intermediate	1159.74	3/29/13	56.43	1103.31	8/26/13	56.87	1102.87
MW-164A	Intermediate	1150.11	3/29/13	46.71	1103.40	8/26/13	47.07	1103.04
MW-165B	Shallow	1148.89	3/29/13	45.53	1103.36	8/26/13	45.87	1103.02
MW-166A	Intermediate	1150.73	3/29/13	50.68	1100.05	8/26/13	51.07	1099.66
MW-166B	Shallow	1150.81	3/29/13	50.80	1100.01	8/26/13	51.00	1099.81
MW-167A	Intermediate	1147.66	3/29/13	47.37	1100.29	8/26/13	47.74	1099.92
MW-167B	Shallow	1147.62	3/29/13	47.44	1100.18	8/26/13	47.90	1099.72
MW-168A	Intermediate	1152.75	3/29/13	53.27	1099.48	8/26/13	53.70	1099.05
MW-168B	Shallow	1152.17	3/29/13	53.14	1099.03	8/26/13	53.55	1098.62
MW-169A	Intermediate	1145.61	3/29/13	49.90	1095.71	8/26/13	50.44	1095.17
MW-169B	Shallow	1145.52	3/29/13	49.85	1095.67	8/26/13	50.44	1095.08
MW-170A	Intermediate	1145.46	3/29/13	51.08	1094.38	8/26/13	51.46	1094.00
MW-171A	Intermediate	1160.22	3/29/13	44.92	1115.30	8/26/13	45.39	1114.83
MW-171B	Shallow	1159.79	3/29/13	44.72	1115.07	8/26/13	45.17	1114.62
MW-172A	Intermediate	1146.97	3/29/13	58.03	1088.94	8/26/13	58.17	1088.80
MW-172B	Shallow	1146.88	3/29/13	57.60	1089.28	8/26/13	57.74	1089.14
MW-173A	Intermediate	1148.57	3/29/13	60.71	1087.86	8/26/13	60.81	1087.76
MW-174A	Intermediate	1142.13	3/29/13	48.70	1093.43	8/26/13	48.95	1093.18
MW-174B	Shallow	1141.72	3/29/13	48.88	1092.84	8/26/13	49.22	1092.50

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
MW-175A	Intermediate	1151.79	3/29/13	50.96	1100.83	8/26/13	51.44	1100.35
MW-175B	Shallow	1151.03	3/29/13	51.14	1099.89	8/26/13	51.64	1099.39
MW-176A	Intermediate	1090.01	3/29/13	9.89	1080.12	8/26/13	10.56	1079.45
MW-176B	Shallow	1089.11	3/29/13	10.41	1078.70	8/26/13	11.05	1078.06
MW-177A	Intermediate	1104.43	3/29/13	7.76	1096.67	8/26/13	9.04	1095.39
MW-177B	Shallow	1105.90	3/29/13	7.39	1098.51	8/26/13	8.70	1097.20
MW-178B	Shallow	1140.34	3/29/13	43.88	1096.46	8/26/13	47.18	1093.16
MW-179A	Intermediate	1107.45	3/29/13	9.37	1098.08	8/26/13	12.53	1094.92
MW-179B	Shallow	1107.64	3/29/13	9.49	1098.15	8/26/13	13.41	1094.23
OW-05	Intermediate	1080.35	3/29/13	10.52	1069.83	8/26/13	13.20	1067.15
OW-06	Intermediate	1079.22	3/29/13	8.00	1071.22	8/26/13	10.45	1068.77
OW-07	Intermediate	1079.06	3/29/13	7.19	1071.87	8/26/13	9.40	1069.66
OW-08	Intermediate	1078.43	3/29/13	6.03	1072.40	8/26/13	8.02	1070.41
OW-09	Intermediate	1080.96	3/29/13	9.38	1071.58	8/26/13	11.69	1069.27
OW-10	Intermediate	1079.79	3/29/13	7.41	1072.38	8/26/13	9.38	1070.41
OW-11	Intermediate	1078.66	3/29/13	5.72	1072.94	8/26/13	7.50	1071.16
OW-12	Intermediate	1080.19	3/29/13	6.38	1073.81	NM	NM	NM
OW-13	Intermediate	1081.25	3/29/13	9.59	1071.66	8/26/13	11.83	1069.42
OW-14	Intermediate	1080.52	3/29/13	7.91	1072.61	8/26/13	9.86	1070.66
OW-15	Intermediate	1080.66	3/29/13	7.71	1072.95	8/26/13	9.43	1071.23
OW-16	Intermediate	1078.22	3/29/13	2.41	1075.81	8/26/13	3.39	1074.83
OW-18	Intermediate	1162.21	3/29/13	47.16	1115.05	8/26/13	46.44	1115.77
OW-22	Intermediate	1161.24	3/29/13	46.72	1114.52	8/26/13	46.42	1114.82
OW-23	Intermediate	1162.08	3/29/13	46.27	1115.81	NM	NM	NM
OW-24	Intermediate	1153.07	NM	NM	NM	NM	NM	NM
OW-25	Intermediate	1155.71	3/29/13	69.09	1086.62	8/26/13	69.33	1086.38
OW-26	Intermediate	1148.64	3/29/13	61.42	1087.22	8/26/13	61.71	1086.93
OW-27	Intermediate	1153.30	3/29/13	66.77	1086.53	8/26/13	67.10	1086.20
OW-28	Intermediate	1153.81	3/29/13	67.42	1086.39	8/26/13	67.76	1086.05
OW-30	Intermediate	1131.58	NM	NM	NM	NM	NM	NM

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
OW-31	Intermediate	1155.78	3/29/13	59.56	1096.22	8/26/13	59.75	1096.03
OW-32	Intermediate	1153.87	3/29/13	57.60	1096.27	8/26/13	57.83	1096.04
OW-33	Intermediate	1154.67	3/29/13	58.26	1096.41	8/26/13	58.45	1096.22
OW-34	Intermediate	1154.70	3/29/13	59.00	1095.70	8/26/13	59.16	1095.54
OW-35	Intermediate	1154.10	3/29/13	58.34	1095.76	8/26/13	58.54	1095.56
OW-36	Intermediate	1157.23	3/29/13	61.90	1095.33	NM	NM	NM
OW-38	Intermediate	1151.19	3/29/13	58.61	1092.58	8/26/13	58.88	1092.31
OW-39	Intermediate	1151.39	3/29/13	56.57	1094.82	8/26/13	56.77	1094.62
OW-40	Intermediate	1157.66	3/29/13	61.24	1096.42	8/26/13	61.31	1096.35
OW-41	Intermediate	1150.22	3/29/13	58.51	1091.71	8/26/13	58.80	1091.42
OW-42	Intermediate	1151.21	3/29/13	57.32	1093.89	8/26/13	57.82	1093.39
OW-43	Intermediate	1156.74	3/29/13	61.21	1095.53	8/26/13	61.51	1095.23
OW-44	Intermediate	1147.84	3/29/13	51.45	1096.39	8/26/13	51.68	1096.16
OW-45	Intermediate	1152.47	3/29/13	52.80	1099.67	8/26/13	53.24	1099.23
OW-46	Intermediate	1151.55	3/29/13	51.63	1099.92	8/26/13	52.09	1099.46
OW-47	Intermediate	1153.44	3/29/13	52.91	1100.53	8/26/13	53.37	1100.07
OW-48	Intermediate	1153.38	3/29/13	53.73	1099.65	8/26/13	54.20	1099.18
OW-49	Intermediate	1154.09	3/29/13	54.69	1099.40	8/26/13	55.13	1098.96
OW-50	Intermediate	1151.16	3/29/13	51.95	1099.21	8/26/13	52.42	1098.74
OW-51	Intermediate	1149.86	3/29/13	51.10	1098.76	8/26/13	51.51	1098.35
OW-52	Intermediate	1107.14	3/29/13	14.12	1093.02	8/26/13	14.90	1092.24
OW-53	Intermediate	1107.13	3/29/13	12.36	1094.77	8/26/13	13.40	1093.73
OW-54	Intermediate	1115.39	3/29/13	13.03	1102.36	8/26/13	20.81	1094.58
OW-55	Intermediate	1107.05	3/29/13	15.53	1091.52	8/26/13	16.38	1090.67
OW-56	Intermediate	1112.15	3/29/13	16.05	1096.10	8/26/13	14.75	1097.40
OW-57	Intermediate	1114.84	3/29/13	12.41	1102.43	8/26/13	16.37	1098.47
OW-58	Intermediate	1109.00	3/29/13	9.08	1099.92	8/26/13	11.63	1097.37
OW-59	Intermediate	1110.50	3/29/13	9.46	1101.04	8/26/13	12.52	1097.98
OW-60	Intermediate	1149.15	3/29/13	60.10	1089.05	8/26/13	60.21	1088.94
OW-61	Intermediate	1148.81	3/29/13	59.05	1089.76	8/26/13	59.15	1089.66

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
OW-62	Intermediate	1151.40	3/29/13	60.84	1090.56	8/26/13	61.03	1090.37
OW-63	Intermediate	1152.90	3/29/13	62.71	1090.19	8/26/13	62.84	1090.06
OW-64	Intermediate	1148.12	3/29/13	58.81	1089.31	8/26/13	58.91	1089.21
OW-65	Intermediate	1147.36	3/29/13	58.29	1089.07	8/26/13	58.44	1088.92
OW-66	Intermediate	1147.09	3/29/13	50.51	1096.58	8/26/13	50.74	1096.35
OW-67	Intermediate	1149.64	3/29/13	53.14	1096.50	8/26/13	53.35	1096.29
OW-68	Intermediate	1146.89	3/29/13	51.08	1095.81	8/26/13	51.28	1095.61
OW-69	Intermediate	1147.02	3/29/13	50.79	1096.23	8/26/13	51.00	1096.02
OW-70	Intermediate	1146.14	3/29/13	50.36	1095.78	8/26/13	50.56	1095.58
OW-71	Intermediate	1158.23	3/29/13	62.40	1095.83	8/26/13	62.58	1095.65
OW-72	Intermediate	1156.05	3/29/13	59.75	1096.30	8/26/13	60.60	1095.45
OW-73	Intermediate	1157.61	3/29/13	60.53	1097.08	8/26/13	61.25	1096.36
OW-74	Intermediate	1148.38	3/29/13	50.12	1098.26	8/26/13	50.66	1097.72
OW-75	Intermediate	1154.51	3/29/13	57.65	1096.86	8/26/13	58.31	1096.20
OW-76	Intermediate	1148.68	3/29/13	51.55	1097.13	8/26/13	52.16	1096.52
OW-77	Intermediate	1157.82	3/29/13	61.85	1095.97	8/26/13	62.27	1095.55
OW-78	Intermediate	1163.94	3/29/13	54.01	1109.93	8/26/13	47.88	1116.06
OW-79	Intermediate	1167.29	3/29/13	55.22	1112.07	8/26/13	51.4	1115.89
OW-80	Intermediate	1169.30	3/29/13	55.64	1113.66	8/26/13	54.02	1115.28
OW-81	Intermediate	1164.13	3/29/13	51.25	1112.88	8/26/13	49.14	1114.99
OW-82	Intermediate	1169.05	3/29/13	55.78	1113.27	8/26/13	55.16	1113.89
OW-83	Intermediate	1173.20	3/29/13	58.56	1114.64	8/26/13	57.15	1116.05
OW-89	Intermediate	1092.56	3/29/13	13.33	1079.23	8/26/13	14.03	1078.53
OW-90	Intermediate	1153.30	3/29/13	60.20	1093.10	8/26/13	61.43	1091.87
OW-92	Intermediate	1154.30	3/29/13	60.43	1093.87	8/26/13	60.55	1093.75
OW-93	Intermediate	1156.87	3/29/13	66.00	1090.87	8/26/13	66.45	1090.42
OW-94	Intermediate	1153.21	3/29/13	59.51	1093.70	8/26/13	59.71	1093.50
OW-95	Intermediate	1150.04	3/29/13	56.45	1093.59	8/26/13	56.65	1093.39
OW-96	Intermediate	1146.64	3/29/13	57.92	1088.72	8/26/13	58.15	1088.49
OW-97	Intermediate	1146.21	3/29/13	58.18	1088.03	8/26/13	58.33	1087.88

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
OW-98	Intermediate	1150.67	3/29/13	62.53	1088.14	8/26/13	62.80	1087.87
OW-99	Intermediate	1146.97	3/29/13	59.21	1087.76	8/26/13	59.42	1087.55
OW-100	Intermediate	1147.39	3/29/13	60.28	1087.11	8/26/13	60.59	1086.80
OW-101	Intermediate	1168.26	3/29/13	49.32	1118.94	8/26/13	49.84	1118.42
OW-102	Intermediate	1166.49	3/29/13	46.02	1120.47	8/26/13	46.57	1119.92
OW-103	Intermediate	1169.13	3/29/13	46.50	1122.63	8/26/13	47.12	1122.01
OW-104	Intermediate	1167.73	3/29/13	47.99	1119.74	8/26/13	48.55	1119.18
OW-105	Intermediate	1165.40	3/29/13	45.34	1120.06	8/26/13	45.96	1119.44
PZ-01	Intermediate	1116.38	3/29/13	33.48	1082.90	8/26/13	34.32	1082.06
PZ-02	Intermediate	1130.80	3/29/13	44.81	1085.99	8/26/13	44.92	1085.88
PZ-11	Deep	1094.18	3/29/13	7.42	1086.76	8/26/13	8.84	1085.34
PZ-12	Deep	1101.36	3/29/13	18.78	1082.58	8/26/13	19.86	1081.50
PZ-13	Intermediate	1081.23	3/29/13	2.16	1079.07	8/26/13	2.76	1078.47
PZ-14	Intermediate	1080.52	3/29/13	1.53	1078.99	8/26/13	2.17	1078.35
TH-EW-12	Intermediate	1107.37	3/29/13	30.02	1077.35	8/26/13	29.66	1077.71
TH-EW-13	Intermediate	1111.04	3/29/13	10.15	1100.89	8/26/13	13.61	1097.43
TH-EW-14R1	Intermediate	1156.72	3/29/13	65.56	1091.16	8/26/13	65.98	1090.74
TH-EW-14R2	Intermediate	1151.08	3/29/13	57.52	1093.56	8/26/13	57.67	1093.41
TH-EW-15	Intermediate	1172.51	3/29/13	52.12	1120.39	8/26/13	52.61	1119.90
TH-EW-16	Intermediate	1147.71	3/29/13	59.66	1088.05	8/26/13	59.93	1087.78
TH-EW-17	Intermediate	1116.44	3/29/13	13.85	1102.59	8/26/13	28.22	1088.22
Brabec		1150.00	3/29/13	50.28	1099.72	8/26/13	51.04	1098.96
D.Starns		1064.50	3/29/13	15.64	1048.86	NM	NM	NM
Frahm		1146.00	3/29/13	55.91	1090.09	8/26/13	57.07	1088.93
Hanson		1144.40	3/29/13	50.16	1094.24	8/26/13	50.98	1093.42
LPN 06-01		1066.68	3/29/13	3.51	1063.17	8/26/13	5.09	1061.59
LPN 06-18		1088.45	3/29/13	3.40	1085.05	8/26/13	7.03	1081.42
LPN 06-19		1140.81	3/29/13	38.38	1102.43	8/26/13	44.39	1096.42
LPN 06-20		1208.77	3/29/13	61.93	1146.84	8/26/13	63.12	1145.65
LPN 06-21		1204.53	3/29/13	54.93	1149.60	8/26/13	61.26	1143.27

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
M90-01		1074.38	3/29/13	4.49	1069.89	8/26/13	6.86	1067.52
M90-02		1075.70	3/29/13	5.69	1070.01	8/26/13	8.49	1067.21
M90-04		1071.08	3/29/13	4.79	1066.29	8/26/13	7.37	1063.71
M90-05R		1076.50	3/29/13	12.14	1064.36	8/26/13	11.96	1064.54
M90-09		1067.97	3/29/13	5.11	1062.86	8/26/13	6.16	1061.81
M90-12R		1070.00	3/29/13	6.92	1063.08	8/26/13	9.61	1060.39
M90-15		1065.39	3/29/13	6.52	1058.87	8/26/13	7.70	1057.69
M90-16R		1063.57	3/29/13	3.94	1059.63	8/26/13	6.95	1056.62
M90-17R		1067.54	3/29/13	8.88	1058.66	8/26/13	11.96	1055.58
M90-20R		1066.45	3/29/13	9.02	1057.43	8/26/13	9.03	1057.42
M90-21		1064.09	3/29/13	9.30	1054.79	8/26/13	9.58	1054.51
M90-22R		1063.17	3/29/13	11.84	1051.33	8/26/13	20.67	1042.50
M90-23R		1056.70	3/29/13	10.82	1045.88	8/26/13	12.78	1043.92
M90-24R		1059.05	3/29/13	13.32	1045.73	8/26/13	13.30	1045.75
M90-26R		1057.07	3/29/13	6.32	1050.75	8/26/13	7.24	1049.83
M90-36R		1059.30	3/29/13	7.30	1052.00	8/26/13	8.20	1051.10
M90-37		1054.19	3/29/13	3.44	1050.75	8/26/13	4.10	1050.09
MUD 90-10		1099.56	3/29/13	9.93	1089.63	8/26/13	11.85	1087.71
MUD 94-3		1085.52	3/29/13	7.58	1077.94	8/26/13	8.14	1077.38
MUD 94-4		1094.81	3/29/13	11.49	1083.32	8/26/13	14.57	1080.24
MUD 94-5		1097.79	3/29/13	5.49	1092.30	8/26/13	7.83	1089.96
MUD 94-6		1085.55	3/29/13	4.07	1081.48	8/26/13	6.05	1079.50
MUD 94-7		1083.07	3/29/13	8.78	1074.29	8/26/13	10.13	1072.94
N.Keiser		1104.20	3/29/13	23.81	1080.39	8/26/13	24.61	1079.59
N.Wann		1107.30	3/29/13	3.53	1103.77	8/26/13	4.17	1103.13
PV-37		1100.90	3/29/13	9.97	1090.93	NM	NM	NM
PV-38		1100.00	3/29/13	5.87	1094.13	8/26/13	7.50	1092.50
PV-39		1084.00	3/29/13	2.48	1081.52	8/26/13	5.15	1078.85
PV-40		1088.90	3/29/13	9.18	1079.72	8/26/13	9.82	1079.08
PV-41		1096.20	3/29/13	6.11	1090.09	NM	NM	NM

Table 2.1
Water Level Measurements 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Zone Designation	Top of Casing Elevation (ft amsl)	Date	Depth to Water btoc (ft) or flow (gpm) March 2013	Groundwater Elevation (ft amsl) March 2013	Date	Depth to Water btoc (ft) or flow (gpm) August 2013	Groundwater Elevation (ft amsl) August 2013
S.Keiser		1114.20	3/29/13	34.78	1079.42	8/26/13	37.02	1077.18
TV-16		1140.30	3/29/13	47.53	1092.77	NM	NM	NM
TV-17A		1137.75	3/29/13	52.64	1085.11	8/26/13	58.74	1079.01
13N_10E32ADDD1_M90-30R		1055.83(1)	3/25/13	4.46	1051.37	8/21/13	5.07	1050.76
13N_10E32DBBA1_M28R_ISLAND_NORTH_WELL		1057.81(1)	3/25/13	4.13	1053.68	8/26/13	4.13	1053.68
13N_10E32DCAA1_M91-58R		1056.35(3)	3/25/13	7.42	1048.93	8/21/13	8.47	1047.88
13N_10E32DCAC1_M90-29R		1054.43(3)	NM	NM	NM	8/21/13	7.85	1046.58
13N_10E32DCAD1_M91-50R		1055.84(1)	3/25/13	10.88	1044.96	8/21/13	12.55	1043.29
13N_10E32DDBC1_M91-54R		1055.34(1)	NM	NM	NM	8/21/13	8.86	1046.48
14N_8E14CC1		1175.85(4)	NM	NM	NM	NM	NM	NM
14N_8E24ACD2_MEAD		1175.09(4)	3/25/13	42.11	1132.98	NM	NM	NM
14N_8E27BAAB1		1167.67(4)	3/29/13	36.37	1131.30	NM	NM	NM
14N_8E2ADDA1		1205(2)	3/29/13	28.82	1176.18	NM	NM	NM
14N_8E36DD1		1151.80(4)	NM	NM	NM	NM	NM	NM
14N_8E3AACC1		1194.51(4)	3/28/13	22.61	1171.90	NM	NM	NM
14N_9E20DD1		1160.64(4)	NM	NM	NM	NM	NM	NM
14N_9E26CBAB1		1082(2)	3/29/13	2.48	1079.52	NM	NM	NM
14N_9E32DD1		1137.03(4)	NM	NM	NM	NM	NM	NM

Notes:

amsl - above mean sea level

ft- feet

gpm - gallons per minute

NM - no measurement

NO - not operational

btoc - below top of casing

* TOC elevation is in process of being resurveyed; groundwater elevation not used for potentiometric surface estimates

(1) Ground surface elevation from Lincoln Water Service

(2) Ground surface elevation from USGS reference elevation

(3) Ground surface elevation from Digital Elevation Model

(4) Ground surface elevation from USACE survey

USGS Source: http://nwis.waterdata.usgs.gov/ne/nwis/gwlevels?search_criteria=search_station_nm&submitted_form=introduction

Table 2.2
Potentiometric Surface Directions and Gradients
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Parameter	March 2013	August 2013
Groundwater Flow Direction	Southeast	Southeast
Groundwater Gradient (foot vertical per foot horizontal)	0.0024	0.0023
Groundwater Gradient (feet per mile)	12.76	12.07

Note:
Horizontal gradients were measured between monitoring wells MW-07A and MW-100A, a horizontal distance of 17,706 feet.

Table 2.3
Monitoring Well Cluster Vertical Groundwater Flow Directions
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Sampling Event	March 2013		August 2013	
Saturated Zones	**Shallow to Intermediate**	**Intermediate to Deep**	**Shallow to Intermediate**	**Intermediate to Deep**
Total Number of Well Clusters	39	18	38	17
Well Clusters with Upward Flow	16	6	19	7
Well Clusters with Downward Flow	22	11	16	10
Well Clusters with no Vertical Gradient	1	1	3	0

Table 2.4
2013 Vertical Gradient Directions and Values, March 2013 and August 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Monitoring Event	Vertical Flow Direction	Flow Between Shallow Zone and Intermediate Zone		Flow Between Intermediate Zone and Deep Zone	
		Well Cluster	Gradient*	Well Cluster	Gradient*
March 2013	Downward Flow	MW-154	0.027	MW-124	0.042
		MW-53	0.035	MW-95	0.043
		MW-56	0.044		
		MW-177	0.046		
		MW-156	0.047		
	Upward Flow	MW-168	-0.023	MW-135	-0.042
		MW-174	-0.033		
		MW-175	-0.070		
		MW-176	-0.075		
August 2013	Downward Flow	MW-177	0.045	MW-124	0.023
		MW-106	0.057	MW-95	0.051
		MW-56	0.076	MW-107	0.080
	Upward Flow	MW-168	-0.022	MW-97	-0.031
		MW-95	-0.036	MW-135	-0.037
		MW-124	-0.036		
		MW-174	-0.038		
		MW-53	-0.040		
		MW-107	-0.040		
		MW-154	-0.057		
		MW-175	-0.071		
		MW-176	-0.074		

Notes:

*Positive gradient indicates downward flow between the two zones. Negative gradient indicates upward flow between the two zones.
MW - monitoring well

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-145B	Shallow	First Quarter 2013	ND	ND	0.56	24.0	ND	ND
		Second Quarter 2013	ND	ND	0.41	17.0	ND	ND
		Third Quarter 2013	ND	ND	1.2	61.0	ND	ND
MW-148A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	0.078 J	0.15 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.91	ND	ND
MW-155B	Shallow	First Quarter 2013	ND	ND	ND	0.25 J	ND	ND
		Second Quarter 2013	ND	ND	ND	0.18 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-160A	Intermediate	First Quarter 2013	ND	ND	0.42 J	1.8	ND	ND
		Second Quarter 2013	ND	ND	0.38 J	1.6	ND	ND
		Third Quarter 2013	ND	ND	0.44 J	1.9	ND	ND
MW-160B	Shallow	First Quarter 2013	ND	ND	0.060 J	0.75 J	ND	ND
		Second Quarter 2013	ND	0.16 J	0.065 J	0.82	ND	ND
		Third Quarter 2013	ND	ND	0.076 J	0.65 J	ND	ND
MW-161A	Intermediate	First Quarter 2013	ND	ND	0.068 J	ND	ND	ND
		Second Quarter 2013	ND	ND	0.40 J	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-161A	Intermediate	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-161B	Shallow	First Quarter 2013	0.14 J	ND	4.1 J	6.9	0.078 J	ND
		Second Quarter 2013	ND	ND	4.1 J	6.6	ND	ND
		Third Quarter 2013	ND	0.095 J	4.0 J	6.9	ND	ND
MW-162A	Intermediate	First Quarter 2013	ND	ND	0.58	63.0	ND	ND
		Second Quarter 2013	ND	ND	0.67	71.0	ND	ND
		Third Quarter 2013	ND	ND	0.61	72.0	ND	ND
MW-163A	Intermediate	First Quarter 2013	ND	ND	0.46	13.0	ND	ND
		Second Quarter 2013	ND	ND	0.46	13.0	ND	ND
		Third Quarter 2013	ND	ND	0.52	15.0	ND	ND
MW-164A	Intermediate	First Quarter 2013	ND	ND	1.3	76.0	ND	ND
		Second Quarter 2013	ND	ND	1.3	78.0	ND	ND
		Third Quarter 2013	ND	ND	1.1	80.0	ND	ND
MW-165B	Shallow	First Quarter 2013	ND	ND	3.2	170	ND	ND
		Second Quarter 2013	ND	ND	3.2	170	ND	ND
		Third Quarter 2013	ND	ND	3.2	170	ND	ND
MW-166A	Intermediate	First Quarter 2013	ND	ND	0.49	68.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-166A	Intermediate	Second Quarter 2013	ND	ND	0.55	75.0	ND	ND
		Third Quarter 2013	ND	ND	0.56	76.0	ND	ND
MW-166B	Shallow	First Quarter 2013	ND	ND	ND	1.9	ND	ND
		Second Quarter 2013	ND	ND	ND	0.37 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-167A	Intermediate	First Quarter 2013	ND	ND	0.98	34.0	ND	ND
		Second Quarter 2013	ND	ND	0.94	34.0	ND	ND
		Third Quarter 2013	ND	ND	1.0	34.0	ND	ND
MW-167B	Shallow	First Quarter 2013	ND	ND	0.20 J	15.0	ND	ND
		Second Quarter 2013	ND	ND	0.23 J	16.0	ND	ND
		Third Quarter 2013	ND	ND	0.24 J	15.0	ND	ND
MW-168A	Intermediate	First Quarter 2013	ND	ND	0.067 J	7.3	ND	ND
		Second Quarter 2013	ND	ND	0.052 J	7.5	ND	ND
		Third Quarter 2013	ND	ND	0.064 J	7.7	ND	ND
MW-168B	Shallow	First Quarter 2013	ND	ND	ND	0.32 J	ND	ND
		Second Quarter 2013	ND	ND	ND	0.28 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.15 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-169A	Intermediate	First Quarter 2013	ND	ND	0.078 J	12.0	ND	ND
		Second Quarter 2013	ND	ND	0.071 J	12.0	ND	ND
		Third Quarter 2013	ND	ND	0.083 J	13.0	ND	ND
MW-169B	Shallow	First Quarter 2013	ND	ND	0.30 J	55.0	ND	ND
		Second Quarter 2013	ND	ND	0.28 J	49.0	ND	ND
		Third Quarter 2013	ND	ND	0.28 J	48.0	ND	ND
MW-170A	Intermediate	First Quarter 2013	ND	ND	ND	5.3	ND	ND
		Second Quarter 2013	ND	ND	ND	5.3	ND	ND
		Third Quarter 2013	ND	ND	ND	6.1	ND	ND
MW-171A	Intermediate	First Quarter 2013	0.53	0.89	1.2	68.0	ND	0.27 J
		Second Quarter 2013	0.58	0.84	1.1	62.0	0.033 J	0.49
		Third Quarter 2013	0.59	0.89	0.90	62.0	ND	0.56
MW-171B	Shallow	First Quarter 2013	3.1 J	5.2	3.1	89.0	ND	ND
		Second Quarter 2013	2.9	4.8	2.8	96.0	0.070 J	0.18 J
		Third Quarter 2013	3.8	5.8	3.0	84.0	ND	ND
MW-172A	Intermediate	First Quarter 2013	ND	ND	0.84	4.0	ND	ND
		Second Quarter 2013	ND	ND	0.68	3.2	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-172A	Intermediate	Third Quarter 2013	ND	ND	0.74	3.2	ND	ND
MW-172B	Shallow	First Quarter 2013	ND	ND	0.51	2.8	ND	ND
		Second Quarter 2013	ND	ND	0.38 J	2.1	ND	ND
		Third Quarter 2013	ND	ND	0.28 J	1.6	ND	ND
MW-173A	Intermediate	First Quarter 2013	ND	ND	0.71	7.0	ND	ND
		Second Quarter 2013	ND	ND	0.67	6.4	ND	ND
		Third Quarter 2013	ND	ND	0.68	6.6	ND	ND
MW-174A	Intermediate	First Quarter 2013	ND	ND	0.055 J	0.16 J	ND	ND
		Second Quarter 2013	ND	ND	0.31 J	1.2	ND	ND
		Third Quarter 2013	ND	ND	0.20 J	0.72	ND	ND
MW-174B	Shallow	First Quarter 2013	ND	ND	0.32 J	1.2	ND	ND
		Second Quarter 2013	ND	ND	0.28 J	1.1	ND	ND
		Third Quarter 2013	ND	ND	0.25 J	1.0	ND	ND
MW-175A	Intermediate	First Quarter 2013	ND	0.47	2.1	8.7	ND	ND
		Second Quarter 2013	ND	0.49	2.2	8.2	ND	ND
		Third Quarter 2013	ND	0.53	2.2	8.6	ND	ND
MW-175B	Shallow	First Quarter 2013	ND	0.072 J	1.6	3.3	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-175B	Shallow	Second Quarter 2013	ND	0.068 J	1.3	2.6	ND	ND
		Third Quarter 2013	ND	0.068 J	1.1	2.3	ND	ND
MW-176A	Intermediate	First Quarter 2013	ND	ND	0.048 J	0.69	ND	ND
		Second Quarter 2013	ND	ND	ND	0.42	ND	ND
		Third Quarter 2013	ND	ND	0.056 J	0.45	ND	ND
MW-176B	Shallow	First Quarter 2013	ND	ND	0.043 J	0.25 J	ND	ND
		Second Quarter 2013	ND	ND	ND	0.20 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-178B	Shallow	First Quarter 2013	ND	ND	ND	1.3	ND	ND
		Second Quarter 2013	ND	ND	ND	1.5	ND	ND
		Third Quarter 2013	ND	ND	ND	1.9	ND	ND
MW-180A	Intermediate	Fourth Quarter 2013	ND	ND	0.45	56.0	ND	ND
MW-180E	Intermediate	Fourth Quarter 2013	ND	ND	0.22	33.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-155B	Shallow	First Quarter 2013	ND	0.73 J	ND	160	ND	ND
		Second Quarter 2013	ND	0.79 J	ND	150	ND	ND
		Third Quarter 2013	ND	0.54 J	ND	120	ND	ND
MW-160A	Intermediate	First Quarter 2013	ND	4.5 J	ND	2100	ND	ND
		Second Quarter 2013	ND	2.4 J	ND	1200	ND	ND
		Third Quarter 2013	ND	3.0 J	ND	1400	ND	ND
MW-160B	Shallow	First Quarter 2013	ND	ND	ND	250	ND	ND
		Second Quarter 2013	ND	ND	ND	140	ND	ND
		Third Quarter 2013	ND	ND	ND	270	ND	ND
MW-161A	Intermediate	First Quarter 2013	ND	42.0	ND	9400	1.9 J	ND
		Second Quarter 2013	ND	40.0 J	ND	8800	ND	ND
		Third Quarter 2013	ND	38.0	ND	13000	2.1 J	ND
MW-161B	Shallow	First Quarter 2013	ND	16.0	ND	6900	2.1 J	ND
		Second Quarter 2013	ND	20.0 J	ND	7200	ND	ND
		Third Quarter 2013	ND	18.0	ND	7200	2.7 J	ND
MW-175A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-175A	Intermediate	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-175B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-176A	Intermediate	First Quarter 2013	ND	2.6	ND	470	ND	ND
		Second Quarter 2013	ND	3.2 J	ND	720	ND	ND
		Third Quarter 2013	ND	3.2 J	ND	810	ND	ND
MW-176B	Shallow	First Quarter 2013	ND	0.59 J	ND	130	ND	ND
		Second Quarter 2013	ND	ND	ND	120	ND	ND
		Third Quarter 2013	ND	ND	ND	100	ND	ND
MW-177A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-177B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-178B	Shallow	First Quarter 2013	ND	0.65 J	ND	30.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.1

2013 Baseline Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-178B	Shallow	Second Quarter 2013	ND	0.90 J	ND	31.0	ND	ND
		Third Quarter 2013	ND	1.0	ND	39.0	ND	ND
MW-179A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-179B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

ND - nondetect
DCE - dichloroethene
DCP - dichloropropane
DNT - dinitrotoluene
J - estimated value
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
TNB - 1,3,5-trinitrobenzene
TNT - trinitrotoluene

Shaded value Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-106A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-106B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-112A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-112A	Intermediate	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-112B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114D	Deep	First Quarter 2013	ND	ND	ND	0.073 J	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-115B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	0.082 J	ND	ND	ND	ND
MW-116B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-118A	Intermediate	First Quarter 2013	ND	ND	0.11 J	0.75	ND	ND
		Third Quarter 2013	ND	ND	0.40 J	0.59	ND	ND
MW-118B	Shallow	First Quarter 2013	ND	ND	0.11 J	0.79	ND	ND
		Third Quarter 2013	ND	ND	0.10 J	0.78	ND	ND
MW-147A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-147B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-147B	Shallow	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-147D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-159A	Intermediate	First Quarter 2013	ND	0.084 J	ND	ND	0.069 J	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-159B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-35A	Intermediate	First Quarter 2013	ND	ND	0.062 J	0.34 J	ND	ND
		Third Quarter 2013	ND	ND	0.086 J	0.56	ND	ND
MW-35B	Shallow	First Quarter 2013	ND	ND	0.044 J	0.084 J	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-35D	Deep	First Quarter 2013	ND	ND	0.040 J	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-38A	Intermediate	First Quarter 2013	ND	ND	ND	ND	0.17 J	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-38D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-46A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-83A	Intermediate	First Quarter 2013	ND	ND	ND	0.21 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.29 J	ND	ND
MW-83B	Shallow	First Quarter 2013	ND	ND	ND	0.14 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-83D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-84A	Intermediate	First Quarter 2013	ND	ND	ND	0.24 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.22 J	ND	ND
MW-84B	Shallow	First Quarter 2013	ND	ND	ND	0.13 J	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-84D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-84D	Deep	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-85A	Intermediate	First Quarter 2013	ND	ND	ND	0.72	ND	ND
		Third Quarter 2013	ND	ND	ND	0.67	ND	ND
MW-85B	Shallow	First Quarter 2013	ND	ND	0.10 J	1.1	ND	ND
		Third Quarter 2013	ND	ND	ND	1.0	ND	ND
MW-85D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-95A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-95B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-95D	Deep	First Quarter 2013	ND	ND	ND	0.089 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.16 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-102A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-102B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-103A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-103B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-103D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-106A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-106B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-110B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-112A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-112B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-114B	Shallow	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-116D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-159A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	2.9
		Third Quarter 2013	ND	ND	ND	0.16 J	ND	0.77 J
MW-159B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-38A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-38D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.2

2013 Perimeter Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-46D	Deep	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-80A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-80B	Shallow	First Quarter 2013	ND	ND	ND	1.4	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-80D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:
ND - nondetect
DCE - dichloroethene
DCP - dichloropropane
DNT - dinitrotoluene
J - estimated value
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
TNB - 1,3,5-trinitrobenzene
TNT - trinitrotoluene

Shaded result indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.3

2013 Compliance Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-100A	Intermediate	First Quarter 2013	ND	ND	ND	0.095 J	ND	ND
MW-100B	Shallow	First Quarter 2013	ND	ND	ND	0.10 J	ND	ND
MW-100D	Deep	First Quarter 2013	ND	ND	ND	0.082 J	ND	ND
MW-158A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-20A	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-20B	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-20C	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-82A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-82B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-82D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-86A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-86B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.3

2013 Compliance Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-86D	Deep	First Quarter 2013	ND	ND	ND	0.59	ND	ND
MW-88A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-96A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-96B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-96D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-97A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-97B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-97D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-98A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-98B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-98D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.3

2013 Compliance Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-101A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-101B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-101D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-61A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-61B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-61D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.3

2013 Compliance Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-88D	Deep	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:
ND - nondetect
DCE - dichloroethene
DCP - dichloropropane
DNT - dinitrotoluene
J - estimated value
RDX - hexa-hydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
TNB - 1,3,5-trinitrobenzene
TNT - trinitrotoluene

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.4

2013 Load Line 1 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-02A	Intermediate	Second Quarter 2013	ND	ND	0.062 J	0.16 J	ND	ND
MW-02B	Shallow	Second Quarter 2013	0.22 J	3.6	3.6	5.2	0.39 J	4.7
MW-03A	Intermediate	Second Quarter 2013	ND	ND	0.10 J	2.3	ND	ND
MW-03B	Shallow	Second Quarter 2013	ND	0.098 J	0.19 J	0.43	ND	ND
MW-124A	Intermediate	Second Quarter 2013	ND	ND	ND	2.3	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.49	ND	ND
MW-124B	Shallow	Second Quarter 2013	ND	ND	1.9 J	26.0	0.065 J	ND
		Fourth Quarter 2013	ND	0.050 J	1.6 J	19.0	0.054 J	ND
MW-124D	Deep	Second Quarter 2013	ND	ND	0.15 J	0.23 J	ND	0.073 J
		Fourth Quarter 2013	ND	ND	0.18 J	ND	ND	ND
MW-125A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	0.15 J	ND	ND	ND
MW-125B	Shallow	Second Quarter 2013	ND	ND	3.5 J	11.0	0.26 J	ND
		Fourth Quarter 2013	ND	ND	1.5	7.5 J	0.10 J	ND
MW-125D	Deep	Second Quarter 2013	ND	ND	0.15 J	ND	ND	0.26 J
		Fourth Quarter 2013	ND	ND	ND	0.11 J	ND	ND
MW-126A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.4

2013 Load Line 1 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-126B	Shallow	Second Quarter 2013	ND	0.15 J	12.0 J	19.0	0.73	0.63
MW-126D	Deep	Second Quarter 2013	ND	ND	0.12 J	ND	0.055 J	ND
MW-127A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-127B	Shallow	Second Quarter 2013	ND	0.57	0.33 J	0.31 J	0.49	3.0
MW-127E	Shallow	Second Quarter 2013	0.24 J	3.1 J	1.7 J	5.6 J	180 J	83.0 J
MW-141A	Intermediate	Second Quarter 2013	ND	0.40 J	0.40 J	0.75	ND	ND
		Fourth Quarter 2013	ND	ND	0.11 J	ND	ND	ND
MW-141B	Shallow	Second Quarter 2013	ND	5.1	7.6 J	54.0	ND	ND
		Fourth Quarter 2013	ND	6.2	8.2	64.0	0.28 J	ND
MW-141E	Shallow	Second Quarter 2013	ND	0.34 J	3.3 J	15.0	ND	ND
		Fourth Quarter 2013	ND	0.31 J	4.2 J	23.0	ND	ND
MW-142A	Intermediate	Second Quarter 2013	ND	ND	ND	0.59	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.93	ND	ND
MW-142E	Intermediate	Second Quarter 2013	ND	ND	ND	ND	1.1 J	0.14 J
		Fourth Quarter 2013	ND	ND	ND	6.6 J	0.22 J	ND
MW-160A	Intermediate	First Quarter 2013	ND	ND	0.42 J	1.8	ND	ND
		Second Quarter 2013	ND	ND	0.38 J	1.6	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.4

2013 Load Line 1 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-160A	Intermediate	Third Quarter 2013	ND	ND	0.44 J	1.9	ND	ND
MW-160B	Shallow	First Quarter 2013	ND	ND	0.060 J	0.75 J	ND	ND
		Second Quarter 2013	ND	0.16 J	0.065 J	0.82	ND	ND
		Third Quarter 2013	ND	ND	0.076 J	0.65 J	ND	ND
MW-161A	Intermediate	First Quarter 2013	ND	ND	0.068 J	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-161B	Shallow	First Quarter 2013	0.14 J	ND	4.1 J	6.9	0.078 J	ND
		Second Quarter 2013	ND	ND	4.1 J	6.6	ND	ND
		Third Quarter 2013	ND	0.095 J	4.0 J	6.9	ND	ND
MW-21A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-21B	Shallow	Second Quarter 2013	ND	0.53	6.3	9.6	ND	ND
		Fourth Quarter 2013	ND	0.59	6.8	9.5	0.048 J	ND
MW-21D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-24A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.4

2013 Load Line 1 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-24A	Intermediate	Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-24B	Shallow	Second Quarter 2013	ND	0.27 J	3.5	15.0	ND	ND
		Fourth Quarter 2013	ND	0.26 J	3.4	14.0	ND	ND
MW-90A	Intermediate	Second Quarter 2013	ND	ND	ND	0.62	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.56	ND	ND
MW-90B	Shallow	Second Quarter 2013	ND	ND	0.067 J	0.13 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-90D	Deep	Second Quarter 2013	ND	0.51	0.88 J	0.26 J	0.047 J	0.14 J
		Fourth Quarter 2013	ND	ND	0.35 J	0.33 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.4

2013 Load Line 1 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-02A	Intermediate	Second Quarter 2013	ND	ND	ND	140	ND	ND
MW-02B	Shallow	Second Quarter 2013	ND	37.0	ND	100	9.3	ND
MW-03A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-03B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-124A	Intermediate	Second Quarter 2013	ND	20.0 J	ND	10000	ND	ND
		Fourth Quarter 2013	ND	23.0	ND	8400	ND	ND
MW-124B	Shallow	Second Quarter 2013	ND	21.0 J	ND	12000	ND	ND
		Fourth Quarter 2013	ND	29.0 J	ND	13000	ND	ND
MW-124D	Deep	Second Quarter 2013	ND	2.6 J	ND	500	ND	ND
		Fourth Quarter 2013	ND	3.0 J	ND	500	ND	ND
MW-125A	Intermediate	Second Quarter 2013	ND	3.0 J	ND	460	ND	ND
		Fourth Quarter 2013	ND	2.8 J	ND	470	ND	ND
MW-125B	Shallow	Second Quarter 2013	ND	4.2 J	ND	2500	ND	ND
		Fourth Quarter 2013	ND	5.9 J	ND	3800 J	ND	ND
MW-125D	Deep	Second Quarter 2013	ND	ND	ND	53.0	ND	ND
		Fourth Quarter 2013	ND	1.1 J	ND	91.0	ND	ND
MW-126A	Intermediate	Second Quarter 2013	ND	31.0 J	ND	5600	11.0 J	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.4

2013 Load Line 1 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-126B	Shallow	Second Quarter 2013	ND	7.6 J	ND	7500	2.4 J	ND
MW-126D	Deep	Second Quarter 2013	ND	280	ND	200	ND	ND
MW-127A	Intermediate	Second Quarter 2013	ND	3.7	ND	11.0	2.2	ND
MW-127B	Shallow	Second Quarter 2013	ND	10.0	ND	69.0	8.8	ND
MW-127E	Shallow	Second Quarter 2013	ND	ND	ND	11.0	ND	ND
MW-141A	Intermediate	Second Quarter 2013	ND	850	ND	6600	ND	ND
		Fourth Quarter 2013	ND	630	ND	9100	4.7 J	ND
MW-141B	Shallow	Second Quarter 2013	ND	8.5 J	ND	5800	ND	ND
		Fourth Quarter 2013	ND	8.0 J	ND	5700	ND	ND
MW-141E	Shallow	Second Quarter 2013	ND	10.0 J	ND	5000	ND	ND
		Fourth Quarter 2013	ND	12.0	ND	6100	4.6 J	ND
MW-142A	Intermediate	Second Quarter 2013	ND	ND	ND	1900	ND	ND
		Fourth Quarter 2013	ND	1.2 J	ND	1400	ND	ND
MW-142E	Intermediate	Second Quarter 2013	ND	4.5	ND	54.0	ND	ND
		Fourth Quarter 2013	ND	20.0	ND	150	ND	ND
MW-160A	Intermediate	First Quarter 2013	ND	4.5 J	ND	2100	ND	ND
		Second Quarter 2013	ND	2.4 J	ND	1200	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.4

2013 Load Line 1 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-160A	Intermediate	Third Quarter 2013	ND	3.0 J	ND	1400	ND	ND
MW-160B	Shallow	First Quarter 2013	ND	ND	ND	250	ND	ND
		Second Quarter 2013	ND	ND	ND	140	ND	ND
		Third Quarter 2013	ND	ND	ND	270	ND	ND
MW-161A	Intermediate	First Quarter 2013	ND	42.0	ND	9400	1.9 J	ND
		Second Quarter 2013	ND	40.0 J	ND	8800 J	ND	ND
		Third Quarter 2013	ND	38.0	ND	13000	2.1 J	ND
MW-161B	Shallow	First Quarter 2013	ND	16.0	ND	6900	2.1 J	ND
		Second Quarter 2013	ND	20.0 J	ND	7200	ND	ND
		Third Quarter 2013	ND	18.0	ND	7200	2.7 J	ND
MW-21A	Intermediate	Second Quarter 2013	ND	4.0	ND	6.7	5.0	ND
		Fourth Quarter 2013	ND	1.3	ND	11.0	1.4	ND
MW-21B	Shallow	Second Quarter 2013	ND	ND	ND	72.0	ND	ND
		Fourth Quarter 2013	ND	0.28 J	ND	84.0	ND	ND
MW-21D	Deep	Second Quarter 2013	ND	39.0	ND	24.0	22.0	ND
		Fourth Quarter 2013	ND	36.0	ND	70.0	13.0	ND
MW-24A	Intermediate	Second Quarter 2013	ND	130	ND	640	4.5 J	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.4

2013 Load Line 1 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-24A	Intermediate	Fourth Quarter 2013	ND	380	ND	180	12.0	ND
MW-24B	Shallow	Second Quarter 2013	ND	ND	ND	27.0	ND	ND
		Fourth Quarter 2013	ND	0.54 J	ND	24.0	ND	ND
MW-90A	Intermediate	Second Quarter 2013	ND	ND	ND	550	ND	ND
		Fourth Quarter 2013	ND	ND	ND	360	ND	ND
MW-90B	Shallow	Second Quarter 2013	ND	ND	ND	52.0 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	120	ND	ND
MW-90D	Deep	Second Quarter 2013	ND	1.9 J	1.4 J	280	ND	ND
		Fourth Quarter 2013	ND	3.3 J	ND	260	3.5 J	ND

Notes:
ND - nondetect
DCE - dichloroethene
DCP - dichloropropane
DNT - dinitrotoluene
J - estimated value
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
TNB - 1,3,5-trinitrobenzene
TNT - trinitrotoluene

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.5

2013 Load Line 2 and Load Line 3 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-04B	Shallow	First Quarter 2013	ND	ND	0.079 J	13.0	ND	ND
MW-130A	Intermediate	Second Quarter 2013	ND	ND	0.11 J	1.2	ND	ND
MW-130B	Shallow	Second Quarter 2013	ND	ND	0.054 J	0.38 J	ND	ND
MW-130D	Deep	Second Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-143B	Shallow	Second Quarter 2013	ND	0.37 J	2.0	16.0	ND	ND
MW-144A	Intermediate	Second Quarter 2013	ND	0.23 J	0.34 J	78.0	ND	ND
		Fourth Quarter 2013	ND	0.076 J	0.20 J	52.0	ND	ND
MW-144E	Intermediate	Second Quarter 2013	ND	1.7	1.1	92.0	0.11 J	ND
		Fourth Quarter 2013	ND	2.2	1.5	120	0.077 J	ND
MW-145A	Intermediate	Second Quarter 2013	ND	ND	0.074 J	25.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	5.5	ND	ND
MW-145B	Shallow	First Quarter 2013	ND	ND	0.56	24.0	ND	ND
		Second Quarter 2013	ND	ND	0.41	17.0	ND	ND
		Third Quarter 2013	ND	ND	1.2	61.0	ND	ND
MW-145E	Intermediate	Second Quarter 2013	ND	0.085 J	1.3	110	ND	ND
		Fourth Quarter 2013	ND	0.097 J	1.2	100	ND	ND
MW-148A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.5

2013 Load Line 2 and Load Line 3 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-148A	Intermediate	Second Quarter 2013	ND	ND	0.078 J	0.15 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.91	ND	ND
MW-148B	Shallow	Second Quarter 2013	ND	ND	3.3	36.0	ND	ND
MW-149A	Intermediate	Second Quarter 2013	ND	0.065 J	0.89	24.0	ND	ND
MW-150A	Intermediate	Second Quarter 2013	ND	ND	0.20 J	2.3	ND	ND
		Fourth Quarter 2013	ND	ND	0.14 J	1.5	ND	ND
MW-150B	Shallow	Second Quarter 2013	0.32 J	0.17 J	0.48	6.5	ND	ND
		Fourth Quarter 2013	ND	0.11 J	1.4	13.0	ND	ND
MW-162A	Intermediate	First Quarter 2013	ND	ND	0.58	63.0	ND	ND
		Second Quarter 2013	ND	ND	0.67	71.0	ND	ND
		Third Quarter 2013	ND	ND	0.61	72.0	ND	ND
MW-163A	Intermediate	First Quarter 2013	ND	ND	0.46	13.0	ND	ND
		Second Quarter 2013	ND	ND	0.46	13.0	ND	ND
		Third Quarter 2013	ND	ND	0.52	15.0	ND	ND
MW-164A	Intermediate	First Quarter 2013	ND	ND	1.3	76.0	ND	ND
		Second Quarter 2013	ND	ND	1.3	78.0	ND	ND
		Third Quarter 2013	ND	ND	1.1	80.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.5

2013 Load Line 2 and Load Line 3 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-165B	Shallow	First Quarter 2013	ND	ND	3.2	170	ND	ND
		Second Quarter 2013	ND	ND	3.2	170	ND	ND
		Third Quarter 2013	ND	ND	3.2	170	ND	ND
MW-166A	Intermediate	First Quarter 2013	ND	ND	0.49	68.0	ND	ND
		Second Quarter 2013	ND	ND	0.55	75.0	ND	ND
		Third Quarter 2013	ND	ND	0.56	76.0	ND	ND
MW-166B	Shallow	First Quarter 2013	ND	ND	ND	1.9	ND	ND
		Second Quarter 2013	ND	ND	ND	0.37 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-167A	Intermediate	First Quarter 2013	ND	ND	0.98	34.0	ND	ND
		Second Quarter 2013	ND	ND	0.94	34.0	ND	ND
		Third Quarter 2013	ND	ND	1.0	34.0	ND	ND
MW-167B	Shallow	First Quarter 2013	ND	ND	0.20 J	15.0	ND	ND
		Second Quarter 2013	ND	ND	0.23 J	16.0	ND	ND
		Third Quarter 2013	ND	ND	0.24 J	15.0	ND	ND
MW-168A	Intermediate	First Quarter 2013	ND	ND	0.067 J	7.3	ND	ND
		Second Quarter 2013	ND	ND	0.052 J	7.5	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.5

2013 Load Line 2 and Load Line 3 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-168A	Intermediate	Third Quarter 2013	ND	ND	0.064 J	7.7	ND	ND
MW-168B	Shallow	First Quarter 2013	ND	ND	ND	0.32 J	ND	ND
		Second Quarter 2013	ND	ND	ND	0.28 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-169A	Intermediate	First Quarter 2013	ND	ND	0.078 J	12.0	ND	ND
		Second Quarter 2013	ND	ND	0.071 J	12.0	ND	ND
		Third Quarter 2013	ND	ND	0.083 J	13.0	ND	ND
MW-169B	Shallow	First Quarter 2013	ND	ND	0.30 J	55.0	ND	ND
		Second Quarter 2013	ND	ND	0.28 J	49.0	ND	ND
		Third Quarter 2013	ND	ND	0.28 J	48.0	ND	ND
MW-170A	Intermediate	First Quarter 2013	ND	ND	ND	5.3	ND	ND
		Second Quarter 2013	ND	ND	ND	5.3	ND	ND
		Third Quarter 2013	ND	ND	ND	6.1	ND	ND
MW-171A	Intermediate	First Quarter 2013	0.53	0.89	1.2	68.0	ND	0.27 J
		Second Quarter 2013	0.58	0.84	1.1	62.0	0.033 J	0.49
		Third Quarter 2013	0.59	0.89	0.90	62.0	ND	0.56
MW-171B	Shallow	First Quarter 2013	3.1 J	5.2	3.1	89.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.5

2013 Load Line 2 and Load Line 3 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-171B	Shallow	Second Quarter 2013	2.9	4.8	2.8	96.0	0.070 J	0.18 J
		Third Quarter 2013	3.8	5.8	3.0	84.0	ND	ND
MW-172A	Intermediate	First Quarter 2013	ND	ND	0.84	4.0	ND	ND
		Second Quarter 2013	ND	ND	0.68	3.2	ND	ND
		Third Quarter 2013	ND	ND	0.74	3.2	ND	ND
MW-172B	Shallow	First Quarter 2013	ND	ND	0.51	2.8	ND	ND
		Second Quarter 2013	ND	ND	0.38 J	2.1	ND	ND
		Third Quarter 2013	ND	ND	0.28 J	1.6	ND	ND
MW-173A	Intermediate	First Quarter 2013	ND	ND	0.71	7.0	ND	ND
		Second Quarter 2013	ND	ND	0.67	6.4	ND	ND
		Third Quarter 2013	ND	ND	0.68	6.6	ND	ND
MW-175A	Intermediate	First Quarter 2013	ND	0.47	2.1	8.7	ND	ND
		Second Quarter 2013	ND	0.49	2.2	8.2	ND	ND
		Third Quarter 2013	ND	0.53	2.2	8.6	ND	ND
MW-175B	Shallow	First Quarter 2013	ND	0.072 J	1.6	3.3	ND	ND
		Second Quarter 2013	ND	0.068 J	1.3	2.6	ND	ND
		Third Quarter 2013	ND	0.068 J	1.1	2.3	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.5

2013 Load Line 2 and Load Line 3 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-180A	Intermediate	Fourth Quarter 2013	ND	ND	0.45	56.0	ND	ND
MW-180E	Intermediate	Fourth Quarter 2013	ND	ND	0.22	33.0	ND	ND
MW-29A	Intermediate	Second Quarter 2013	ND	ND	ND	2.0	ND	ND
MW-29B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-32A	Intermediate	Second Quarter 2013	ND	ND	0.22 J	6.8	ND	ND
MW-32B	Shallow	Second Quarter 2013	ND	ND	0.14 J	5.9	ND	ND
MW-32D	Deep	Second Quarter 2013	ND	ND	0.072 J	5.8	ND	ND
MW-65A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-65B	Shallow	Second Quarter 2013	0.49	0.64	0.37 J	16.0	ND	ND
MW-99A	Intermediate	Second Quarter 2013	ND	ND	0.064 J	0.47	ND	ND
MW-99B	Shallow	Second Quarter 2013	ND	ND	0.088 J	1.4	ND	ND
MW-99D	Deep	Second Quarter 2013	ND	ND	0.10 J	3.3	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.5

2013 Load Line 2 and Load Line 3 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-143B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-148B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-149A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	0.96 J
MW-150A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.25 J	ND	ND
MW-150B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-175A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-175B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-32A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-32B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-32D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-65A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Notes:
ND - nondetect
DCE - dichloroethene
DCP - dichloropropane
DNT - dinitrotoluene
J - estimated value
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
TNB - 1,3,5-trinitrobenzene
TNT - trinitrotoluene

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-104A	Intermediate	Second Quarter 2013	ND	ND	ND	0.89	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.58	ND	ND
MW-104B	Shallow	Second Quarter 2013	ND	ND	ND	0.45	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.59	ND	ND
MW-104D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-104O	Overburden	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-105A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-105B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-105O	Overburden	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-109A	Intermediate	Second Quarter 2013	ND	ND	0.13 J	4.3	ND	ND
MW-109B	Shallow	Second Quarter 2013	ND	ND	0.12 J	4.0	ND	ND
MW-11	Intermediate	Second Quarter 2013	ND	ND	ND	2.9	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-111A	Intermediate	Second Quarter 2013	ND	ND	ND	0.23 J	ND	ND
MW-111B	Shallow	Second Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-151A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-151B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-152B	Shallow	Second Quarter 2013	ND	ND	0.053 J	1.3	ND	ND
MW-153A	Intermediate	Second Quarter 2013	ND	0.059 J	ND	ND	ND	ND
MW-153B	Shallow	Second Quarter 2013	ND	ND	ND	0.65	ND	ND
MW-154A	Intermediate	Second Quarter 2013	ND	0.079 J	0.18 J	5.3	ND	ND
MW-154B	Shallow	Second Quarter 2013	ND	ND	0.043 J	3.1	ND	ND
MW-155A	Intermediate	Second Quarter 2013	ND	ND	ND	0.14 J	ND	ND
MW-155B	Shallow	First Quarter 2013	ND	ND	ND	0.25 J	ND	ND
		Second Quarter 2013	ND	ND	ND	0.18 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-155E	Intermediate	Second Quarter 2013	ND	ND	ND	0.31 J	ND	ND
MW-156A	Intermediate	Second Quarter 2013	ND	ND	0.097 J	0.41	ND	ND
MW-156B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-157A	Intermediate	Second Quarter 2013	ND	ND	0.059 J	1.7	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-157A	Intermediate	Fourth Quarter 2013	ND	ND	0.054 J	0.86	ND	ND
MW-157B	Shallow	Second Quarter 2013	ND	ND	ND	0.20 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.20 J	ND	ND
MW-176A	Intermediate	First Quarter 2013	ND	ND	0.048 J	0.69	ND	ND
		Second Quarter 2013	ND	ND	ND	0.42	ND	ND
		Third Quarter 2013	ND	ND	0.056 J	0.45	ND	ND
MW-176B	Shallow	First Quarter 2013	ND	ND	0.043 J	0.25 J	ND	ND
		Second Quarter 2013	ND	ND	ND	0.20 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-178B	Shallow	First Quarter 2013	ND	ND	ND	1.3	ND	ND
		Second Quarter 2013	ND	ND	ND	1.5	ND	ND
		Third Quarter 2013	ND	ND	ND	1.9	ND	ND
MW-18A	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-18B	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-42A	Intermediate	Second Quarter 2013	ND	ND	0.099 J	2.9	ND	ND
		Fourth Quarter 2013	ND	0.061 J	0.12 J	3.5	ND	ND
MW-42B	Shallow	Second Quarter 2013	ND	ND	ND	0.11 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-42B	Shallow	Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-42D	Deep	Second Quarter 2013	ND	0.058 J	0.12 J	3.5	ND	ND
		Fourth Quarter 2013	ND	0.049 J	0.13 J	3.4	ND	ND
MW-43A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-43B	Shallow	Second Quarter 2013	ND	0.14 J	0.14 J	3.5	ND	ND
MW-43D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-44A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-44B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-44D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-53A	Intermediate	Fourth Quarter 2013	ND	ND	ND	0.41	ND	ND
MW-53B	Shallow	Fourth Quarter 2013	ND	ND	ND	10.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-09A	Intermediate	Second Quarter 2013	ND	0.54 J	ND	55.0	ND	ND
		Fourth Quarter 2013	ND	0.50 J	ND	64.0 J	ND	ND
MW-09B	Shallow	Second Quarter 2013	ND	ND	ND	38.0	ND	ND
		Fourth Quarter 2013	ND	0.21 J	ND	43.0	ND	ND
MW-09D	Deep	Second Quarter 2013	ND	ND	ND	480	ND	ND
		Fourth Quarter 2013	ND	ND	ND	320	ND	ND
MW-104A	Intermediate	Second Quarter 2013	ND	5.0 J	ND	320	ND	ND
MW-104B	Shallow	Second Quarter 2013	ND	2.9 J	ND	620	ND	ND
MW-104D	Deep	Second Quarter 2013	ND	ND	ND	0.28 J	ND	ND
MW-104O	Overburden	Second Quarter 2013	ND	1.0	ND	ND	ND	ND
MW-105A	Intermediate	Second Quarter 2013	ND	1.4	ND	28.0	ND	ND
		Fourth Quarter 2013	ND	1.5 J	ND	27.0 J	ND	ND
MW-105B	Shallow	Second Quarter 2013	ND	1.3	ND	23.0	ND	ND
		Fourth Quarter 2013	ND	1.7	ND	26.0	ND	ND
MW-105O	Overburden	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-109A	Intermediate	Second Quarter 2013	ND	0.76 J	ND	17.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-109B	Shallow	Second Quarter 2013	ND	0.69 J	ND	18.0	ND	ND
MW-111A	Intermediate	Second Quarter 2013	ND	ND	ND	6.6	ND	ND
MW-111B	Shallow	Second Quarter 2013	ND	ND	ND	7.4	ND	ND
MW-136A	Intermediate	Second Quarter 2013	ND	ND	ND	4.9	ND	ND
		Fourth Quarter 2013	ND	ND	ND	3.0	ND	ND
MW-136B	Shallow	Second Quarter 2013	ND	1.2	ND	53.0	ND	ND
		Fourth Quarter 2013	ND	3.7	ND	200	ND	ND
MW-136D	Deep	Second Quarter 2013	ND	ND	ND	140	ND	ND
		Fourth Quarter 2013	ND	1.9 J	ND	200	ND	ND
MW-136E	Shallow	Second Quarter 2013	ND	1.1 J	ND	89.0	ND	ND
		Fourth Quarter 2013	ND	0.83 J	ND	77.0	ND	ND
MW-137A	Intermediate	Second Quarter 2013	ND	1.9 J	ND	350	ND	ND
		Fourth Quarter 2013	ND	0.20 J	ND	20.0	ND	ND
MW-137B	Shallow	Second Quarter 2013	ND	ND	ND	17.0	ND	ND
		Fourth Quarter 2013	ND	4.5 J	ND	760	ND	ND
MW-137E	Shallow	Second Quarter 2013	ND	16.0	ND	4100	ND	ND
		Fourth Quarter 2013	ND	19.0	ND	4900	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-138A	Intermediate	Second Quarter 2013	ND	ND	ND	4.9	ND	ND
MW-138B	Shallow	Second Quarter 2013	ND	15.0 J	ND	2700	ND	ND
		Fourth Quarter 2013	ND	17.0	ND	3200	ND	ND
MW-139A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-139B	Shallow	Second Quarter 2013	ND	1.4 J	ND	240	ND	ND
		Fourth Quarter 2013	ND	1.7 J	ND	300	ND	ND
MW-140A	Intermediate	Second Quarter 2013	ND	ND	ND	0.60 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.66 J	ND	ND
MW-140B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-140D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-140O	Overburden	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-151A	Intermediate	Second Quarter 2013	ND	1.0	ND	44.0	ND	ND
MW-151B	Shallow	Second Quarter 2013	ND	5.3	ND	1100	ND	ND
MW-152B	Shallow	Second Quarter 2013	ND	0.68 J	ND	9.3	ND	ND
MW-153A	Intermediate	Second Quarter 2013	ND	2.9 J	ND	710	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-153B	Shallow	Second Quarter 2013	ND	1.6 J	ND	320	ND	ND
MW-154A	Intermediate	Second Quarter 2013	ND	1.1	ND	41.0	ND	ND
MW-154B	Shallow	Second Quarter 2013	ND	0.54 J	ND	18.0	ND	ND
MW-155A	Intermediate	Second Quarter 2013	ND	4.3 J	ND	910	ND	ND
		Fourth Quarter 2013	ND	4.0 J	ND	940	ND	ND
MW-155B	Shallow	First Quarter 2013	ND	0.73 J	ND	160	ND	ND
		Second Quarter 2013	ND	0.79 J	ND	150	ND	ND
		Third Quarter 2013	ND	0.54 J	ND	120	ND	ND
MW-155E	Intermediate	Second Quarter 2013	ND	2.1 J	ND	470	ND	ND
MW-156A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-156B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-157A	Intermediate	Second Quarter 2013	ND	ND	ND	37.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	20.0	ND	ND
MW-157B	Shallow	Second Quarter 2013	ND	ND	ND	0.65 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	1.4	ND	ND
MW-176A	Intermediate	First Quarter 2013	ND	2.6	ND	470	ND	ND
		Second Quarter 2013	ND	3.2 J	ND	720	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-176A	Intermediate	Third Quarter 2013	ND	3.2 J	ND	810	ND	ND
MW-176B	Shallow	First Quarter 2013	ND	0.59 J	ND	130	ND	ND
		Second Quarter 2013	ND	ND	ND	120	ND	ND
		Third Quarter 2013	ND	ND	ND	100	ND	ND
MW-178B	Shallow	First Quarter 2013	ND	0.65 J	ND	30.0	ND	ND
		Second Quarter 2013	ND	0.90 J	ND	31.0	ND	ND
		Third Quarter 2013	ND	1.0	ND	39.0	ND	ND
MW-18A	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-18B	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-40A	Intermediate	Second Quarter 2013	ND	ND	ND	1.8	ND	ND
MW-40B	Shallow	Second Quarter 2013	ND	0.57 J	ND	85.0	ND	ND
MW-42A	Intermediate	Second Quarter 2013	ND	ND	ND	96.0	ND	ND
		Fourth Quarter 2013	ND	0.51 J	ND	89.0	ND	ND
MW-42B	Shallow	Second Quarter 2013	ND	ND	ND	0.82 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-42D	Deep	Second Quarter 2013	ND	0.67 J	ND	120	ND	ND
		Fourth Quarter 2013	ND	0.31 J	ND	98.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.6

2013 Load Line 4 Interior Plume Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-43A	Intermediate	Second Quarter 2013	ND	ND	ND	19.0	ND	ND
MW-43B	Shallow	Second Quarter 2013	ND	ND	ND	2.4	ND	ND
MW-43D	Deep	Second Quarter 2013	ND	ND	ND	11.0	ND	ND
MW-44A	Intermediate	Second Quarter 2013	ND	2.2 J	ND	150	ND	ND
		Fourth Quarter 2013	ND	2.7 J	ND	180	ND	ND
MW-44B	Shallow	Second Quarter 2013	ND	ND	ND	13.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	11.0	ND	ND
MW-44D	Deep	Second Quarter 2013	ND	ND	ND	19.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	22.0	ND	ND
MW-72A	Intermediate	Second Quarter 2013	ND	ND	ND	3.3	ND	ND
MW-72B	Shallow	Second Quarter 2013	ND	6.3	ND	410	ND	ND
MW-78A	Intermediate	Second Quarter 2013	ND	ND	ND	0.68 J	ND	ND
MW-78B	Shallow	Second Quarter 2013	ND	2.9	ND	39.0	ND	ND

Notes:
ND - nondetect
DCE - dichloroethene
DCP - dichloropropane
DNT - dinitrotoluene
J = estimated value
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
TNB - 1,3,5-trinitrobenzene
TNT - trinitrotoluene

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.7

2013 Monitoring Wells Associated with Focused Extraction Wells Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-119A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-119B	Shallow	Second Quarter 2013	ND	0.095 J	0.12 J	0.19 J	ND	ND
		Fourth Quarter 2013	ND	0.083 J	0.11 J	0.18 J	ND	ND
MW-120A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-120B	Shallow	Second Quarter 2013	ND	0.053 J	3.0 J	7.4	ND	ND
		Fourth Quarter 2013	ND	ND	6.0	6.8	0.059 J	ND
MW-120D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	0.12 J	ND	0.031 J	ND
MW-120E	Intermediate	Second Quarter 2013	ND	ND	0.64 J	8.5	ND	ND
		Fourth Quarter 2013	ND	ND	0.77 J	9.6	0.11 J	ND
MW-121A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-121B	Shallow	Second Quarter 2013	ND	ND	0.098 J	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-121E	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.7

2013 Monitoring Wells Associated with Focused Extraction Wells Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-121E	Intermediate	Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-122A	Intermediate	Second Quarter 2013	ND	ND	0.15 J	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-122B	Shallow	Second Quarter 2013	ND	ND	0.34 J	1.1	ND	ND
		Fourth Quarter 2013	ND	ND	0.58 J	1.3	ND	ND
MW-123A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-123B	Shallow	Second Quarter 2013	ND	ND	0.19 J	0.14 J	ND	ND
		Fourth Quarter 2013	ND	ND	0.21 J	0.23 J	ND	ND
MW-128A	Intermediate	Second Quarter 2013	ND	ND	0.29 J	0.43 J	ND	ND
		Fourth Quarter 2013	ND	ND	0.16 J	0.18 J	ND	ND
MW-128B	Shallow	Second Quarter 2013	ND	ND	0.72	1.4	ND	ND
		Fourth Quarter 2013	ND	ND	0.64	1.7	ND	ND
MW-131A	Intermediate	Second Quarter 2013	ND	ND	0.63	3.0	ND	ND
		Fourth Quarter 2013	ND	ND	0.66	3.0	ND	ND
MW-131B	Shallow	Second Quarter 2013	ND	ND	0.15 J	0.81	ND	ND
		Fourth Quarter 2013	ND	ND	0.12 J	0.51	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.7

2013 Monitoring Wells Associated with Focused Extraction Wells Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-131D	Deep	Second Quarter 2013	ND	ND	ND	0.19 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.31 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.7

2013 Monitoring Wells Associated with Focused Extraction Wells Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-119A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-119B	Shallow	Second Quarter 2013	ND	ND	ND	0.34 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.45 J	ND	ND
MW-120A	Intermediate	Second Quarter 2013	ND	200	ND	300	0.91 J	ND
		Fourth Quarter 2013	ND	230	ND	180	1.2 J	ND
MW-120B	Shallow	Second Quarter 2013	ND	5.4 J	3.0 J	6600	ND	ND
		Fourth Quarter 2013	ND	0.98 J	ND	690	ND	ND
MW-120D	Deep	Second Quarter 2013	ND	190	ND	11.0	1.0 J	ND
		Fourth Quarter 2013	ND	240	ND	15.0	1.3 J	ND
MW-120E	Intermediate	Second Quarter 2013	ND	24.0 J	ND	12000	ND	ND
		Fourth Quarter 2013	ND	15.0 J	ND	7600	ND	ND
MW-121A	Intermediate	Second Quarter 2013	ND	ND	ND	0.87 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.70 J	ND	ND
MW-121B	Shallow	Second Quarter 2013	ND	ND	ND	0.26 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-121E	Intermediate	Second Quarter 2013	ND	ND	ND	1.6	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.7

2013 Monitoring Wells Associated with Focused Extraction Wells Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-121E	Intermediate	Fourth Quarter 2013	ND	ND	ND	3.2	ND	ND
MW-122A	Intermediate	Second Quarter 2013	ND	0.61 J	ND	60.0	ND	ND
		Fourth Quarter 2013	ND	7.7	ND	330	ND	ND
MW-122B	Shallow	Second Quarter 2013	ND	3.0 J	ND	790	ND	ND
		Fourth Quarter 2013	ND	3.7 J	ND	710	ND	ND
MW-123A	Intermediate	Second Quarter 2013	ND	0.48 J	ND	7.4	ND	ND
		Fourth Quarter 2013	ND	ND	ND	3.4	ND	ND
MW-123B	Shallow	Second Quarter 2013	ND	ND	ND	2.1	ND	ND
		Fourth Quarter 2013	ND	ND	ND	2.9	ND	ND
MW-133A	Intermediate	Second Quarter 2013	ND	ND	ND	7.2	ND	ND
		Fourth Quarter 2013	ND	ND	ND	23.0	ND	ND
MW-133B	Shallow	Second Quarter 2013	ND	2.5 J	ND	290	ND	ND
		Fourth Quarter 2013	ND	3.6	ND	250	ND	ND
MW-133D	Deep	Second Quarter 2013	ND	0.26 J	ND	33.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	2.1	ND	ND
MW-134A	Intermediate	Second Quarter 2013	ND	1.4	ND	29.0	ND	ND
		Fourth Quarter 2013	ND	1.6	ND	61.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.7

2013 Monitoring Wells Associated with Focused Extraction Wells Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-134B	Shallow	Second Quarter 2013	ND	10.0	ND	210	ND	ND
		Fourth Quarter 2013	ND	11.0	ND	170	ND	ND
MW-134D	Deep	Second Quarter 2013	ND	0.49 J	ND	140	ND	ND
		Fourth Quarter 2013	ND	0.50 J	ND	78.0	ND	ND
MW-135A	Intermediate	Second Quarter 2013	ND	1.9 J	ND	130	ND	ND
		Fourth Quarter 2013	ND	1.6 J	ND	110	ND	ND
MW-135B	Shallow	Second Quarter 2013	ND	8.3	ND	210	ND	ND
		Fourth Quarter 2013	ND	8.2	ND	240 J	ND	ND
MW-135D	Deep	Second Quarter 2013	ND	3.7 J	ND	930	ND	ND
		Fourth Quarter 2013	ND	3.6 J	ND	660	ND	ND

Notes:
ND - nondetect
DCE - dichloroethene
DCP - dichloropropane
DNT - dinitrotoluene
J - estimated value
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
TNB - 1,3,5-trinitrobenzene
TNT - trinitrotoluene

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

Table 3.8

2013 Sidegradient and Downgradient Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-08A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-08B	Shallow	Second Quarter 2013	ND	ND	ND	0.22 J	ND	ND
MW-129A	Intermediate	Second Quarter 2013	ND	ND	0.055 J	0.26 J	ND	ND
MW-129B	Shallow	Second Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-129D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-146A	Intermediate	Second Quarter 2013	ND	0.060 J	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-146B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-174A	Intermediate	First Quarter 2013	ND	ND	0.055 J	0.16 J	ND	ND
		Second Quarter 2013	ND	ND	0.31 J	1.2	ND	ND
		Third Quarter 2013	ND	ND	0.20 J	0.72	ND	ND
MW-174B	Shallow	First Quarter 2013	ND	ND	0.32 J	1.2	ND	ND
		Second Quarter 2013	ND	ND	0.28 J	1.1	ND	ND
		Third Quarter 2013	ND	ND	0.25 J	1.0	ND	ND
MW-25A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-25B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.8

2013 Sidegradient and Downgradient Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-28A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-28B	Shallow	Second Quarter 2013	ND	ND	ND	0.92 J	ND	ND
MW-28D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-31A	Intermediate	First Quarter 2013	ND	ND	0.045 J	ND	ND	ND
MW-31B	Shallow	First Quarter 2013	ND	ND	ND	1.5	ND	ND
MW-33A	Intermediate	Second Quarter 2013	ND	ND	0.12 J	0.79	ND	ND
MW-33B	Shallow	Second Quarter 2013	ND	ND	0.052 J	ND	ND	ND
MW-33D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.8

2013 Sidegradient and Downgradient Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-08A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-08B	Shallow	Second Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-177A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-177B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-179A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-179B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-25A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-25B	Shallow	Second Quarter 2013	ND	0.29 J	ND	23.0	ND	ND
MW-31A	Intermediate	First Quarter 2013	ND	ND	ND	0.22 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L - micrograms per liter

FNOP.ChemCrossTab_Annual_Aquifer

January 27, 2014

Table 3.8

2013 Sidegradient and Downgradient Monitoring Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-31B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-89A	Intermediate	Second Quarter 2013	ND	ND	ND	8.9	ND	ND
MW-89B	Shallow	Second Quarter 2013	ND	ND	ND	0.80 J	ND	ND
MW-89D	Deep	Second Quarter 2013	ND	ND	ND	1.3	ND	ND
MW-89E	Intermediate	Second Quarter 2013	ND	ND	ND	390	ND	ND
MW-91A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-91B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-91D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-93A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-93B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:
ND - nondetect
DCE - dichloroethene
DCP - dichloropropane
DNT - dinitrotoluene
J - estimated value
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
TNB - 1,3,5-trinitrobenzene
TNT - trinitrotoluene

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Table 4.1

2013 TCE and RDX Pre-Treatment and Post-Treatment Results for Residential GAC Units

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives
Location	**Event**	**RDX**
WSW-52A	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-52A-B	First Quarter 2013	0.22 J
	Third Quarter 2013	0.54
WSW-52C	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-52C-B	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-53	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-53-B	First Quarter 2013	6.2
	Third Quarter 2013	6.0
WSW-54	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-54-B	First Quarter 2013	2.3
	Third Quarter 2013	2.0

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.1

2013 TCE and RDX Pre-Treatment and Post-Treatment Results for Residential GAC Units

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds
Location	**Event**	**TCE**
WSW-52A	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-52A-B	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-52C	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-52C-B	First Quarter 2013	130
	Third Quarter 2013	160
WSW-53	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-53-B	First Quarter 2013	2.1
	Third Quarter 2013	2.1
WSW-54	First Quarter 2013	ND
	Third Quarter 2013	ND
WSW-54-B	First Quarter 2013	4.4
	Third Quarter 2013	4.3

Notes:
ND = nondetect
J = estimated value
TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
UNFL-09A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
UNFL-10A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
UNFL-27	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-100	First Quarter 2013	ND	ND	ND	0.12 J	ND	ND
	Third Quarter 2013	ND	ND	ND	0.12 J	ND	ND
WSW-101	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-102	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-103	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-104	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-105	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
WSW-106	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-107	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-108	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-109	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-110	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-111	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-112	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-113	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-114	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-115	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
WSW-117	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-27	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-29	First Quarter 2013	ND	ND	ND	0.12 J	ND	ND
	Third Quarter 2013	ND	ND	ND	0.11 J	ND	ND
WSW-29A	First Quarter 2013	ND	ND	ND	0.35 J	ND	ND
	Third Quarter 2013	ND	ND	ND	0.32 J	ND	ND
WSW-32	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-34	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-36	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-50A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-50B	First Quarter 2013	ND	ND	ND	2.0	0.074 J	ND
	Third Quarter 2013	ND	ND	ND	1.7	0.060 J	ND
WSW-51	First Quarter 2013	ND	ND	ND	0.31 J	ND	ND
	Third Quarter 2013	ND	ND	ND	0.43	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
WSW-51A	First Quarter 2013	ND	ND	ND	1.6	ND	ND
	Third Quarter 2013	ND	ND	0.060 J	1.4	ND	ND
WSW-52A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-52A-B	First Quarter 2013	ND	ND	ND	0.22 J	ND	ND
	Third Quarter 2013	ND	ND	ND	0.54	ND	ND
WSW-52B	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-52C	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-52C-B	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-53	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-53-B	First Quarter 2013	ND	ND	0.24 J	6.2	ND	ND
	Third Quarter 2013	ND	ND	0.22 J	6.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
WSW-54	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-54-B	First Quarter 2013	ND	ND	0.16 J	2.3	ND	ND
	Third Quarter 2013	ND	0.064 J	0.17 J	2.0	ND	ND
WSW-55	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Second Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
	Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-56	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-57	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-58	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-59	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
WSW-60	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-61	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-62	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-63	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-64	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-65	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-66	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-67	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-68	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
WSW-73	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-74	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-75	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-76	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-77	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-79	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-80	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-81	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-82	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-86	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
WSW-87	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-89	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-90	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-91	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-92	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-93	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-94	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-95	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-96	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-97	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Explosives					
Location	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
WSW-99	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
UNFL-09A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
UNFL-10A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
UNFL-27	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-100	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-101	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-102	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-103	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-104	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-105	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
WSW-106	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-107	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-108	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-109	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-110	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-111	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-112	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-113	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-114	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-115	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
WSW-117	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-27	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-29	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-29A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-32	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-34	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-36	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-50A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-50B	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-51	First Quarter 2013	ND	ND	0.59	0.43 J	ND	ND
	Third Quarter 2013	ND	ND	ND	0.38 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
WSW-51A	First Quarter 2013	ND	ND	ND	4.6	ND	ND
	Third Quarter 2013	ND	ND	ND	4.7	ND	ND
WSW-52A	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-52A-B	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-52B	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-52C	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-52C-B	First Quarter 2013	ND	ND	ND	130	ND	ND
	Third Quarter 2013	ND	2.5	ND	160	ND	ND
WSW-53	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-53-B	First Quarter 2013	ND	ND	ND	2.1	ND	ND
	Third Quarter 2013	ND	ND	ND	2.1	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
WSW-54	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-54-B	First Quarter 2013	ND	ND	ND	4.4	ND	ND
	Third Quarter 2013	ND	ND	ND	4.3	ND	ND
WSW-55	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Second Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
	Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-56	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-57	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-58	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-59	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
WSW-60	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-61	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-62	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-63	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-64	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-65	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-66	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-67	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-68	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
WSW-73	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-74	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-75	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-76	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-77	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-79	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-80	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-81	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-82	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-86	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
WSW-87	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-89	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-90	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-91	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-92	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-93	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-94	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-95	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-96	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND
WSW-97	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 4.2

2013 Water Supply Well Sample Results

2013 Annual Report

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
WSW-99	First Quarter 2013	ND	ND	ND	ND	ND	ND
	Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:
Notes:
ND = nondetect
DCE = dichloroethene
DCP = dichloropropane
DNT = dinitrotoluene
J = estimated value
RDX = hexa-hydro-1,3,5-trinitro-1,3,5-triazine
TNB = 1,3,5-trinitrobenzene
TNT = trinitrotoluene

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

'-B' notation after Well ID indicates that the sample was collected before the Granular Activated Carbon unit.

Table 5.1
2013 Alternate Water Supply Maintenance Activities
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Water Supply Unit	Approximate GAC Unit Installation Date	2013 GAC Unit Replacement History	Comment
50B	Not Applicable	Not Applicable	Supplied with bottled drinking water
51A	Not Applicable	Not Applicable	Supplied with bottled drinking water
52A	June 1994	October 18, 2013	Primary and secondary GAC vessels replaced.
52C	April 2003	November 18, 2013	Primary and secondary GAC vessels replaced.
53	November 1991	October 17, 2013	Primary and secondary GAC vessels replaced.
54	February 1991	October 10, 2013	Primary and secondary GAC vessels replaced.

Note:
GAC – granular activated carbon

Table 6.1
Groundwater Treatment Plant and Extraction Well Operation and Maintenance Activity Frequencies
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Activity	Frequency
Record flow data at all GTPs and extraction wells.	Daily
Conduct O&M activities and inspections at all GTPs and extraction wells.	Weekly and as per maintenance schedule
Conduct O&M sampling at the main and AOP GTPs.	Monthly
Conduct O&M sampling at the LL1 and LL4 GTPs.	Monthly and quarterly
Conduct O&M sampling at the extraction wells.	Quarterly
Perform carbon change-outs (liquid and vapor phase).	As dictated by the change-out criteria

Notes:
AOP - Advanced Oxidation Process
GTP - Groundwater Treatment Plant
LL - Load Line
O&M - Operations and Maintenance

Table 6.2
Percent Uptime of Groundwater Treatment Plants in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Total Time (hours)	Main GTP		LL1 GTP		AOP GTP		LL4 GTP	
		Downtime (hours)	Uptime Efficiency	Downtime (hours)	Uptime Efficiency	Downtime (hours)	Uptime Efficiency	Downtime (hours)	Uptime Efficiency
January	744	0	100%	23	97%	5.5	99%	9.5	99%
February	672	0	100%	1	100%	0	100%	24.5	96%
March	744	0	100%	36	95%	0.75	100%	0	100%
April	720	2.5	100%	27.75	96%	33.5	95%	17.25	98%
May	744	0	100%	0	100%	132.5	82%	16	98%
June	720	0	100%	84	88%	67	91%	0.75	99.9%
July	744	2.5	100%	3	100%	165	78%	102	86%
August	744	0.5	100%	1.5	100%	425	43%	168.5	77%
September	720	0	100%	2	99.7%	496	31%	543	25%
October	744	66	91%	3.25	100%	103	86%	410.5	45%
November	720	215	70%	1.25	100%	391	46%	492	32%
December	744	4.5	99%	1.25	100%	281	62%	201.5	73%
2013 Total	8760	291	97%	184	98%	2100	76%	1985.5	77%

Notes:
% - Percent
AOP - Advanced Oxidation Process
GTP - Groundwater Treatment Plant
LL - Load Line

Table 6.3
Average Extraction Well Flow Rates and Operational Set Point Flow Rates for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Well	Operational Set Point Flow Rate (gpm)[1]	2013 Runtime Average Flow Rate (gpm)	Well Uptime (%)	2013 Adjusted Average Annual Flow Rate (gpm)[2]
EW-1/1R	200	216	90.8%	196
EW-2[3]	150	0	0.0%	0
EW-3[4]	300	0	0.0%	1
EW-4	100	100	94.7%	95
EW-5[3]	175	0	0.0%	0
EW-6[4]	50	0	0.0%	0
EW-7	290	285	95.1%	271
EW-8[3]	250	0	0.0%	0
EW-9	140	155	94.5%	147
EW-10[3]	400	0	0.0%	0
FEW-11	600	500	76.0%	380
EW-12	275	257	92.4%	238
EW-13[3]	0	0	0.0%	0
FEW-14	190	247	95.1%	235
FEW-15	500	461	77.4%	357
EW-16[4]	100	0	0.0%	0
EW-17[5]	325	360	90.5%	326

Notes:

[1]The extraction well basis for the operational rates was based on the 2012 Containment Evaluation Report. Operational set point flow rate is defined as the desired flow rate for the well to operate whereas the average flow rate is based on an average of the actual flows measured during 2013.

[2]Adjusted Average 2013 Flow Rates (AAFR) were based on uptime during 2013 according to the following equation: AAFR = (2013 Runtime Average Flow Rate) X (Well Uptime which is defined as extraction well operational hours in a month as recorded in the individual well programmable logic controllers).

[3]EW-2, EW-5, EW-8, EW-10, and EW-13 were not operated in 2013.

[4]EW-3, EW-6, and EW-16 were taken offline on January 2, 2013 with minimal flow in January, 2013.

[5]Calculation of the runtime average flow rate and the adjusted average annual flow rate for EW-17 does not include the months of January through April because the well came online in May 2013.

% - percent

EW - extraction well

FEW - focused extraction well

gpm - gallons per minute

Table 6.4
Specific Capacities of Active Extraction Wells
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Well Name: EW-1R

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency	Change from Peak Specific Capacity	Change from Peak Efficiency
2012	April step test	15.5	470	30.3	66%	NA	NA
2013	Sept step test(1)	11.5	298	25.9	57%	-14%	-14%
2013	Dec step test(2)	10.5	298	28.4	63%	-6%	-5%

Well Name: EW-4

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency	Change from Peak Specific Capacity	Change from Peak Efficiency
2001	Pre-startup test	21.3	78	3.6	5%	NA	NA
2005	Dec step test	17.9	99	5.5	9%	52%	61%
2007	May step test(2)	19.7	96	4.9	7%	34%	30%
2008	May step test	20.4	89	4.4	9%	20%	61%
2009	Aug step test	25.5	85	3.3	6%	-40%	-35%
2010	Dec step test(2)	18.5	82	4.4	7%	-20%	-22%
2011	June step test	18.6	78	4.2	7%	-24%	-25%
2012	April step test	22.7	87	3.8	6%	-31%	-29%
2013	January step test	21.6	102	4.7	8%	-15%	-9%
2013	May step test	17.8	84	4.7	8%	-15%	-12%

Well Name: EW-7

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency	Change from Peak Specific Capacity	Change from Peak Efficiency
2001	Pre-startup test	19.2	371	19.3	29%	NA	NA
2006	Feb step test	9.0	250	27.8	42%	NA	NA
2007	Aug step test	15.6	346	22.2	36%	-20%	-16%
2009	Feb step test	17.2	366	21.3	34%	-23%	-20%
2009	Aug step test	17.2	365	21.2	33%	-24%	-20%
2010	Oct step test	18.6	372	20.0	31%	-28%	-26%
2011	June step test	19.5	387	19.8	31%	-29%	-27%
2011	Aug step test(2)	17.8	390	21.9	34%	-21%	-19%
2012	April step test	17	372	21.9	34%	-21%	-19%
2013	May step test	15.1	304	20.1	31%	-28%	-26%
2013	Dec step test(2)	13.5	322	23.9	36%	-14%	-13%

Table 6.4
Specific Capacities of Active Extraction Wells
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Well Name: EW-9

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency	Change from Peak Specific Capacity	Change from Peak Efficiency
2001	Pre-startup test	8.8	115	13.1	16%	NA	NA
2003	Step test	17.6	180	10.3	13%	-21%	-17%
2006	Feb step test	15.9	162	10.2	13%	-22%	-15%
3/2007	Pre-rehab test	16.8	140	8.3	12%	-37%	-24%
5/2007	Post-rehab test	17.8	163	9.2	13%	-30%	-18%
2008	June step test	14.9	136	9.1	13%	-31%	-20%
2009	Aug step test	19.4	168	8.7	12%	-34%	-22%
2010	Oct step test	17.7	150	8.5	11%	-35%	-30%
2011	June step test	18.7	154	8.2	11%	-37%	-33%
2011	Aug step test(2)	18.3	165	9.0	12%	-31%	-25%
2012	April step test	18.3	166	9.1	12%	-31%	-24%
2013	May step test	19.3	170	8.8	12%	-33%	-23%
2013	Dec step test(2)	20.3	172	8.5	11%	-35%	-27%

Well Name: FEW-11

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency	Change from Peak Specific Capacity	Change from Peak Efficiency
2001	Step test	11.9	531	44.7	35%	NA	NA
2009	August step test	13.5	561	41.6	35%	-7%	-1%
2010	Nov step test	13.3	553	41.6	35%	-7%	-1%
2011	June step test	14.3	544	38.0	31%	-15%	-11%
2012	April step test	16.5	540	32.7	27%	-27%	-22%
2013	May step test	18.7	557	29.8	25%	-33%	-30%
2013	Dec step test(2)	18.1	563	31.2	26%	-30%	-26%

Well Name: EW-12

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency	Change from Peak Specific Capacity	Change from Peak Efficiency
2006	Pre-startup test	48.5	332	6.9	31%	NA	NA
2007	June step test	51.7	332	6.4	28%	NA	NA
2009	Feb step test	52.9	350	6.6	32%	NA	NA
2009	Aug step test	38.9	350	9.0	44%	0%	0%
2010	Nov step test	57.0	250	4.4	18%	-51%	-59%
2011	Jan step test(2)	51.5	300	5.8	24%	-36%	-45%
2011	June step test	59.4	300	5.1	21%	-43%	-52%
2011	Sept step test	70.5	300	4.3	18%	-52%	-58%
2011	Dec step test(2)	63.6	300	4.7	20%	-48%	-54%
2012	April step test	62.1	300	4.8	21%	-47%	-53%
2013	January step test(2)	59.1	300	5.1	22%	-44%	-50%
2013	April step test	61.5	300	4.9	21%	-46%	-52%

Table 6.4
Specific Capacities of Active Extraction Wells
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Well Name: FEW-14

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency	Change from Peak Specific Capacity	Change from Peak Efficiency
2009	August step test	14.5	336	23.2	67%	NA	NA
2010	Dec step test	14.7	339	23.1	67%	0%	NA
2011	June step test	15.0	343	22.9	67%	-1%	0%
2012	April step test[3]	8.2	209	25.5	77%	10%	15%
2013	May step test	12.2	260	21.3	60%	-16%	-22%

Well Name: FEW-15

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency	Change from Peak Specific Capacity	Change from Peak Efficiency
2010	March step test[4]	5.0	500	100.0	69%	NA	NA
2011	June stet test	12.2	508	41.6	29%	NA	NA
2011	Aug step test	12.0	496	41.3	29%	-1%	-4%
2012	April step test	11.8	493	41.8	29%	0%	-1%
2013	May step test	11.7	476	40.7	28%	-2%	-4%

Well Name: EW-17

Year	Data Source	Drawdown (ft)	Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Theoretical Well Efficiency (%)	Change from Peak Specific Capacity	Change from Peak Efficiency
2013	May step test	32.6	350	10.7	32%	NA	NA

Notes:

[1]Pump replaced at EW-1R in 2012. Current pump is not cabable of 470 gpm.

[2]Post Rehabilitation

[3]Pump replaced at FEW-14. New pump will not exceed 210 gpm.

[4]Transducer malfunction in 2010, causing inaccurate drawdown readings. 2011 data used for comparison.

Theoretical Well Efficiency was calculated from the ratio of the theoretical drawdown to the actual drawdown. Theoretical drawdown was calculated by Jacob's method based on the Theis equation.

Step tests for EW-1, EW-6, and EW-16 were not performed in 2013 as they were shut down.

% - percent

EW - extraction well

FEW - focused extraction well

ft - feet

gpm - gallons per minute

NA - not applicable

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
January	1526/1580	• On January 1, 2013, operators shut down EW-3, EW-6 and EW-16 per the *Groundwater Model Evaluation of EW-3, EW-6, and EW-16 Technical Memorandum, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska* dated September 26, 2012. Flow was increased at FEW-14 from 190 gallons per minute (gpm) to 250 gpm. • On January 8, 2013, programmers completed the programming for the Main groundwater treatment plant (GTP) human machine interface (HMI) watchdog for the effluent tank, Load Line (LL) 4 sump switch, high-high and low-low programming interlock with the Main GTP, and EW-1R low pressure (leak) and advanced oxidation plant (AOP) GTP shutdown alarm. • On January 9, 2013, operators shut down EW-4 for recovery in preparation for the step test scheduled for January 11, 2013. • On January 11, 2013, operators performed the step test at EW-4 post- well rehabilitation. • On January 29, 2013, operators installed a louver motor at EW-9. • On January 29, 2013, operators checked on the blind flange sizes at EW-3, EW-6, EW-10, and EW-16 in preparation for pipe removal.
February	1529/1580	• On February 4, 2013, JEO Survey company was onsite to survey the top of casing elevations for the operating extraction wells. • On February 5, 2013, JEO was on site for a site walk of the south side of the Main GTP in preparation for the EW-1R/AOP check valve installation design. • On February 7, 2013, operators found that the uninterruptible power supply (UPS) for the main control computer was not operating. Operators subsequently removed the UPS units from EW-3, EW-6, EW-10 and EW-16 and used one for the main control computer. Operators also checked the batteries for the UPS. • On February 8, 2013, operators adjusted the top of casing elevations based on the survey report for the operating extraction wells. • On February 15, 2013, Supervisory Control and Data Acquisition (SCADA) call out at 2030 for human machine interface (HMI) fault error. Operator responded to the Main GTP, shut down the computer, and rebooted the system. Plant running normal after restart. • On February 14, 2013, operators shut the external gate valves at EW-3, EW-6, EW-10 and EW-16 in preparation for complete deactivation of the EWs and pump houses. • On February 19 and 20, 2013, operators worked on building pipe stands inside the pump houses at EW-3, EW-6, EW-10 and EW-16 in preparation for complete deactivation of the EWs and pump houses. • On February 23, 2013, SCADA call out at 0100 for HMI communication loss. Operator responded to the Main GTP and found an HMI reboot error. The operator shut off the computer and restarted the plant.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
March	1524/1580	• On March 14, 2013, operator worked on EW-6 and EW-10 pump house piping removal. • On March 15, 2013, operator oversaw the subcontractor that removed the well pumps from EW-3, EW-6, EW-10 and EW-16. Operator took the pumps and motors to the LL1 GTP for storage. • On March 20, 2013, operators worked on EW-6, EW-10, and EW-16 pump house piping removal. • On March 22, 2013, operators removed piping for EW-3, EW-6, EW-10 and EW-16 and the corresponding installed blind flanges on discharge piping. • On March 25, 2013, operators inspected EW-1R, EW-3, EW-4, EW-6, EW-7, EW-9, EW-10, FEW-14, and EW-16 pump houses. • On March 25, 2013, operators shut down power at EW-3, EW-6, and EW-10. • On March 25, 2013, operators replaced variable frequency drive (VFD) controller at EW-7. • On March 28, 2013, operators worked with Omaha Public Power District (OPPD) on removing power from EW-3, EW-6, EW-10, and EW-16. • On March 28, 2013, operators deconstructed and pressure washed the EW-3 and EW-10 pump/motors. These items were stored at the LL1 GTP.
April	1527/1580	• On April 5, 2013, SCADA call out at 0141 for effluent tank low level alarm. The operator restarted the Main GTP. A problem occurred while restarting the Main GTP. The operator hit stop on the influent pump P-110 and started the other two influent pumps P-120 and P-130. • On April 23, 2013, operators assisted the OPPD with removal of the electric meters at EW-3, EW-6, EW-10, and EW-16. • On April 30, 2013, the Main GTP was shut down due to a blown fuse inside the transformer located outside the Main GTP. A snake crawled into the transformer and was shocked. OPPD replaced the fuse and power was brought back online. The Main GTP was restarted within 2 hours.
May	1512/1580	• On May 6, 2013, operators sprayed around the Main GTP for weeds. • On May 6, 2013, operators shut down EW-4 and performed step test at EW-4 on May 7, 2013. • On May 7, 2013, operators shut down EW-7 and performed step test at EW-7 on May 8, 2013. • On May 8, 2013, operators shut down EW-9 and performed step test at EW-9 on May 9, 2013. • On May 9, 2013, operators shut down FEW-14 and performed step test at FEW-14 on May 10, 2013. The test was interrupted due to the Main GTP shutdown. The test was performed again on May 13, 2013. • On May 12, 2013, operators shut down FEW-14 to re-perform the step test at FEW-14 on May 13, 2013.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• On May 12, 2013, SCADA call out at 0920 for general filter fault. Operator responded to the plant and found a broken spring on P-230 prefilter. The operator replaced the spring and restarted the plant. • On May 15, 2013, Sawyer Construction excavated at the two 12-inch influent line locations coming from EW-1R (east side) and the AOP GTP (west side). • On May 16, 2013, operators shut down EW-1R and the AOP GTP for the subcontractor to install the check valves on the two lines feeding the Main GTP. Both influent pipes to the Main GTP were drained prior to tap-in for the installation. The manholes for the two check valves were placed by Sawyer Construction. • On May 17, 2013, Sawyer Construction installed the two check valves for the two 12-inch influent lines. • On May 18, 2013, Sawyer Construction completed backfilling and finish grading of the two areas where the manholes and the check valves were installed. Operators attempted to restart EW-1R and the AOP GTP, but minor leaks were observed on the AOP GTP side of the check valve. Repairs were made on Monday May 20, 2013. • On May 20, 2013, the check valve bolts and nuts were tightened at the EW-1R and AOP GTP manhole locations. EW-1R and AOP GTP were started and no leaks were observed initially. The AOP GTP was brought online through the Main GTP. EW-1R shut down automatically for high pressure. Pressure built up in the line due to an airlock caused from draining the line to install the valve. Operators emptied the influent storage tank to relieve the pressure (air lock). After the well was ready to restart, an issue occurred with the EW-1R pump motor. The motor windings were bad and required replacement. The pump motor was replaced with the original 50-horsepower (HP) pump and motor from FEW-11 that had been placed in storage. • On May 21, 2013, operators tested the 50-HP pump and motor (originally from FEW-11) for proper operation. This pump/motor will be installed and used at EW-1R. • On May 22, 2013, AWS was onsite to remove the existing pump/motor from EW-1R and replace the pump with the 50 HP pump/motor (originally from FEW-11). • On May 22, 2013, operators started the EW-1R pump to check flow and operation. Pressure built up in the line to 85 pounds per square inch (psi) at the pump house and to 55 psi at the air relief valve located immediately downstream of the EW-1R check valve outside the Main GTP. The well was shut down for further investigation. • On May 23, 2013, operators shut down the AOP GTP and started draining the pipeline. EW-1R was shut down in preparation to perform an inspection the following day. The AOP GTP was restarted.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• On May 24, 2014, operators shut down the AOP GTP to inspect the check valve for EW-1R. The check valve was installed properly. The check valve was removed from the manhole and EW-1R was started. Pressure built up again but the pipe from EW-1R exhibited good flow at the check valve manhole. The check valve for EW-1R was put back on without its mechanism to basically act as a pipe. The pressure and flow issues were not resolved. The operator restarted the AOP GTP. The gate valve isolating EW-1R from the AOP GTP pipeline was closed and water in the EW-1R line was drained in an attempt to remove any potential air locks in the pipeline. • On May 25, 2013, the operator opened the EW-1R gate valve and filled the EW-1R pipe. Water flowed to the EW-1R pump house. Pressure was only 31 psi. This configuration was done with the AOP GTP check valve intact with the components and with no check valve components on the EW-1R side. Water flowed normally in reverse from the Main GTP to EW-1R. EW-1R was restarted in an attempt to push the water back to the Main GTP to facilitate normal flow with no pressure buildup. The pressure built up again as before with 85 psi at the pump house and 55 psi at the Main GTP air relief valve. The operator shut down EW-1R for the long weekend to investigate further on May 28, 2013. • On May 28, 2013, the operator slowly disconnected the bolts associated with the AOP line check valve. Pressure was slowly relieved and flow that was restricted in the EW-1R line was released at the AOP GTP check valve manhole. Once all the pressure was relieved, the operator removed the check valve components associated with the AOP GTP pipeline. EW-1R was restarted and flow was observed which slowly raised to a rate of 200 gpm. The flow rate was later increased to 250 gpm to compensate for the 12 days of down time. Continued to operate EW-1R at 250 gpm rather than the typical 200 gpm flow rate for about 48 days to compensate for the down time caused by the line pressure issues. • On May 29, 2013, EW-4 was shut down due to line loss in the system. The operator responded to EW-4, troubleshot the Programmable Logic Controller (PLC) panel voltage-current and found one PLC relay not receiving necessary voltage. The circuit breaker was reset and restarted the VFD associated with the well. EW-4 was brought back online. • On May 31, 2013, operators shut down the Main GTP effluent flow to Wahoo Creek because of a suspected leak on the 20-inch effluent line at the AOP and LL4 GTP water tap. This line provides water for the eye wash and shower at the AOP GTP. Flow of treated water from the AOP and LL4 GTPs was directed to Clear Creek with wells EW-1R, EW-4, EW-7 and EW-9 running. FEW-14 was shut down due to Clear Creek capacity of only 800 gpm. AOP flow was also shut down. The leak was located 50 feet

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		west of the AOP building, at the same location where the AOP influent leak occurred on May 28. • On May 31, 2013, Sawyer Construction excavated the area around the 20-inch effluent line from the Main GTP and also excavated an open pit to repair the AOP GTP influent gate valve leak. The 20-inch effluent line and the 12-inch influent line from Section 32 (wells EW-7, EW-9 and FEW-14) to the Main GTP was to locate the source of the leak. The source of leak was found on the 1.5-inch tap-in to the 20-inch effluent line where the 1.5-inch line is connected to the 20-inch effluent line with a steel band affixed with bolts and nuts. The loose bolts and nuts were tightened. The entire pit was inspected before the Main GTP, AOP GTP, and LL4 GTP were restarted. The pit was left open, all three plants were restarted, and the components exposed in the pit were monitored for leaks and other issues. Once it was determine that no leaks were occurring, Sawyer Construction backfilled the entire pit on June 3, 2013.
June	1573/1630	• On June 10, 2013, the cable broke on the south overhead door at the Main GTP. Operator called Overhead Door Service to schedule repair. The repairman arrived, inspected the door, and determined that the lower panel needed replacement and a new panel was ordered. • On June 12, 2013, operator shut down EW-1R and AOP GTP to drain the line and reinstall the EW-1R side of the check valve. Operator removed the check valve, reinstalled the mechanism, and reinstalled the check valve. After restarting EW-1R, flows and pressures ran normal. The AOP GTP was restarted and flows and pressure ran normal. • On June 17, 2013, the pilot study ultraviolet (UV) treatment system located at EW-9 shut down. Operator responded and reset the system. • On June 20, 2013, operator shut down EW-1R and AOP GTP to drain line and reinstall the AOP side of the check valve. Operator removed the check valve, reinstalled the mechanism, and reinstalled the check valve. Operator restarted EW-1R and found issues with no flow and pressure increase as occurred in May 2013 after the check valves the EW-1R side were installed. An air lock occurred on the line between both the AOP GTP side and EW-1R check valve locations. The pipeline was drained again and the operator removed the check valve mechanism from AOP GTP side. The valve was reinstalled without its mechanism. Both EW-1R and the AOP GTP were restarted after the operation trial.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
July	1582/1630	• On July 5, 2013, parts were ordered for the UV treatment system at EW-9 in preparation to the system to EW-4. • On July 8, 2013, the operator disconnected and prepared to remove the UV system from EW-9. The isolation valves would not seal so the operator procured blind flanges. • On July 9, 2013, the operator shut down EW-9, installed blind flanges on the valves, then disconnected the UV treatment system. The operator moved the UV treatment system from EW-9 to EW-4. EW-9 was restarted and flow was directed to the Main GTP for full treatment. • On July 10, 2013, the operator shut down EW-4 and took the existing piping apart for installation of new piping and the UV system. The UV model number used was PMD150 C1/4 with a single medium-pressure lamp with rating of 2.5 kilowatts (KW). • On July 11, 2013, the new piping work for EW-4 UV treatment system was installed. Because the wiring was not complete, EW-4 was started without the UV system being online. • On July 12, 2013, the operator completed the electrical wiring on the UV treatment system at EW-4 and started the system. • On July 15, 2013, the operator ran EW-4 and sampled the UV system operating at three different dosages. These dosages were 227 millijoule per centimeter squared (mJ/cm^2), 289 mJ/cm^2, and 360 mJ/cm^2. Corresponding intensities were 470 milliwatts per square centimeter (mW/cm^2), 599 mW/cm^2, and 749 mW/cm^2. The influent (untreated) EW-4 sample had an hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) level of 3.6 µg/L. Effluent RDX concentrations at the three dosage and intensity levels were 1.5 micrograms per liter (µg/L), 1.2 µg/L and 0.85 µg/L, respectively. Effluent RDX results were below the treatment goal of 2 µg/L. Based on these performance results, the UV system was used permanently at EW-4 with weekly sampling for three weeks followed by monthly sampling. The UV system will be operated at the lowest dosage (227 mJ/cm^2) until effluent RDX levels exceed 2 µg/L. • On July 16, 2013, the operator repaired outside lighting on the east side of Main GTP. • On July 23, 2013, the operator shut down EW-9 and removed the 7.5-HP VFD, replaced it with a 20 HP VFD, and restarted the well. • On July 23, 2013, the operator checked for proper operation of the UV system at EW-4. • On July 24, 2013, the operator sampled EW-4 UV system influent and effluent as part of the start-up pilot test protocol (week 1). • On July 26, 2013, SCADA call out for general filter fault at the Main GTP. The operator responded to the Main GTP and found the filters were in high differential pressure due to the high amount of carbon fines in the settling tanks due to carbon change outs and backwash. The operator shut down the

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		Main GTP. The operator flushed and reset the prefilter and restarted the Main GTP. EW-9 had a pump failure. The operator responded to EW-9, and found that the pump/motor had shorted out, causing a VFD failure. The operator replaced the VFD. The pump and motor were scheduled for replacement on July 29. • On July 26, 2013, the operator assembled the replacement the pump for EW-9. • On July 29, 2013, Peterson Drilling installed a 20-HP pump and motor at EW-9 (model number 300S200-5; serial number A14B70005-P20148US8172. The well was restarted after installation. • On July 31, 2013, the operator sampled EW-4 UV system influent and effluent as part of the start-up protocol (week 2).
August	1620/1695	• On August 2, 2013, parts were emptied from the former EW-5 pump house in preparation for installation of FEW-11 UV treatment system within the pump house. A main disconnect safety switch was mounted on the wall. • On August 6, 2013, Overhead Door Service was on site to install the new lower section and seals on the south garage door. They also serviced the north garage door. • During the week of August 5, 2013, operators worked on the EW-5 inside building electrical modification in preparation for the planned AOP UV equipment installation. • On August 8, 2013, the operator adjusted the EW-9 flow elevation set point to 11.5 feet, which corresponds to a flow of 230 gpm. • On August 9, 2013, the UV system at EW-4 shut down. The operator reset and restarted the system. • On August 9, 2013, SCADA call out at 1945 because the HMI at the Main GTP shutdown. The operator responded to the treatment plant, uploaded Windows updates, performed a disc clean and disc defragmentation. The operator restarted and continued monitoring the system for proper operation. • On August 12, 2013, the operator worked on the installation of conduit inside the former EW-5 pump house in preparation for the AOP UV equipment installation. All necessary preliminary electrical work was completed inside the former EW-5 pump house. • On August 16, 2013, the operator checked the calibration of the EW-9 transducer and turned the flow rate down to 175 gpm (set point elevation at 21.7 feet). • On August 19, 2013, the operator relocated the flow meter at EW-9 and installed brackets for the relocation of the VFD. This was in preparation for installation of a new AOP UV system. • On August 19, 2013, the operator replaced the outside light photocell at the EW-9 pump house building.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• On August 19, 2013, the operator relocated the flow meter at EW-7 and installed brackets for the relocation of the VFD. This was in preparation for installation of a new AOP UV system. • On August 20, 2013, the operator relocated the VFD at the EW-9 location inside the pump house. • On August 21, 2013, the operators mowed around the existing utility pole outside the former EW-5 pump house in preparation an additional power pole to be installed. • On August 21, 2013, parts were ordered for FEW-14 exhaust fan location to accommodate space issues for the upcoming AOP UV system. • On August 21, 2013, the operator noted EW-9 flow rate and level were fluctuating. The operator responded to the EW-9 pump house, checked all connections on the VFD and PLC panel, and rebooted and reset the PLC. The well was restarted and the flow level set point was reset and operating at 175 gpm. • On August 22, 2013, the operator worked on the doors of the former EW-5 pump house and replaced the hinges and straightened the door jams. • On August 22, 2013, Fremont Electric was on site at the former EW-5 pump house to install the new power pole, existing disconnect, and new meter socket. They relocated and terminated the underground wiring. A daily quality control report was submitted to document the activities. • On August 22, 2013, Tuff Shed was on site to install a shed outside the Main GTP on the west side of the building. • On August 22 and 23, 2013, OPPD was on site to install the transformers at the former EW-5 pump house. • On August 26, 2013, site personnel took site-wide water levels. • On August 27, 2013, the operator relocated the VFD at the EW-7 location inside the pump house. • On August 28, 2013, the operator moved a 120-volt alternating current outlet and fan controls at FEW-14 in preparation for installation of the new UV treatment system. • On August 29, 2013, the operator shut down EW-4 and FEW-14 to control flow and pressure at the prefilters for the Main GTP. At 1230, the operator slowly brought FEW-14 back online and at 1330 brought EW-4 back online. • On August 29, 2013, OPPD was at the former EW-5 pump house to install the meter. The operator inspected the interior wiring, fan, and lighting for proper operation. • On August 30, 2013, the EW-4 UV treatment system shut down from high temperature. The system was inspected and restarted.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• On August 31, 2013, observation well levels were recorded at EW-1R. EW-1R was shut down in preparation for the constant-rate test scheduled for September 3, 2013. • On August 31, 2013, the Main GTP operated normally and was not affected by the power outage that caused a shutdown of the LL1 GTP, AOP GTP and LL4 GTP.
September	1577/1640	• On September 3, 2013, operators restarted EW-1R and performed a constant-rate test at the maximum obtainable flow (286 gpm). EW-1R operated at this flow rate until September 10, 2013. • On September 5, 2013, the fan controls were relocated at FEW-14 in preparation for UV equipment installation. • On September 5, 2013, the operator shut down the AOP GTP/FEW-11 and locked and tagged the system. Water was then pumped out of the AOP GTP/FEW-11 pipeline at the AOP GTP in preparation for the FEW-11 pipeline modification at EW-5. • On September 6, 2013, the operator removed the blind flange for the pipe running toward EW-5 and installed a valve system to pump water out of the FEW-11 pipeline. • On September 6, 2013, operators worked on FEW-14 UV system electrical modifications (installed alternating current outlet and UV disconnect, and associated wiring). • On September 9, 2013, Sawyer Construction cut the FEW-11 pipeline in preparation for tie-in to the UV system that would be installed at the former EW-5 pump house. The operators pumped water from the FEW-11 line to the existing 8-inch/12-inch line (Section 32 line) which carries EW-7, EW-9 and FEW-14 water to the Main GTP. EW-7, EW-9 and FEW-14 were shut down in order to make this operation work. FEW-11 water will eventually be treated at the Main GTP. • On September 9, 2013, Sawyer Construction removed the concrete slab inside the former EW-5 pump house. • On September 10, 2013, the operator installed a new exhaust fan in the FEW-14 pump house. • On September 10, 2013, the operator shut down EW-1R for a step test. • On September 11, 2013, the operator started the EW-1R step test. • On September 11, 2013, the operator installed the UV disconnect switch at FEW-14 pump house. • On September 12, 2013, the operator wired in a new exhaust fan and controls at FEW-14 pump house. • On September 13, 2013, the operator removed the old exhaust fan at FEW-14 pump house and replaced the steel sheeting on the outside of the building.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• On September 16, 2013, the operators built stands for the UV control cabinet for the EW-7 UV treatment system. • From September 17 to 20, 2013, Sawyer Construction performed a tie-in of the wellhead of FEW-11 pipeline to the former EW-5 pump house. • On September 18, 2013, the FEW-14 UV treatment system piping was initiated and was completed on September 19, 2013. • On September 19, 2013, the operator shut down FEW-14 to install the electrical distribution block specific to the UV treatment system. The well was restarted being installed. • On September 20, 2013, the operator initiated construction of the EW-7 UV treatment system piping. • On September 20, 2013, the operator shut down FEW-14 to install the UV treatment system piping inside the FEW-14 pump house. • On September 23, 2013, the operators worked on the building wall modifications at the FEW-14 pump house • During week of September 23, 2013, the operators continued to build stands for the UV control cabinets and UV equipment for EW-7, EW-9 and FEW-14. • On September 24, 2013, the operator installed underground conduit at the former EW-5 pump house for the FEW-11 UV treatment system. • On September 26, 2013, the operators moved the UV treatment equipment and control cabinets from the Main GTP to the pump houses for EW-7 and FEW-14 using a telehandler. • On September 27, 2013, the operators moved the UV equipment and control cabinets from the Main GTP to the former EW-5 pump house (UV equipment for FEW-11) and EW-9 pump house using a telehandler. • On September 30, 2013, Sawyer Construction initiated installation of interior carbon steel piping inside the former EW-5 pump house in preparation for connections to the FEW-11 UV treatment system. • During the week of September 30, 2013, operators installed polyvinyl chloride (PVC) piping and electrical connections between the UV treatment systems and the control cabinets at EW-7,EW-9 and FEW-14. The control cabinets were placed and secured into the stands. Sawyer Construction welded the carbon steel piping assembly connections to the FEW-11 UV treatment system located inside the former EW-5 pump house.
October	1535/1615	• On October 2, 2013, EW-4 UV treatment system shut down due to an inoperable bulb. A new UV bulb was ordered. • On October 4, 2013, Sawyer Construction applied an epoxy coating to the inside and outside of the carbon steel piping that will be installed inside the former EW-5 pump house.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• On October 5, 2013, operators performed electrical control connections between the UV treatment system, the control cabinet, and the disconnect panel at EW-7 and FEW-14. The operators also connected piping for the EW-9 UV treatment system. • On October 7, 2013, Sawyer Construction installed the epoxy-coated carbon steel piping and connected the assembly to the FEW-11 UV treatment system at the former EW-5 pump house. • On October 7 and 8, 2013, electrical tie-ins were installed between the control cabinet and the UV systems at EW-7 and FEW-14. Piping work was completed at EW-9. • On October 7, 2013, operators replaced the UV bulb (lamp) for the EW-4 UV treatment system. • On October 7, 8 and 9, 2013, the operator completed the wiring and controls for the FEW-14 UV system. • On October 8, 2013, the influent and effluent of the UV system was sampled at EW-4. • On October 9, 2013, the new UV system at FEW-14 was started and samples were collected at the influent and effluent of the system for explosives analysis (method 8330). The operator collected the 2nd, 3rd, 4th, and 5th sets of treatment of samples on October 10, 11, 12 and 13, respectively. • On October 8, 9, and 10, 2013 operators completed the wiring and controls for the EW-7 UV treatment system. • On October 10, 2013, operators performed startup of the new UV system at EW-7 and collected samples at the influent and effluent of the system for explosives analysis. The operators collected the 2nd, 3rd, and 4th sets of samples on October 11, 12, and 13, 2013 respectively. • On October 10, 2013, operators installed concrete anchors for the UV system at FEW-14. • During the week of October 7, 2013, operators continued with piping, wiring, and control connections for the EW-9 UV system. • On October 14, 2013, operators completed all connections for the EW-9 UV system and performed startup of the system. The first set of samples were collected at the influent and effluent of the UV system and laboratory analyzed for explosives analysis. The operators collected 2nd, 3rd, 4th, 5th, and 6th sets of samples during the rest of the week. • On October 14, 2013, operators worked on the stands for the FEW-11 UV system to be mounted at the former EW-5 pump house. • On October 14 and 15, 2013, operators completed the 6th and 7th sets of UV treatment samples at FEW-14. • On October 14, 15 and 16, 2013, operators completed the 5th, 6th, and 7th sets of UV samples at EW-7.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• Between October 14 and 15, 2013, no exterior piping work was performed by Sawyer Construction due to wet weather. • On October 15, 2013, the Main GTP and extraction wells were shut down for high settling tank levels. The operator pumped down the settling tank and reset the Main GTP and associated extraction wells. The operator found that the backwash valve was not fully closed and closed the valve. • On October 16, 2013, the EW-4 UV treatment system was shut down. The system shut down for high temperature. The operator checked the alarm set points, reset them to factory settings, and restarted the system. • On October 17, 2013, the operator continued building and installing the UV system control cabinet stands for the FEW-11 UV treatment system (to be placed at the former EW-5 pump house). The operators raised the control cabinet panels and mounted them onto the stands. The cabinets were mounted on the north side of the former EW-5 pump house. The operator started working on the electrical connections to the control cabinets. • On October 18, 2013, the UV treatment system at EW-7 was shut down for a LLC-1 fault. The operator attempted to reset the system but the system would ramp up, then stabilized, and shut down. The Aquionics operations manager was called and the operator was referred to their engineer. Troubleshooting was performed on October 21, 22 and 23, 2013. Problem was not resolved but the operator checked the capacitance of the capacitors using a capacitance meter on site.
November	975/1015	• During the week of October 28, 2013 until November 3, 2013, the Main GTP was down for well rehabilitation and pipeline construction for the UV effluent tie-ins. The operators shut down EW-1R, EW-7, EW-9, FEW-11, and the AOP GTP in preparation for well rehabilitation and removed the low level probes and pressure transducers from these wells. The UV systems for FEW-11, EW-7, and EW-9 were also shut down. Well rehabilitation was continued by performing pump/motor removal, pre-downhole camera videos, and surging of the wells at EW-1R, EW-7, EW-9, and FEW-11. Rehabilitation operations continued until November 7, 2013 with the Main GTP shut down. • On November 1, 2013, the operators wired the pump motor for EW-7 and reinstalled the pressure transducer and low level probes. • On November 1, 2013, the piping for EW-7 and EW-9 was disassembled and a discharge nozzle was installed on the piping within the respective well houses. This was done to redirect the well rehabilitation water to the main header pipes that eventually discharged to the Main GTP influent storage tank. • On November 4, 2013, operators installed a new capacitor for the AOP UV treatment system located in the former pump house of EW-5. Operators replaced the broken quartz spacers in the UV reactor vessel. The system

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		was restarted without any water flow through it and checked for proper operation. Operators checked all five UV systems for quality control measures. • On November 6, 2013, the operator started the EW-7 UV system to purge the existing 8-inch/12-inch line (Section 32 line) which carries water from EW-7, EW-9, and FEW-14 to the Main GTP. • On November 6, 2013, operators pumped out the AOP GTP building sump and transported the water for treatment and disposal at the Main GTP. This was done to limit the amount of solids accumulation at the Main GTP influent storage tank. • On November 6, 2013, operators prepared the packer with cabling and hosing for installation at FEW-11. • On November 7, 2013, operators installed pressure gauges on the FEW-11 UV treatment system (installed at the former EW-5 pump house). Heater brackets were also installed in the former EW-5 pump house. • On November 8, 2013, the operators wired the EW-1R pump and installed a pressure transducer and low level probe. • On November 8, 2013, pressure transducer and low level probe were installed at FEW-11. • On November 8, 2013, operators checked all the pipeline valves and well houses in preparation for Main GTP startup. • On November 8, 2013, operators started the Main GTP and extraction wells EW-1R, EW-4, EW-7, EW-9, and EW-14. High solids were observed in the pipeline causing constant backwashing of the prefilters. To reduce the system flow rates and pressures in the pipelines, EW-1R, EW-4, and EW-14 were shut down. • On November 8, 2013, operators started the FEW-11 at 275 gpm. • On November 9, 2013, SCADA call out for general filter fault. The operator logged onto the system remotely and determined that the prefilters faulted and locked out due to high differential pressure. The plant was manually operated to clean out the filter. The operator shut off the AOP GTP and cycled the wells to reduce flow rates and minimize differential pressures build up. • On November 10, 2013, all three prefilters were disassembled and the filter socks were pressure steam-cleaned to reduce differential pressure buildup in the system. The prefilters were reassembled. The Main GTP was restarted with all wells in operation and FEW-11 running at 266 gpm. • On November 10, 2013, SCADA call out for high differential pressure and backwash lock out. Operators responded to the site. The operator manually ran the plant and backwashed the filters which lowered the differential pressures. The Main GTP was restarted but the AOP GTP was shut down. • November 11, 2013, the AOP GTP was shut down due to high rehabilitation solids. The FEW-11 was restarted for post rehabilitation step

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		test at a flow rate of 287 gpm. The operator observed high prefilter solids at the Main GTP coming from FEW-11/AOP GTP. The operator shut down the AOP GTP and began running it manually. FEW-11 was cycled to continue the step test. Following the step test, the AOP system was manually operated at a flow rate of 552 gpm. • On November 11, 2013, the operator collected pressure readings at FEW-11 and at the UV treatment system located at the former EW-5 pump house. Pressure readings were reported at 152 psi at FEW-11 and 32 psi at the UV treatment system. The flow rates at both FEW-11 and the UV system were stable at 552 gpm. • November 11, 2013, a heater was installed at the former EW-5 pump house. • November 11, 2013, the FEW-11 UV treatment system was sampled. • November 11, 2013, the processor board dip switches at EW-7 were in the incorrect position. After placing the switches in the correct position, the system became fully operational and started. • November 11, 2013, SCADA call-out for plant shut down due to high differential pressure and backwash lockout. The operator shut down the Main GTP to allow the solids to settle out. • November 12, 2013, the operator disassembled the prefilters and steam-cleaned the filter socks. The filters were reassembled. The Main GTP and the AOP GTP were restarted. High differential filter pressures were observed at the Main GTP caused by high solids and high flow rates from FEW-11 and the AOP GTP. The operator shut down the AOP GTP which allowed the Main GTP system pressures to stabilize. • November 12, 2013, the pump was pulled from FEW-11 and the packer was installed. The pump at FEW-11 was reinstalled. • November 13, 2013, the operator reviewed all site pipeline valves so that valve ID tags and labels could be made and installed. • November 13, 2013, the operator wired the pump motor for FEW-11 after installing the packer. • November 13, 2013, SCADA call-out for high differential pressure at the prefilter and backwash lockout. The filters and plant were operated manually to flush the prefilters. The Main GTP was restarted without the AOP GTP. The AOP GTP was operated manually to control flow rates and system pressure. • November 14, 2013, the pressure transducer was calibrated at FEW-11 with the packer installed. The HMI was updated to correct the well elevations and depths. • November 14, 2013, FEW-11/AOP GTP was started for the packering test. FEW-11 had a flow rate of 151 gpm. Water samples were collected at FEW-11 and AOP GTP and were packed and sent to the lab via FedEx.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• November 14, 2013, the operator installed a power analyzer at the Main GTP addition. • November 15, 2013, the AOP GTP was shut off for high solids resulting from well rehabilitation. FEW-11 was restarted at a flow rate of 150 gpm. Water samples were collected for the packering test and sent to the lab via FedEx. • November 15, 2013, the 8th set of UV treatment samples were collected at EW-7 UV treatment system. Samples were packed and sent to the lab via FedEx. • November 15, 2013, SCADA call out for high differential pressure of the prefilters at the Main GTP. The operator shut down the plant and ran it manually to clear the prefilters. The filters were cycled on/off remotely. • November 16 and 17, 2013, FEW-11/AOP GTP was cycled on/off remotely to clear the plant pipelines of the well rehabilitation solids. • During the week of November 18, 2013, the AOP GTP was running at a reduced flow rate due to the installed packer. • On November 18, 2013, the operator sampled the Main GTP, LL-4 GTP, LL-1 GTP, and the extraction wells. Water samples were packed and sent to the lab via FedEx. • On November 18, 2013, the operator checked pressures and filled the packers at FEW-11 and FEW-15. • On November 19, 2013, the flow rate at FEW-11 was increased. • On November 20, 2013, a backwash was completed on GAC-310. • On November 20, 2013, the operator increased flow rate on FEW-11. • On November 20, 2013, high differential pressure occurred at the prefilters. Operators shut down EW-7, EW-9 and EW-14 to reduce flow at the Main GTP to keep it operating. The operator restarted EW-7, EW-9 and EW-14. When EW-9 restarted, the UV system faulted and would not start remotely. The operator responded to EW-9 and found water flowing out of UV lamp #2. The quartz sleeve was broken. The operator called the manufacturer to check possible causes and ordered a new quartz sleeve. • On November 20, 2013, the operator worked with personnel from the solar panel vendor on placement and lay out of the solar array. • On November 20, 2013, the operator changed the flow rate set points for the UV systems to match actual well flow rates in order to do a comparison on dosage rates. • On November 21, 2013, a conference call was held with the manufacturer (Aquionics) concerning the broken UV quartz sleeve and quartz flow meter connections. Aquinoics stated that the quartz sleeve could have been broken from well rehabilitation debris passing through the system or that the quartz sleeve was compromised during manufacturing or installation. A new quartz sleeve was ordered to be installed at the EW-9 system.

Table 6.5
Monthly Activity Summary for Main Groundwater Treatment Plant and Extraction Wells for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Extraction Well Total Flow/ Extraction Well Operational Set Point Flow Rate (gpm)	Monthly Activities at the Main GTP and Associated Extraction Wells
		• On November 21, 2013, the operators sampled the FEW-11 AOP UV system. Water samples were packed and dropped off at FedEx for delivery to the lab.
December	977/1015	• On December 2, 2013, the operators shut down EW-1R, EW-7 and EW-9 for organic chemical analysis sampling. EW-1R, EW-7 and EW-9 were sampled for the analysis after the shutdown. • On December 3, 2013, the operators performed Biological Activity Reaction Test (BART) tests at EW-1R, EW-7 and EW-9 locations. • On December 4, 2013, FEW-14 was shut down for a communication error caused by programming work. The programmer troubleshot the system and restarted the well. • On December 4, 2013, the operators performed step tests on EW-1R and EW-9. • On December 13, 2013, the Main GTP went into “High Differential” from FEW-11 startup. The operator shut down EW-1R and EW-4 and reduced flow at EW-7 to keep the Main GTP and the AOP GTP operating to perform the FEW-11 constant rate test. The operator monitored and increased the flow remotely. • On December 19, 2013, SCADA call out for the Main GTP HMI shutdown. The HMI was shut down, rebooted, and restarted. • On December 20, 2013, the operator shut down the Main GTP and the UV treatment systems at the extraction wells for subcontractor Solar Heat to perform tie-in of the solar panel system to the transformer. OPPD shut down the power at 1021 and power restored at 1126 after which the Main GTP and UV system at the extraction wells were restarted. • On December 30, 2013, the operator checked the FEW-14 UV system and found the power level setting was at 4. During further testing, the operator replaced the UV intensity monitor from EW-7 and installed it at FEW-14 and vice versa. After re-starting the systems, EW-7 operated at a power level setting of 4 and FEW-14 was operating at a setting of 1. Since the monitor was on warranty, Aquionics will be sending a replacement monitor for use at EW-7. • On December 31, 2013, SCADA callout for power bump at the site which shut down EW-4 for VFD fault. The system was reset and restarted.

Note: The operational set point flow rates include extraction wells EW-1R, EW-4, EW-7, EW-9, FEW-11, and EW-14.

Table 6.6
GAC Vessel Backwashing Summary for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	GAC Vessels Backwashed	Additional Comments
January	320, 340, and 360	None
February	320 and 360	Spent carbon from GAC vessels 370 and 380 removed for disposal.
March	320, 340, and 360	None
April	320, 340, and 360	None
May	310, 330, and 350	GAC vessels 320, 340 and 360 were taken off-line waiting for carbon change-out scheduled for July 2013.
June	310, 330, and 350	None
July	310, 330, and 350	Carbon change-out at 320, 340, and 360.
August	310, 330, and 350	None
September	310, 330, and 350	None
October	310, 330, and 350	None
November	310	None
December	330 and 350	None

Note:
GAC - Granular activated carbon

Table 6.7
Shutdowns and Startups for the Main Groundwater Treatment Plant and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Descriptions for Shutdowns and Startups at the Main GTP
January	• On January 1, 2013, extraction wells (EW)-3, EW-6 and EW-16 were shut down per the *Groundwater Model Evaluation of EW-3, EW-6, and EW-16 Technical Memorandum, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska* dated September 26, 2012. Flow was increased at focused extraction well (FEW)-14 from 190 gallons per minute (gpm) to 250 gpm.
February	• On February 7, 2013, the uninterruptible power supply (UPS) for the main control computer was not operational. The UPS units at EW-3, EW-6, EW-10 and EW-16 were removed and one was used for the main control computer. Batteries for the UPS were evaluated and checked. • On February 15, 2013, Supervisory Control and Data Acquisition (SCADA) call out at 2030 for human machine interface (HMI) fault error. The computer at the Main groundwater treatment plant (GTP) was shut down and rebooted. The Main GTP ran normal after restart. • On February 23, 2013, SCADA call out at 0100 for HMI communication loss and reboot error at the Main GTP. The computer was shut off and restarted. System running normal after restart.
March	• On March 25, 2013, the variable frequency drive (VFD) controller was replaced at EW-7.
April	• On April 5, 2013, SCADA call out at 0141 for low level alarm at the Main GTP effluent tank. The Main GTP was restarted with the influent pump P-110 offline and the other two influent pumps P-120 and P-130 online. • On April 30, 2013, the Main GTP shut down from a blown fuse inside the transformer located outside the Main GTP. A snake had gone in the transformer and was shocked. Omaha Public Power District replaced the fuse and power was reinitiated. The Main GTP was restarted.

Table 6.7
Shutdowns and Startups for the Main Groundwater Treatment Plant
and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Descriptions for Shutdowns and Startups at the Main GTP
May	• On May 12, 2013, SCADA call out at 0920 for general filter fault at the Main GTP due to a broken spring on the P-230 pre-filter. The spring was replaced. The Main GTP was restarted. • On May 16, 2013, EW-1R and the AOP GTP were shut down to install the check valves on the 2 influent pipelines to the Main GTP. Both pipelines were drained prior to tap-in for the installation. The manholes for the two check valves were installed by Sawyer Construction. • On May 20, 2013, the check valve bolts and nuts were tightened for the EW-1R and the advanced oxidation process (AOP) GTP manhole locations. EW-1R and the AOP GTP were started with no leaks initially. However, EW-1R shut down for high pressure in the line due to an airlock caused from draining the line to install the valve. The well automatically shut down due to high pressure and the operators emptied the influent storage tank to relieve the pressure (air lock). The EW-1R motor windings were bad and required replacement. The pump was replaced with an existing one in storage (original 50 horsepower [HP] pump and motor from FEW-11 from 2002). The AOP GTP was brought online through the Main GTP. • On May 22, 2013, EW-1R pump was started to check flow and operation. Pressure built up in the line to 85 pounds per square inch (psi) at the pump house and to 55 psi at the air relief valve immediately downstream of the EW-1R check valve outside the Main GTP. The well was shut down for further investigation. • On May 25, 2013, the EW-1R gate valve was opened and the pipeline was filled. Water flowed to the EW-1R pump house and pressure was only 31 psi as expected. This configuration was completed with the AOP check valve in-tact with the components and with no check valve components on the EW-1R side. EW-1R was restarted in an attempt to push the water back to the Main GTP to facilitate normal flow with no pressure buildup. The pressure built up again as before with 85 psi at the pump house and 55 psi at the Main GTP air relief valve. EW-1R was shut down. • On May 28, 2013, the bolts associated with the AOP GTP pipeline check valve were disconnected. Pressure was slowly relieved and flow that was restricted in the EW-1R line was released at the AOP GTP check valve manhole. Once all the pressure was relieved, the check valve components associated with the AOP GTP line were removed. EW-1R was restarted and flow was observed which slowly increased to 200 gpm. Flow was later increased to 250 gpm to compensate for the 12 days of down time. (Expected to operate for 48 days at this rate to compensate for the down time and lower flow rate of 200 gpm).

Table 6.7
Shutdowns and Startups for the Main Groundwater Treatment Plant
and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Descriptions for Shutdowns and Startups at the Main GTP
	• On May 29, 2013, EW-4 was shut down due to line loss in the system. A Program Logic Controller (PLC) relay was not receiving adequate voltage. The circuit breaker was reset and the VFD associated with the well was restarted. EW-4 was brought back online. • On May 31, 2013, flow from the Main GTP to Wahoo Creek was shut down due to a suspected leak on the 20-inch effluent line at the AOP GTP and LL4 GTP water tap (for eye wash shower at the AOP GTP, treated water source for the AOP GTP and LL4 GTPs) located 50 feet west of the AOP GTP building (same location where the AOP GTP influent leak occurred). Flow was directed to Clear Creek with wells EW-1R, EW-4, EW-7 and EW-9 running. FEW-14 was shut down due to Clear Creek capacity of only 800 gpm. The AOP GTP also was shut down. • On May 31, 2013, Sawyer Construction was on-site to excavate the area around the 20-inch effluent Main GTP pipeline and the open pit to repair the AOP GTP influent gate valve leak. The 20-inch effluent line along with the 12-inch influent line from Section 32 (wells EW-7, EW-9 and FEW-14) to the Main GTP was exposed to locate the source of the leak. The source was found on the 1.5-inch tap-in to the 20-inch effluent line where the 1.5-inch line is connected with a steel band with a set of bolts and nuts to the 20-inch effluent line. The loose bolts and nuts were tightened. The entire pit was inspected before the Main GTP, AOP GTP and LL4 GTP were restarted. All three plants were restarted and the pit was monitored for any issues.
June	• On June 12, 2013, EW-1R and the AOP GTP were shut down to drain the pipelines and reinstall the EW-1R side of the check valve. The check valve was removed, the mechanism was re-installed, and the check valve was reinstalled. EW-1R and the AOP GTP were then restarted. Flows and pressures were running normal. • On June 17, 2013, ultraviolet (UV) treatment system located at EW-9 shut down. The system was reset. • On June 20, 2013, EW-1R and AOP GTP were shut down and the pipeline was drained to reinstall the AOP GTP side of the check valve. Operator removed the check valve, reinstalled the mechanism, and reinstalled check valve. EW-1R was restarted and issues were observed with no flow and pressure increase. The line was drained again and the check valve mechanism was removed again from the AOP GTP side. The valve was reinstalled without the mechanism. Both EW-1R and the AOP GTP were restarted after the operation trial.

Table 6.7
Shutdowns and Startups for the Main Groundwater Treatment Plant
and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Descriptions for Shutdowns and Startups at the Main GTP
July	• On July 9, 2013, EW-9 was shut down to install blind flanges on the valves and disconnect the UV treatment system. The UV treatment system was moved from EW-9 to the pump house for EW-4. EW-9 was restarted without the UV system and water was conveyed to the Main GTP for treatment. • On July 10, 2013, EW-4 was shut down and the existing piping was taken apart to install new piping for the UV treatment system (UV model number PMD150 C1/4 with a single medium pressure lamp with rating of 2.5 kilowatts (KW)). • On July 11, 2013, piping work was completed for the new EW-4 UV treatment system. EW-4 was started without the UV treatment system because the wiring was not complete. • On July 12, 2013, the wiring on the UV system at EW-4 was completed and the system was started. • On July 23, 2013, EW-9 was shut down and the 7.5 HP VFD was removed and replaced with a 20 HP VFD. The well was restarted. • On July 26, 2013, SCADA call out for general filter fault at the Main GTP. The filters were in high differential pressure (high amount of carbon fines in settling tanks due to carbon change-outs) backwash and shut down the Main GTP. The system was flushed and the pre-filters were reset. The Main GTP was restarted. The EW-9 pump/motor shorted causing a VFD failure. The operator replaced the VFD. The pump and motor are scheduled for replacement on July 29, 2013. • On July 29, 2013, Peterson Drilling installed a 20 HP pump and motor at EW-9. The model number used was 300S200-5 with Serial number A14B70005-P20148US8172. The well was restarted after installation.
August	• On August 9, 2013, SCADA call out at 1945 for the HMI shutdown. The operator uploaded windows updates, performed a disc clean and disc defragmentation. The operator restarted and continued monitoring the system for proper operation. • On August 21, 2013, flow and water levels at EW-9 were fluctuating. All connections on the VFD and PLC panel were checked, rebooted and reset the PLC. The well was restarted. The water level set point was reset to operate at a flow rate of 175 gpm. • On August 29, 2013, EW-4 and FEW-14 were shut down to control flow and pressure at the Main GTP pre-filters. At 1230, FEW-14 was brought back online. At 1330 EW-4 was brought back online.
September	• On September 3, 2013, EW-1R was started and a constant rate test was performed at the maximum obtainable flow (286 gpm). EW-1R operated at this flow for 7 days.

Table 6.7
Shutdowns and Startups for the Main Groundwater Treatment Plant and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Descriptions for Shutdowns and Startups at the Main GTP
	• On September 19, 2013, the operator shut down FEW-14 to install the electrical distribution block for the UV treatment system. The well was restarted after installation. • On September 20, 2013, installation of EW-7 UV treatment system piping began. • On September 20, 2013, FEW-14 was shut down to install the UV treatment system piping inside the FEW-14 pump house.
October	• On October 9, 2013, operators performed the startup of the new UV treatment system at FEW-14. Samples were collected at the influent and effluent of the system for explosives analysis (method 8330). The operator collected the 2nd, 3rd, 4th, and 5th sets of samples on October 10, 11, 12 and 13, 2013 respectively. • On October 10, 2013, the EW-7 UV treatment system was started. Samples were collected at the influent and effluent of the system for explosives analysis. The operators collected the 2nd, 3rd, and 4th sets of samples on October 11, 12, and 13, 2013 respectively. • On October 14, 2013, the EW-9 UV treatment system was started. Samples were collected at the influent and effluent of the system for explosives analysis. The operators collected 2nd, 3rd, 4th, 5th, and 6th sets of samples during the rest of the week. • On October 15, 2013, the Main GTP and extraction wells were shut down for high settling tank level. The operator pumped the settling tank down and reset the plant and wells. The backwash valve was not fully closed and the operator closed the valve. • On October 16, 2013, EW-4 UV system was shut down for high temperature. The alarm set points were reset to factory setting and the system was restarted. • On October 18, 2013, the UV system at EW-7 was shut down for a LLC-1 fault. The system would not reset. The Aquionics engineer was contacted but problem was not resolved. A capacitance meter was shipped to the site to check the capacitor.

Table 6.7
Shutdowns and Startups for the Main Groundwater Treatment Plant
and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Descriptions for Shutdowns and Startups at the Main GTP
November	• During the week of October 28, 2013 until November 3, 2013, the Main GTP was down for well rehabilitation and pipeline construction for the UV treatment system effluent tie-ins. EW-1R, EW-7, EW-9, FEW-11, and the AOP GTP were shut down in preparation for well rehabilitation. The low level probes and pressure transducers were removed from these wells. The FEW-11 UV treatment systems located at the former pump house for EW-5, the EW-7 UV treatment system, and the EW-9 treatment system were also shut down. Well rehabilitation activities were initiated which included performing pump/motor removal, pre-downhole camera videos, and surging of the wells at EW-1R, EW-7, EW-9, and FEW-11. Rehabilitation operations continued until November 7, 2013 with the Main GTP shut down. • On November 8, 2013, the Main GTP and extraction wells EW-1R, EW-4, EW-6, EW-9, and EW-14 were restarted. High solids were observed in the pipeline causing constant backwashing of the pre-filters at the Main GTP. To reduce the system flow rates and pressures in the pipelines, EW-1R, EW-4, and FEW-14 were shut down. • On November 8, 2013, FEW-11 was started at a lower flow rate of 275 gpm. • On November 9, 2013, SCADA call-out for general filter fault because the pre-filters locked out due to high differential pressure. The Main GTP was operated manually to clean out the filters. The AOP GTP was shut down and the wells were cycled to reduce flow rates and minimize differential pressure build up. • On November 10, 2013, all three pre-filters were disassembled and the filter socks were pressure steam cleaned to reduce differential pressure buildup in the system. The operator reassembled the pre-filters and restarted the Main GTP with all wells in operation and FEW-11 operating at a flow rate of 266 gpm. • On November 10, 2013, SCADA call-out for high differential pressure and backwash lock out. The Main GTP was manually operated. Backwashed the filters which lowered the differential pressures. The Main GTP was restarted but the AOP GTP was shut down. • November 11, 2013, the AOP GTP was shut down due to high rehabilitation solids. FEW-11 was restarted for post-rehabilitation step-test with a system flow rate of 287 gpm. The operator observed high pre-filter solids at the Main GTP coming from FEW-11. The operator shut down the AOP GTP system and began running it manually. Operator cycled FEW-11 to continue the step-test. Following the well step-test, the AOP system was manually operated at a flow rate of 552 gpm.

Table 6.7
Shutdowns and Startups for the Main Groundwater Treatment Plant
and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Descriptions for Shutdowns and Startups at the Main GTP
	• November 11, 2013, SCADA call-out for plant shutdown due to high differential pressure and backwash lockout. The Main GTP was shut down to allow the solids to settle out. • November 12, 2013, the operator disassembled the pre-filters and steam cleaned the filter socks. The filters were then reassembled. The operator restarted the Main GTP and the AOP GTP. • November 12, 2013, high differential filter pressures were observed at the Main GTP caused by high solids and high flow rates from FEW-11 and the AOP GTP. The operator shut down the AOP which allowed the Main GTP system pressures to stabilize. • November 13, 2013, SCADA call-out for high differential pressure at the pre-filter and backwash lockout. Filters and the Main GTP were operated manually to flush the pre-filters. The Main GTP was restarted without the AOP GTP. The operator continued to run the AOP GTP manually while onsite to control flow rates and system pressure. • November 14, 2013, the operator started FEW-11 for packering test. FEW-11 had a flow rate of 151 gpm. Water samples were collected at FEW-11 for the packering evaluation. Water samples were packed and sent to the Test America laboratory for analysis via FedEx. • November 15, 2013, the AOP GTP was shut off for high rehabilitation solids. The operator restarted FEW-11 at a flow rate of 150 gpm. Water samples were collected for the packering test. Samples were packed and sent to the lab via FedEx. • November 15, 2013, SCADA call-out for high differential pressure of the pre-filters at the Main GTP. The Main GTP was shut down and ran manually to clear the pre-filters. The filters were cycled on/off remotely. • On November 20, 2013, high differential pressure occurred at the pre-filters. EW-7, EW-9 and EW-14 were shut down to reduce flow at the Main GTP to keep it operating. EW-7, EW-9 and EW-14 were restarted. When EW-9 restarted, the UV treatment system faulted and would not start remotely. Water was flowing out of UV lamp #2 because the quartz sleeve was broken. The operator called the manufacturer to check possible causes and ordered a new quartz sleeve.
December	• On December 2, 2013, EW-1R, EW-7 and EW-9 were shut down for organic chemical analysis sampling. • On December 4, 2013, FEW-14 was shut down for a communication error caused by programming work. The programmer troubleshot the system and restarted the well.

Table 6.7
Shutdowns and Startups for the Main Groundwater Treatment Plant and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Descriptions for Shutdowns and Startups at the Main GTP
	• On December 13, 2013, the Main GTP went into "High Differential" from post-packer FEW-11 startup. The operator shut down EW-1R and EW-4 and reduced the flow at EW-7 to keep the Main GTP and the AOP GTP operating to perform the FEW-11 constant rate test. The operator monitored and increased flow remotely. • On December 19, 2013, SCADA call out for the Main GTP HMI shutdown. The operator responded, shut down HMI, rebooted, and restarted the plant. • On December 20, 2013, the operator shut down the Main GTP and the UV systems at the extraction wells for subcontractor Solar Heat to perform tie-in of the solar panel system to the transformer. Omaha Public Power District shut down the power at 1021 hours and power restored at 1126 hours after which the Main GTP and UV system at the extraction wells were restarted. • On December 31, 2013, SCADA callout for power bump at the site which shut down EW-4 for VFD fault. EW-4 was reset and restarted.

Table 6.8
Main Groundwater Treatment Plant and Associated Extraction Wells
2013 Monthly Influent and Effluent Analytical Results
2013 Annual Monitoring Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Sampling Location	Sampling Date	TCE (µg/L)
Volatiles		
EW-1R	01/31/2013	**3.3**
EW-1R	05/01/2013	**3.5**
EW-1R	08/05/2013	**3.5**
EW-1R	11/18/2013	**3.4**
EW-4	05/01/2013	1.0 U
EW-4	08/05/2013	1.0 U
EW-4	08/05/2013	1.0 U
EW-4	11/18/2013	1.0 U
EW-7	05/01/2013	1.0 U
EW-7	11/18/2013	1.0 U
EW-9	05/01/2013	1.0 U
EW-9	11/18/2013	1.0 U
FEW-14	05/01/2013	**0.86 J**
FEW-14	11/18/2013	**0.43 J**
GTP-310	07/01/2013	1.0 U
GTP-310	08/05/2013	1.0 U
GTP-310	09/03/2013	**0.27 J**
GTP-310	10/02/2013	1.0 U
GTP-310	11/18/2013	1.0 U
GTP-310	12/03/2013	**0.28 J**
GTP-320	01/03/2013	1.0 U
GTP-320	01/31/2013	**0.26 J**
GTP-320	02/28/2013	**0.27 J**
GTP-320	04/01/2013	**0.31 J**
GTP-320	05/01/2013	**0.44 J**
GTP-330	07/01/2013	1.0 U
GTP-330	08/05/2013	1.0 U
GTP-330	09/03/2013	1.0 U
GTP-330	10/02/2013	1.0 U
GTP-330	11/18/2013	**0.19 J**
GTP-330	12/03/2013	**0.19 J**
GTP-340	01/03/2013	1.0 U
GTP-340	01/31/2013	**0.20 J**
GTP-340	02/28/2013	**0.17 J**
GTP-340	04/01/2013	**0.22 J**
GTP-340	05/01/2013	**0.30 J**

Table 6.8
Main Groundwater Treatment Plant and Associated Extraction Wells
2013 Monthly Influent and Effluent Analytical Results
2013 Annual Monitoring Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Sampling Location	Sampling Date	TCE (µg/L)
Volatiles		
GTP-350	07/01/2013	1.0 U
GTP-350	08/05/2013	1.0 U
GTP-350	09/03/2013	1.0 U
GTP-350	10/02/2013	1.0 U
GTP-350	11/18/2013	1.0 U
GTP-350	12/03/2013	1.0 U
GTP-360	01/03/2013	1.0 U
GTP-360	01/31/2013	**0.21 J**
GTP-360	02/28/2013	**0.21 J**
GTP-360	04/01/2013	**0.23 J**
GTP-360	05/01/2013	**0.34 J**
GTP-EFF	01/03/2013	1.0 U
GTP-EFF	01/31/2013	**0.20 J**
GTP-EFF	02/28/2013	**0.21 J**
GTP-EFF	04/01/2013	**0.24 J**
GTP-EFF	05/01/2013	**0.38 J**
GTP-EFF	06/03/2013	1.0 U
GTP-EFF	07/01/2013	1.0 U
GTP-EFF	08/05/2013	1.0 U
GTP-EFF	09/03/2013	**0.14 J**
GTP-EFF	10/02/2013	1.0 U
GTP-EFF	11/18/2013	1.0 U
GTP-EFF	12/03/2013	**0.21 J**
GTP-INF	01/03/2013	**0.63 J**
GTP-INF	01/31/2013	**0.76 J**
GTP-INF	02/28/2013	**0.71 J**
GTP-INF	04/01/2013	**0.82 J**
GTP-INF	05/01/2013	**0.78 J**
GTP-INF	06/03/2013	**0.71 J**
GTP-INF	07/01/2013	**0.93 J**
GTP-INF	08/05/2013	**0.86 J**
GTP-INF	09/03/2013	**0.47 J**
GTP-INF	10/02/2013	**3.5**
GTP-INF	11/18/2013	**1.9**
GTP-INF	12/03/2013	**0.63 J**

Table 6.8
Main Groundwater Treatment Plant and Associated Extraction Wells
2013 Monthly Influent and Effluent Analytical Results
2013 Annual Monitoring Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Sampling Location	Sampling Date	RDX (µg/L)
Explosives		
EW-1R	05/01/2013	**0.082 J**
EW-1R	11/18/2013	**0.085 J**
EW-4	01/31/2013	**3.7**
EW-4	05/01/2013	**3.7**
EW-4	08/05/2013	**3.6**
EW-4	08/05/2013	**1.5**
EW-4 (UV INF)	09/03/2013	**3.6**
EW-4 (UF EFF)	09/03/2013	**1.4**
EW-4 (UV INF)	12/03/2013	**3.6**
EW-4 (UF EFF)	12/03/2013	**1.4**
EW-7	01/31/2013	**7.4**
EW-7	05/01/2013	**7.8**
EW-7	08/05/2013	**7.8**
EW-7 (UV INF)	12/03/2013	**7.4**
EW-7 (UV EFF)	12/03/2013	**0.30**
EW-9	01/31/2013	**20.0**
EW-9	01/31/2013	**6.7**
EW-9	05/01/2013	**20.0**
EW-9	05/01/2013	**6.7**
EW-9	08/05/2013	**18.0**
EW-9 (UV INF)	12/03/2013	**19.0**
EW-9 (UV EFF)	12/03/2013	**0.38**
FEW-14	01/31/2013	**5.0**
FEW-14	05/01/2013	**4.8**
FEW-14	08/05/2013	**4.7**
FEW-14 (UV INF)	12/03/2013	**5.2**
FEW-14 (UV EFF)	12/03/2013	**0.24**

Table 6.8
Main Groundwater Treatment Plant and Associated Extraction Wells
2013 Monthly Influent and Effluent Analytical Results
2013 Annual Monitoring Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Sampling Location	Sampling Date	RDX (µg/L)
Explosives		
GTP-310	07/01/2013	0.20 U
GTP-310	08/05/2013	**0.075 J**
GTP-310	09/03/2013	**0.10 J**
GTP-310	10/02/2013	**0.12 J**
GTP-310	11/18/2013	**0.15 J**
GTP-310	12/03/2013	**0.18 J**
GTP-320	01/03/2013	**0.67 J**
GTP-320	01/31/2013	**0.83**
GTP-320	02/28/2013	**1.1**
GTP-320	04/01/2013	**1.2**
GTP-320	05/01/2013	**1.4**
GTP-330	07/01/2013	0.20 U
GTP-330	08/05/2013	**0.044 J**
GTP-330	09/03/2013	**0.18 J**
GTP-330	10/02/2013	**0.22**
GTP-330	11/18/2013	**0.26**
GTP-330	12/03/2013	**0.22**
GTP-340	01/03/2013	**0.50 J**
GTP-340	01/31/2013	**0.58**
GTP-340	02/28/2013	**0.58**
GTP-340	04/01/2013	**0.76**
GTP-340	05/01/2013	**0.96**
GTP-350	07/01/2013	0.20 U
GTP-350	08/05/2013	**0.055 J**
GTP-350	09/03/2013	**0.081 J**
GTP-350	10/02/2013	**0.42**
GTP-350	11/18/2013	**0.16 J**
GTP-350	12/03/2013	**0.16 J**
GTP-360	01/03/2013	**0.46 J**
GTP-360	01/31/2013	**0.61**
GTP-360	02/28/2013	**0.85**
GTP-360	04/01/2013	**0.94**
GTP-360	05/01/2013	**1.1**

Table 6.8
Main Groundwater Treatment Plant and Associated Extraction Wells
2013 Monthly Influent and Effluent Analytical Results
2013 Annual Monitoring Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Sampling Location	Sampling Date	RDX (µg/L)
Explosives		
GTP-EFF	01/03/2013	**0.54 J**
GTP-EFF	01/31/2013	**0.70**
GTP-EFF	02/28/2013	**0.87**
GTP-EFF	04/01/2013	**0.97**
GTP-EFF	05/01/2013	**1.1**
GTP-EFF	06/03/2013	0.20 U
GTP-EFF	08/05/2013	**0.059 J**
GTP-EFF	09/03/2013	**0.12 J**
GTP-EFF	10/02/2013	**0.22**
GTP-EFF	11/18/2013	**0.20**
GTP-INF	01/31/2013	**4.4**
GTP-INF	02/28/2013	**4.4**
GTP-INF	04/01/2013	**4.3**
GTP-INF	05/01/2013	**4.2**
GTP-INF	06/03/2013	**4.1**
GTP-INF	07/01/2013	**4.2**
GTP-INF	08/05/2013	**6.0**
GTP-INF	09/03/2013	**6.7**
GTP-INF	10/02/2013	**5.5**
GTP-INF	11/18/2013	**0.21**
GTP-INF	12/03/2013	**0.34**

Table 6.8
Main Groundwater Treatment Plant and Associated Extraction Wells
2013 Monthly Influent and Effluent Analytical Results
2013 Annual Monitoring Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Sampling Location	Sampling Date	Nitrate (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (Residue, Non-Filterable) (mg/L)	Iron (μg/L)	Manganese (μg/L)	pH
Wet Chemistry							
EW-4	08/08/2013	**5.0**	-	-	-	-	-
GTP-EFF	01/03/2013	**3.9**	-	-	-	-	7.1
GTP-EFF	01/31/2013	**3.8**	-	-	-	-	7.1
GTP-EFF	02/28/2013	**4.2**	-	-	-	-	7.1
GTP-EFF	04/01/2013	**3.8**	-	-	-	-	7.1
GTP-EFF	05/01/2013	**3.9**	-	-	-	-	7
GTP-EFF	06/03/2013	**3.5**	-	-	-	-	7
GTP-EFF	07/01/2013	**3.8**	-	-	-	-	7.1
GTP-EFF	08/08/2013	**3.8**	-	-	-	-	7.1
GTP-EFF	09/03/2013	**4.3**	-	-	-	-	7
GTP-EFF	10/02/2013	**3.8**	-	-	-	-	7.13
GTP-EFF	11/18/2013	**4.8**	-	-	-	-	7.1
GTP-EFF	12/03/2013	**4.9**	-	-	-	-	7
GTP-INF	06/03/2013	-	**0.81 J**	0.50 U	**120 J**	**33.0**	-

Notes:
Bold values denote detections.
Gray shading indicates an exceedance of the Final Target Groundwater Cleanup Goals of 5 μg/L (TCE) and 2 μg/L (RDX)
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
mg/L - miligrams per liter
μg/L - micrograms per liter
U - nondetect
J - estimated values
EFF - effluent
EW - extraction well
FEW - focused extration well
GTP - groundwater treatment plant
INF - influent

Table 6.9
2013 Monthly Discharge Volumes for the Groundwater Treatment Plants
2013 Annual Report
Former Nebraska Ordnance Plant

2013	Monthly Effluent Discharge (in gallons)		
	Main GTP	LL1 GTP	LL4 GTP
January	67,834,000	13,375,000	22,631,400
February	61,000,000	12,510,800	18,692,600
March	67,430,000	12,988,100	22,414,900
April	63,800,000	12,479,900	21,071,400
May	55,660,000	12,423,600	21,462,800
June	65,200,000	19,594,500	22,259,000
July	64,120,000	25,829,800	17,544,000
August	56,140,000	26,723,200	17,400,600
September	51,249,999	25,791,900	3,868,200
October	59,400,000	26,237,500	8,938,900
November	35,610,000	25,928,000	All flow to Main GTP
December	52,650,000	26,842,500	10,469,900
Total	700,093,999	240,724,800	186,753,700

Notes:
GTP - Groundwater Treatment Plant
LL - Load Line

Table 6.10
Load Line 1 Groundwater Treatment Plant
2013 Monthly Influent, Effluent and Air Emissions Analytical Data
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Sampling Date	Predicted TCE (ppbV)*	TCE Air Concentration (ppbV)	TCE Water Concentration (µg/L)
Volatiles				
LL1_AIR_EF	01/31/2013	301	2.0 U	-
LL1-EFF	01/03/2013		-	1.0 U
LL1-EFF	01/31/2013		-	**0.21 J**
LL1-EFF	02/28/2013		-	**0.15 J**
LL1-INF	01/03/2013		-	**130**
LL1-INF	01/31/2013		-	**130**
LL1-INF	02/28/2013		-	**130**
LL1_AIR_EF	05/01/2013	324	2.0 U	-
LL1-EFF	04/01/2013		-	1.0 U
LL1-EFF	05/01/2013		-	1.0 U
LL1-EFF	05/22/2013		-	1.0 U
LL1-EFF	06/11/2013		-	**0.33 J**
LL1-INF	04/01/2013		-	**150**
LL1-INF	05/01/2013		-	**140**
LL1-INF	06/11/2013		-	**110**
LL1_AIR_EF	07/01/2013	420	**2.9**	-
LL1-EFF	07/01/2013		-	**0.21 J**
LL1-EFF	08/05/2013		-	**0.36 J**
LL1-EFF	08/08/2013		-	-
LL1-EFF	09/03/2013		-	**0.36 J**
LL1-INF	07/01/2013		-	**100**
LL1-INF	08/05/2013		-	**100**
LL1-INF	09/03/2013		-	**100**
LL1_AIR_EF	11/18/2013	505	**110**	-
LL1-EFF	10/02/2013		-	**0.34 J**
LL1-EFF	11/18/2013		-	**0.36 J**
LL1-EFF	12/03/2013		-	**0.22 J**
LL1-INF	10/02/2013		-	**120**
LL1-INF	11/18/2013		-	**120**
LL1-INF	12/03/2013		-	**110**

Table 6.10
Load Line 1 Groundwater Treatment Plant
2013 Monthly Influent, Effluent and Air Emissions Analytical Data
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Sampling Date	RDX (µg/L)
Explosives		
LL1-EFF	01/31/2013	**0.071 J**
LL1-INF	01/31/2013	0.20 U
LL1-EFF	05/01/2013	**0.077 J**
LL1-EFF	05/22/2013	0.20 U
LL1-INF	05/01/2013	**0.079 J**
LL1-EFF	08/05/2013	**0.069 J**
LL1-INF	08/05/2013	**0.075 J**
LL1-EFF	11/18/2013	**0.049 J**
LL1-INF	11/18/2013	**0.087 J**

Table 6.10
Load Line 1 Groundwater Treatment Plant
2013 Monthly Influent, Effluent and Air Emissions Analytical Data
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Sampling Date	Nitrate (mg/L)	Total Organic Carbon (mg/L)	Total Suspended Solids (Residue, Non-Filterable) (mg/L)	Iron (µg/L)	Manganese (µg/L)	pH
Wet Chemistry							
LL1-EFF	01/03/2013	**11.0**	-	-	-	-	8.3
LL1-EFF	01/31/2013	**10.0**	-	-	-	-	8.2
LL1-EFF	02/28/2013	**12.0 J**	-	-	-	-	8.2
LL1-EFF	04/01/2013	**11.0**	-	-	-	-	8.2
LL1-EFF	05/01/2013	**11.0**	-	-	-	-	8.2
LL1-EFF	07/01/2013	**11.0**	-	-	-	-	8.2
LL1-EFF	08/08/2013	**11.0**	-	-	-	-	8.2
LL1-EFF	09/03/2013	**11.0**	-	-	-	-	8.12
LL1-INF	07/01/2013	-	**1.9**	0.50 U	150 U	8.5 U	-
LL1-EFF	10/02/2013	**11.0**	-	-	-	-	8.12
LL1-EFF	11/18/2013	**10.0**	-	-	-	-	7.3
LL1-EFF	12/03/2013	**10.0**	-	-	-	-	8.2

Notes:

Bold values denote detections.

Shaded values exceed the cleanup goal of 5 ug/L for TCE or 2 ug/L for RDX.

*Predicted air influent concentration of TCE is calculated from the Ideal Gas Law equation and assumes 100% of mass transfer from the liquid phase to the vapor phase for TCE. Values used in the calculation are presented in Appendix L of the *LL1 Groundwater Treatment PLant Operation and Maintenance Manual*.

EFF - effluent
INF - influent
LL - load line
TCE - trichloroethene
U - nondetect

µg/L - micrograms per liter
mg/L - milligrams per liter
ppbV - parts per billion by volume
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
J - estimated value

Table 6.11
Operational Activities and Shutdowns for Load Line 1 Groundwater Treatment Plant and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description at LL1 GTP
January	• On January 9, 2013, extraction well (EW)-12 was shut down to recover and prepare for the step test scheduled for January 11, 2012. • On January 11, 2013, operators performed the step test at EW-12 post- well rehabilitation.
February	• During the week of February 25, 2012, operators shut down the load line (LL) 1 groundwater treatment plant (GTP) plant for one hour for replacement of the coupler for the discharge pump.
March	• On March 7, 2013, operators disassembled and cleaned the blower at the LL1 GTP for the installation of the new impeller and bearing. • On March 8, 2013, the blower was re-assembled with new impeller and parts and operators re-started the LL1 GTP. • On March 12 and 13, 2013, operators dug out the rock and soil east end of the LL1 GTP building to expose the previously installed conduits for former EW-13. Two 1-inch conduits and one 2-inch conduit ran from the building outside all the way to the fence. Only two conduits (one 2-inch conduit and one 1-inch conduit) were in place for EW-13. • On March 21, 2013, operator worked on the LL1 GTP motor control center to install the circuit breaker and variable frequency drive (VFD) for EW-17 (to be installed in April 2013). The circuit breaker was shut down for EW-12, but did not restart. A replacement circuit breaker was ordered for next day delivery. The LL1 GTP was shut down. • On March 22, 2013, replaced the circuit breaker for EW-12 and installed the circuit breaker and VFD for EW-17. Restarted the LL1 GTP. • On March 25, 2013, Andersen Electric was on-site to perform conduit work at the LL1 GTP for EW-17 and a safety meeting was conducted. • On March 27, 2013, EW-6 pump and motor was cleaned and prepared for installation at EW-17.
April	• On April 8, 2013, operators dug holes for the posts at EW-12 in preparation for removing the existing fence along the EW-12 road and placing posts just around the well. • On April 9, 2013, held a pre-construction meeting to install EW-17. • On April 10, 2013, Supervisory Control and Data Acquisition (SCADA) call out at 1655 for the LL1 GTP shutdown. EW-12 was shut down for low level. Operators restarted EW-12 at a lower water level translating to a flow of 250 gallons per minute (gpm). • On April 11, 2013, operators checked the LL1 GTP programing, adjusted low level settings time delay, and effluent pump alarms. • On April 11, 2013, Peterson Drilling installed EW-17 and placed grout in the well.

Table 6.11
Operational Activities and Shutdowns for Load Line 1 Groundwater Treatment Plant and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description at LL1 GTP
	• On April 12, 2013, operators set concrete posts at EW-12 for fence installation around the well. • On April 15, 2013, performed development of EW-17. Operators assisted the drilling crew with treatment of development water from EW-17 through the LL1 GTP. • On April 16, 2013, set the pit-less adapter for EW-17. • On April 18, 2013, Andersen Electric dug holes for the pull boxes in preparation for the EW-17 conduit installation. • On April 24, 2013, Peterson Drilling installed the pump and motor at EW-17. The pump and motor from EW-6 (off-line since January 2013) was used. • On April 26, 2013, SCADA call out for low level at EW-12. EW-12 and the LL1 GTP was reset remotely. • On April 28, 2013, SCADA call out for EW-12 shutdown. System was left down to perform step test the following day. • On April 29, 2013, operator performed step test at EW-12. • During the week of April 29, 2013, subcontractor Sawyer Construction initiated and completed trenching for EW-17 pipe installation.
May	• Between May 1 and 3, 2013, Sawyer Construction continued with the EW-17 pipe installation work and performed hydrostatic testing of the pipe. • On May 3, 2013, measured EW-17 pipe elevations after the pipe was placed in the trench. • On May 1, 2013, completed necessary programming to aid in communication between the EW-17 instrumentation and the LL1 GTP building PLC. • On May 3, 2013, mowed around the LL1 GTP building. • Between May 6 and 8, 2013, Sawyer Construction performed backfill of EW-17 pipeline. • Between May 6 and 8, 2013, Andersen Electric installed 2-inch and 1-inch conduit between the well and the LL1 GTP building fence and also installed the local disconnect panel. Two 2-inch and four 1-inch conduits were placed for EW-17 and a future well. • On May 10, 2013, installed ninety degree elbows on EW-12 and EW-17 sampling ports. • On May 14, 2013, subcontractors completed installation of the EW-17 pipe trench backfill and pulling/termination of the pump/controls wiring. • On May 14, 2013, verified EW-17 low level probe and pressure transducer operating normal. • On May 15, 2013, performed mini operation of the EW-17 pump through the LL1 GTP.

Table 6.11
Operational Activities and Shutdowns for Load Line 1 Groundwater Treatment Plant and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description at LL1 GTP
	• On May 15, 2013, subcontractor initiated placement of the access road to EW-17 from County Road F. • On May 16, 2013, gravel was placed for the road to EW-17. In addition, bollards and fencing around the well were placed. • On May 17, 2013, performed the step test at EW-17 with EW-12 in operation. The four steps included 100 gpm, 200 gpm, 275 gpm, and 300 gpm, respectively. After the step tests, both wells were shut down for the rest of the day and the weekend in preparation for the constant rate test for EW-17 during week of May 20, 2013. EW-12 remained shut down for the entire week of May 20, 2013. • On May 20, 2013, started EW-17 constant rate test at 350 gpm. • On May 22, 2013, collected samples for TCE and RDX at EW-17 and LL1 GTP effluent. Sample results showed 43 micrograms per liter (μg/L) for TCE at EW-17 and non-detect for TCE at the LL1 GTP effluent. RDX results to be provided once they become available. • Week of May 27, 2013, continued with EW-17 constant rate test. EW-12 shut down during this week.
June	• On June 4, 2013, while the constant rate test for EW-17 was running, SCADA alarm for the shutdown of LL1 GTP and EW-17 because the power supply had failed. The operator shut off the system and replaced the power supply. When the Programmable Logic Controller (PLC) was brought back up, the operator found no communication between the PLC and the human machine interface (HMI). Procured a crossover cable which restored communication and downloaded program. PLC system came back online. LL-1 GTP and EW-17 remained offline so that EW-17 could recover. • On June 5, 2013, operator attempted to pump down and inspect sump at LL1 GTP, but found that the PCL/HMI would not control the pumps and no relay outputs were working for the PLC program. This was caused by an incomplete program download from the previous day. • On June 6, 2013, operator repaired the LL1 GTP PLC and HMI issue by completing a serial download. The operator tested the system and prepared for PLC system restart. • On June 7, 2013, operator calibrated EW-17 pressure transducer after the PLC/HMI downloads. The operator brought EW-12 online along with LL1 GTP. EW-12 was operated at 325 gpm. EW-17 was off-line and recovering after the constant rate test. • On June 8, 2013, SCADA call out for EW-12/LL1 shut down for low water level at EW-12. The operator turned down the flow from 325 to 290 gpm.

Table 6.11
Operational Activities and Shutdowns for Load Line 1 Groundwater Treatment Plant and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description at LL1 GTP
	• On June 9, 2013, SCADA call out for EW-12/LL1 shut down for low water level at EW-12. The operator turned down the flow from 290 to 275 gpm. EW-17 flow was correspondingly increased to 325 gpm. • On June 10, 2013, shut down EW-17 to chlorinate with 2.5 gallons of 12.5 percent sodium hypochlorite. • On June 11, 2013, started EW-17 and operated LL1 GTP at 600 gpm (EW-12 at 275 gpm and EW-17 at 325 gpm). This was the official first day of operation and maintenance of EW-17. • On June 17, 2013, operator shutdown LL1 GTP and replaced pressure transducer in EW-17. The operator calibrated EW-17 and EW-12 pressure transducers and re-started the LL1 GTP. • On June 18, 2013, operator raised pressure transducer depth at EW-17 and recalibrated the unit.
July	• On July 21, 2013, SCADA call out for the LL1 GTP shutdown. The LL1 GTP transfer pump lost prime and had to be primed. • On July 31, 2013, received regulatory approval for taking the LL1 GTP vapor phase GAC vessel offline.
August	• On August 16, 2013, the LL1 GTP shut down for maintenance of the transfer pump. • On August 31, 2013, SCADA call out from site wide power outage. Restarted the LL1 GTP.
September	• On September 4, 2013, while the operator was connecting a power monitor to LL1 GTP, an air conditioner unit in the control room was not properly cooling. The operator removed the unit for cleaning and found a Freon leak. The unit was taken to Todd Valley air conditioning for repairs. • On September 6, 2013, the operator re-installed the air conditioner after repair. • On September 8, 2013, SCADA call out at 1030 for the LL1 GTP shutdown. Reset the LL1 GTP remotely but was unable to restart EW-17. A lockout bit that was installed in controls program was removed. The LL1 GTP was immediately re-started. • On September 12, 2013, processor was replaced for the LL1 GTP PLC. • On September 16, 2013, a decibel check was performed at the LL1 GTP by the site Safety Manager.
October	• On October 19, 2013, SCADA call-out for a power bump for the LL1 GTP shutdown. The operator responded, reset, and restarted the LL1 GTP. • On October 20, 2013, SCADA call-out for a power bump causing the LL1 GTP to shut down. Restarted and checked out the LL1 GTP systems to ensure proper operation.

Table 6.11
Operational Activities and Shutdowns for Load Line 1 Groundwater Treatment Plant and Associated Extraction Wells in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description at LL1 GTP
	• On October 21, 2013, a power bump was experienced site-wide. The LL1 GTP was shut down and the operator reset and restarted the plant. • On October 27, 2013, SCADA call out for site-wide power bump. The LL1 GTP was shut down. The operator reset the LL1 GTP remotely except EW-17. The operator responded to site and started EW-17.
November	• No significant activities or shutdowns.
December	• On December 31, 2013, SCADA callout for power bump at the site which shut down LL1 GTP. Operator responded, reset and re-started the plant.

Table 6.12
Advanced Oxidation Process Groundwater Treatment Plant and FEW-11
2013 Monthly Influent and Effluent Analytical Results
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Sample Date	RDX (μg/L)	TCE (μg/L)
AOP-EFF	01/03/2013	**3.3 J**	**0.28 J**
	01/31/2013	**3.2**	**0.35 J**
	02/28/2013	**3.2**	**0.38 J**
AOP-INF	01/03/2013	**4.2 J**	**1700**
	02/28/2013	**4.0**	**1600**
FEW-11	01/31/2013	**3.9**	**1600**
AOP-EFF	04/01/2013	**3.1**	**0.35 J**
	05/01/2013	**3.1**	**0.32 J**
	06/03/2013	**3.0**	**0.30 J**
AOP-INF	04/01/2013	**3.7**	**1700**
	06/03/2013	**3.8**	**1600**
FEW-11	05/01/2013	**3.8**	**1500**
AOP-EFF	07/01/2013	**3.1**	1.0 U
	08/05/2013	**3.2**	**0.21 J**
	09/03/2013	**3.1**	**0.20 J**
AOP-INF	07/01/2013	Not Analyzed	**1600**
	09/03/2013	**4.1**	**1800**
AOP-EFF	10/02/2013	**3.3**	1.0 U
	12/03/2013	**0.12 J**	**0.40 J**
AOP-INF	10/02/2013	**3.9**	**1900**

Notes:

Bold values denote detections.

Gray shading indicates exceedance of the Final Target Groundwater Cleanup Goals of 5 μg/L (TCE) and 2 μg/L (RDX).

AOP - Advanced Oxidation Process

EFF - effluent

FEW - focused extration well

INF - influent

RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine

μg/L - micrograms per liter

TCE - trichloroethene

U - nondetect

J - estimated value

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
January	• On January 8, 2013, operators/programmer worked on completing the programming for the extraction well (EW)-1R low pressure (leak) at the advanced oxidation process (AOP) groundwater treatment plant (GTP) shutdown alarm. • On January 15, 2013, oil was changed in the AOP GTP air compressor. The air filters were changed on the pressure swing adsorption (PSA) unit and the cooling water system. • On January 22, 2013, worked on the PSA exhaust system modifications. • On January 23 and 24, 2013, worked on the electrical conduit at AOP GTP for fan control by the front door in response to the hazardous operations study conducted in October 2012. • On January 29, 2013, operators pulled wire and installed a switch on the remote fan switch at the AOP GTP and tested the switch for proper operation.
February	• There were no significant events or shutdowns this month at FEW-11 and the AOP GTP.
March	• On March 25, 2013, operators inspected the focused extraction well (FEW)-11 pump house. • On March 26, 2013, operators troubleshot and removed the motor actuator for the louver at the AOP GTP for replacement and a new actuator was ordered.
April	• On April 1, 2013, operators installed the new louver actuator on exhaust fan at the AOP GTP and verified for proper operation. • On April 1, 2013, operators cleaned out the reactor vessel pressure ports at the AOP GTP. • On April 10, 2013, operators installed a float system for the ozone relief valve and ordered the float switch. • On April 10, 2013, Supervisory Control and Data Acquisition (SCADA) call out at 1635 for the AOP GTP shut down because the PSA unit was frozen. The heater was placed on the valves. • On April 11, 2013, operators depressurized the PSA for valve repair. A bad contact for solenoid valve Tank B was found. The Program Logic Controller (PLC) was replaced and tested for proper operation. The PSA was purged and restarted. The AOP GTP was then restarted. • On April 14, 2013, SCADA call out at 2345 for communication loss to the AOP GTP. Restarted the AOP GTP remotely. • On April 22, 2013, operators worked on control system for AOP ozone relief valve system.

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	• On April 27, 2013, SCADA call out for AOP ozone generator shut down. Attempted remote start, but the ozone generator would not start because of an ozone generator fault. The system was reset and the generator was replaced with a new phase monitor. System was restarted. • On April 27, 2013, SCADA call out for AOP oxygen flow low-low alarm. Operator checked oxygen pressures, flow meter, and flow controller outputs. Verified flow control valve operation, reset pressure, and reset the manual flow regulator. System was restarted and monitored for issues. • On April 29, 2013, mass flow control valve for the oxygen generator not working at the AOP GTP. Operator by-passed the valve to operate the unit. Flow was monitored through the mass flow meter, which communicates to the PLC. A replacement flow control valve was ordered.
May	• From May 6 to May 10, 2013, operators installed the float valve for the excess ozone system located after the ozone destruct unit. • On May 10, 2013, operators mowed around the AOP GTP. • On May 10, 2013, ordered new mass control valve from Brooks Instruments (Model SLA5853S2DAB3C2A1 Mass Flow Controller) for the PSA system that delivers oxygen to the ozone generator. This control valve replaced the valve that stopped operating on April 30, 2013. • On May 13, 2013, SCADA call out at 1603 for low oxygen flow at the AOP GTP. The plant was shut down to perform step test on FEW-11 the following day. • On May 14, 2013, operators restarted the AOP GTP and performed step-test at FEW-11. • On May 16, 2013, the AOP GTP was shut down so as to initiate installation of the check valves outside the Main GTP. • On May 17, 2013, operators replaced air relief valve on AOP 12-inch line toward the Main GTP. • On May 18, 2013, the operator restarted the AOP GTP after the completion of the check valves and associated manholes outside the Main GTP. The operator observed a leak on the AOP side of check valve. The plant was shut down again for investigation of cause for May 20, 2013. • On May 20, 2013, minor leaks on the AOP GTP side of the check valve flowing to Main GTP (outside the Main GTP) were fixed. The AOP GTP was restarted immediately. • During week of May 20, 2013, the AOP GTP had multiple shutdowns due to flow issues from EW-1R to the Main GTP. See Section 3.1.1 of the monthly O&M report on details for the EW-1R startup issues that affected the AOP GTP flows to the Main GTP.

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	• On May 28, 2013, operator shut down the AOP GTP to begin removing the AOP check valve side to prepare for installation of the check valve outside the Main GTP on the AOP effluent line to the influent storage tank and EW-1R line to Main GTP. The operator also closed the AOP GTP effluent line gate valve to the Main GTP influent tank to drain the line between the AOP GTP check valve and the EW-1R gate valve. The AOP check valve side components located outside the Main GTP (southwest of the storage tanks outside of the Main GTP) were removed. The AOP GTP restarted on its own without operator intervention. Since the gate valve on the AOP GTP effluent line upstream of its check valve location was closed, this caused the gasket inside the AOP GTP building influent line to blow and required replacement. Operator shut off the VFD at FEW-11 and left the AOP GTP offline so that EW-1R could be brought back online with the Main GTP. The cause of the AOP GTP restarting without operator intervention was investigated by reviewing the ladder logic of the AOP GTP PLC program. • On May 28, 2013, it was observed that the flow differential between the AOP GTP and FEW-11 line increased to approximately 45 to 50 gpm (differential) compared to normal difference of 25 to 30 gpm. An alarm caused the plant to shut down. The operator re-started the plant and received the same alarm. It was suspected there may be a leak in the FEW-11 line. The operator reduced the flow to 300 gpm and re-started the plant and went to look for a leak along the 6 miles of pipe. A leak was found bubbling outside the AOP line on the influent branch off the main line from FEW-11. The spill was around the 8-inch influent line gate valve. The operator immediately shut down the plant. ECC then followed spill reporting procedures by notifying USACE Project Engineer and Assistant Project Manager. The estimated volume of the spill was 2,500 gallons. • On May 29, 2013, USACE notified NDEQ of the spill incident. The spill was not a reportable spill since the amount of TCE and RDX that were lost were significantly lower than the reportable quantities - 0.032 pounds for TCE compared to reportable quantity of 100 pounds and 0.000079 pounds of RDX compared to no limits. The quantities of contaminants lost were based on influent concentration data and the volume of water spilled. ECC also initiated non-compliance report that was required to be submitted to NDEQ within 5 days of the spill incident. • On May 29, 2013, Sawyer Construction excavated the area around the leak 50 feet west of the AOP GTP building. All three gate valves in the area were exposed – AOP GTP influent, AOP GTP effluent, and the FEW-11 main pipeline. As suspected, the leak was coming from the AOP GTP influent gate

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	valve. All water in the pit was pumped out. The AOP GTP influent and effluent lines were drained. An effort was made to remove the bolts on one side of the gate valve to replace the gasket. Since the area where the gate valve assembly originally placed was so tight, the bolts could not be manually loosened. The bolts were cut with a saw-cut machine. The replacement gasket could not be inserted between the two flanges because of the tight space. • On May 29, 2013, soil samples were collected from three locations of the excavated soil from the 8-inch AOP GTP influent spill location. Samples were stored in the refrigerator in the event analysis for TCE and RDX needed to be performed. • On May 30, 2013, the AOP influent pipe immediately east of the gate valve was cut, the valve assembly was removed from the pit and taken to the Main GTP for cleaning, replacement with new bolts and gaskets on one side (east side) with the 1-foot of pipe. Sawyer Construction was on-site to help with the repair efforts. The assembly was placed back into the pit with pipe fused to the existing pipe using electro-fusion with an 8-inch coupler. The other side of the gate valve was connected to the other end of the existing pipe (west of the valve) with new bolts and gaskets. The pit was backfilled with one foot of imported sand. • On May 31, 2013, the AOP GTP was restarted with a flow rate of 300 gpm, and slowly increased to 500 gpm. The plant ran smoothly. The open pit by to the west of the AOP building was inspected. A water leak east of the 8-inch gate valve was observed. Water appeared to be bubbling on top of the 20-inch effluent line from the Main GTP to Wahoo Creek. The AOP GTP was shut down because the flow from the Main GTP to Wahoo Creek also needed to be shut down. • On May 31, 2013, the AOP GTP was restarted after the leak to the 20-inch effluent line to Wahoo Creek from the Main GTP was fixed. • On May 31, 2013, ECC officially submitted the NCR report for the spill incident outside the AOP GTP that occurred on May 28, 2013.
June	• During weekend of June 1 and 2, 2013, operator inspected the open pit by the AOP GTP where the leaking pipeline had been repaired and found no issues. • On June 7, 2013, Sawyer Construction backfilled the open pit west of AOP GTP. • On June 10, 2013, installed new mass controller flow valve for the PSA system. • On June 11, 2013, Sawyer Construction completed backfilling the pit west of AOP GTP. • On June 12, 2013, operator shut down EW-1R and the AOP GTP to drain the

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	line and reinstall EW-1R side of the check valve. The operator removed the check valve, re-installed mechanism, and re-installed check valve. The operator restarted EW-1R and the AOP GTP with flow rates and pressures ran normal. • On June 13, 2013, operator started building the mounting plate for PSA mass control flow valve. • On June 14, 2013, operator shut down the AOP GTP and completed semi-annual maintenance on system air compressor. The AOP GTP was restarted after performing maintenance. • On June 19, 2013, operator shut down the AOP GTP to rebuild ejector pump because the pump motor had worn out bearings. Bearings were replaced in the motor. In addition the pump seal was not in the kit and the operator ordered a new pump seal. The AOP GTP was down until the next day. • On June 20, 2013, operator completed assembling the AOP GTP ejector pump and restarted the AOP GTP. • On June 20, 2013, operator shut down EW-1R and the AOP GTP to drain line and reinstall the AOP side of the check valve. The operator removed the check valve, re-installed mechanism, and reinstalled check valve. The operator restarted EW-1R and found issues with no flow and pressure increase as before (from May 2013 after post-valve installation startup) from the EW-1R side. It appeared there may still be some kind of air lock on the line between both the AOP side and EW-1R check valve locations. The line was drained again and the operator removed the check valve mechanism from AOP side and re-installed the valve without its mechanism. Restarted both EW-1R and AOP after the trial. • During week of June 24, 2013, a memorandum was submitted to regulators requesting elimination of vapor phase carbon treatment (air emission control) from operation of the LL1 GTP system. • On June 24, 2013, SCADA alarm for the AOP GTP shutdown for phase fault due to storms. Operator responded and restarted the system. • On June 25, 2013, operator noted the AOP GTP down with no alarm. The operator went to the AOP GTP to investigate and found that the air compressor had shut off. The operator restarted the air compressor, allowed for the system to purge and restarted the AOP GTP. After restarting the air compressor at the AOP GTP, the treatment plant shut down again for "High Air Discharge Temperature" and "Motor M2 Shutdown". The operator investigated the problem, checked amperage draw (1.3 amps) on M2 and seemed fine but motor seemed to be running at a low speed with a low revolutions per minute, air flow seemed acceptable. The operator removed

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	and cleaned the thermostat and replaced the oil filter. The system was back up and running. • On June 25, 2013, operator worked on mass flow control valve wiring and connectors for the PSA system. • On June 27, 2013, SCADA alarm for the AOP GTP shutdown for phase fault due to storms. The operator responded and restarted the system.
July	• On July 2, 2013, the operator replaced the magnesium dioxide media in the ozone destruct unit. • On July 2, 2013, the operator sampled AOP GTP at different dosages for RDX reduction testing. Information is provided below: o 5447-072013-AOP-47 - 47.3 milliliters per minute (ml/min) peroxide, 223 luminous flux (Lm), 522 gallons per minute (gpm), 9 kilowatts (KW), 10.1 percent ozone. o 5447-072013-AOP-60 - 61.4 ml/min (peroxide), 221 lm, 524 gpm, 9 KW, 10.1 percent ozone. o Treated RDX results were 2.9 and 3 μg/L which shows that increased ozone and peroxide dosages did not reduce RDX any further. • On July 6, 2013, SCADA call out for power loss and the AOP GTP shut down for high sump level and ozone generator fault. The operator responded and found a high sump level as a false alarm and reset additional equipment and restarted AOP GTP. • On July 8, 2013, the operator took apart the air relief valve at the AOP GTP and re-adjusted the internal float. • On July 10, 2013, the AOP GTP shut down inadvertently. The operator found the ozone generator on local control instead of remote and the ozone percent defaulted to 5 percent. The system was restarted. • On July 15, 2013, the operator repaired the outside lighting at the AOP GTP. • On July 21, 2013, SCADA call out for shut down of the AOP GTP. The operator found the systems down when checking the system remotely and the AOP GTP was reset remotely. • On July 24, 2013, a baseline sample was collected from FEW-11 as part of the cycling operation. • On July 26, 2013, SCADA call out for general filter fault at the Main GTP. The operator responded to the Main GTP and found the filters were in high differential pressure (high amount of carbon fines in settling tanks due to carbon change outs) backwash and shut down the Main GTP. The operator flushed and reset the pre-filter and restarted the treatment plant. The AOP GTP failed to start due to low oxygen flow and the operator responded to the AOP GTP and found the ejector pump operating with high noise and no flow.

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	This pump operates by creating low pressure at the educter (venturi) that will allow ozone to suck through to mix with influent water in order for the AOP reaction to occur. This pump also serves as a mini secondary function in that it returns portion of the water to the heat exchanger as a cooling water source of the ozone generator. The operator investigated what parts would require replacement and repair. The AOP GTP was left shut down for 7 days as part of the planned cycling operation for FEW-11. • On July 28, 2013, the operator disassembled the educter pump at the AOP GTP and found the pump to have come apart and twisted the motor housing. The pump and motor require replacement. • On July 30, 2013, the operator picked up the replacement educter pump (manufacturer Ebara) at the local distributor Dultmier to be installed back at the AOP GTP. • On July 31, 2013, the operator installed the educter pump at the AOP GTP. • On July 31, 2013, baseline sample results from FEW-11 cycling operations were 1,800 μg/L of TCE.
August	• The AOP GTP continued to be shut down from the previous month on August 1 and 2, 2013 as part of the cycling test for FEW-11. • On August 2, 2013, the operator removed a non-working auto drain valve from the compressor at the AOP GTP. The operator inspected the part, cleaned, and tested the valve. The valve will require replacement. On August 3, 2013, the AOP GTP and FEW-11 was restarted as part of the cycling operation following a 7-day shutdown. Sampling was conducted and results were 2,400 µg/L of TCE. The operator monitored the pre-filter backwash cycle at the Main GTP remotely because the AOP GTP was restarted after an extended shutdown period. • On August 5, 2013, sampling was conducted at FEW-11 and results were 1,800 µg/L of TCE. • On August 6, 2013, a power bump caused the AOP GTP to shut down. The operator reset and restarted the system. • On August 10, 2013, the AOP GTP and FEW-11 were shut down for 21 days as part of the cycling operation evaluation. • On August 15, 2013, the operator drained and cleaned the ozone generator cooling water reservoir. • On August 19, 2013, the operator worked on mounting the plate and piping for installation of the mass flow control valve associated with the oxygen flow system at the AOP GTP. • On August 20, 2013, the operator replaced the drain valve and piping associated with the air receiver tank at the AOP GTP.

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	• On August 22, 2013, the operator flushed, cleaned, and refilled the ozone generator cooling water system, and replaced the cooling water filters. • On August 23, 2013, the operator completed the control cable wiring connections for the mass flow control valve and tested the valve for proper operation. • On August 23, 2013, the operator cleaned the air compressor drain tank. The drain tank pump was not working. The drain tank was removed, inspected, and a replacement was ordered. • On August 27, 2013, the operator re-built the air compressor drain tank pump for the AOP GTP and prepared it for reinstallation. • On August 28, 2013, the operator prepared the AOP GTP for restart after a long 19-day shutdown from the cycling test. The operator prepared the air compressor, PSA unit, and purged the ozone generator. • On August 29, 2013, at 0730 the AOP GTP and FEW-11 were restarted. FEW-11 was sampled after 1 hour, 2 hours, 4 hours, 6 hours, and 8 hours. • On August 30, 2013, the AOP GTP was shut down due to low ozone concentrations. This was caused by a broken hose on the analyzer, which was repaired. The operator sampled FEW-11 after 24 hours and again after 30 hours after startup. • On August 31, 2013, the operator sampled FEW-11 at 48 hours after startup. • On August 31, 2013, SCADA call out from site-wide power outage. The operator responded and restarted the AOP GTP and FEW-11.
September	• On September 1, 2013, SCADA call-out for AOP GTP shutdown from low ozone concentration at the AOP GTP. The ozone monitor was giving bad readings. The operator inspected and calibrated the system. The meter required factory service. • On September 5, 2013, the operator shut down the AOP GTP/FEW-11, locked and tagged system, and water was pumped out of AOP/FEW-11 pipe line at AOP GTP in preparation for the FEW-11 pipeline modification at the former EW-5 pump house. • On September 9, 2013, Sawyer Construction cut the FEW-11 pipeline in preparation for the tie-in to the former EW-5 pump house to place the FEW-11 UV system. The operators pumped water from the FEW-11 line to the existing 8-inch and 12-inch lines (Section 32 line) that conveys water from EW-7, EW-9 and FEW-14 to the Main GTP. EW-7, EW-9 and FEW-14 were shut down during these activities. • On September 10, 2013, the operator set up a sump pump and containment tank to complete the draining of the FEW-11 pipeline east of the former EW-5 pump house.

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	• On September 11, 2013, the operator pumped out the former EW-5 pit and cut the pipeline to allow the inside of the pipe to dry. • On September 11, 2013, the operator installed a new slop tank pump at the AOP GTP. • On September 13, 2013, the operator removed the pump, trough, and tank from the former EW-5 pump house. The pipeline was empty and ready for modifications. • On September 16, 2013, the site Safety Manager performed decibel checks at the AOP GTP. A safety audit report was submitted separately. • On September 17, 2013, the operator completed the installation of the AOP GTP air compressor condensate pump and the associated piping. • On September 21, 2013, the operator completed maintenance at the AOP GTP, started the air compressor and PSA in preparation for the restart of the AOP GTP scheduled for September 23, 2013. • On September 24, 2013, the operators began purging ozone and PSA systems in preparation for startup of the AOP GTP the following day. • On September 25, 2013, the operator checked the AOP GTP system, opened all pipeline valves by the former EW-5 pump house, and outside AOP GTP. The system was started at1330. The system was then shut down for 20 days to install the exterior high-density polyethylene piping tie-in between the existing FEW-11 pipeline and the former EW-5 pump house. • On September 25, 2013, the AOP GTP was shut down at 1425. The operator investigated the issue and found an Omaha Public Power District (OPPD) power wire down outside north of the AOP GTP. The operator called OPPD to repair the issue. The AOP GTP was back on line at 1724. Another call out for the AOP GTP shut down for low oxygen flow. The operator troubleshot the issue and restarted the system. • On September 29, 2013, SCADA call out because the AOP GTP shut down. The operator dialed in from home and the system would not restart. The operator found that oxygen concentrations were low and the flow was low. The operator responded to the plant and found a discharge valve on the PSA was stuck open. The internals of the valve were replaced and the oxygen was allowed to build up. The system was restarted.

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
October	• On October 14, 2013, SCADA call out for power interruption and the AOP GTP was shut down for a phase fault. The operator reset the AOP GTP remotely. • On October 19, 2013, SCADA call out for a power bump causeing the AOP GTP to shut down. The operator responded, reset, and restarted the AOP GTP. • On October 20, 2013, SCADA call out for a power bump causing the AOP GTP to shut down. The operator restarted the AOP GTP remotely. • On October 21, 2013, a power bump was experienced site-wide and shut down the AOP GTP. The operator reset and restarted the plant. • On October 27, 2013, SCADA call out for site-wide power bump which shut down the AOP GTP. The operator reset the plant remotely. • On October 28, 2013, the operator shut down FEW-11 and the AOP GTP in preparation for the well rehabilitation operations scheduled during week of October 28 and November 4, 2013.
November	• October 28 to November 3. The AOP GTP was down for well rehabilitation and pipeline construction for the UV treatment system effluent tie-ins. The FEW-11 UV treatment system installed at the former EW-5 pump house was also shut down. Well rehabilitation was completed by performing pump/motor removal, pre-downhole camera and post-hole camera videos, and surging of FEW-11. Rehabilitation operations continued till November 7, 2013 shutting down the AOP GTP and the Main GTP. • On November 5, 2013, operators performed maintenance of the AOP GTP air compressor while the system was down for well rehabilitation at FEW-11. • On November 6, 2013, operators pumped out the AOP GTP building sump and transported the water for treatment and disposal at the Main GTP. This was done to limit the amount of solids accumulation at the Main GTP influent storage tank. • On November 6, 2013, operators prepared the packer with cabling and hosing for installation at FEW-11. This was following the well rehabilitation operation. • On November 7, 2013 installed pressure gauges on the FEW-11 UV system at the former EW-5 pump house. Heater brackets were installed in the former EW-5 pump house. • On November 8, 2013, operators installed the pressure transducer and low level probe at FEW-11 in preparation to restart FEW-11 and the AOP GTP. • On November 8, 2013, operators restarted the FEW-11 at a flow rate of 275 gpm. Pre-filters at the Main GTP were going into constant backwash due to

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	pipeline and rehabilitation solids. The operator shut down EW-1R, EW-4, and FEW-14 to lower the flow rate and resultant pressure. The operator monitored the system remotely. • On November 9, 2013, SCADA call out for general filter fault at the Main GTP. The operator logged onto the system remotely and determined that the pre-filters faulted and locked out due to high differential pressure. The operator responded to the plant and manually operated the plant to clean out the filters. The operator shut off the AOP GTP and cycled the other operating wells to the Main GTP to reduce flow rates and minimize differential pressures build up associated with the pre-filters. • On November 10, 2013, disassembled all three pre-filters and pressure steamed the filter socks to reduce differential pressure buildup in the system. Reassembled the pre-filters and restarted the Main GTP and respective operating wells. FEW-11 and AOP GTP running at 266 gpm. • On November 10, 2013, SCADA call-out for high differential pressure and backwash lock out. The operator manually ran the plant and backwashed the filters which lowered the differential pressures. The operators shut down FEW-11/AOP GTP but started the Main GTP. • On November 11, 2013, operators restarted FEW-11 and the AOP GTP for the post-rehabilitation step-test with a system flow rate of 287 gpm. The operator observed high pre-filter solids at the Main GTP coming from FEW-11 and AOP GTP. The operator shut down the AOP GTP and began running it manually. The operator cycled FEW-11 to continue the step-test and was able to reach a flow rate of 552 gpm. However, review of the data showed that additional data was required to perform well rehabilitation evaluation. FEW-11 and the AOP GTP were restarted and stopped frequently from the plugging of pre-filters at the Main GTP. • On November 11, 2013, the pipeline pressures at the well head for FEW-11 and at the former EW-5 pump house (where the FEW-11 UV system is located) was measured. The operator collected pressure readings at FEW-11 and at the UV system at the former EW-5 pump house. Pressure readings were reported at 152 pounds per square inch (psi) at FEW-11 and 32 psi at the UV treatment system. A flow rate of 552 gpm was measured at FEW-11. • On November 11, 2013, the operator installed a heater at the former EW-5 pump house where the UV system for FEW-11 is located. • On November 11, 2013, the FEW-11 UV system was sampled. This was the 6th sample following system startup in October 2013. • On November 12, 2013, operators disassembled the pre-filters and steam cleaned the filter socks at the AOP GTP. The filters were then reassembled.

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	The AOP GTP was restarted. High differential filter pressures were observed at the Main GTP caused by high solids and high flow rates from FEW-11 and the AOP GTP. The operator shut down the AOP GTP, which allowed the Main GTP system pressures to stabilize. The pump and motor was pulled from FEW-11 and the packer was installed. The pump and motor were re-installed back into the FEW-11 well. • On November 13, 2013, the operator wired the pump motor for FEW-11 after installing the packer and started FEW-11 and AOP GTP. • On November 13, 2013, SCADA call-out for high differential pressure at the pre-filter and backwash lockout. The operator responded to the AOP GTP and operated the filters and plant manually to flush the pre-filters. The operator restarted the Main GTP without the AOP GTP. The operator then continued to run the AOP GTP manually while on site to control flow rates and system pressures. • On November 14, 2013, the operator calibrated the pressure transducer at FEW-11 with the packer installed. The operator updated the HMI to correct the well elevations and depths. • On November 14, 2013, the operator started FEW-11 and the AOP GTP for the packering test with FEW-11 operating at a decreased flow rate of 151 gpm. Collected the first set of water samples at FEW-11/ for the packer operation evaluation. • On November 15, 2013, the AOP GTP was shut down due to high soilds levels resulting from well rehabilitation. The operator restarted FEW-11 at a flow rate of 150 gpm. The second set of water samples were collected at FEW-11 for the packer evaluation. • On November 16 and 17, 2013, the operator cycled the FEW-11 and the AOP GTP on/off remotely to clear the plant pipelines of the well rehabilitation solids. • During the week of November 18, 2013, the AOP GTP was running at a reduced flow rate from the installed packer. The flow rate was slowly increased to determine the maximum flow rate potentially obtained with a packer in place. Flow rates between 200 gpm to 260 gpm were obtained. • On November 18, 2013, the operator checked pressures and filled the packer at FEW-11. • On November 21, 2013, the influent and effluent of the FEW-11 UV system was sampled. These were the samples following system startup in October 2013. • Between November 25 and 29, 2013, FEW-11 and the AOP GTP operated at a reduced flow of 250-260 gpm.

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	• On November 25, 2013, the 8th sample was collected from the influent and effluent of the FEW-11 UV system. • On November 29, 2013, operator shut down FEW-11 and AOP GTP in preparation for the constant rate test scheduled for FEW-11 on December 3. • During the month of November 2013, treated water from both the UV and HiPOx systems were discharged to the Main GTP.
December	• The FEW-11 UV system operated from December 2 to 6. It was shut down for packer removal from the FEW-11 well and the constant rate test associated with the operation of the packer. The FEW-11 UV system was restarted on December 16, 2013 at flow of 256 gpm with discharge water to the AOP GTP for TCE treatment and discharge to the Main GTP. • On December 3, 2013, operators performed BART tests at FEW-11. • On December 4, 2013, the AOP GTP was shut down for an ozone generator fault. The operator reset the generator and restarted the system • On December 6, 2013, the operator shut down the AOP GTP for packer test well recovery data. • On December 9, 2013, the operators unwired the pump and motor and removed the low level probe and pressure transducer from FEW-11 in preparation for packer removal. • On December 10, 2013, the operators, with AWS Well Service, removed the pump and packer from FEW-11. The pump and motor were re-installed back in the well. Pump (to bottom of shroud) was set at 94.7 feet below top of casing. • On December 11, 2013, the operators installed the pressure transducer at FEW-11. The operators found the conduit between the wellhead to pump house had water inside and was frozen. The operators could not pull the pressure transducer cable through for proper installation and calibration. A heater was set up with an air duct to thaw the conduit. The operators then prepared the AOP GTP to operate manually. • On December 11, 2013, the operators ran a step-test at FEW-11 and at the AOP GTP manually. A post-rehabilitation step-test was also run at FEW-11 by operating the well manually. • On December 12, 2013, the conduit at FEW-11 thawed out and the operators were able to pull the pressure transducer and set the transducer and low level cable to proper depth in the well. The operators connected the local PLC to a laptop and calibrated the transducer. • On December 13, 2013, FEW-11 and AOP GTP were started at a constant flow of 256 gpm to simulate draw down conditions at nearby wells. • On December 13, 2013, the Main GTP went into “High Differential” from

Table 6.13
Operational Activities and Shutdowns of the AOP GTP in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Description for the AOP GTP
	FEW-11 startup. The operator shut down EW-1R and EW-4 and reduced the flow at EW-7 to keep the Main GTP and FEW-11/AOP GTP operating to perform FEW-11 constant rate test. The operator increased the flow remotely to maintain a flow rate of 256 gpm. • On December 16, 2013, shut down AOP GTP and FEW-11 after the constant rate test to obtain recovery data. • On December 17, 2013, installed a new uninterruptible power supply at UV system control panel located inside the former EW-5 pump house. • On December 18, 2013, operator restarted the AOP GTP and FEW-11 at a flow rate of 252 gpm. The operator monitored the pre-filter differential pressures at the Main GTP. • On December 19, 2013, the operator attached a power monitor to FEW-11 pump circuit to collect data for the packer test. • On December 20, 2013, the operator shut down the AOP GTP so that the solar panel array being installed outside the AOP GTP building could be tied into the transformer. OPPD shut down the power at 1330. Terminations were performed by Solar Heat. Power was restored at 1630 hours. The AOP GTP was restarted shortly after. • December 6 to 16, 2013, the FEW-11 UV system was shut down to clear all solids from the well rehabilitation events. • On December 26, 2013, the operators shut down the AOP GTP to perform maintenance on air compressor AC-700 and to locate an ozone leak. The operators completed air compressor maintenance and found the ozone air relief float valve cover to be cracked. The cover and mechanical float were removed from the air reliever to be repaired and adjusted. The AOP GTP remained shut down. • On December 27, 2013, the operators re-installed a cover on the AOP GTP air relief float valve. Pressure was still not relieving properly. The relief float valve (electronic) will require rebuilding due to a buildup of pressure with the pipe connection between the float valve assembly and the ozone destruct unit (which requires cleaning). Ozone levels were monitored and the AOP GTP was restarted to operate during the weekend. A rebuild kit for the valve was ordered. Investigation will continue during the upcoming weeks when the operators dismantle the float valve assembly, ozone destruct unit and the piping between the two units. • On December 31, 2013, SCADA callout for power bump at the site which shut down the AOP GTP for ozone generator fault and FEW-11 VFD fault. Operator responded, reset and restarted FEW-11 and the AOP GTP.

Table 6.14
Load Line 4 Groundwater Treatment Plant
2013 Monthly Influent, Effluent and Air Emissions Analytical Data
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Sampling Date	Predicted Concentration of TCE in Influent Air (ppbV)*	TCE Air Concentration (ppbv)	TCE (μg/L)
Volatiles				
LL4_AIR_EF	01/03/2013	1382	**330**	-
LL4-EFF	01/03/2013	-	-	**0.51 J**
LL4-EFF	01/31/2013	-	-	**0.70 J**
LL4-EFF	02/28/2013	-	-	**0.64 J**
LL4-INF	01/03/2013	-	-	**340**
LL4-INF	01/31/2013	-	-	**350**
LL4-INF	02/28/2013	-	-	**340**
LL4_AIR_EF	04/01/2013	1164	**370**	-
LL4-EFF	04/01/2013	-	-	**0.54 J**
LL4-EFF	05/01/2013	-	-	**0.53 J**
LL4-EFF	06/03/2013	-	-	**0.51 J**
LL4-INF	04/01/2013	-	-	**350**
LL4-INF	05/01/2013	-	-	**320**
LL4-INF	06/03/2013	-	-	**240**
LL4_AIR_EF	07/01/2013	1008	**240**	-
LL4_AIR_EF	08/12/2013	-	**230**	-
LL4-EFF	07/01/2013	-	-	**0.21 J**
LL4-EFF	08/12/2013	-	-	**0.52 J**
LL4-EFF	09/03/2013	-	-	**0.62 J**
LL4-INF	07/01/2013	-	-	**310**
LL4-INF	09/03/2013	-	-	**310**
LL4-EFF	10/03/2013	-	-	**0.53 J**
LL4-EFF	11/18/2013	-	-	1.0 U
LL4-EFF	12/03/2013	-	-	1.0 U
LL4-INF	11/18/2013	-	-	**640**
LL4-INF	12/03/2013	-	-	**600**

Table 6.14
Load Line 4 Groundwater Treatment Plant
2013 Monthly Influent, Effluent and Air Emissions Analytical Data
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Sampling Date	RDX (μg/L)
Explosives		
LL4-EFF	01/31/2013	0.20 U
LL4-INF	01/31/2013	**0.041 J**
LL4-EFF	05/01/2013	**0.032 J**
LL4-INF	05/01/2013	**0.046 J**
LL4-EFF	08/12/2013	0.20 U

Table 6.14
Load Line 4 Groundwater Treatment Plant
2013 Monthly Influent, Effluent and Air Emissions Analytical Data
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Sample Date	Nitrate (mg/L)	Total Organic Carbon (mg/L)	Suspended Solids (Residue, Non-Filterable) (mg/L)	Iron (μg/L)	Manganese (μg/L)	pH
Wet Chemistry							
LL4-EFF	01/03/2013	**7.3**	-	-	-	-	8.2
LL4-EFF	01/31/2013	**7.0**	-	-	-	-	8.2
LL4-EFF	02/28/2013	**7.8**	-	-	-	-	8.2
LL4-EFF	04/01/2013	**6.8**	-	-	-	-	8.1
LL4-EFF	05/01/2013	**7.0**	-	-	-	-	8.2
LL4-EFF	06/03/2013	**7.0**	-	-	-	-	8.2
LL4-INF	06/03/2013	-	**0.82 J**	0.50 U	200 U	15.0 U	-
LL4-EFF	07/01/2013	**7.0**	-	-	-	-	8.3
LL4-EFF	08/12/2013	**7.8**	-	-	-	-	7.2
LL4-EFF	09/03/2013	**6.9**	-	-	-	-	8.13
LL4-EFF	10/03/2013	**11.0**	-	-	-	-	8.23
LL4-EFF	11/18/2013	**9.7**	-	-	-	-	7.5
LL4-EFF	12/03/2013	**10.0**	-	-	-	-	7.5

Notes:

Bold values denote detections

Shaded value denotes detection above the cleanup goal of either 5 μg/L for TCE or 2 μg/L for RDX.

*Predicted air influent concentration of TCE is calculated from the Ideal Gas Law equation and assumes 100% of mass transfer from the liquid phase to the vapor phase for TCE. Values used in the calculation are presented in Appendix L of the *LL1 Groundwater Treatment Plant Operations and Maintenance Manual*.

EFF - effluent
INF - influent
LL - load line
TCE - trichloroethene
U - nondetect

μg/L - micrograms per liter
mg/L - milligrams per liter
ppbV - parts per billion by volume
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
J - estimated value

Table 6.15
Operational Activities and Shutdowns of Load Line 4 Treatment Plant in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Descriptions
January	• On January 7, 2013, operators worked on the load line (LL) 4 groundwater treatment plant (GTP) flow differential and air stripper sump level high-high and low-low switches and programing. • On January 8, 2013, operators/programmer worked on completing the programming for the LL4 GTP sump switch programming interlock with the Main GTP. • On January 9, 2013, operators found the Ethernet radio was facing south instead of east. Operators reset the antenna to face east. • On January 17, 2013, operators changed the oil in air compressor at the LL4 GTP. • On January 17, 2013, after shutting down the system for air compressor maintenance, the LL4 GTP would not restart. Operators found the main Programmable Logic Controller (PLC) had faulted. Upon further investigation, it was determined that the flow comparison program was not working. Worked on the program by bypassing ladder logic to the flow comparison and restarted the plant. The LL4 GTP was running normally at 1445. • On January 22, 2013, operators fixed the LL4 GTP influent flow meter comparison programming issues.
February	• On February 7, 2013, operators installed confined space signs on the LL4 GTP influent vault. • On February 13, 2013, operators shut down the LL4 GTP and started removing effluent pipes for check valve installation. Installed the check valves with new butterfly valves. • On February 14, 2013, operators tightened all bolts and support brackets at the LL4 GTP. Started the pumps manually to prime them and checked for leaks and flows. Restarted the LL4 GTP.
March	• During the week of March 4, 2013, operators worked on the domestic water system for the LL4 GTP bathroom installation. Electrical receptacles were also installed within the bathroom. • On March 5, 2013, operators cleaned out the sump at the LL4 GTP. • On March 21, 2013, operators completed work on the pump rack at the LL4 GTP water system for the bathroom. • On March 25, 2013, operators inspected the focused extraction well (FEW)-15 pump house.
April	• On April 3 to 5, 2013, operators worked on the motor control center room and bathroom at the LL4 GTP. • Operators continued to work on the LL4 GTP bathroom during the week of April 8. • On April 13, 2013, Supervisory Control and Data Acquisition (SCADA) call out at 0400 for LL4 GTP shutdown due to communication failure error. Operator could not connect remotely since the internet at the site was down. Operator responded to the plant and rebooted the LL4 computer/PLC. He restarted the system at 0615. • On April 13, 2013, SCADA call out at 0935 for loss of communication at LL4 GTP. Operator reset the watch dog timer at the LL4 GTP from 240 to 320 seconds and restarted the system. • On April 14, 2013, SCADA call out at 2345 for communication loss to the LL4 GTP and the AOP GTP. Operator dialed in and checked for communications, but the LL4 GTP would not restart remotely. Operator was able to restart the LL4 GTP from the Main GTP. The issue will be investigated early next week. • On April 15, 2013, operators continued to experience communication problems between the controls computer at the Main GTP and the PLC at the LL4 GTP. Operators worked with the programmer and the subcontractor HOA to troubleshoot the issue. The operators restarted the controls computer and the LL4 PLC and monitored for communication for the rest of the afternoon and evening. The LL4 GTP operated normally.

Table 6.15
Operational Activities and Shutdowns of Load Line 4 Treatment Plant in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Descriptions
	• On April 16, 2013, operators worked with HOA on LL4 GTP communication issues. HOA ran routine tests and was not able to locate the problem. The LL4 GTP ran normally that day and during the rest of the week. • During week of April 22, 2013, operators completed installation of the bathroom components inside the LL4 GTP.
May	• On May 10, 2013, operators mowed around the LL4 GTP. • On May 14, 2013, operators shut down the LL4 GTP in preparation for step test at FEW-15 for following day. • On May 15, 2013, operators performed step test at FEW-15. • On May 31, 2013, the LL4 GTP was shut down in the morning to investigate the leak on the 20-inch effluent line from the Main GTP to Wahoo Creek. • On May 31, 2013, the LL4 GTP was restarted after the leak was fixed on the 20-inch effluent line to Wahoo Creek from the Main GTP.
June	• On June 12, 2013, FEW-15 shutdown and the operator checked out the well and found out it was a power bump. FEW-15 and LL4 GTP were restarted. • During week of June 24, 2013, a memorandum was submitted requesting elimination of vapor phase carbon treatment (air emission control) from operation of the LL1 GTP system. • The operator continued on the LL4 GTP bathroom modifications this month. Completed all work associated with the LL4 GTP bathroom. Procured septic tank companies to install a septic tank outside the fence and north of LL4 GTP. Work to be scheduled for first week of July 2013. • On June 27, 2013, storms in area. SCADA alarm for the LL4 GTP shutdown for variable frequency drive (VFD) fault. The operator responded and restarted the system. The shutdown was caused by storms. • On June 28, 2013, the operator repaired lightning rods on the LL4 GTP building that were not intact.
July	• On July 8, 2013, the subcontractor installed a septic tank at the LL4 GTP. • On July 11, the operators completed offices and bathroom at the LL4 GTP area. • On July 21, 2013, SCADA call out for the LL4 GTP shutdown. The operator reset the plant remotely. • On July 24, 2013, the operator sampled FEW-15 as part of baseline cycling operation. • On July 26, 2013, the operator shut down LL4 GTP/FEW-15 for cycling testing. • On July 29, 2013, the operator brought LL4 GTP/FEW-15 back online. • On July 30, 2013, FEW-15 sample was collected as part of the cycling evaluation. • On July 31, 2013, received regulatory approval for taking vapor phase GAC vessel offline from LL4 GTP operation based on the memorandum submitted this month and discussion with regulators during the Project Management meeting on July 17, 2013. • On July 31, 2013, received initial set of results from FEW-15 cycling operation. Baseline trichloroethene (TCE) sample results showed 320 micrograms per liter (μg/L) and 490 μg/L for samples collected immediately after startup with 3 day shutdown prior. TCE concentrations were 340 μg/L after nearly 2 days of operation after starting up.

Table 6.15
Operational Activities and Shutdowns of Load Line 4 Treatment Plant in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Descriptions
August	• On August 3, 2013, the LL4 GTP and FEW-15 were shut down as part of the cycling operation for the next 7 days. • On August 10, 2013, the LL4 GTP and FEW-15 were restarted as part of the cycling operation following a 7 day shutdown. Sampling was performed immediately after startup and with TCE concentrations of 670 µg/L. • On August 12, 2013, FEW-15 was sampled again following startup (from August 10, 2013). TCE concentrations were 370 µg/L. • On August 13, 2013, FEW-15 was sampled again following startup (from August 10, 2013). TCE concentratiosn were 380 µg/L. • On August 31, 2013, SCADA call out from site wide power outage. The operator responded and restarted the LL4 GTP/FEW-15.
September	• On September 8, 2013, SCADA call out at 1030 for the LL4 GTP shutdown. The operator dialed into the system, reset the LL4 GTP and restarted the plant. The LL4 GTP shut down again for a FEW-15 VFD fault. The operator responded to FEW-15 found a VFD faulted for overcurrent and ground fault. The VFD would not reset. The operator checked the motor for shorting with an ohm meter and found no problems with the VFD and reset without motor being connected. The operator suspected a faulty motor which requires replacement. Since FEW-15 needed to shut down for the 21-day cycling operation test, this shutdown was considered the first day of the shutdown. • On September 9, 2013, the operator tested FEW-15 VFD with a replacement motor, verified that the motor was fault and not the VFD. The operator contacted AWS for a motor replacement. One of the existing 30 horsepower (HP) motors was used as the replacement with an existing compatible VFD. • On September 16, 2013, the site Safety Manager performed a decibel checks at the LL4 GTP. A safety audit report was submitted separately. • On September 25, 2013, SCADA call out for the LL4 GTP PLC for lost communication. The operator uploaded the internet protocol information and restarted the Human Machine Interface (HMI) and PLC at the LL4 GTP. • On September 27, 2013, AWS Drilling was on site to remove the damaged FEW-15 pump motor (25 HP). The motor was replaced with an existing 30 HP motor. The operator wired the motor, installed a pressure transducer and the low level switch. The operator temporarily tested the motor operation.
October	• On October 1, 2013, when the operator attempted to restart the LL4 PLC program by downloading the program into the PLC, the PLC locked up and lost communications to the HMI. The operator called HOA Solutions for assistance. HOA Solutions connected the HMI to the PLC. The system was operational. • On October 2, 2013, the operators restarted FEW-15 and LL4 GTP after a 24 day shutdown period from the cycling operation. FEW-15 would start and then shut down for well low level. The operator went to FEW-15 to investigate and found the low level probe had a bad connection. The connection was repaired. The operators then collected a 1-hour, 2-hour, 4-hour, 6-hour, and 8-hour sample after startup as part of the cycling operation. • On October 3, 2013, the operators collected a 24-hour and 30-hour sample at the LL4 GTP influent as part of the cycling operation. • On October 4, 2013, the operators collected a 48-hour sample at the LL4 GTP influent as part of the cycling operation. • On October 5, 7 and 9, 2013, operators collected a 72-hour, 120-hour, and 168-hour sample at the LL4 GTP influent as part of the cycling operation.

Table 6.15
Operational Activities and Shutdowns of Load Line 4 Treatment Plant in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Descriptions
	• On October 10, 2013, the operator shut down the FEW-15/LL4 GTP for pump removal and packer installation. The operator assisted Peterson Drilling in the packer installation at FEW-15 and the packer was found to have a hole in it. FEW-15/LL4 was off until the packer could be repaired and installed October 15 • On October 15, 2013, the operator assisted Peterson Drilling at FEW-15 with the downhole packer installation. The operators installed clamps on the packer but the clamps did not hold water while the unit was dropped down and the packer leaked. The operators removed the packer and removed the pump and motor while waiting for new packer. • On October 16, 2013, the operator wired the pump at FEW-15, installed and wired pressure transducer, and low level probe. The operator then started the LL4 GTP. • On October 19, 2013, SCADA call out for a power bump for the LL4 GTP shutdown. The operator responded, reset, and restarted the LL4 GTP. • On October 20, 2013, SCADA call out for a power bump causing the LL4 GTP to shut down. Restarted LL4 GTP and checked out the systems to ensure proper operation. • On October 21, 2013, the operator shut down the LL4 GTP and FEW-15. The pump and motor was removed in preparation for packer installation at FEW-15. The operator also unwired and removed the pressure transducer and the low level probe. • During the week of October 21, 2013, the packer at FEW-15 was installed. • On October 25, 2013, AWS was on site with the FEW-15 pump and motor and re-installed it back at the well. • On October 28, 2013, the operators installed the pressure transducer and wired the well pump motor at FEW-15. • On October 30, 2013, operators started the FEW-15/LL4 GTP and ran the system to test what the well would produce with the packer in place. FEW-15 produced a maximum flow of 256 gpm. FEW-15 and LL4 GTP was shut down end of the day. LL4 GTP remained shut down for rest of the month and anticipated to be restarted on November 4, once the tie-in of EW-1R to LL4 GTP was completed.
November	• Between November 1 and 13, 2013, FEW-15/LL4 GTP was shut down for construction of the UV effluent piping tie-in and tie-in of EW-1R to the LL4 GTP. • On November 13, 2013, LL4 GTP and FEW-15 was restarted at a reduced flow rate of 230 gpm due to the packer in FEW-15 well. The first set of influent and effluent samples were collected for packer operation evaluation. All treated water from LL4 GTP was conveyed to the Main GTP for additional treatment and added insurance in case sampling results showed TCE concentrations greater than the cleanup goal of 5 μg/L. • On November 14, 2013, the LL4 GTP and FEW-15 continued operation with a reduced flow rate with the packer in place. A second set of influent and effluent samples were collected for the packer operation evaluation. • Between November 15 to 21, 2013, FEW-15 and the LL4 GTP continued to operate at a reduced flow rate with the packer in place. A third set of influent and effluent samples were collected for the packer evaluation • On November 15, 2013, the operator checked the inflation of the packer at FEW-15. • On November 18, 2013, the operator checked pressures and filled the packers at FEW-15. • On November 21, 2013, SCADA alarm for LL4 GTP/FEW-15 shutdown for VFD fault for overcurrent. The operator inspected the VFD wiring but found no issues. The operator unwired the motor leads and checked the continuity to ground. The operator found two of the three phases shorted to ground. The motor will require removal and replacement. FEW-15 and the LL4 GTP were shut down until November 26.

Table 6.15
Operational Activities and Shutdowns of Load Line 4 Treatment Plant in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Operational Activities and Shutdown Descriptions
	• On November 26, 2013, the motor at FEW-15 was replaced. The 30 HP motor from the shelf previously used at EW-10 was used at FEW-15. FEW-15 and the LL4 GTP were restarted and operated at reduced flow of 230 gpm. • On November 27, 2013, the LL4 GTP was shut down for "High Differential Pressure" at the Main GTP influent storage tank. Tank level went to 16.5 feet due influent pump shutdown at the Main GTP and hence shutting down the LL4 GTP. The LL4 GTP did not restart due to a PLC lockup. The operator manually backwashed the pre-filters at the Main GTP and returned the Main GTP to normal operations. After troubleshooting the LL4 GTP, the PLC was reset and the plant was restarted. The LL4 GTP operated normally.
December	• On December 6, 2013, the operator shut down the LL4 GTP so that well recovery data from the packer test could be obtained. • On December 9, 2013, the operators unwired the pump and motor and removed the low level probe and pressure transducer from FEW-15 in preparation for packer removal the following day. • On December 10, 2013, AWS Well Service was on site to remove the pump and motor from FEW-15. The pipe coupling sleeve that connects the drop pipe and the pump and motor assembly came loose and the pump and motor fell into the bottom of the well. Inspection of the well and the screen is scheduled for December 13, 2013. • On December 12, 2013, AWS Well Service was onsite to remove the FEW-15 pump and motor assembly. The operators brought the FEW-15 pump and motor assembly to the Main GTP for inspection, cleaning, and testing prior to installing back into the well. • On December 13, 2013, Sargent Drilling was on site to perform downhole video camera inspection of the FEW-15 well casing bottom and the condition of the screen. All downhole components of the well appeared to be in good condition. Pump and motor were re-installed in the well by AWS Well Service following the camera inspection. The pump (to bottom of the shroud) was set at 93 feet below top of casing. The operators installed a low-level switch and pump pressure transducer at FEW-15. FEW-15 and LL4 GTP was restarted and ramped up to 236 gpm to simulate draw down conditions at nearby wells. The well flow ramped up to full speed with flow of 464 gpm when checked remotely 30 minutes after the well was restarted. The operator shut down FEW-15 and LL4 GTP. • On December 14, 2013, the operator was on site to troubleshoot FEW-15 flow. The operator found the PLC program to have an incorrect proportional-integral-derivative output correction in level set point. The operator made corrections to the program, recalibrated, and started LL4 GTP/FEW-15 for constant rate test. Limits on VFD P-200 discharge pump were adjusted at LL4 GTP to run at a constant low flow. LL4 GTP/FEW-15 running at 0900 hours at a flow of 236 gpm. • On December 15, 2013, SCADA call out for FEW-15/LL4 GTP shutdown. The operator remotely restarted the system. • On December 16, 2013, the operators shut down LL4 GTP and FEW-15 after the constant rate test to obtain recovery data. • On December 18, 2013, the operator restarted the LL4 GTP and FEW-15 at 487 gpm. Treated water was discharged to Wahoo Creek. Between December 1 and 18, 2013, all treated water from LL4 GTP was sent to the Main GTP. • On December 20, 2013, the operator shut down the LL4 GTP to perform tie-in of the solar panel to the transformer. OPPD shut down power at 1330. Terminations were performed by Solar Heat and power was restored at 1630 hours. LL4 GTP was restarted shortly after.

Table 6.16
Groundwater Circulation Well GCW-01
2013 Monthly Influent and Effluent Analytical Data
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Location	Sampling Date	TCE (μg/L)
GCW1-INF	02/28/2013	**420**
GCW1-EFF	02/28/2013	**0.30 J**
GCW1-INF	06/03/2013	**420**
GCW1-EFF	06/03/2013	**3.0**
GCW1-EFF	07/01/2013	**0.67 J**
GCW1-INF	09/03/2013	**480**
GCW1-EFF	09/03/2013	**0.14 J**
GCW1-INF	12/03/2013	**400**
GCW1-EFF	12/03/2013	1.0 U

Notes:

Bold values denote detections.

Shaded value denotes detection above the cleanup goal of 5 ug/L for TCE. There were no exceedances above this value for effluent samples.

EFF - effluent

INF - influent

μg/L - micrograms per liter

TCE - trichloroethene

U - nondetect

J - estimated value

Table 6.17
Groundwater Circulation Well GCW-01 Operation and Maintenance Activities in 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Average Flow Rate (gpm)	Maintenance Activities
January	23	• System operational for entire month.
February	23.1	• System operational for entire month. • On February 28, 2013, the packer was aired and sampled.
March	23.1	• System operational for entire month.
April	23.34	• System operational for entire month.
May	22.12	• System operational for entire month.
June	23.2	• System operational for entire month. • On June 3, 2013 the packer was aired and sampled.
July	19.4	• System operational for entire month except on July 3, 2013 when the system went down for a power bump and was restarted. • On July 25, 2013, the operator removed batteries from GCW-01 that were previously associated with the wind generator (part of the pilot work through University of Missouri, Rolla) and assisted Continental Battery Company to load and haul away the batteries.
August	18.54	• System operational for entire month.
September	19.25	• System operational for entire month.
October	17.47	• System operational for entire month.
November	18.86	• System operational for entire month. • On November 20, 22, and 30, 2013 the vacuum line was blown out due to icing up.
December	19.51	• System operational for entire month. • On December 5, 2013 the water lines were frozen and the heaters in the pit were turned on.

Notes:
gpm - gallons per minute
GCW - groundwater circulation well

Table 6.18
Routine Operation and Maintenance Activities for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Activity	Facilities	Frequency
Equipment Preventative Maintenance	All	Per preventative maintenance schedule
Update Parts and Equipment Inventory	All	Annual
Paint Equipment and Floor around Equipment	All	As needed
Conduct General Plant Cleanup	All	As needed
Inspect Wahoo Creek for Flow Conditions and Erosion	Main GTP	Weekly
Service Air Compressors	Main GTP, AOP GTP	Weekly
Service Ozone Generator	AOP GTP	Weekly
Service Air Stripper and Blower	LL1 GTP, LL4 GTP	Semiannual for air stripper and weekly for blower

Notes:
AOP - Advanced Oxidation Process
GTP - groundwater treatment plant
LL - load line

Table 6.19
Miscellaneous Operation and Maintenance Activities for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Maintenance Activities
January	• Performed preventative maintenance of equipment and maintained the Main groundwater treatment plant (GTP) office, electrical room, and other treatment plant locations as needed. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Worked with the site Safety Manager on the safety audit items between January 2 and 4, 2013. • Held an Open House on January 16, 2013. • Cleaned the south bay and mopped the office of the Main GTP. • Worked on updating all the treatment plant software licenses. • Began disposition of the government property. • Repaired ice machine. • Performed monthly sampling events.
February	• Performed preventative maintenance of equipment. • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Installed conduit, pulled wire, and terminated wire for an additional outlet and panel box at the Main GTP expansion location. • Gathered all recyclables for disposal. • Sealed four barrels with residential granular activated carbon for shipment. • Cleaned and vacuumed the advanced oxidation process (AOP) GTP.
March	• Performed preventative maintenance of equipment. • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Provided plant tour to Iowa Western Community College students along with the U.S. Army Corps of Engineers Project Engineer. • Replaced the water pressure reducer on deionized water system at the Main GTP. • Worked on Main GTP light fixtures. • Obtained pumps for LATA-Bay West from the load line (LL) 1 GTP. • Held site visit for future work on the project.
April	• Performed preventative maintenance of equipment • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Received and installed new desktop office computer. • Held Open House on April 17, 2013.
May	• Performed preventative maintenance of equipment. • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow.

Table 6.19
Miscellaneous Operation and Maintenance Activities for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Maintenance Activities
	• Assisted LATA/Baywest with well problems and unloaded injection chemicals for pilot test study. • Tested emergency lighting and found none working. • Disassembled trailer axles and repacked the wheel bearings. Ordered new tires and greased the seals. Reinstalled new grease seals in trailer hubs and re-installed the axles. • Mowed around EW-1R, EW-3, EW-4, EW-5, EW-16, and FEW-14, FEW-15, Main GTP, AOP GTP, LL4 GTP, and GCW-01. • Performed perk test for the LL4 GTP bathroom septic system.
June	• Performed preventative maintenance of equipment. • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Mowed around EW-3, EW-4, EW-5, FEW-14 and EW-16. Also mowed around the AOP GTP, Main GTP, and GCW-01. • Sprayed weeds at pressure sustaining vault, FEW-11, and the Main GTP. • Swept and cleaned the floors at all four GTPs. • Edged and sprayed weeds around the AOP GTP. • Sprayed weeds at EW-9, EW-10 and Section 32 electrical boxes. • Replaced battery for the site truck.
July	• Performed preventative maintenance of equipment. • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Mowed Main GTP, EW-8, 11, AOP GTP, and LL1 GTP. Also sprayed gravel pads for weeds. • Fabricated new axle for wheels on pull behind sprayer for lawn mower. • Mowed GCW-01 and FEW-14. • Held Open House and Project Managers meeting on July 17, 2013. • Procured the ultraviolet treatment system pilot study equipment for EW-7, EW-9, FEW-11, and FEW-14.

Table 6.19
Miscellaneous Operation and Maintenance Activities for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Maintenance Activities
August	• Performed preventative maintenance of equipment. • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Swept and washed down the LL1 GTP, the LL4 GTP and the AOP GTPs for USACE tour. • Held USACE site tour. • Mowed outside the Main GTP, the AOP GTP, EW-3, EW-4, EW-5, EW-7, EW-9, FEW-15, EW-16, and GCW-1. • Dropped off recyclables at Omaha.
September	• Performed preventative maintenance of equipment. • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Met with the University of Nebraska-Lincoln (UNL) on-locate crew. The UNL plan to cross the 18-inch effluent line with an 8-inch pipeline right next to the pressure sustaining valve vault. UNL will be in touch with the operator to ensure he is present at location when crossing is expected to take place. • Completed the Hazardous Communication Training. • Completed and submitted the Government equipment inventory.
October	• Performed preventative maintenance of equipment. • Cleaned office and the motor control center room. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Mowed around EW-3, EW-4, EW-16, FEW-14, and the Main GTP. • Changed residential carbon on October 10, 2013. • Changed carbon along with installation of new GAC system at Sutton residence on October 15, 2013. • Installed new GAC system at local residence on October 18, 2013. • Measured quarterly National Resource District well water levels on October 29, 2013. • Held transition meetings and conducted site tours.

Table 6.19
Miscellaneous Operation and Maintenance Activities for 2013
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

Month	Maintenance Activities
November	• Performed preventative maintenance of equipment. • Cleaned office, motor control center room, extraction well pump houses, and the Main GTP. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Repaired lighting at the west side of the Main GTP, replaced two bulbs, and one ballast. • Installed a new emergency light fixture in the motor control room at the Main GTP. • Changed the GAC unit at the winery on November 14, 2013. • Provided a site tour of the AOP GTP and the LL4 GTP to USACE Omaha District on November 15, 2013 as part of five year review. • Held Open House on November 20, 2013. • Dug holes, poured concrete, installed pedestals, and installed solar grid panel support infrastructure for the Main GTP and the AOP GTP/LL4 GTP during the weeks of November 18 and 25, 2013. Completion of installation of the solar panels and testing anticipated for mid-December 2013.
December	• Performed preventative maintenance of equipment. • Cleaned office, motor control center room, extraction well pump houses, and the Main GTP. • Checked Wahoo Creek on a weekly basis for erosion and flow. • Spent residential carbon that was stored in the Main GTP for disposal was removed by Cabot Corporation (formerly Norit) on December 11, 2013. • Completed solar panel installations and tie-ins for the Main GTP and the LL4 GTP/AOP GTP on December 23, 2013. Solar Panel System was brought online on December 31, 2013. • Transferred Government equipment to HydroGeoLogic (HGL). • Bundled cardboard and hauled to recycler in Omaha. • Delivered rock to the site and placed in areas that were depressed and eroded. Areas covered include EW-12 driveway, FEW-11 driveway, Section 32 from Highway 66 to EW-10 with rock placed from the Section 32 main road to EW-7, from County Road 6 to FEW-14 and then south to EW-4. In addition, rock was placed around EW-1R and EW-5.

Table 7.1
2013 Optimization Activities
2013 Annual Report
Former Nebraska Ordnance Plant, Mead, Nebraska

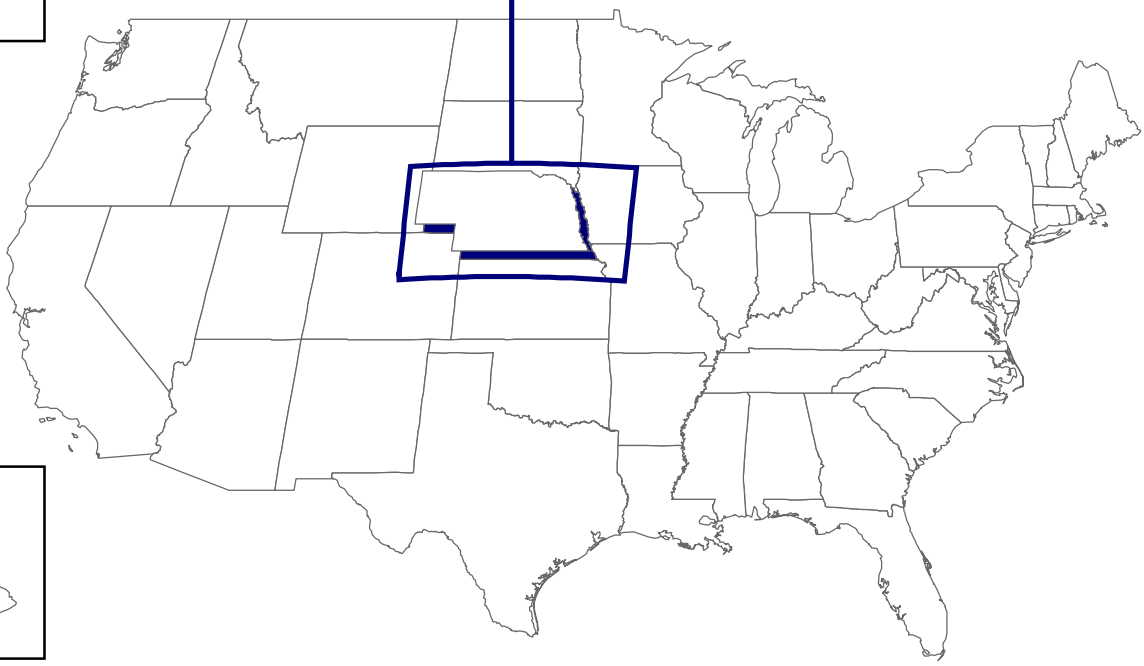
VE Idea	VE Idea Name and Description	Evaluation
Evaluated and Implemented		
FI-7	Reduce the Displays and Information Produced for Open Houses, the Number of Open Houses, and the Newsletter Frequency: – Reduced the amount of displays and information produced for open houses. – Reduced the number of open houses from quarterly to semi-annual. – Reduced newsletter frequency from quarterly to semi-annual.	Reduced open house meetings and costs by 50 percent.
FI-19	Install Leak Detection System in Influent System of Main GTP: – Installation of flow sensors to detect flow differences between extraction wells and Main GTP.	Prevented major spill in May 2013.
FI-34	Reduce Matrix Spike Sampling Requirements: – Stopped collecting Matrix Spike and duplicate samples for O&M sampling events.	Cost reduction of 5 to 10 percent for sampling, analysis, and reporting.
REC-1	Install Solar Panels: – Installation of solar panel arrays at the Main GTP, and AOP GTP/LL4 GTP sites to supplement power.	Completed in 2013 with results to be evaluated in 2014.
TG-9	Install System to Remove RDX Before Water Enters Groundwater Treatment Plants: – Evaluated effectiveness of TG-9 pilot study of UV treatment systems. – Installation of UV treatment system at 4 extraction wells to remove RDX.	Anticipated savings of 1 million over 10 years.
TG-13	Use Reinjection Wells at Strategic Locations to Control and Contain Plume: – Simulations of groundwater flow and transport were modeled to evaluate the potential effectiveness of reinjection. – Installation and modification of reinjection wells to control and contain plume.	Remediation timeframe decreased by 38 percent. Models indicate need for at least five injection wells.
(Unnamed)	Eliminate Air Emissions Control (Vapor Phase Granular Activated Carbon) at LL1 GTP and LL4 GTP: – Remove vapor phase granular activated carbon treatment (which provides air emissions control) after the carbon has been consumed. – Reduced the air sampling requirements for TCE from a monthly basis to aquarterly basis.	To be evaluated in 2014.
Evaluated		
OPR-2	Enhance Mass Removal Rates of Contamination at Focused Extraction Wells Using Packers to Focus the Zone of Extraction: – Used focused extraction well packers on FEW-11 and FEW-15. – Reduced screen length and pumping rate for more precise extraction.	Cost per kilogram of TCE removed decreased by 52 percent at FEW-11 and by 36 percent at FEW-15. Reduced pumping rates increased remedial timeframe.
OPR-3	Optimizing Pumping Rates: – Optimizing pumping rates on FEW-15 by moving to cycling periods for pumping.	Less effective, increased O&M costs, and increased remedial timeframe.

Notes:

AOP - advance oxidation process
GTP - troundwater treatment plant
kg - kilogram
LL - Load Line
O&M - operations and maintenance
FEW - focused extraction well
QC - quality control
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TCE - trichloroethene
UV - ultraviolet
VE - value enhancement
EW - extraction well

FIGURE(S)

This page was intentionally left blank.



US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

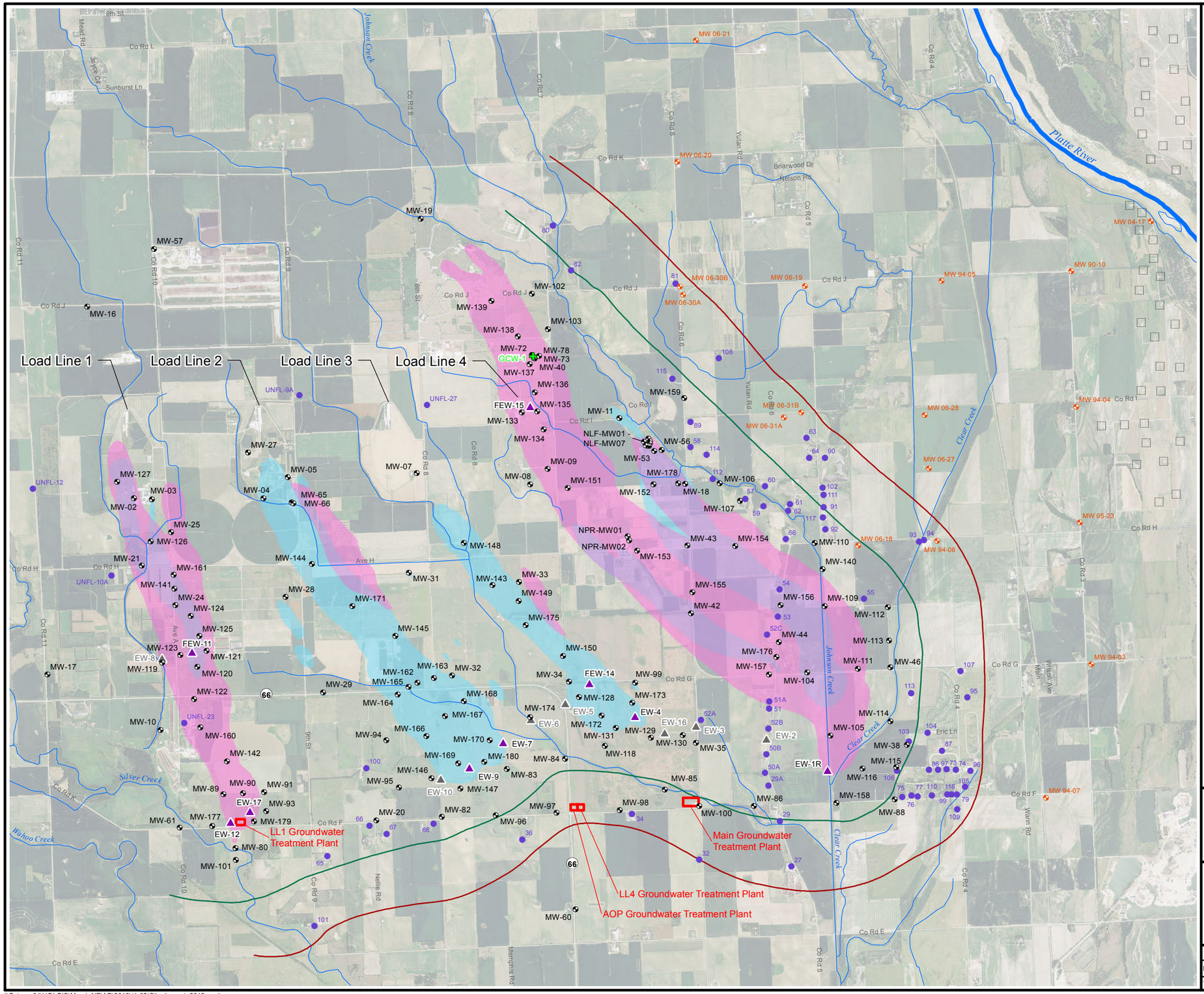
Legend

- ★ Mead
- County
- State

Figure 1.1
Site Location

Drawn by: RR	Reviewed by: TH, LT	Source: HGL Projection: NAD 1983 Nebraska State Plane (Nebraska inset map) Units: Feet
Date: 02/26/2014	Date: 02/27/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(1-01)Site_Location.mxd



Legend

- Groundwater Monitoring Well/Well Cluster
- Water Supply Well
- Groundwater Extraction Well
- Groundwater Extraction Well (Inactive)
- Groundwater Circulation Well
- Metropolitan Utility District Extraction Well
- Metropolitan Utility District Monitoring Well
- Half-Mile Buffer Zone
- One-Mile Buffer Zone
- Groundwater Treatment Plant

Contaminant Plume

- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)
- Approximate Area of Both TCE at a Concentration of 5 µg/L or Greater and RDX at a Concentration of 2 µg/L or Greater (2013)

NOTES:

TCE and RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

N

0 2,000 4,000 8,000
Feet

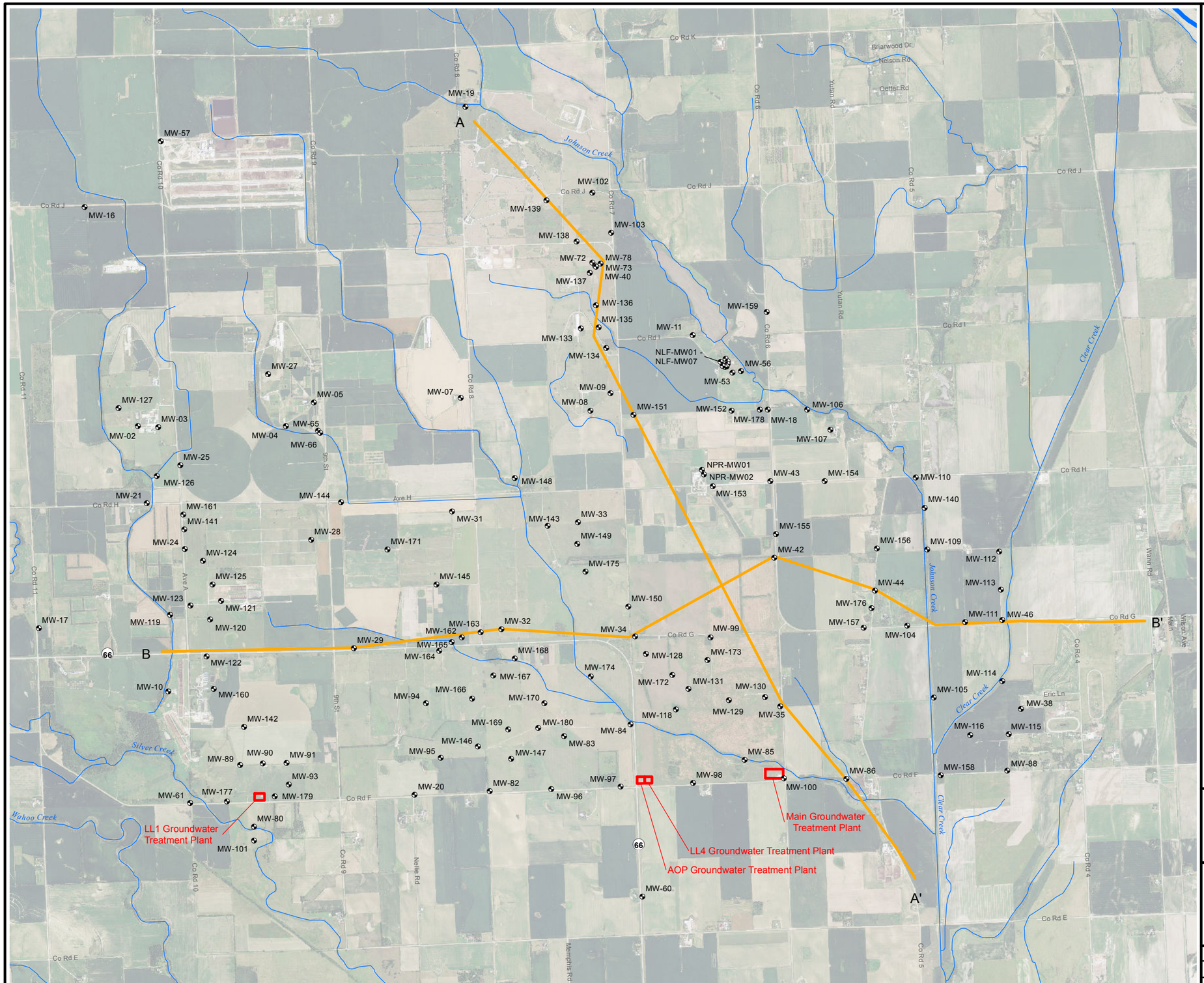
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 1.2
Site Layout

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 01/24/2014	Date: 02/27/2014	
Version: 2	Revision Date / Initials: 02/28/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\(1-02)Site_Layout_2013.mxd



Legend

- Groundwater Monitoring Well/Well Cluster
- Cross Section Location
- Groundwater Treatment Plant

NOTE:

See Figures 2.2a and 2.2b for cross sections.

N

0 1,750 3,500 7,000

Feet

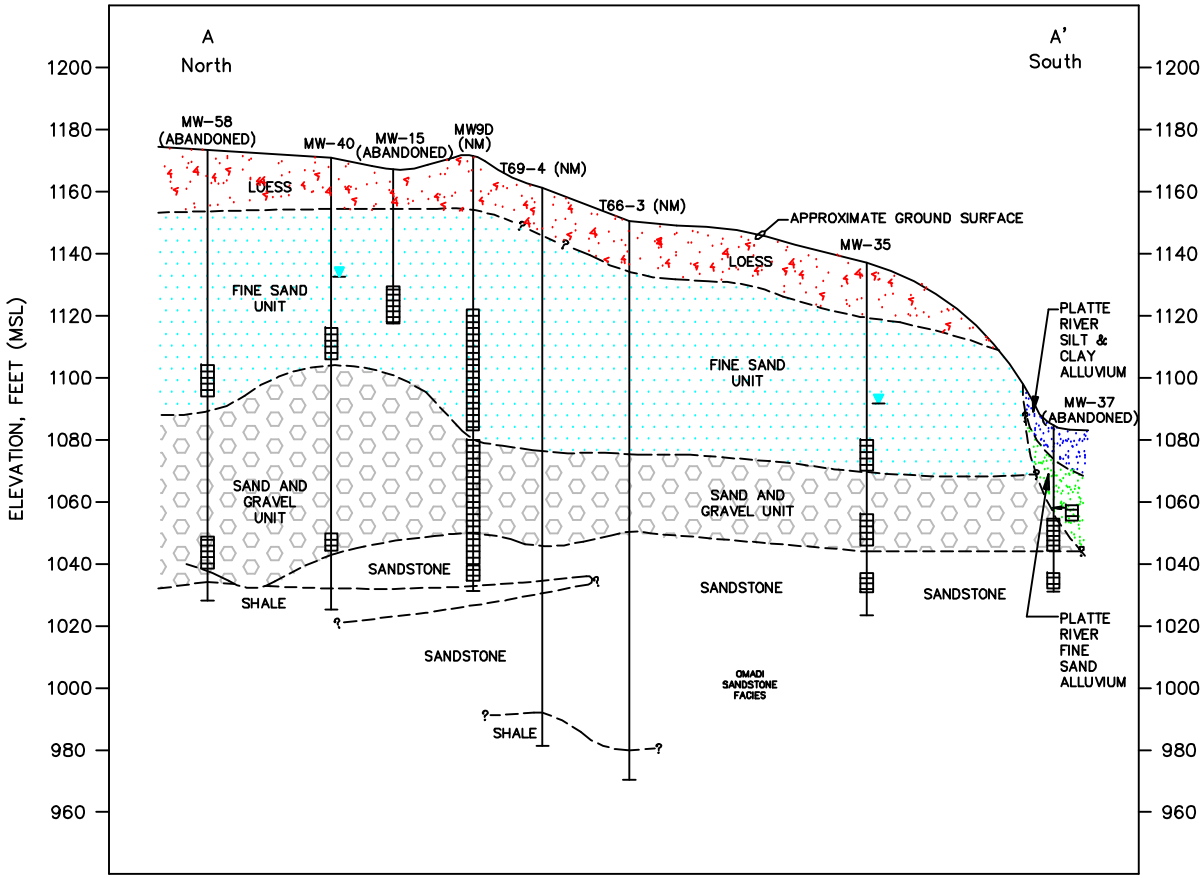
US Army Corps of Engineers
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 2.1
Cross Section Locations

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 01/24/2014	Date: 02/03/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(2-01)Cross_Sec_Loc_2013.mxd



LEGEND:

MW-58 MONITORING WELL LOCATION

T69-4 ARDC TEST HOLE LOCATION

SCREENED INTERVAL FOR EACH WELL IN CLUSTER

GROUNDWATER LEVEL FOR INTERMEDIATE ZONE AS MEASURED IN MARCH 2013

NOTES:

1. SUBSURFACE GEOLOGIC CONDITIONS ARE BASED ON SAMPLE DESCRIPTIONS FROM MONITORING WELL BORING LOGS, DOWNHOLE GEOPHYSICAL LOGS OF MONITORING WELLS, AND ARDC TEST HOLE LOGS (PISKIN, 1971). GEOLOGIC CONDITIONS SHOWN AWAY FROM BORINGS ARE INTERPRETIVE.
2. SEE FIGURE 2.1 FOR CROSS SECTION LOCATIONS.
3. VERTICAL EXAGGERATION 100X.
4. ALL SANDSTONES AND SHALES IN THIS CROSS SECTION ARE PART OF THE OMADI SANDSTONE FACIES.
5. THE UPPER SCREENED INTERVAL OF THE MW-37 CLUSTER IS SHOWN OFFSET FROM THE WELL.
6. UPDATED FROM CROSS SECTIONS IN REMEDIAL INVESTIGATION REPORTS (USACE, 1993a)
7. ARDC-AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER

4000 0 4000 8000

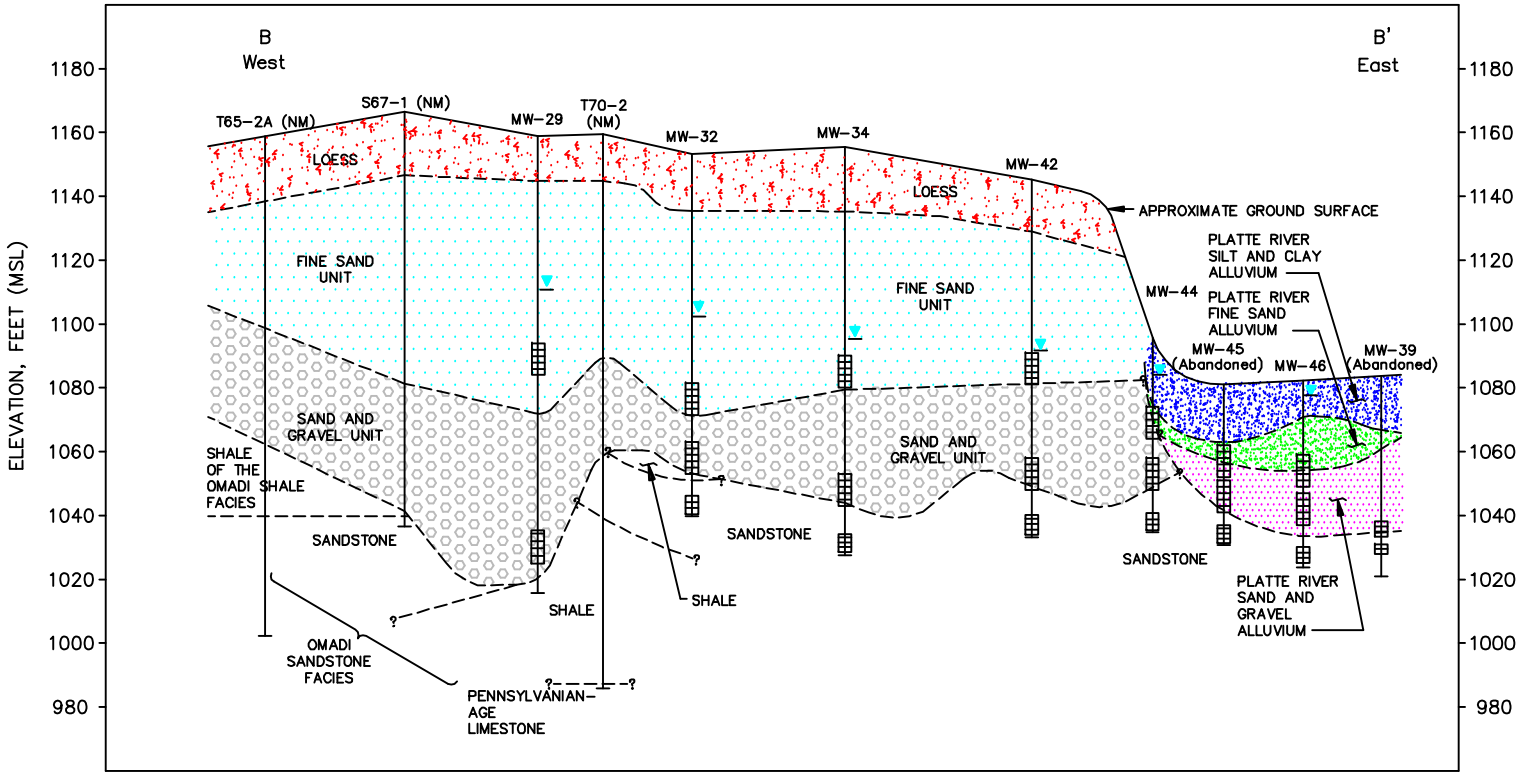
SCALE FEET

US Army Corps of Engineers
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 2.2a
Geologic Cross Section A-A'

Drawn by: MGJ	Reviewed by: RR	Notes and Sources: Units: Feet
Date: February 23, 2009	Date: April 10, 2014	
Version:	Revision Date/Initials: April 10, 2014 TH	



4000 0 4000 8000

SCALE FEET

LEGEND:

MW-29 MONITORING WELL LOCATION

T70-2 ARDC TEST HOLE LOCATION (PISKIN, 1971)

SCREENED INTERVAL FOR EACH WELL IN CLUSTER

GROUNDWATER LEVEL FOR THE INTERMEDIATE ZONE AS MEASURED IN MARCH 2013

NOTES:

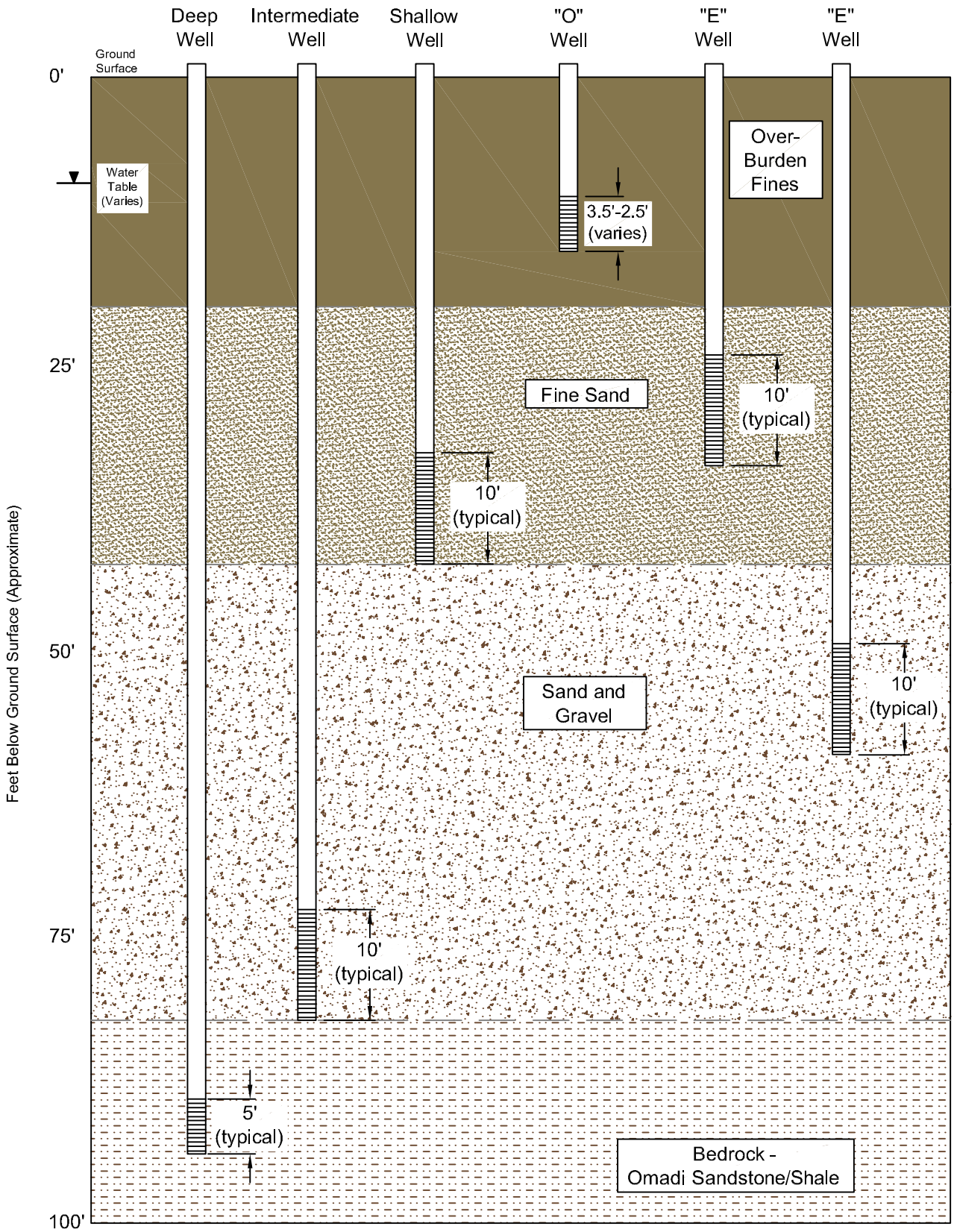
1. SUBSURFACE GEOLOGIC CONDITIONS ARE BASED ON SAMPLE DESCRIPTIONS FROM MONITORING WELL BORING LOGS, DOWNHOLE GEOPHYSICAL LOGS OF MONITORING WELLS, AND ARDC TEST HOLE LOGS (PISKIN, 1971). GEOLOGIC CONDITIONS SHOWN AWAY FROM BORINGS ARE INTERPRETIVE.
2. SEE FIGURE 2.1 FOR CROSS SECTION LOCATIONS.
3. VERTICAL EXAGGERATION 100X.
4. UPDATED FROM CROSS SECTIONS IN REMEDIAL INVESTIGATION REPORTS (USACE, 1993a)
5. ARDC-AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER

US Army Corps of Engineers
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 2.2b
Geologic Cross Section B-B'

Drawn by: MGJ	Reviewed by: RR	Notes and Sources: Units: Feet
Date: February 23, 2009	Date: April 10, 2014	
Version:	Revision Date/Initials: April 10, 2014 TH	

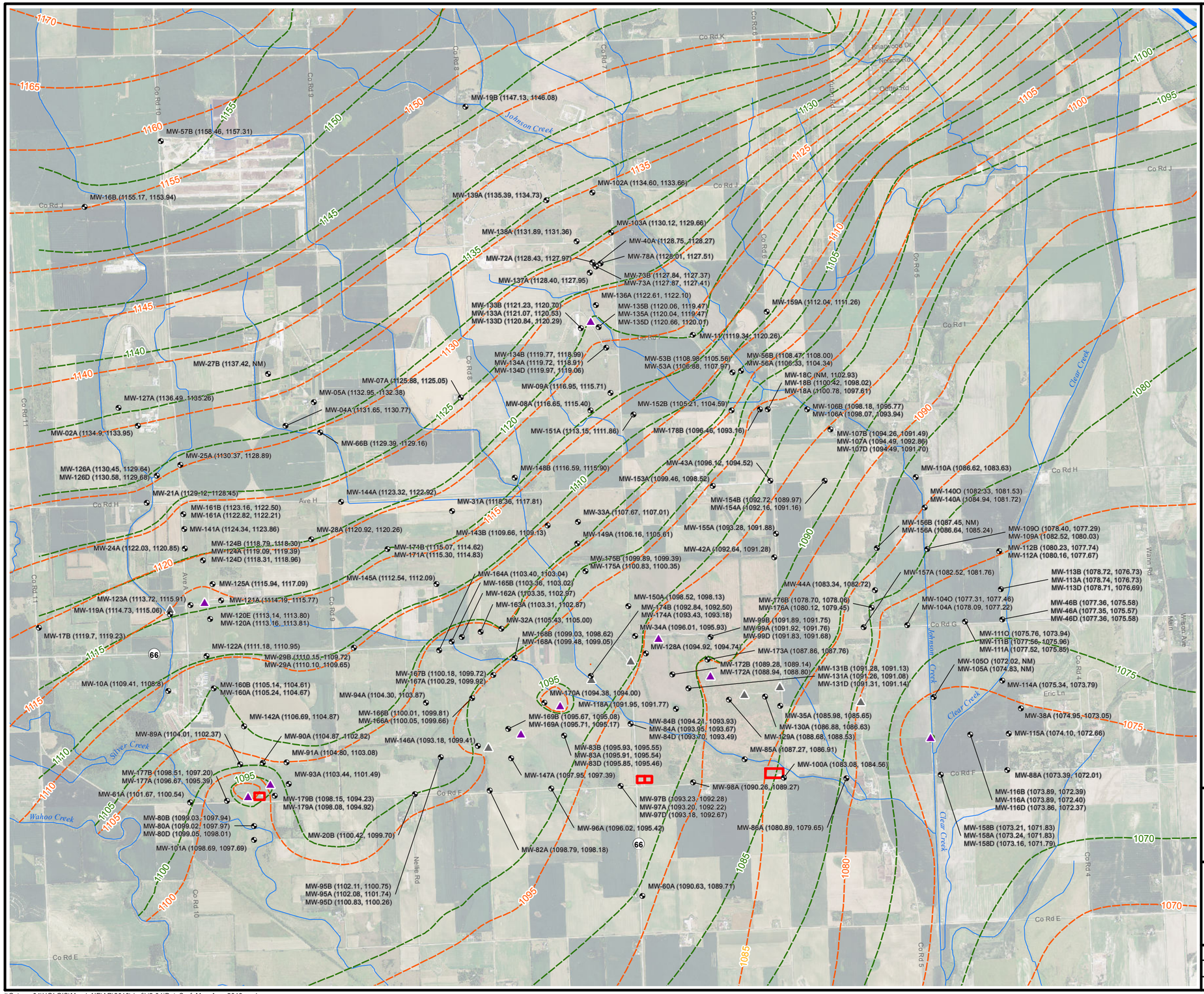


Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Monitoring Well Depth Intervals and Designations

Drawing No.: **Figure 2.3**

Date: **02/27/2014**



Legend

- Groundwater Monitoring Well/Well Cluster
- Groundwater Extraction Well
- Groundwater Extraction Well (Inactive)
- 1100 March 2013 Potentiometric Contour
- 1100 August 2013 Potentiometric Contour
- Groundwater Treatment Plant
- MW-110A (1086.62, 1083.63) — Water Level Elevations from the March and August Measurement Events

NOTES:

Water level elevations in feet above mean sea level.

NM = Not Measured

Observation wells are not plotted on this map; however, observation well water levels were used in the production of the potentiometric surfaces.

The 5-foot contour interval does not illustrate drawdown at all extraction wells.

Hydraulic Gradient (i) calculations between
MW-07A and MW-100A:
March 2013 = 0.0024
August 2013 = 0.0023

N

0 1,750 3,500 7,000
Feet

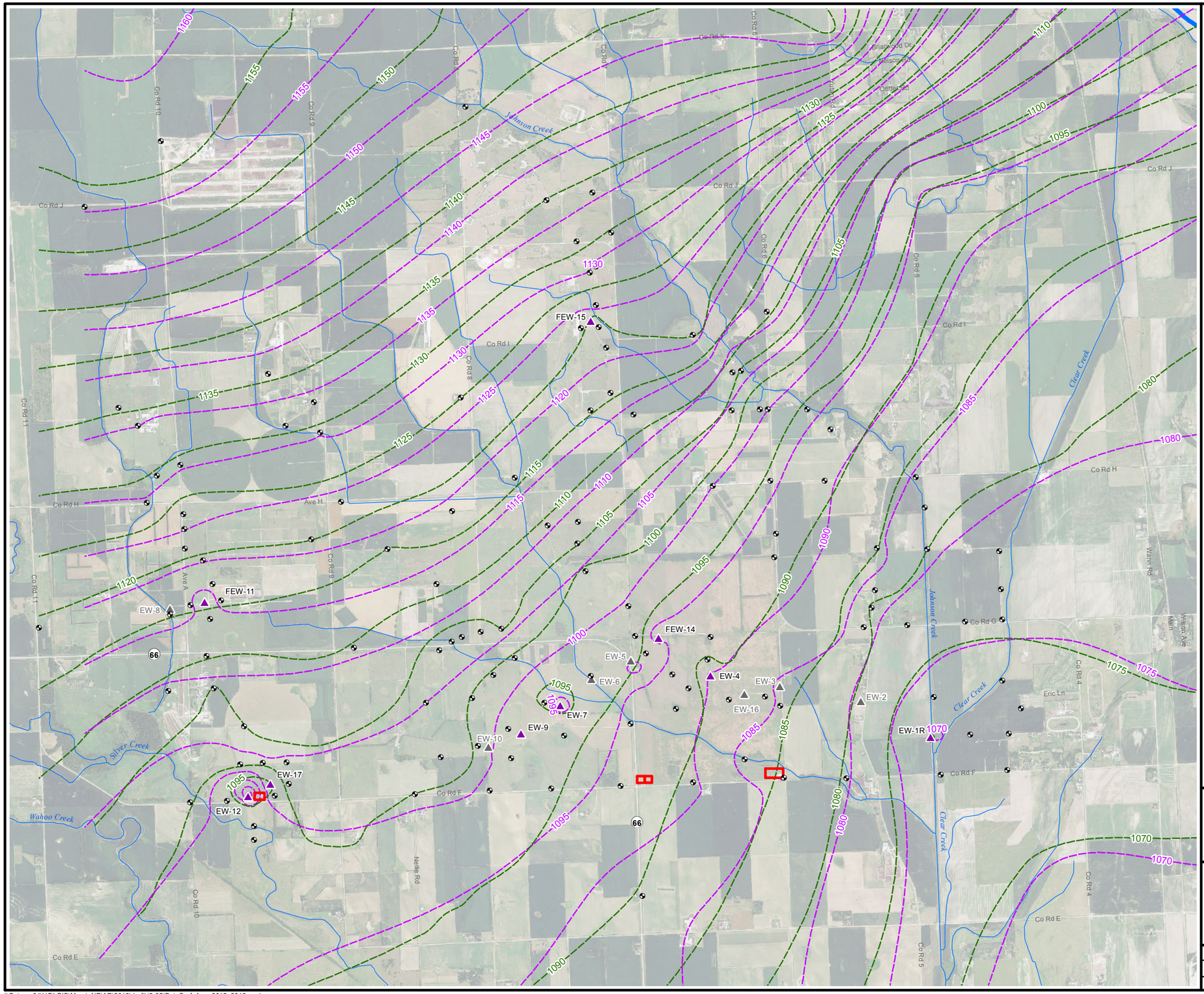
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 2.4
Potentiometric Surface of the Intermediate Zone
March 2013 and August 2013

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 01/24/2014	Date: 02/27/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(2-04)Pot_Surf_Mar_Aug_2013.mxd



Legend

- Groundwater Monitoring Well/Well Cluster
- Groundwater Extraction Well
- Groundwater Extraction Well (Inactive)
- 1100 August 2012 Potentiometric Contour
- 1100 August 2013 Potentiometric Contour
- Groundwater Treatment Plant

NOTES:

Water level elevations in feet above mean sea level.

Observation wells are not plotted on this map; however, observation well water levels were used in the production of the potentiometric surfaces.

The 5-foot contour interval does not illustrate drawdown at all extraction wells.

N

0 1,750 3,500 7,000

Feet

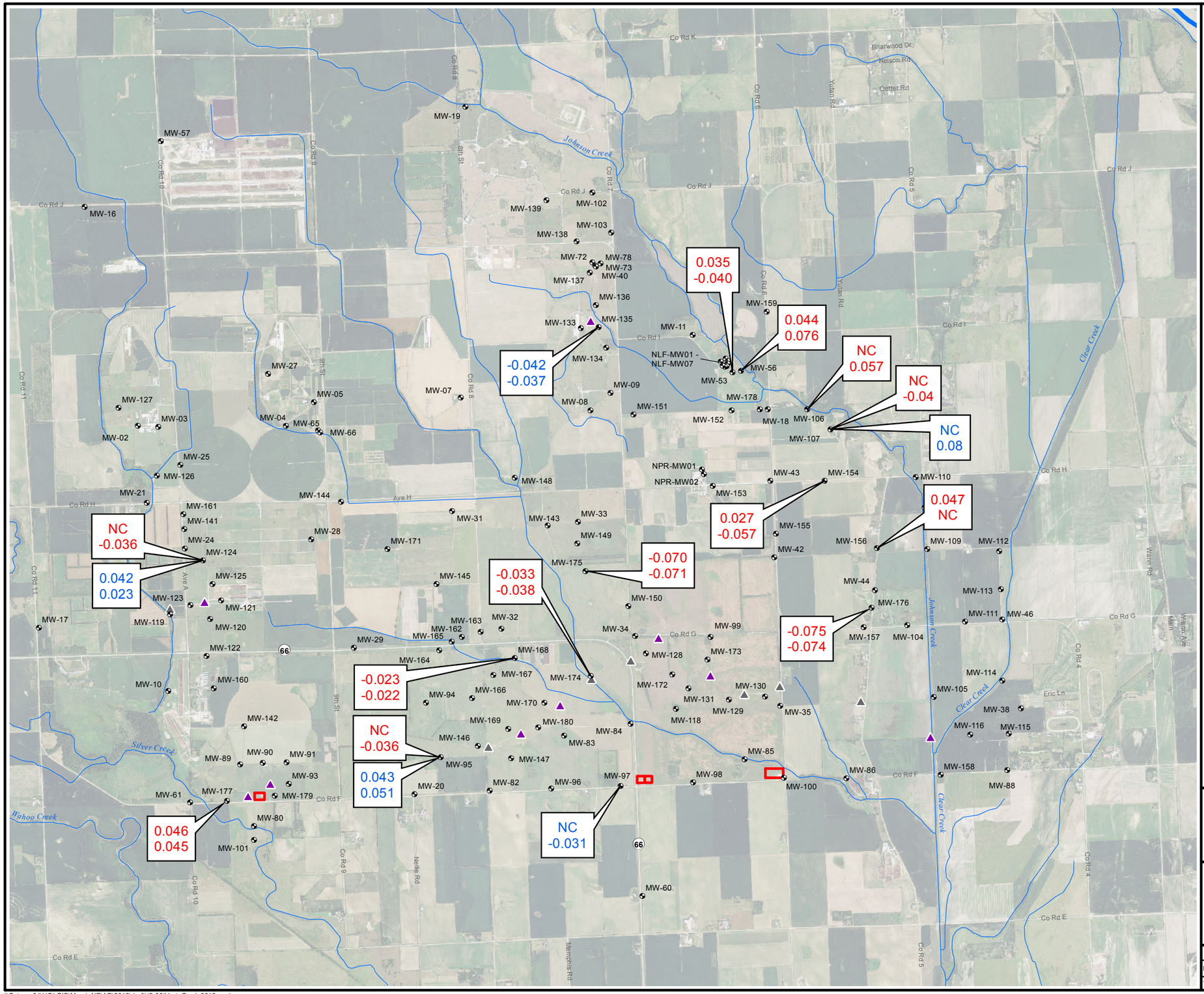
US Army Corps of Engineers
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 2.5
Potentiometric Surface of the Intermediate Zone - August 2012 and 2013

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 01/24/2014	Date: 02/27/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(2-05)Pot_Surf_Aug_2012_2013.mxd



Legend

- Groundwater Monitoring Well/Well Cluster
- Groundwater Extraction Well
- Groundwater Extraction Well (Inactive)
- Groundwater Treatment Plant
- 0.035 / -0.040 — Vertical hydraulic gradient between the Shallow Zone and the Intermediate Zone for March (top value) and August (bottom value), 2013
- 0.043 / 0.051 — Vertical hydraulic gradient between the Intermediate Zone and the Deep Zone for March (top value) and August (bottom value), 2013

NOTES:

Vertical gradient values are in feet of head per feet between screened intervals. Positive vertical gradient indicates downward flow and negative vertical gradient indicates upward flow.

NC = Not calculated.

N

0 1,750 3,500 7,000

Feet

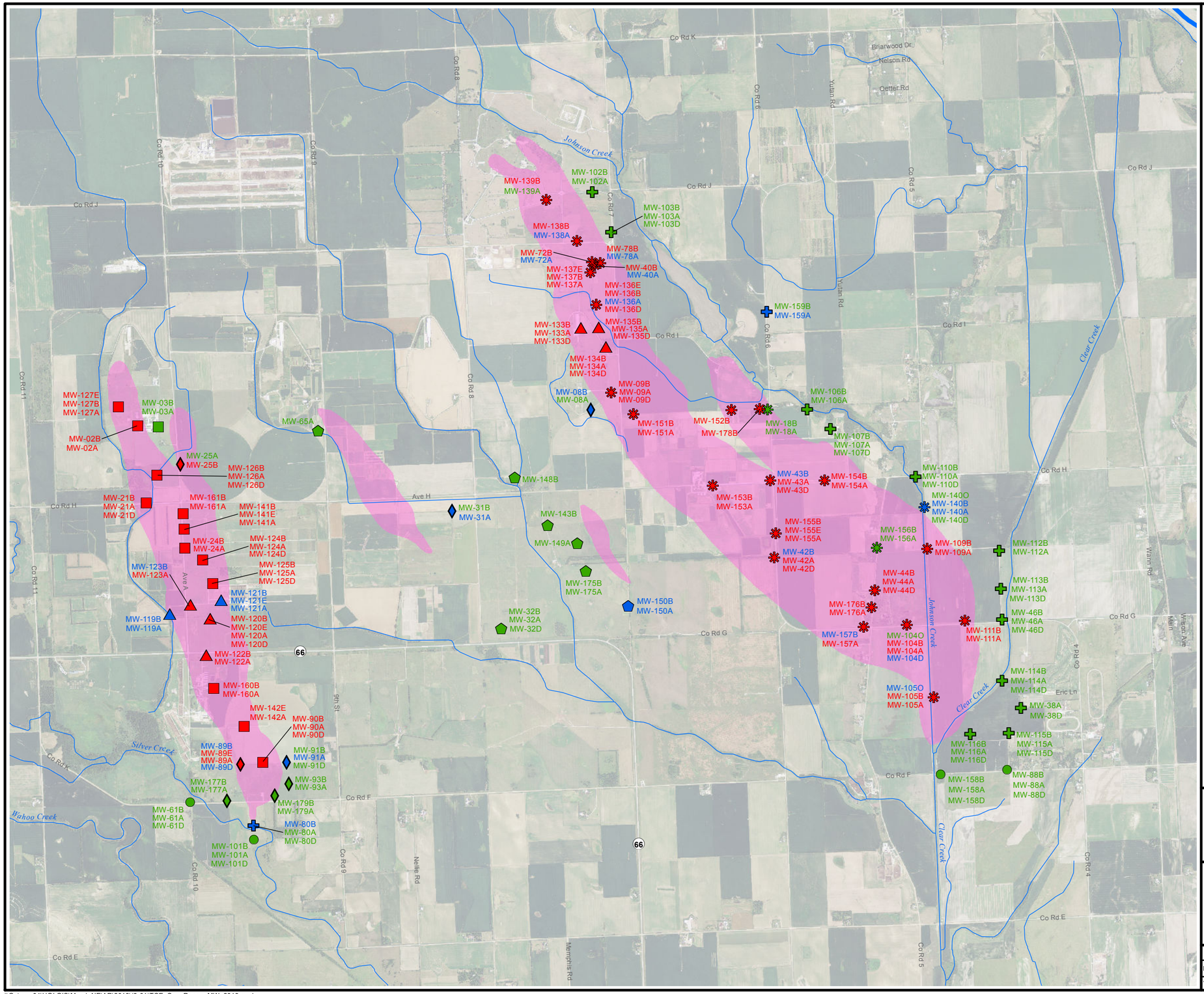
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 2.6
Vertical Gradients

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 01/24/2014	Date: 02/27/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(2-06)Vert_Grad_2013.mxd



Legend

- Compliance Monitoring Well
- Load Line 1 Interior Plume Monitoring Well
- Load Line 2 and Load Line 3 Interior Plume Monitoring Well
- Load Line 4/Atlas Missile Area and Landfill Interior Plume Monitoring Well
- Focused Extraction Monitoring Well
- Perimeter Monitoring Well
- Sidegradient/Downgradient Monitoring Well
- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)

Red - TCE Detected At or Above 5 µg/L

Blue - TCE Detected Below 5 µg/L

Green - TCE Not Detected

NOTES:

TCE plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
µg/L = micrograms per liter

The highest detection from each sample location was used to determine the symbol color.

N

0 1,750 3,500 7,000
Feet

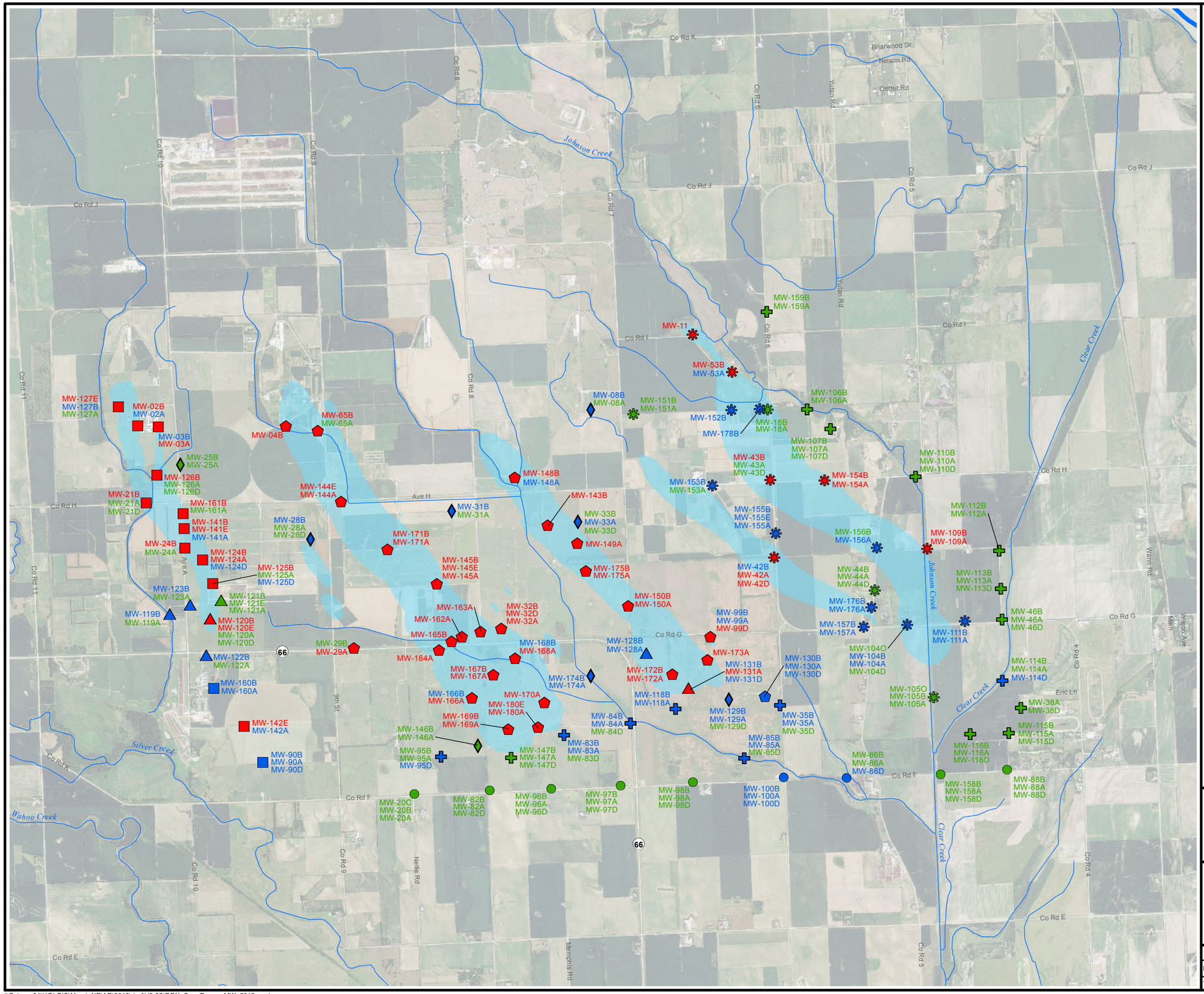
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.1
TCE Concentration Range for Monitoring Wells - 2013 Sampling Events

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/05/2014	Date: 02/27/2014	
Version: 2	Revision Date / Initials: 02/27/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\(3-01)TCE_Con_Range_MW_2013.mxd



Legend

- Compliance Monitoring Well
- Load Line 1 Interior Plume Monitoring Well
- Load Line 2 and Load Line 3 Interior Plume Monitoring Well
- Load Line 4/Atlas Missile Area and Landfill Interior Plume Monitoring Well
- Focused Extraction Monitoring Well
- Perimeter Monitoring Well
- Sidegradient/Downgradient Monitoring Well
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)

Red - RDX Detected At or Above 2 µg/L

Blue - RDX Detected Below 2 µg/L

Green - RDX Not Detected

NOTES:

RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

The highest detection from each sample location was used to determine the symbol color.

N

0 1,750 3,500 7,000

Feet

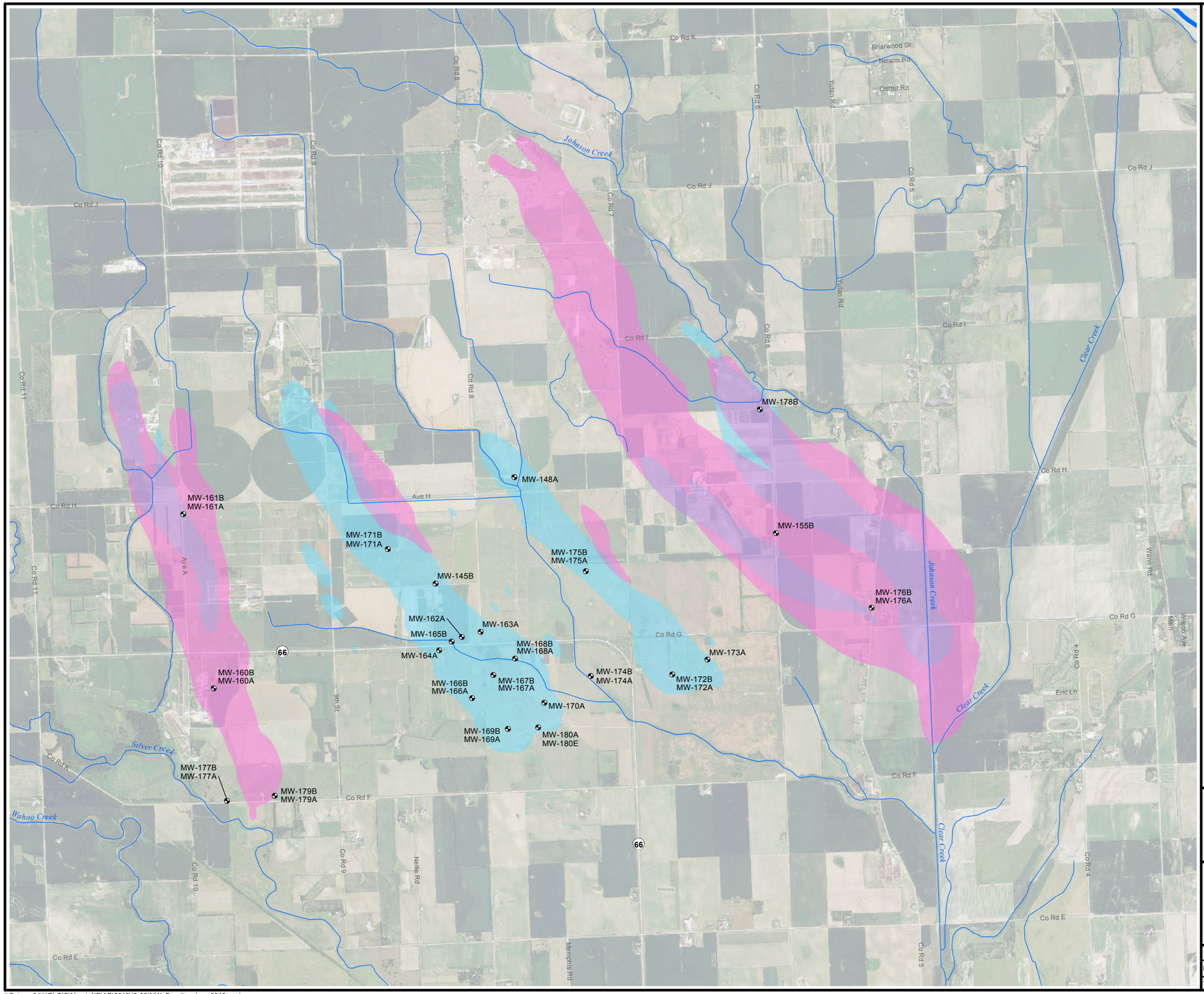
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.2
RDX Concentration Range for Monitoring Wells - 2013 Sampling Events

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/05/2014	Date: 02/27/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\ARI\2013\draft\(3-02)RDX_Con_Range_MW_2013.mxd



Legend

- Baseline Monitoring Well/Well Cluster

Contaminant Plume

- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)
- Approximate Area of Both TCE at a Concentration of 5 µg/L or Greater and RDX at a Concentration of 2 µg/L or Greater (2013)

NOTES:

TCE and RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

N

0 1,750 3,500 7,000
Feet

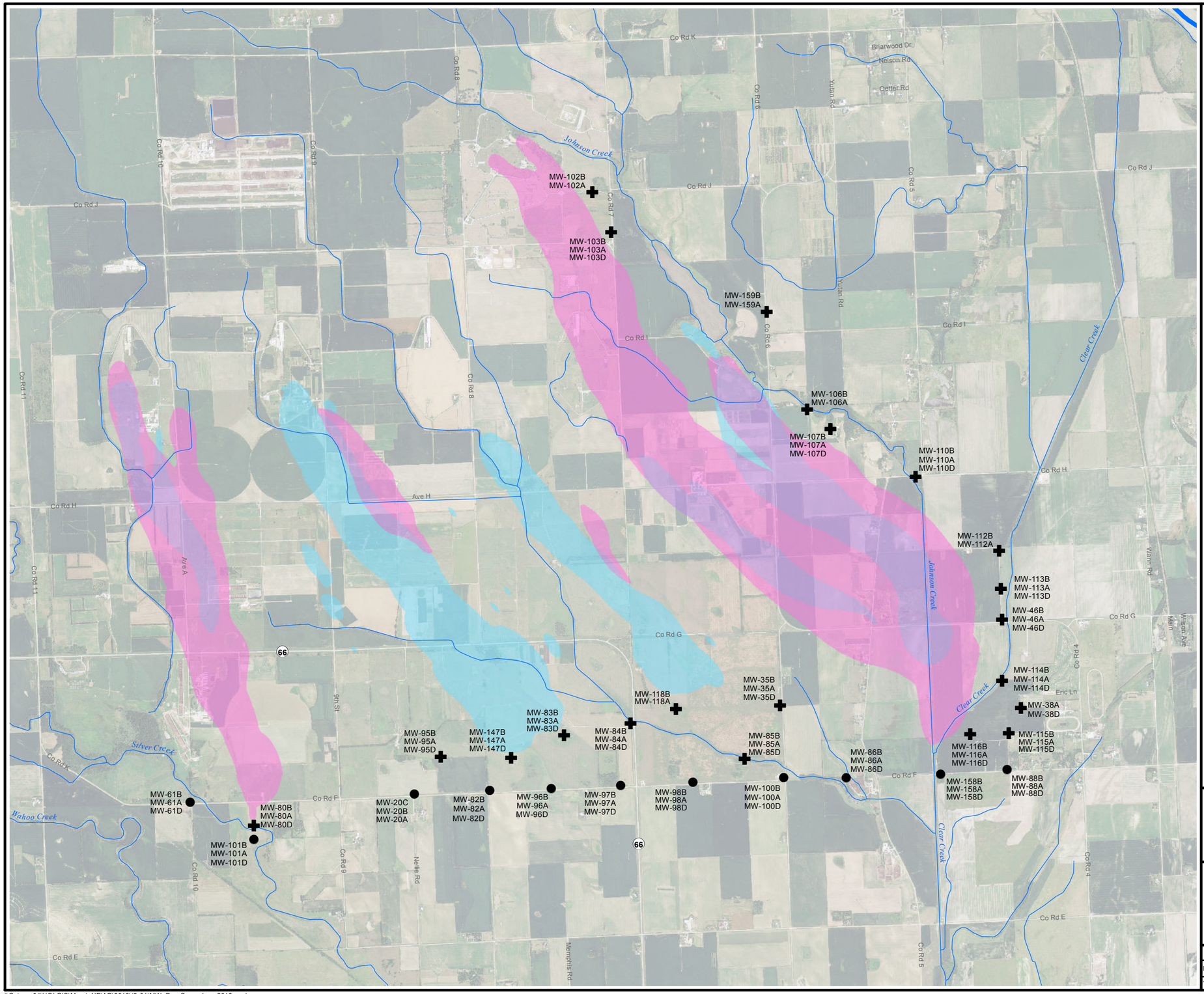
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.3
2013 Baseline Monitoring Wells

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/06/2014	Date: 02/27/2014	
Version: 2	Revision Date / Initials: 02/28/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\(3-03)MW_Baseline_Loc_2013.mxd



Legend

✚ Perimeter Monitoring Well

● Compliance Monitoring Well

Contaminant Plume

- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)
- Approximate Area of Both TCE at a Concentration of 5 µg/L or Greater and RDX at a Concentration of 2 µg/L or Greater (2013)

NOTES:

TCE and RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

N

0 1,750 3,500 7,000

Feet

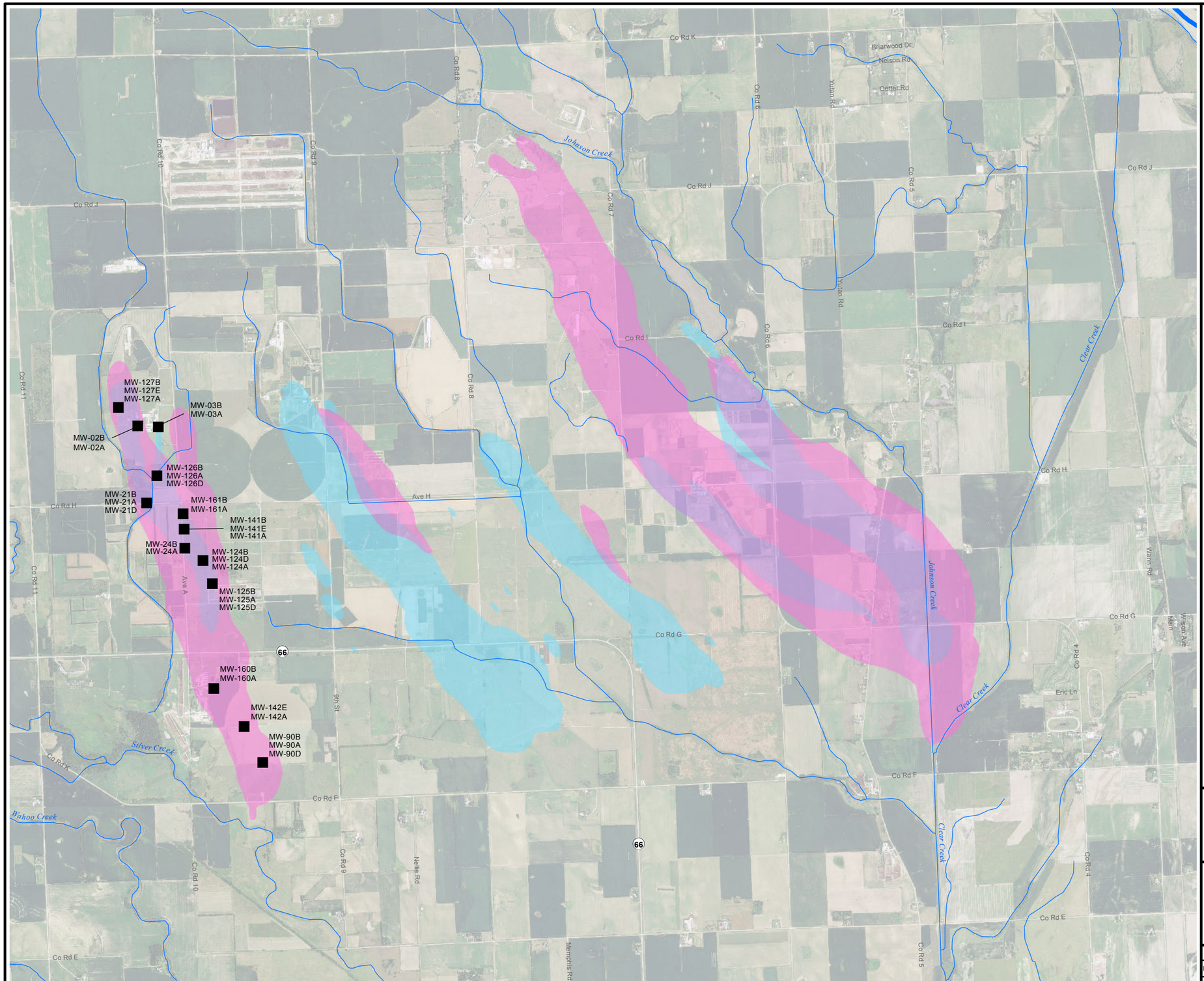
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.4
Perimeter and Compliance Monitoring Wells Sampled During 2013

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/06/2014	Date: 02/27/2014	
Version: 2	Revision Date / Initials: 02/28/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\(3-04)MW_Per_Comp_Loc_2013.mxd



Legend

■ Load Line 1 Interior Plume Monitoring Well

Contaminant Plume

- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)
- Approximate Area of Both TCE at a Concentration of 5 µg/L or Greater and RDX at a Concentration of 2 µg/L or Greater (2013)

NOTES:

TCE and RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

N

0 1,750 3,500 7,000
Feet

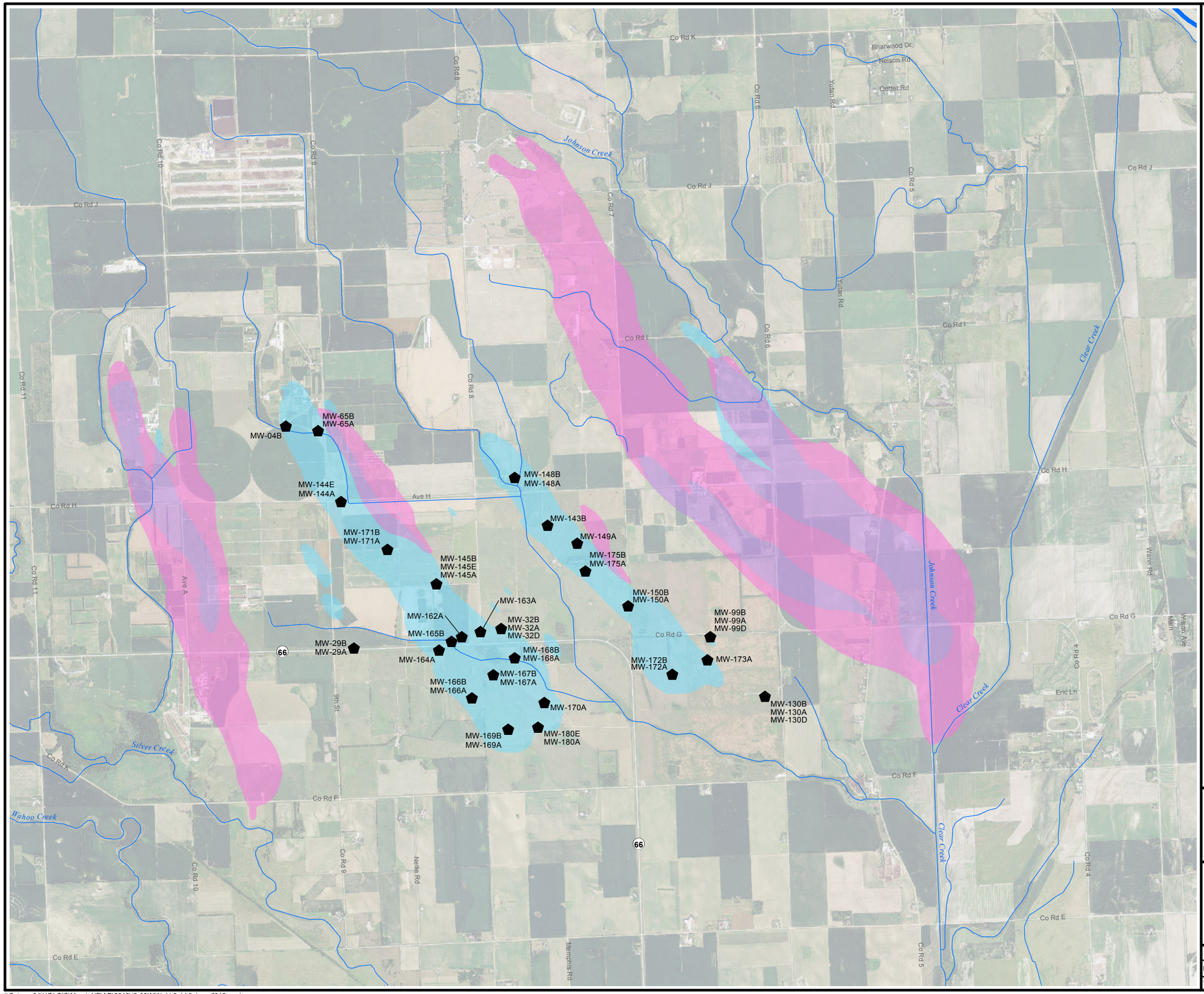
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.5
Interior LL1 Plume Monitoring Wells Sampled During 2013

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/06/2014	Date: 02/27/2014	
Version: 2	Revision Date / Initials: 02/28/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\(3-05)MW_LL1_Loc_2013.mxd



Legend

Load Line 2 and Load Line 3 Interior Plume Monitoring Well

Contaminant Plume

- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)
- Approximate Area of Both TCE at a Concentration of 5 µg/L or Greater and RDX at a Concentration of 2 µg/L or Greater (2013)

NOTES:

TCE and RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

N

0 1,750 3,500 7,000
Feet

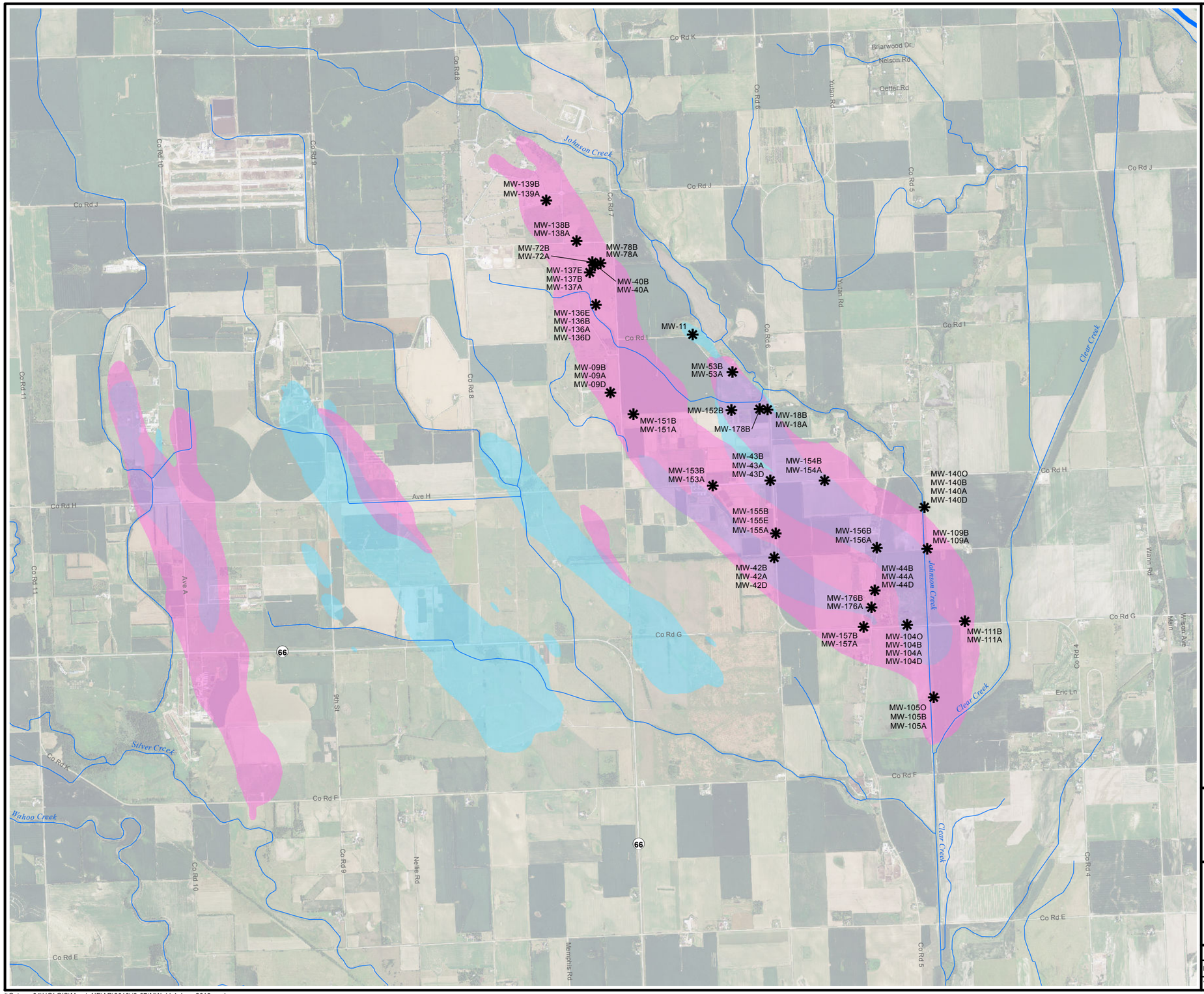
US Army Corps of Engineers
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.6
Interior LL2 and LL3 Plume Monitoring Wells Sampled During 2013

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/06/2014	Date: 02/27/2014	
Version: 2	Revision Date / Initials: 02/28/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\(3-06)MW_LL2_LL3_Loc_2013.mxd



Legend

✱ Load Line 4/Atlas Missile Area and Landfill Interior Plume Monitoring Well

Contaminant Plume

- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)
- Approximate Area of Both TCE at a Concentration of 5 µg/L or Greater and RDX at a Concentration of 2 µg/L or Greater (2013)

NOTES:

TCE and RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

N

0 1,750 3,500 7,000
Feet

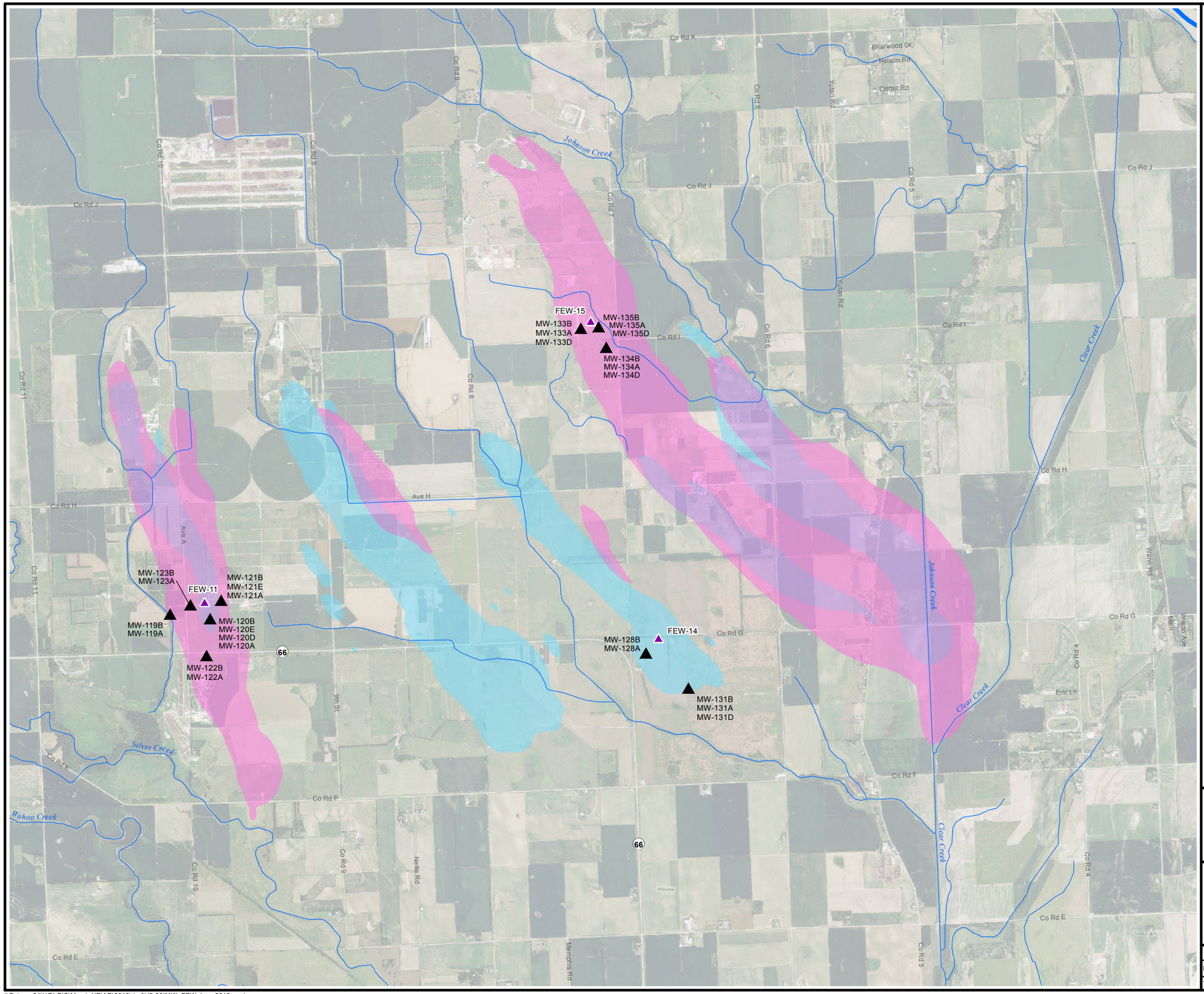
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.7
LL4/Atlas Missile Area/Landfill Interior Plume Monitoring Wells Sampled During 2013

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/07/2014	Date: 02/27/2014	
Version: 2	Revision Date / Initials: 02/28/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NEVAR\2013\(3-07)MW_LL4_Loc_2013.mxd



Legend

- Focused Extraction Monitoring Well
- Focused Extraction Well

Contaminant Plume

- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)
- Approximate Area of Both TCE at a Concentration of 5 µg/L or Greater and RDX at a Concentration of 2 µg/L or Greater (2013)

NOTES:

TCE and RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

N

0 1,750 3,500 7,000
Feet

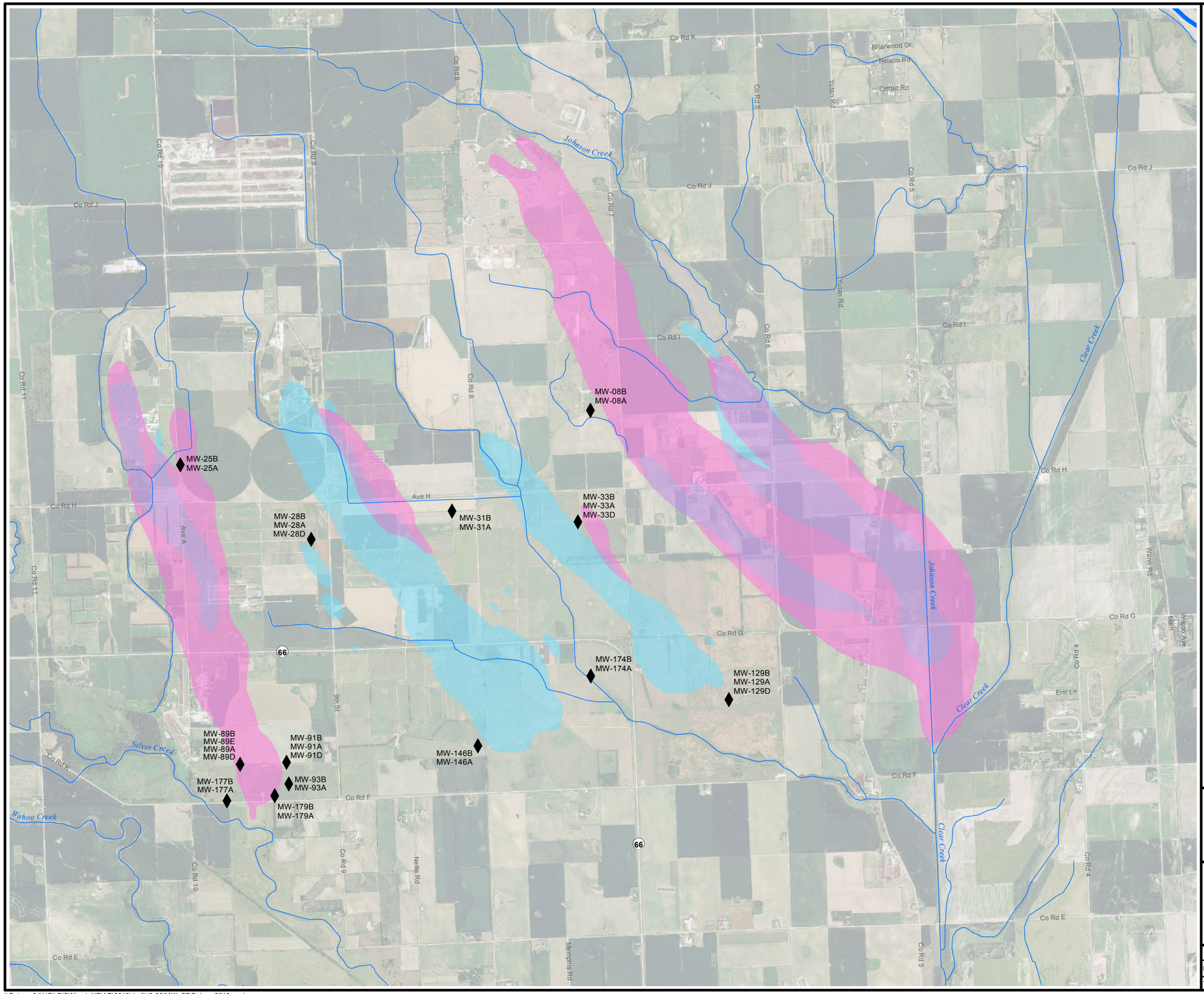
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.8
Monitoring Wells Associated with Focused Extraction Wells Sampled During 2013

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/07/2014	Date: 02/27/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(3-08)MW_FEW_Loc_2013.mxd



Legend

♦ Sidegradient/Downgradient Monitoring Well

Contaminant Plume

- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)
- Approximate Area of Both TCE at a Concentration of 5 µg/L or Greater and RDX at a Concentration of 2 µg/L or Greater (2013)

NOTES:

TCE and RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

N

0 1,750 3,500 7,000
Feet

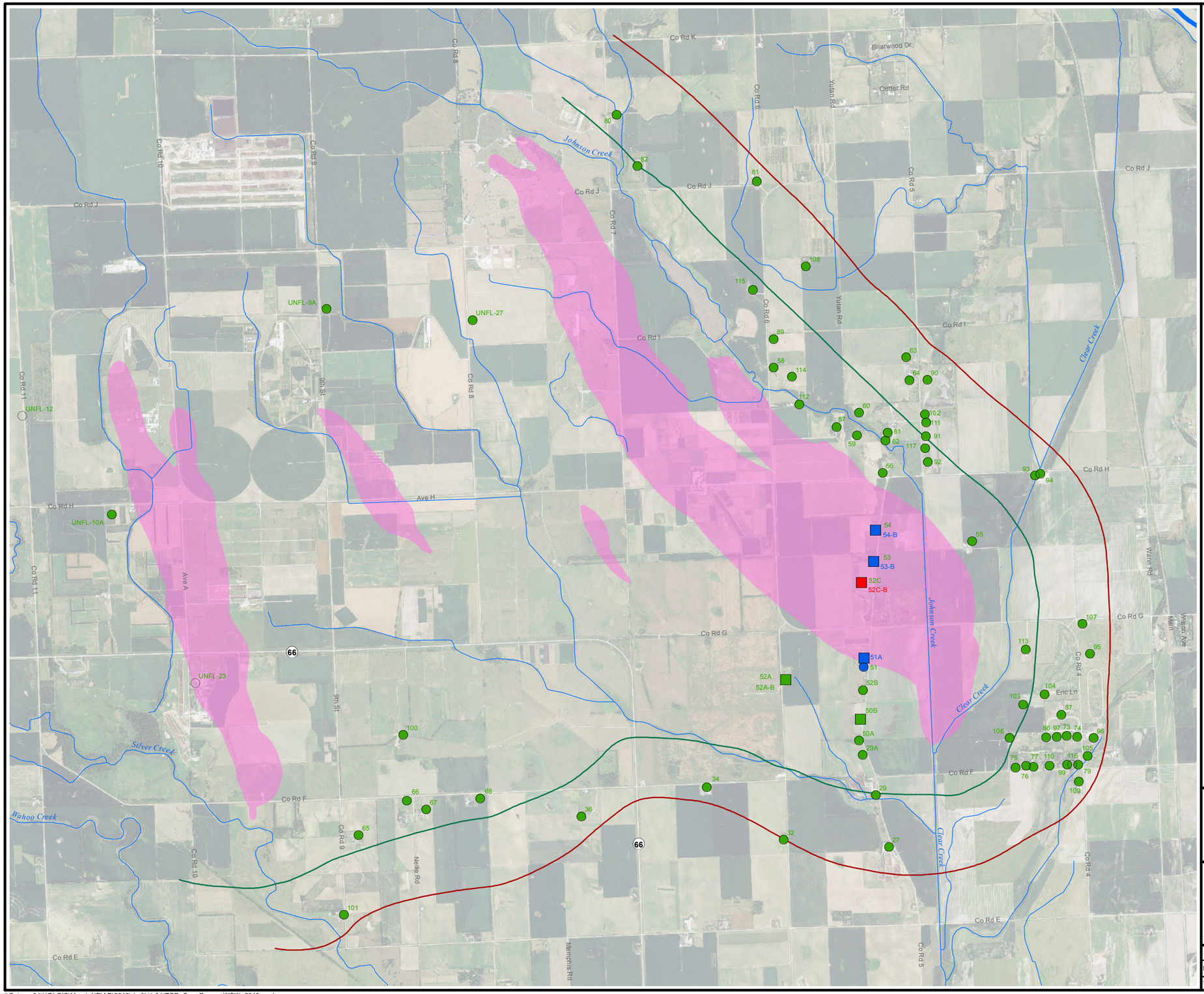
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 3.9
Sidegradient and Downgradient Monitoring Wells Sampled During 2013

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 02/07/2014	Date: 02/27/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(3-09)MW_SDG_Loc_2013.mxd



Legend

- Water Supply Well
- Alternate Water Supply Well
- Half-Mile Buffer Zone
- One-Mile Buffer Zone
- Approximate Area of TCE at a Concentration of 5 µg/L or Greater (2013)

Red - TCE Detected At or Above 5 µg/L

Blue - TCE Detected Below 5 µg/L

Green - TCE Not Detected

NOTES:

TCE plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

TCE = trichloroethene
µg/L = micrograms per liter

The highest detection from each sample location was used to determine the symbol color.

N

0 1,750 3,500 7,000

Feet

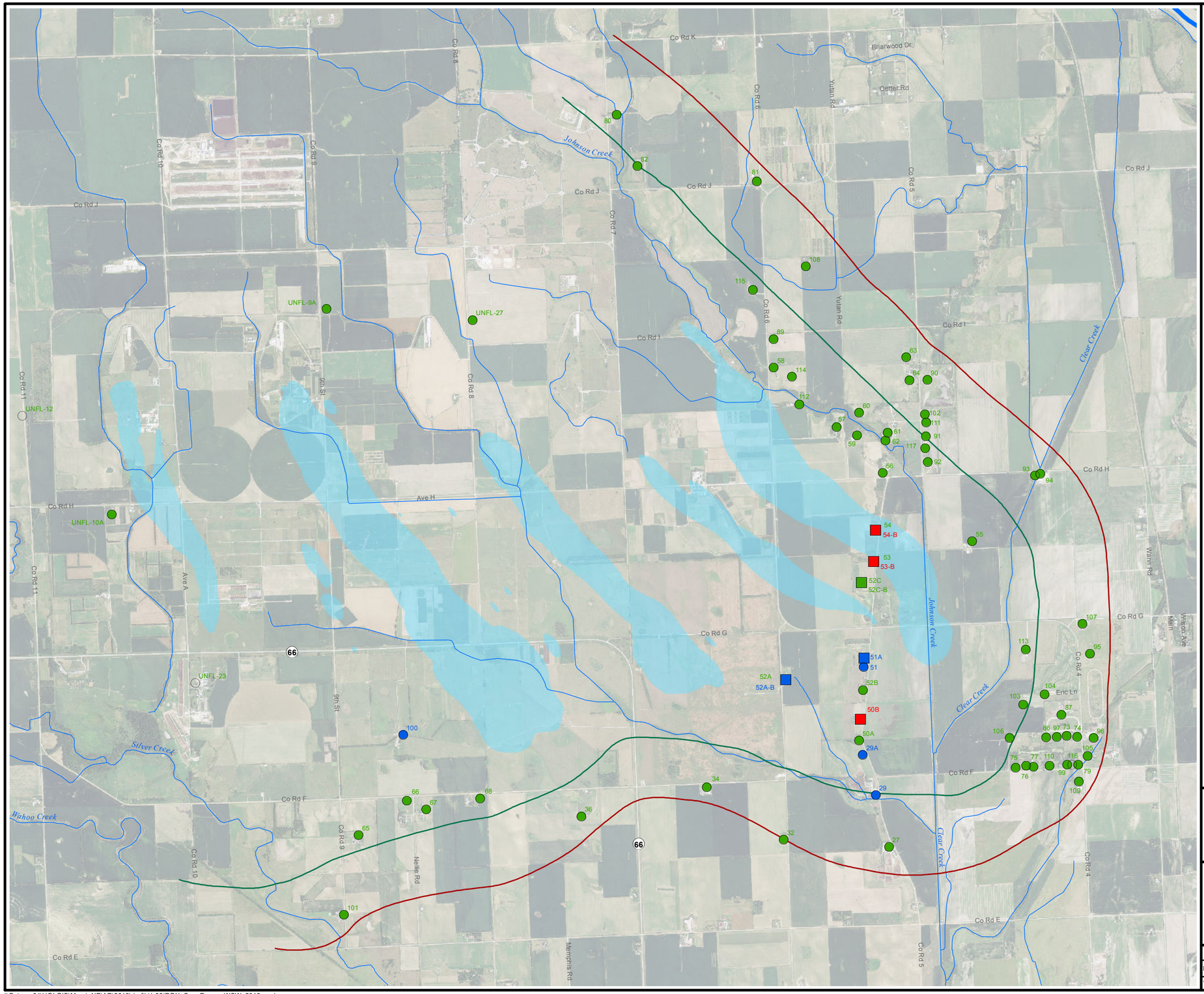
US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 4.1
TCE Concentration Range for Water Supply Wells - 2013 Sampling Events

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 01/24/2014	Date: 02/27/2014	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(4-01)TCE_Con_Range_WSW_2013.mxd



Legend

- Water Supply Well
- Alternate Water Supply Well
- Half-Mile Buffer Zone
- One-Mile Buffer Zone
- Approximate Area of RDX at a Concentration of 2 µg/L or Greater (2013)

Red - RDX Detected At or Above 2 µg/L

Blue - RDX Detected Below 2 µg/L

Green - RDX Not Detected

NOTES:

RDX plume delineations are based on Groundwater Monitoring Program data, direct-push data, and other data. The plume delineations represent a combination of the shallow zone data and the intermediate zone data.

RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
µg/L = micrograms per liter

The highest detection from each sample location was used to determine the symbol color.

N

0 1,750 3,500 7,000

Feet

US Army Corps of Engineers ®
Kansas City District

Former Nebraska Ordnance Plant
Mead, Nebraska
2013 Annual Report

Figure 4.2
RDX Concentration Range for Water Supply Wells - 2013 Sampling Events

Drawn by: RR	Reviewed by: TH, LT	Source: HGL, ECC, NAIP (2012) Projection: NAD 1983 Nebraska State Plane Units: Feet
Date: 01/24/2014	Date: 02/27/2018	
Version: 3	Revision Date / Initials: 04/21/2014 RR	

\\Gst-srv-01\HGLGIS\Mead_NE\AR\2013\draft\(4-02)RDX_Con_Range_WSW_2013.mxd

APPENDICES A THROUGH P
(PROVIDED ON CD ONLY)

Appendix A Concentration Trend Charts
- A.1 - Perimeter Monitoring Wells
- A.2 - Compliance Monitoring Wells
- A.3 - Load Line 1 Interior Plume Monitoring Wells
- A.4 - Load Line 2 and Load Line 3 Interior Plume Monitoring Wells
- A.5 - Load Line 4 Interior Plume Monitoring Wells
- A.6 - Monitoring Wells associated with Focused Extraction Wells
- A.7 - Upgradient, Sidegradient, and Downgradient Monitoring Wells
- A.8 - Water Supply Wells

Appendix B Statistical Charts

Appendix C Summary of Results from the 2013 Monitoring Well Sampling Events

Appendix D Quality Control Summary Report Fourth Quarter 2013 Groundwater Monitoring Program Sampling Events

Appendix E Quality Control Summary Report Fourth Quarter 2013 Water Supply Well Sampling Event

Appendix F Quality Control Summary Report Fourth Quarter 2013 Operation and Maintenance Sampling Events

Appendix G 2013 Data Quality Assessment Report

Appendix H Process Flow Data for the Main Groundwater Treatment Plant

Appendix I Monthly and Annual Flow Summary for the Main Groundwater Treatment Plant

Appendix J 2013 Main Groundwater Treatment Plant Sludge Profile

Appendix K Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant

Appendix L Monthly Flow Summary for Advanced Oxidation Process Groundwater Treatment Plant

Appendix M Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant

Appendix N Groundwater Circulation Well GCW-0l Operational Data

Appendix O Analytical Results Summary for Monitoring Wells Surrounding Groundwater Circulation Well GCW-0l

Appendix P Concentration Trend Charts for Extraction Wells

This page was intentionally left blank.

APPENDIX A

Concentration Trend Charts

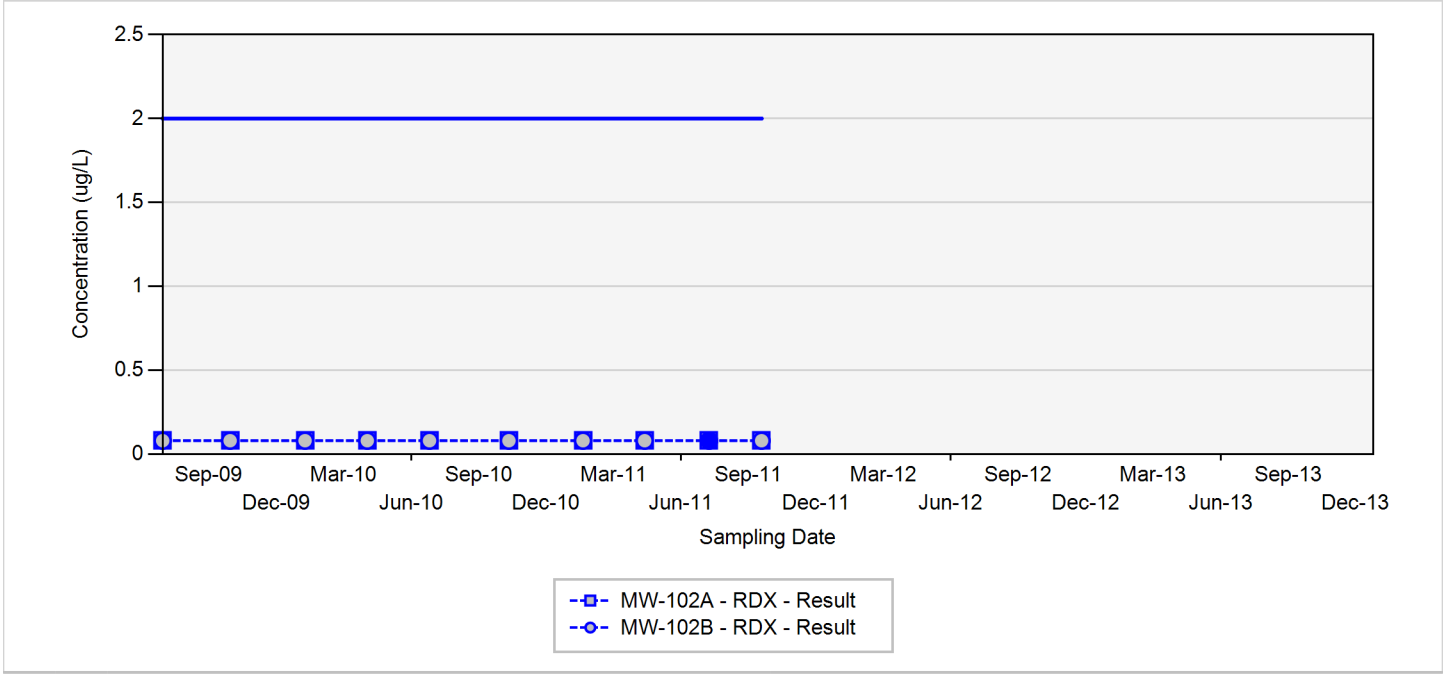
This page was intentionally left blank.

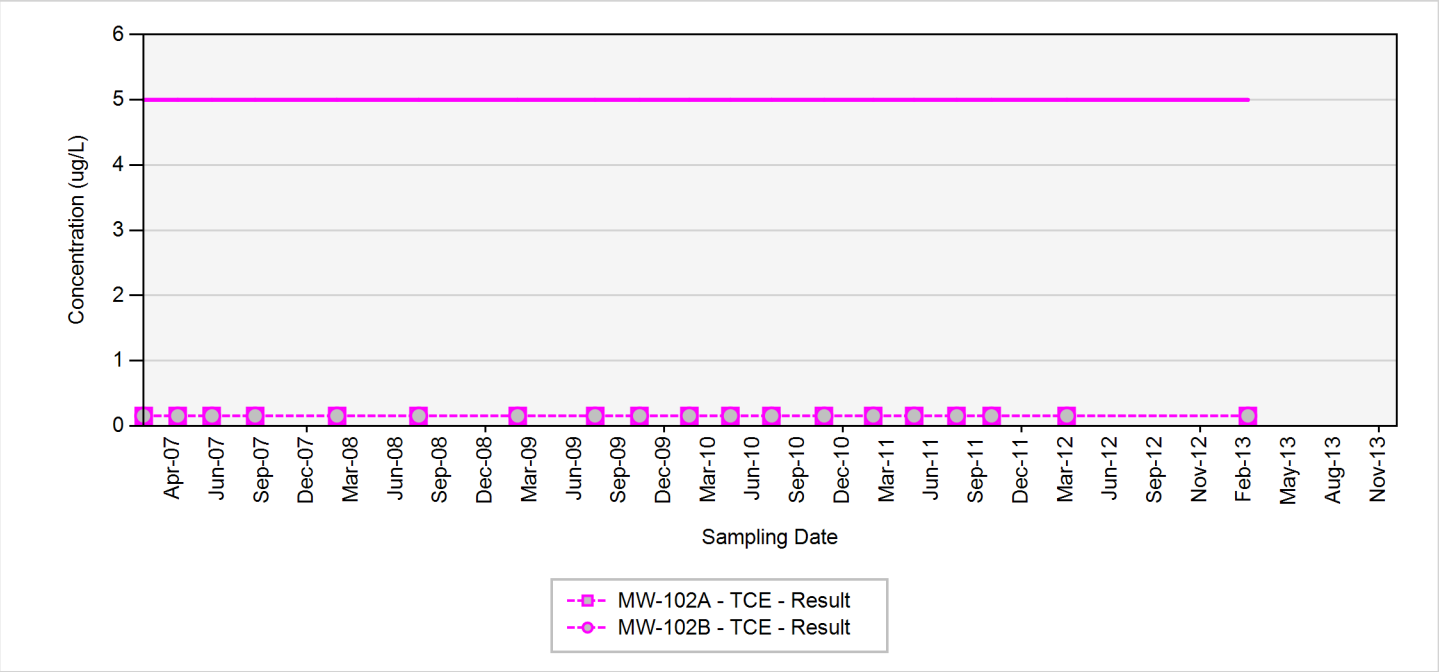
A.1 – Perimeter Monitoring Wells

This page was intentionally left blank.

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-102





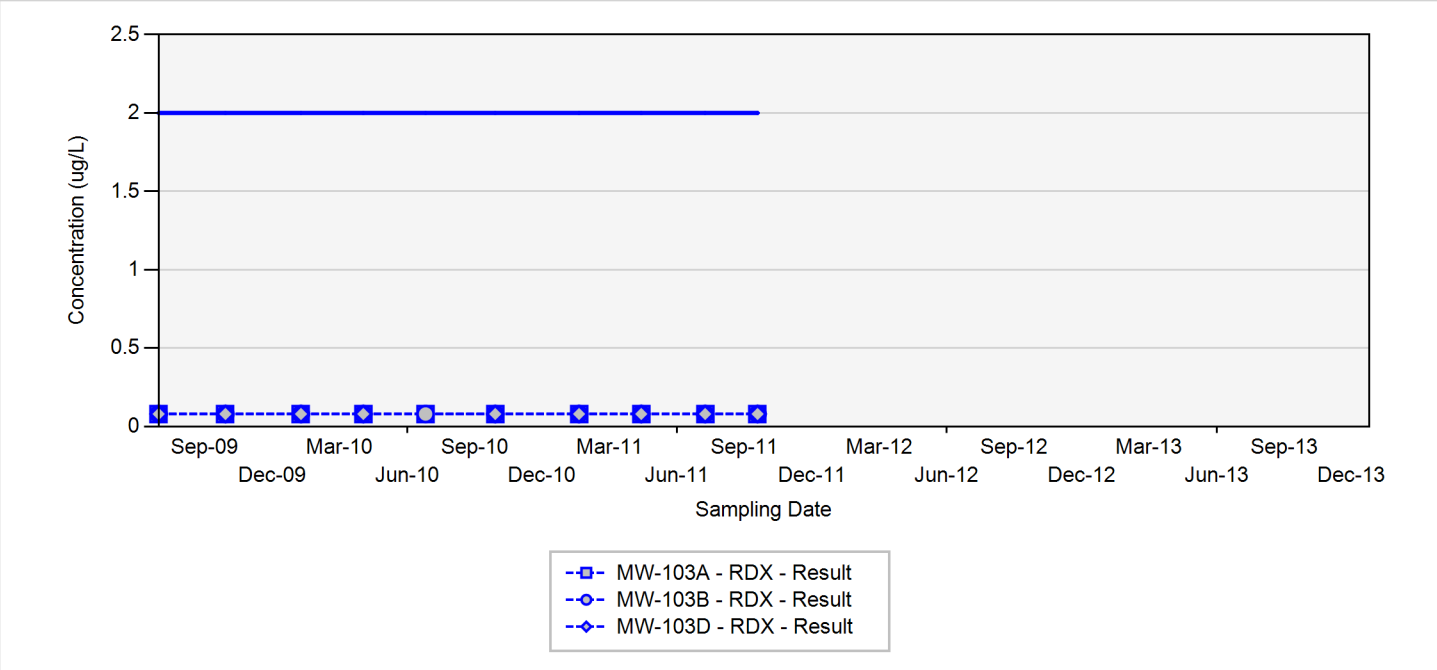
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

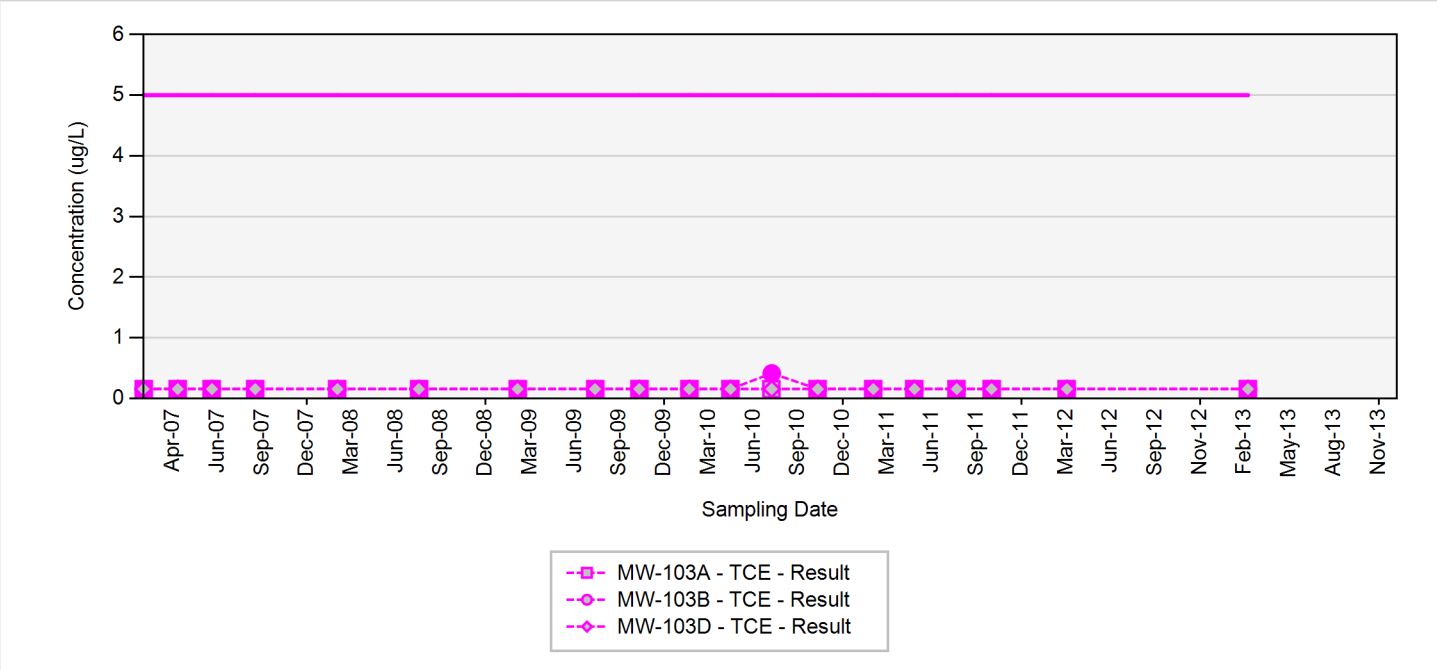
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-103





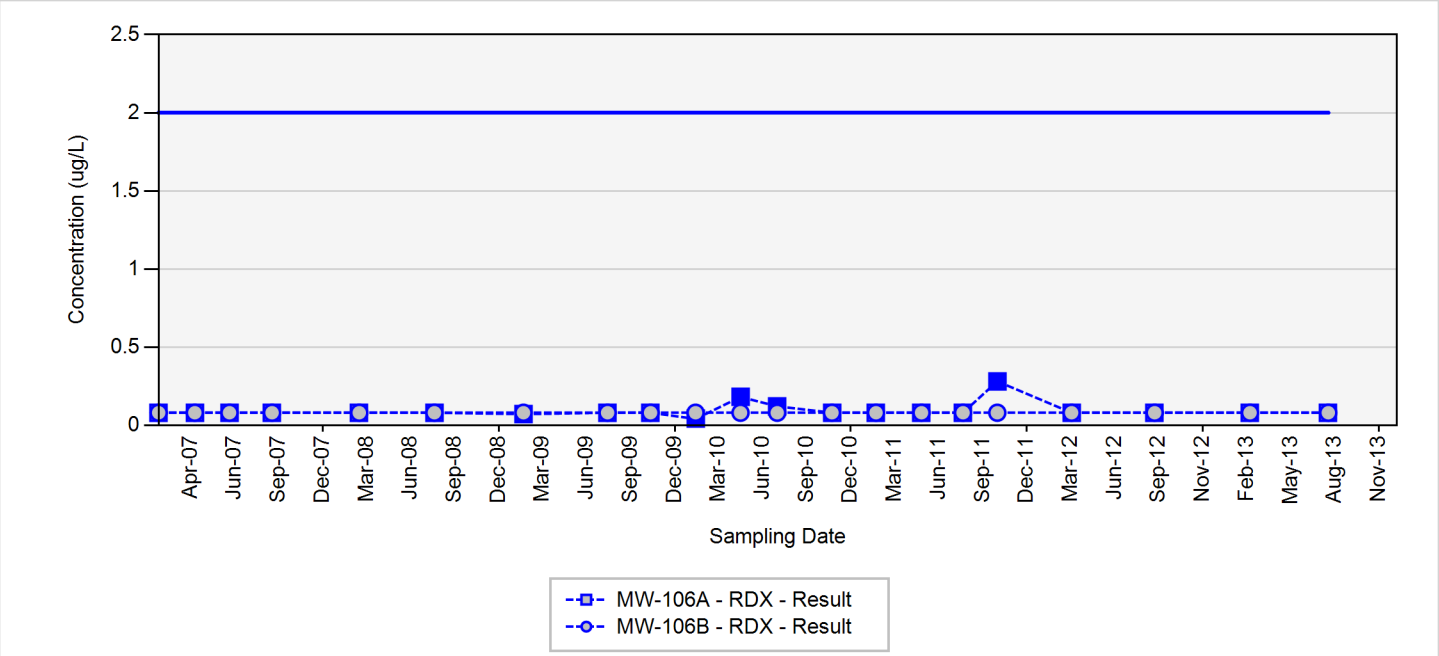
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

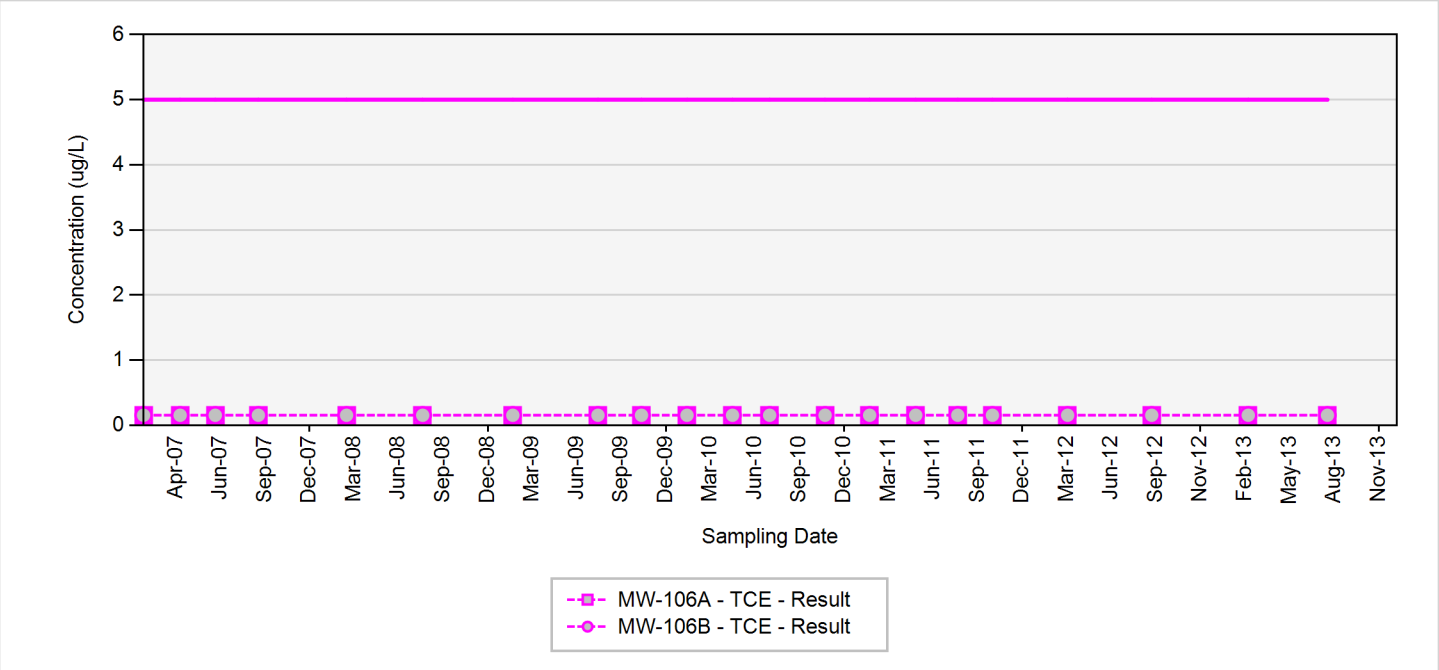
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-106





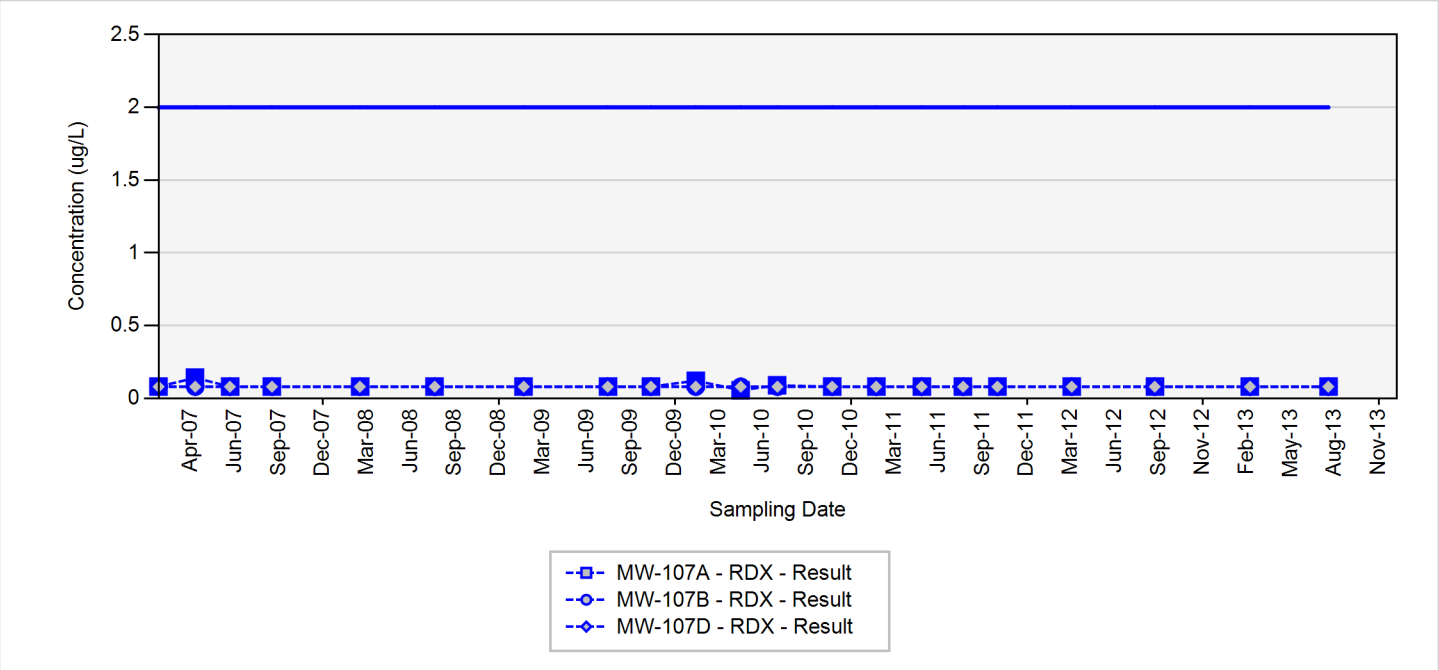
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

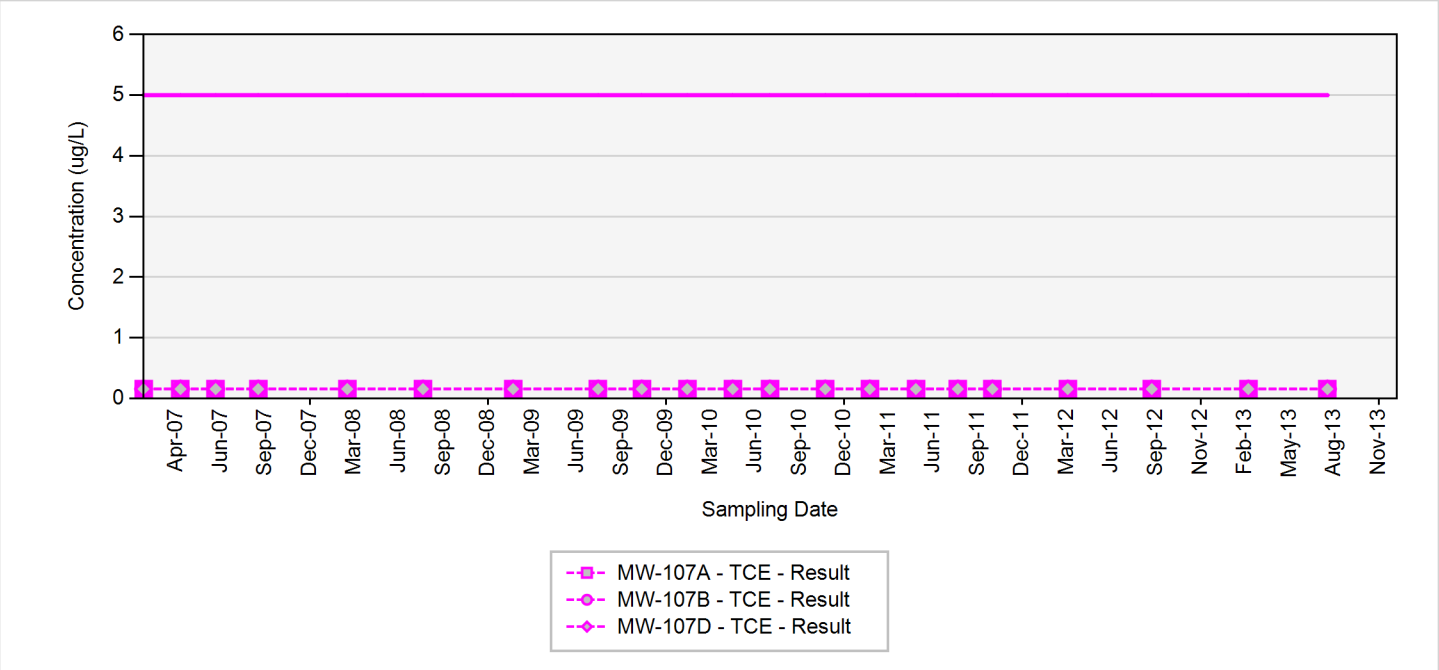
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-107





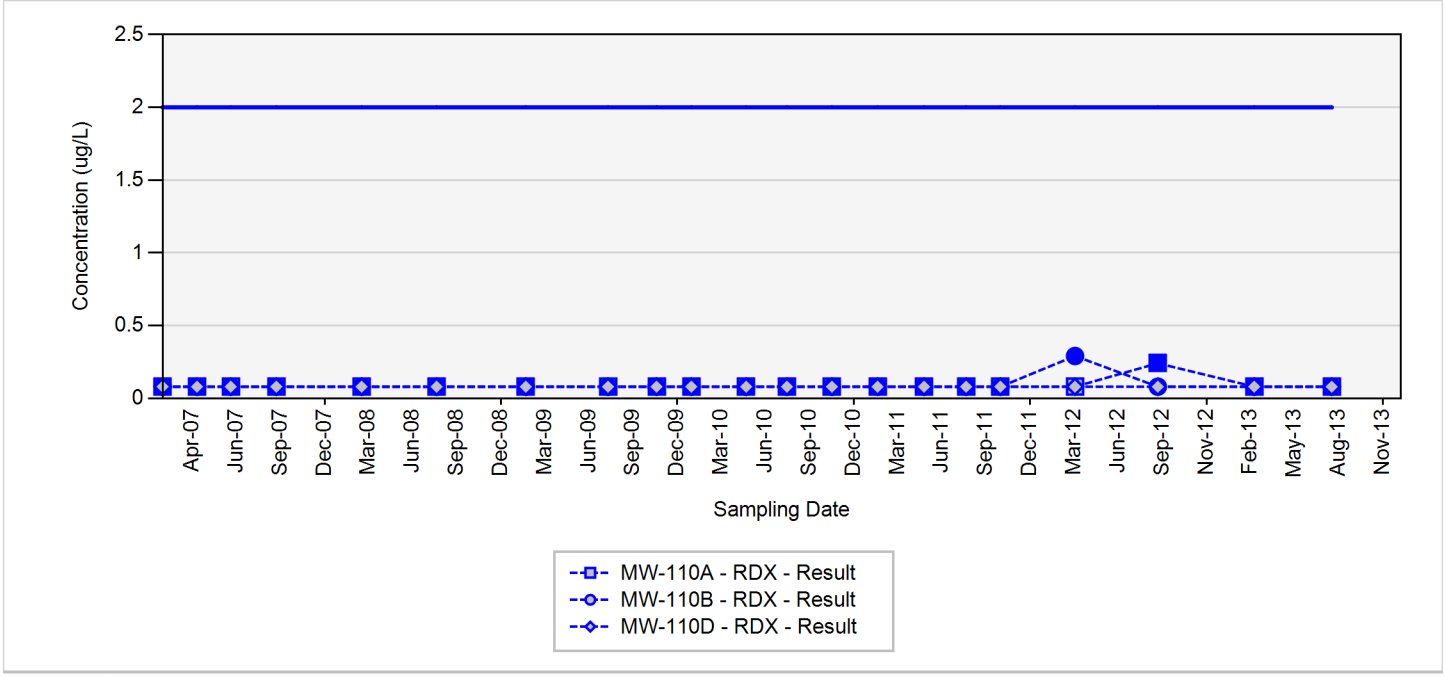
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

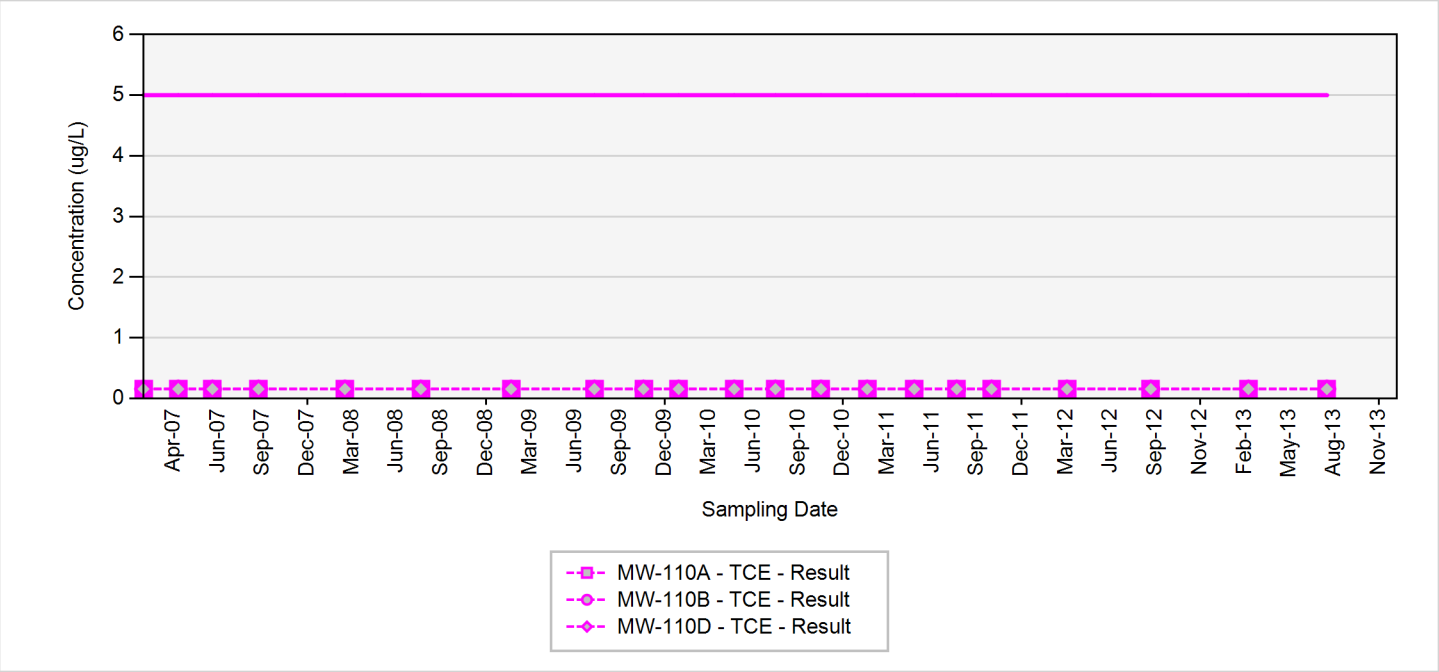
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-110





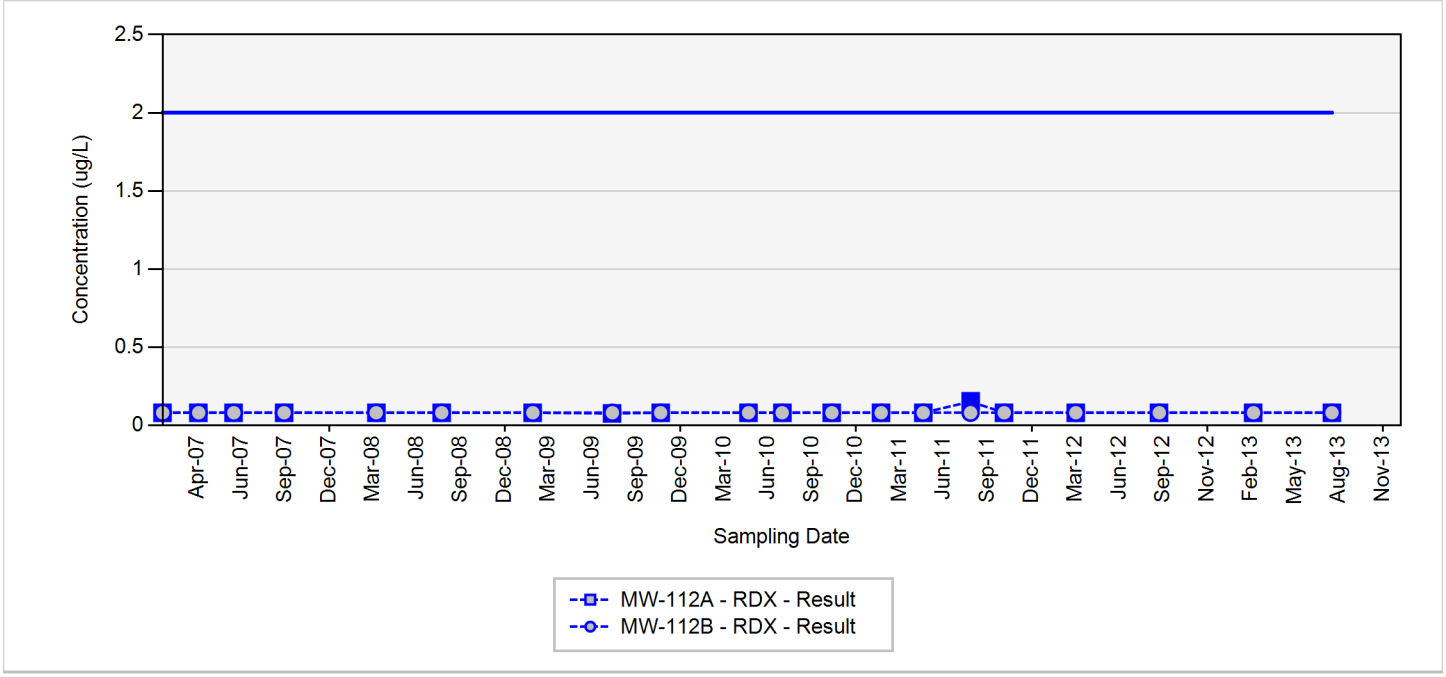
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

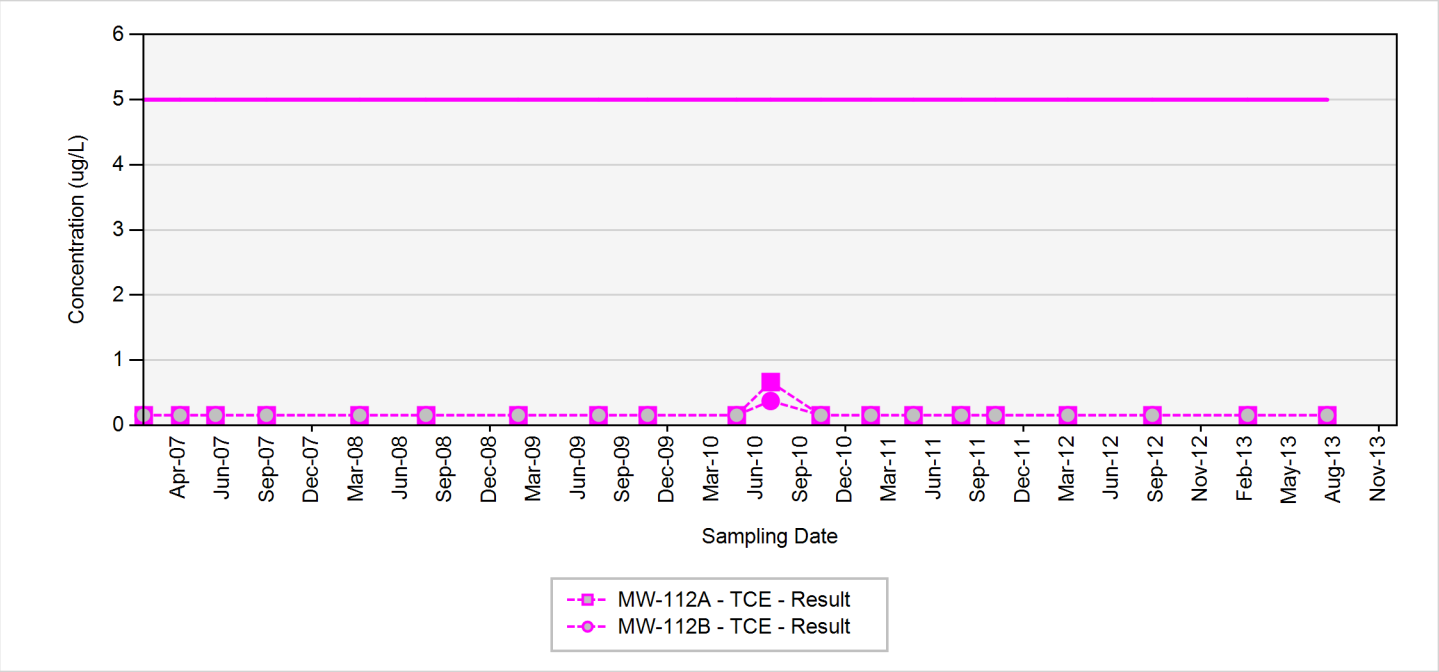
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-112





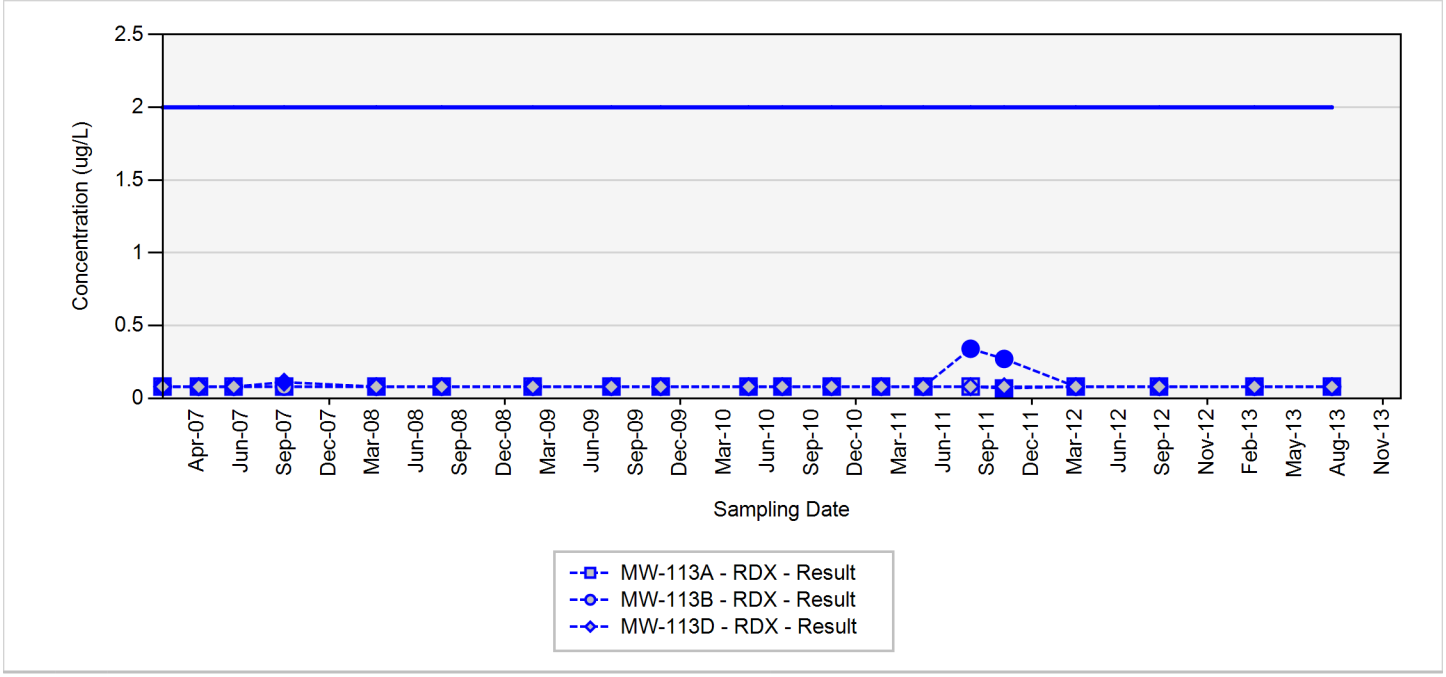
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

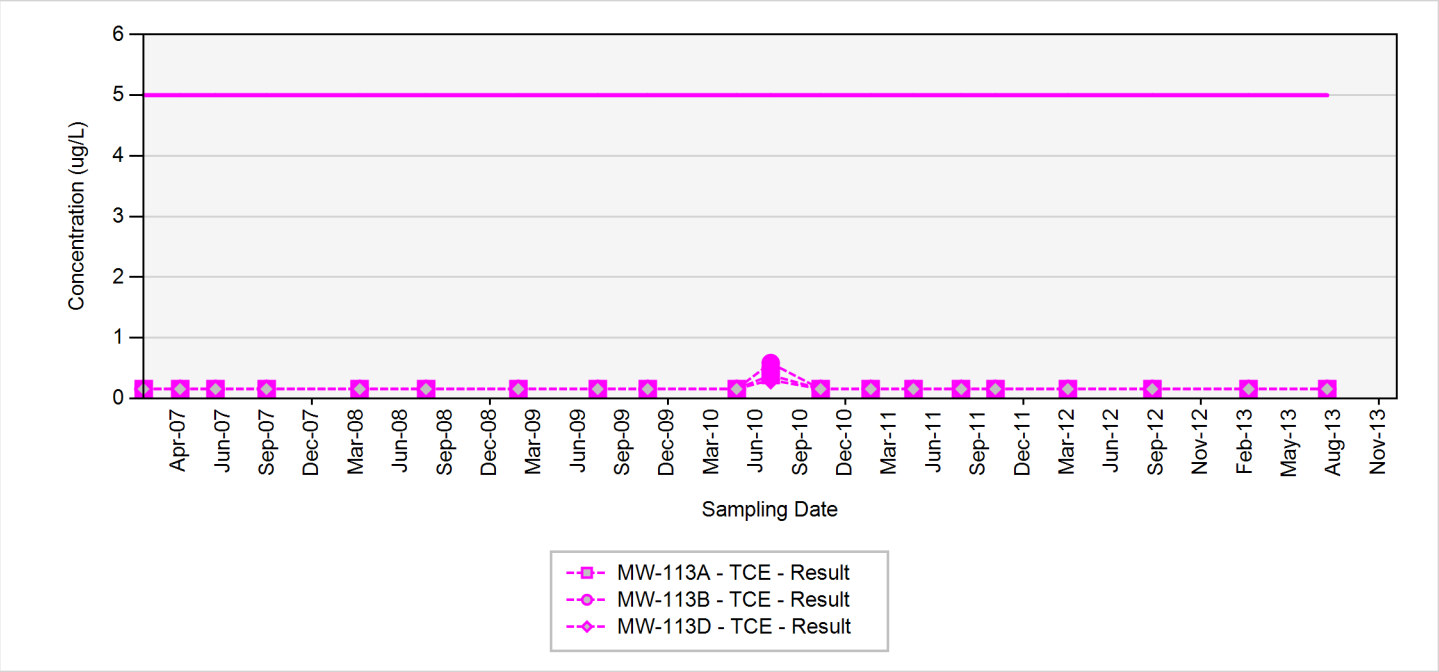
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-113





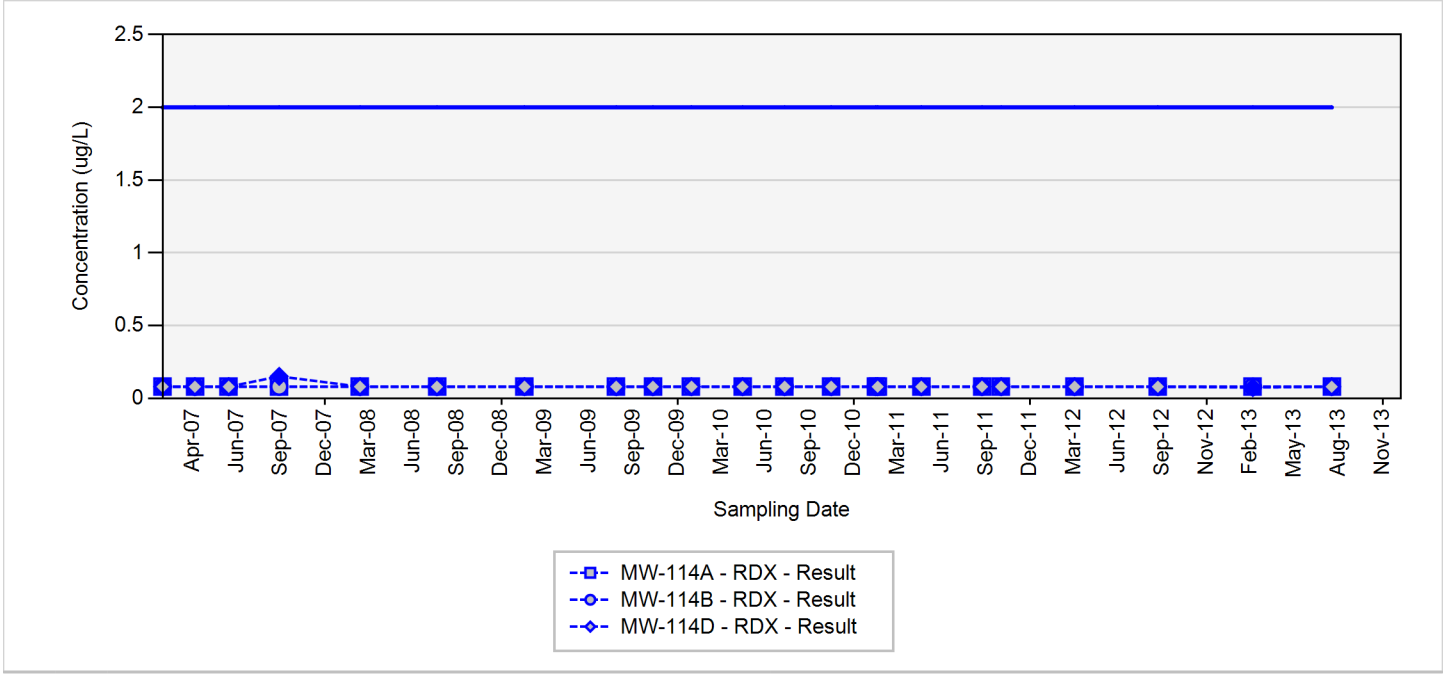
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

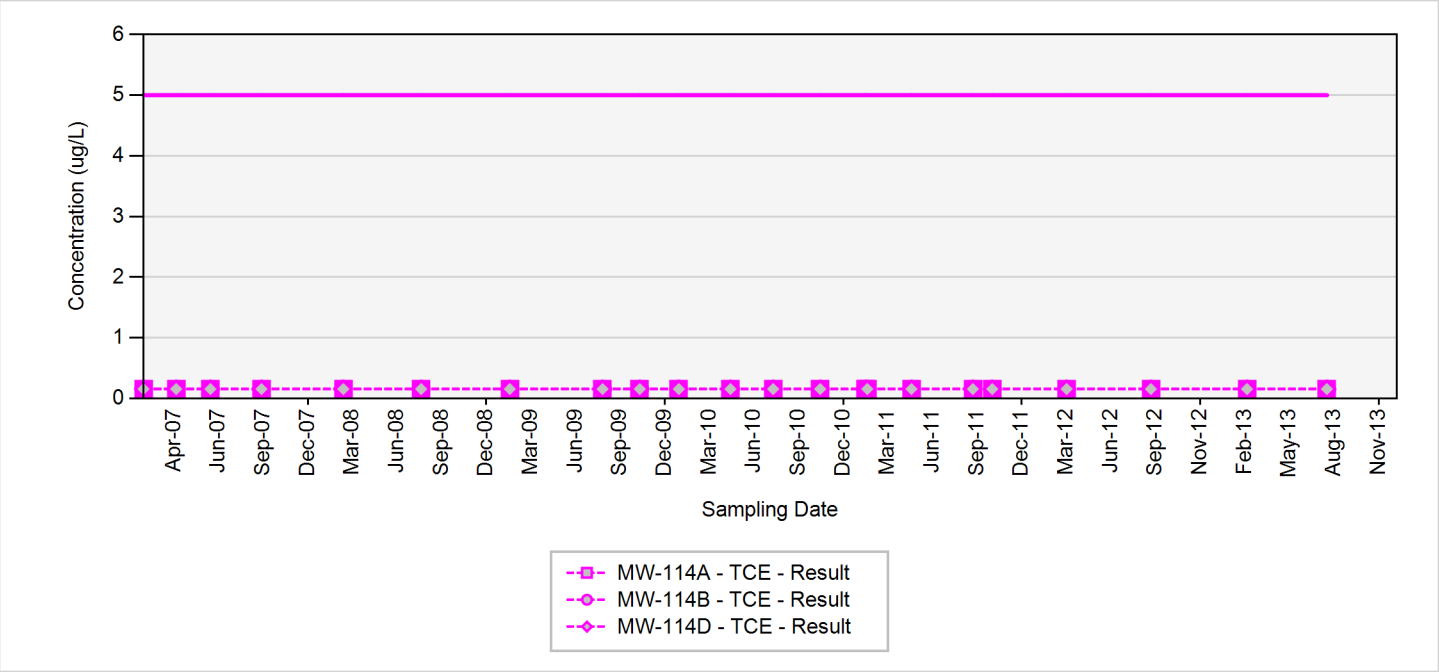
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-114





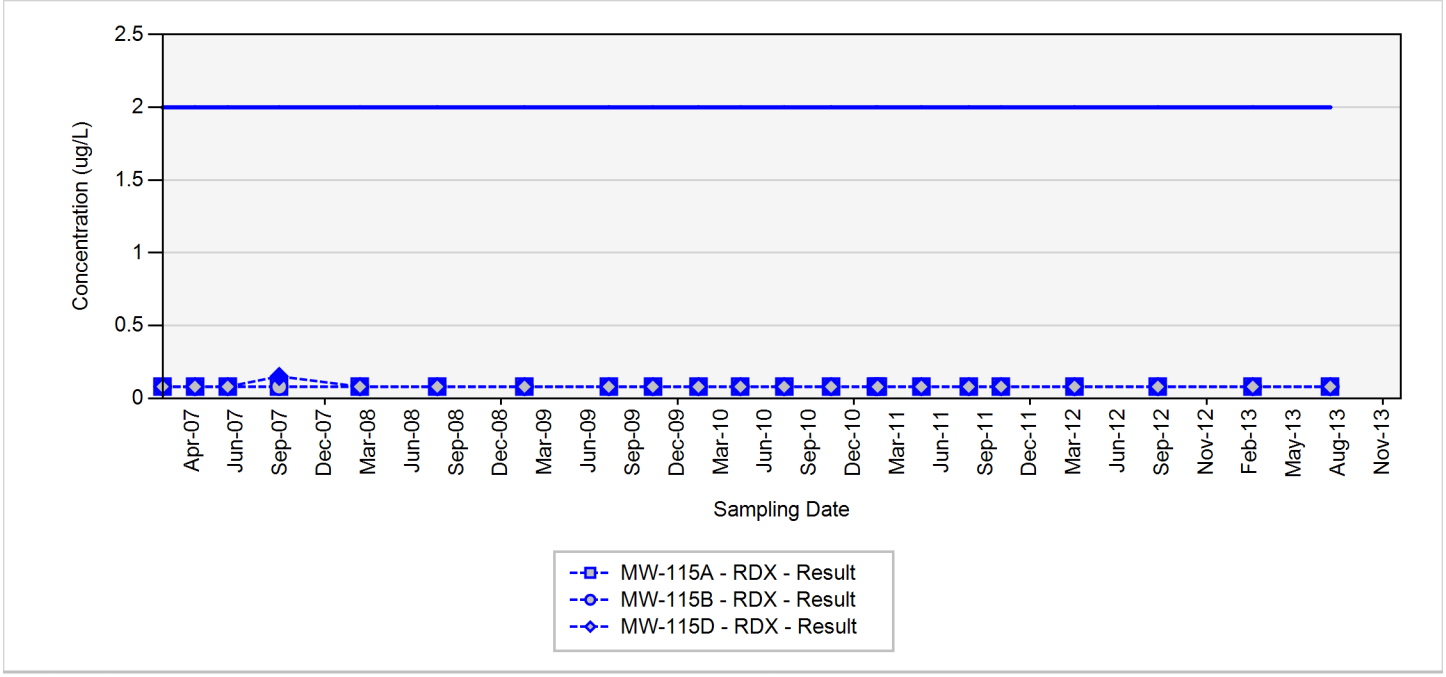
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

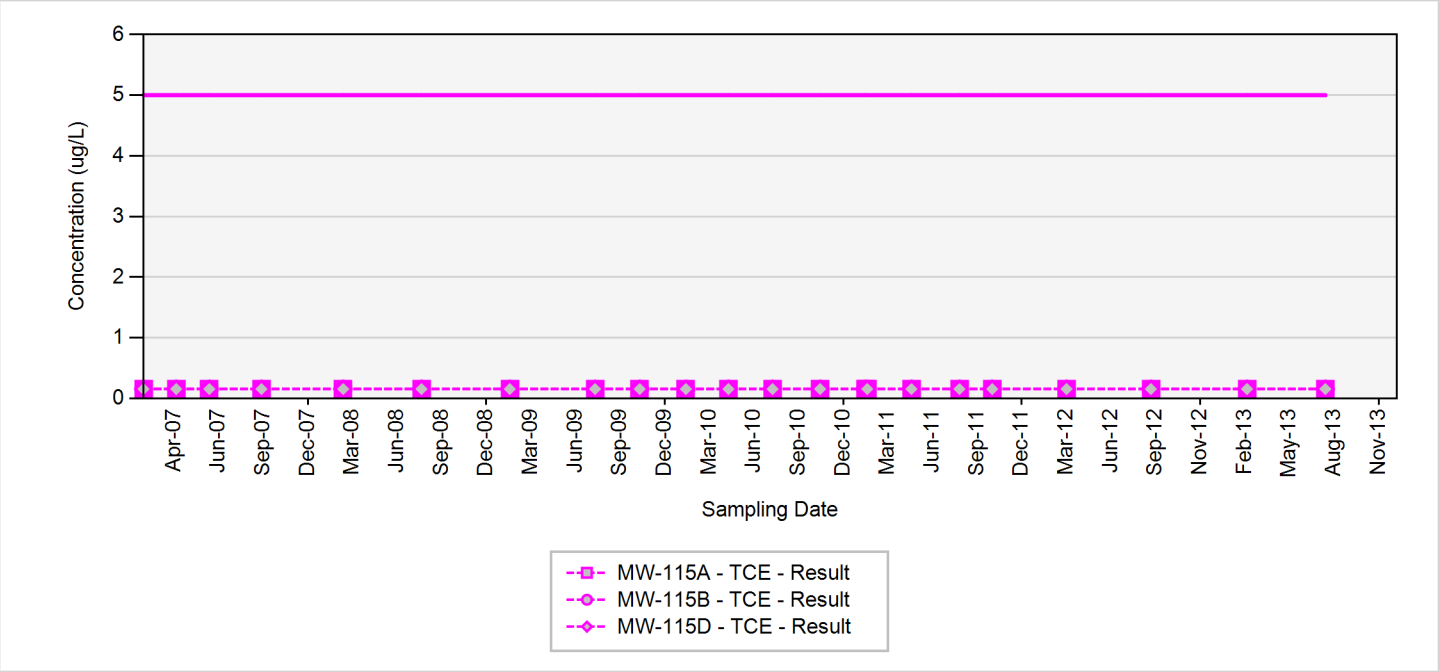
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-115





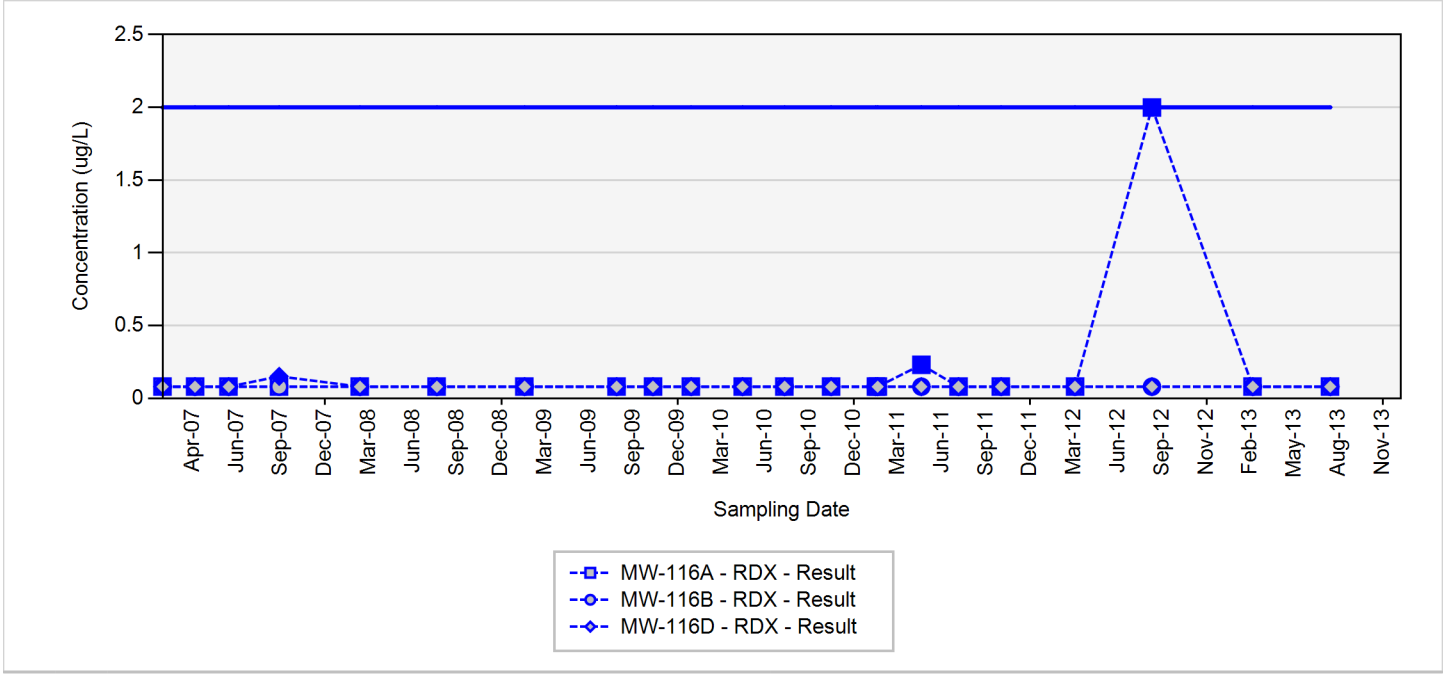
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

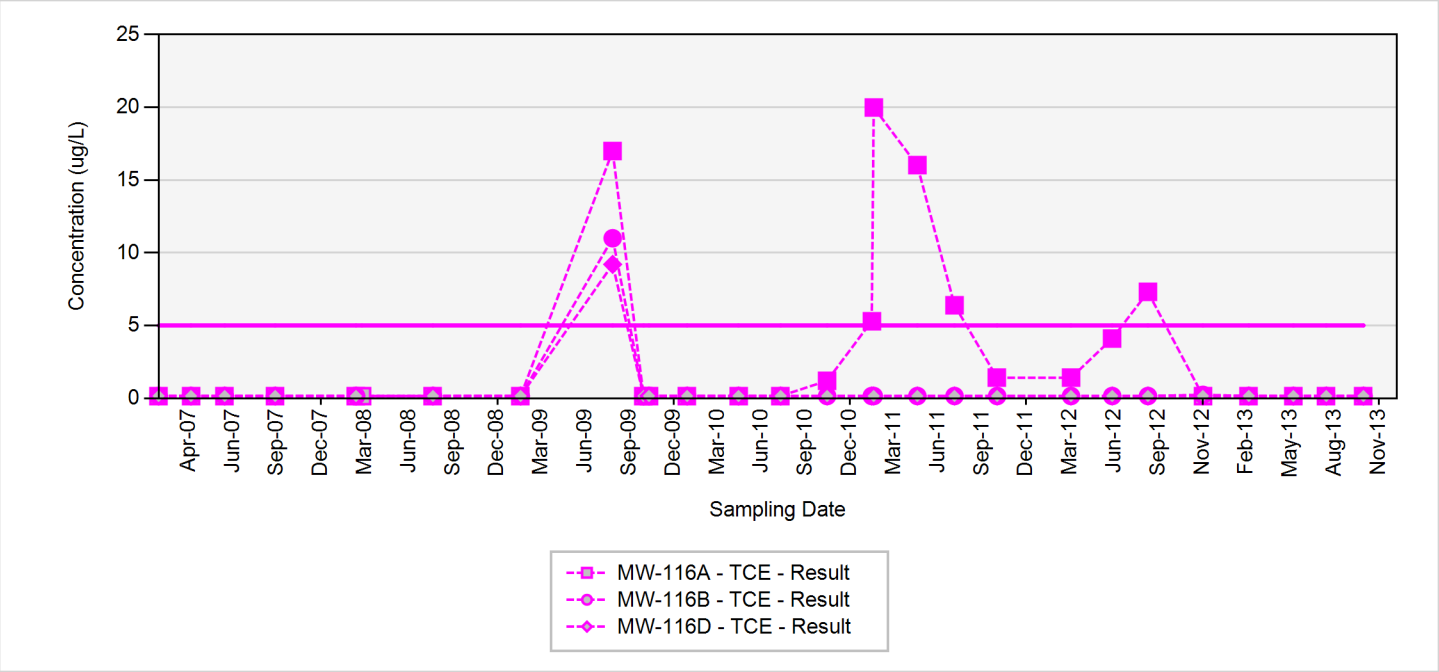
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-116





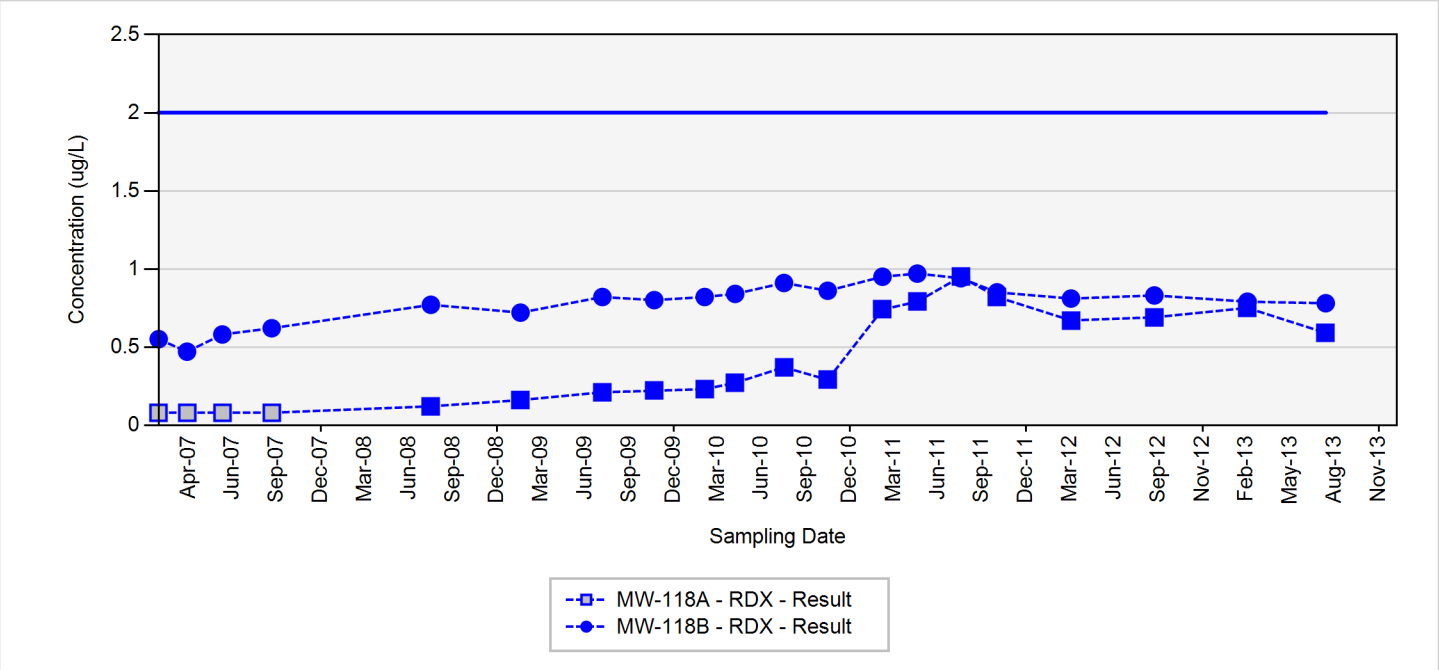
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

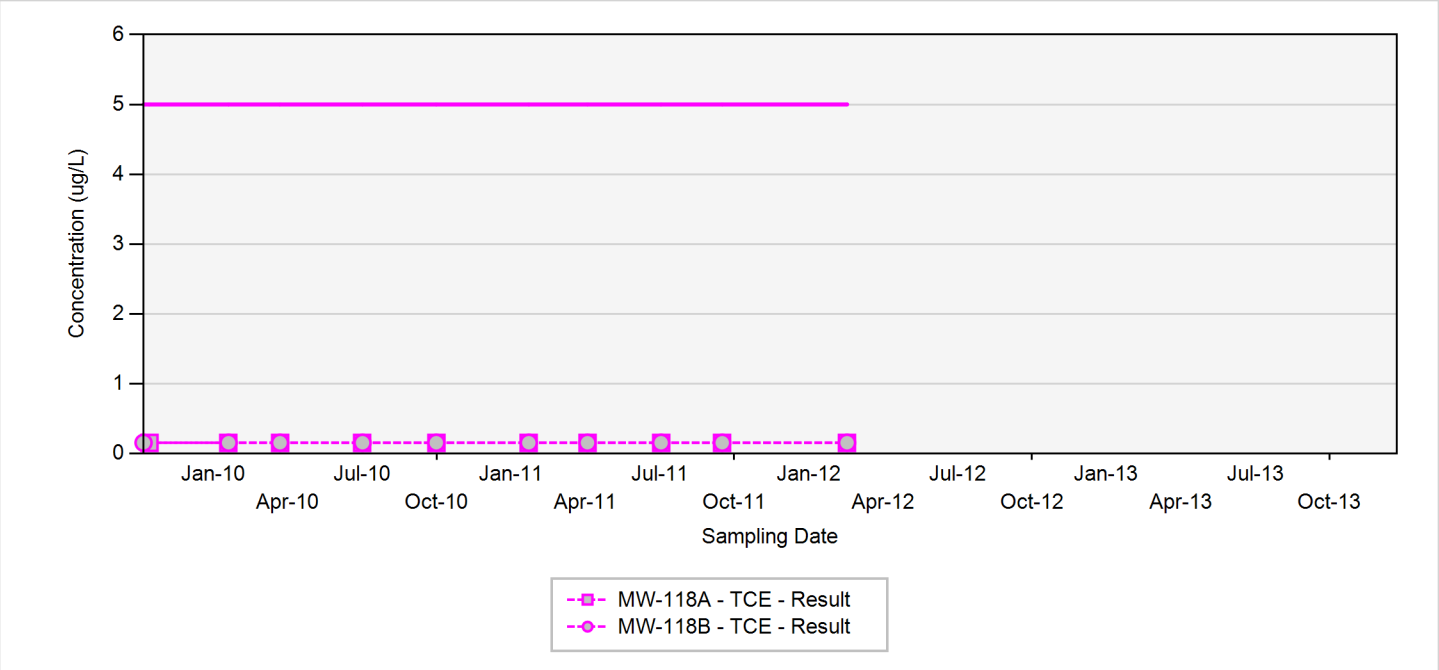
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-118





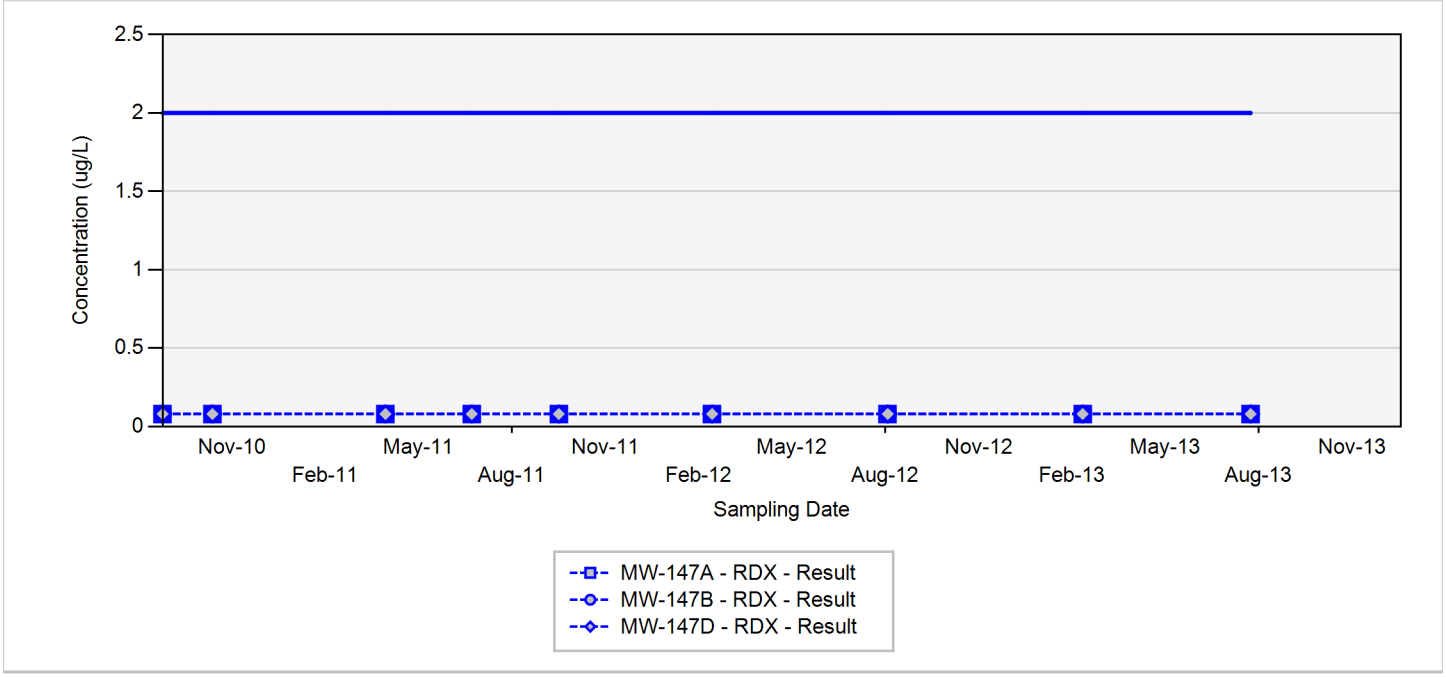
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

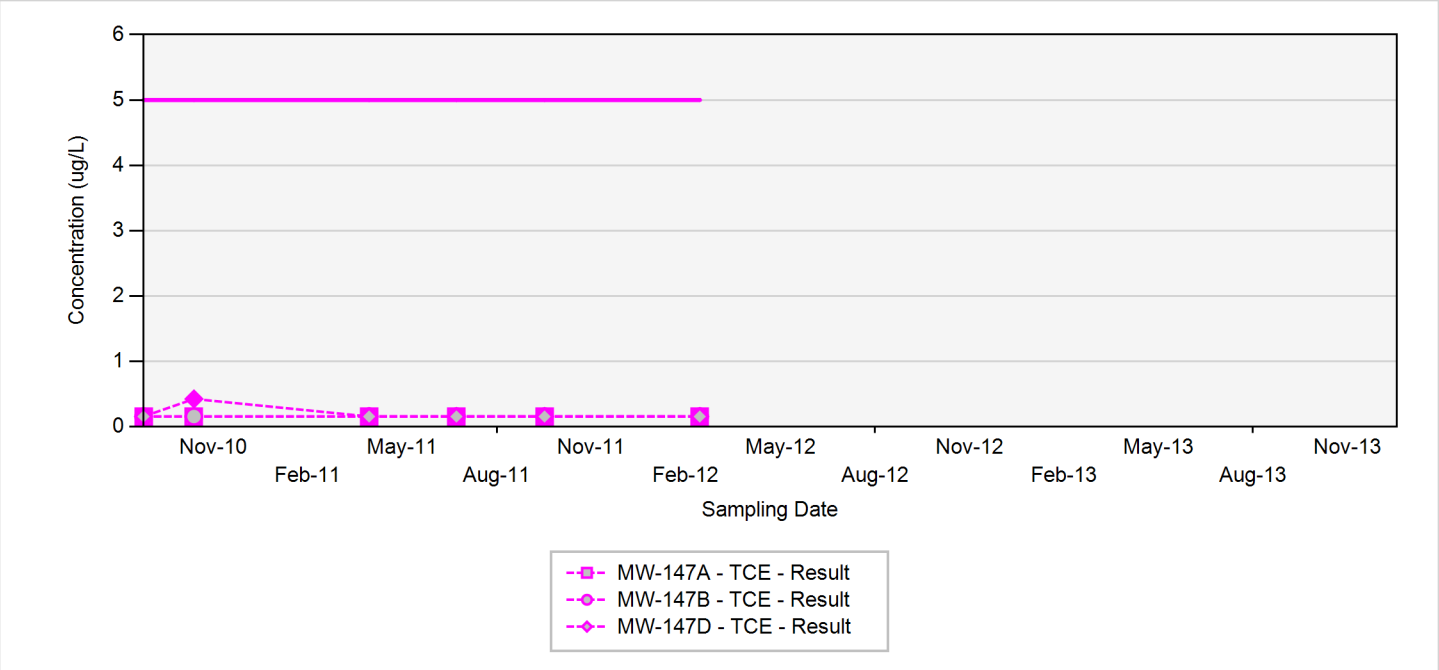
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-147





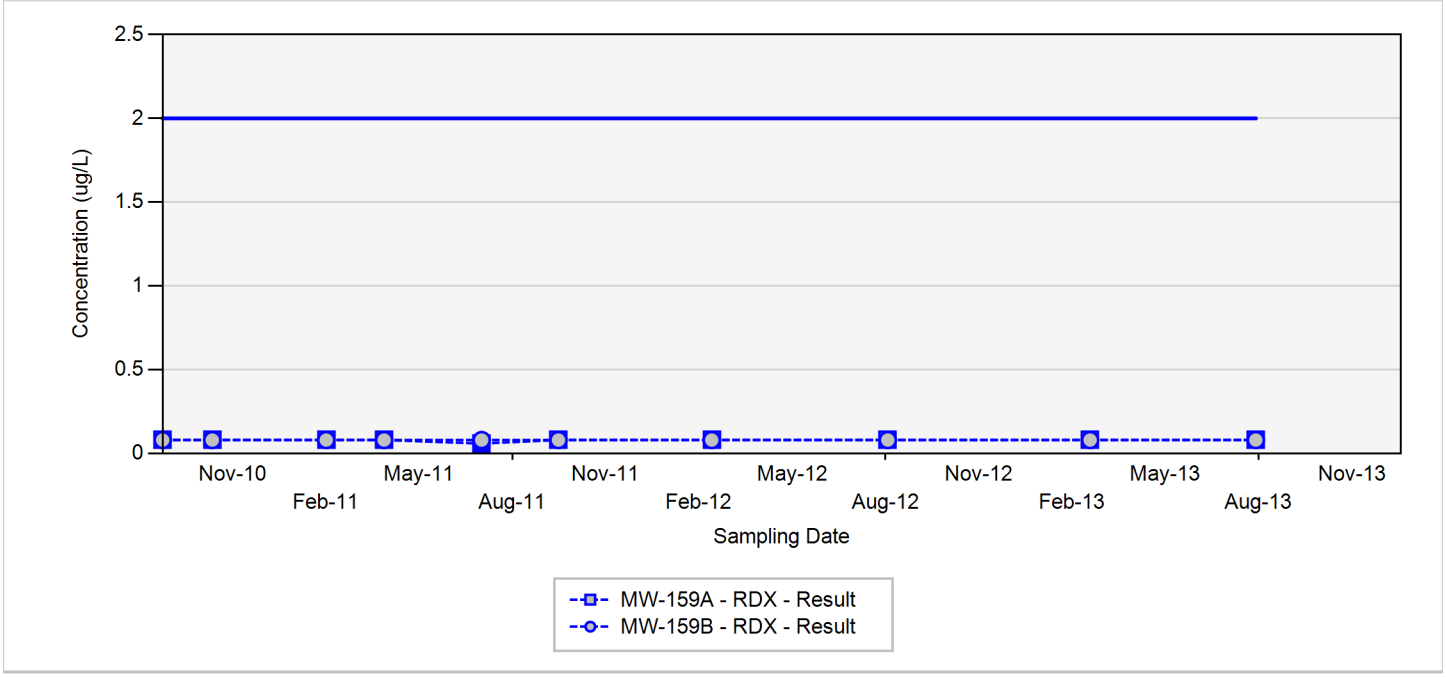
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

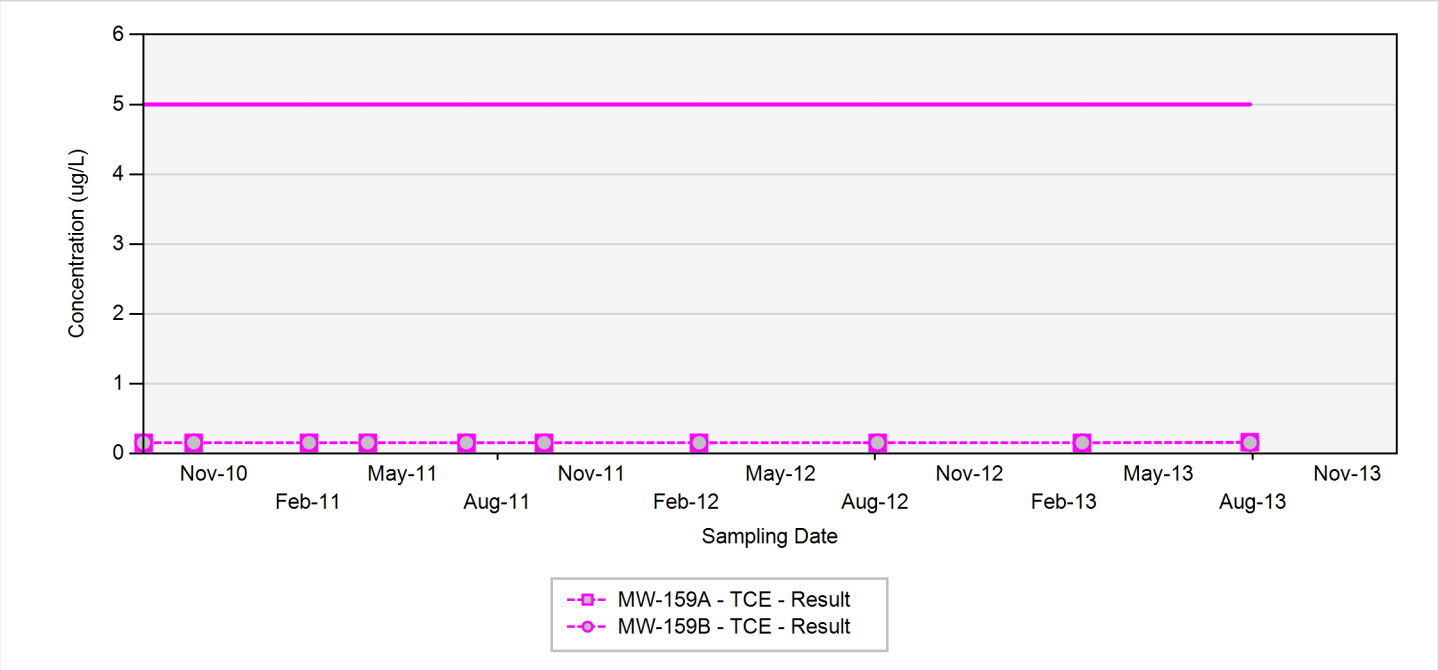
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-159





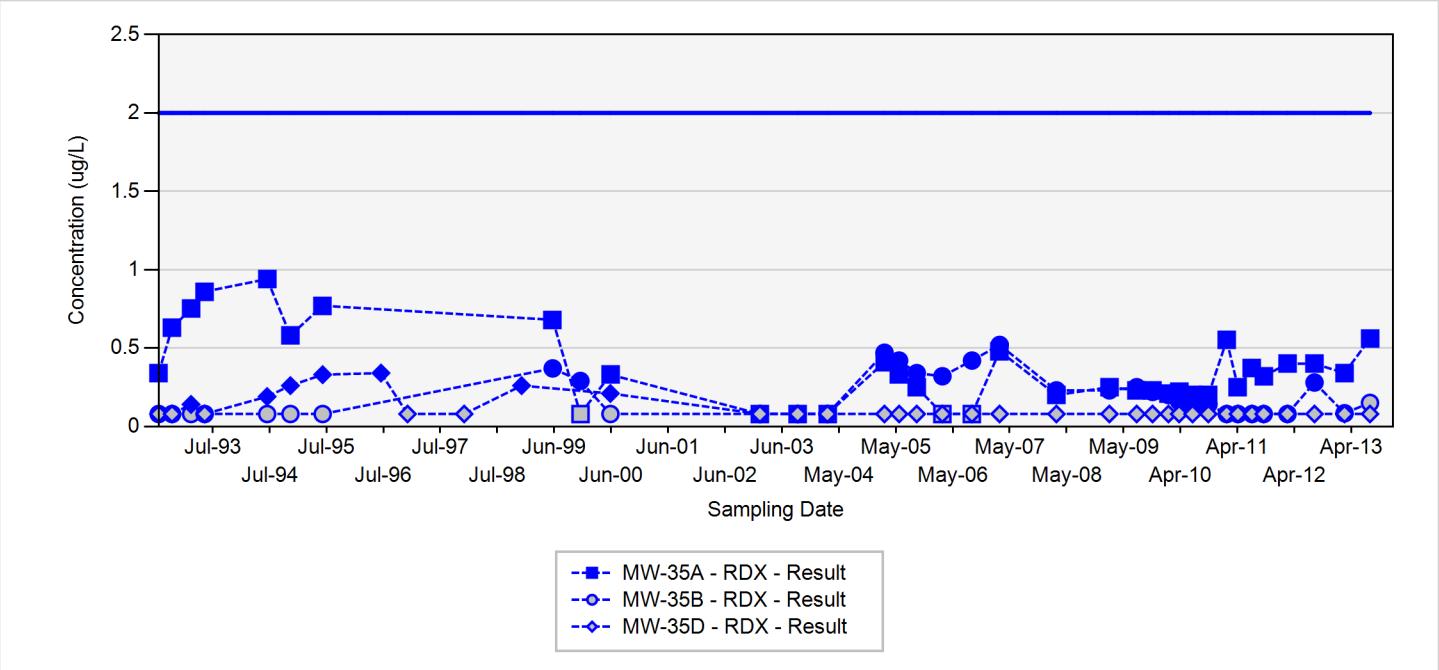
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

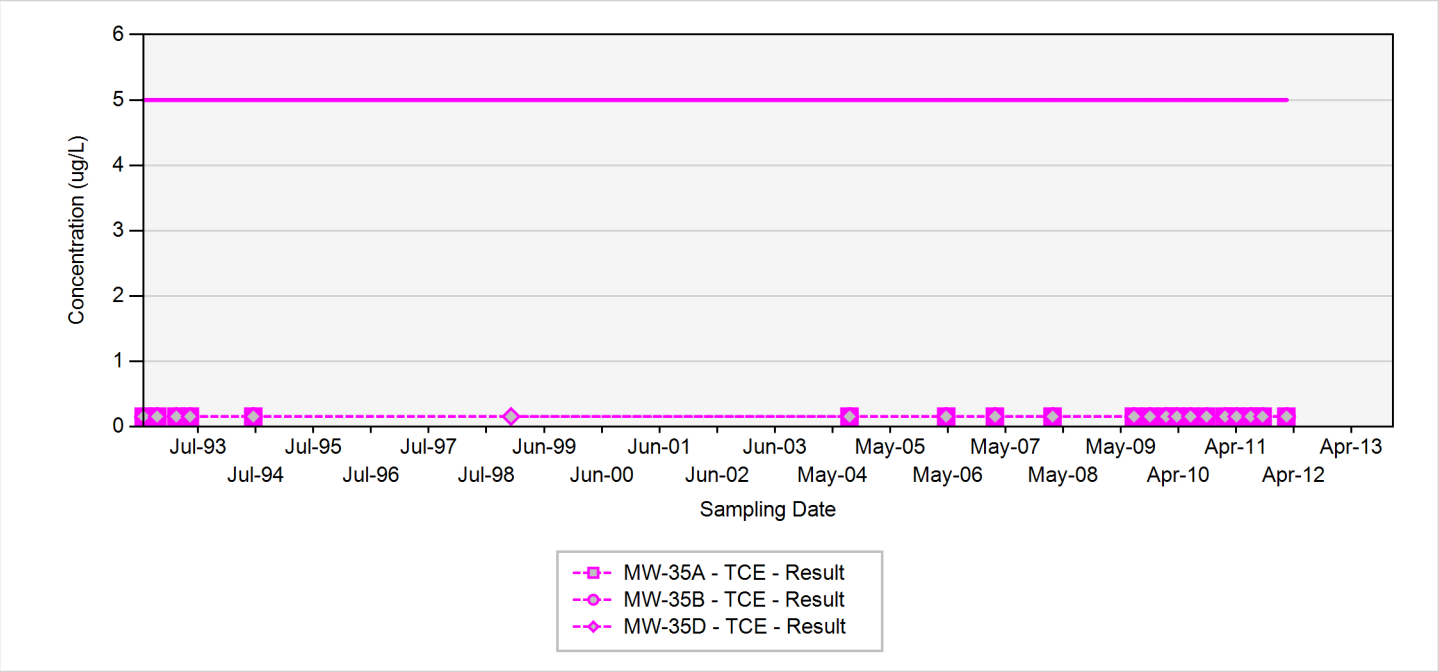
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-35





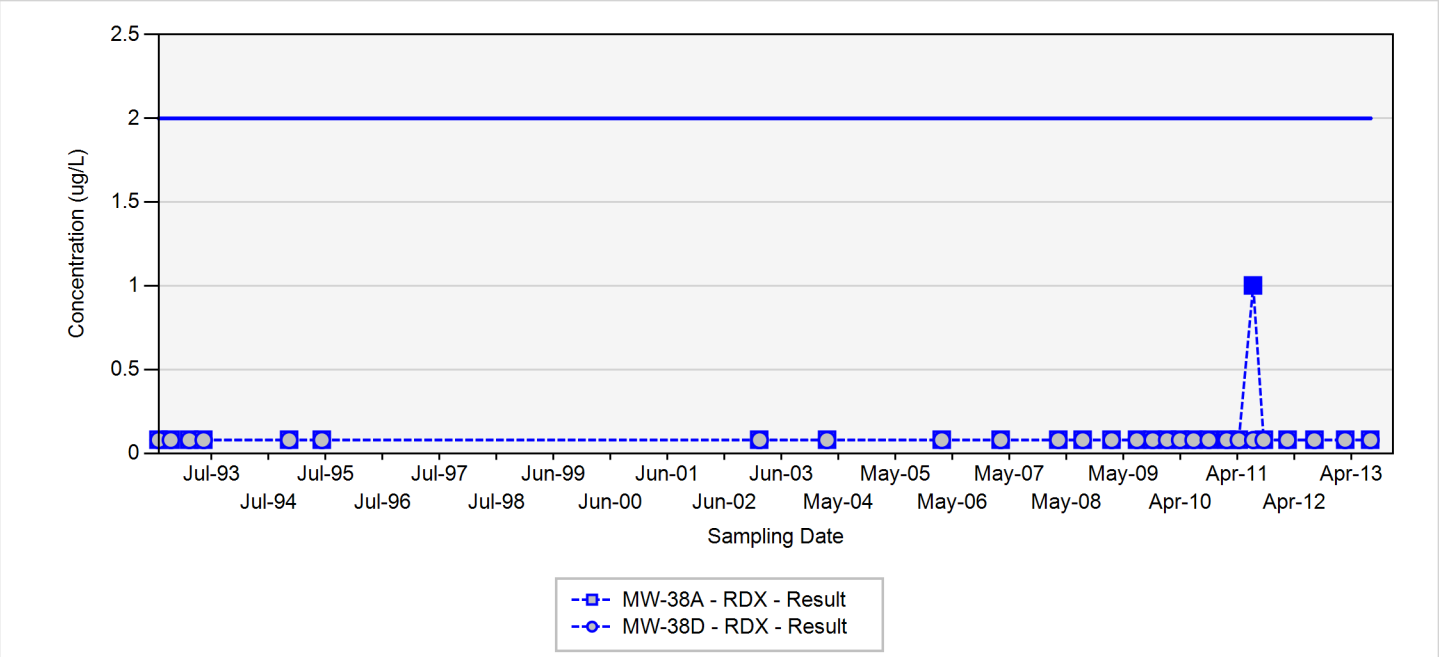
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

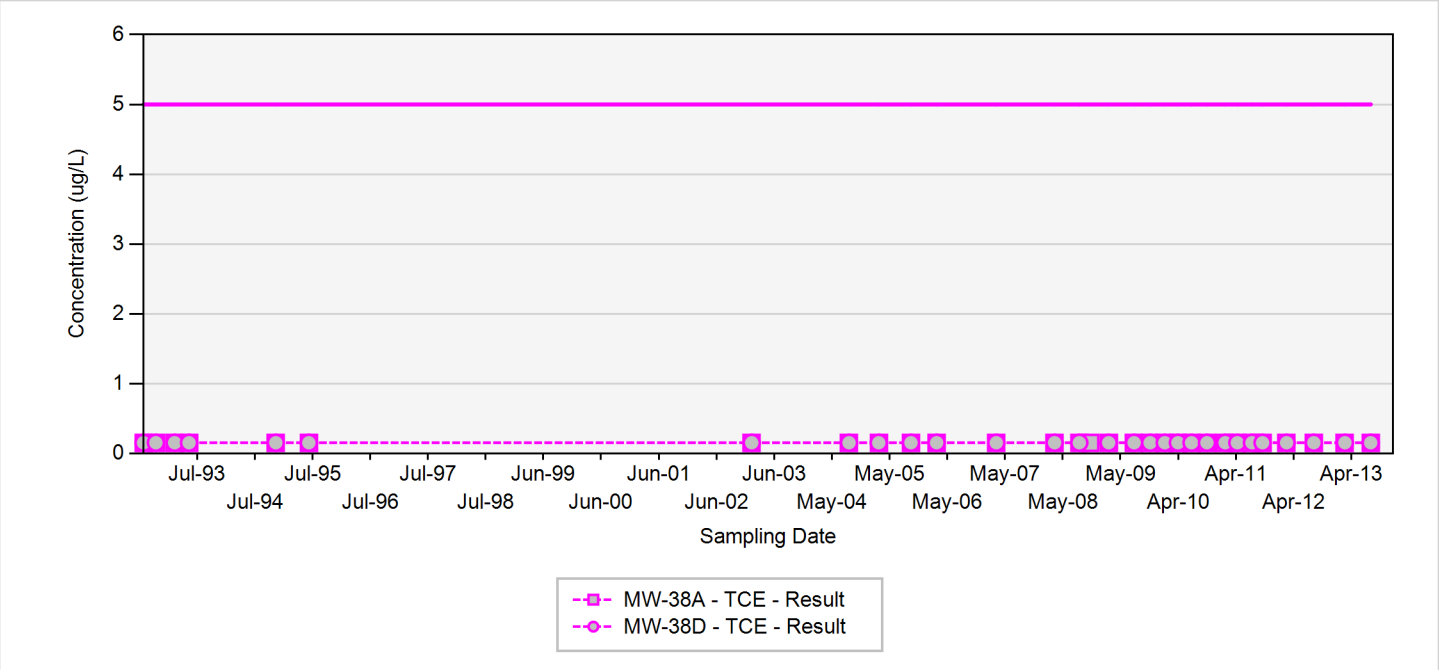
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-38





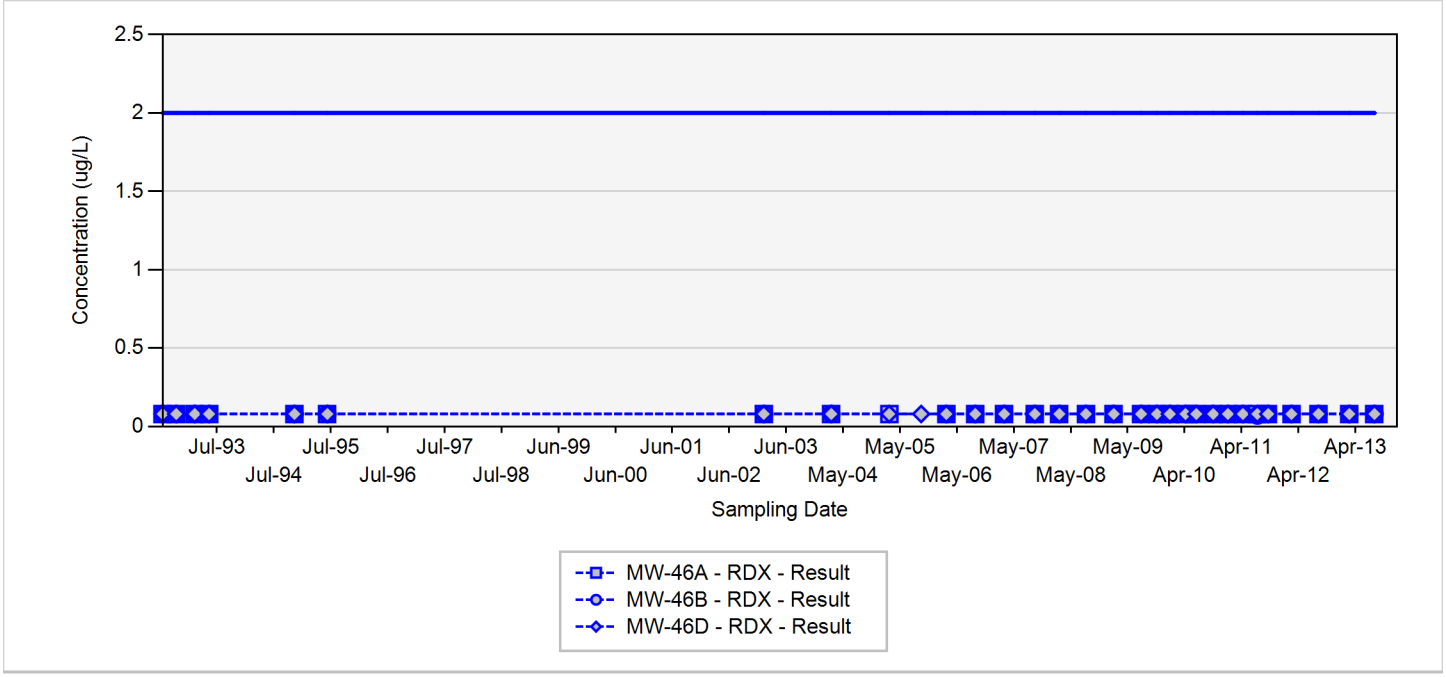
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

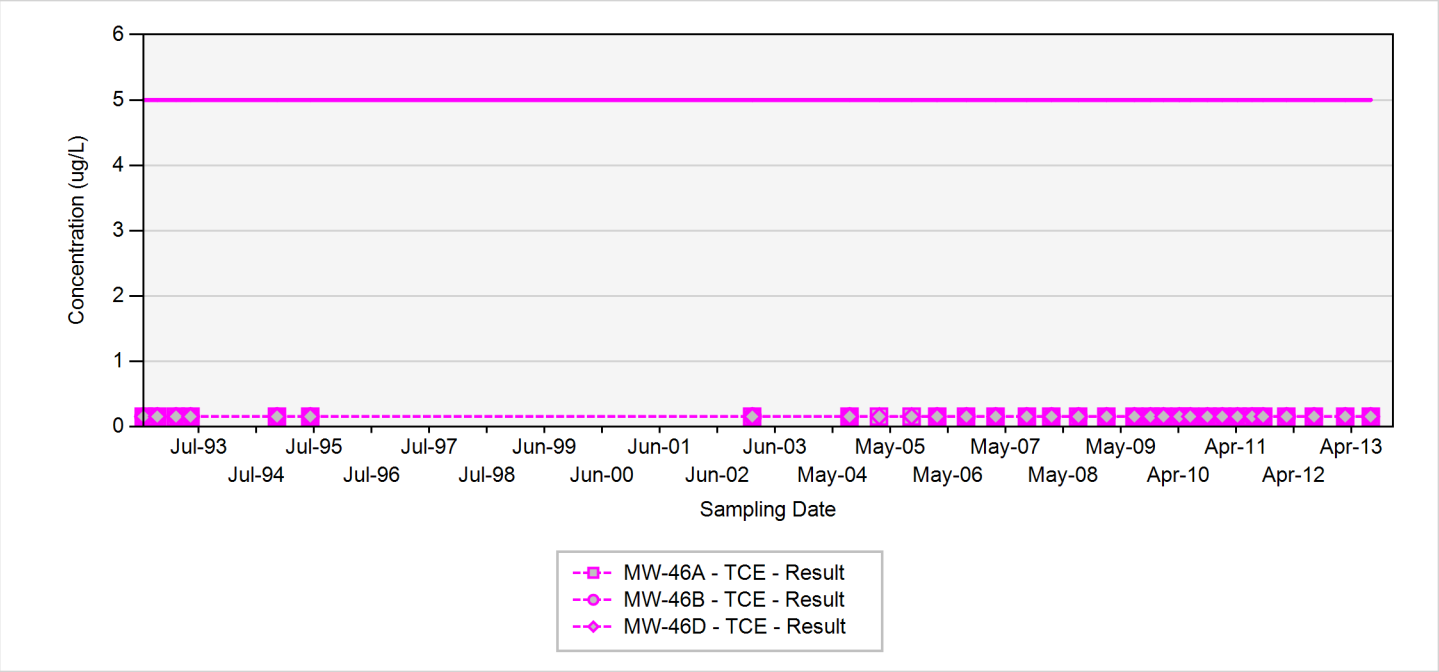
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-46





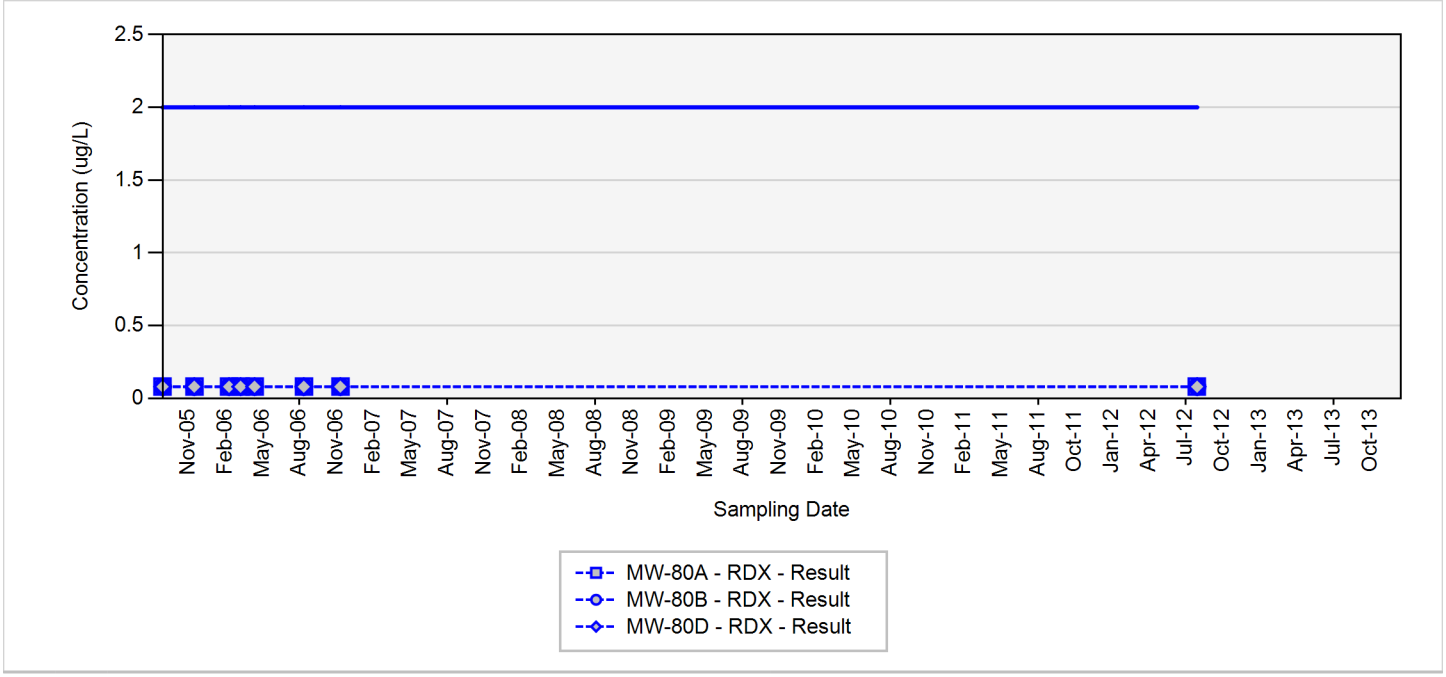
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

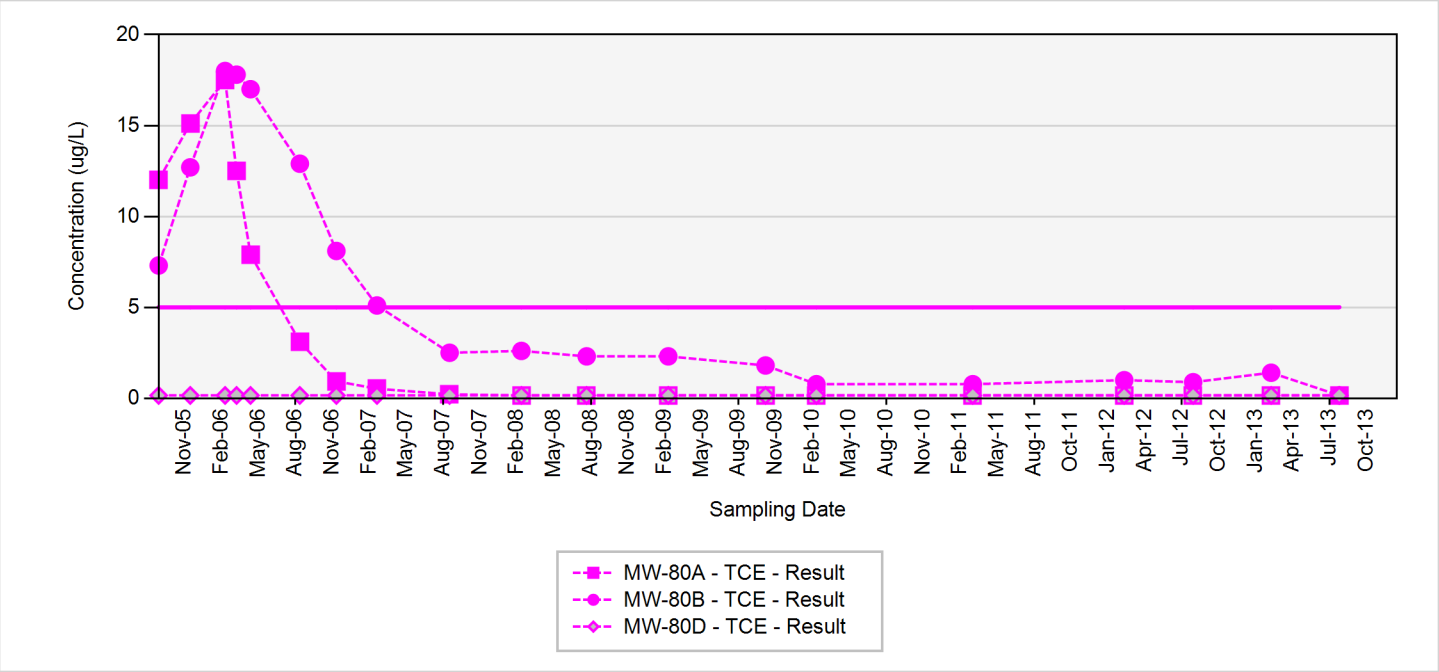
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-80





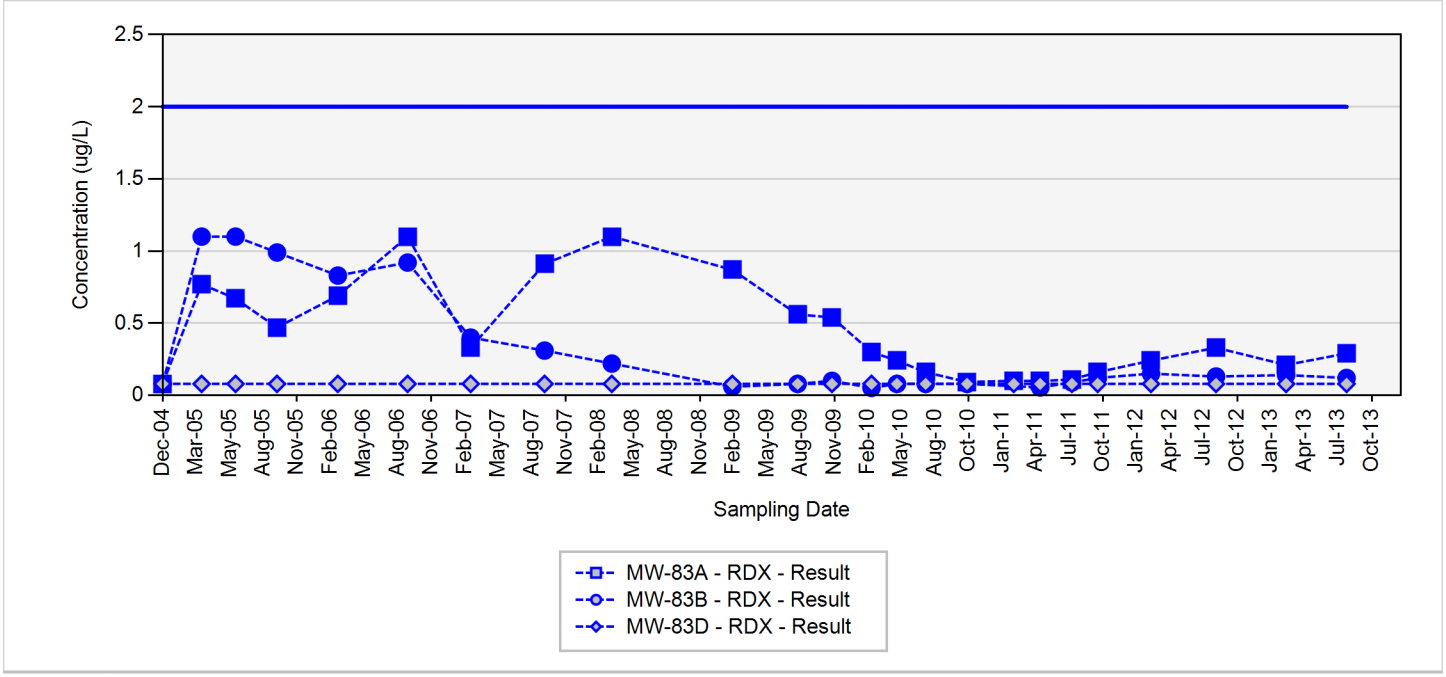
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

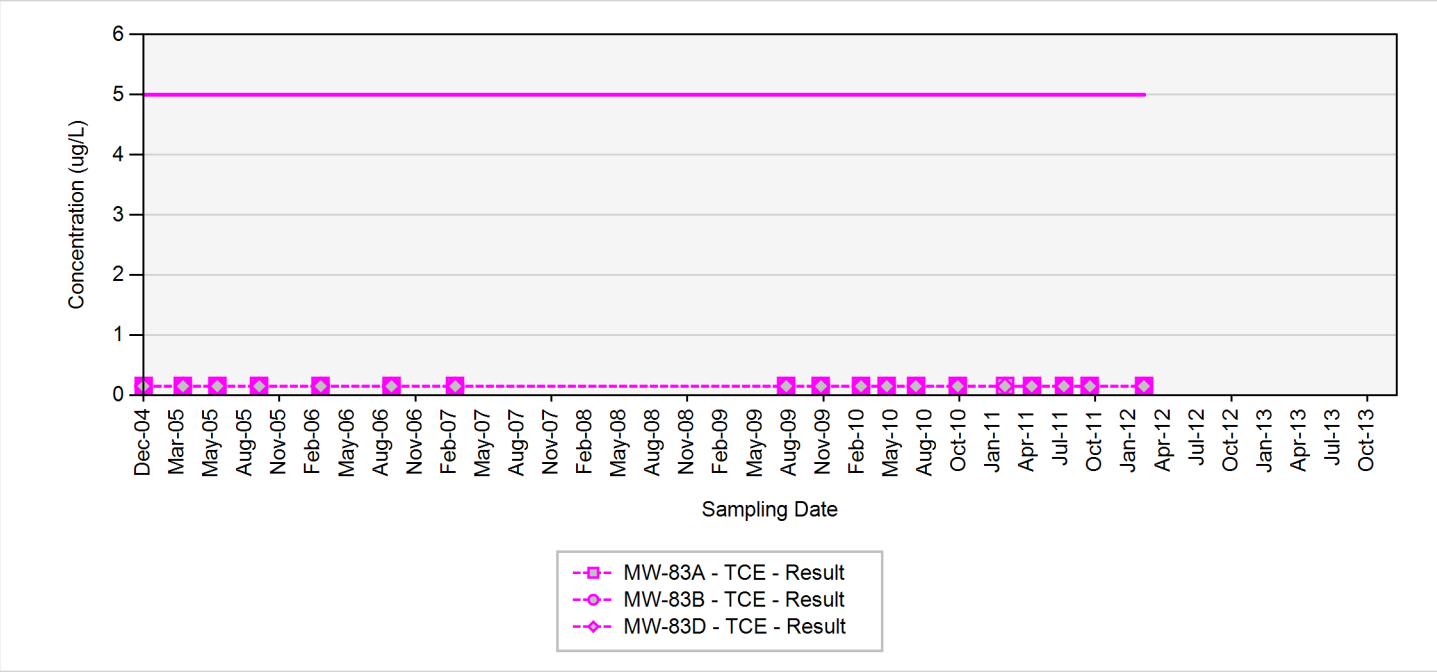
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-83





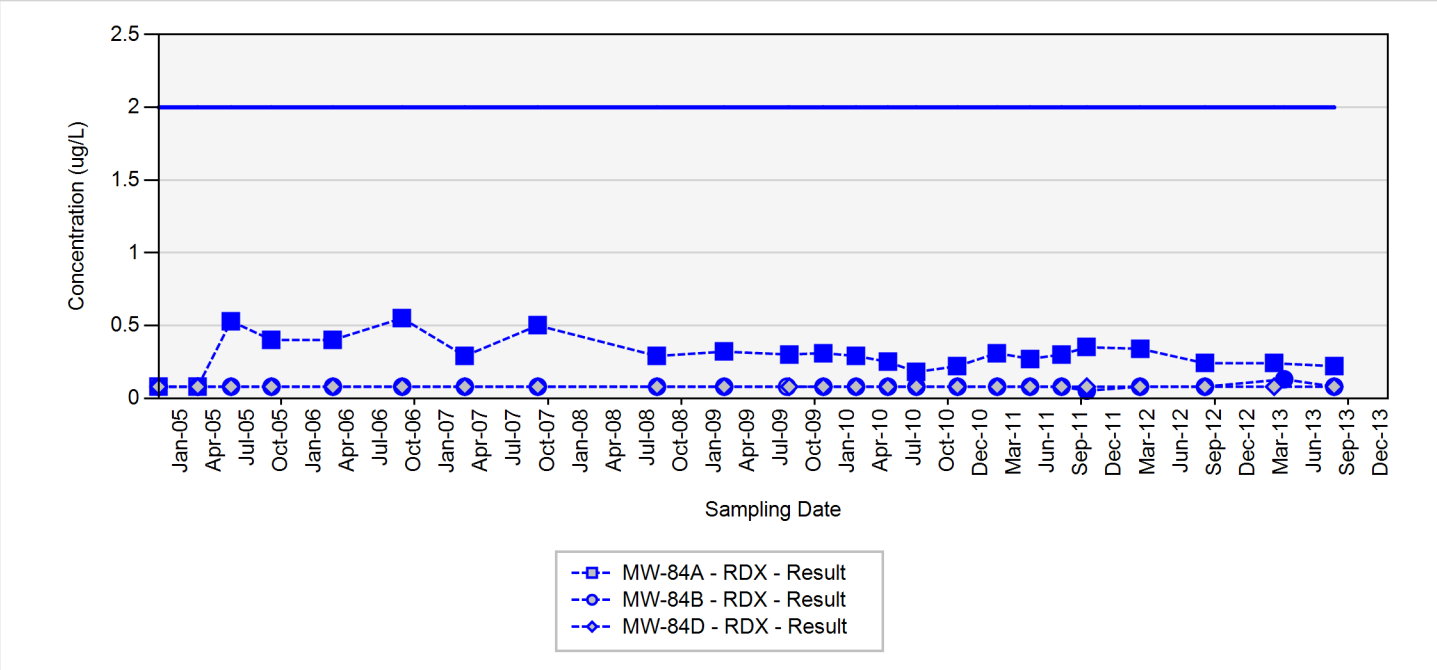
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

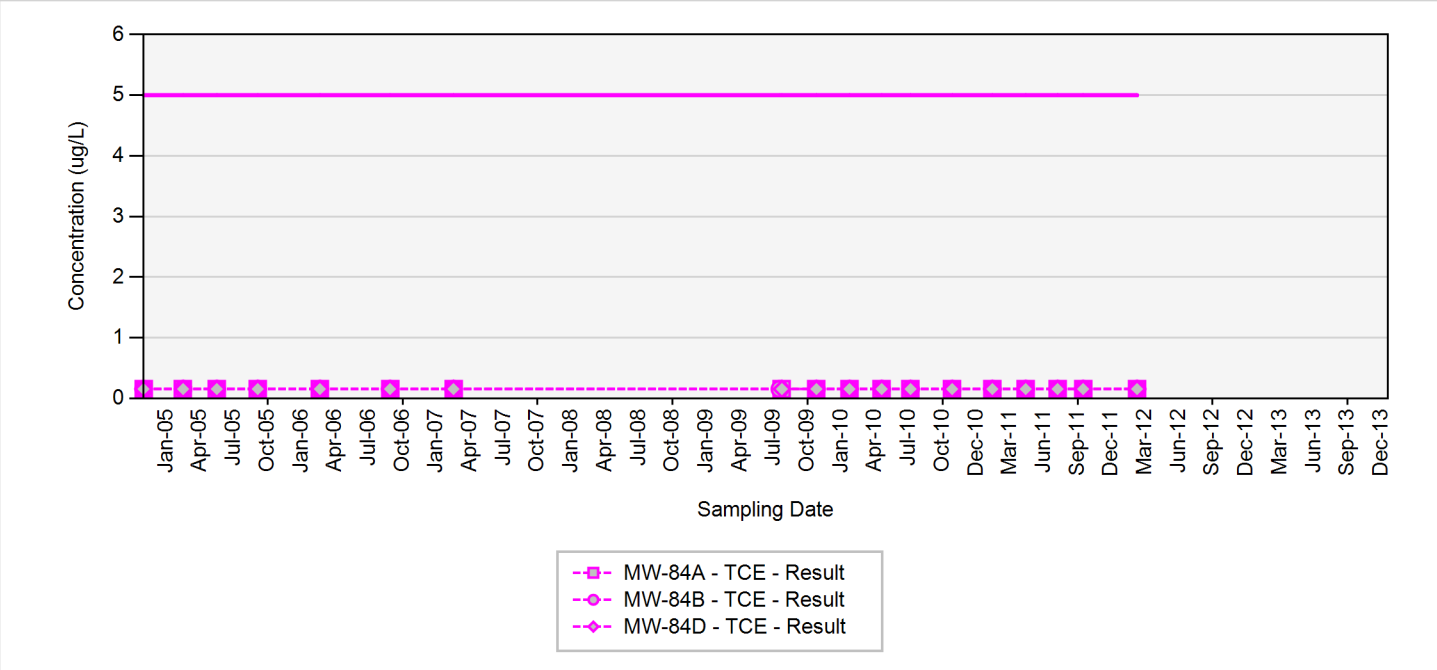
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-84





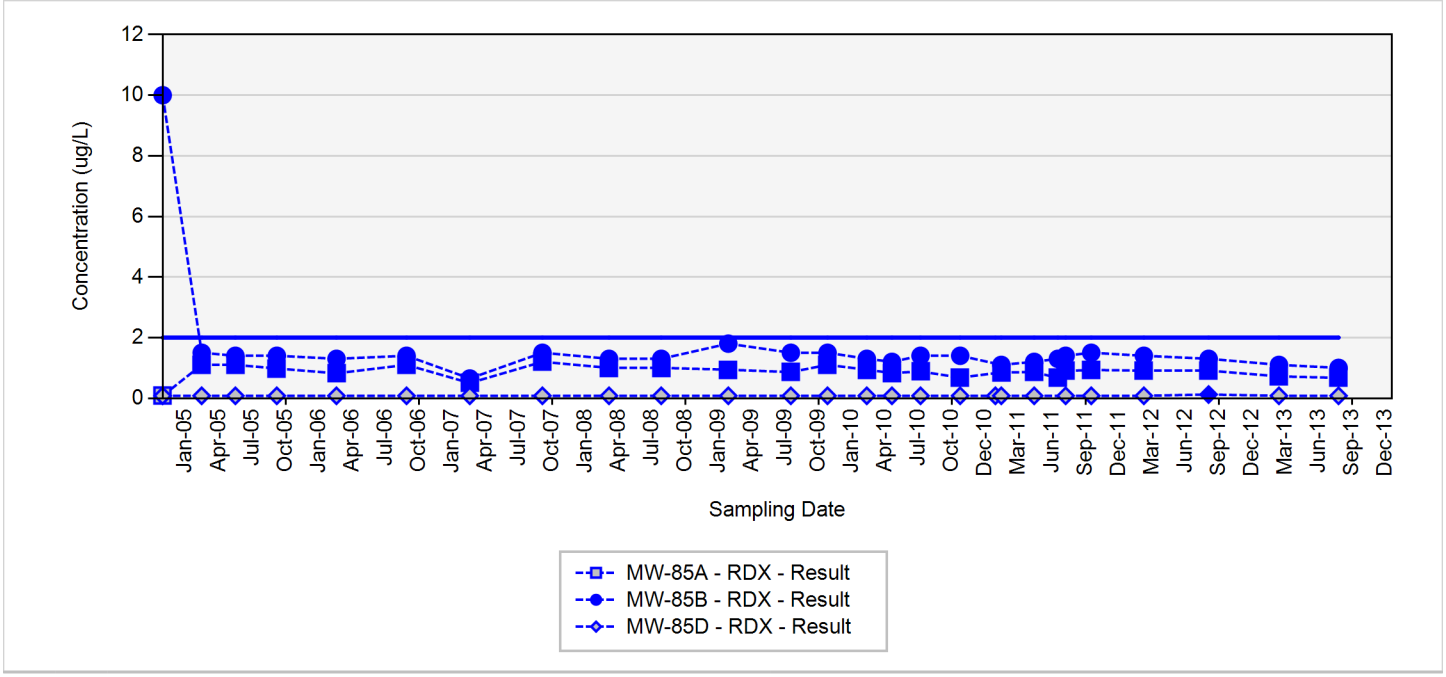
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

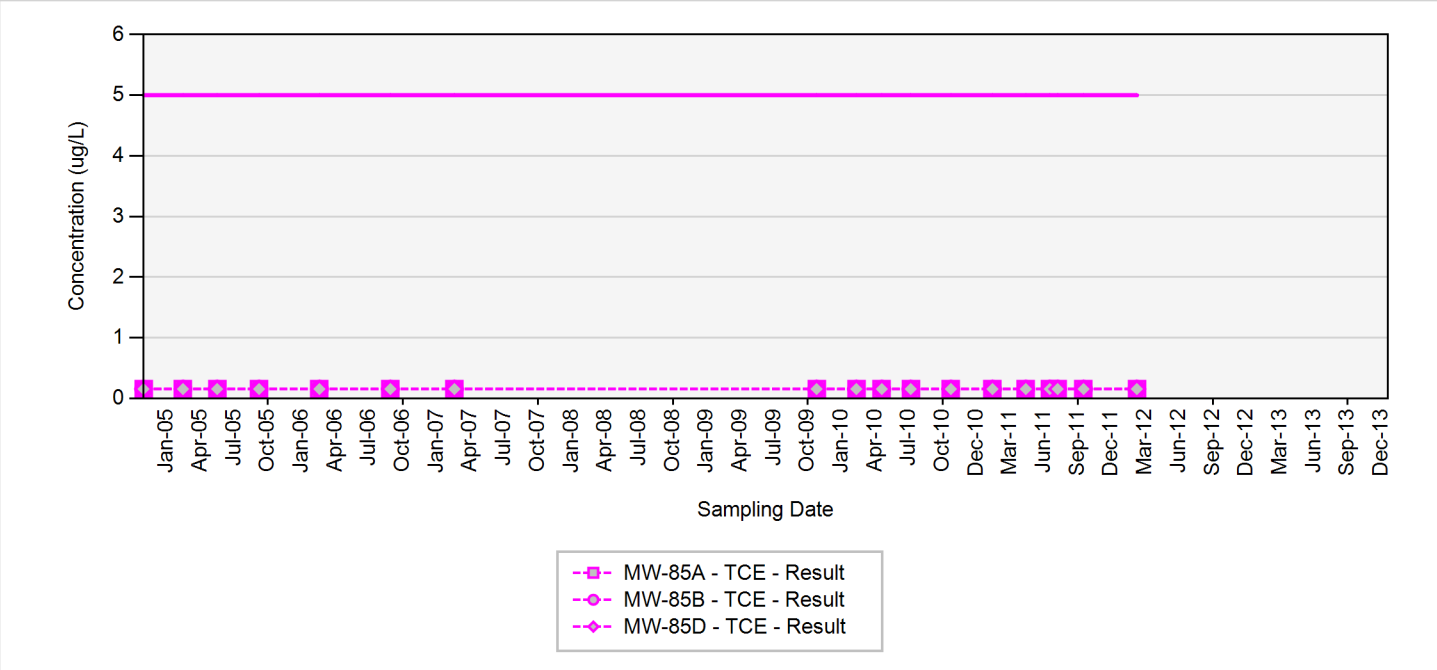
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-85





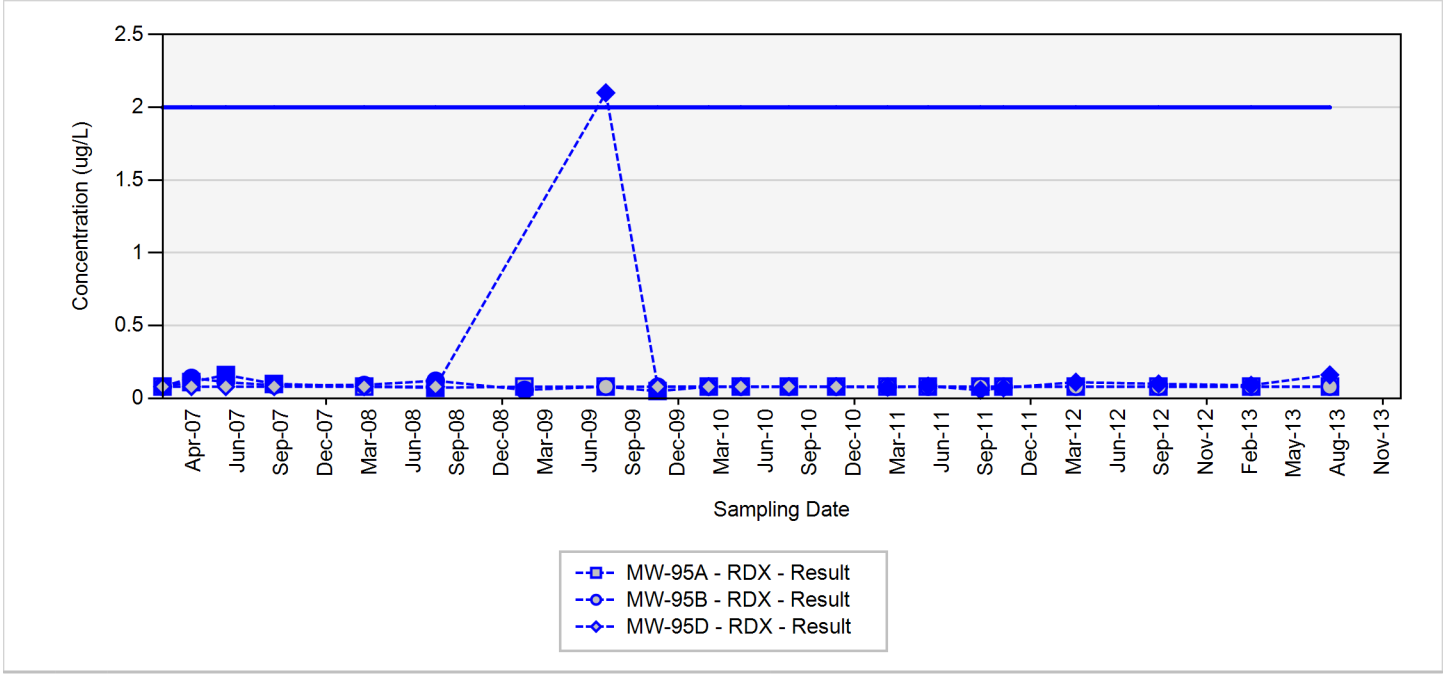
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

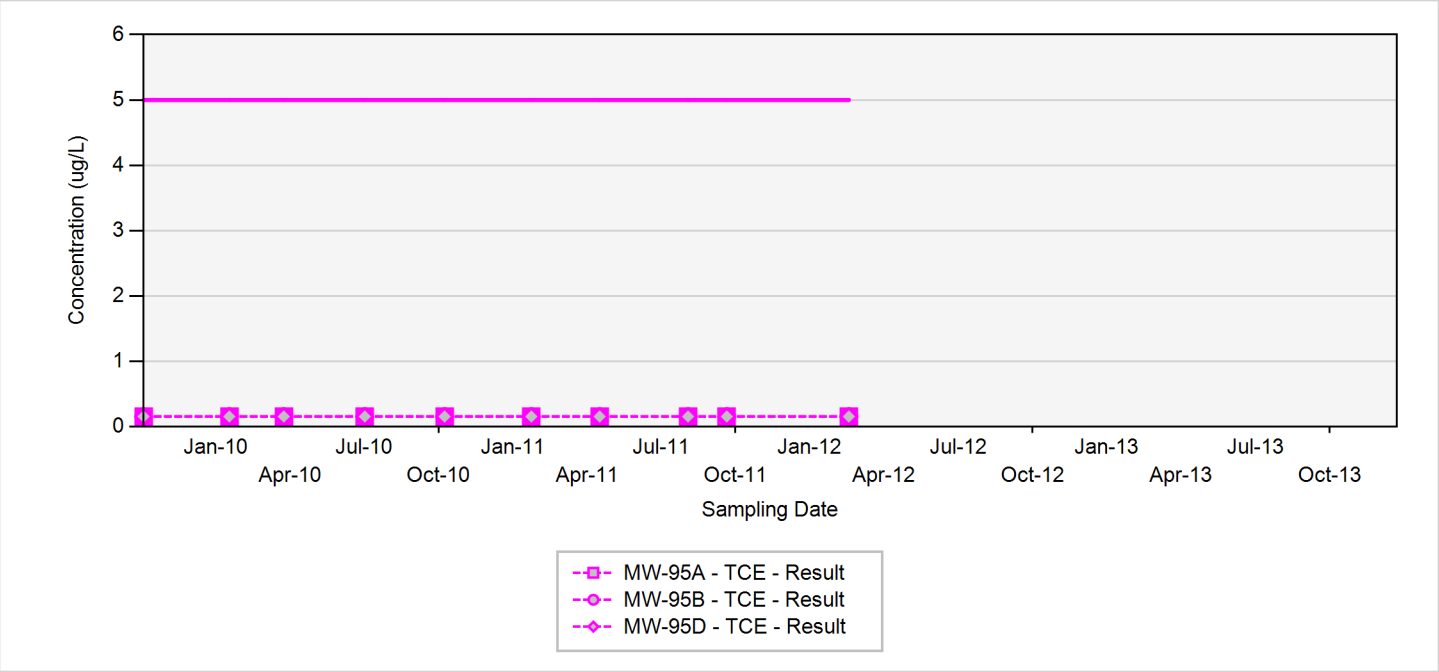
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.1
Concentration Trend Charts for Perimeter Monitoring Wells

MW-95





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

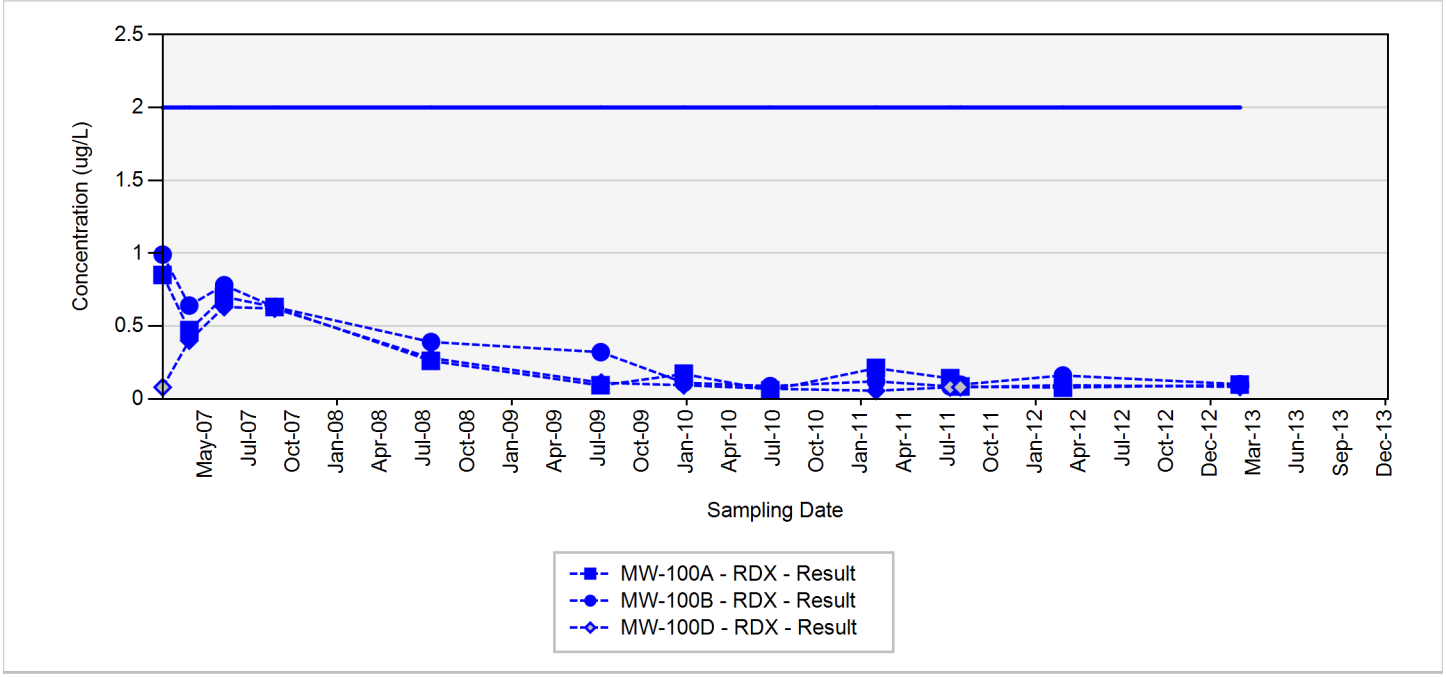
This page was intentionally left blank.

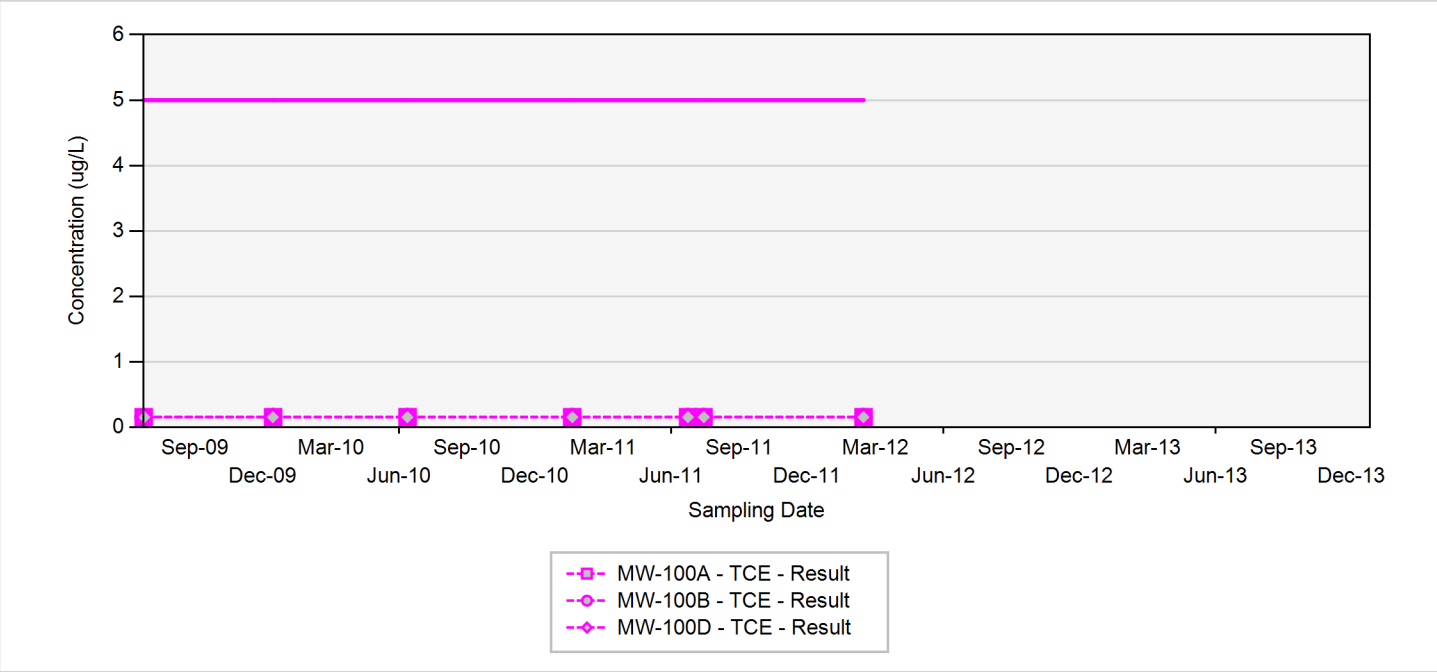
A.2 – Compliance Monitoring Wells

This page was intentionally left blank.

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-100





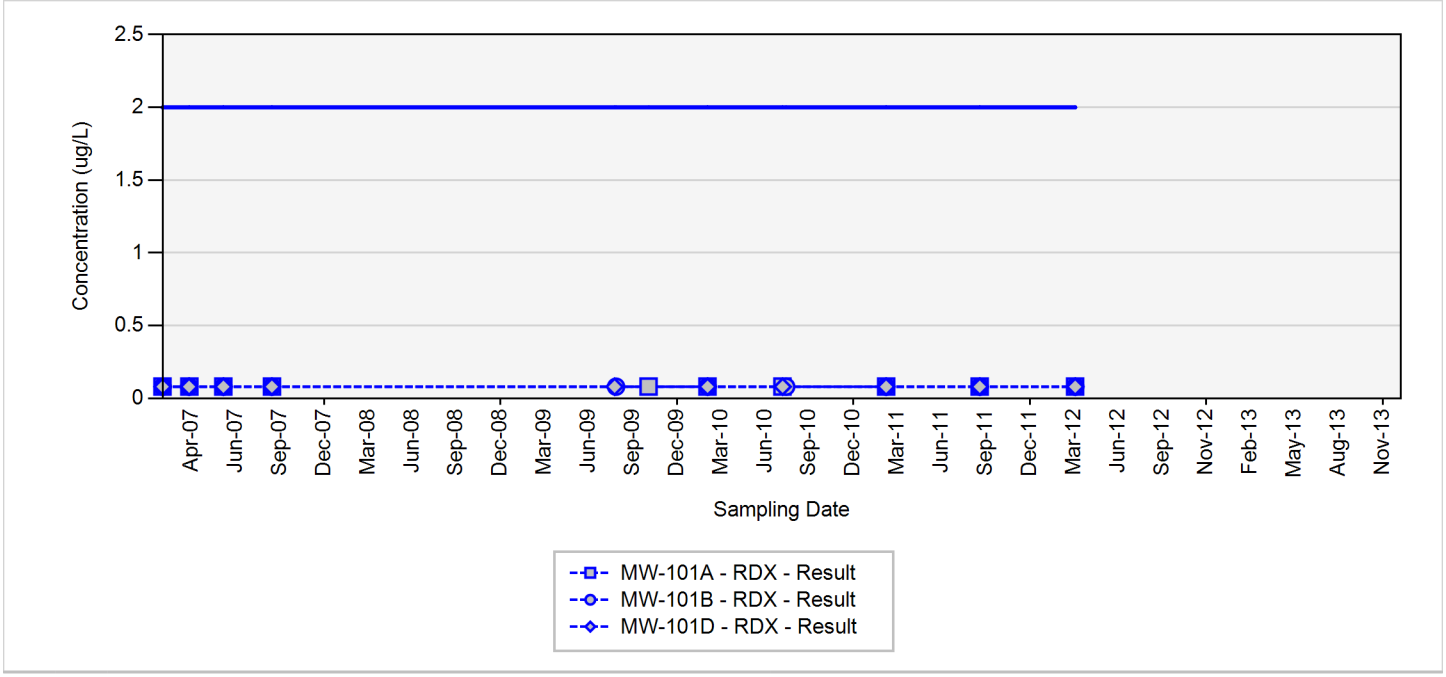
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

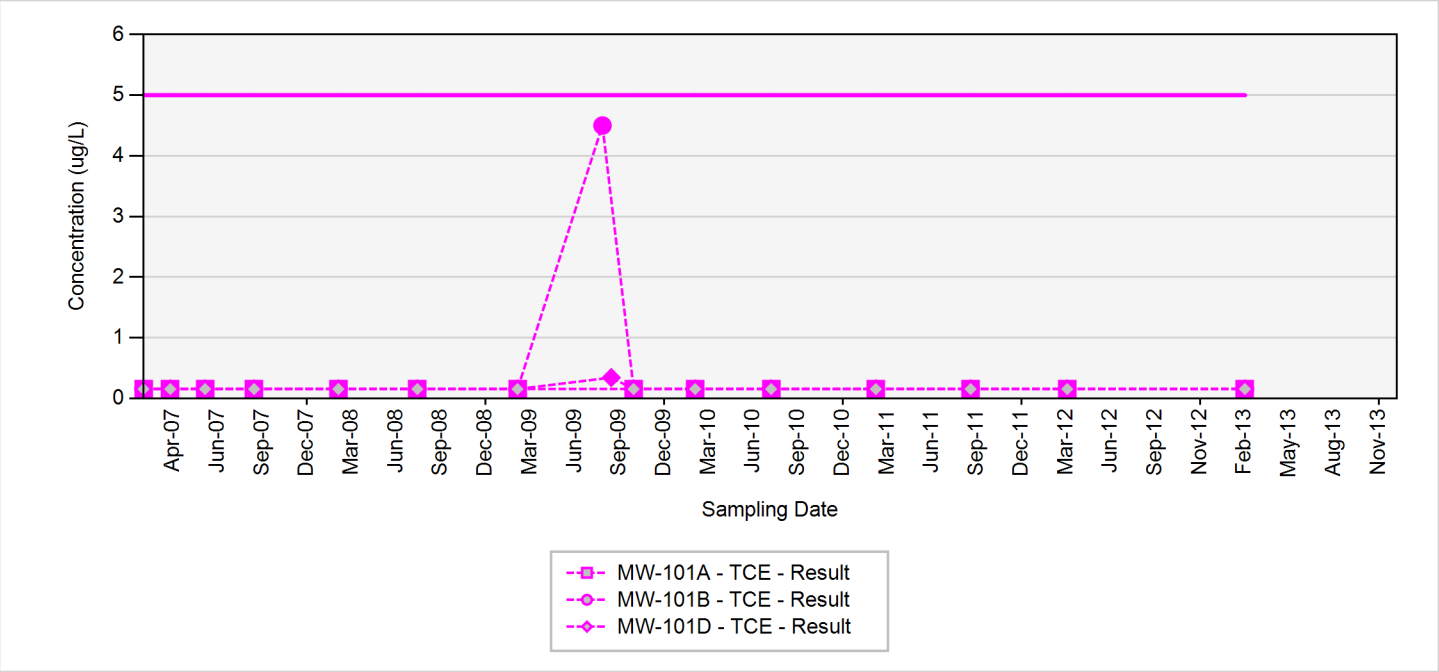
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-101





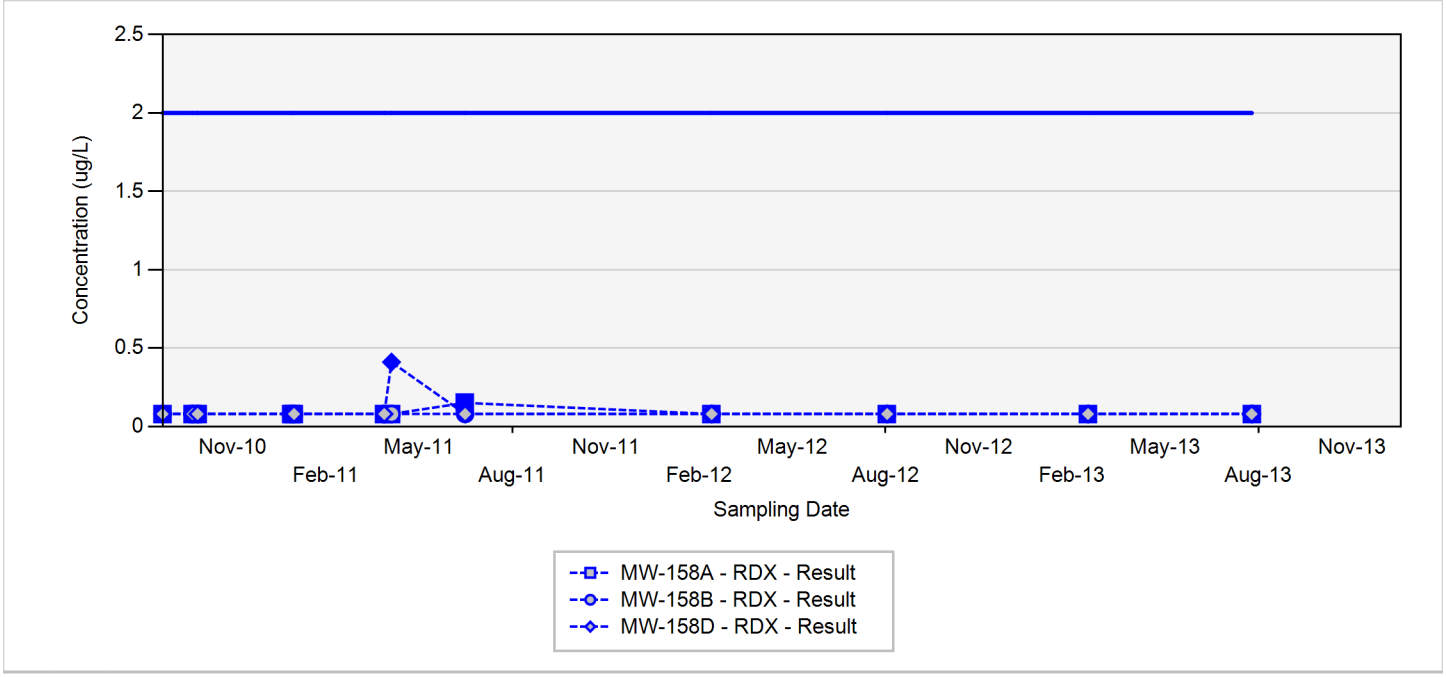
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

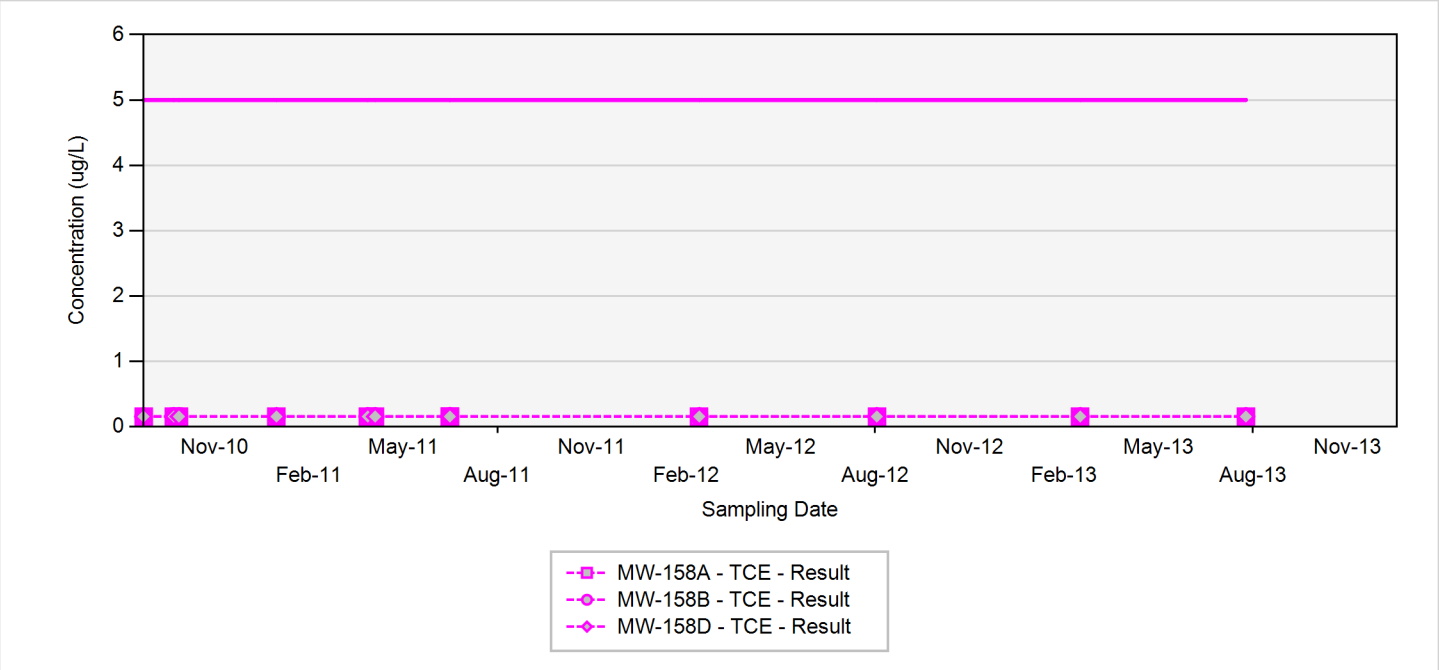
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-158





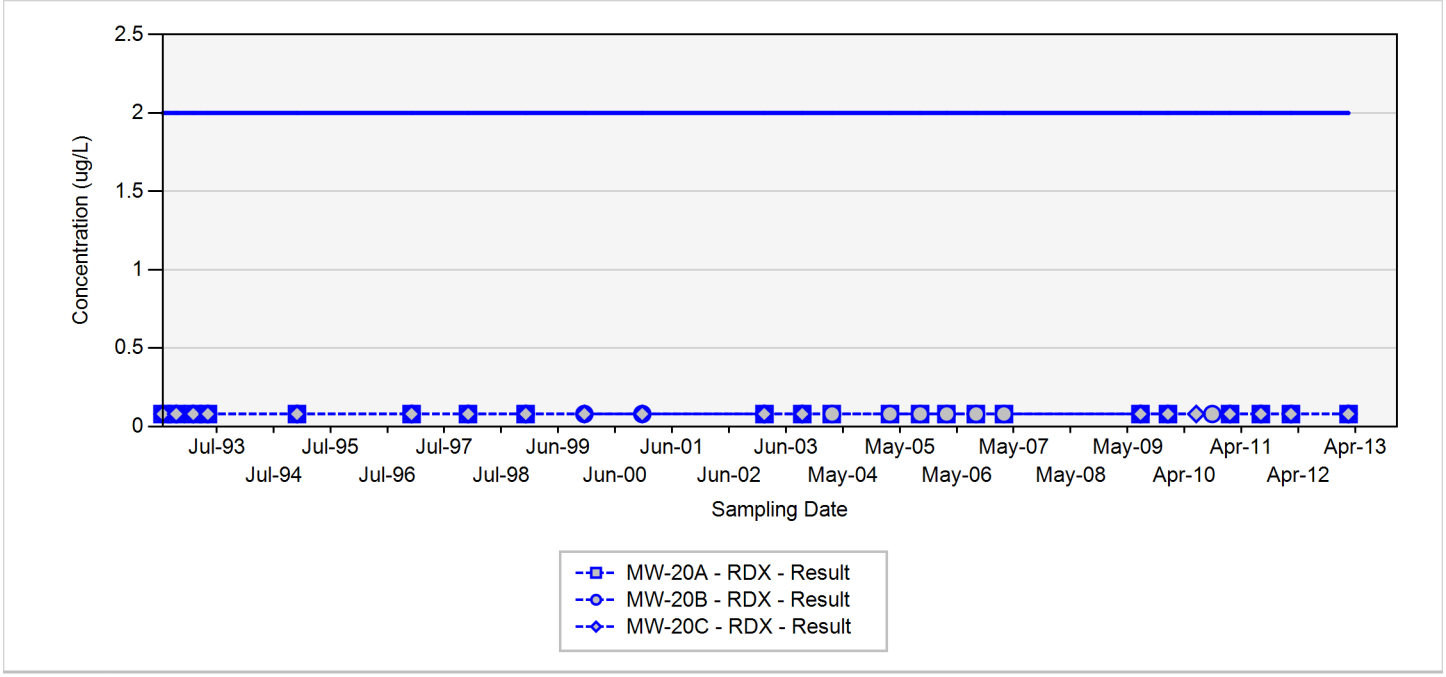
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

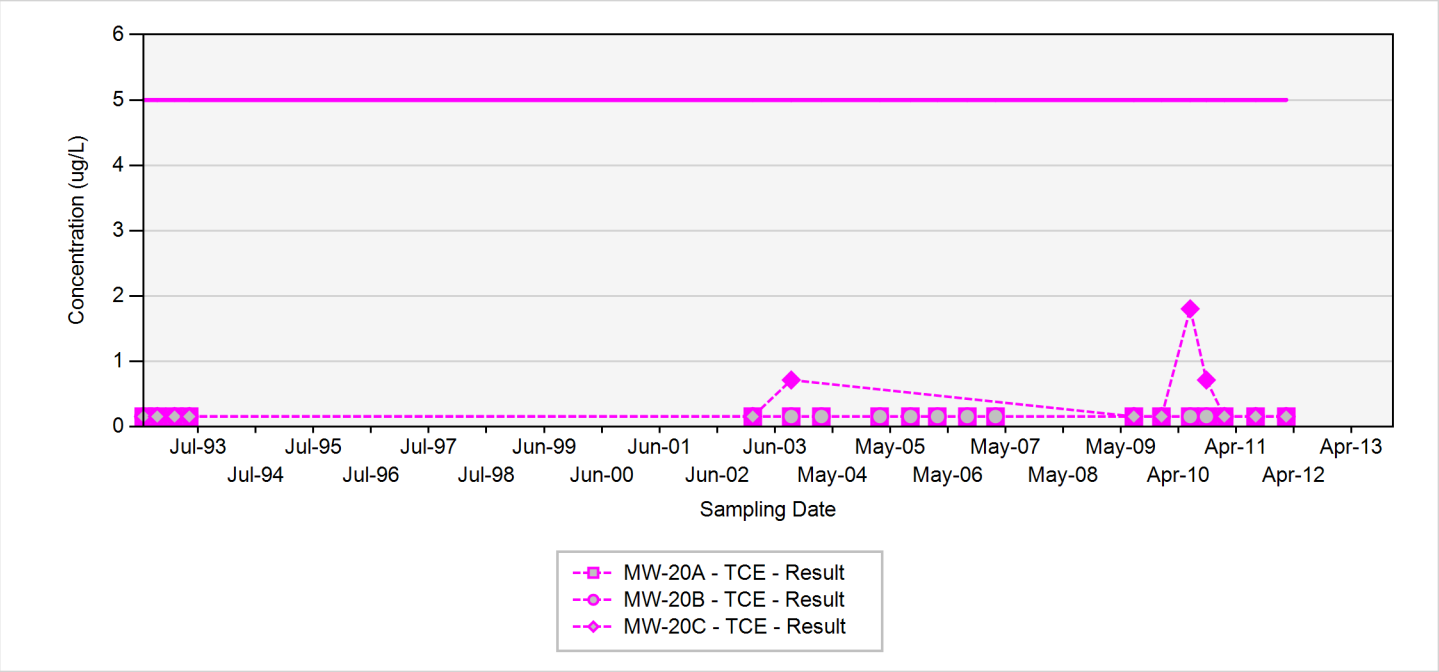
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-20





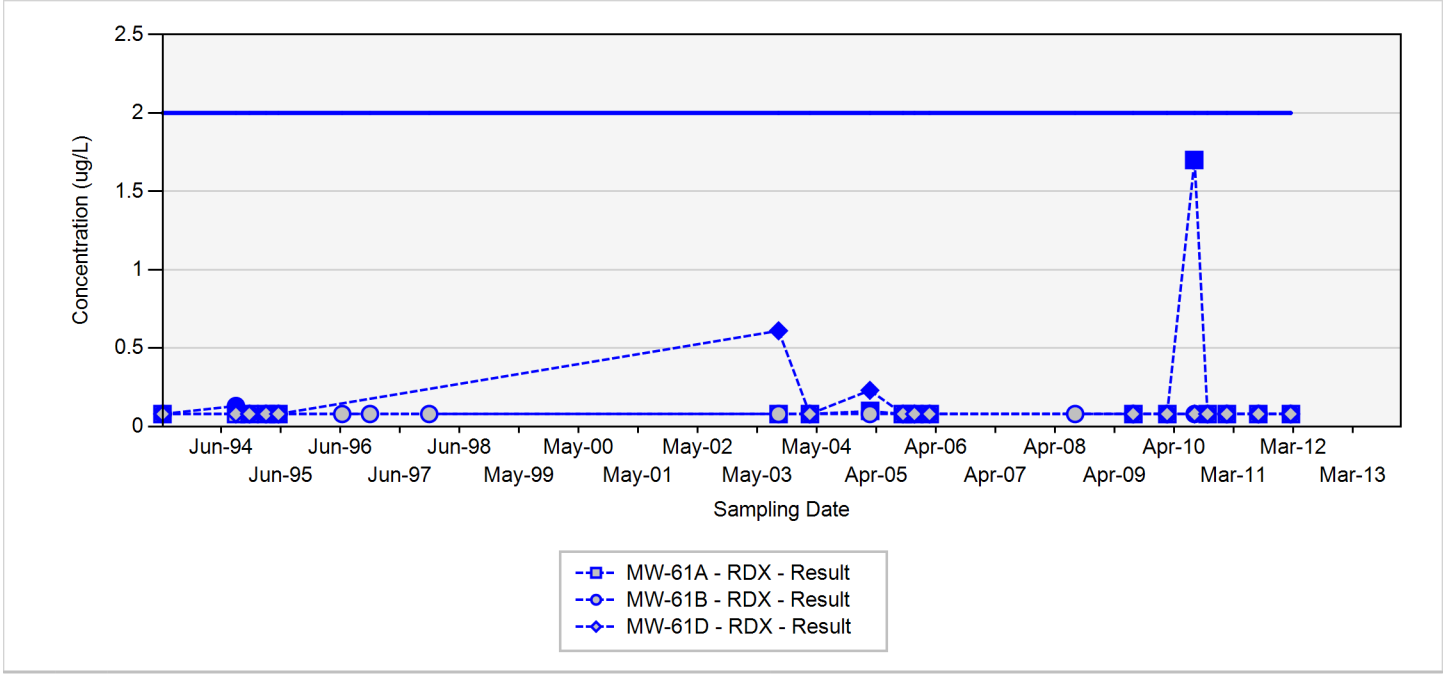
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

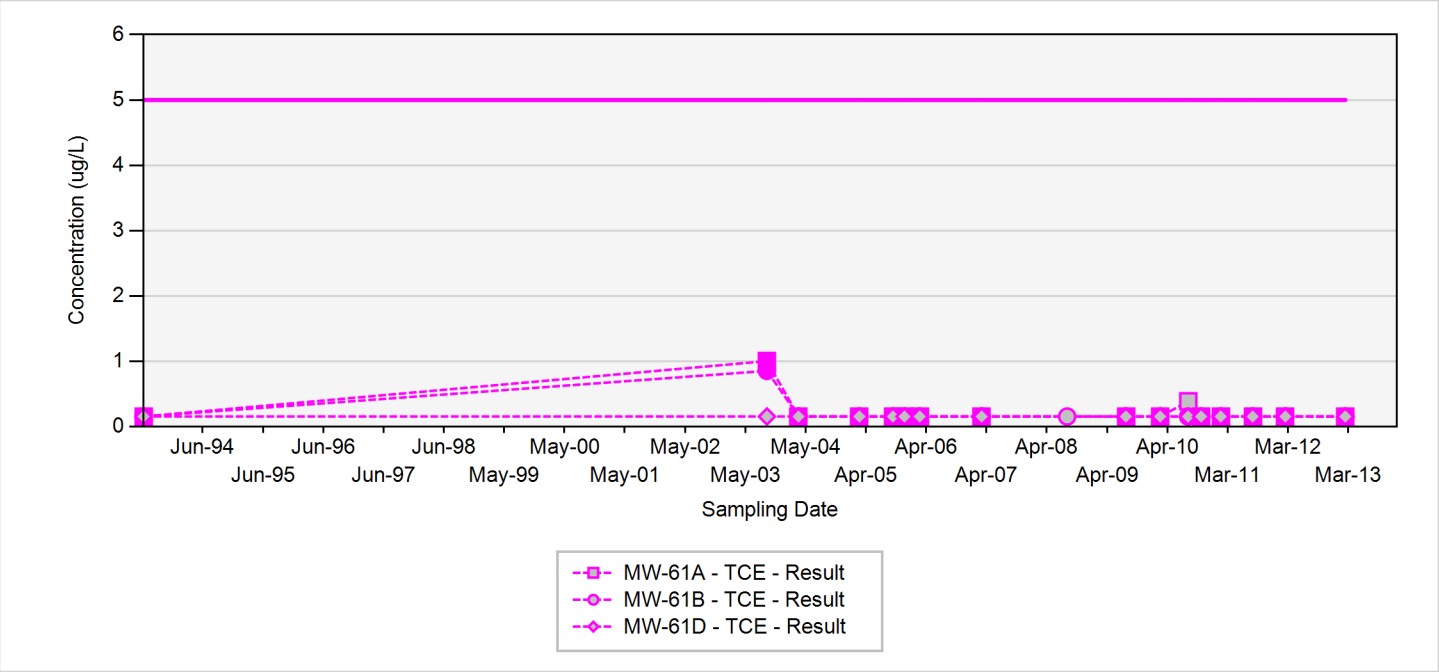
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-61





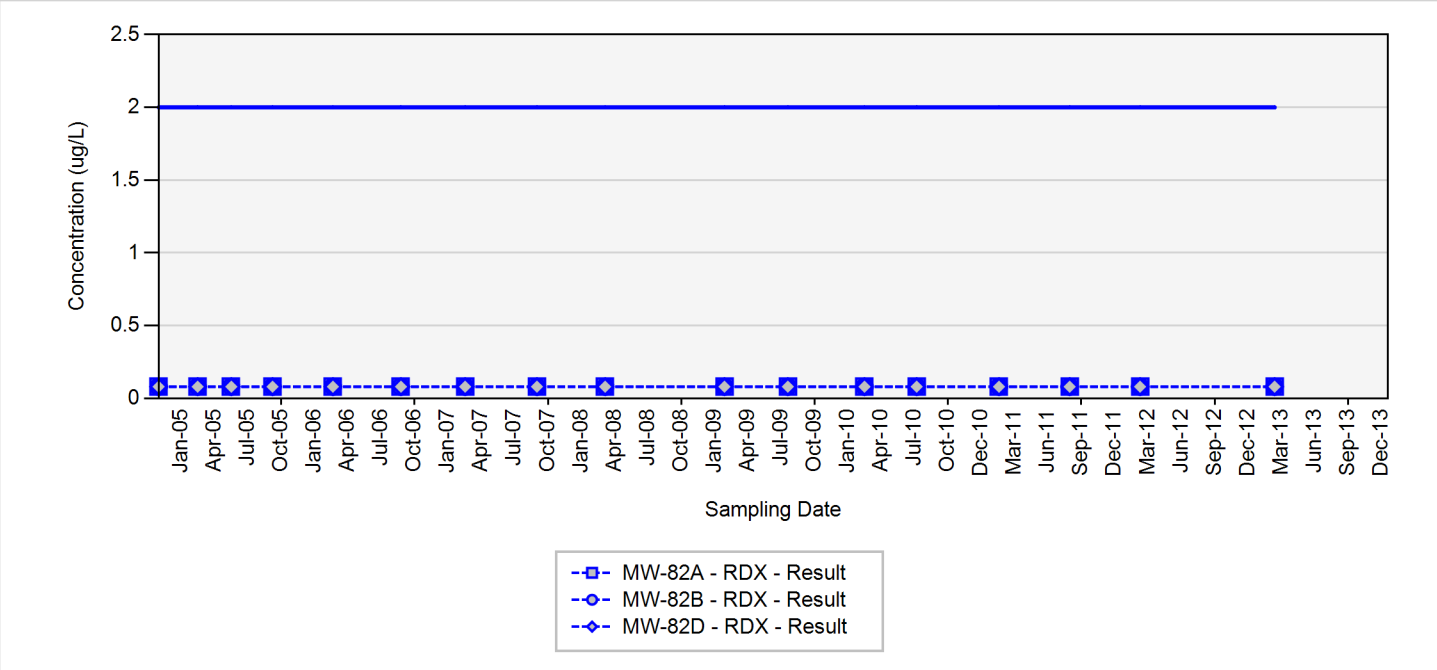
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

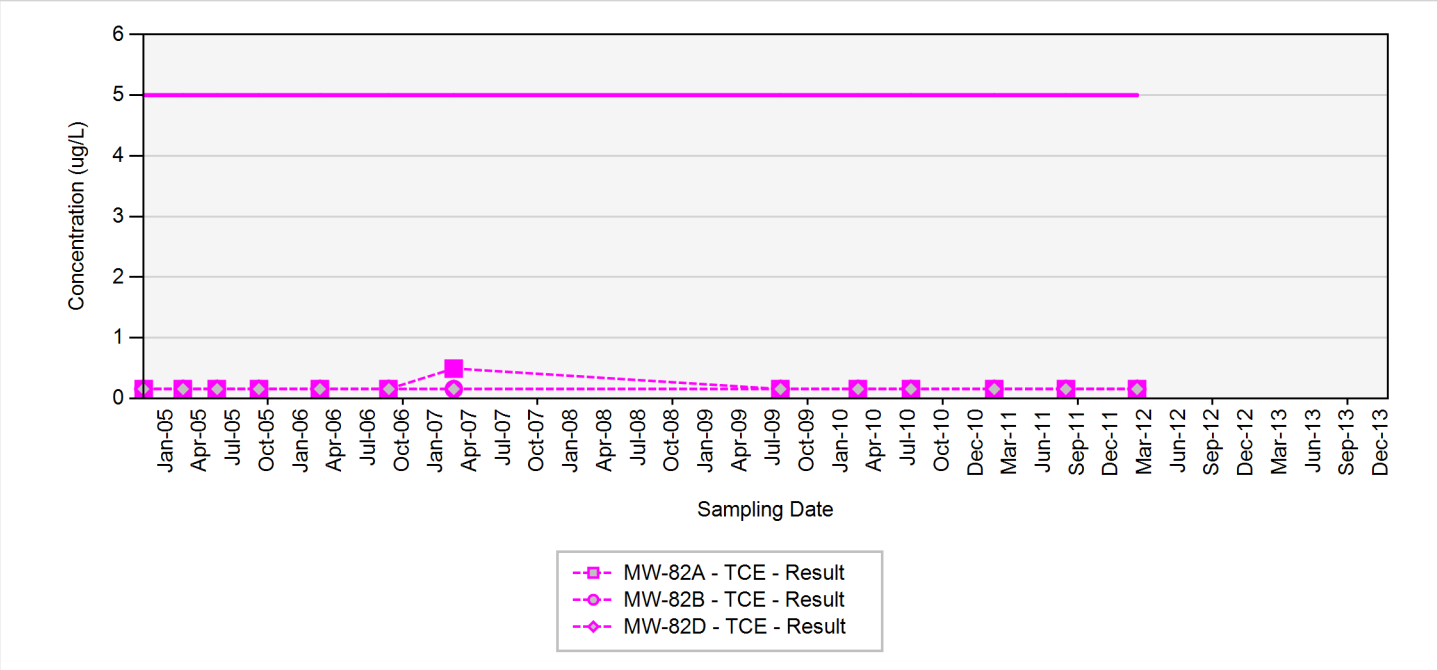
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-82





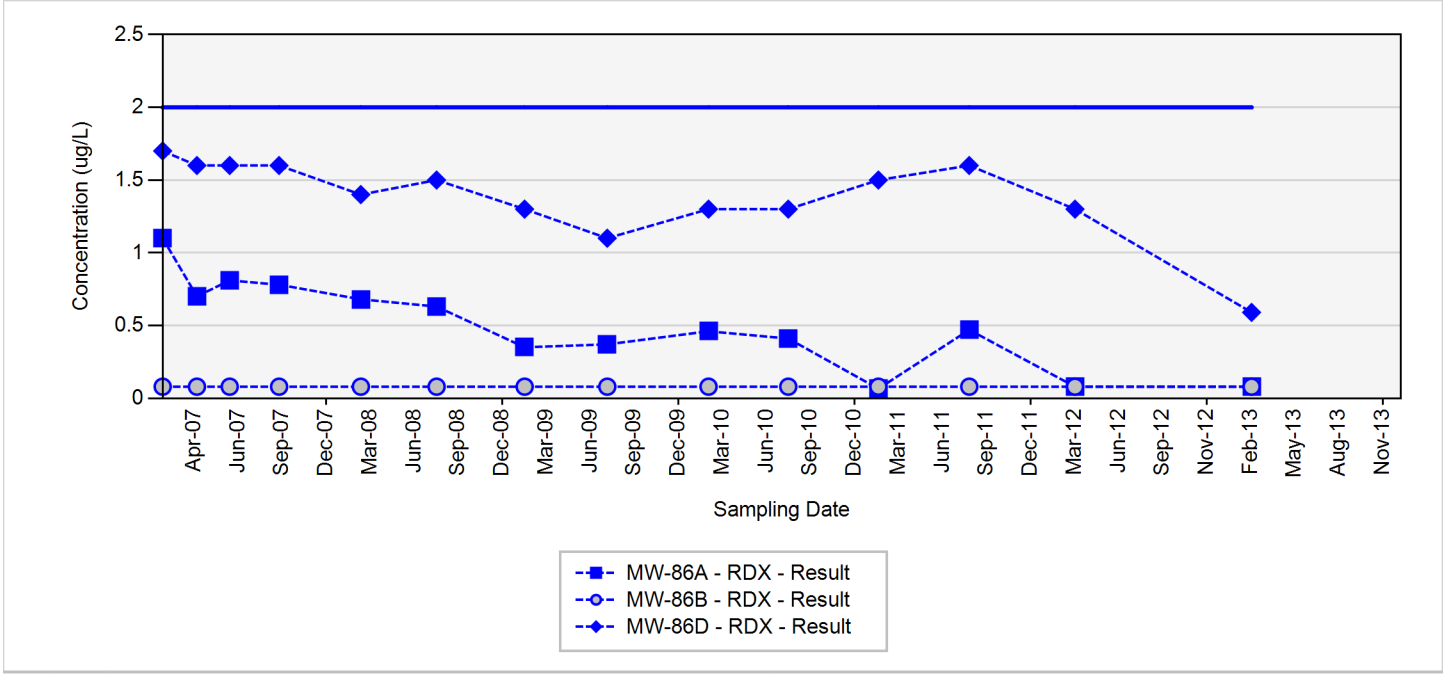
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

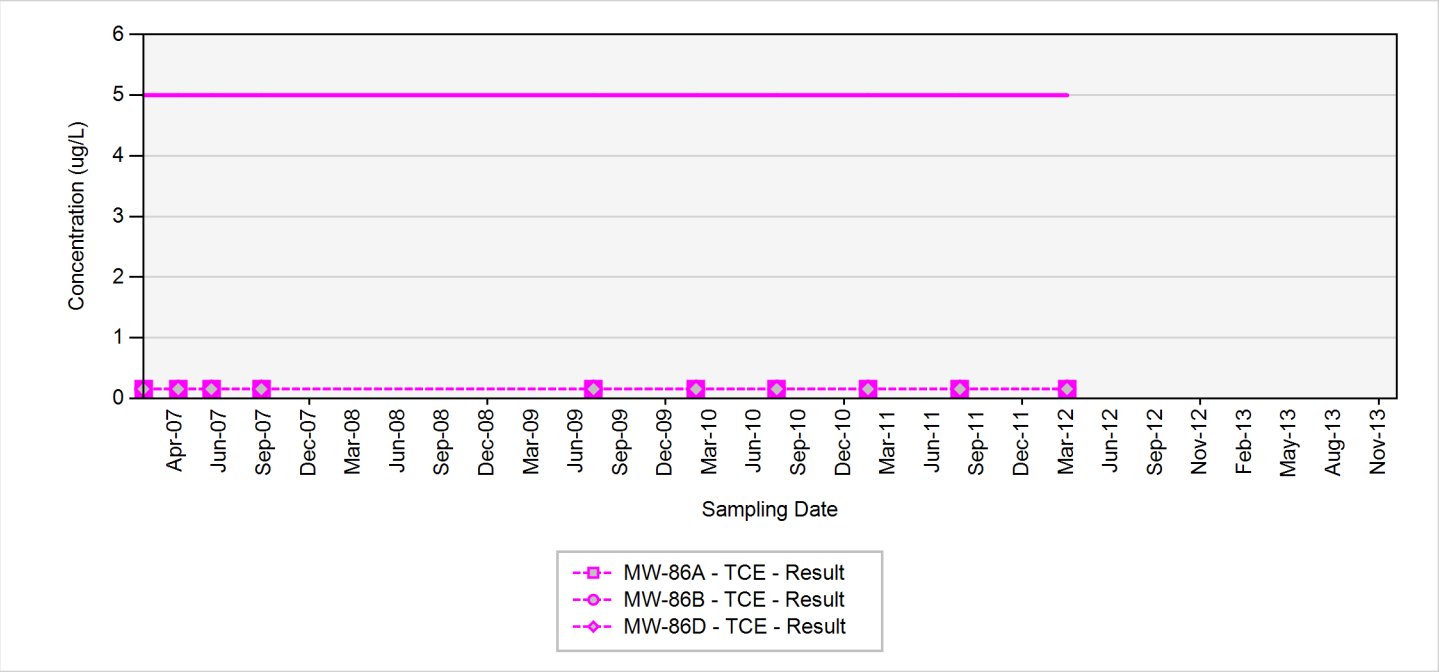
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-86





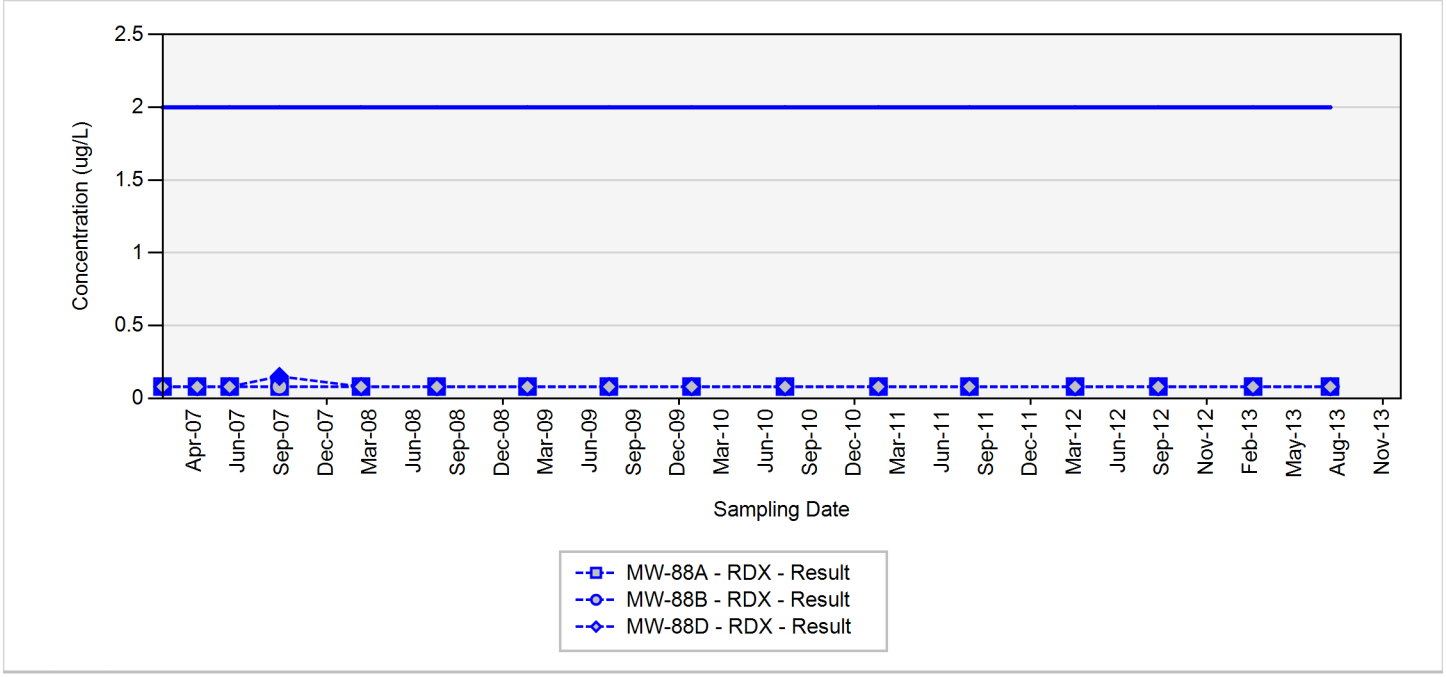
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

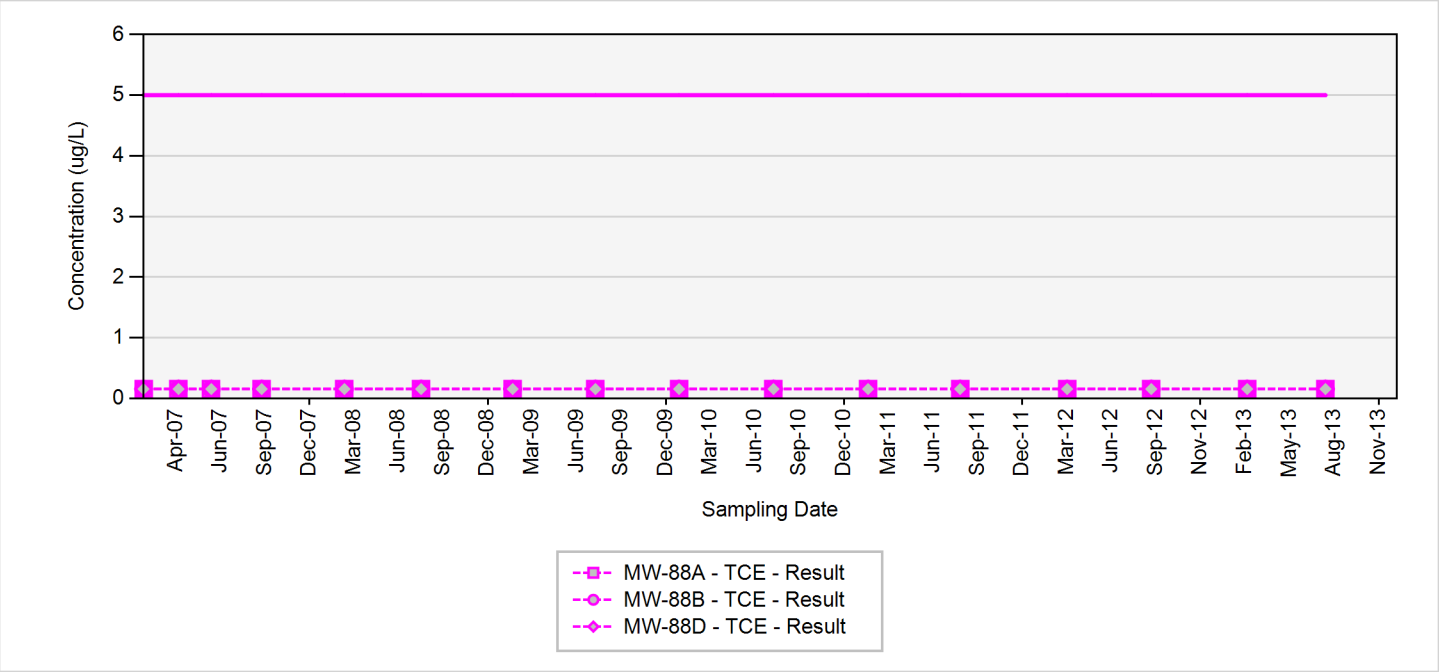
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-88





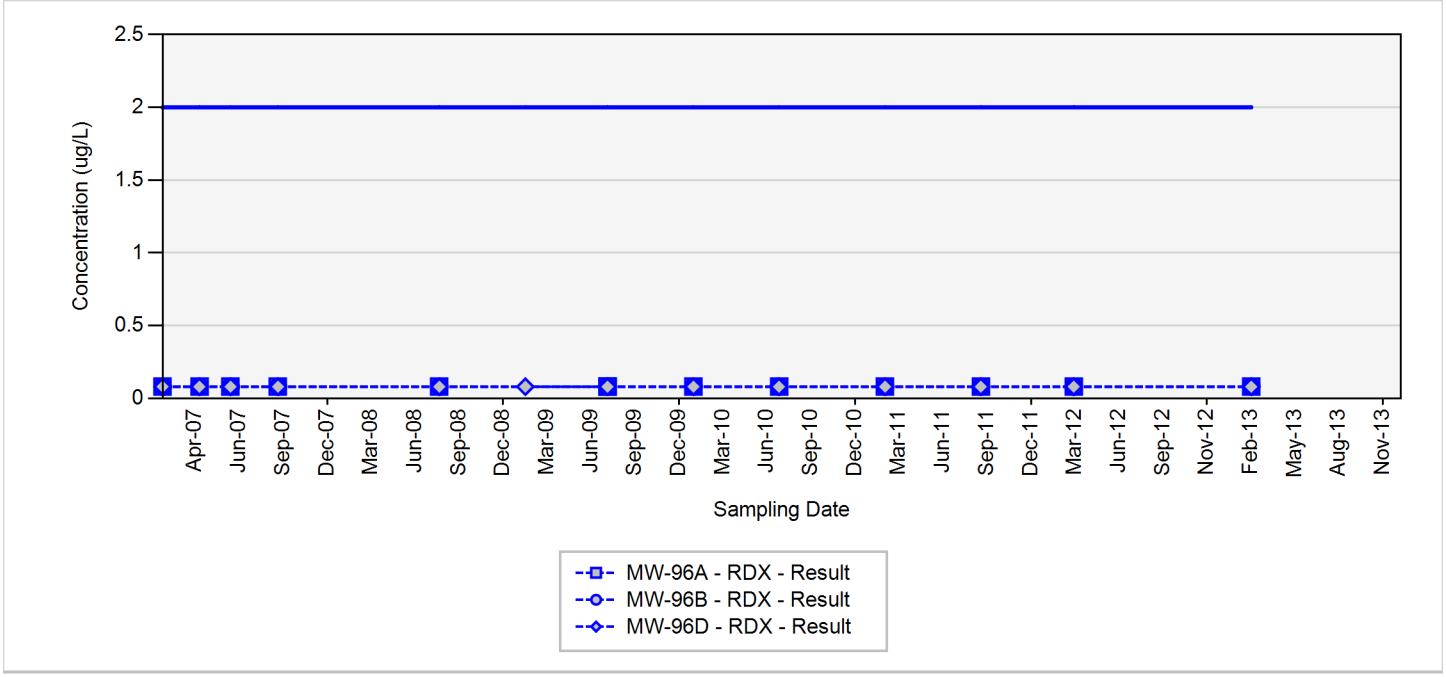
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

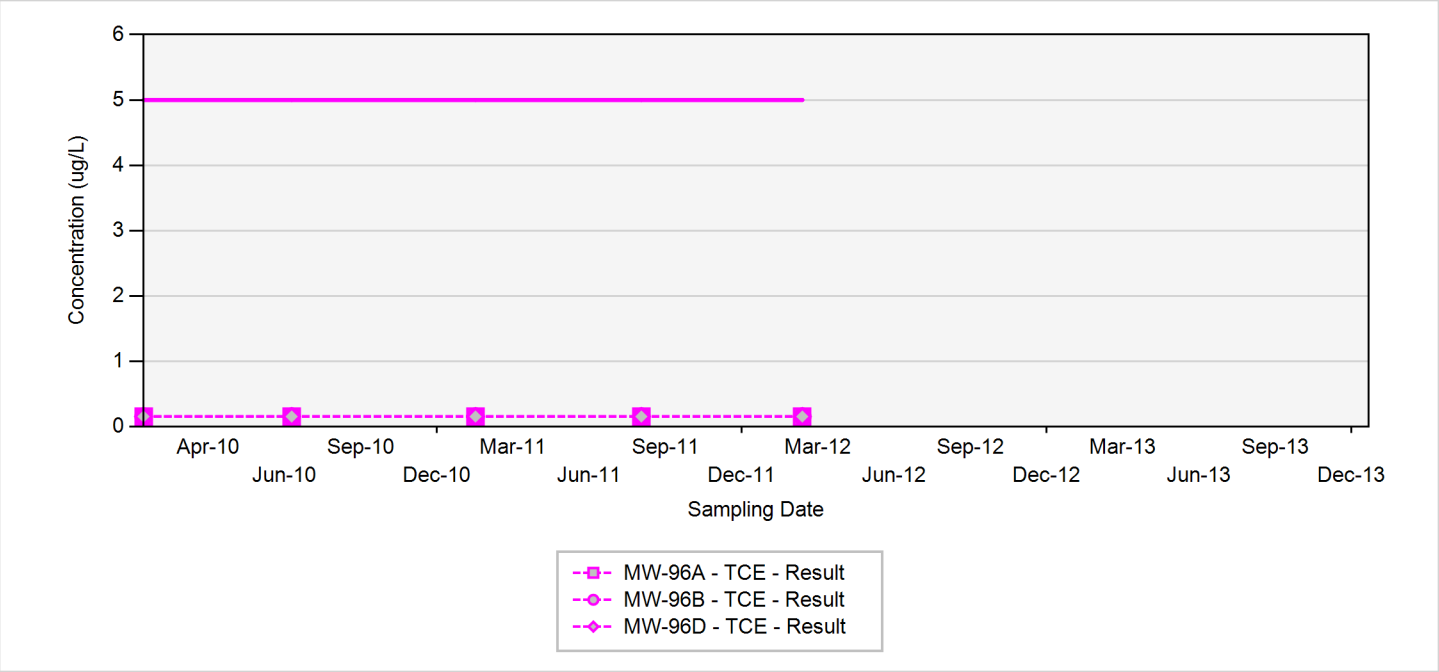
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-96





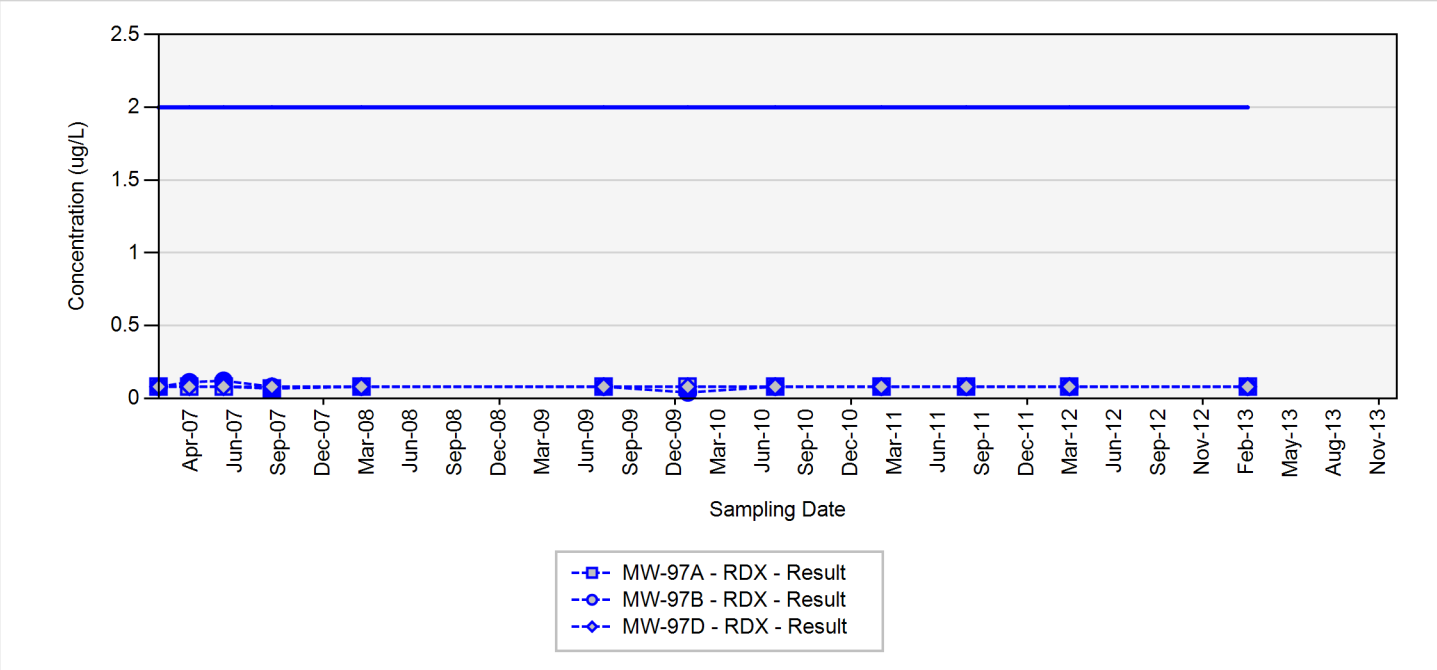
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

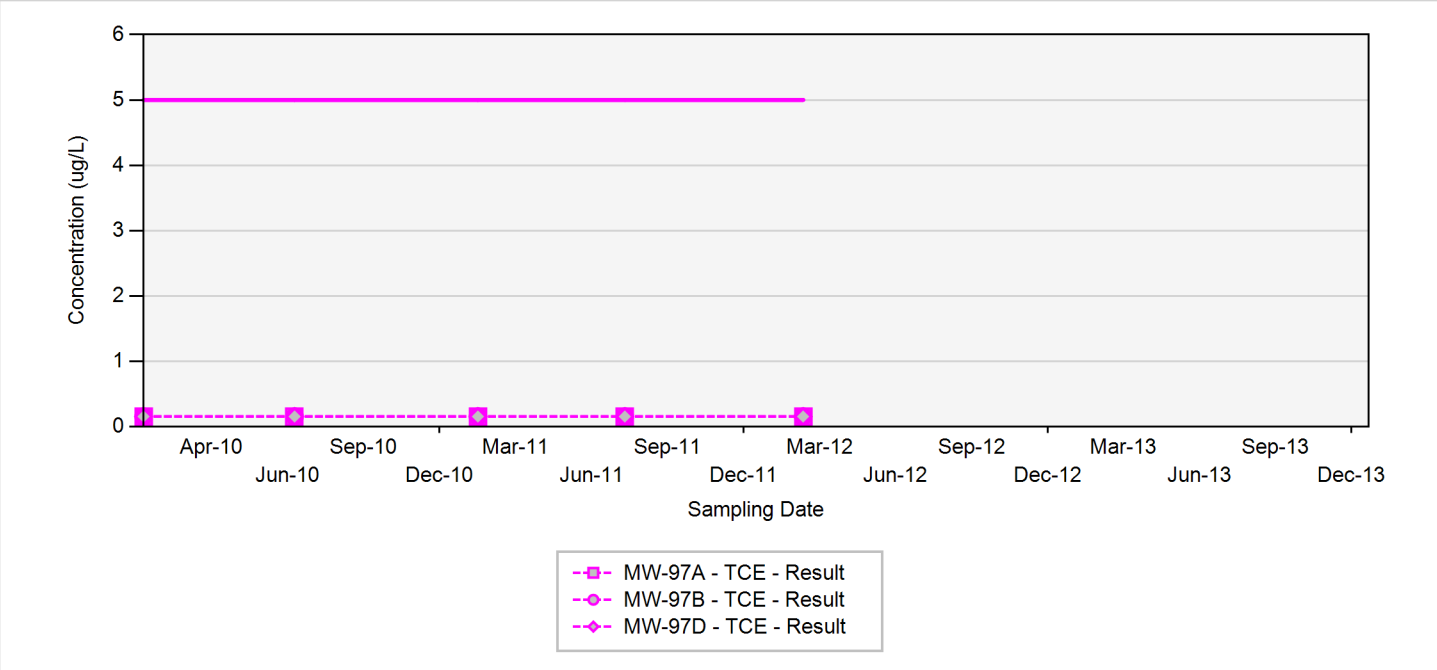
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-97





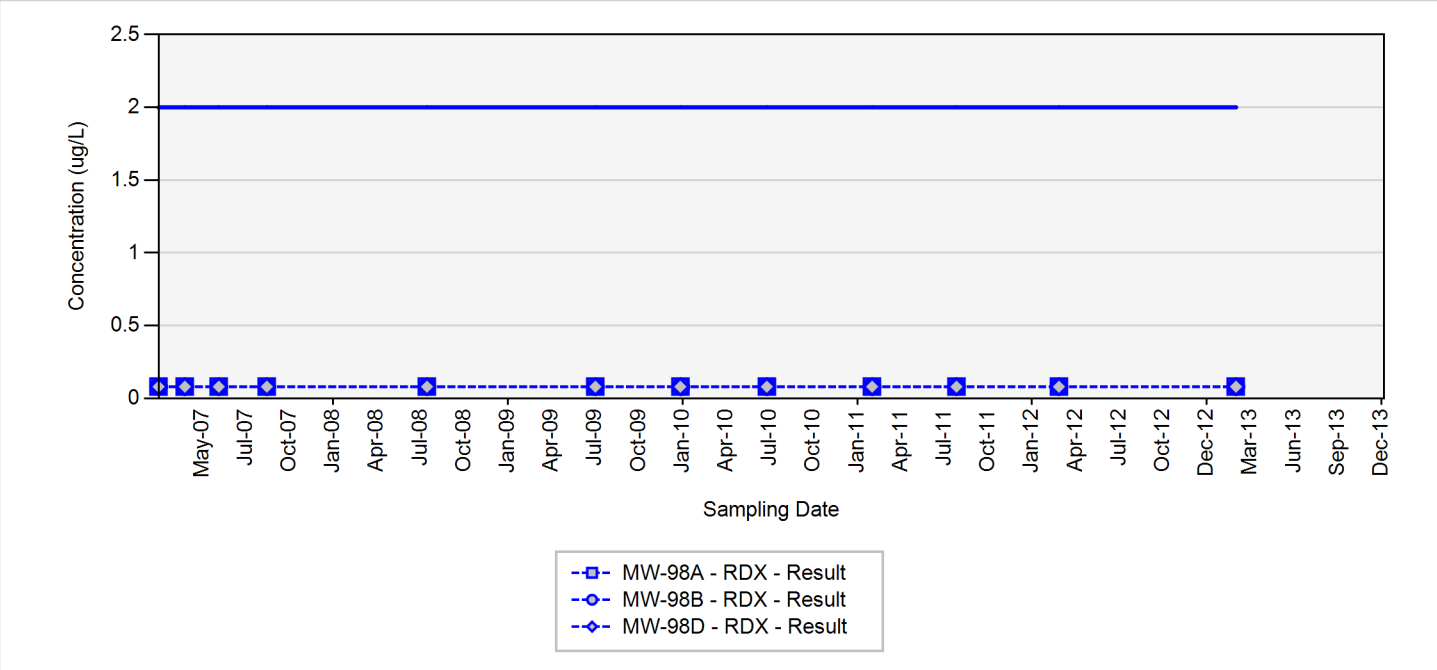
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

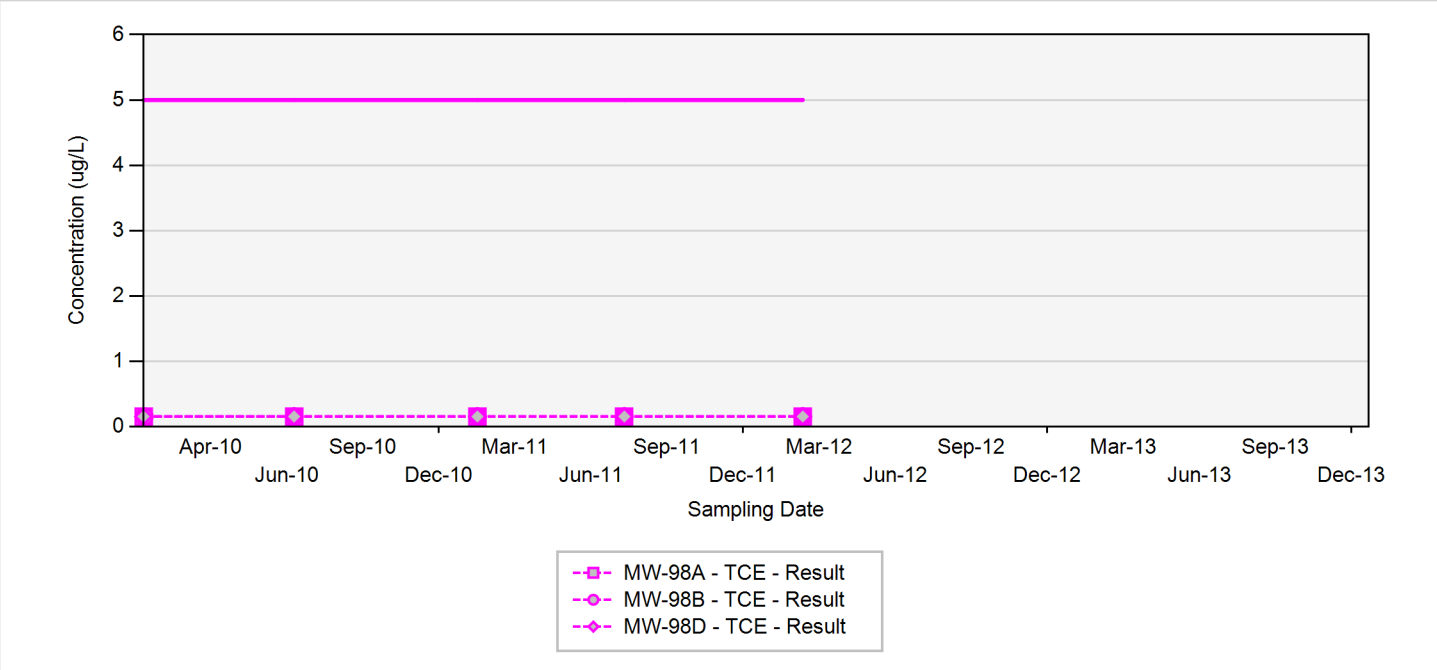
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.2
Concentration Trend Charts for Compliance Monitoring Wells

MW-98





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

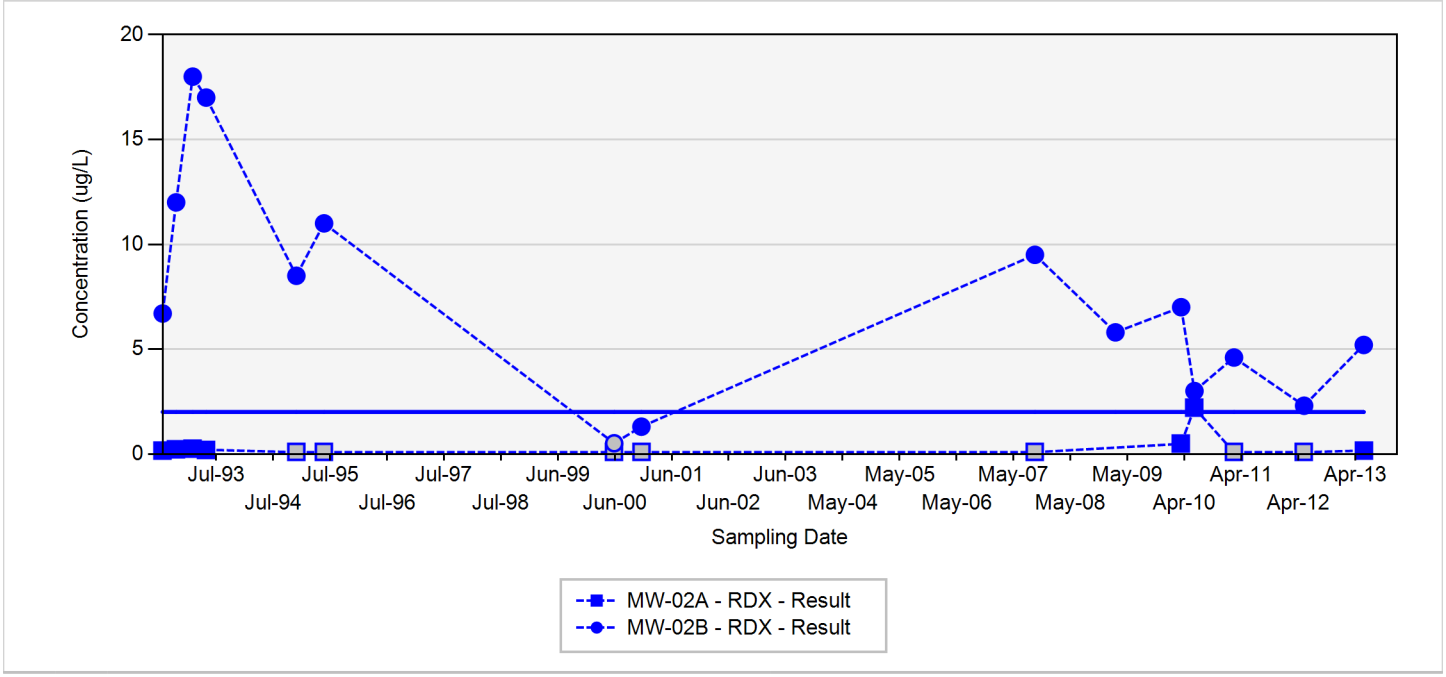
This page was intentionally left blank.

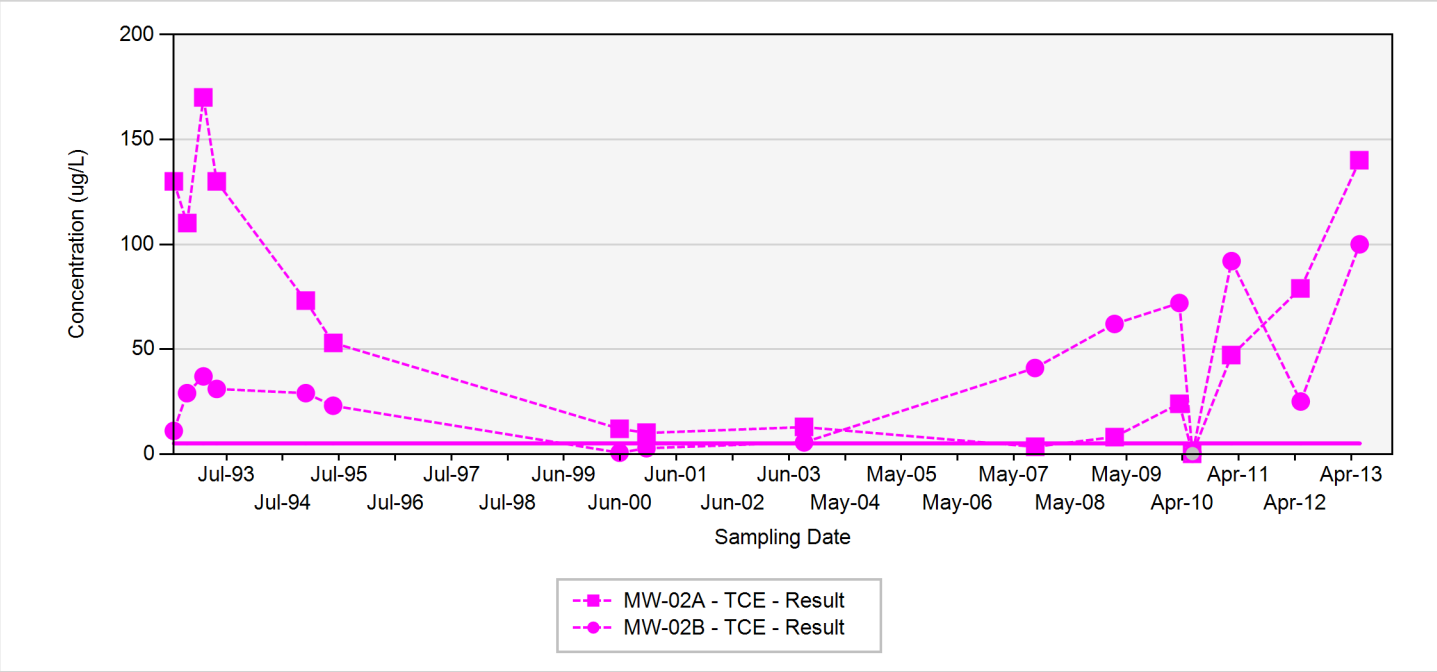
A.3 – Load Line 1 Interior Plume Monitoring Wells

This page was intentionally left blank.

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-02





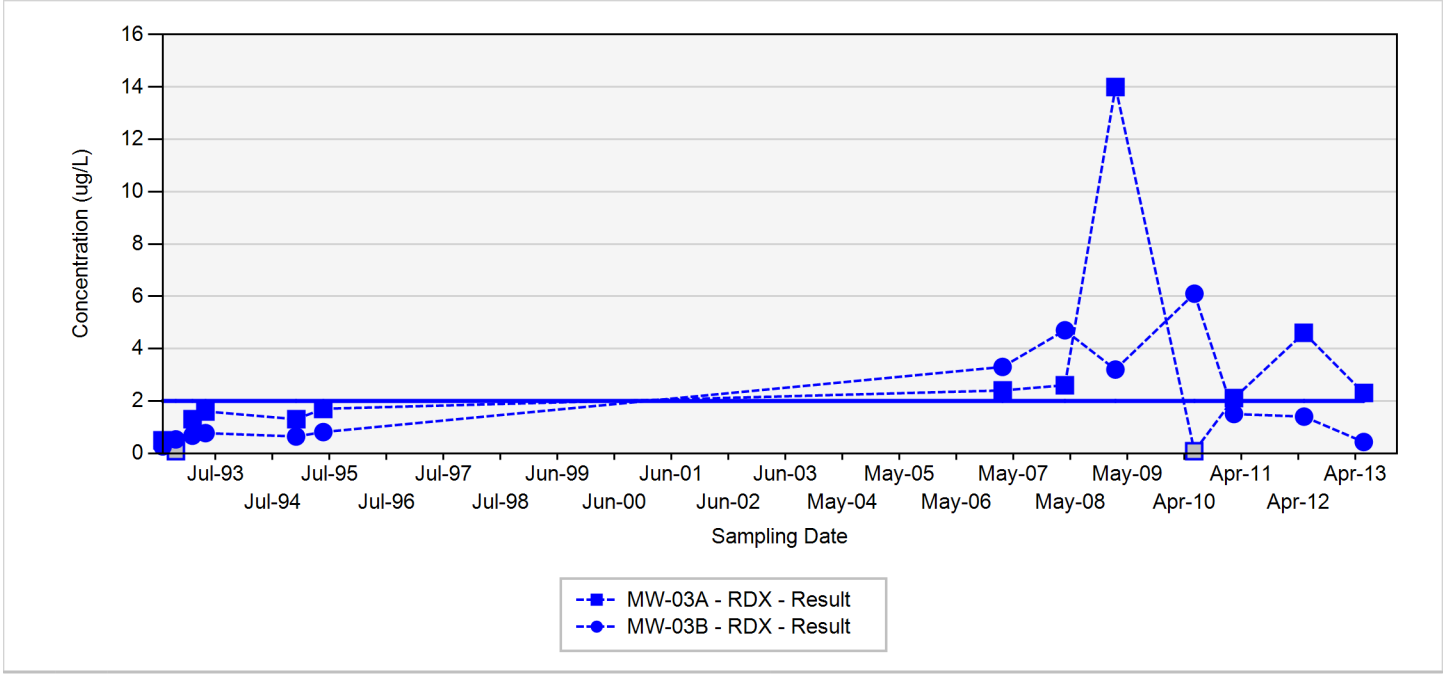
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

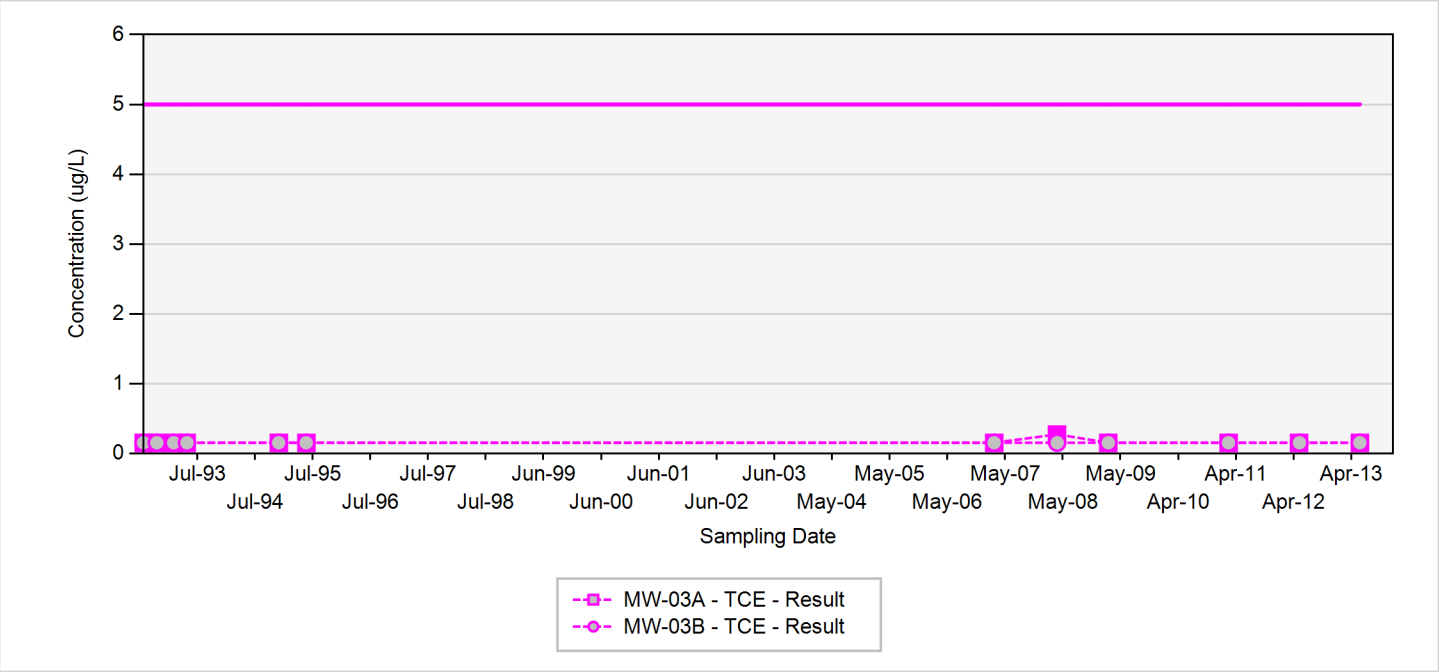
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-03





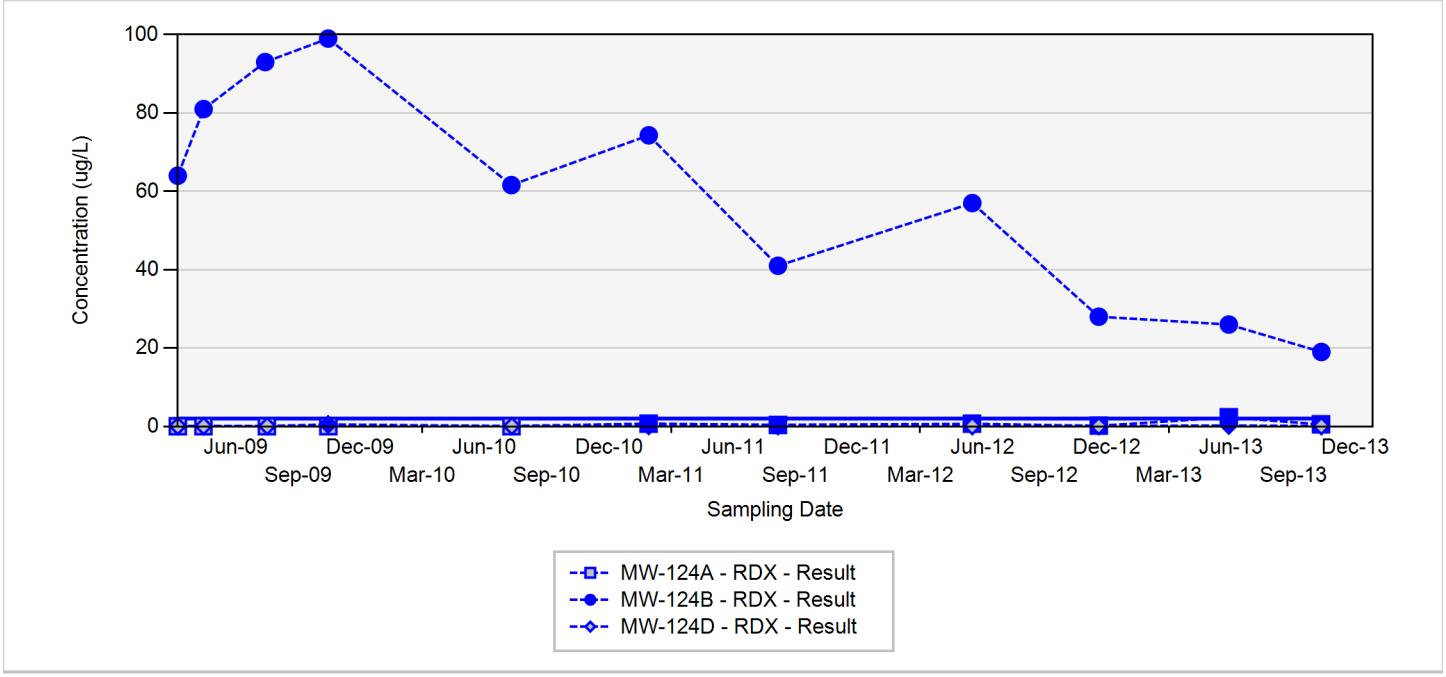
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

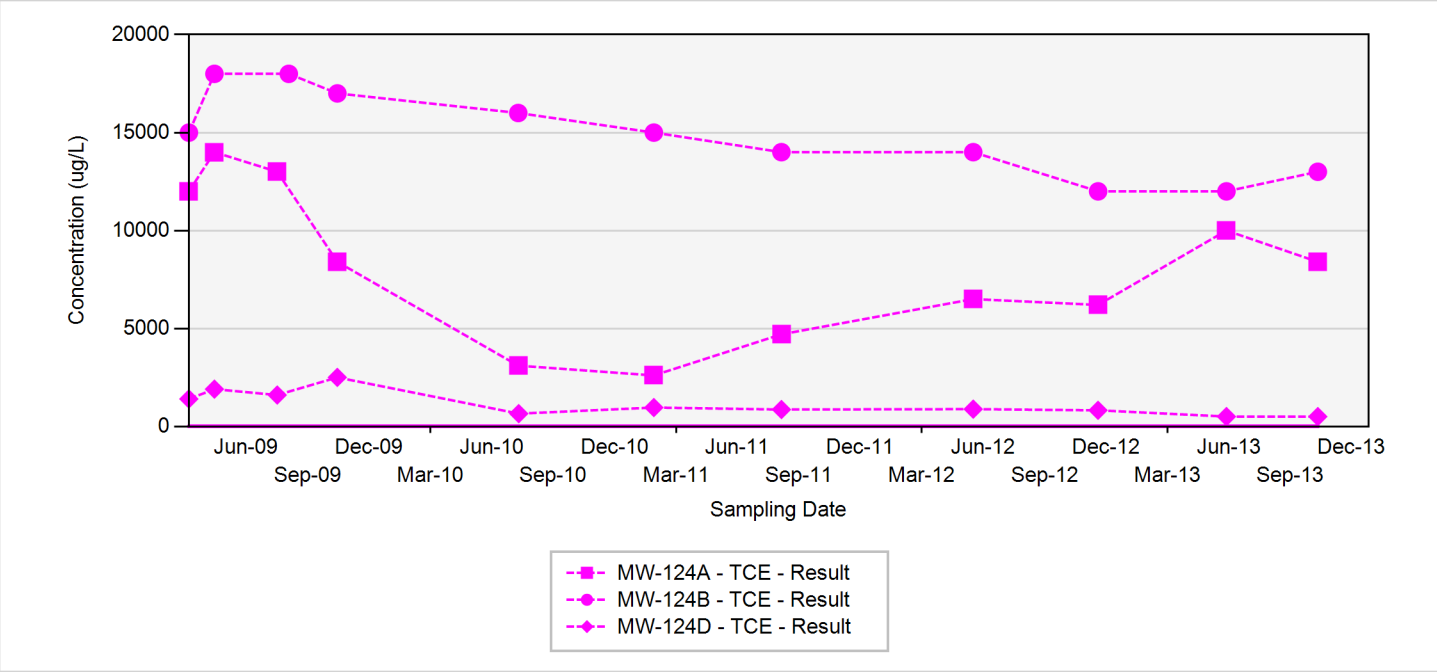
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-124





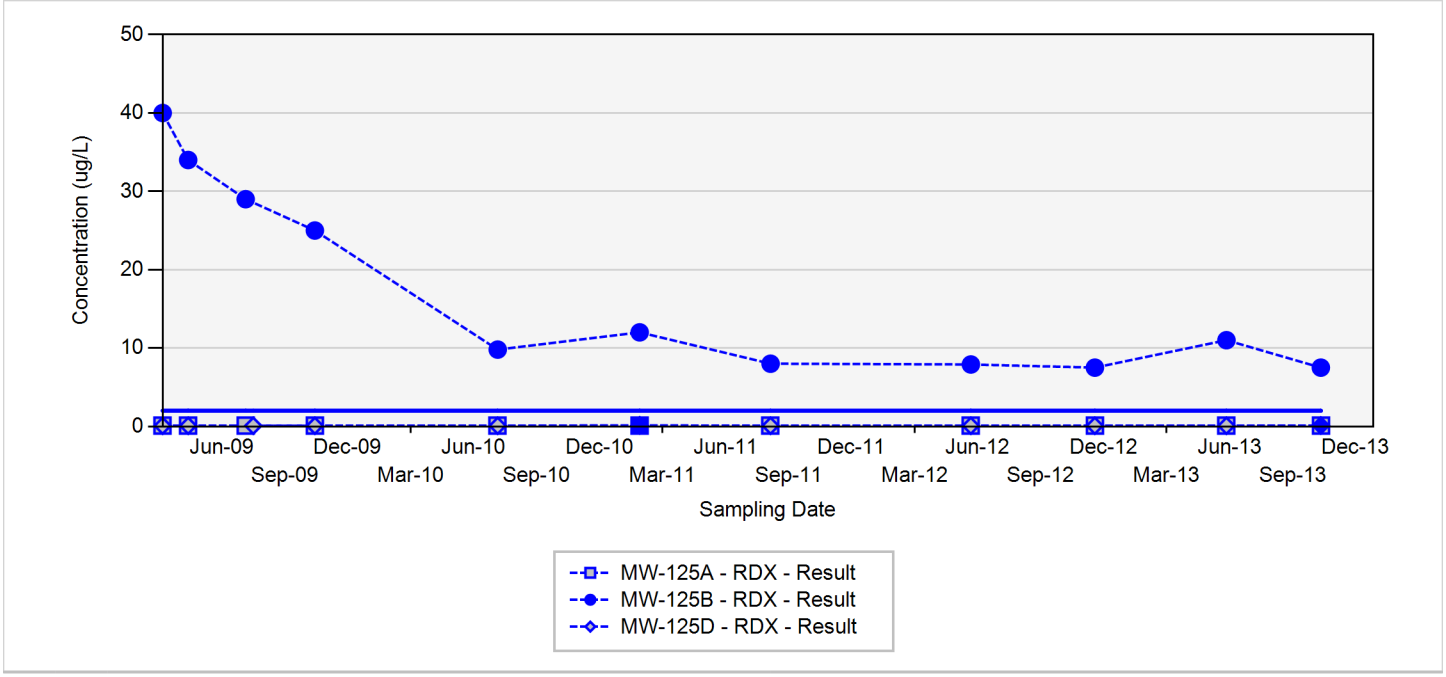
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

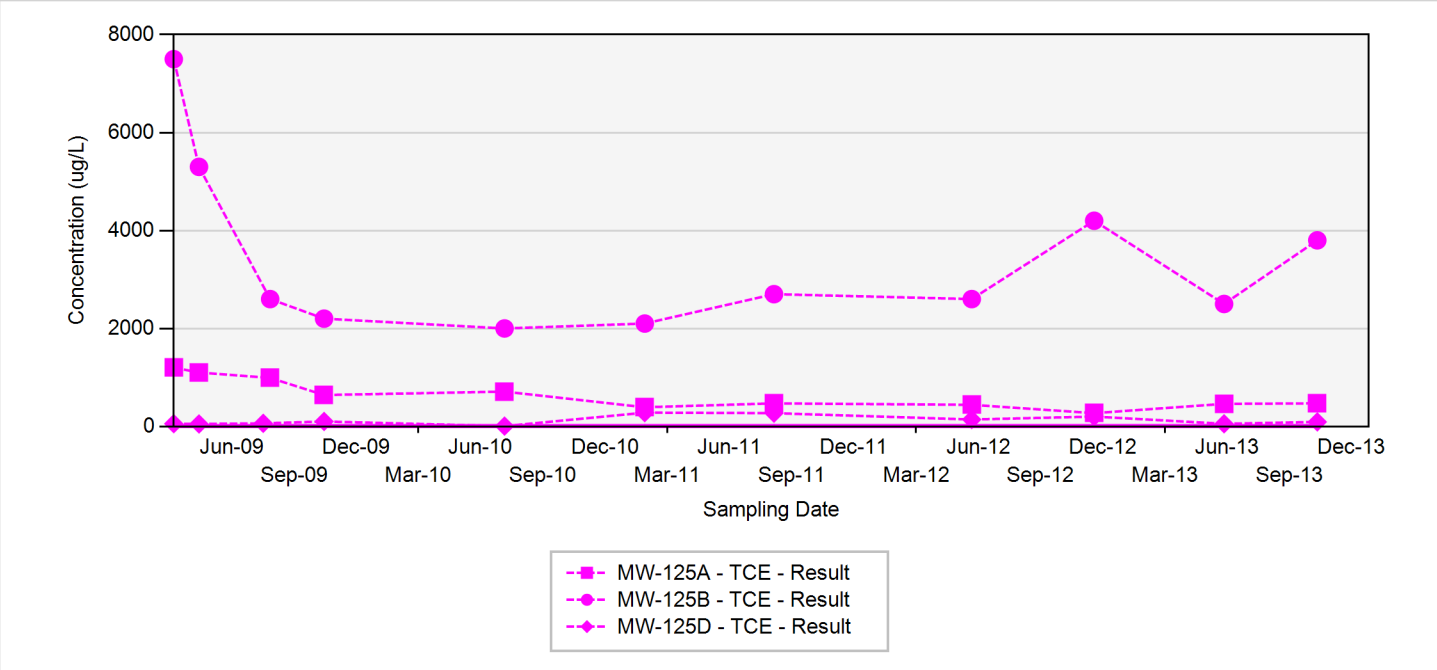
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-125





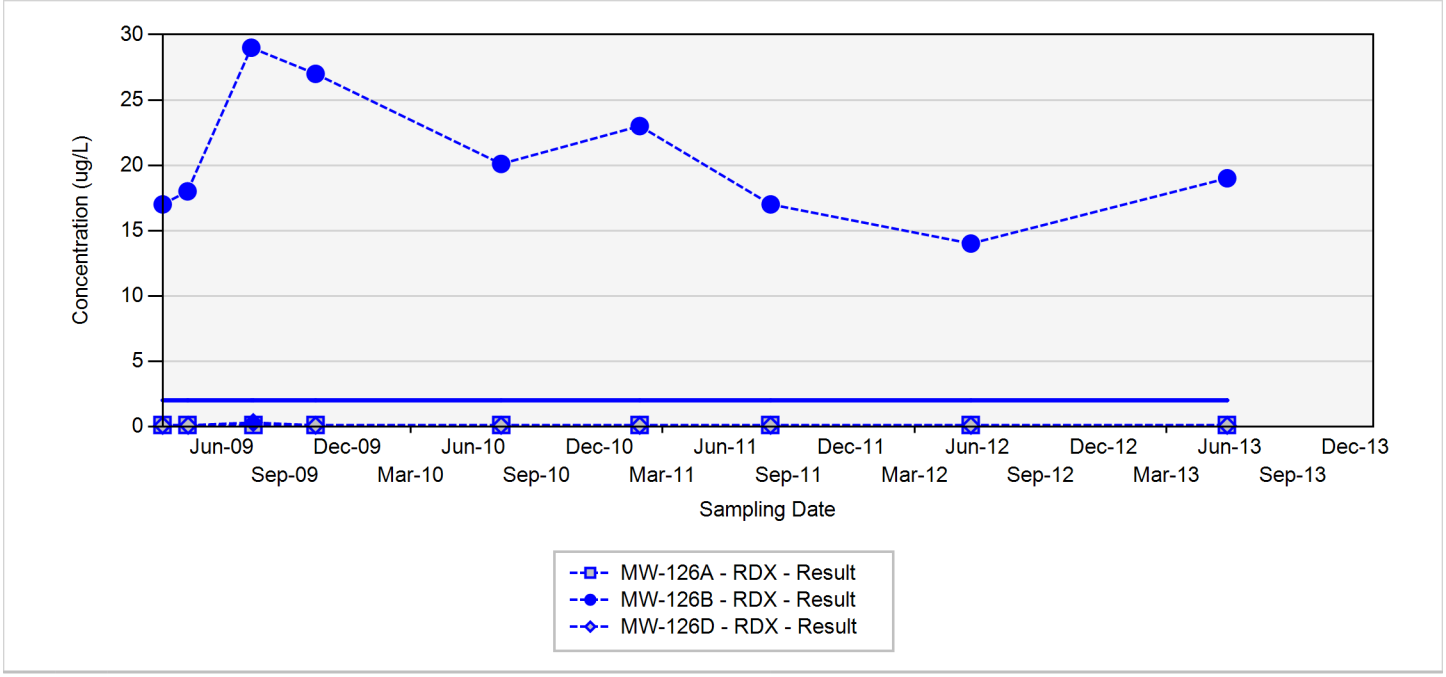
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

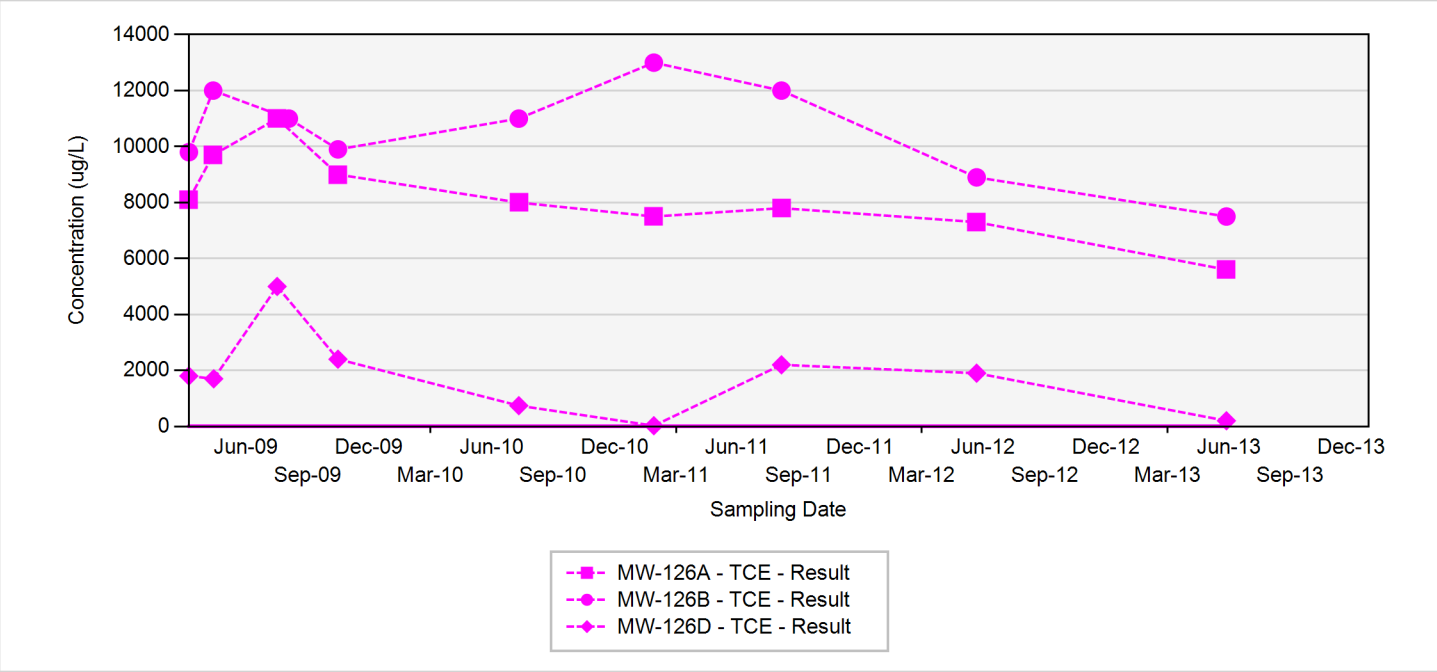
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-126





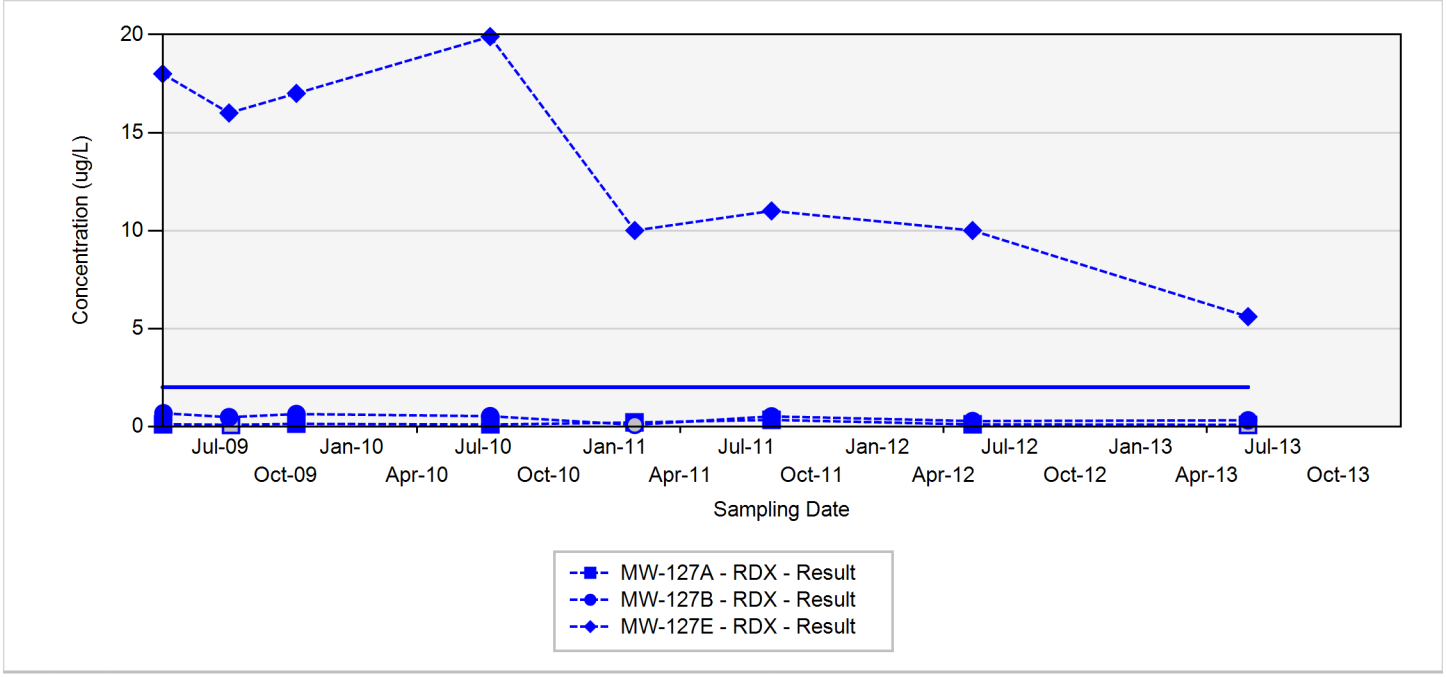
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

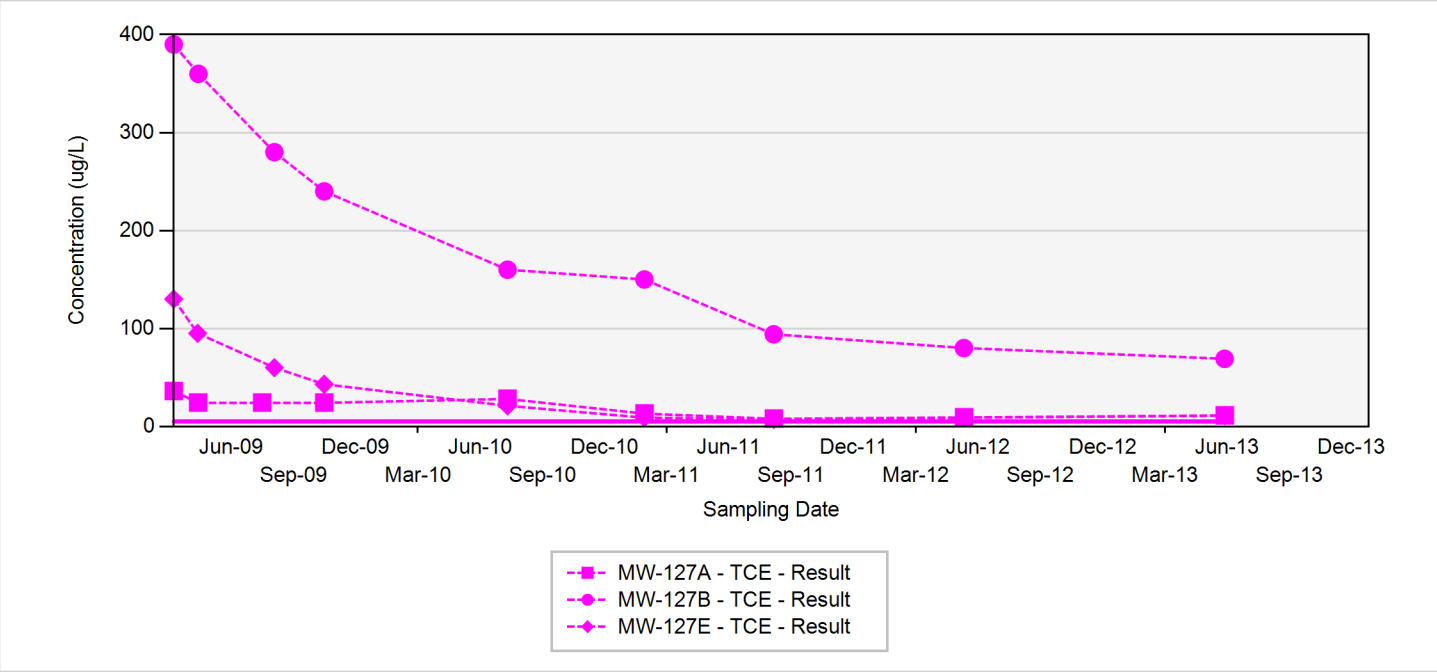
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-127





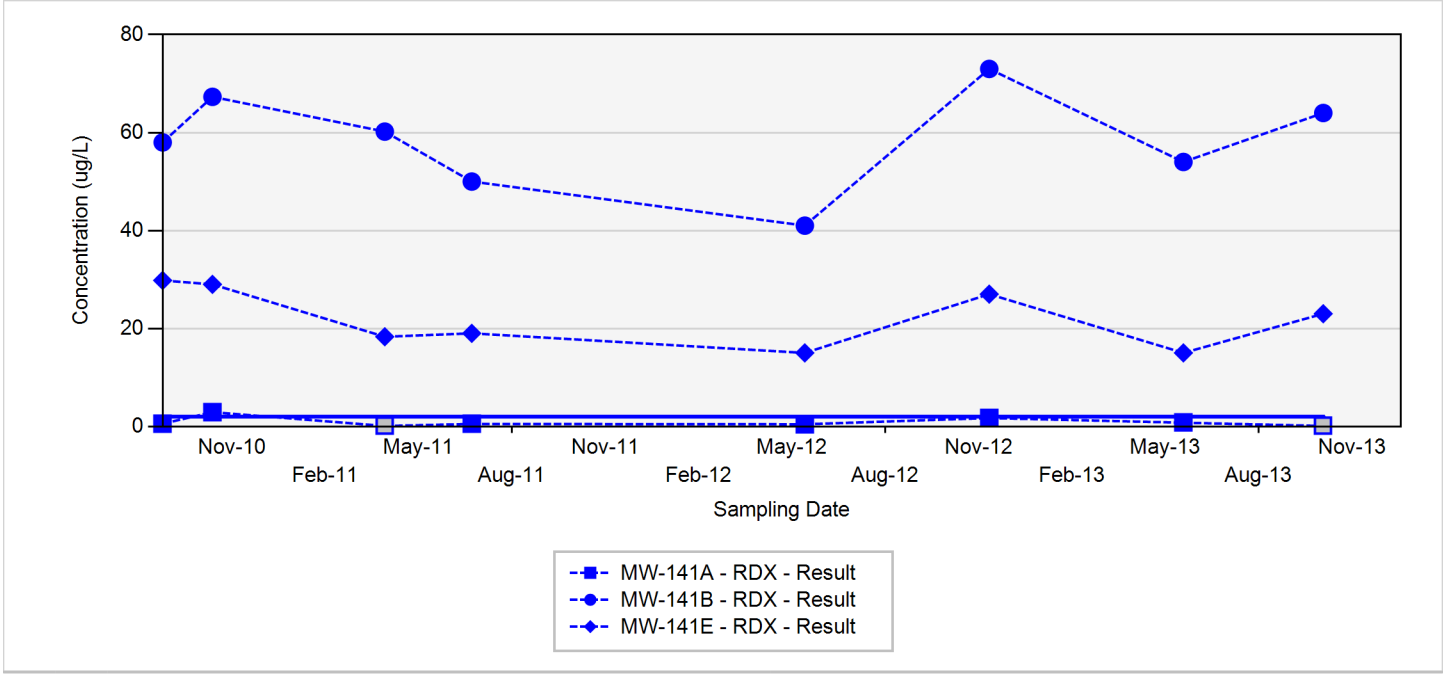
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

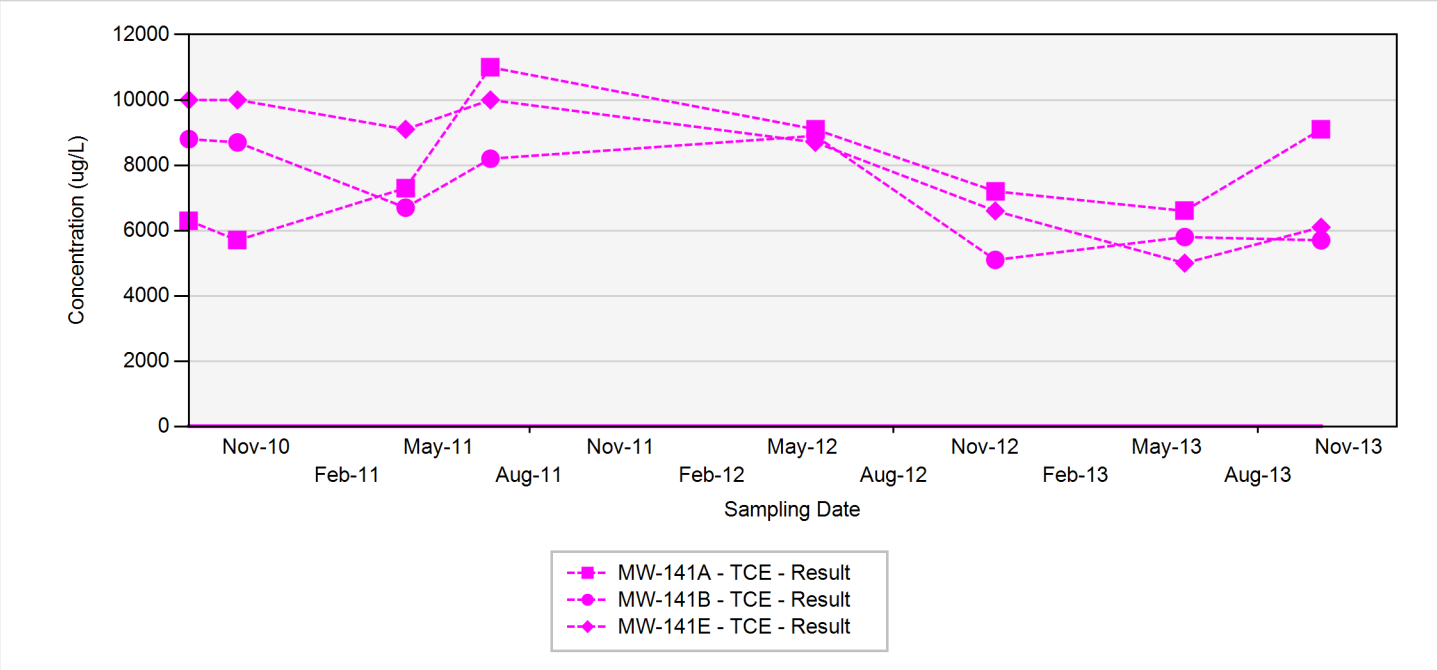
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-141





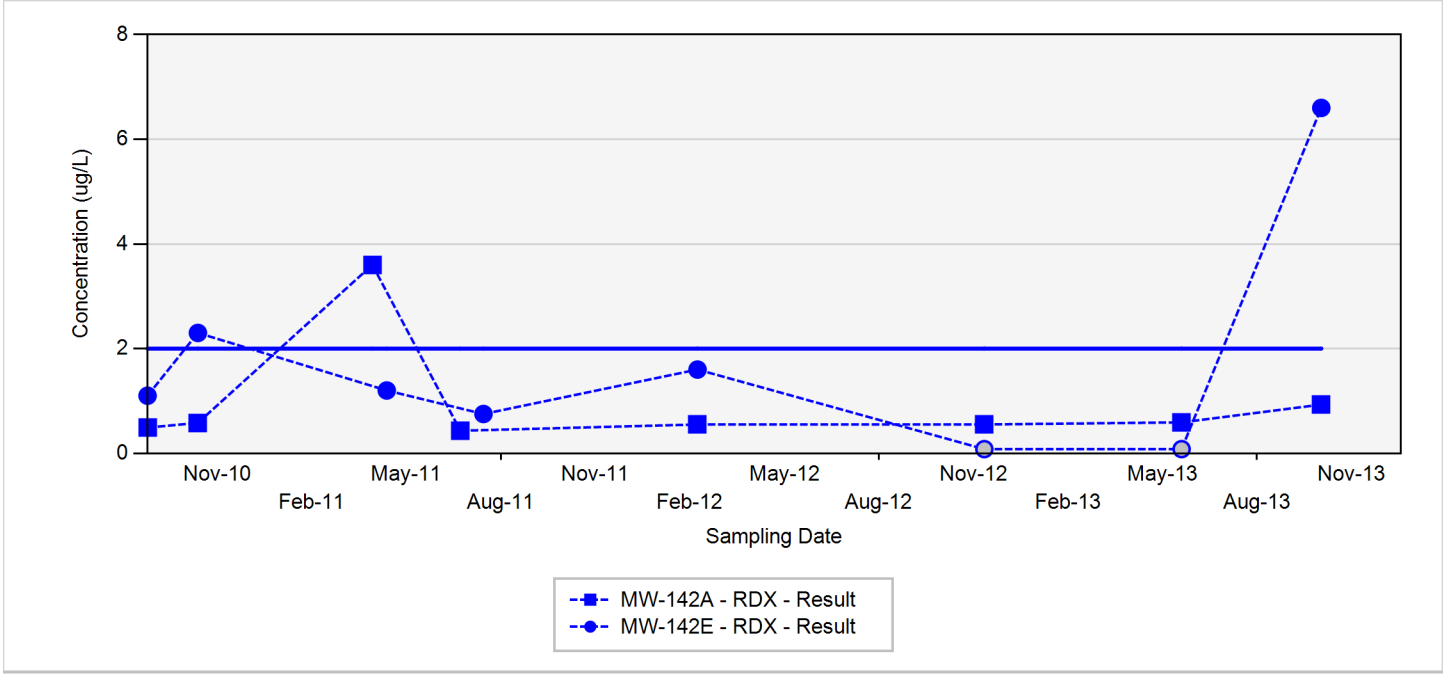
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

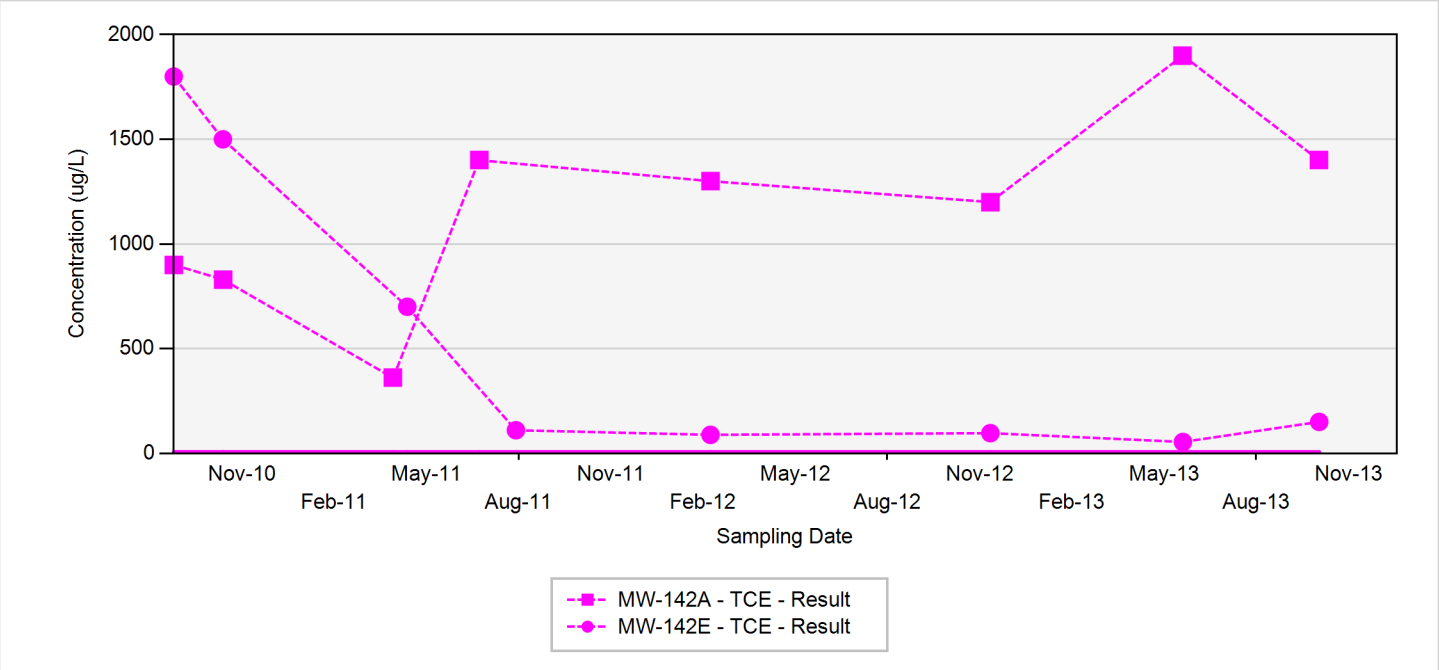
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-142





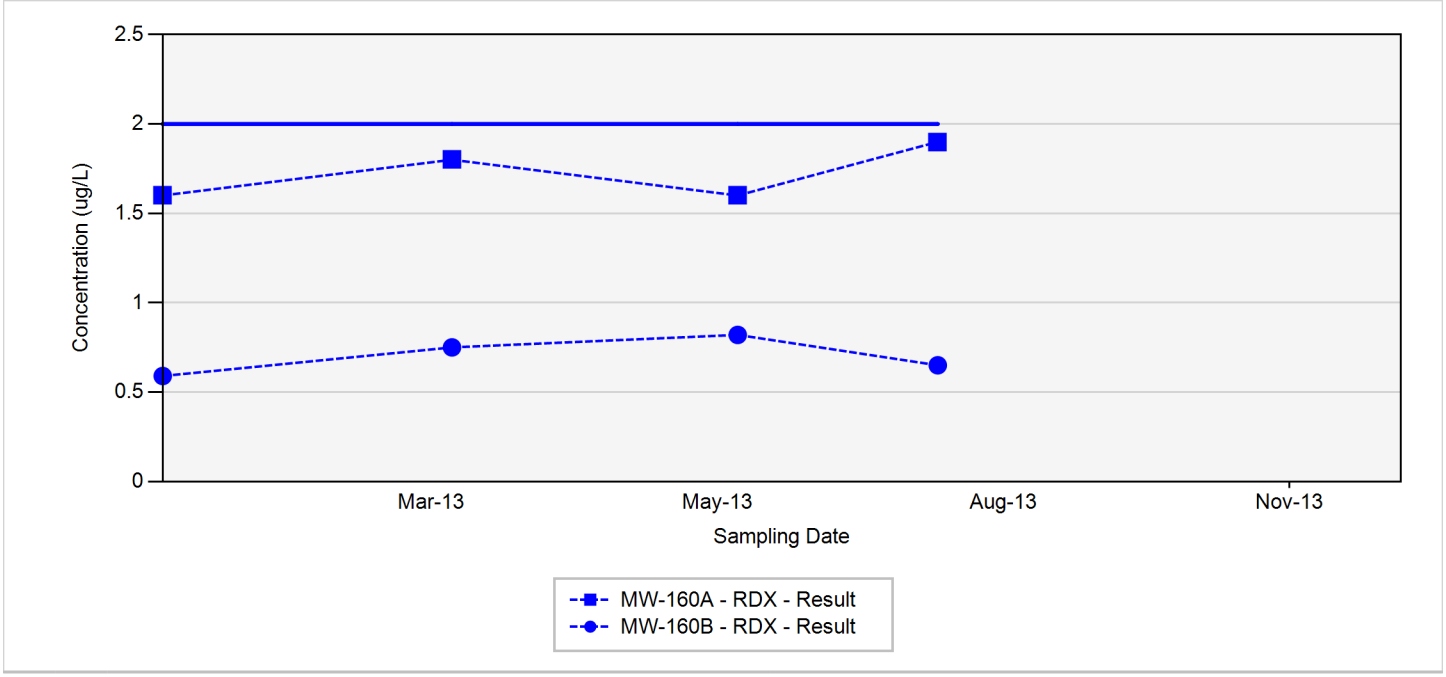
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

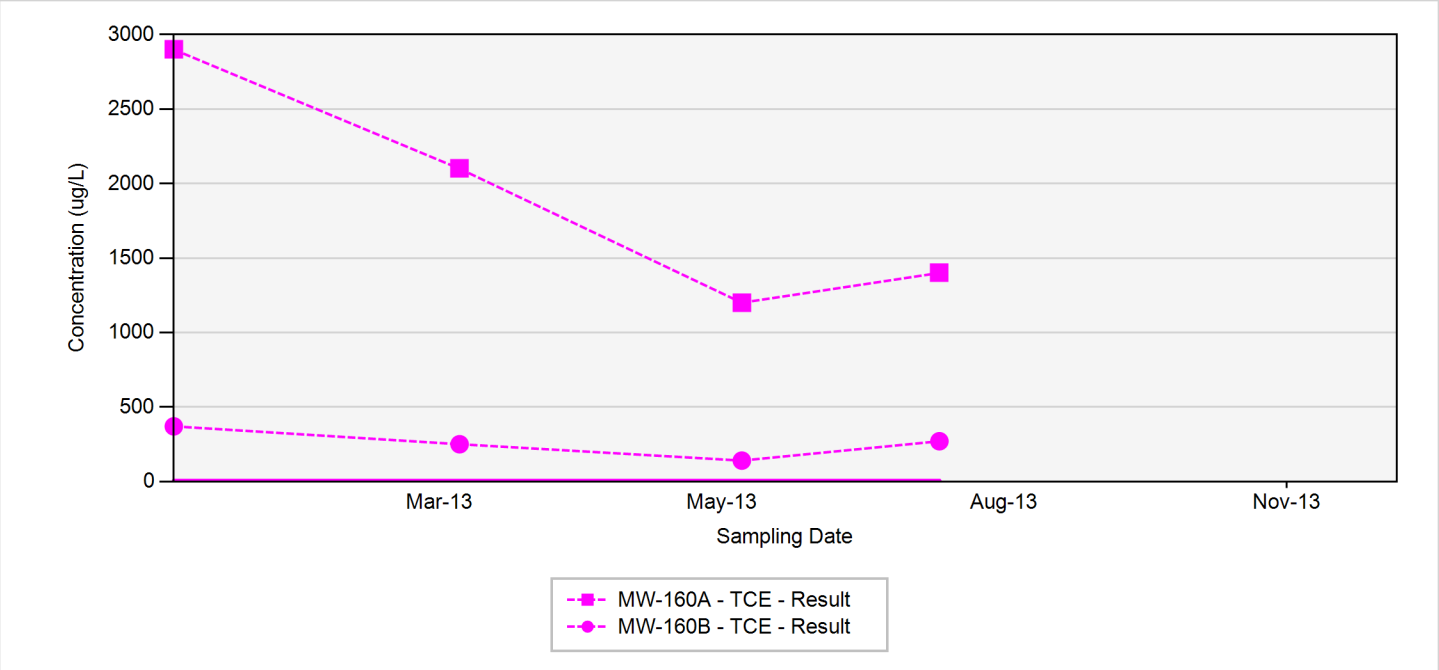
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-160





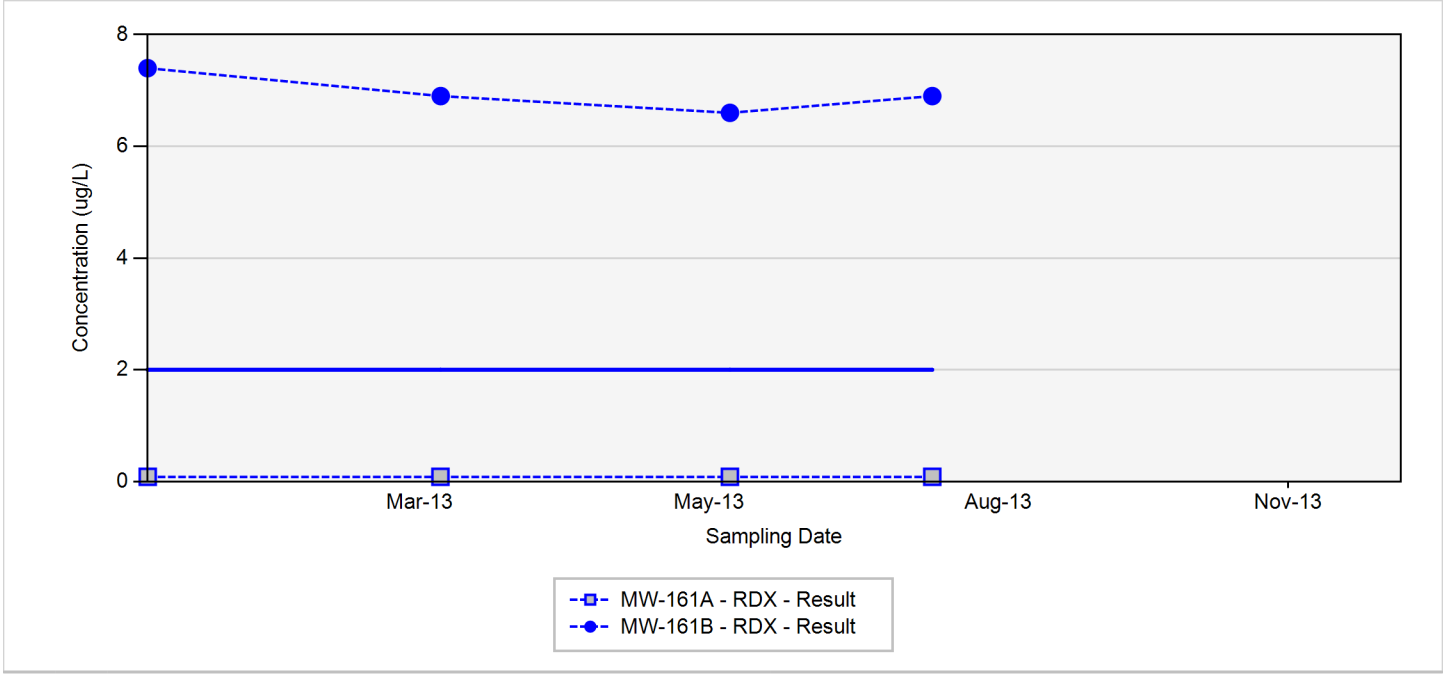
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

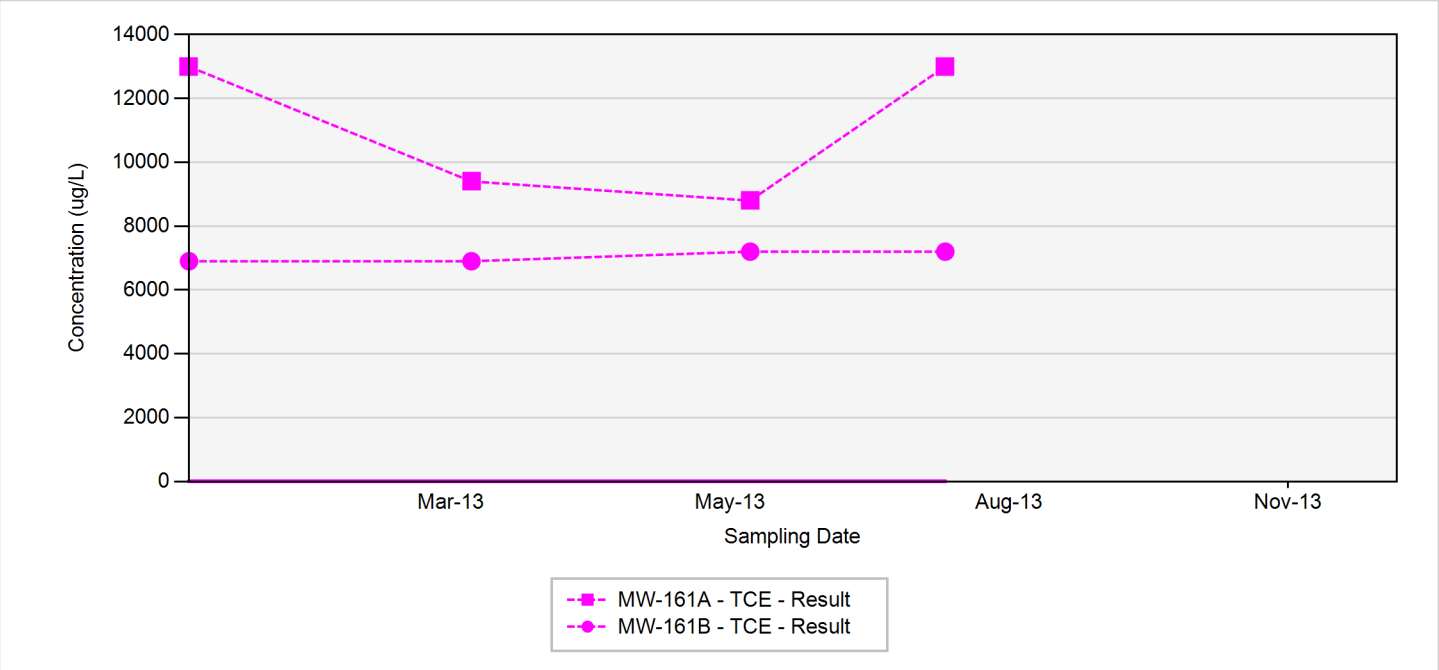
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-161





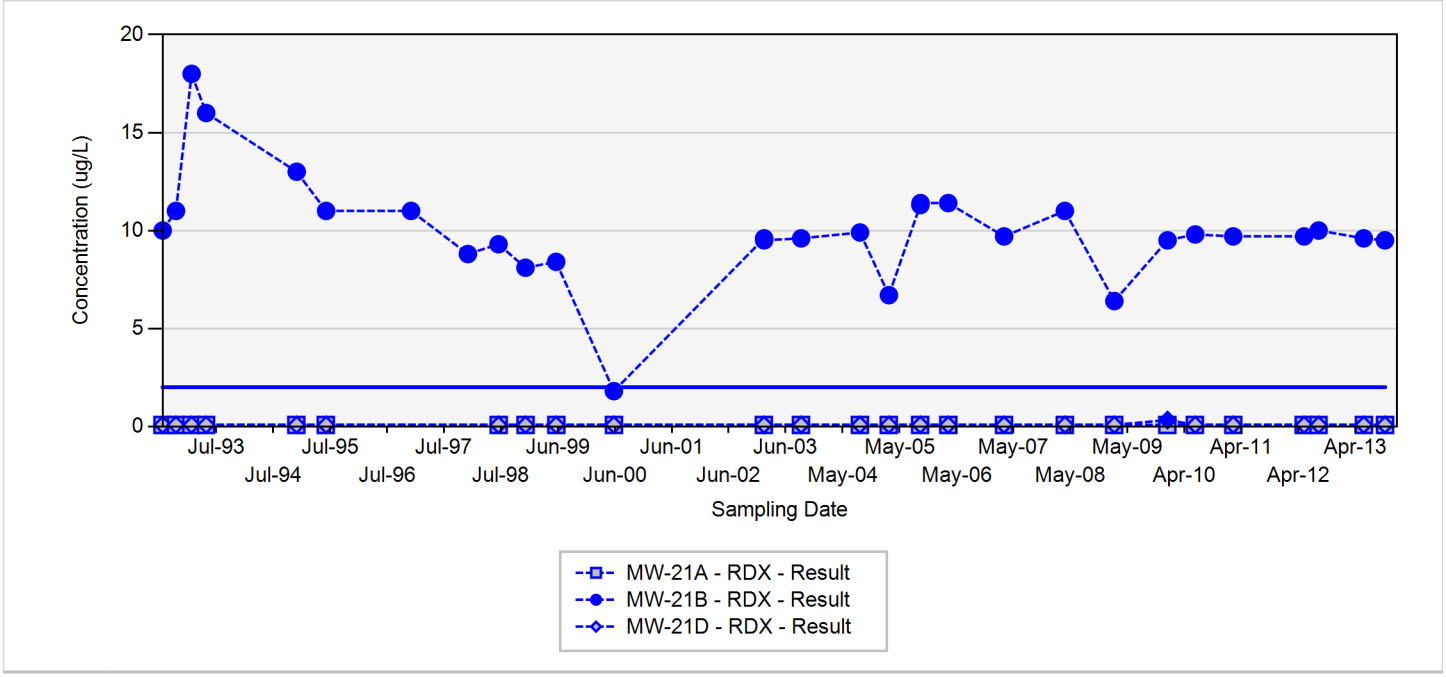
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

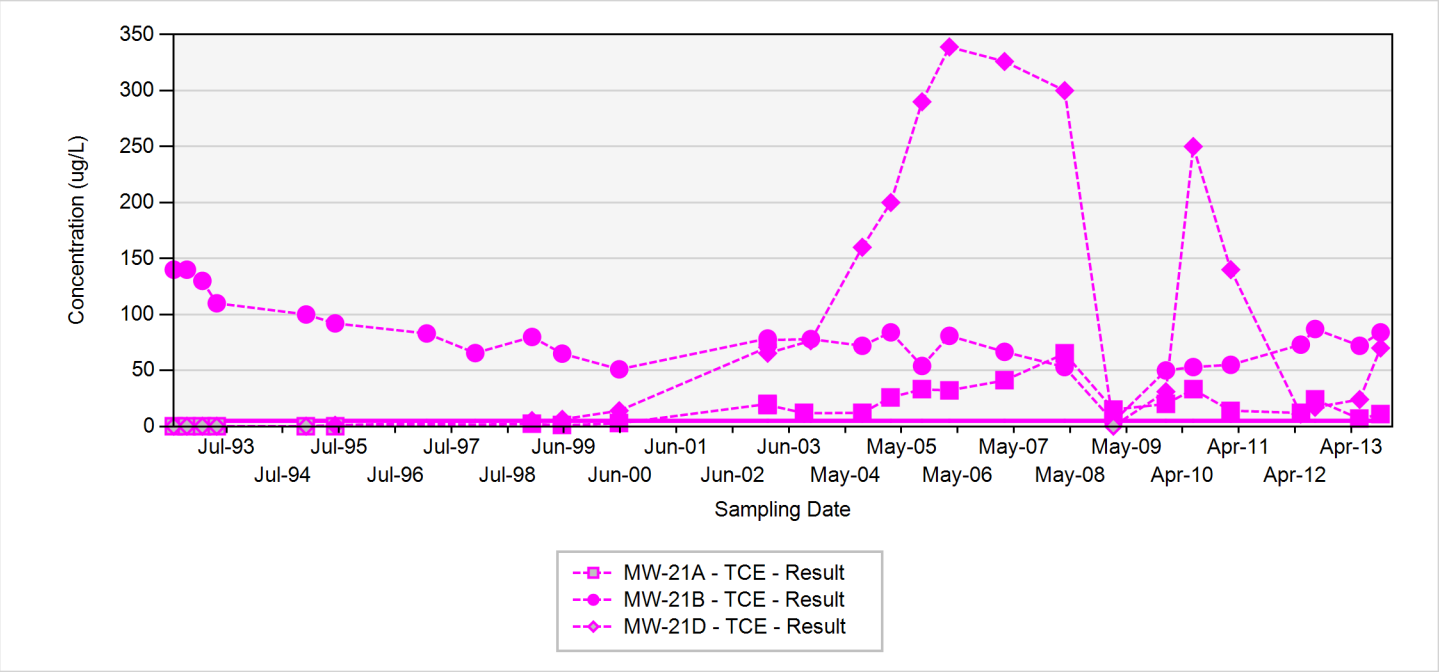
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-21





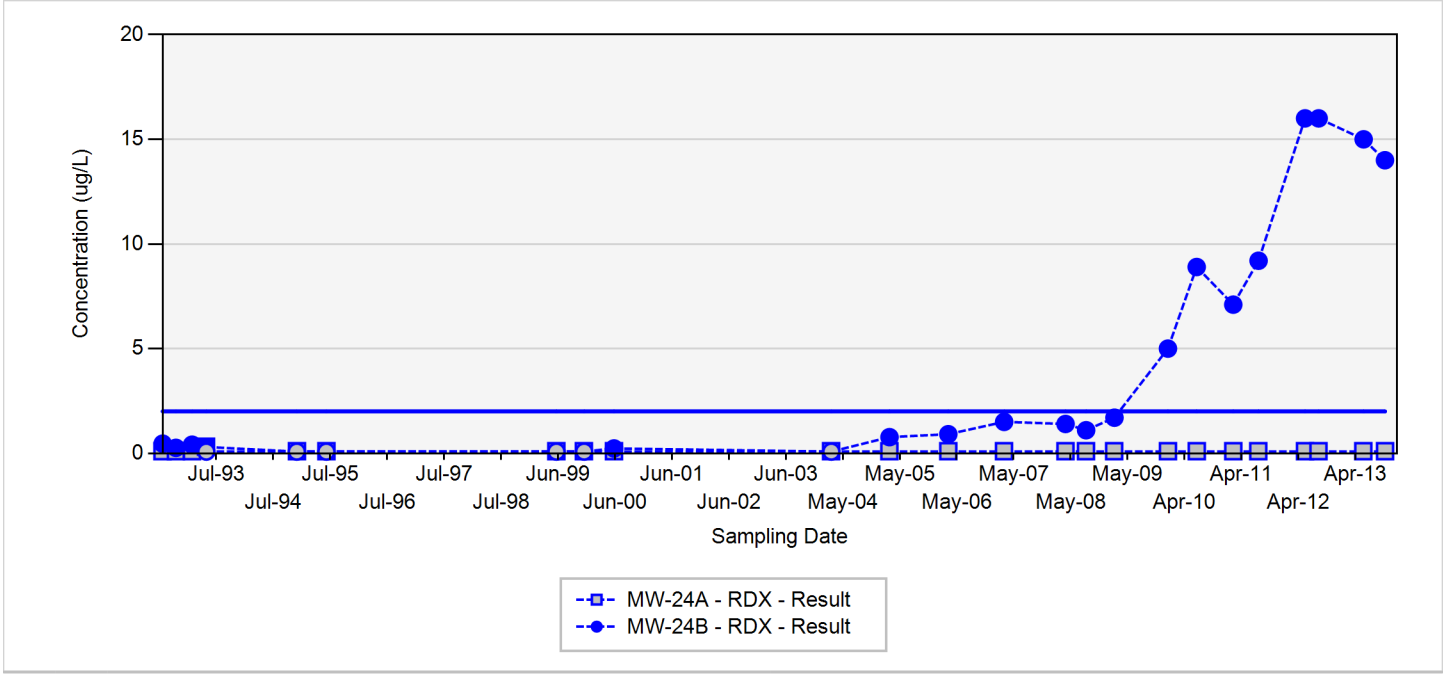
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

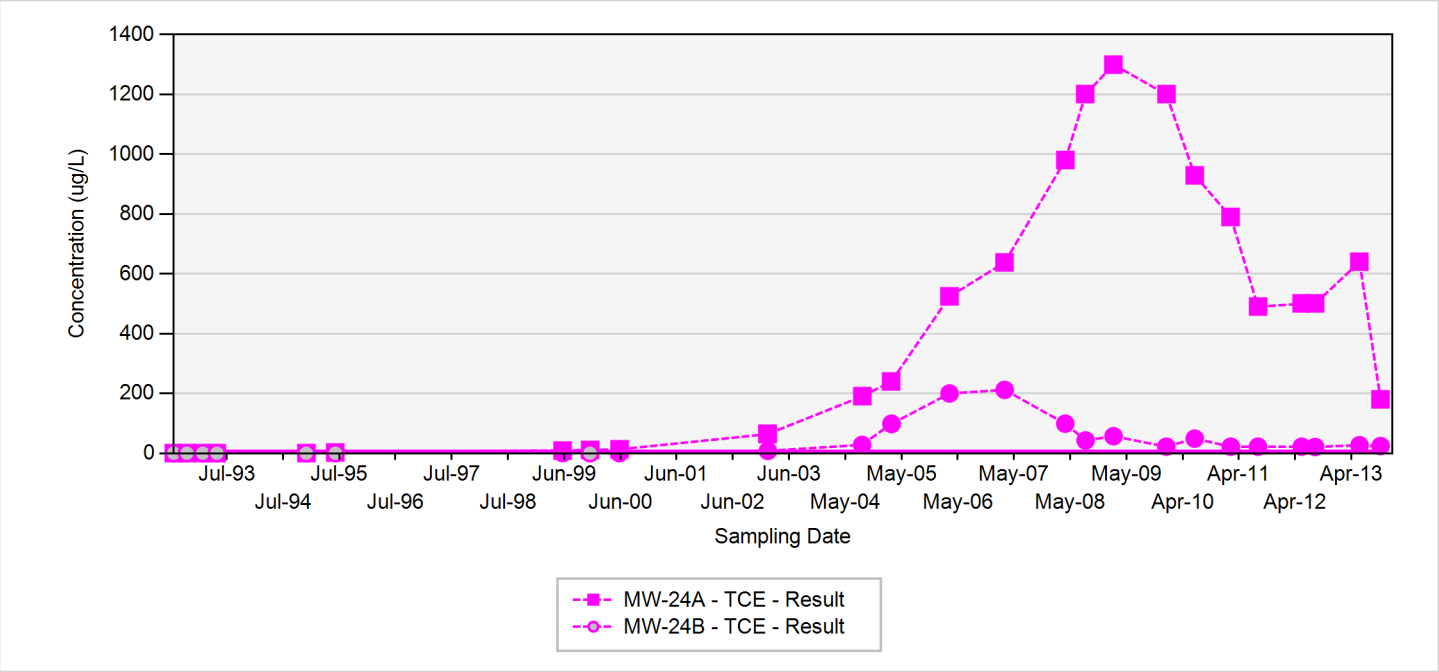
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-24





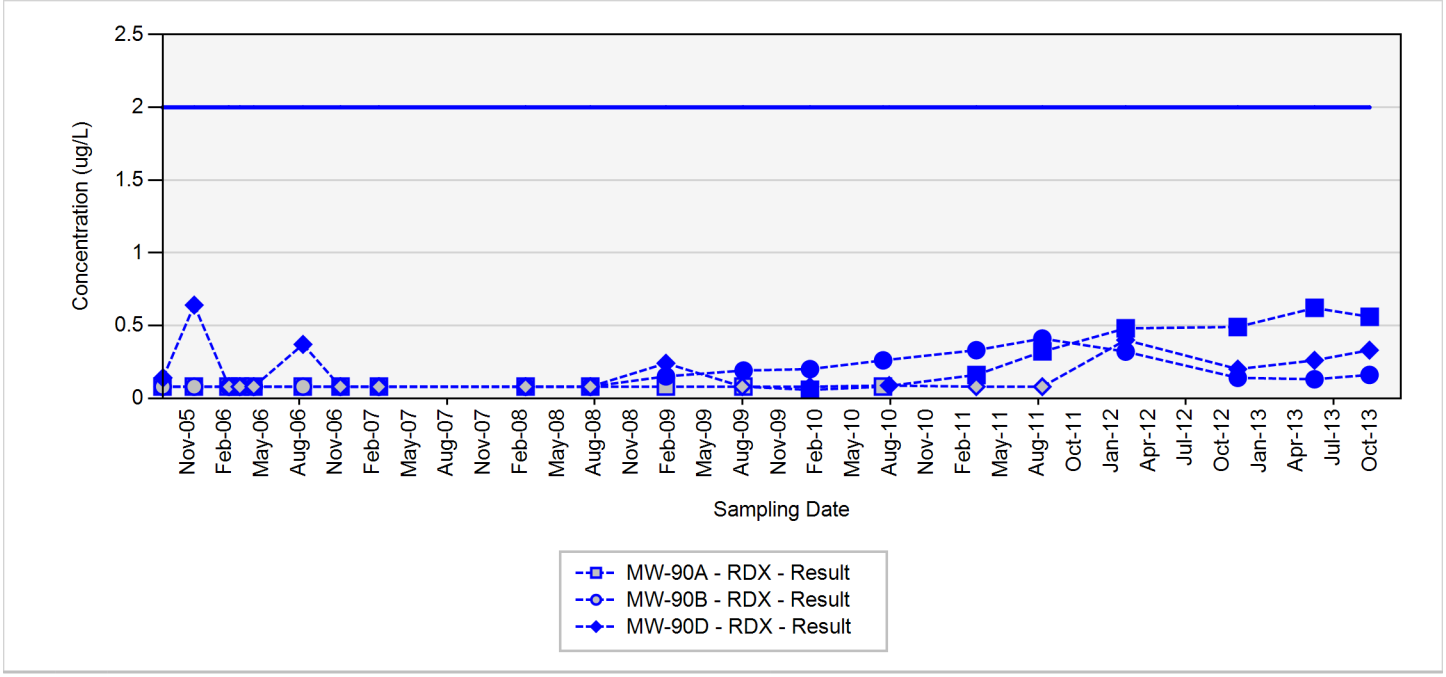
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

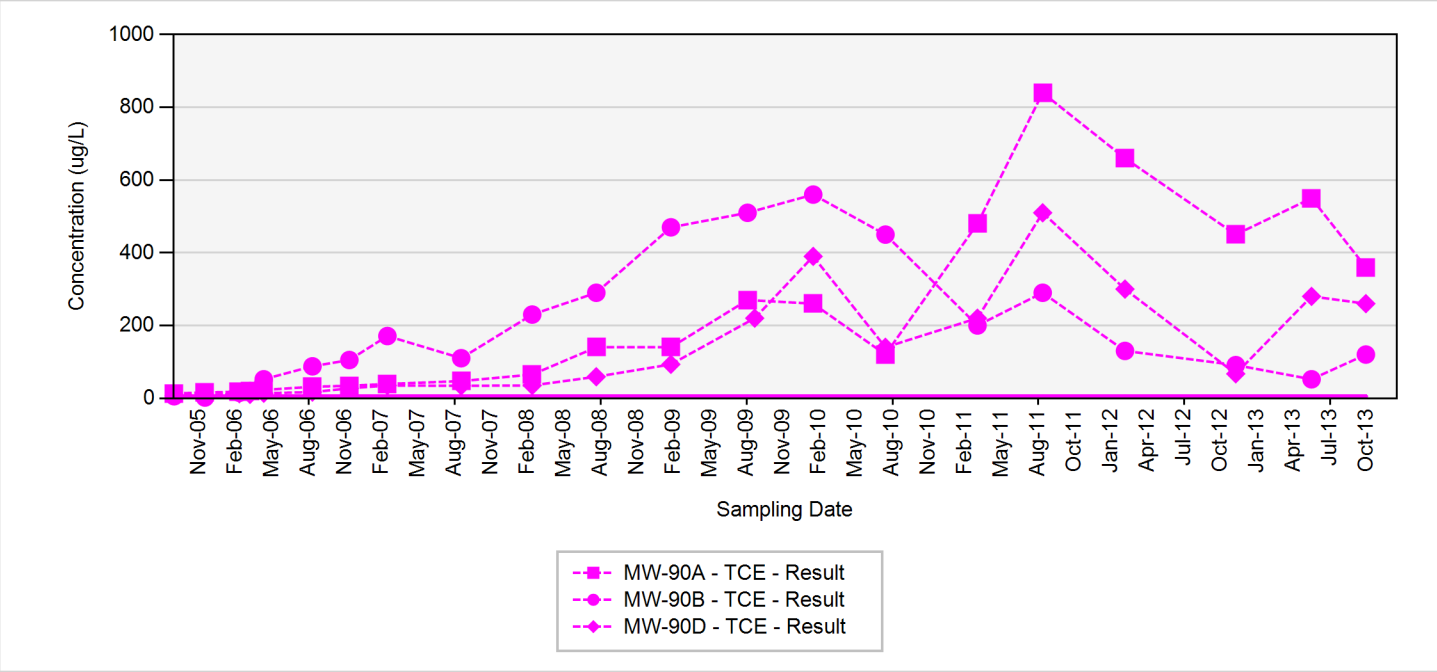
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.3
Concentration Trend Charts for Load Line 1 Interior Plume Monitoring Wells

MW-90





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

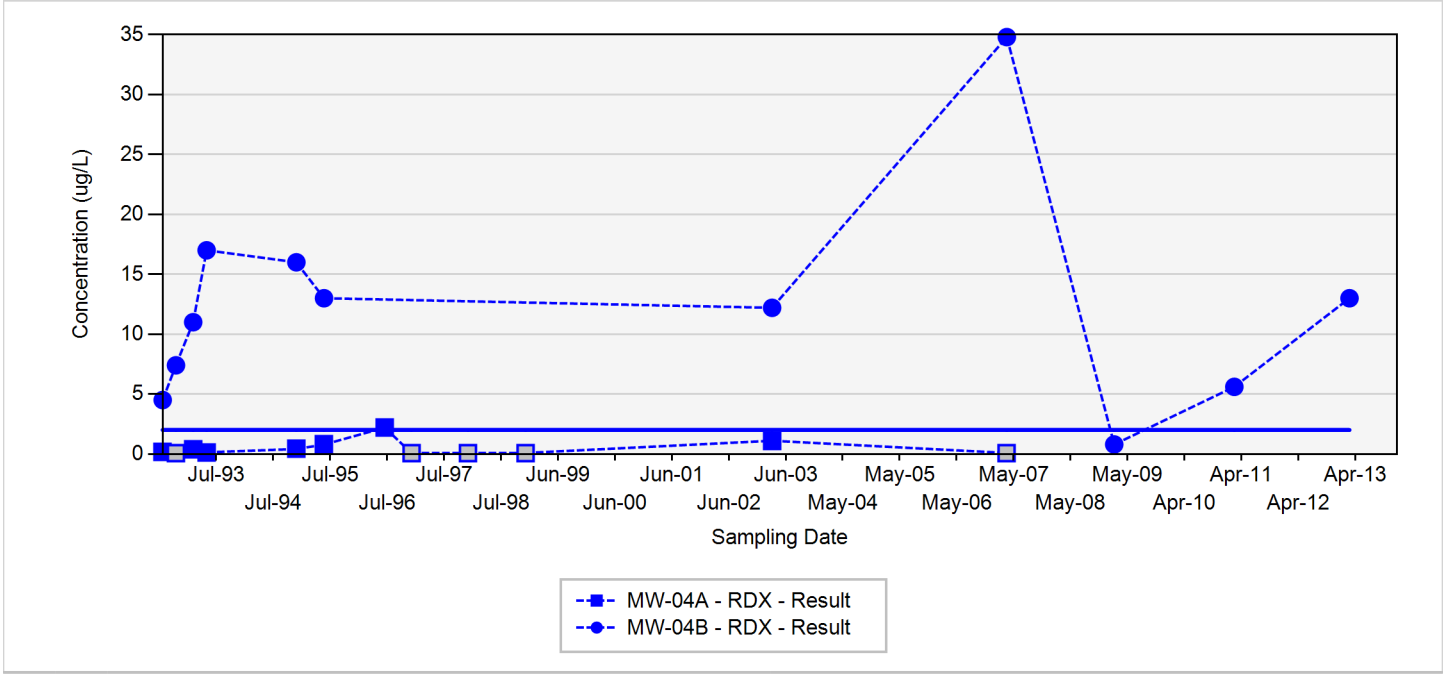
This page was intentionally left blank.

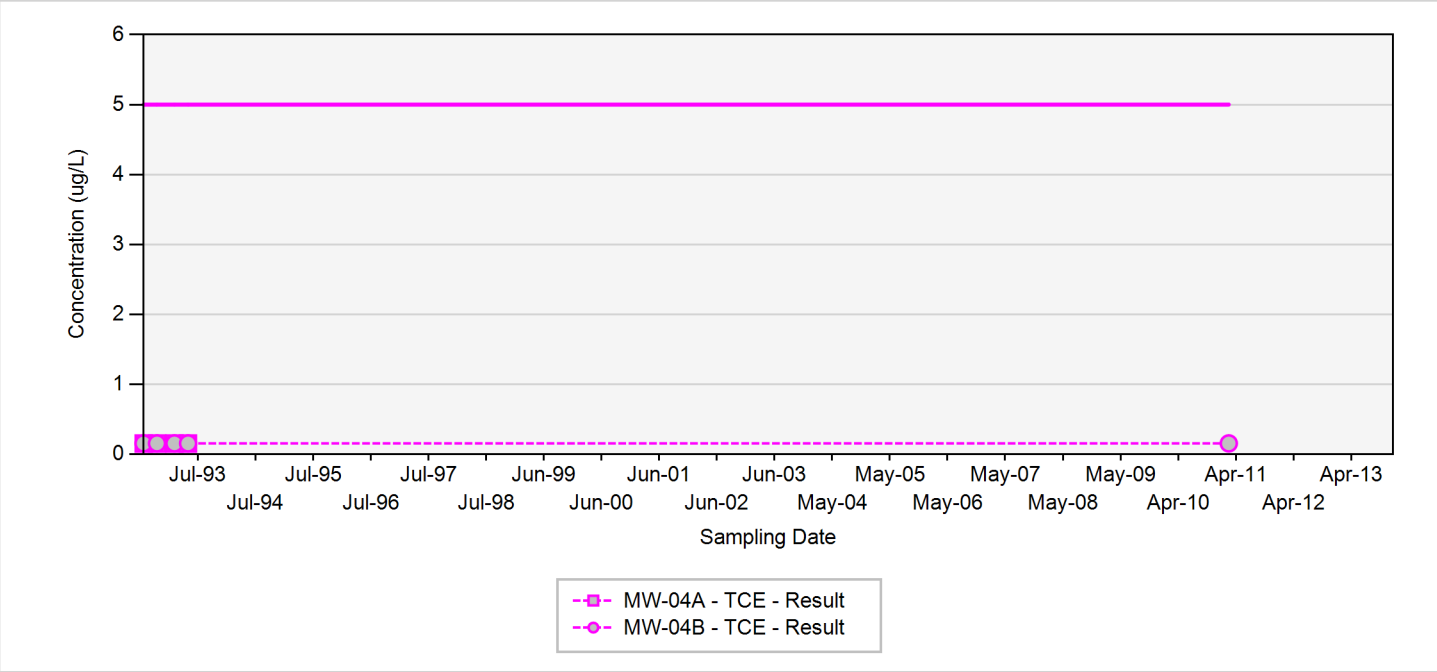
A.4 – Load Line 2 and Load Line 3 Interior Plume Monitoring Wells

This page was intentionally left blank.

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-04





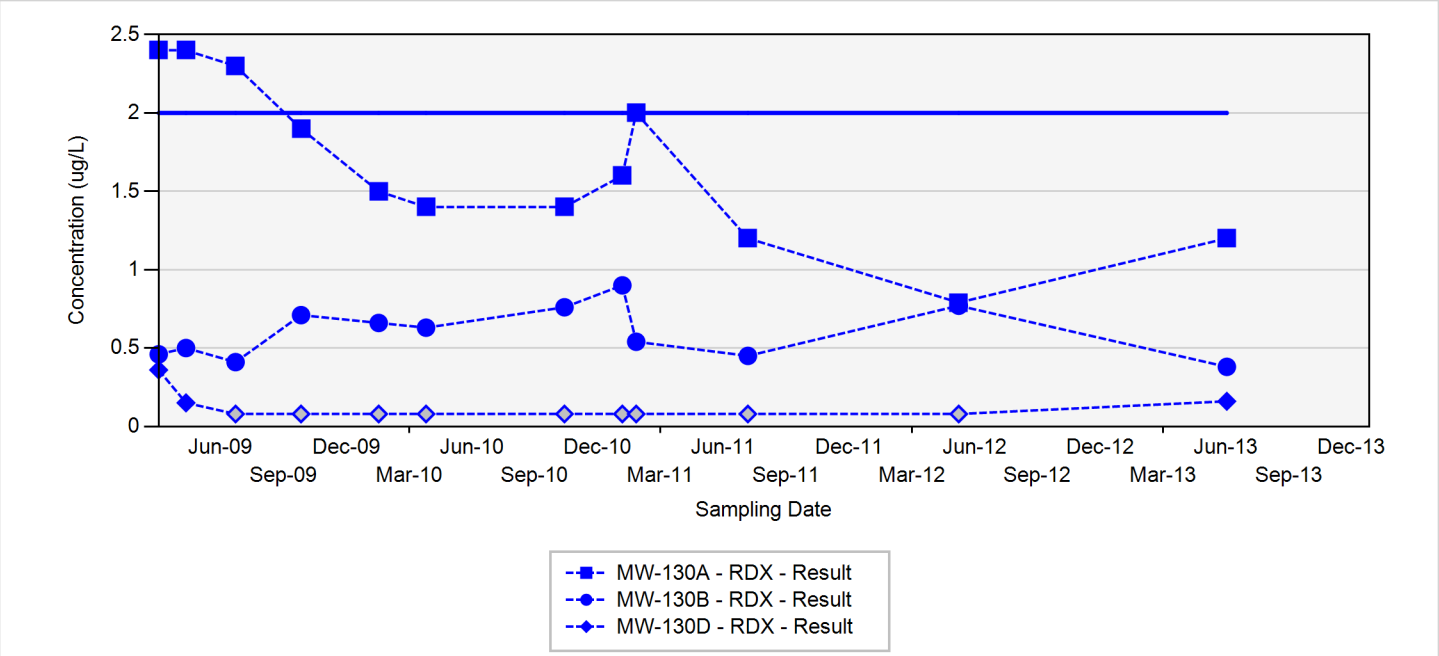
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-130



No Data Available

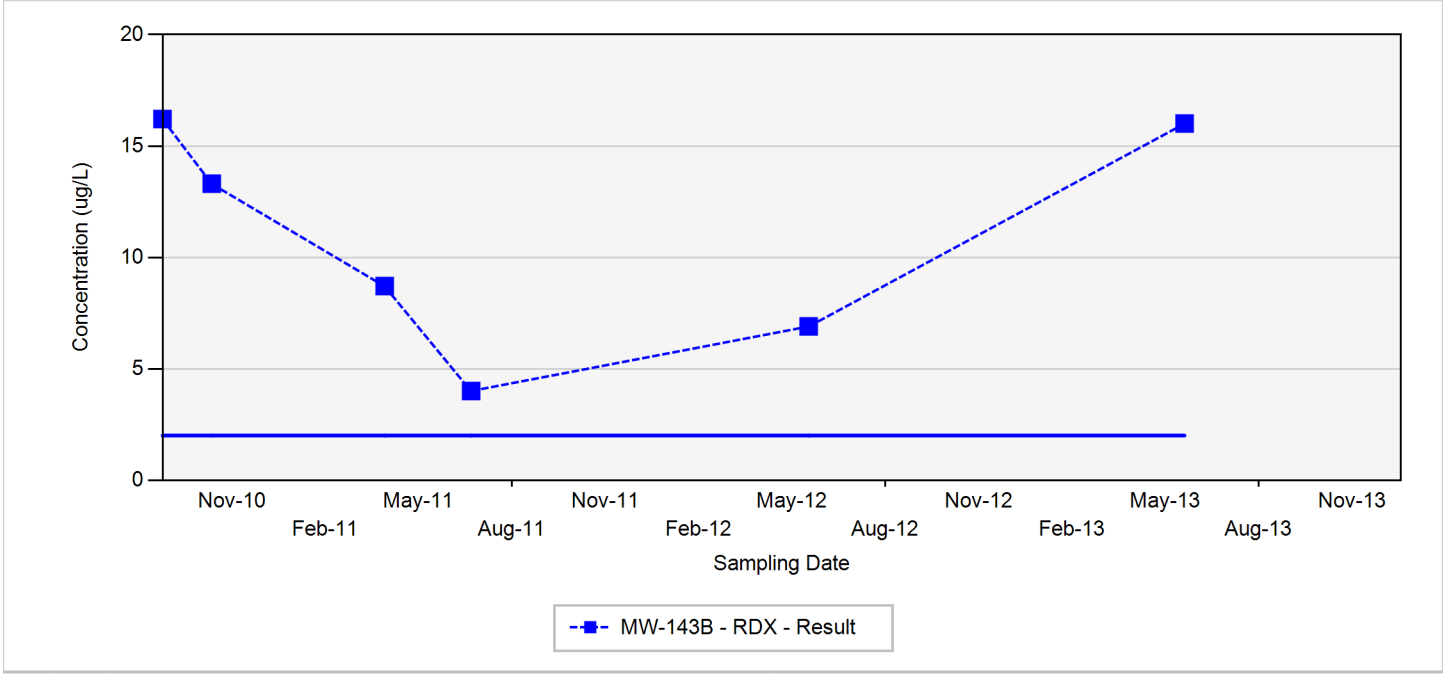
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

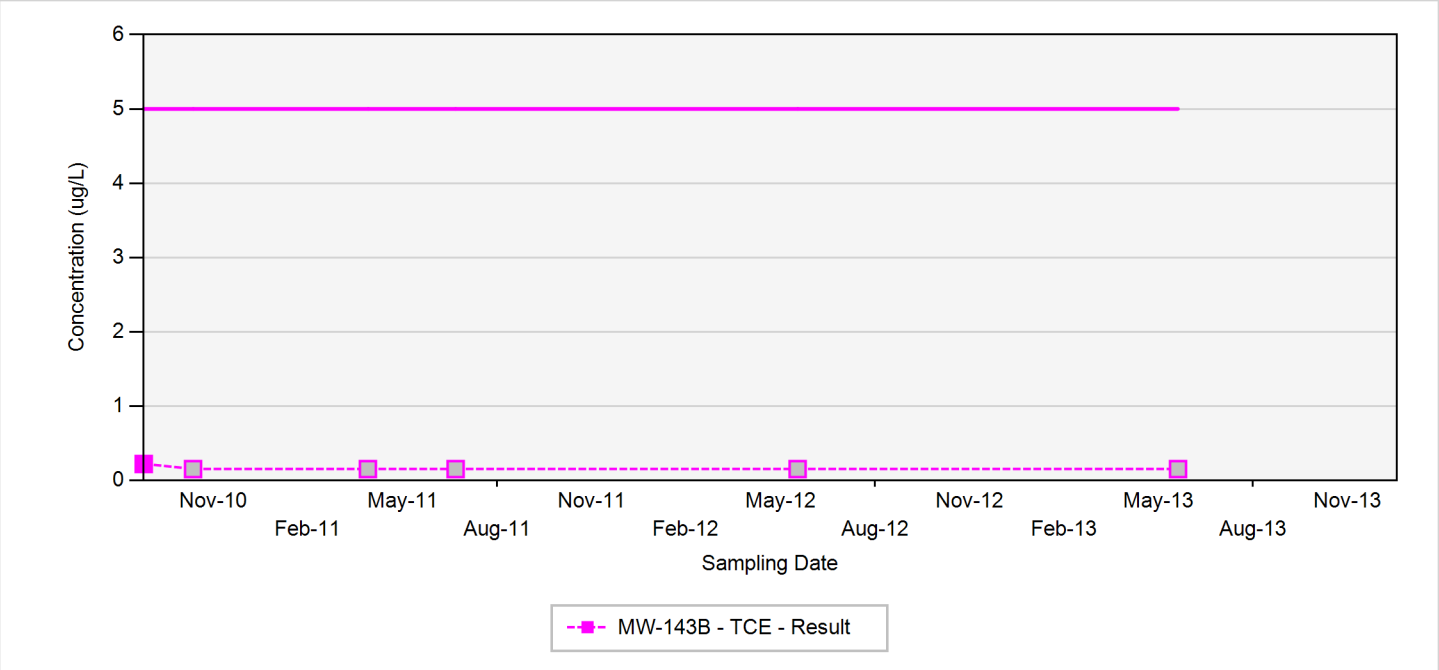
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-143





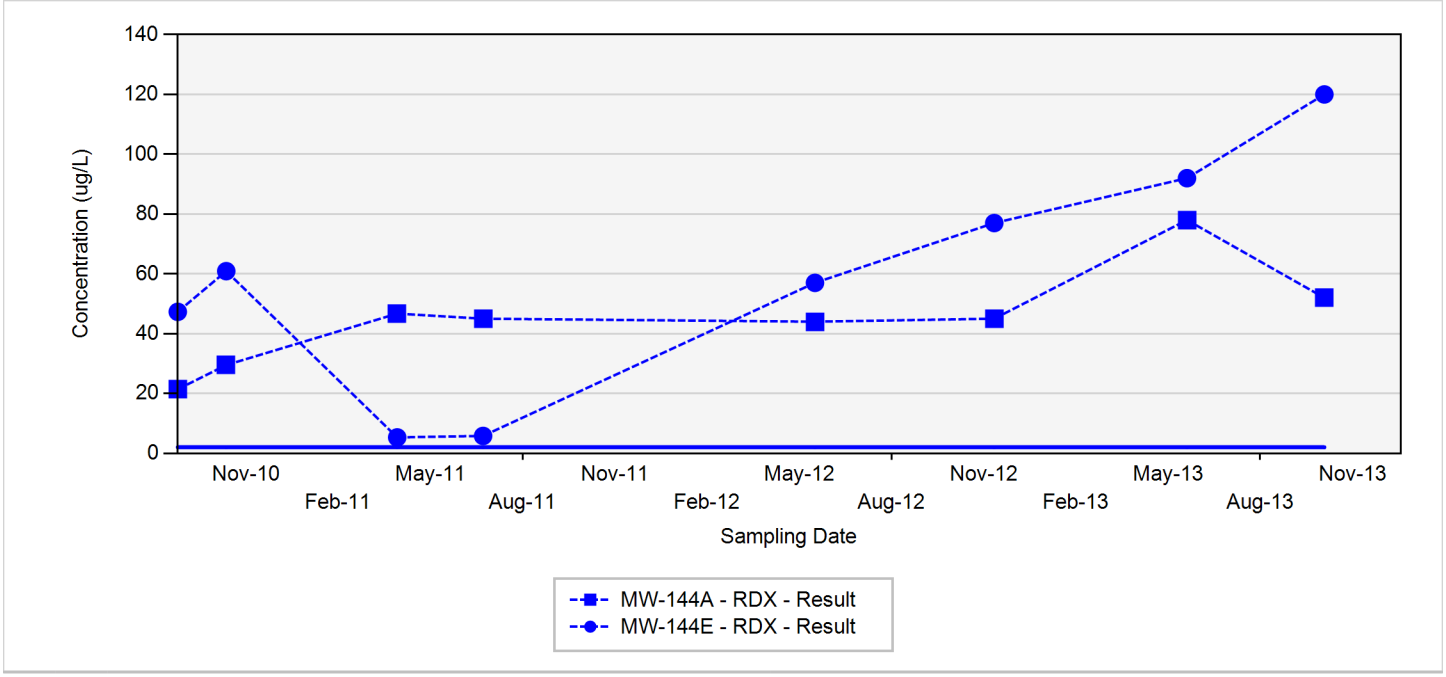
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

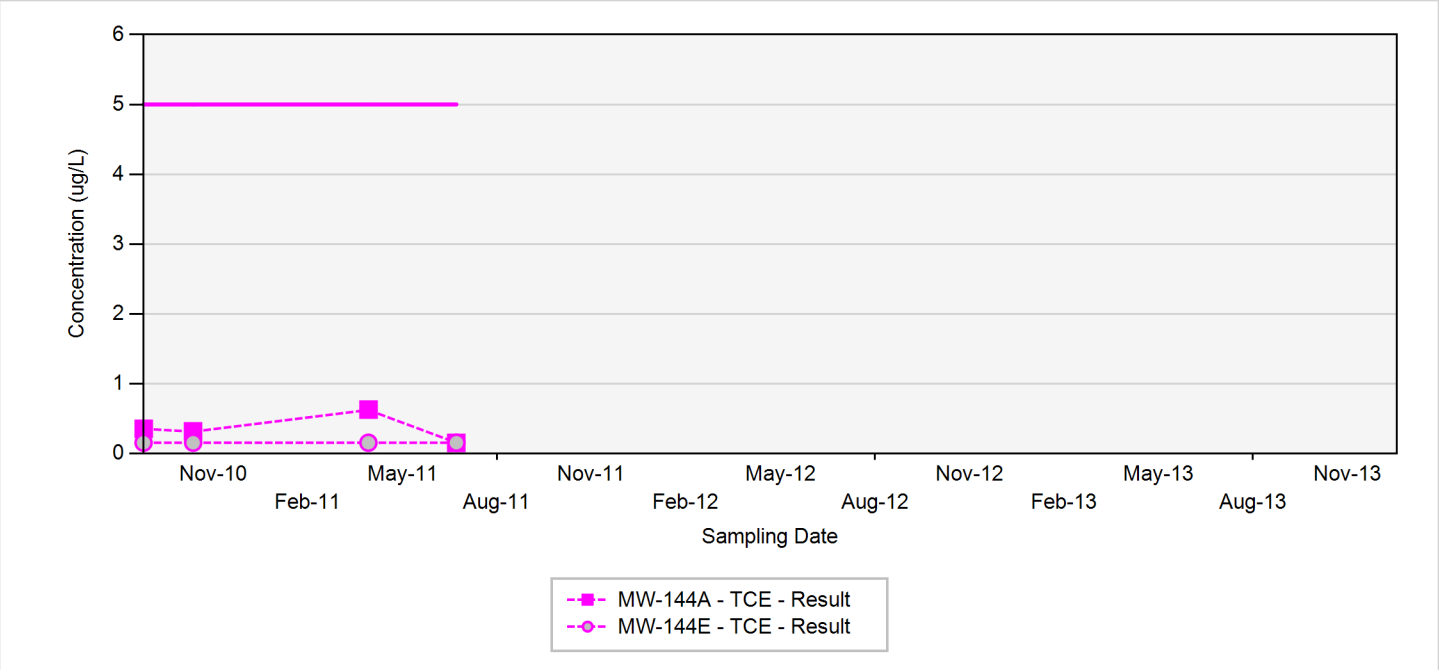
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-144





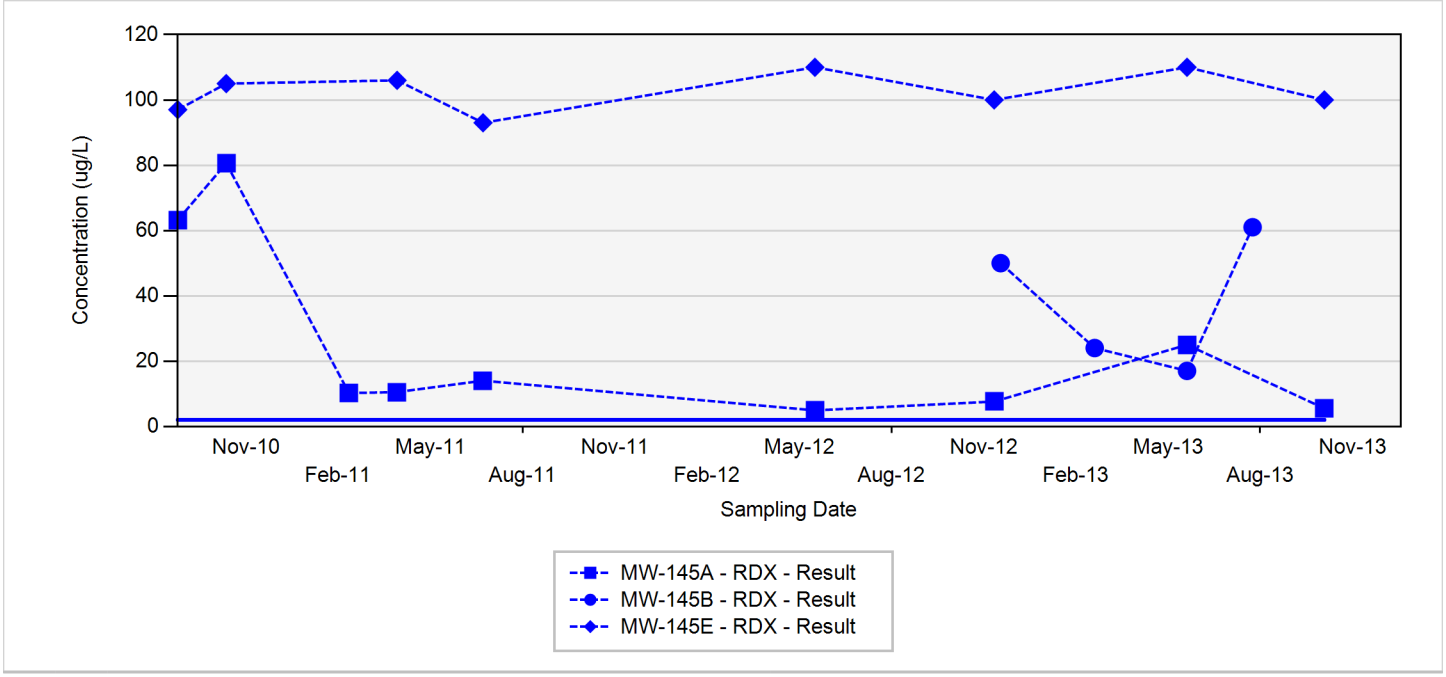
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

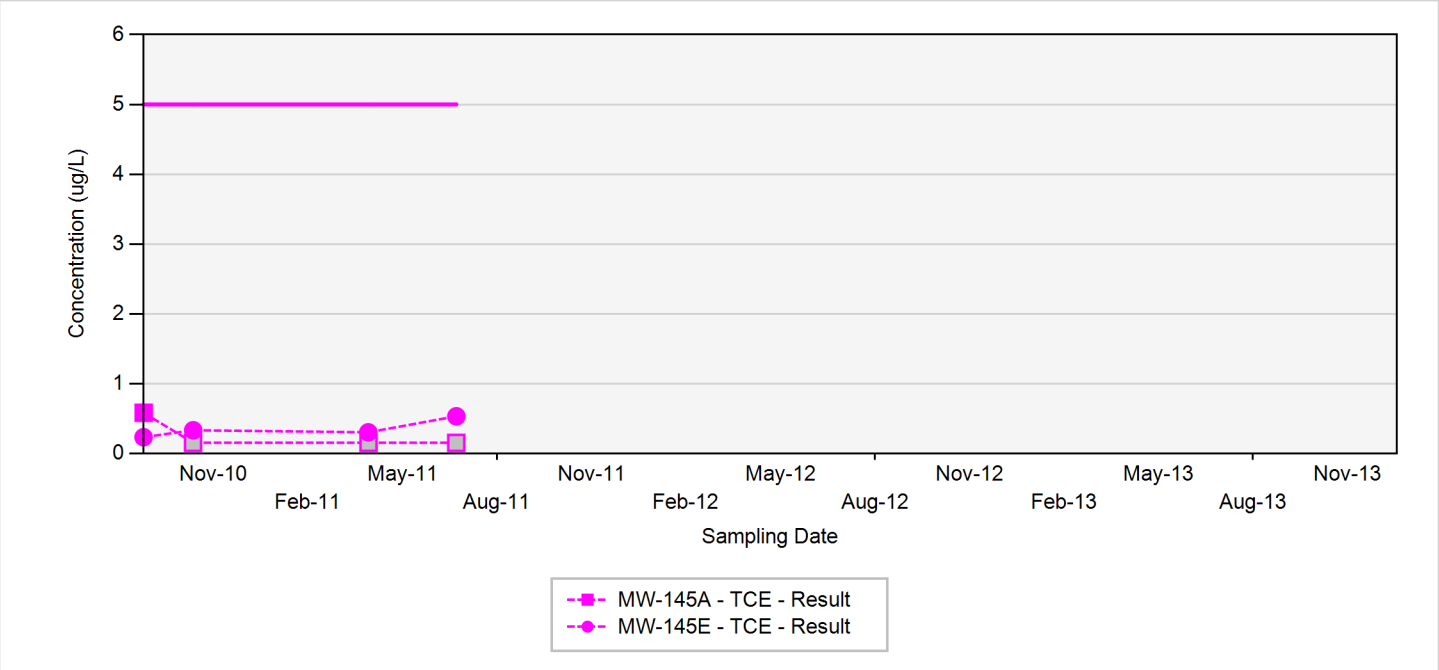
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-145





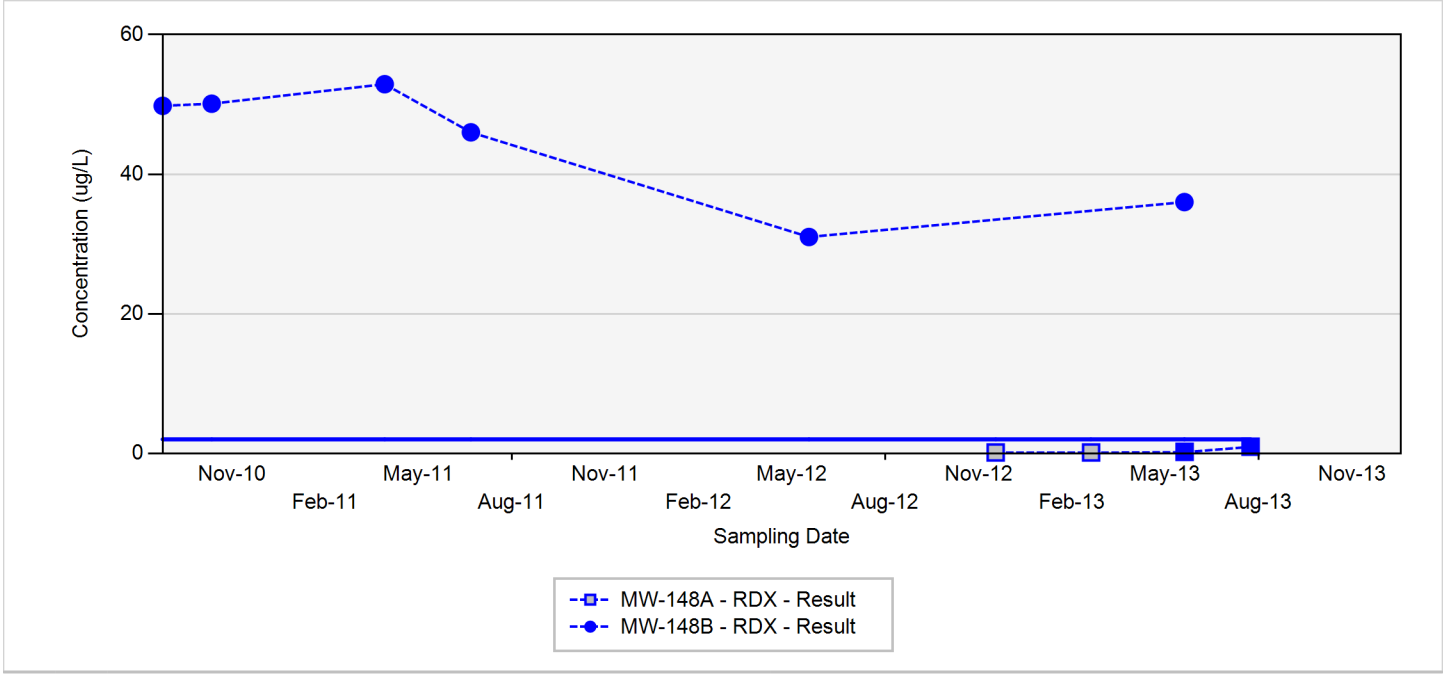
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

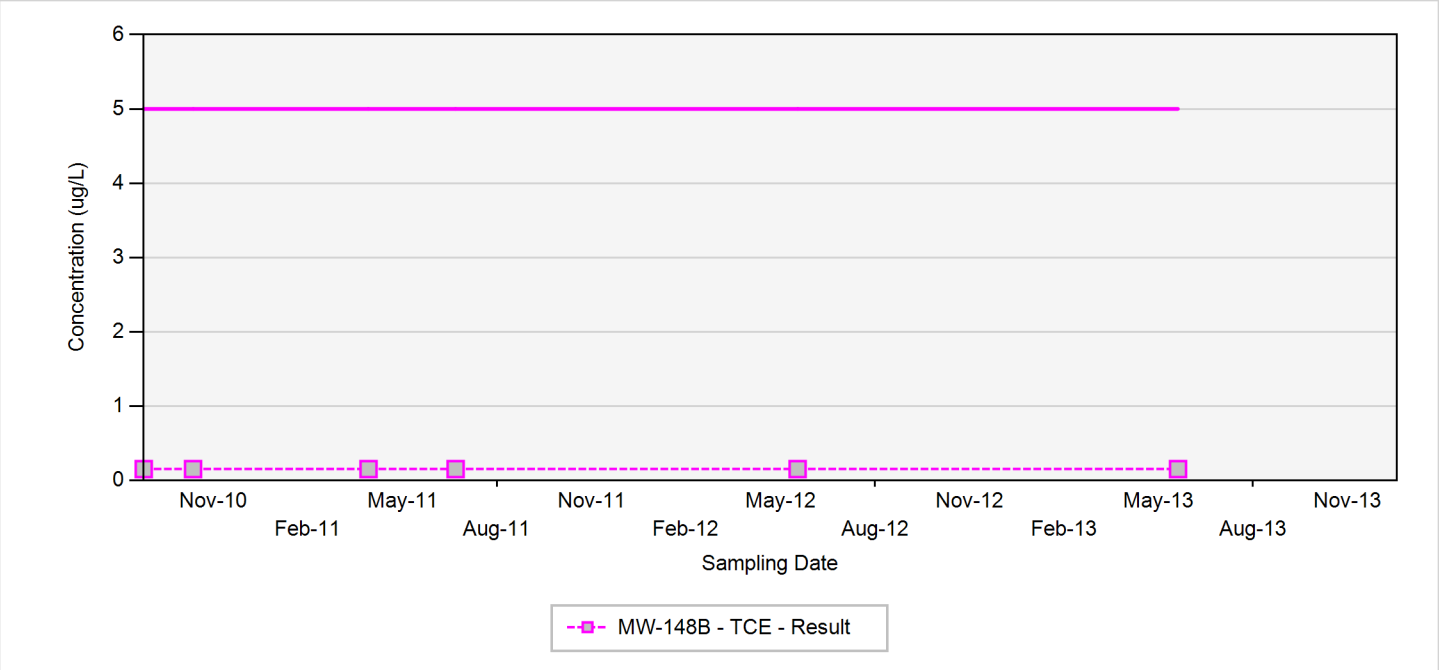
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-148





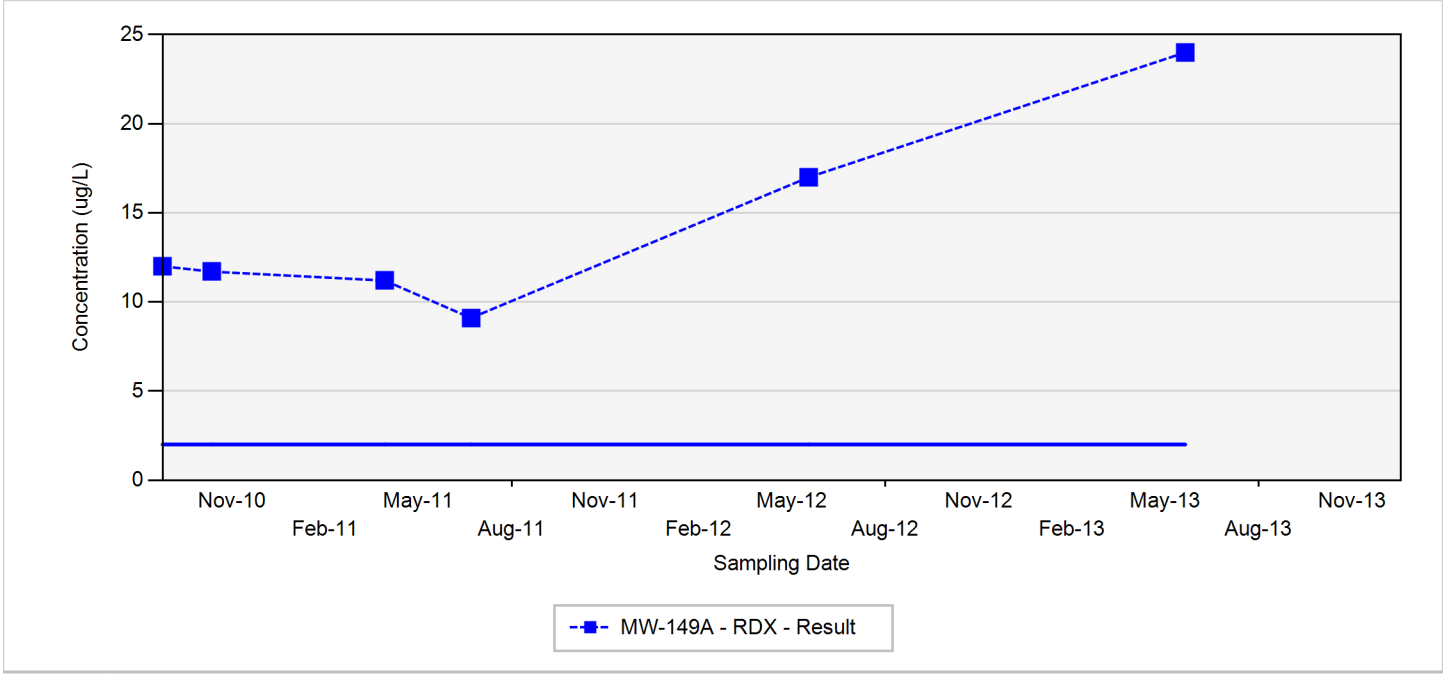
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

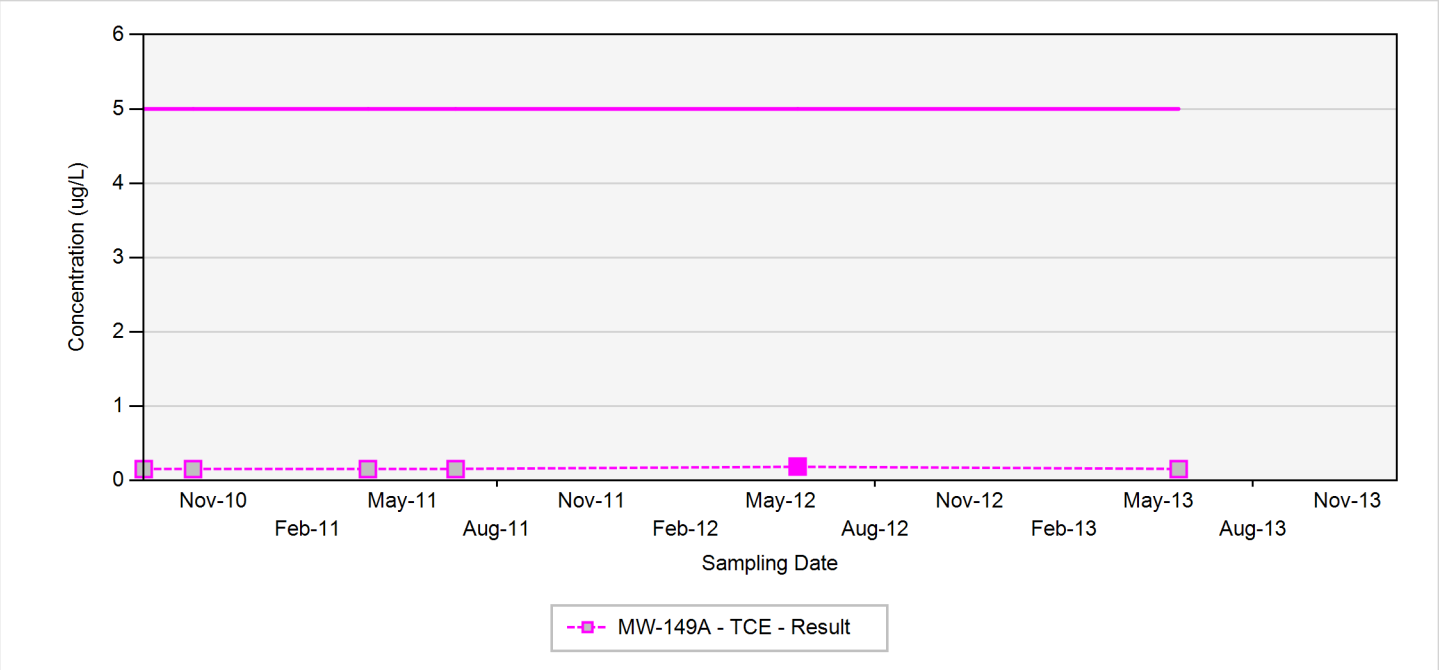
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-149





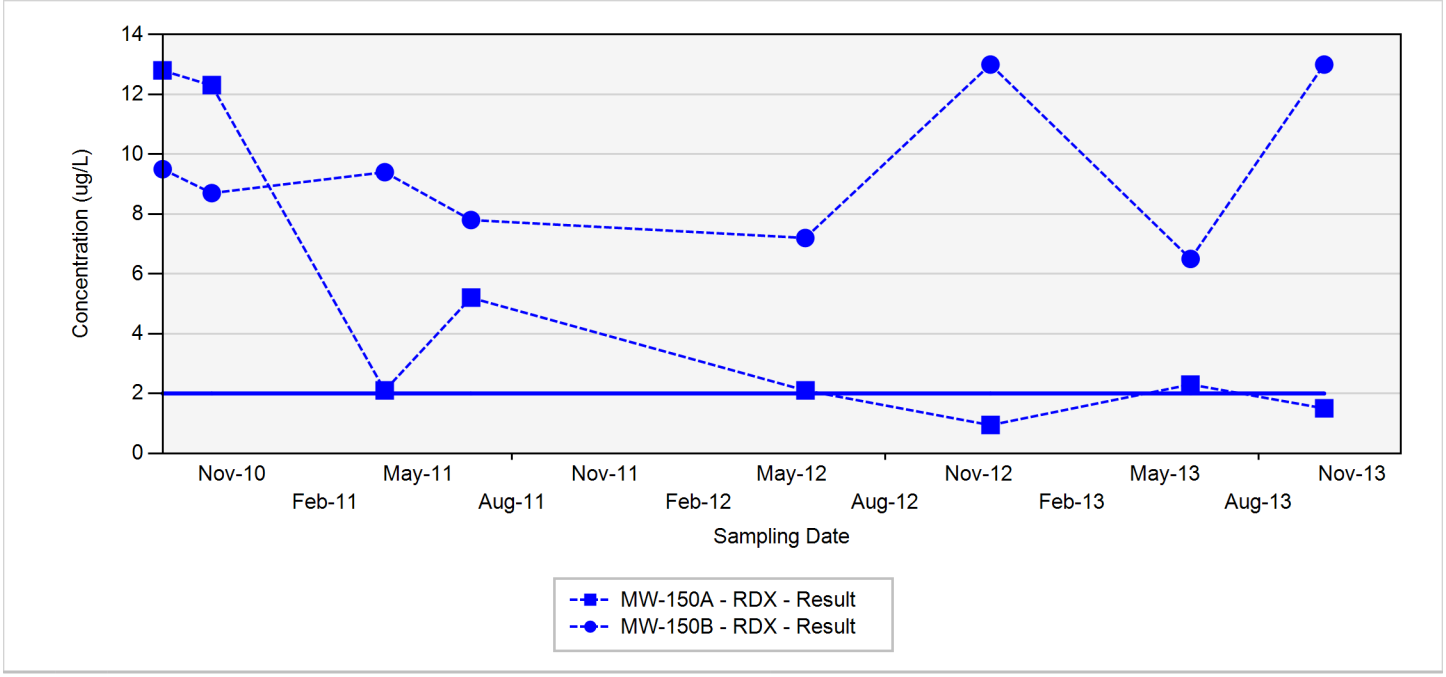
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

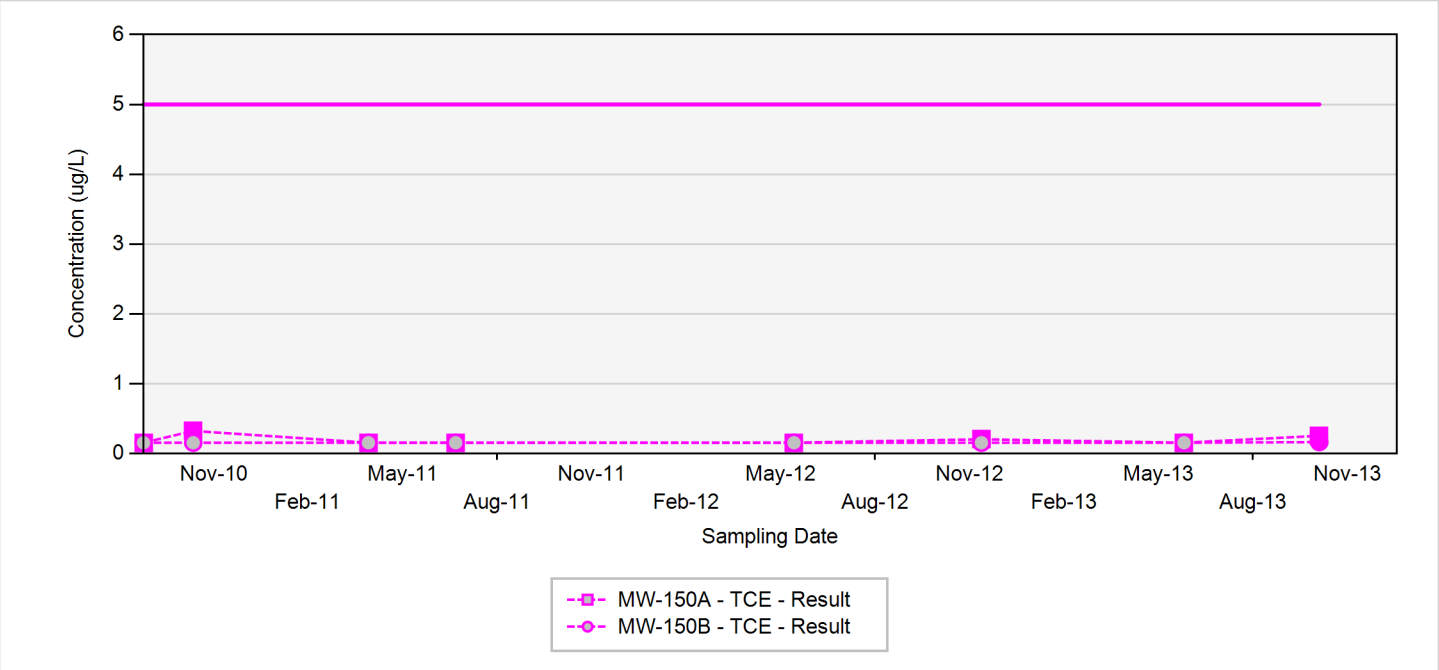
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-150





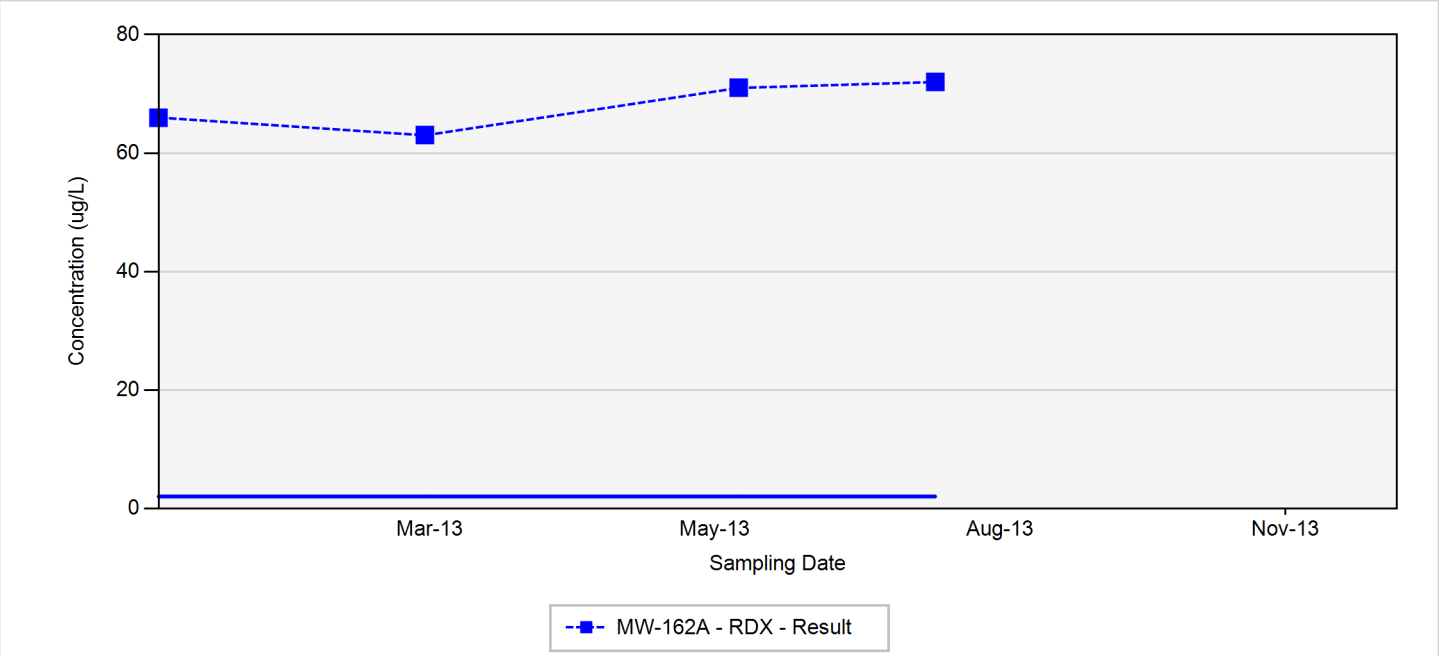
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

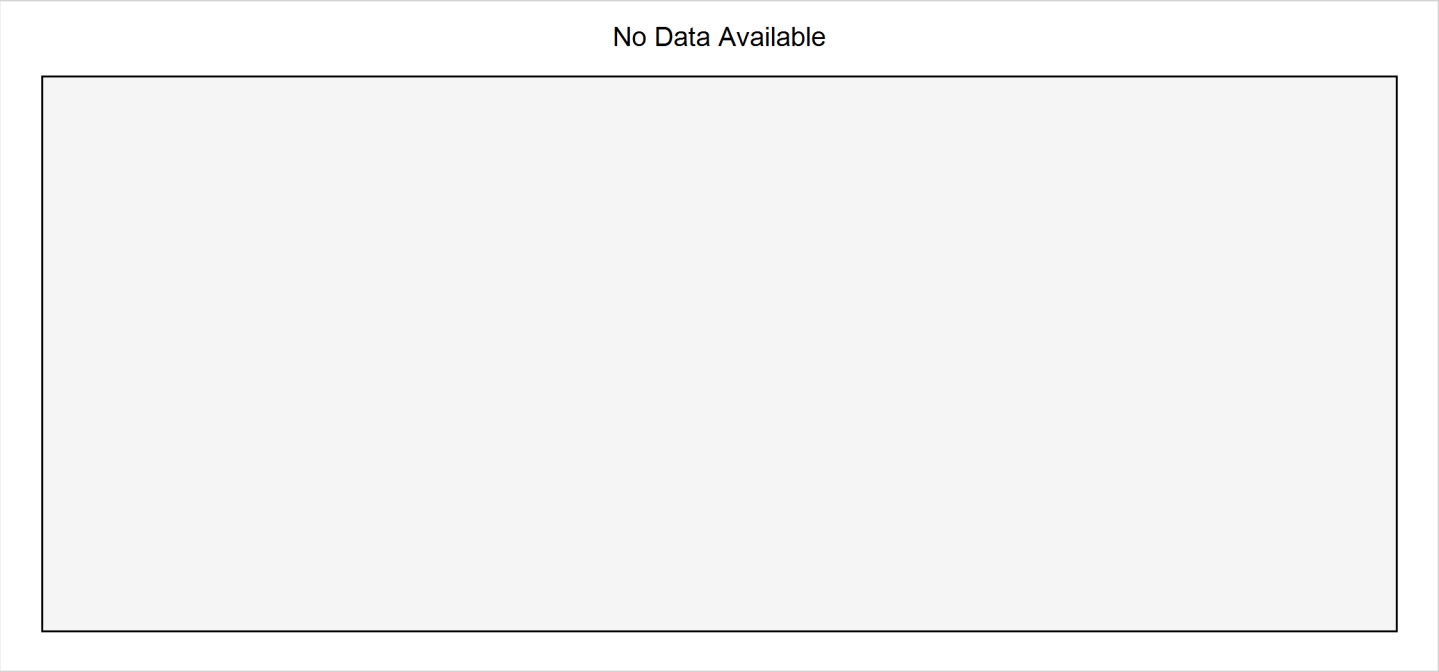
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-162





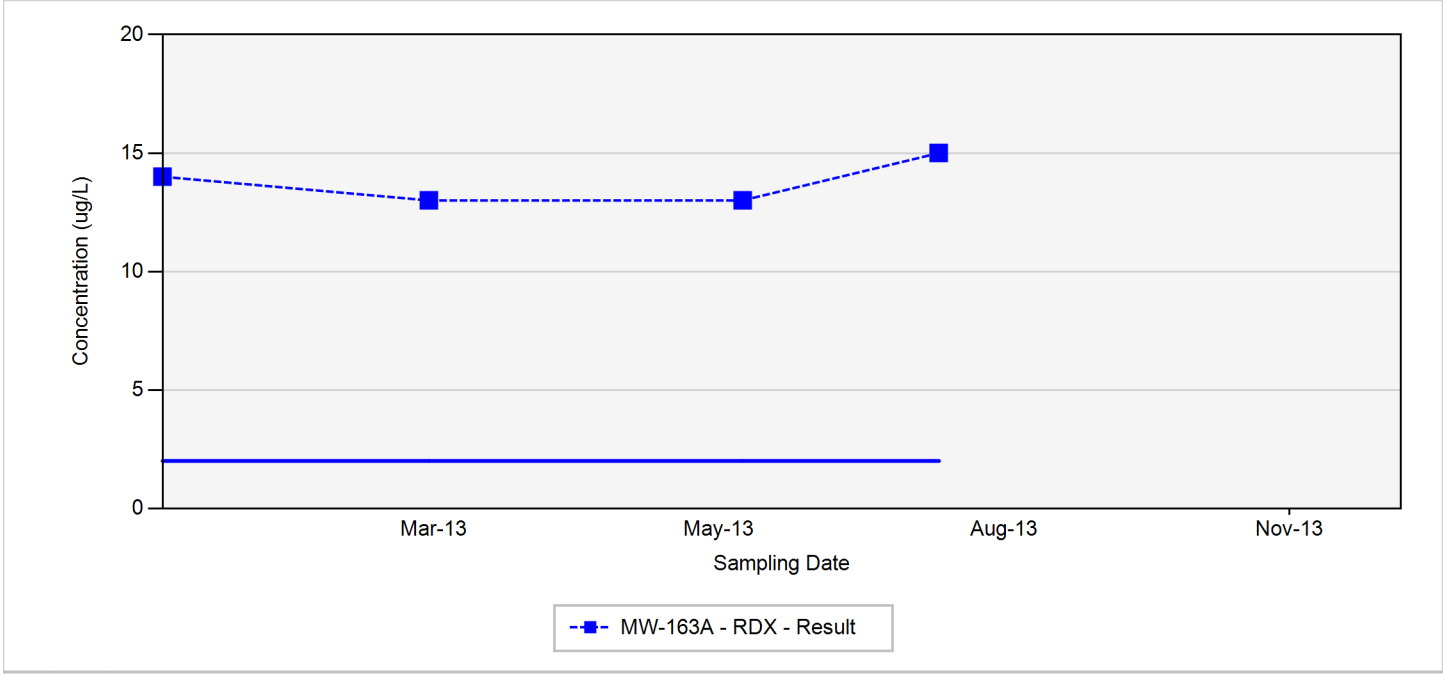
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

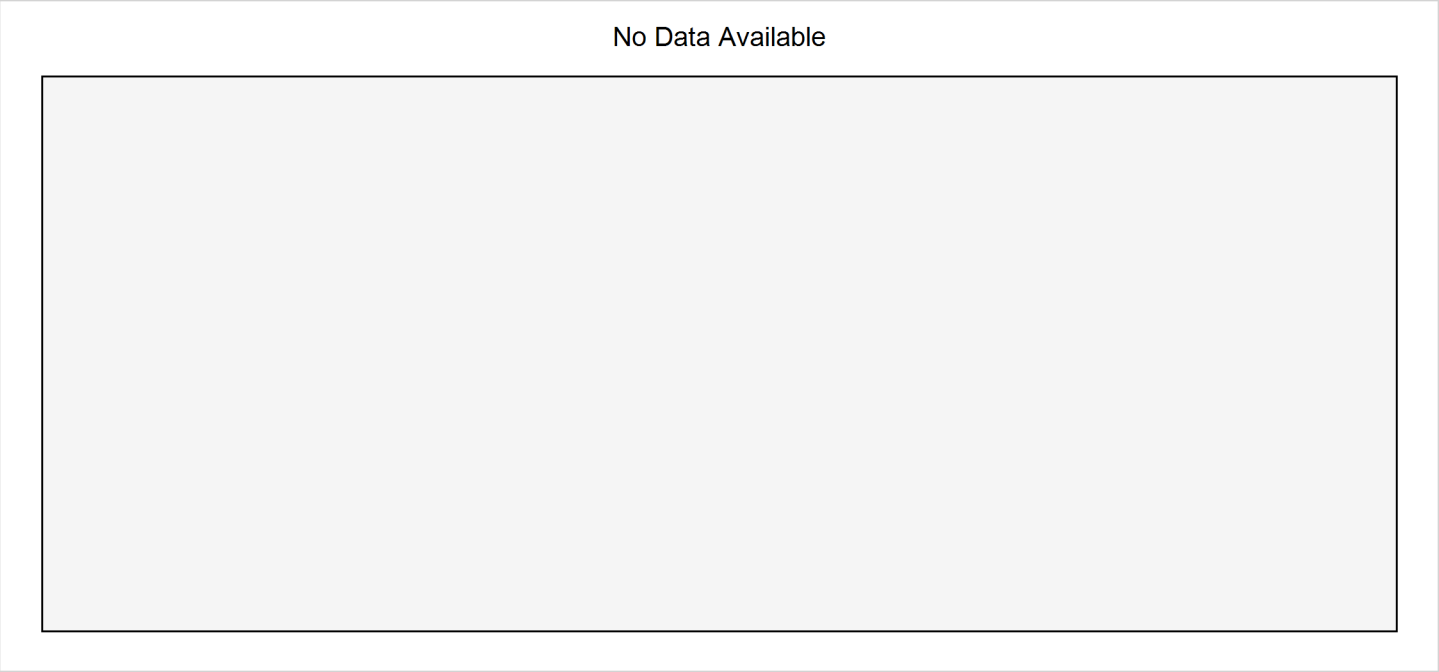
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-163





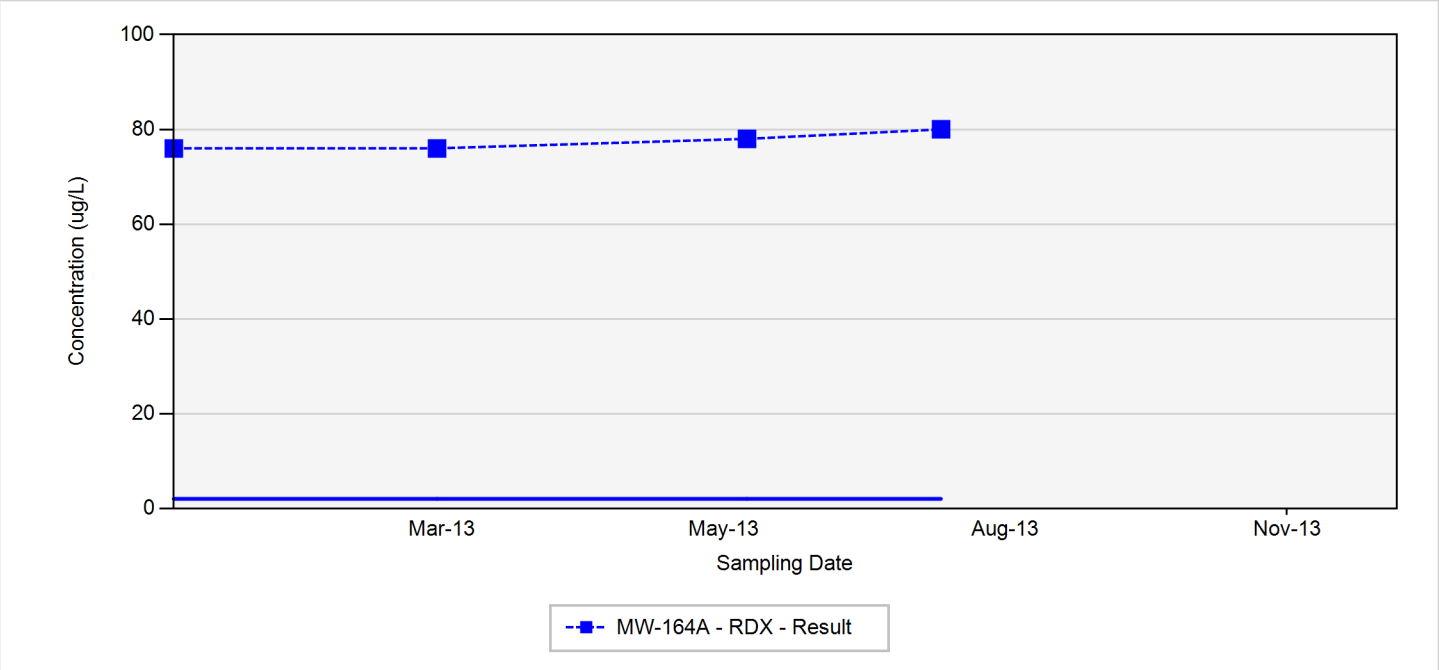
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

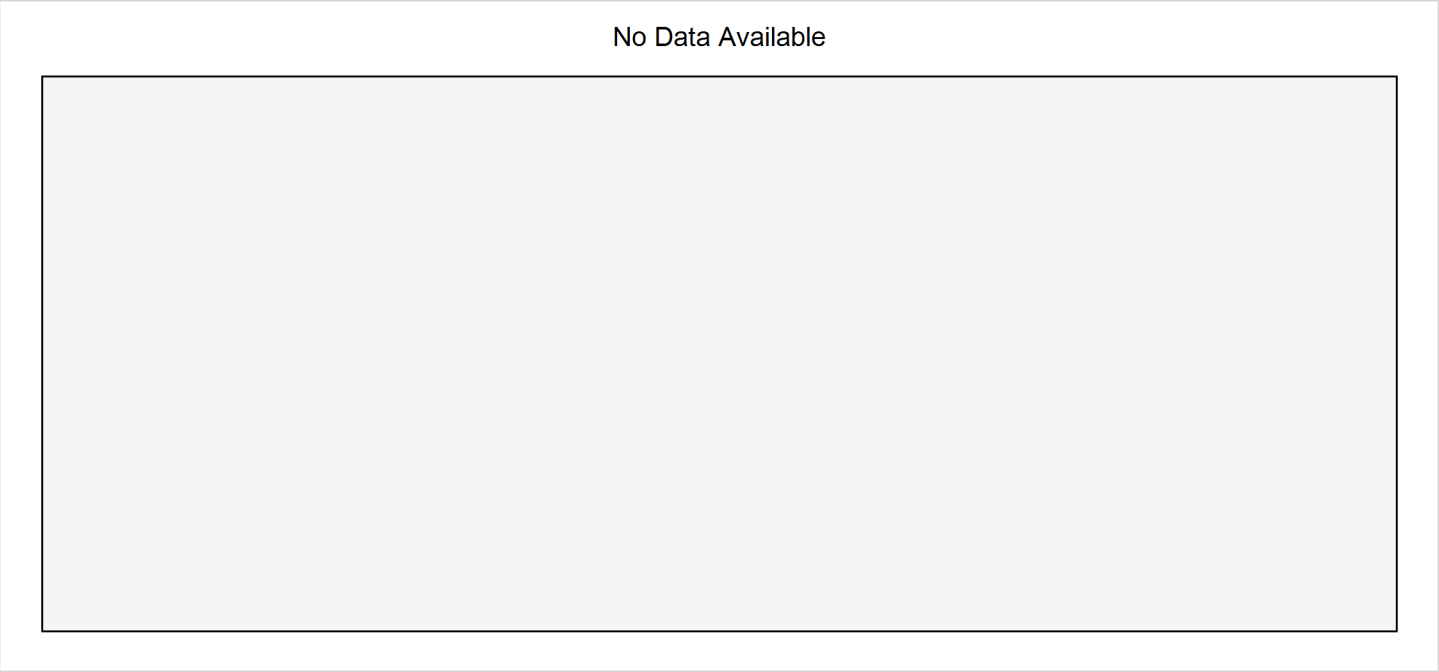
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-164





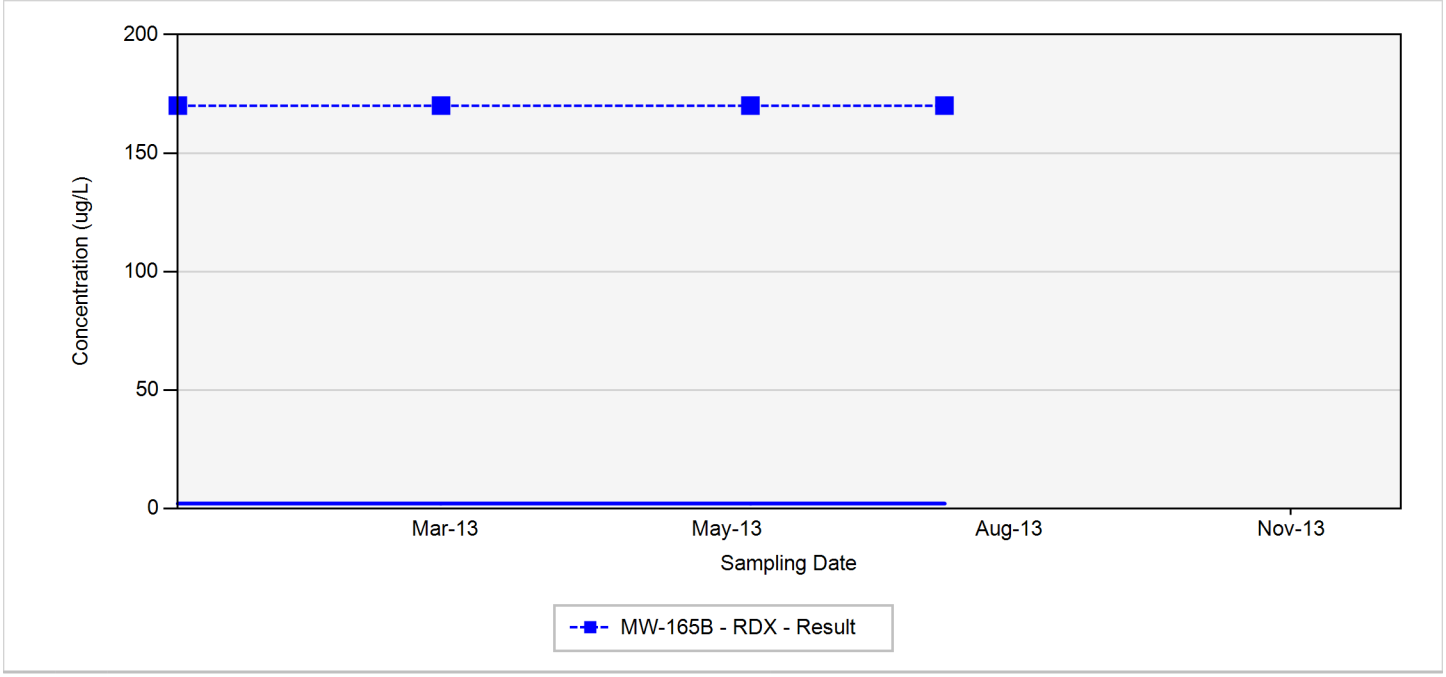
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

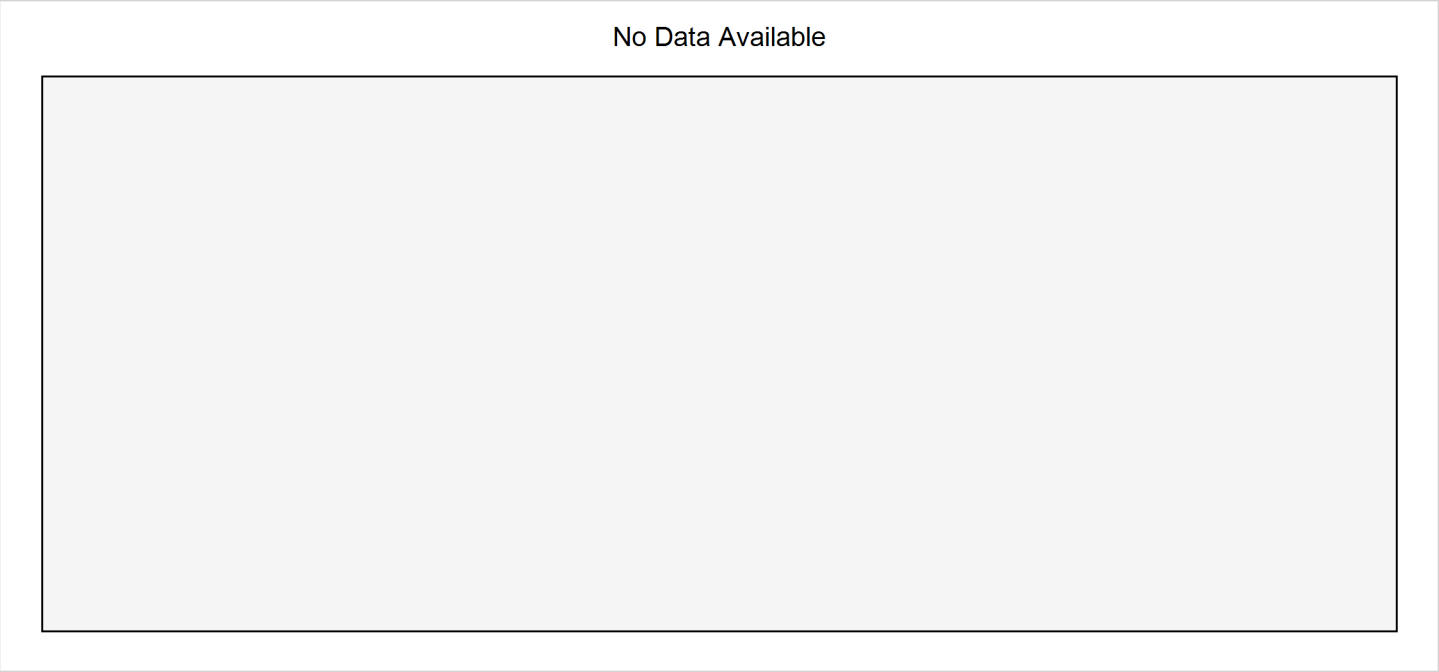
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-165





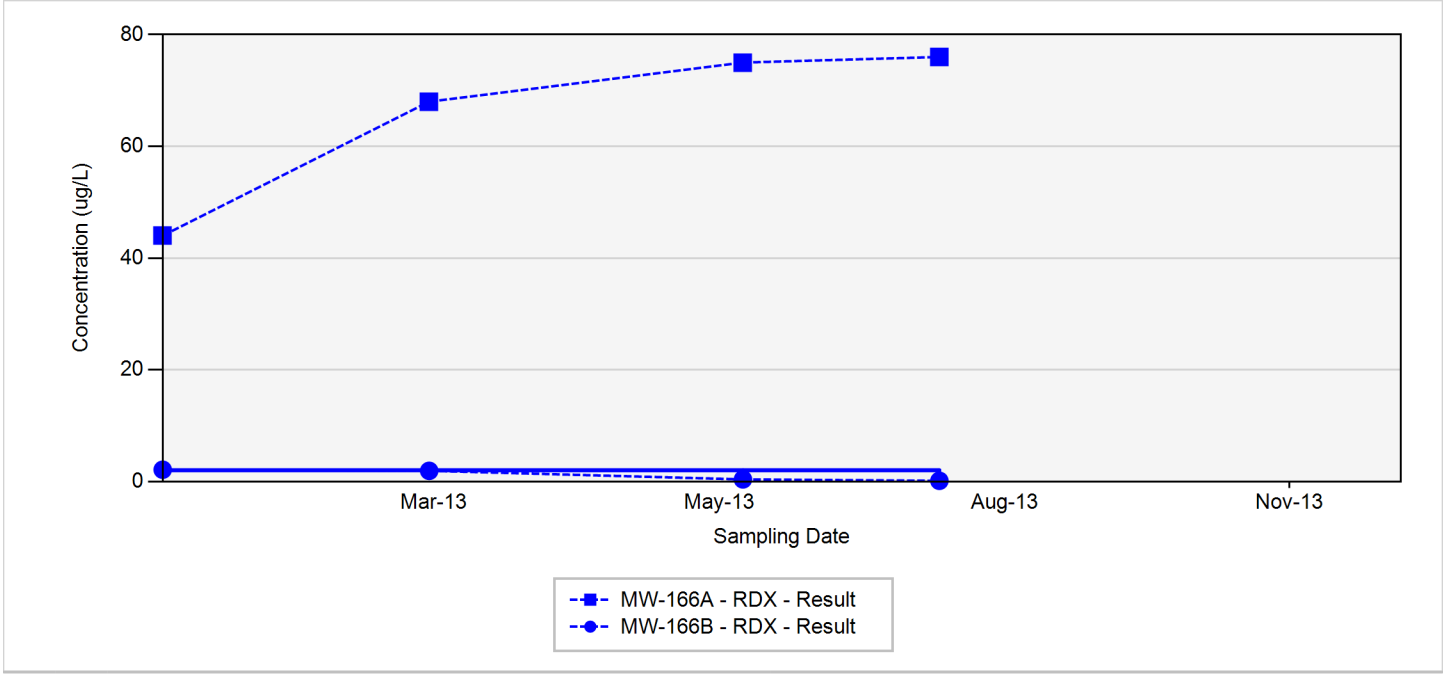
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

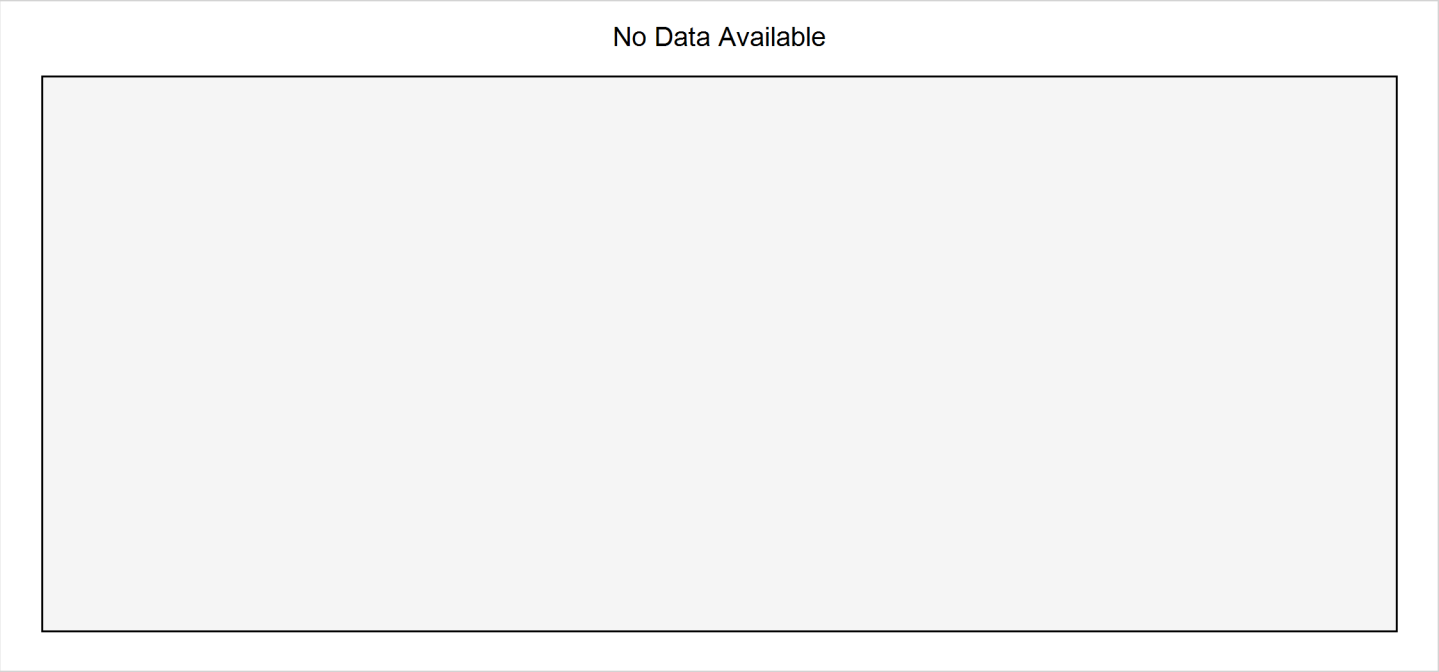
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-166





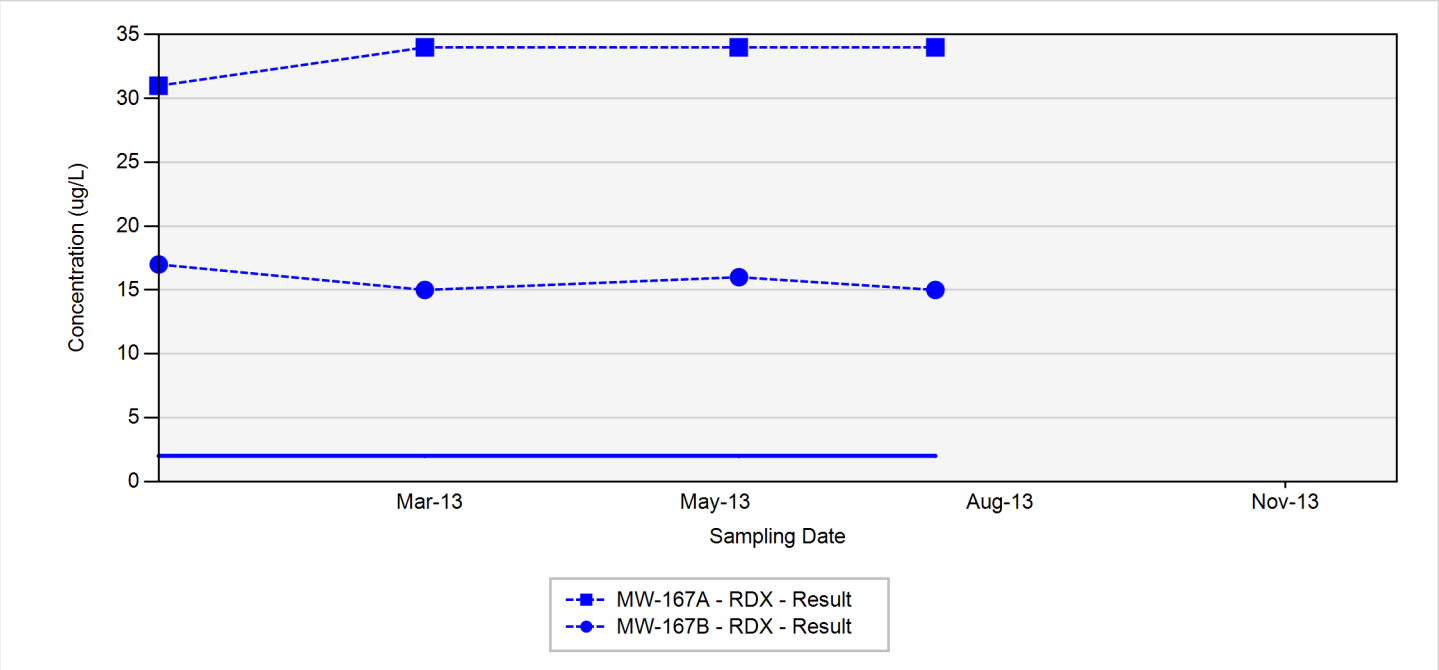
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

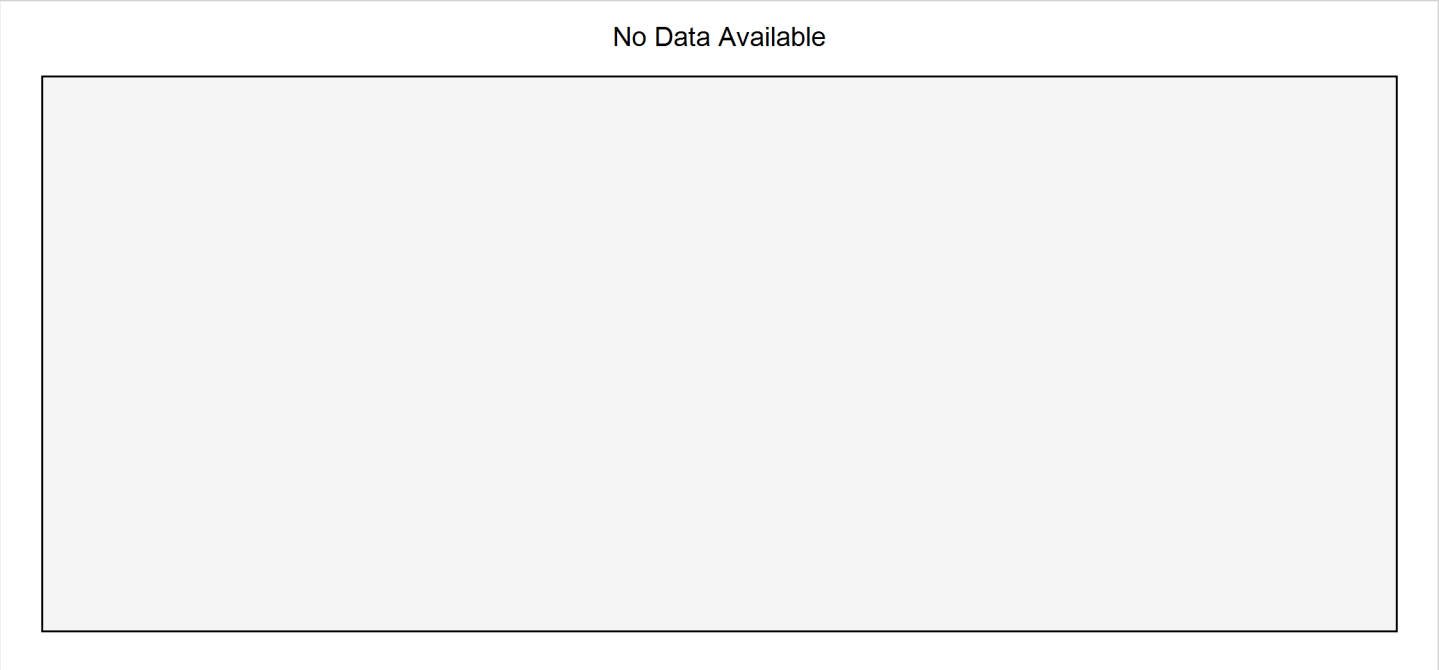
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-167





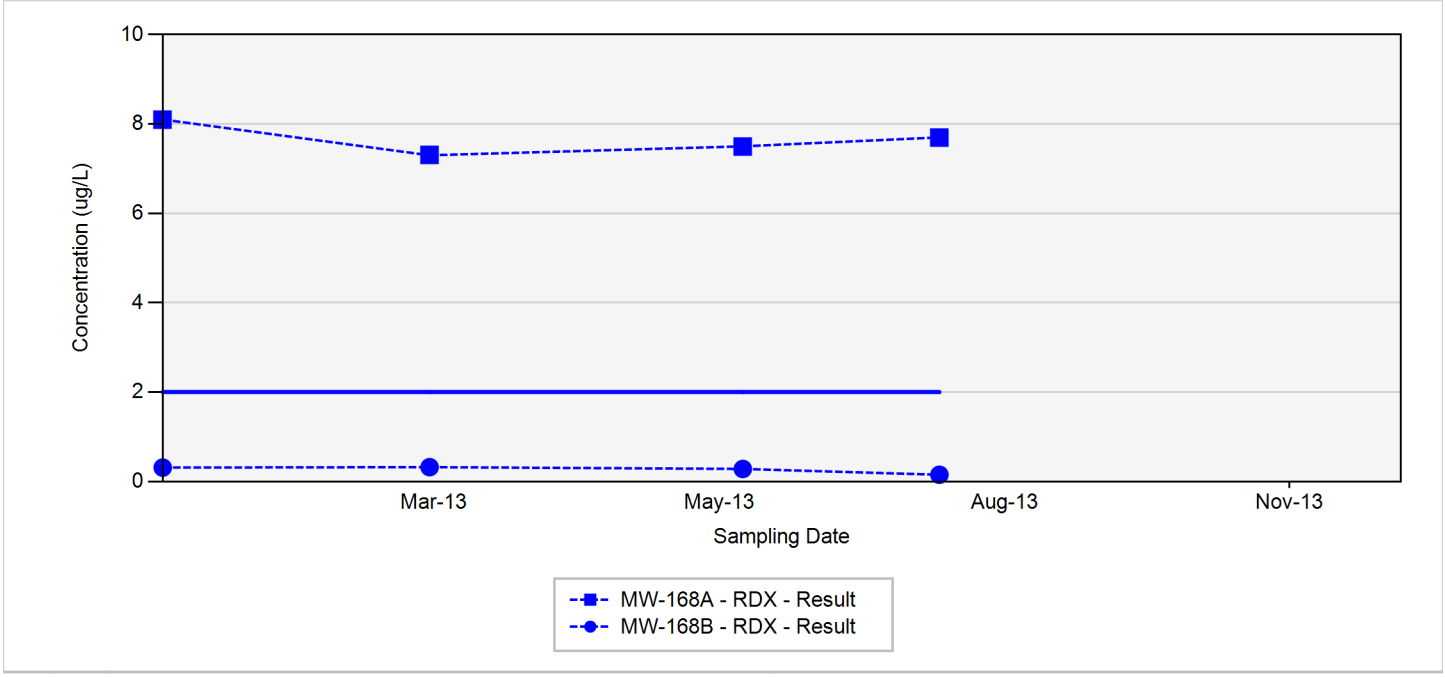
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

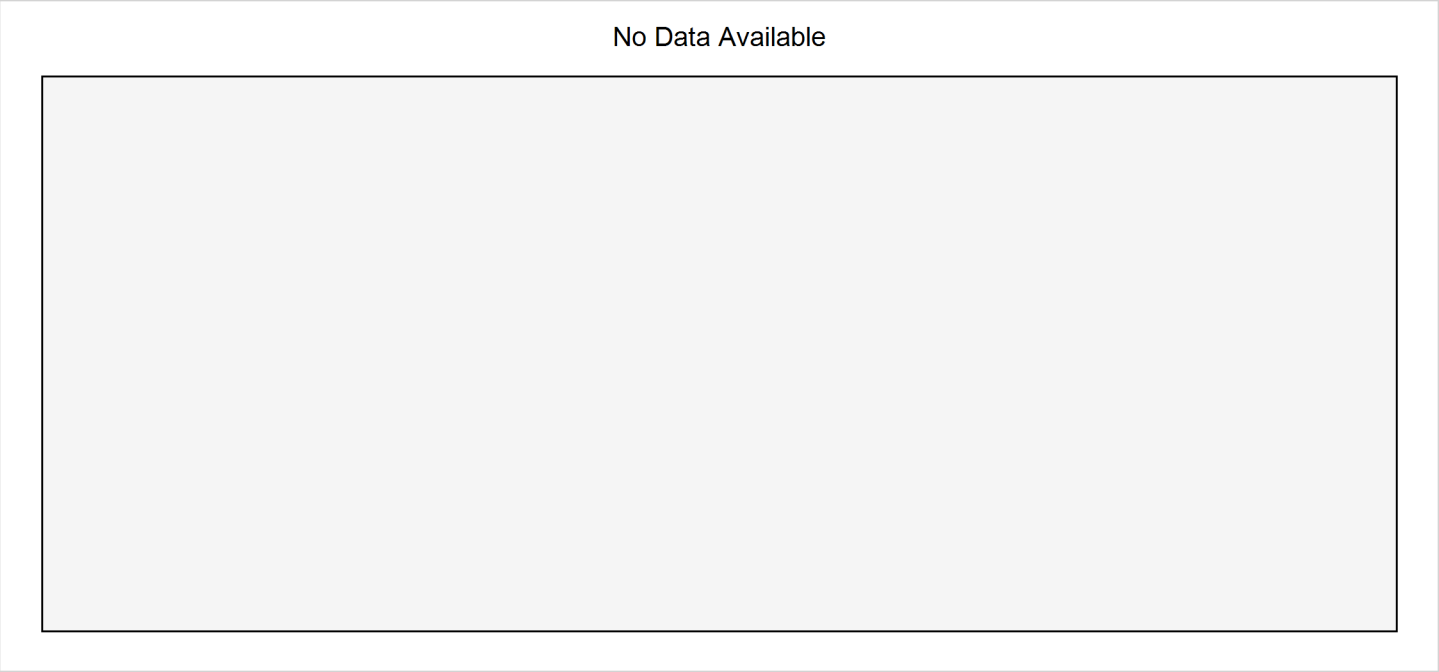
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-168





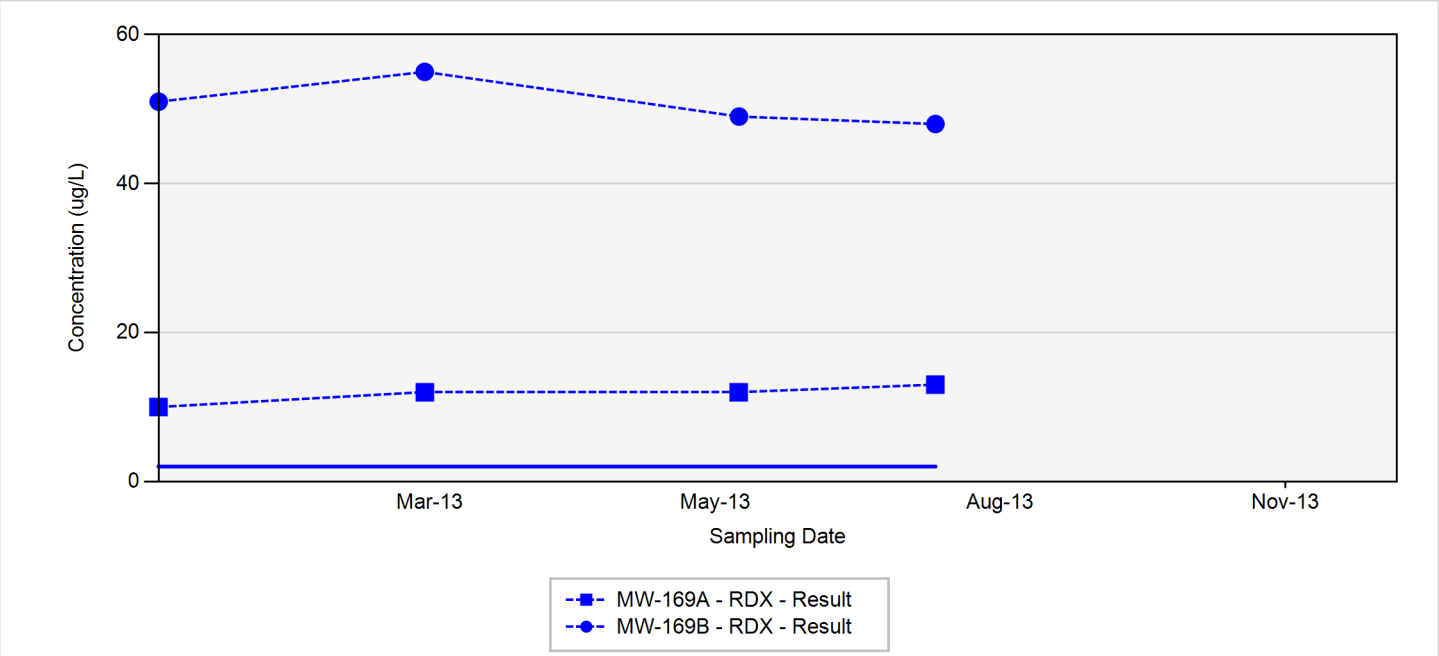
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

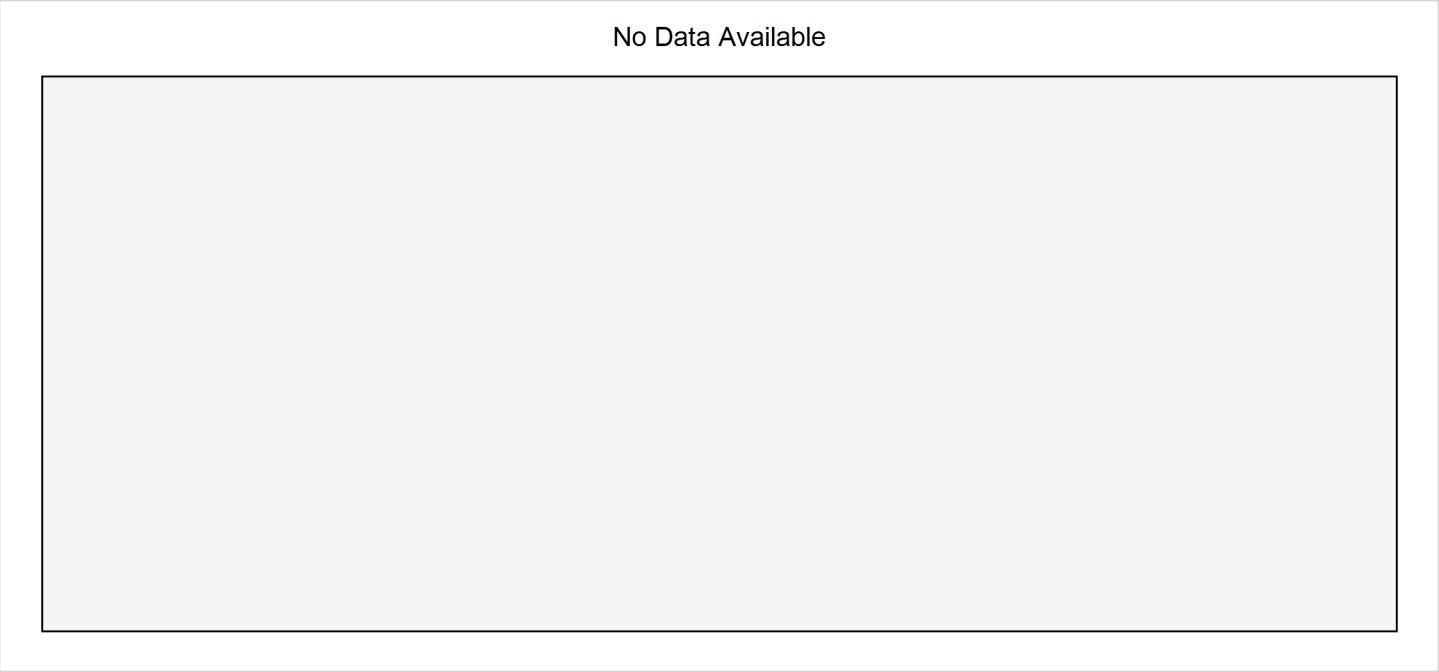
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-169





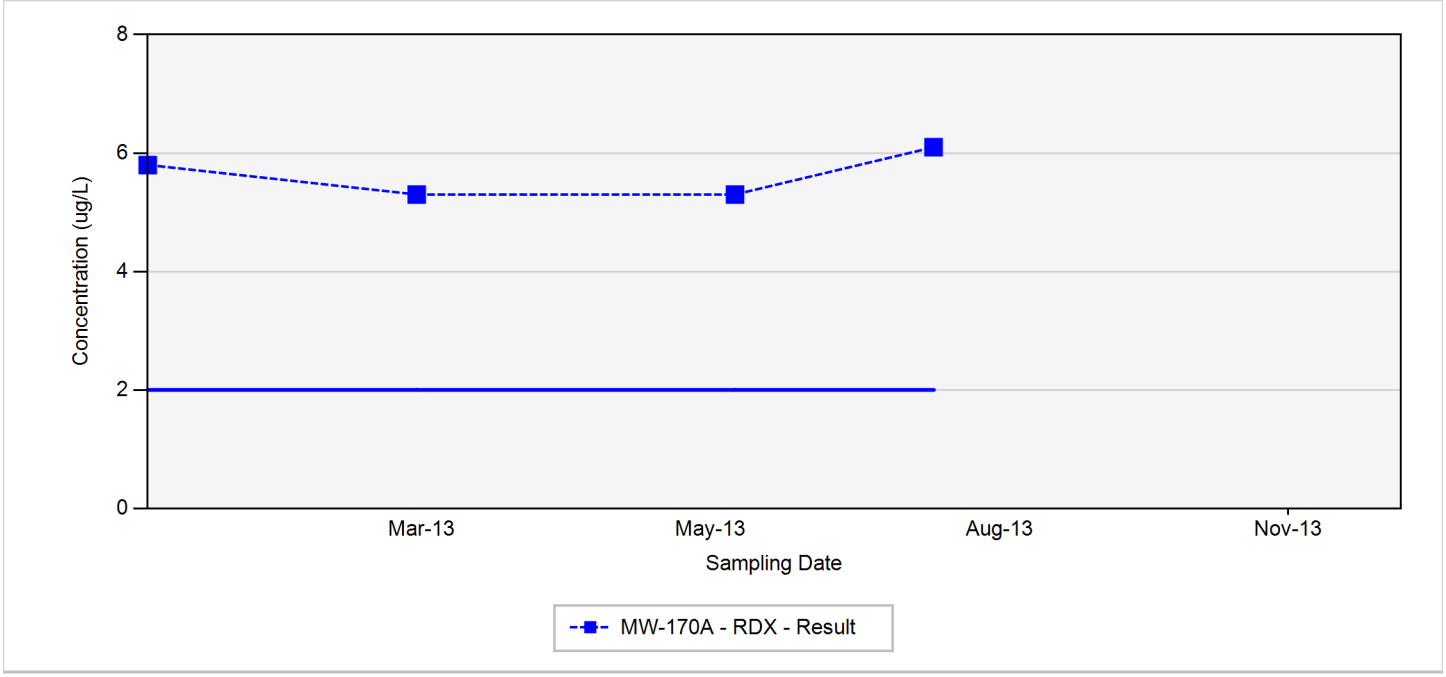
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

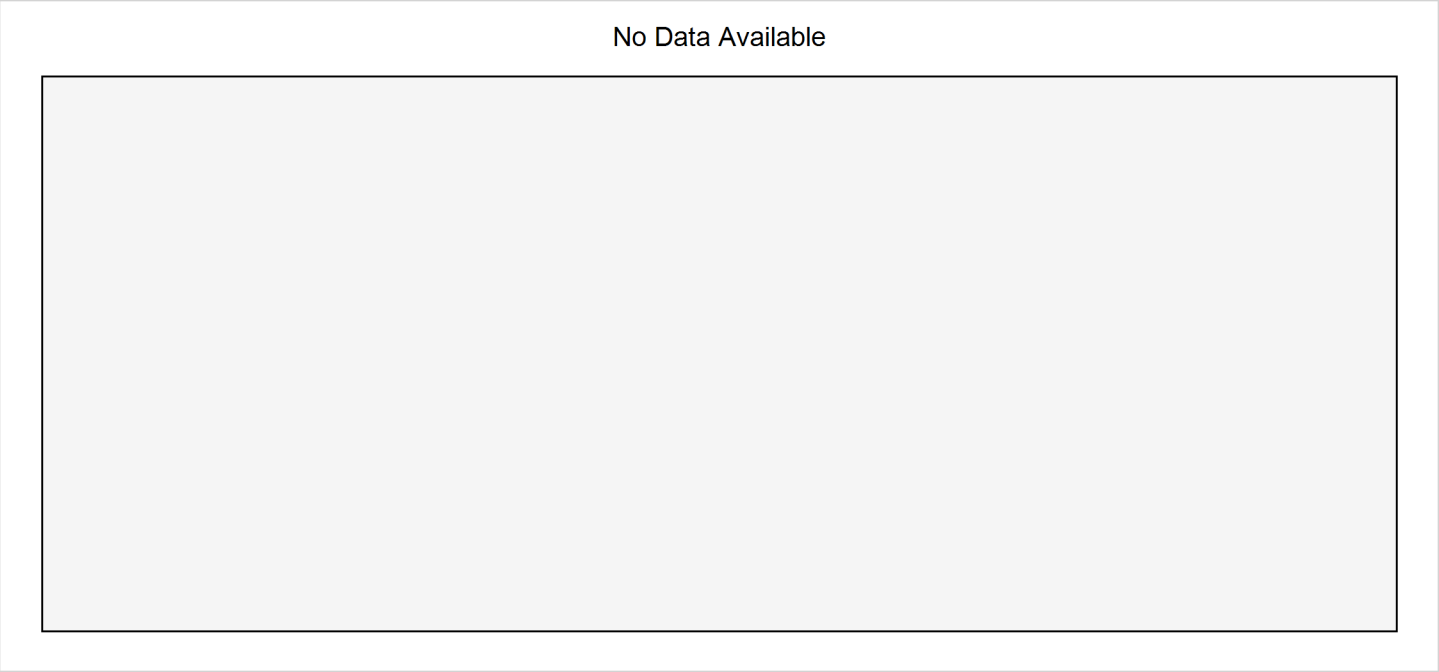
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-170





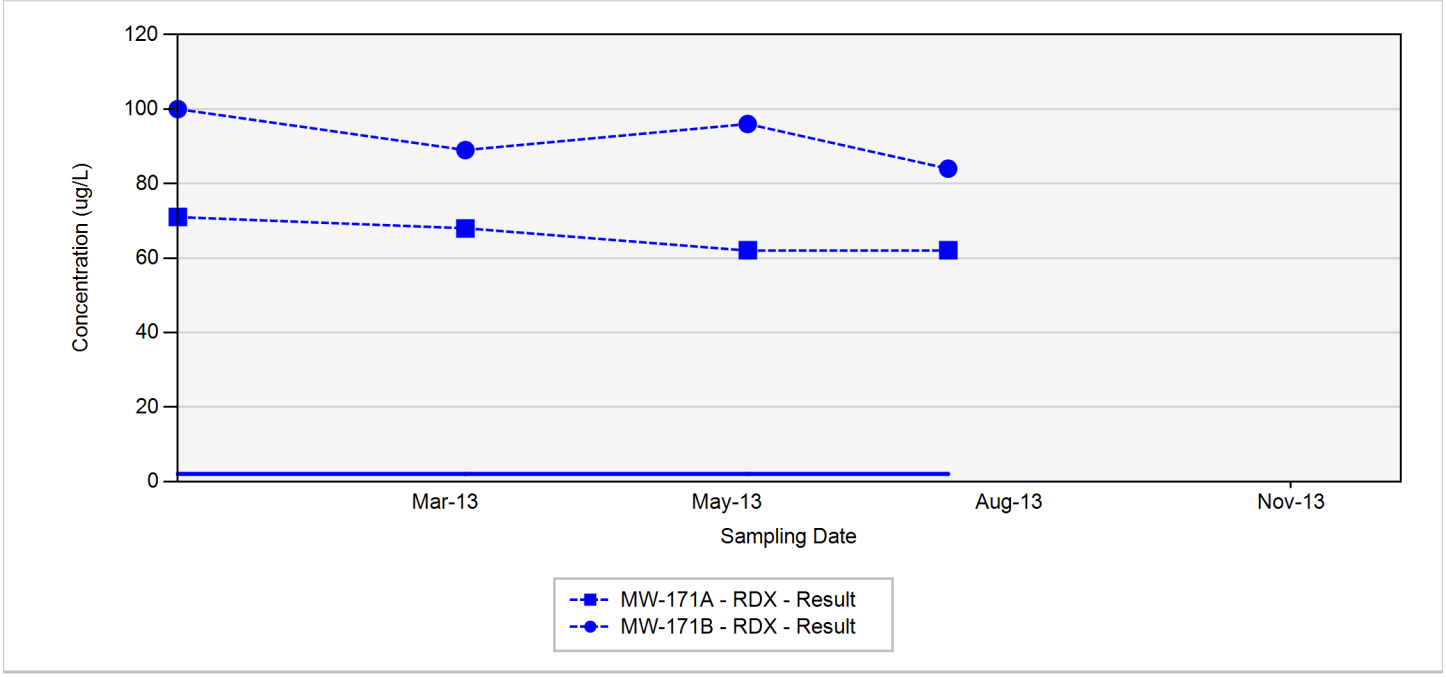
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

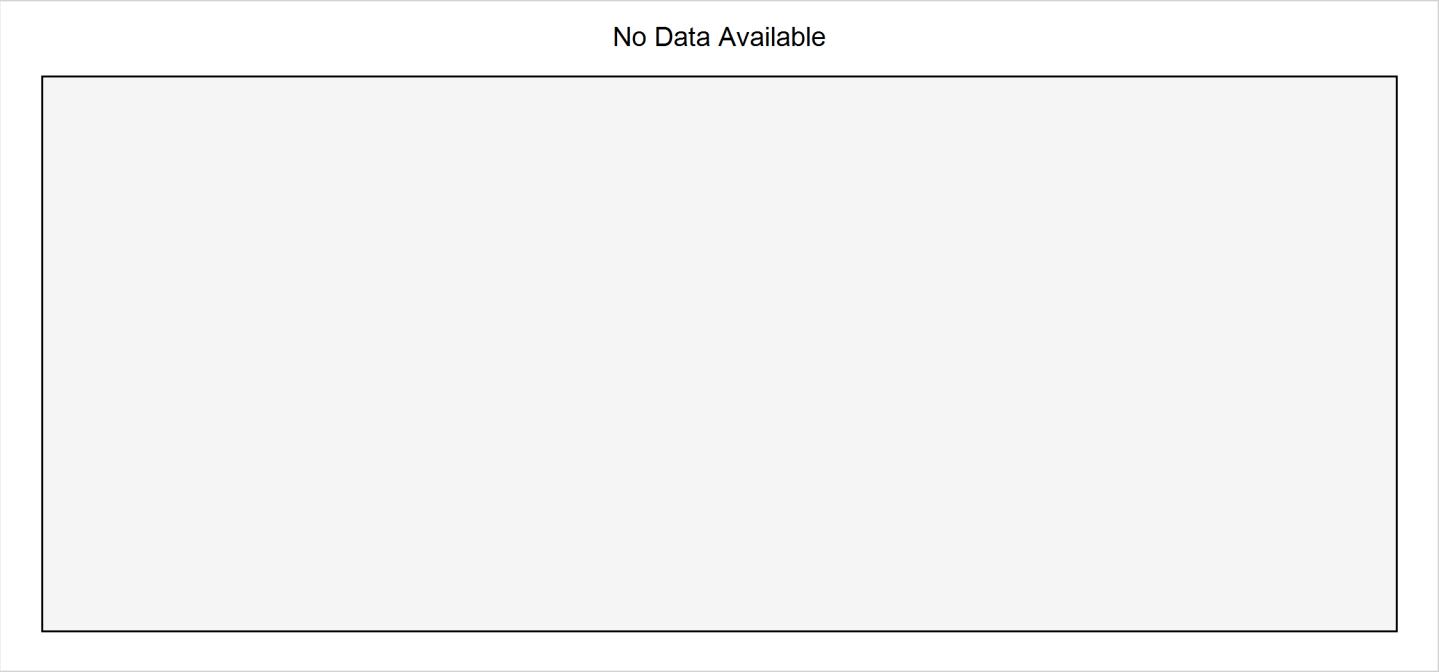
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-171





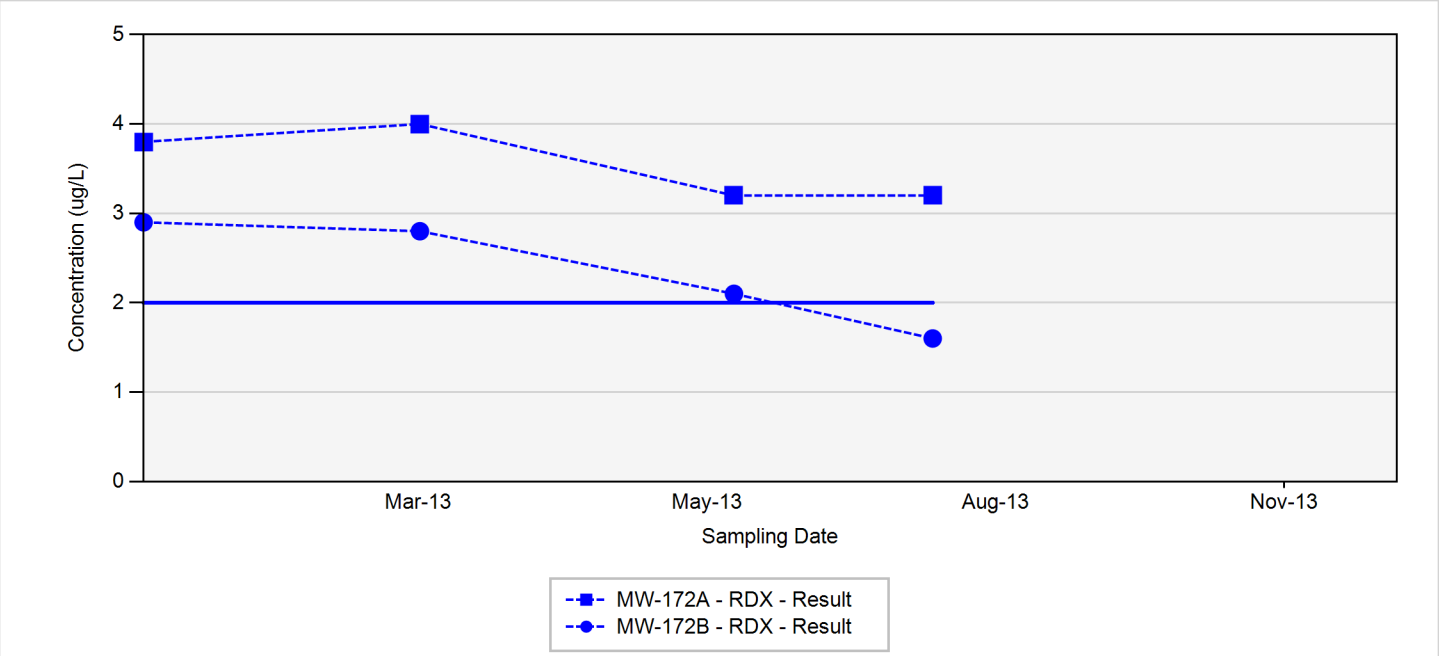
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

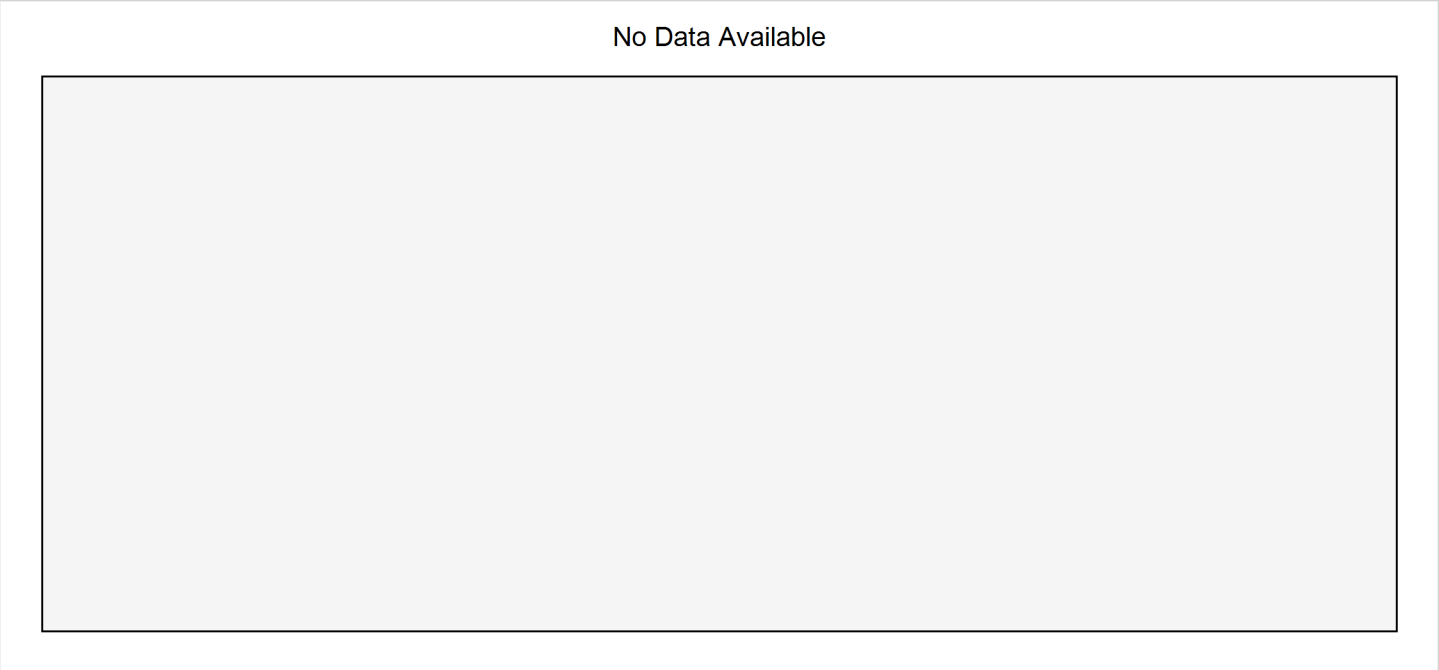
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-172





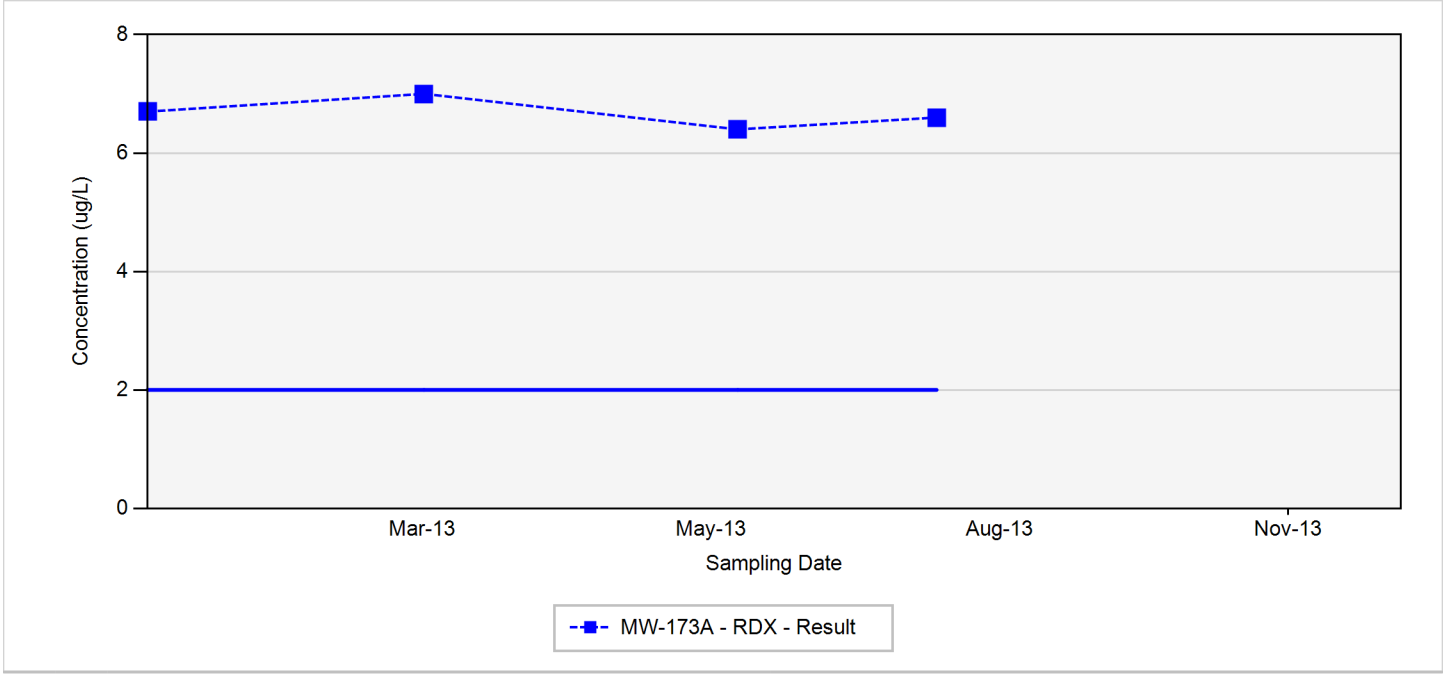
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

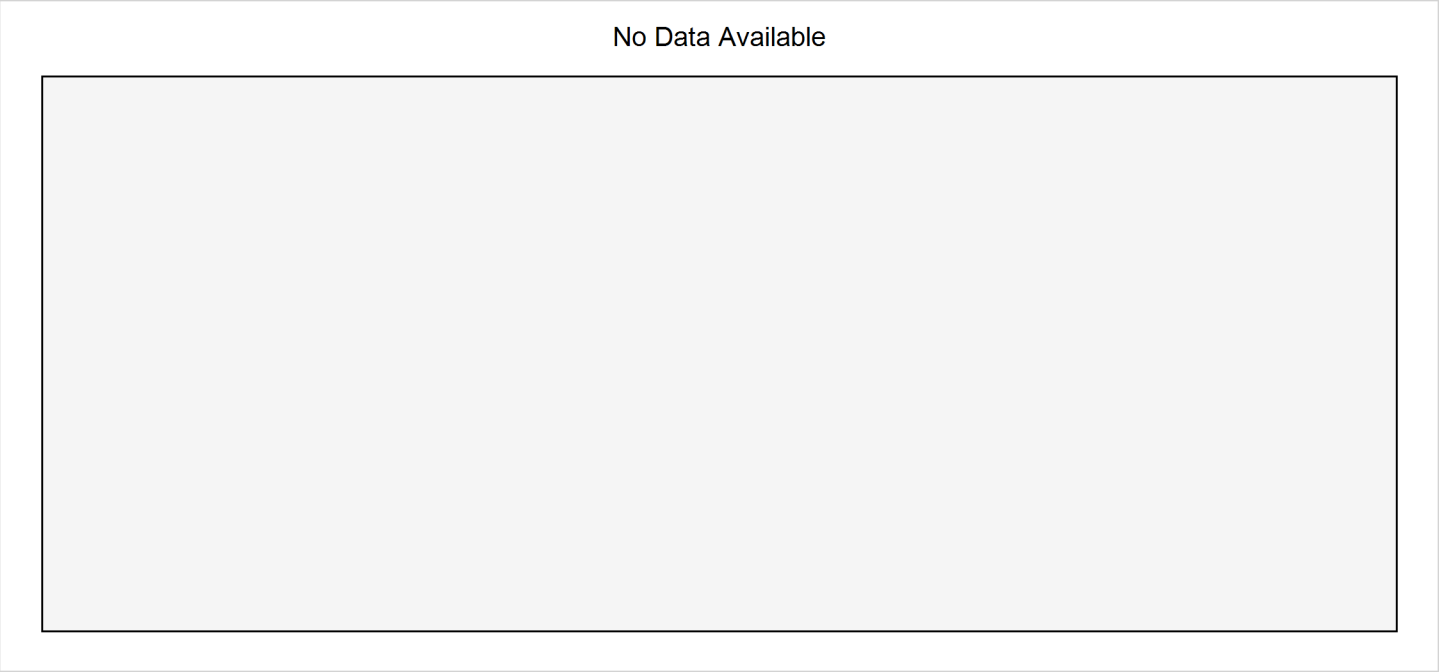
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-173





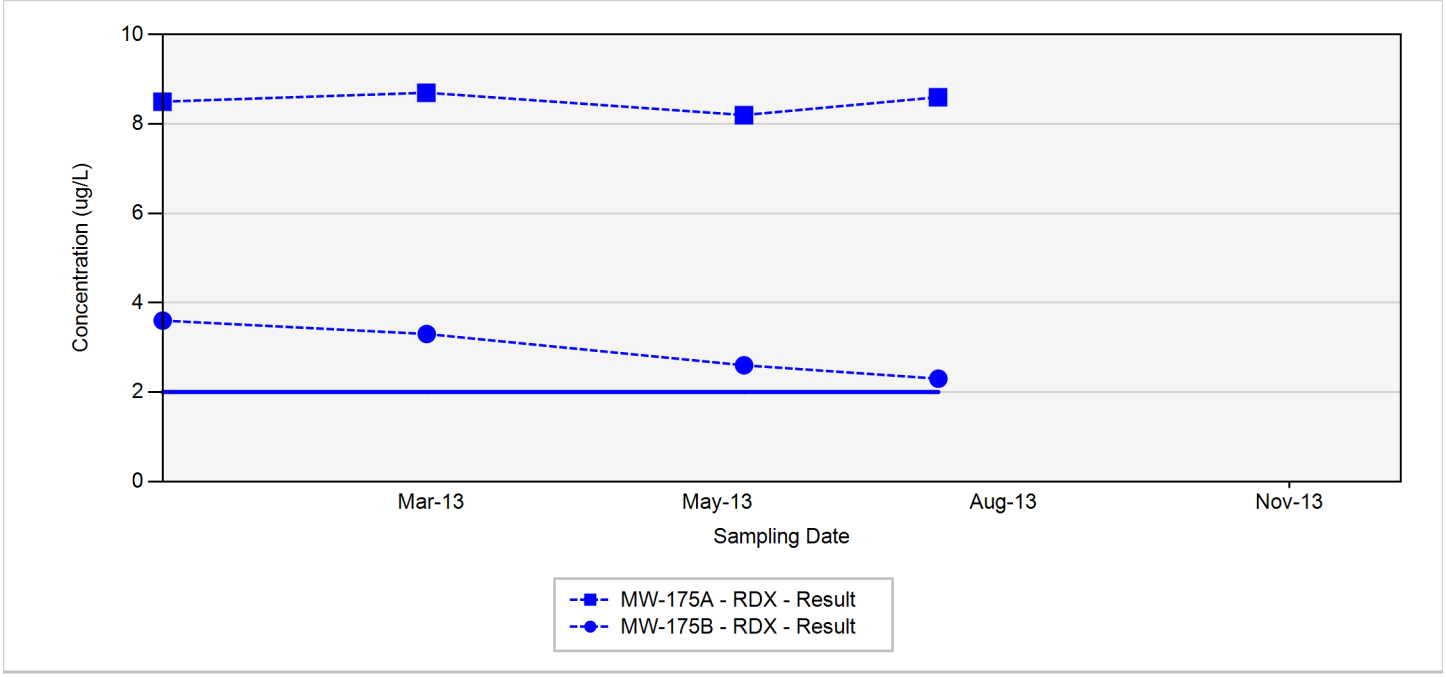
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

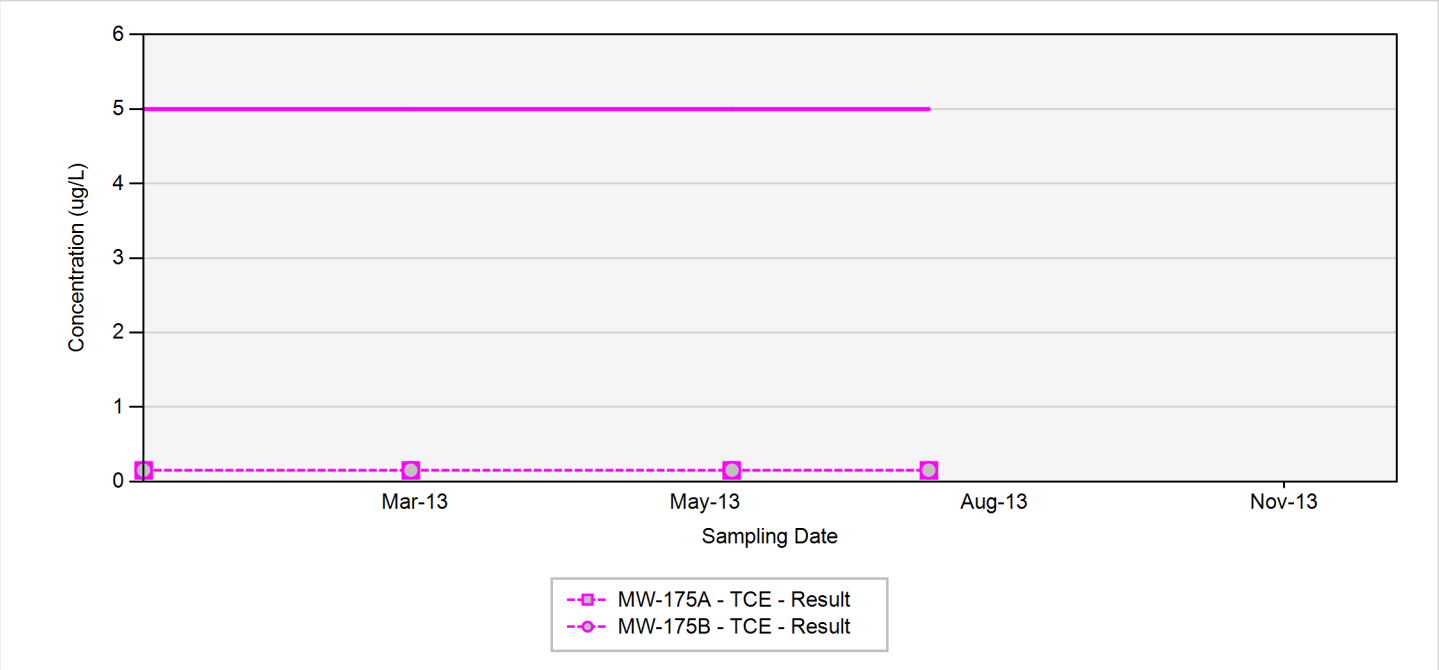
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-175





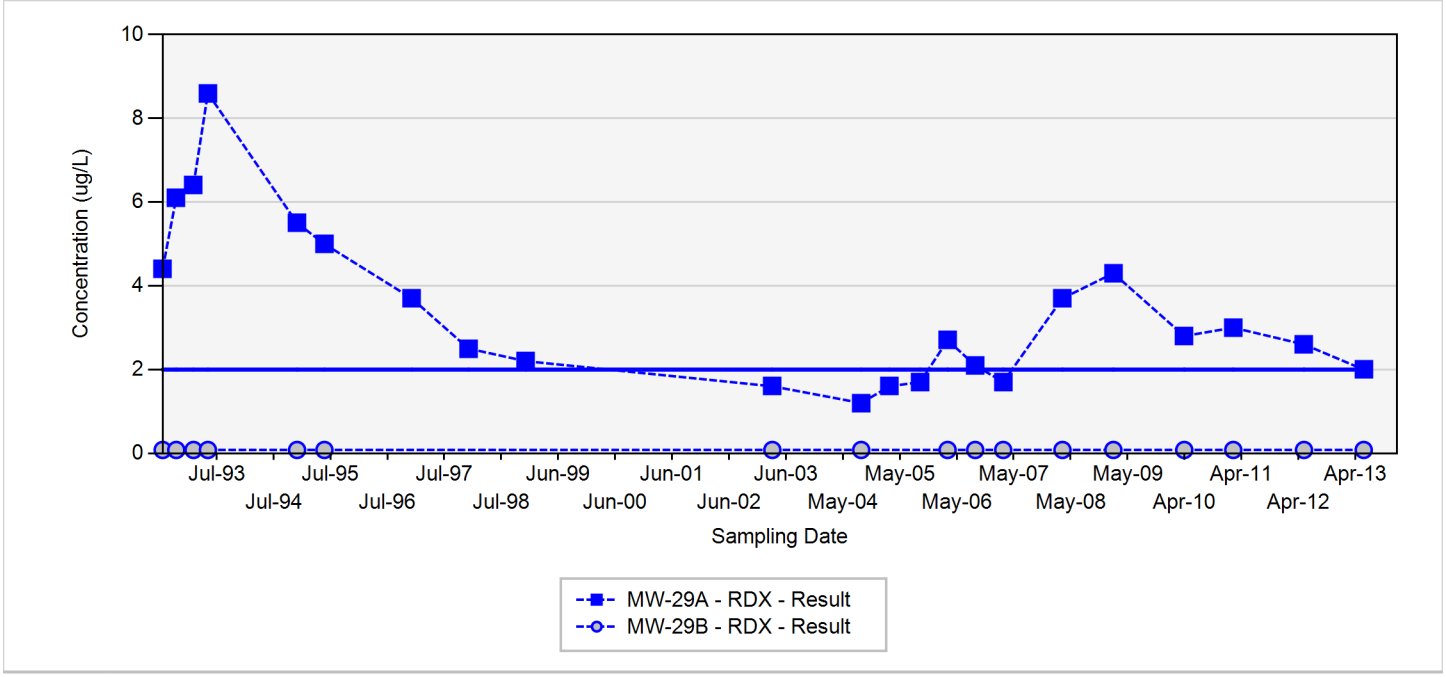
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

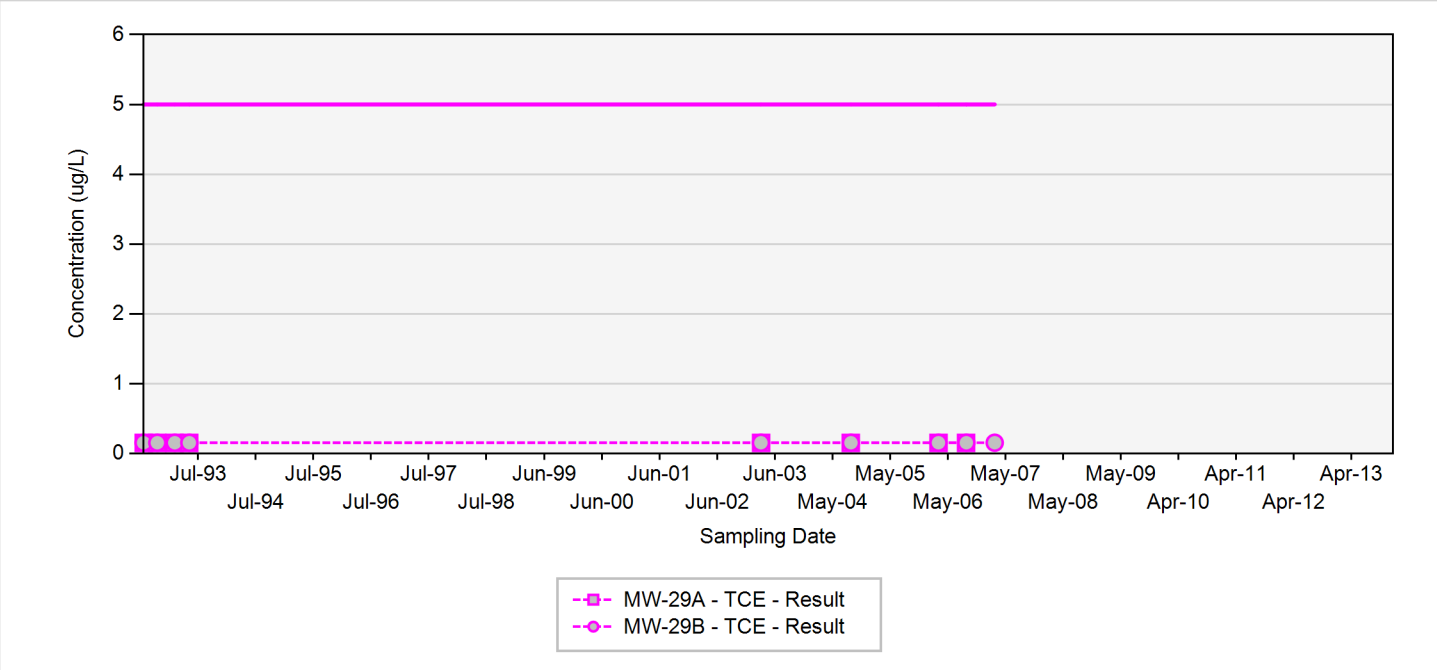
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-29





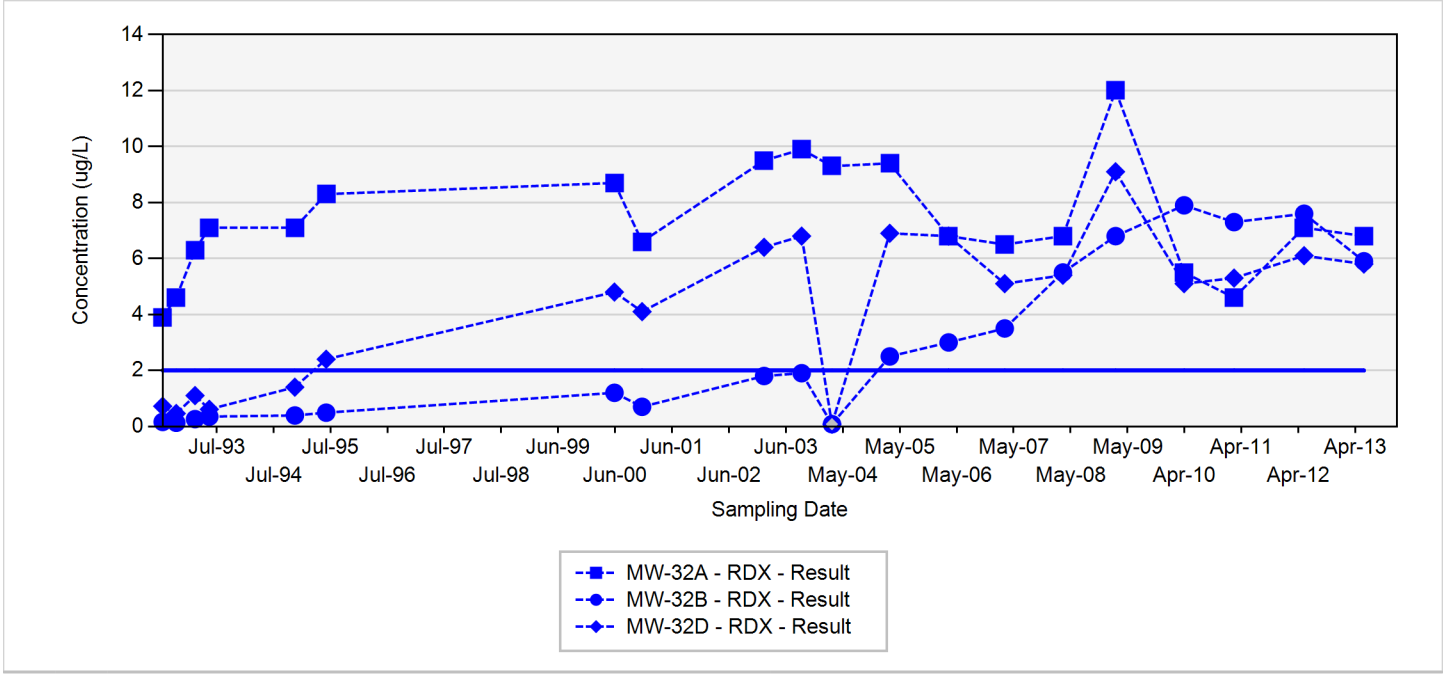
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

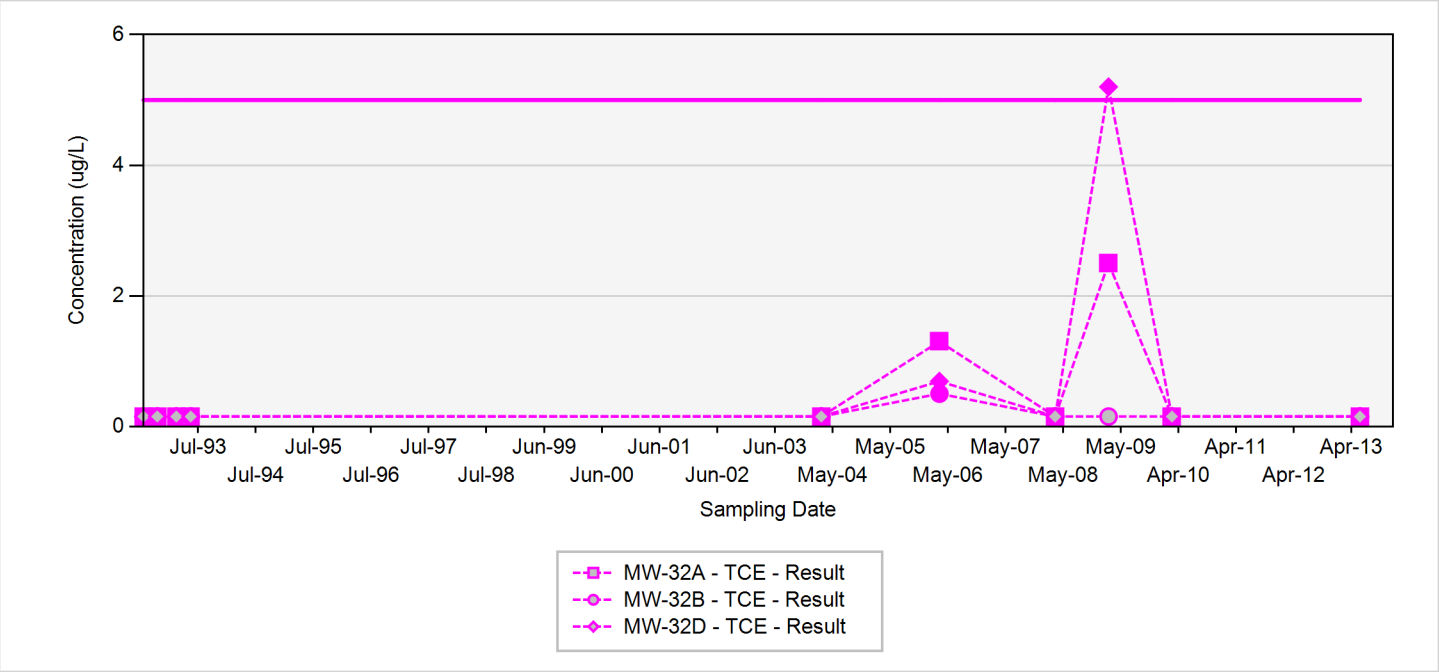
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-32





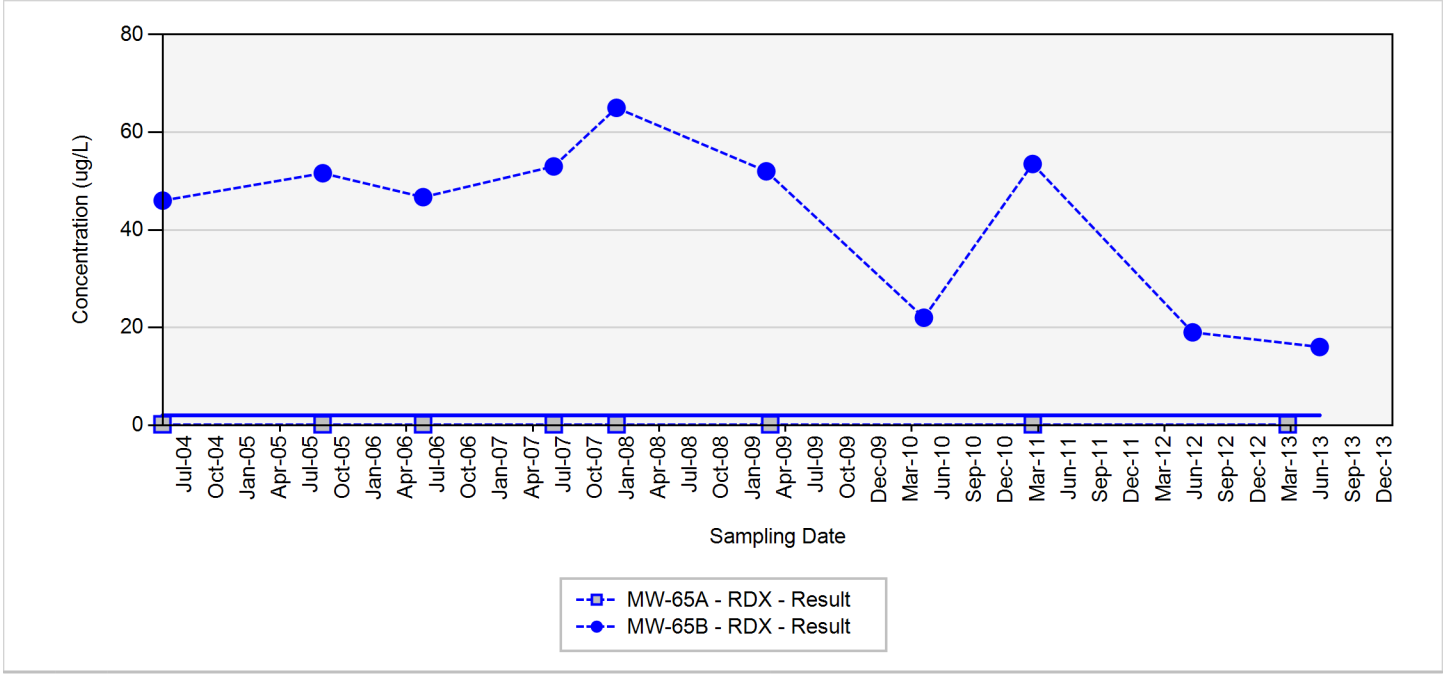
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

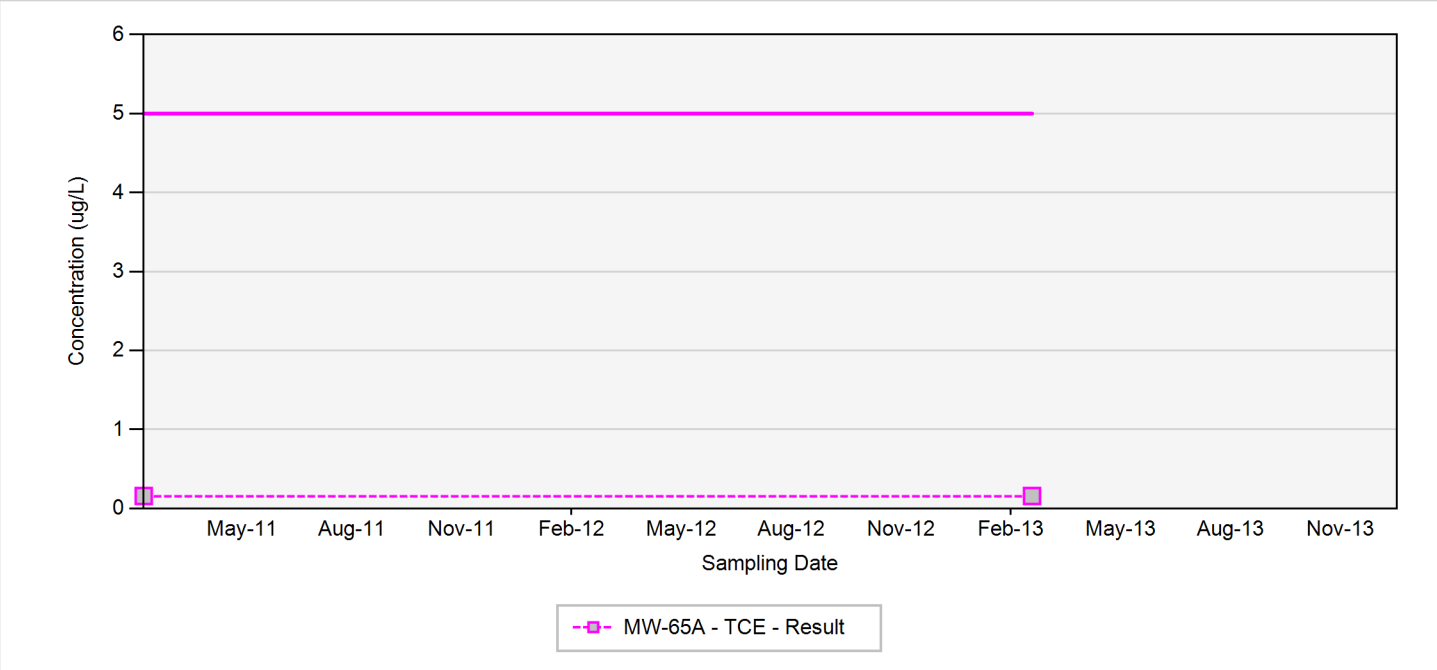
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-65





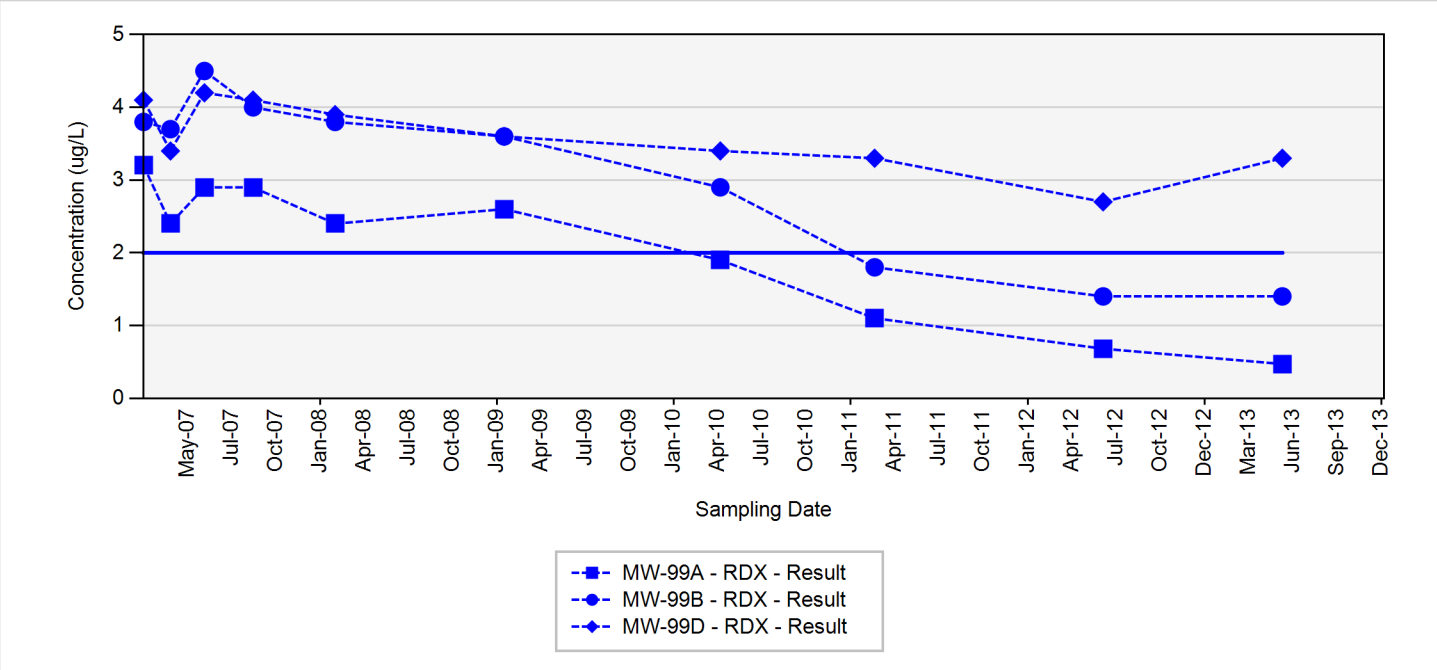
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

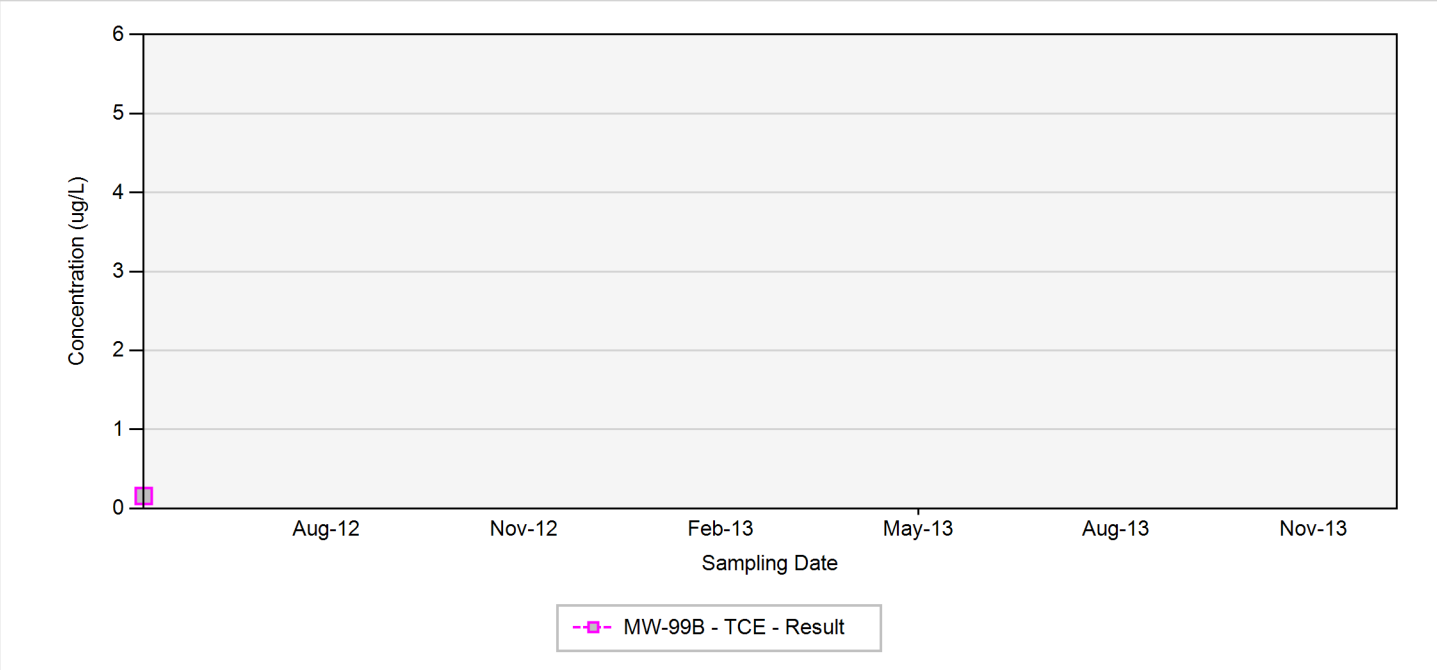
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.4
Concentration Trend Charts for Load Line 2 and 3 Interior Plume Monitoring Wells

MW-99





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

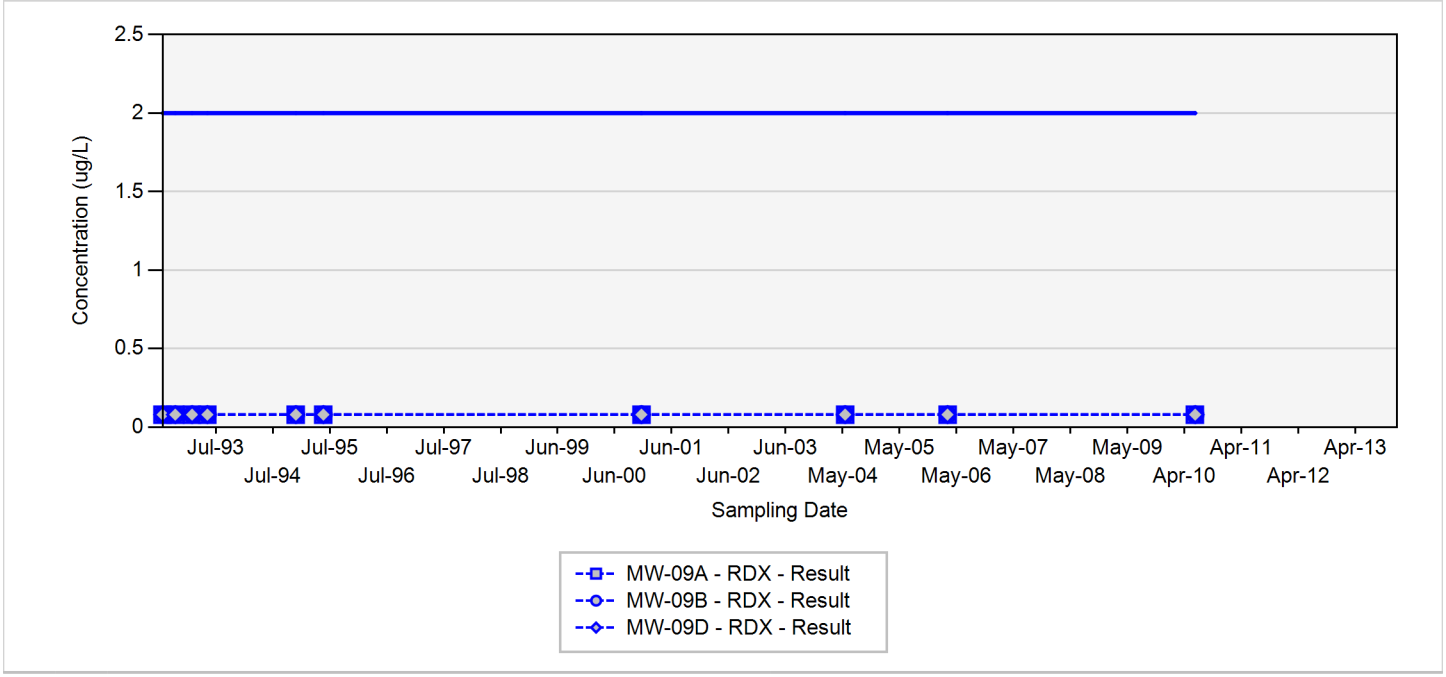
This page was intentionally left blank.

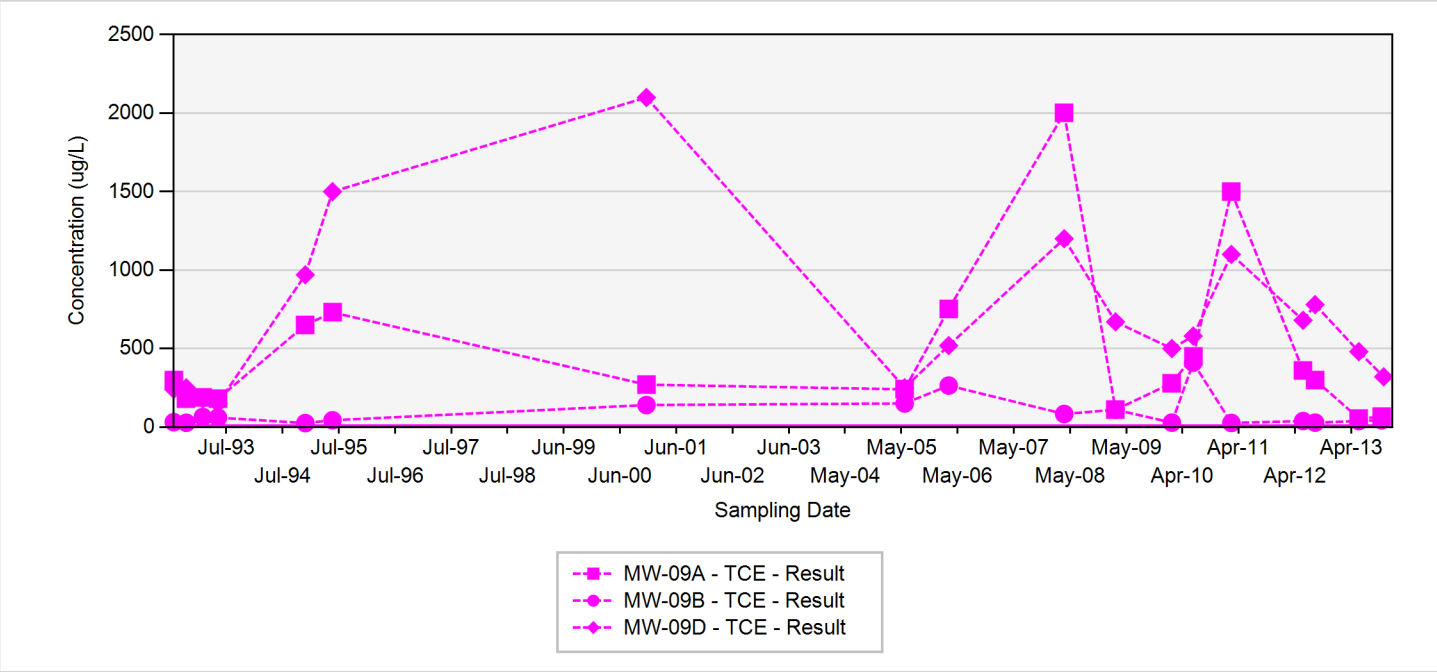
A.5 – Load Line 4 Interior Plume Monitoring Wells

This page was intentionally left blank.

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-09





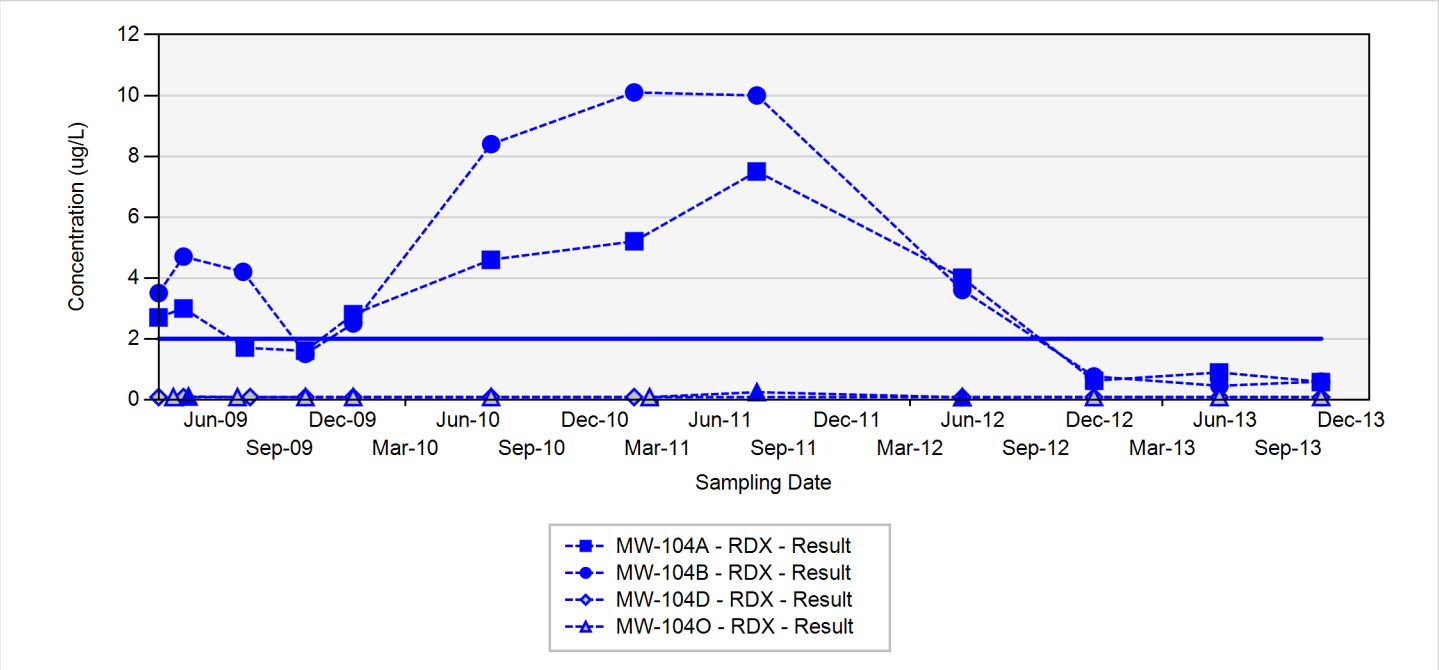
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

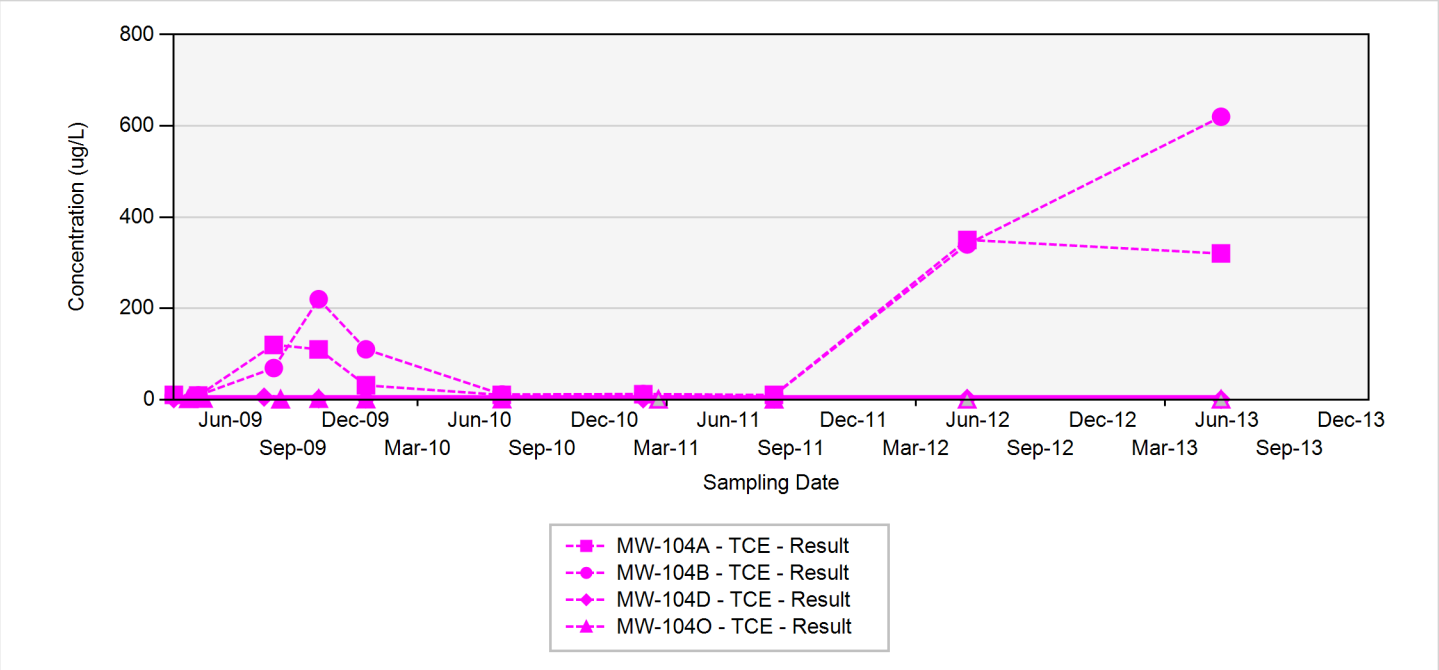
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-104





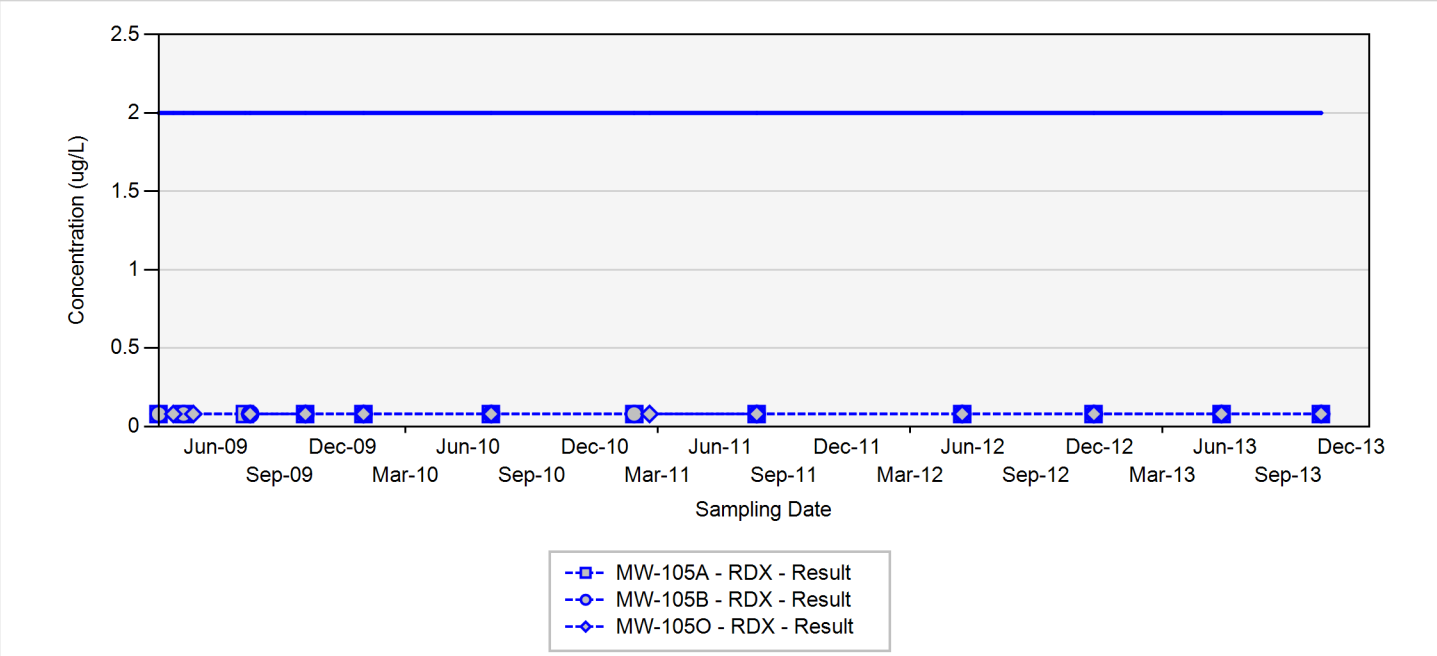
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

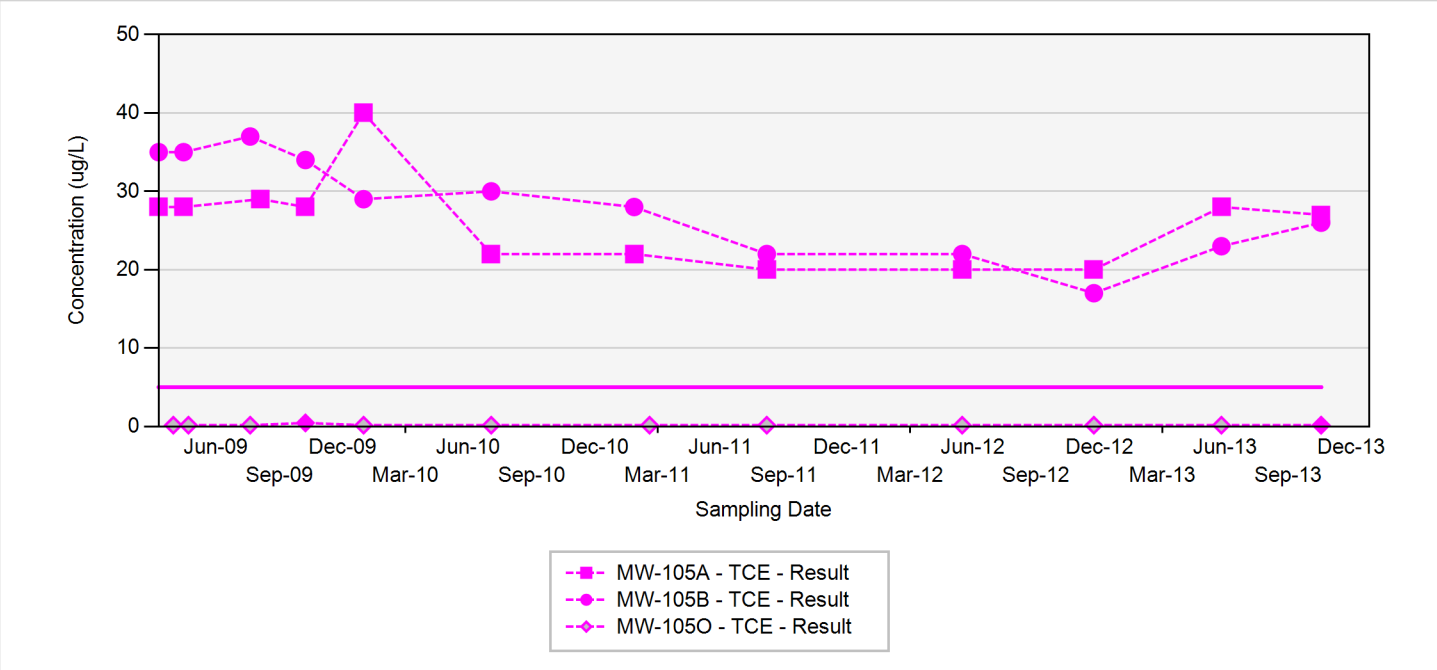
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-105





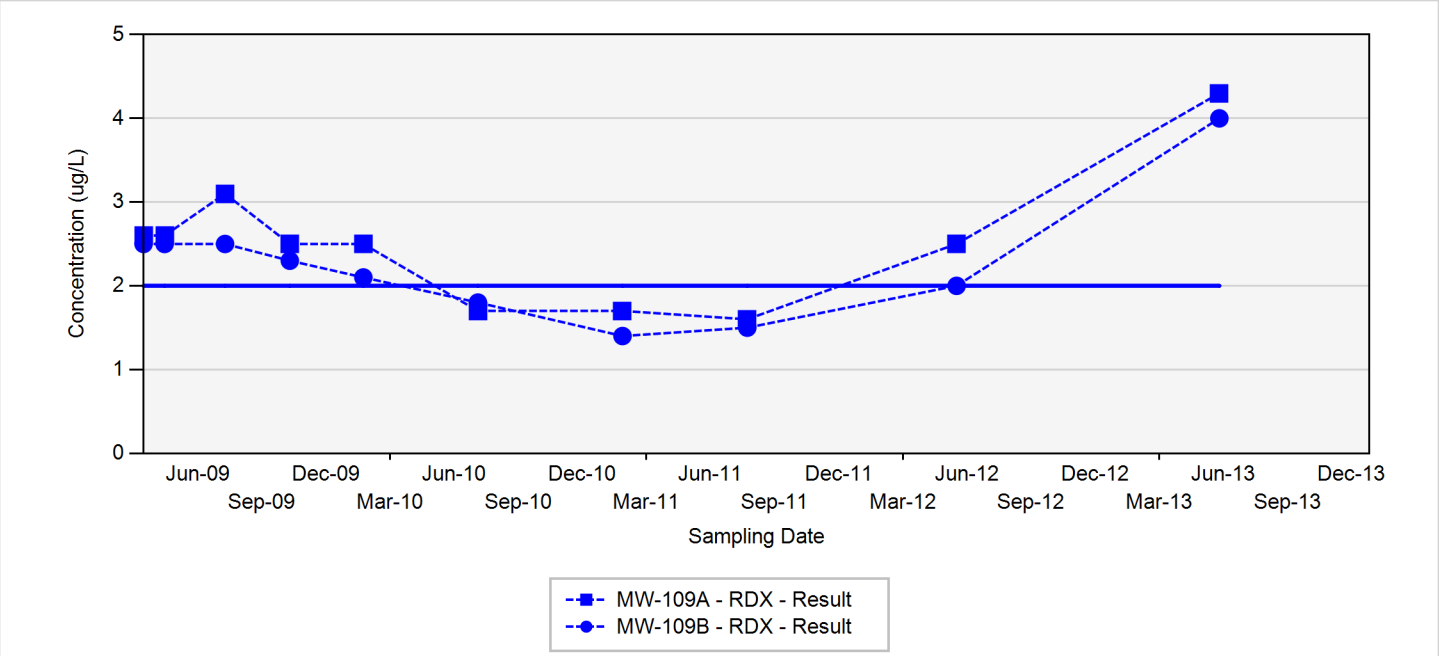
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

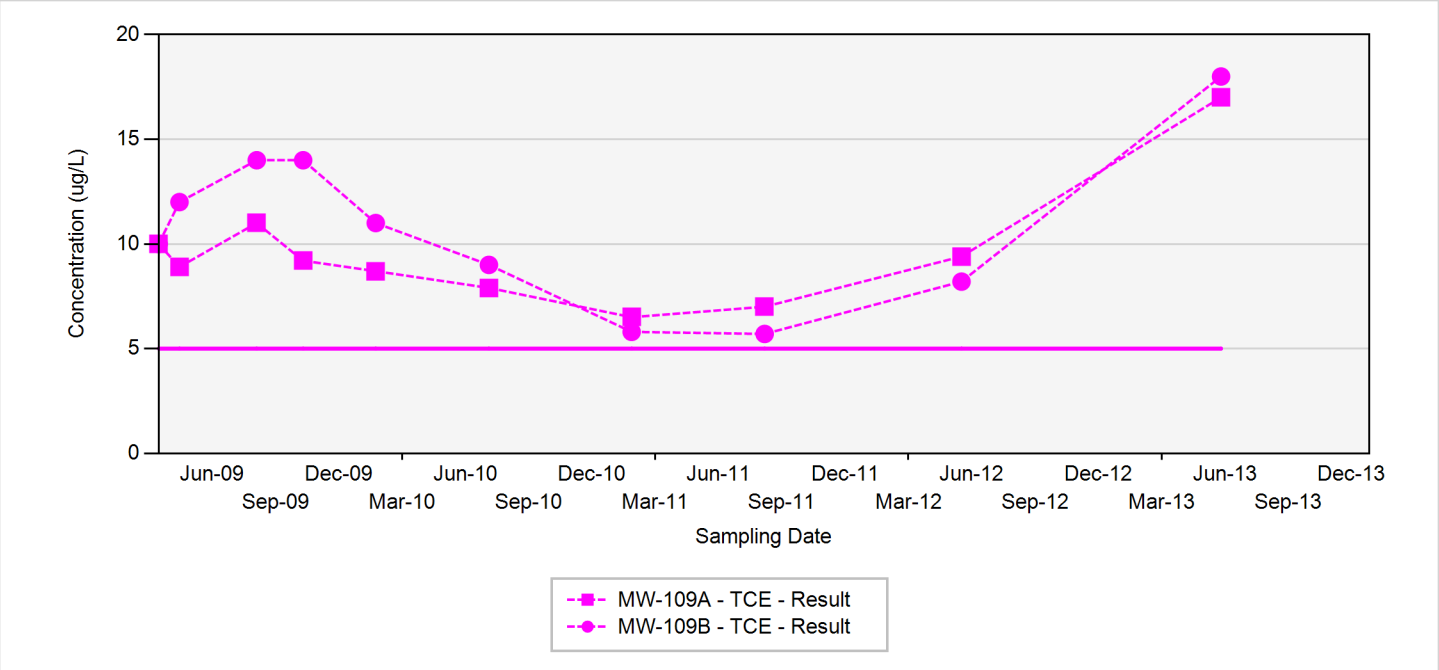
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-109





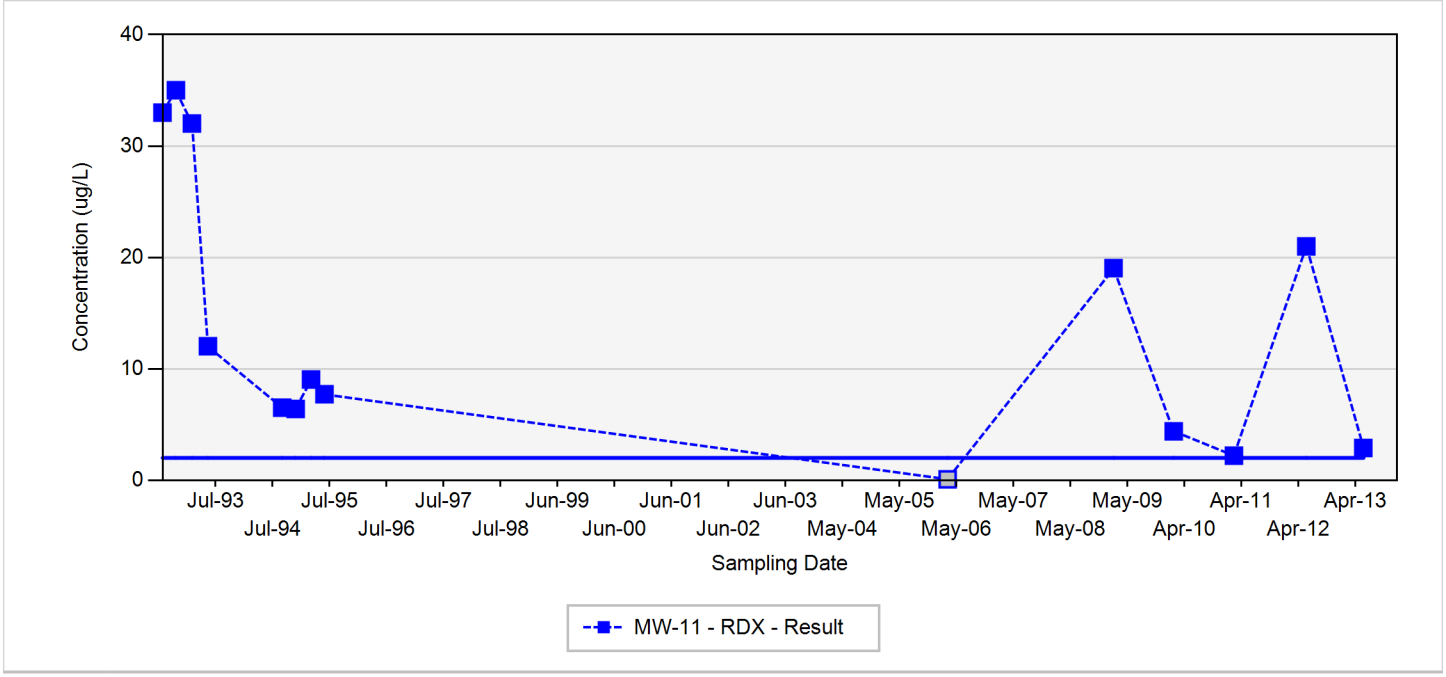
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

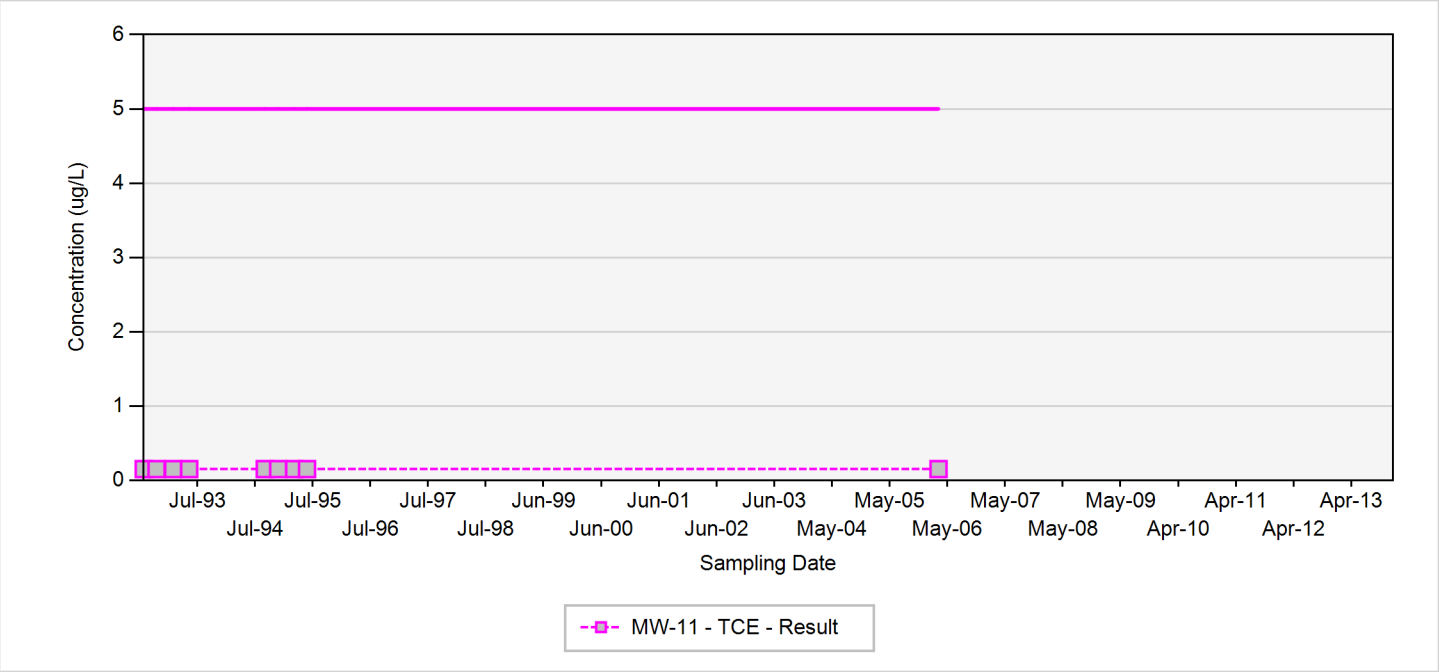
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-11





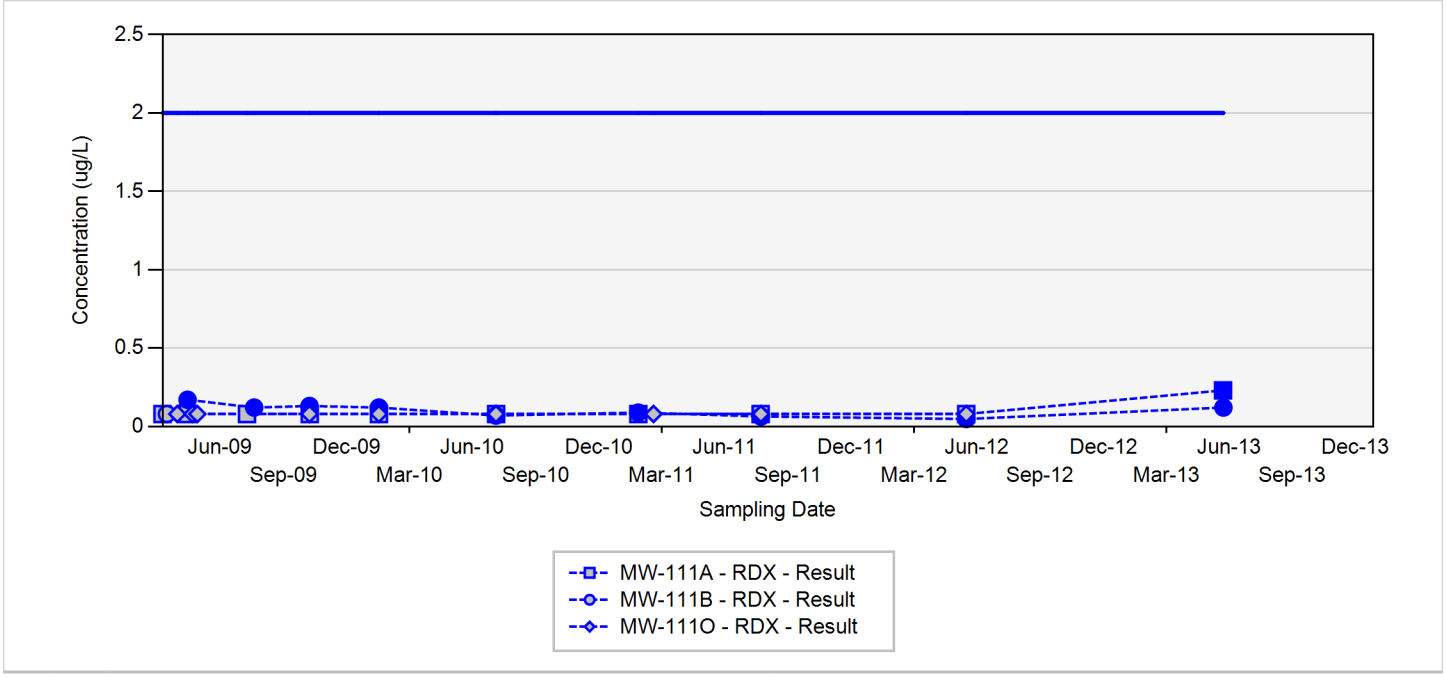
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

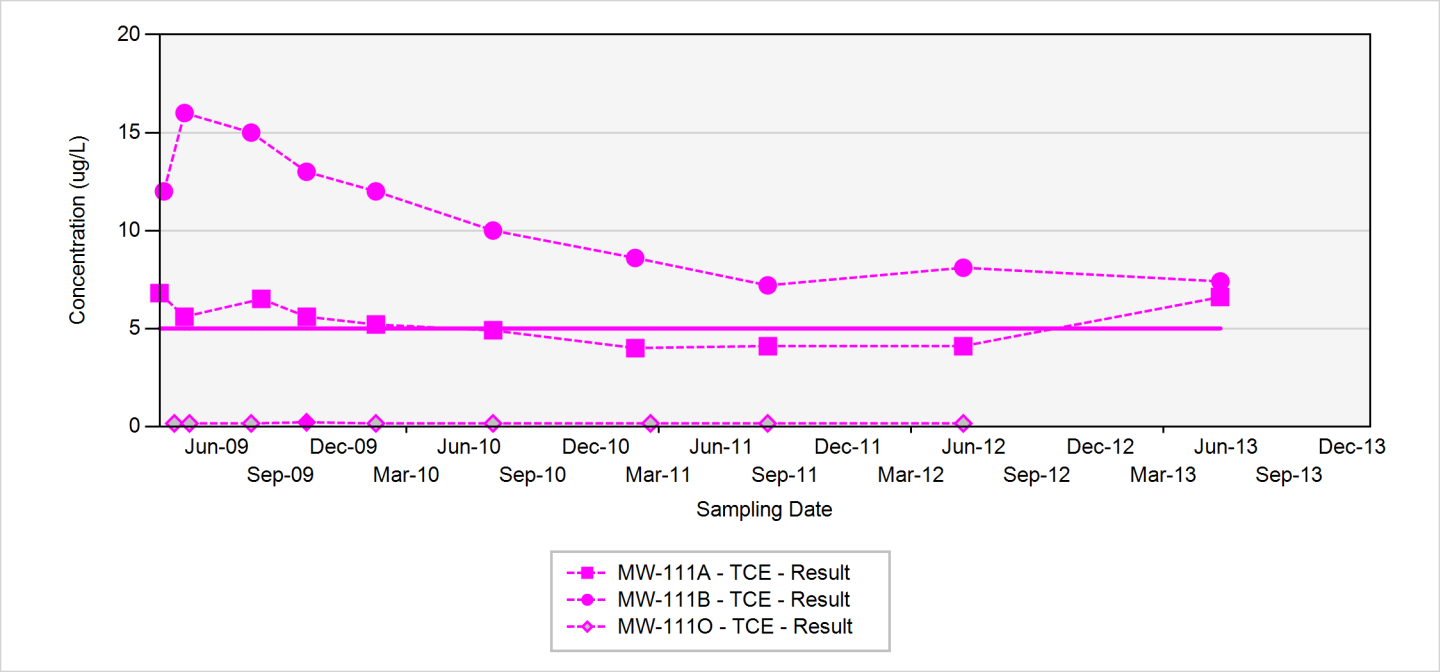
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-111





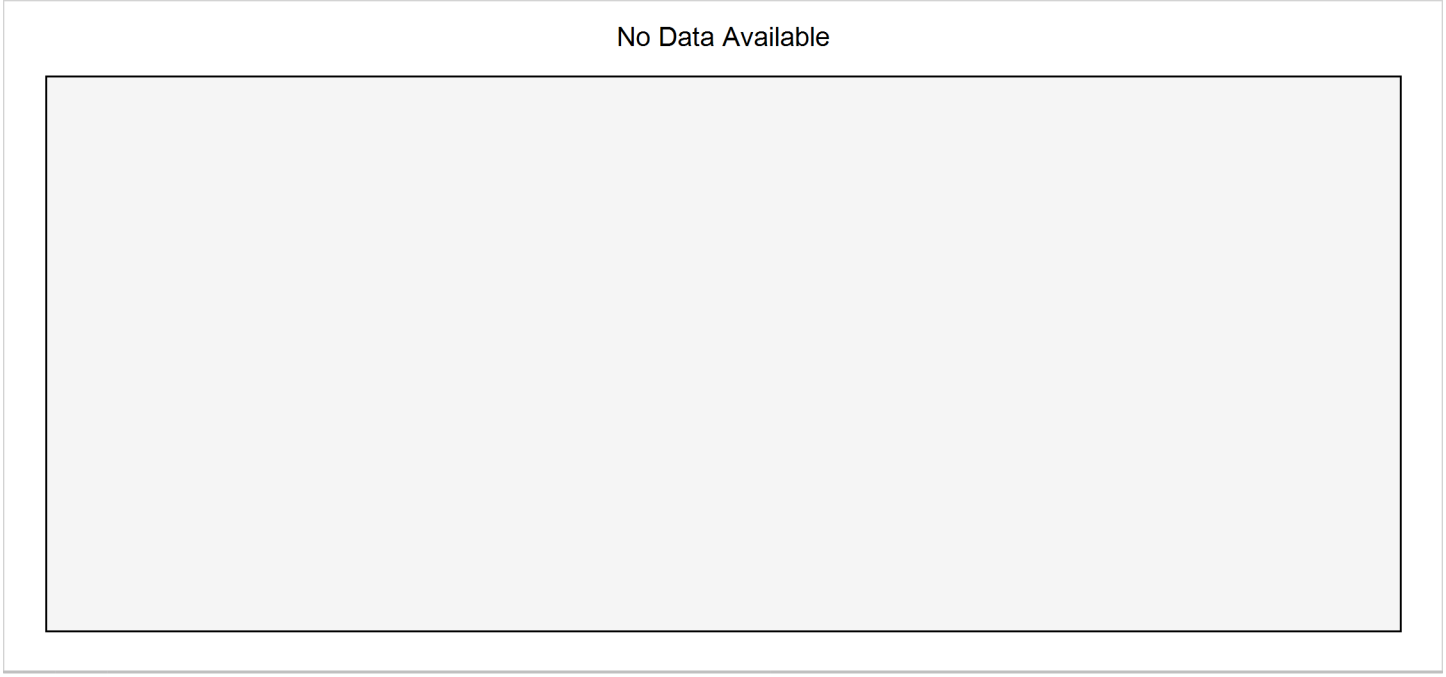
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

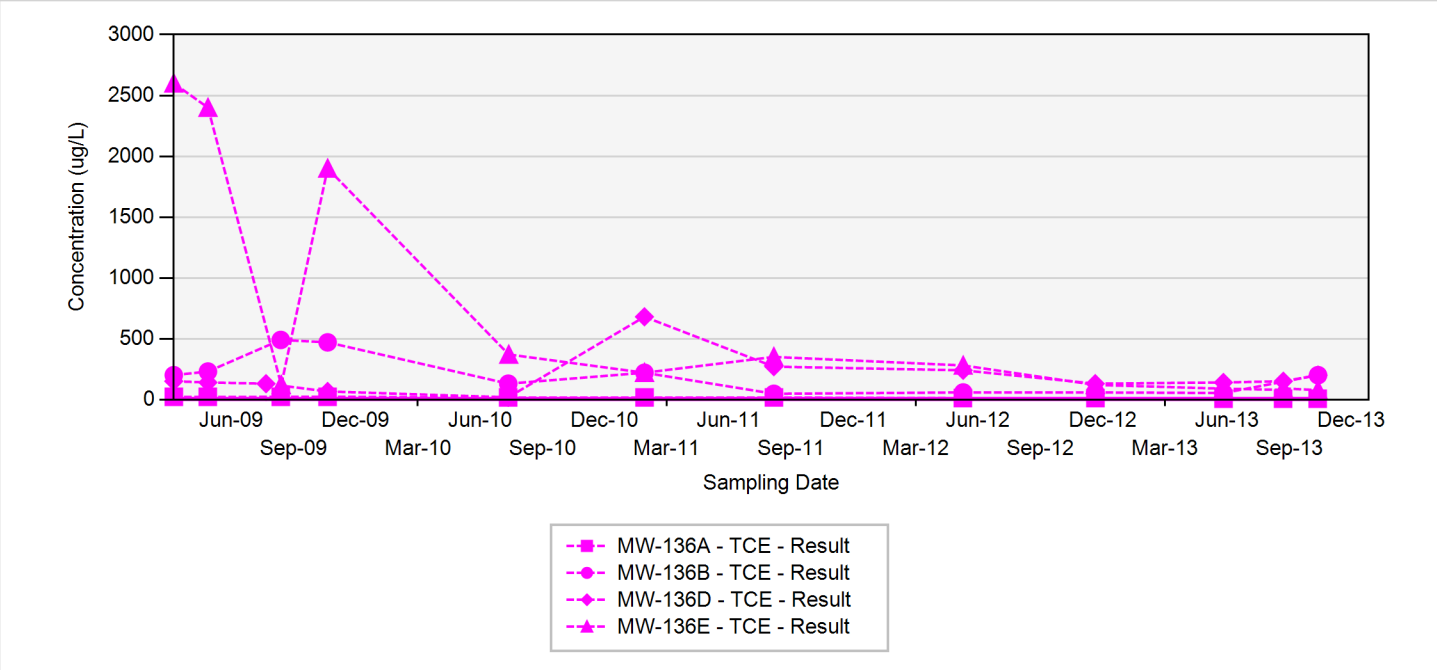
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-136





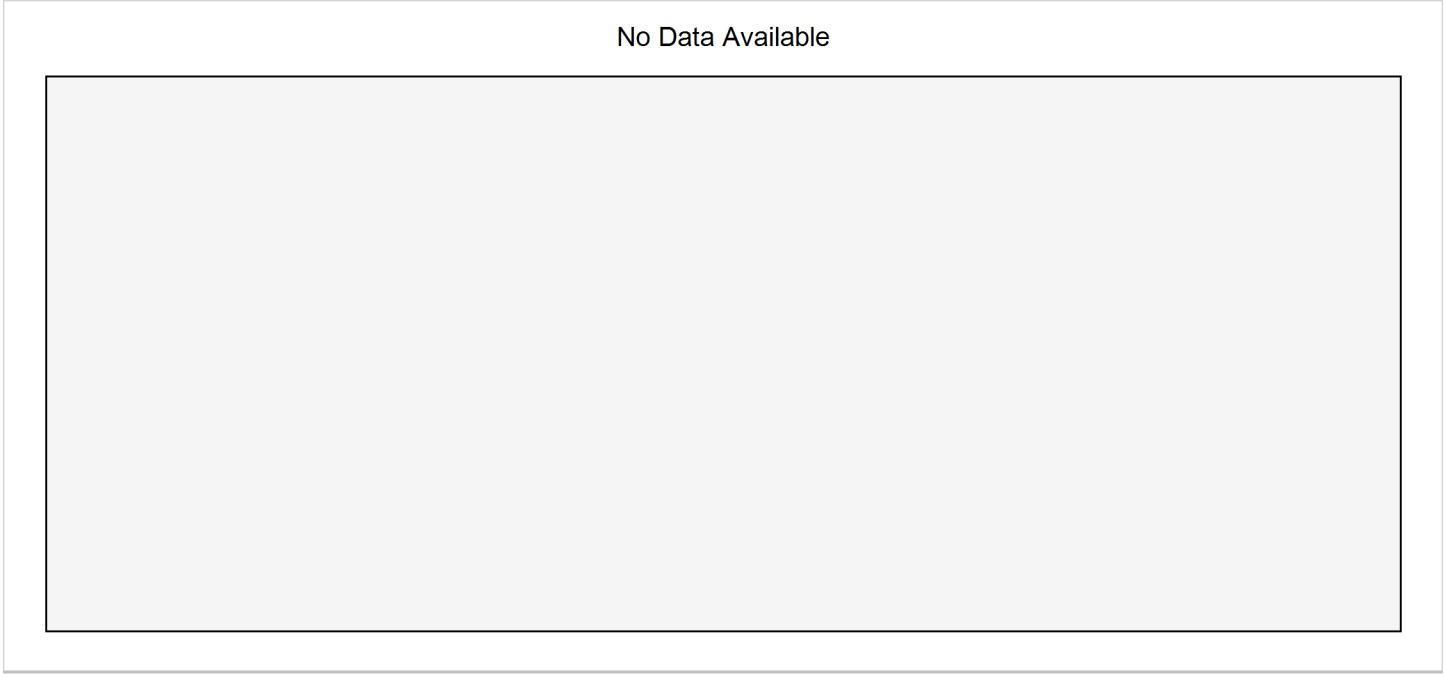
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

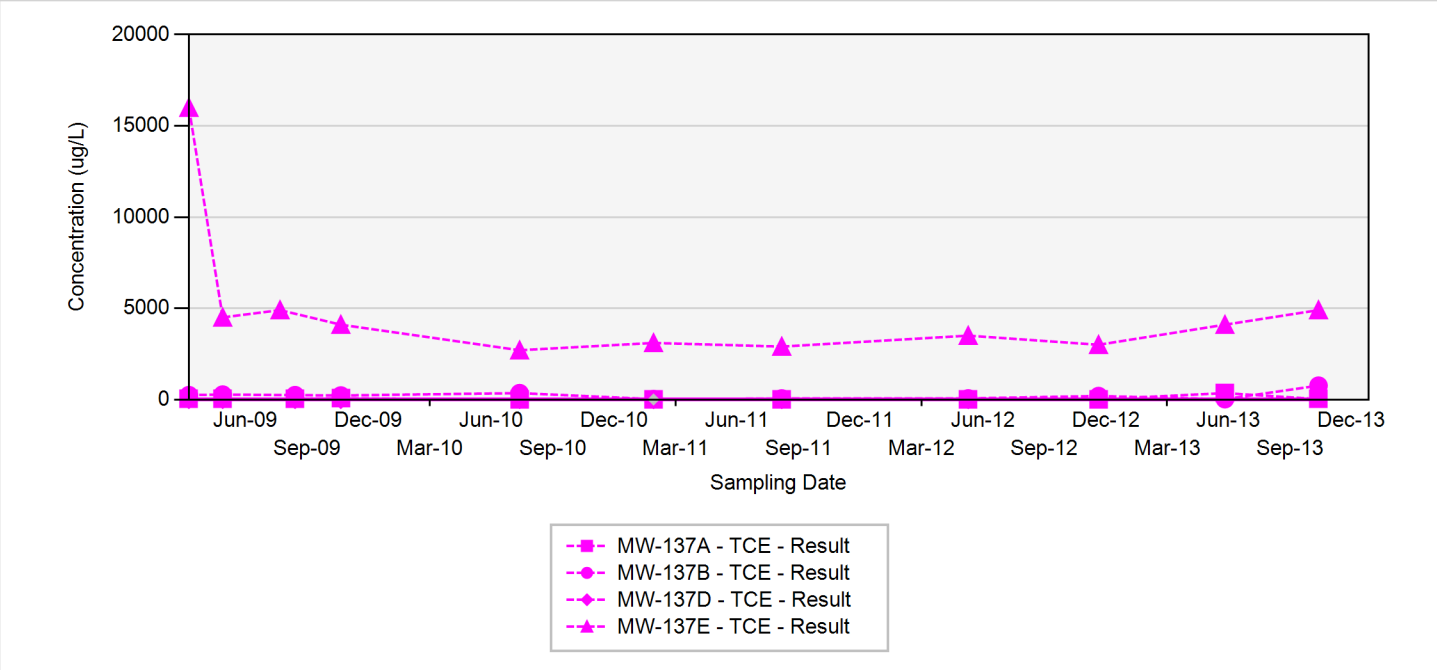
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-137





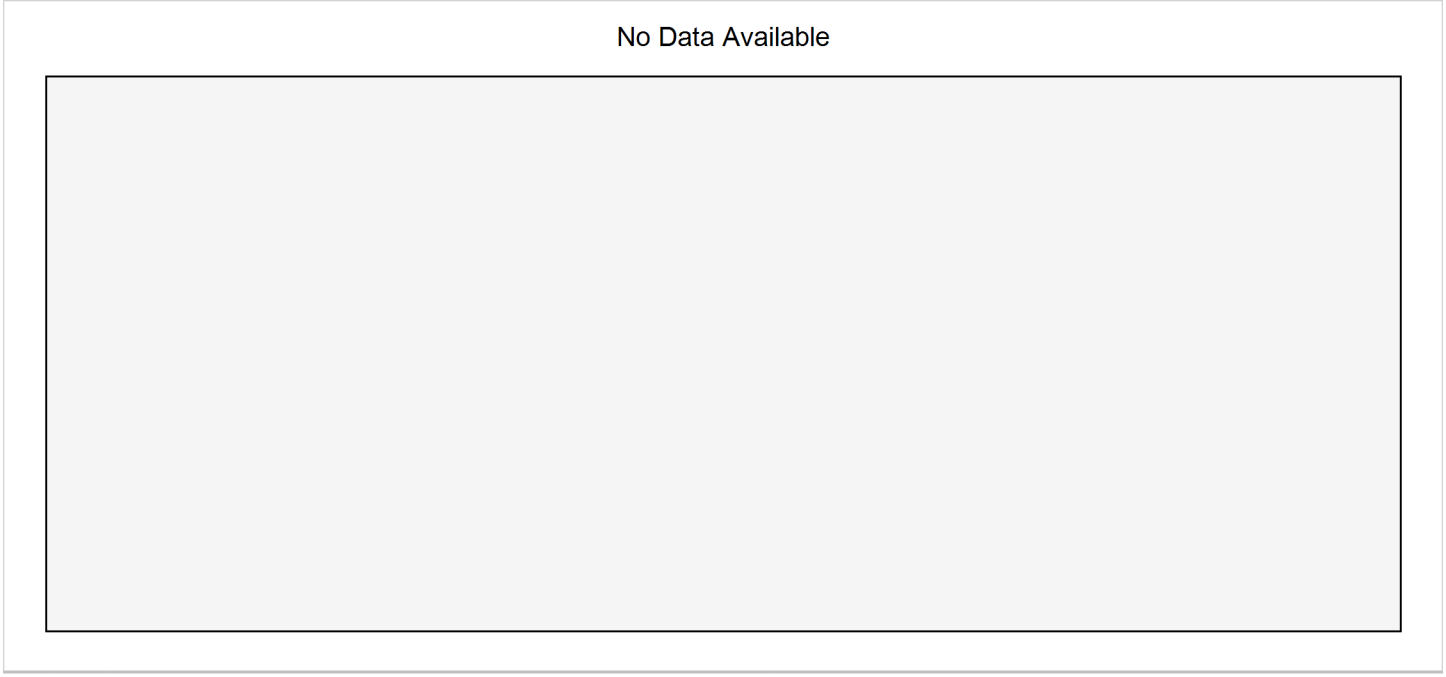
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

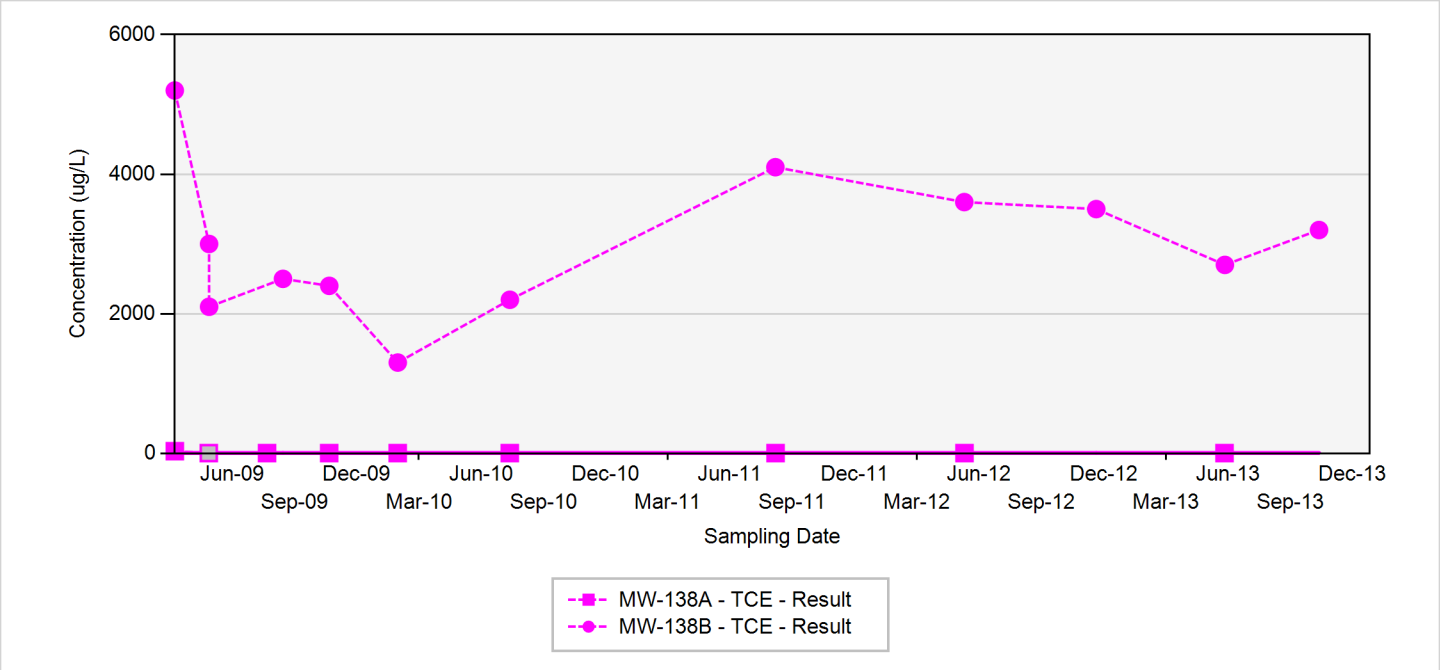
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior
Plume Monitoring Wells

MW-138





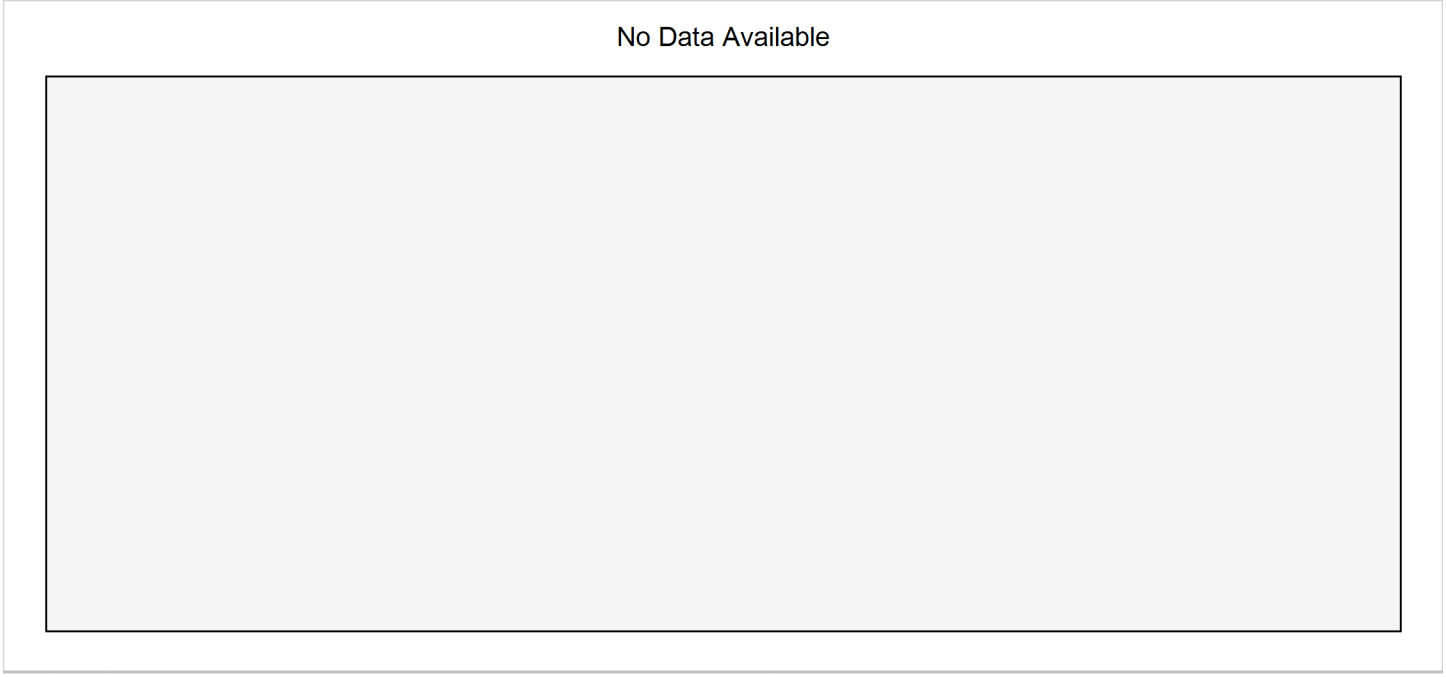
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

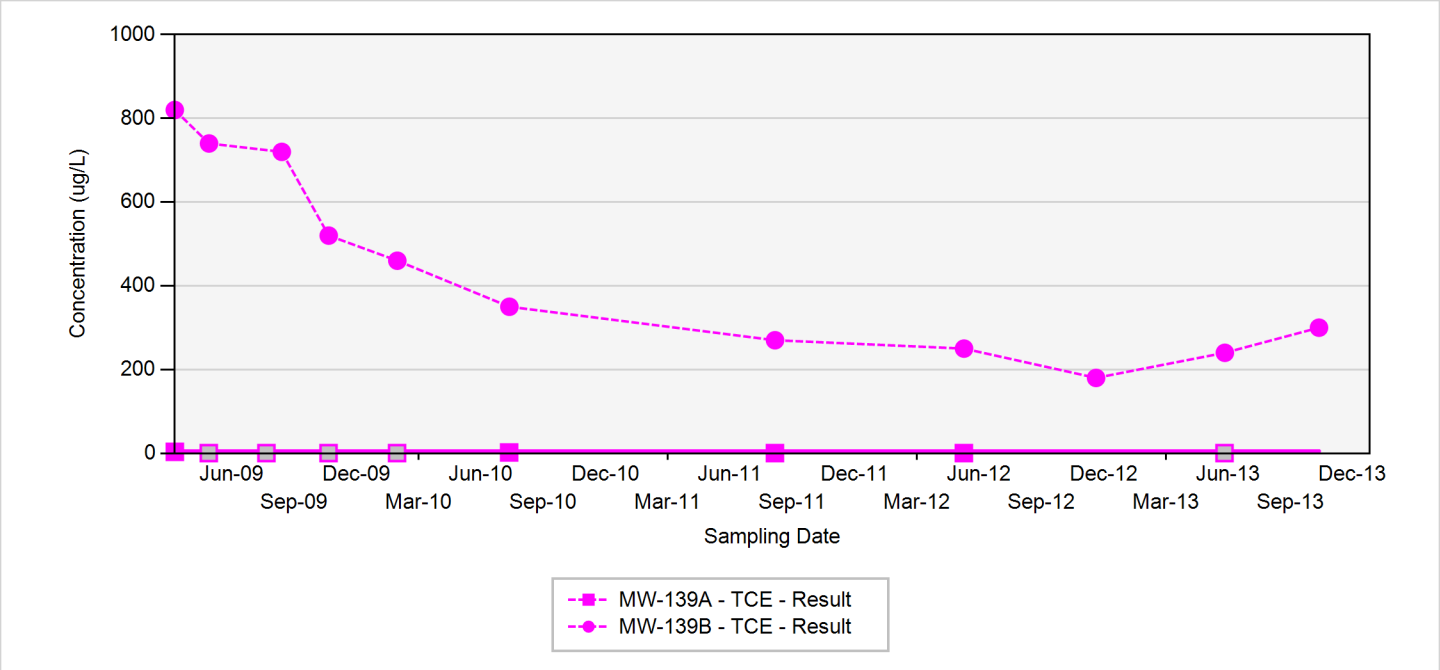
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-139





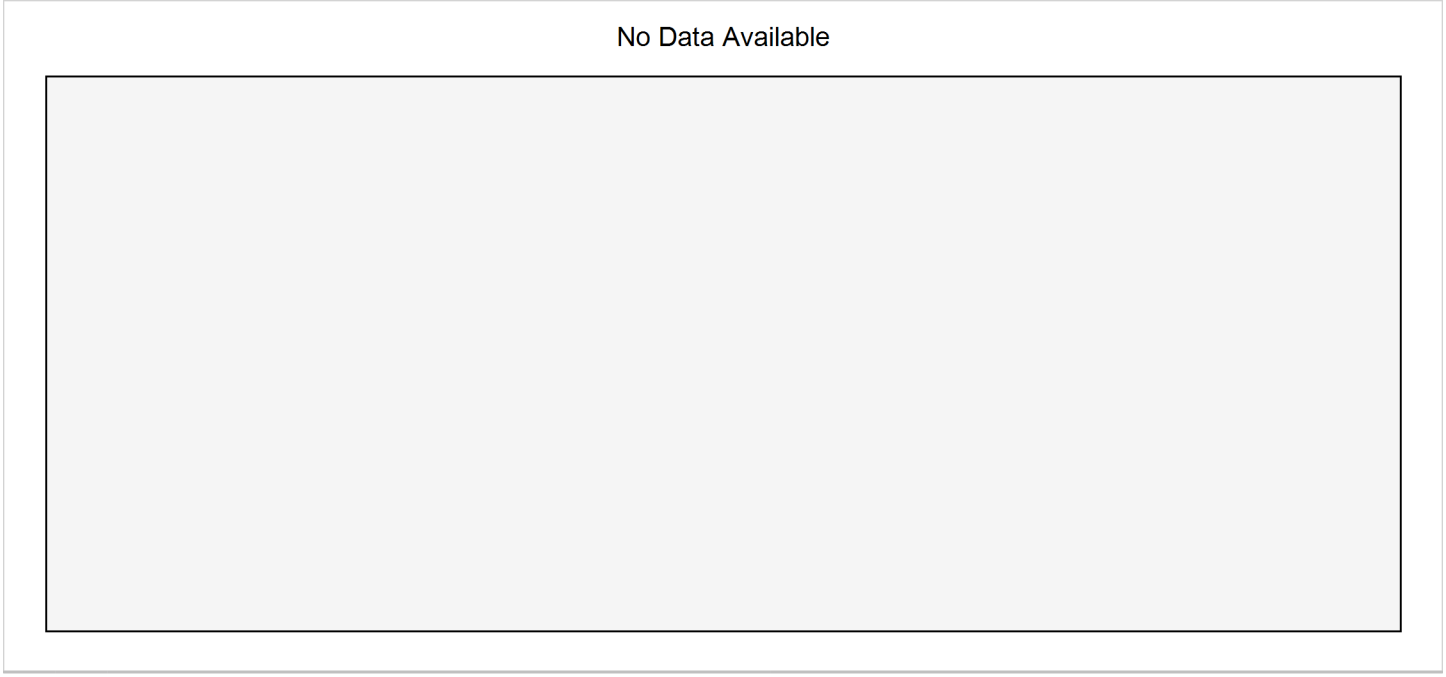
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

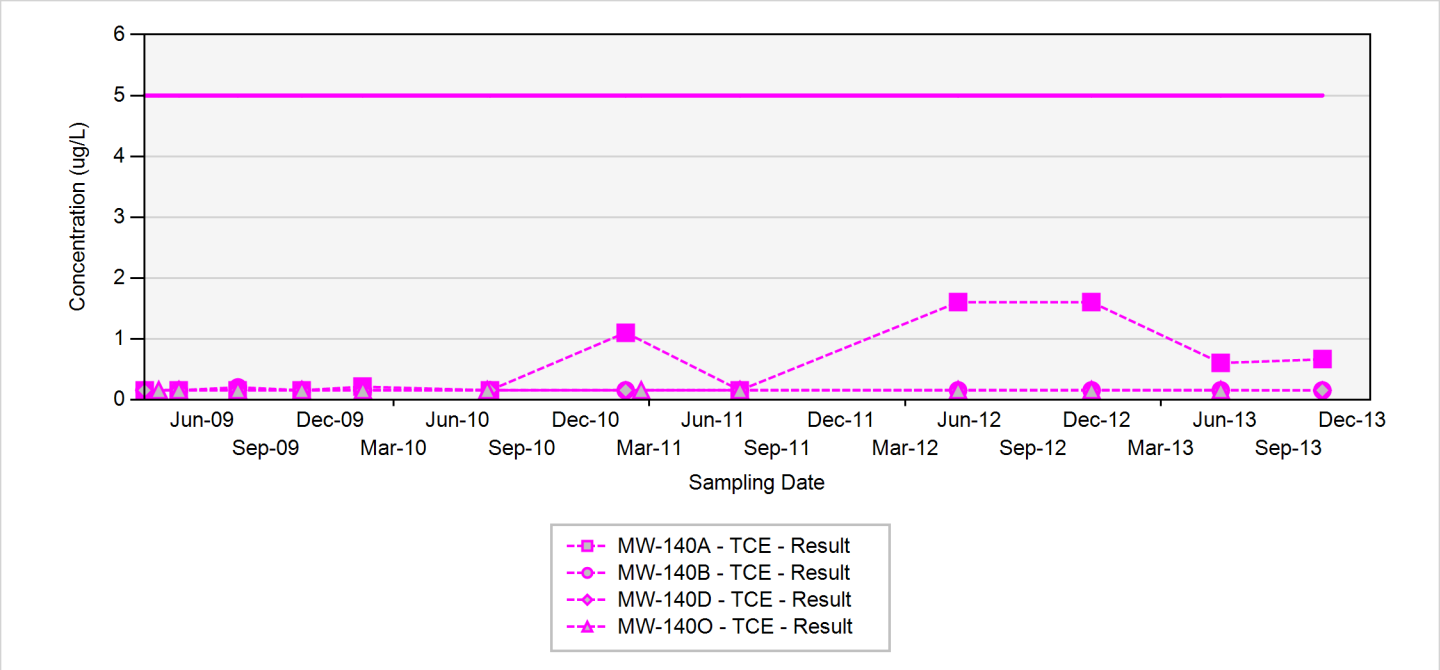
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-140





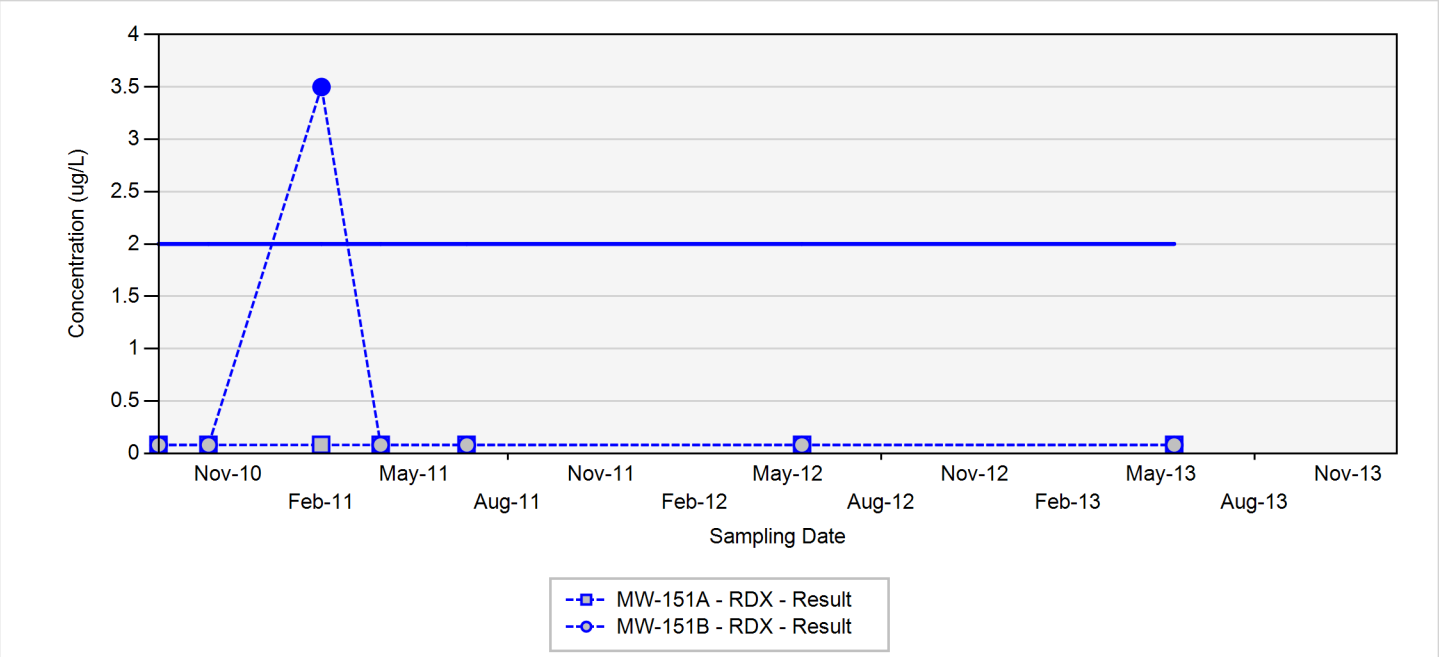
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

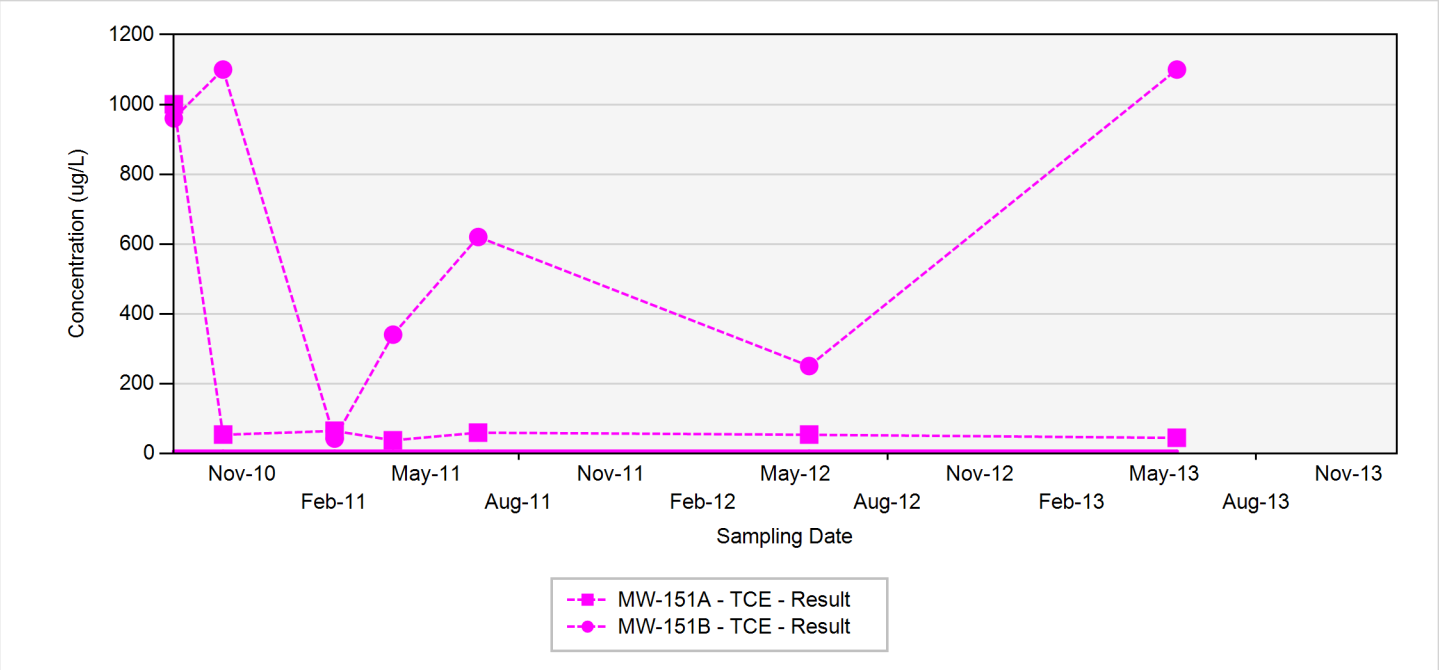
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-151





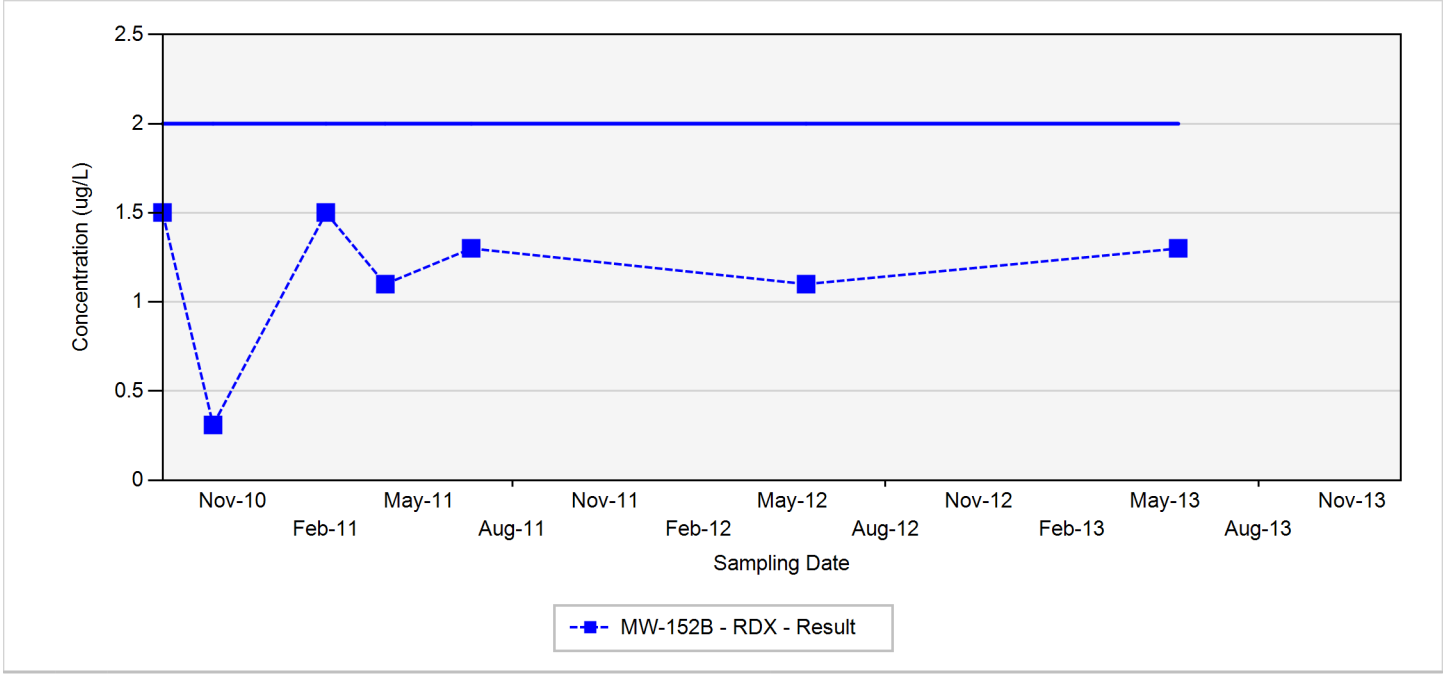
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

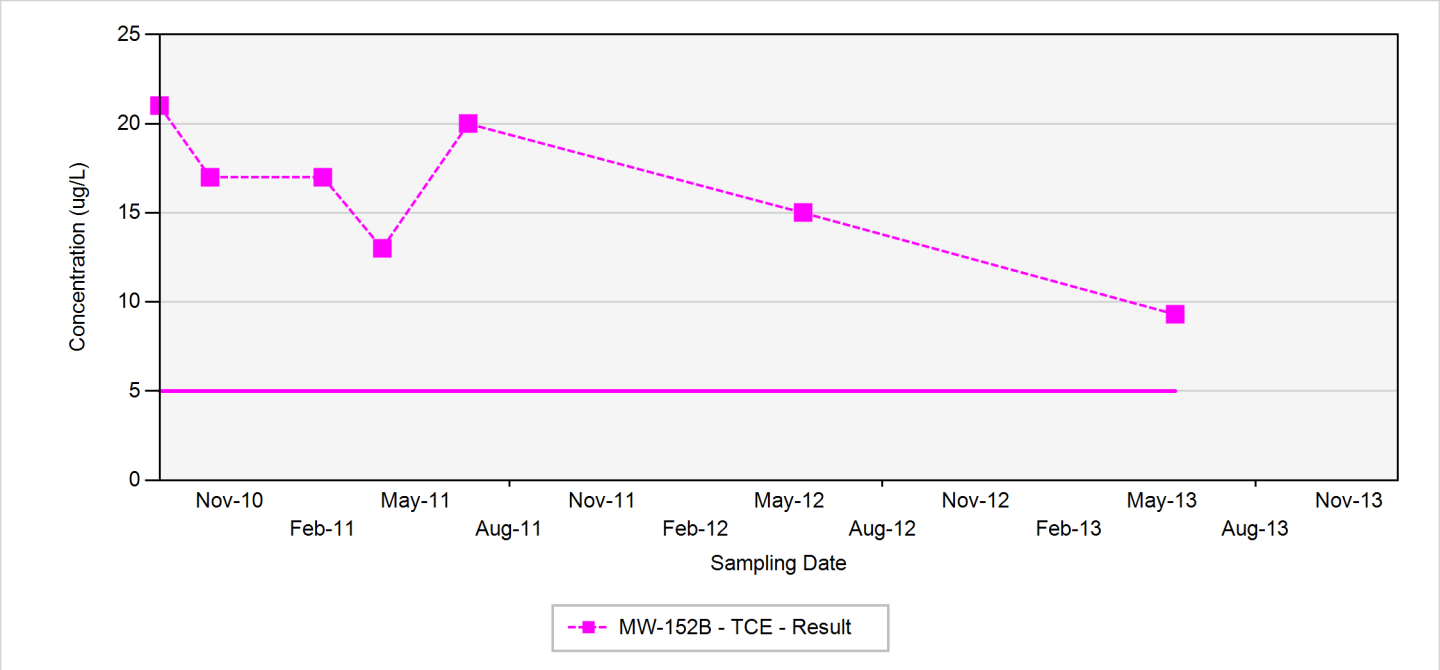
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-152





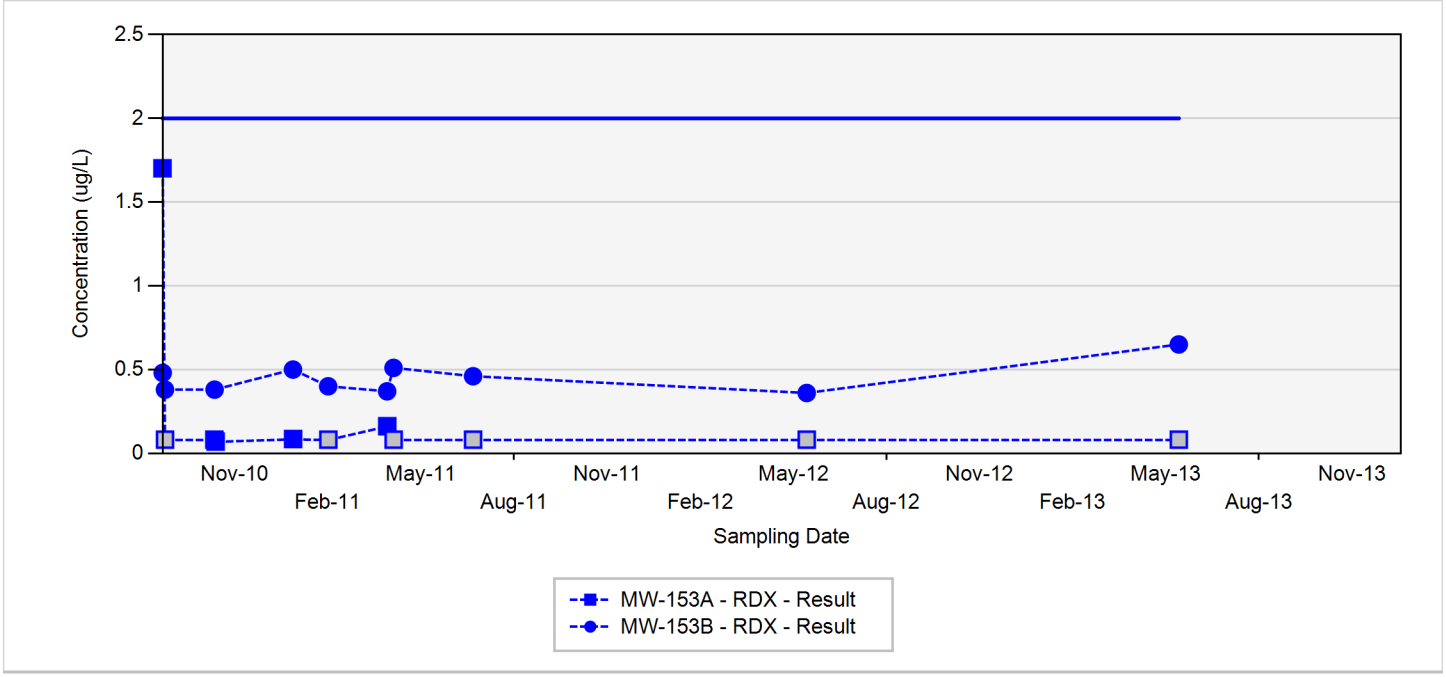
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

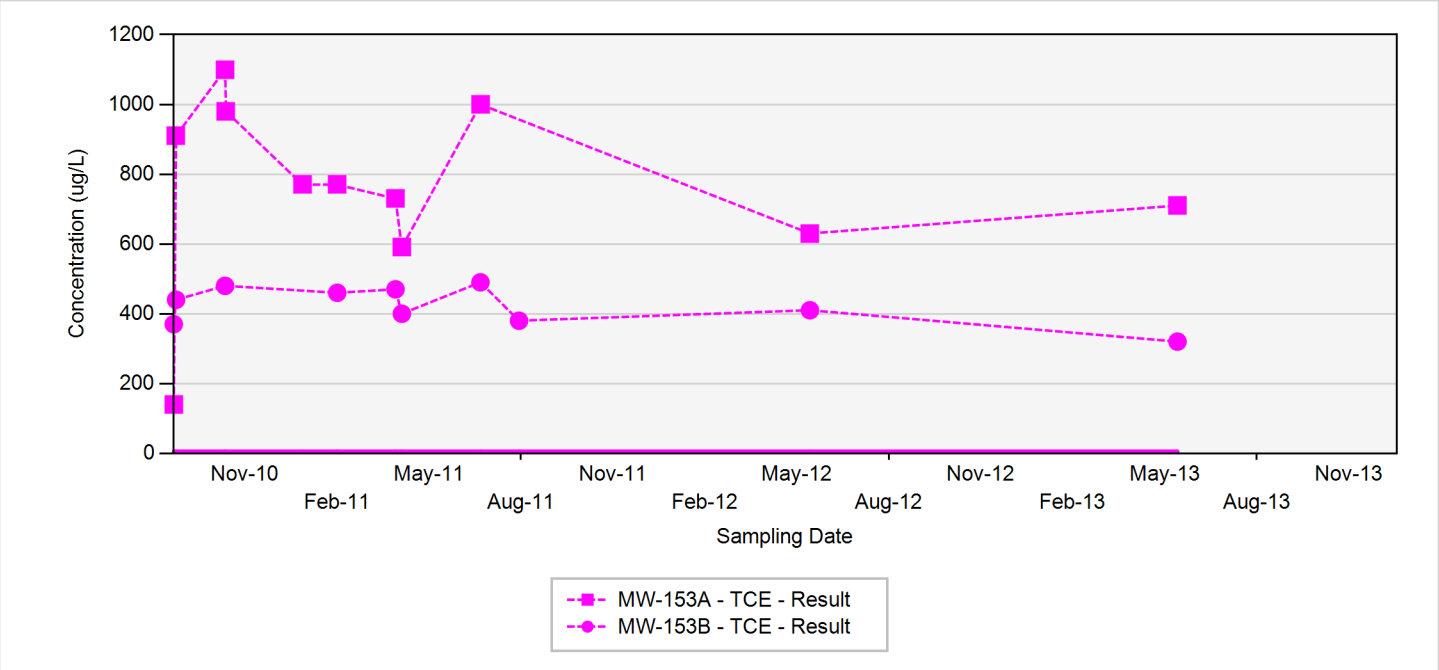
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-153





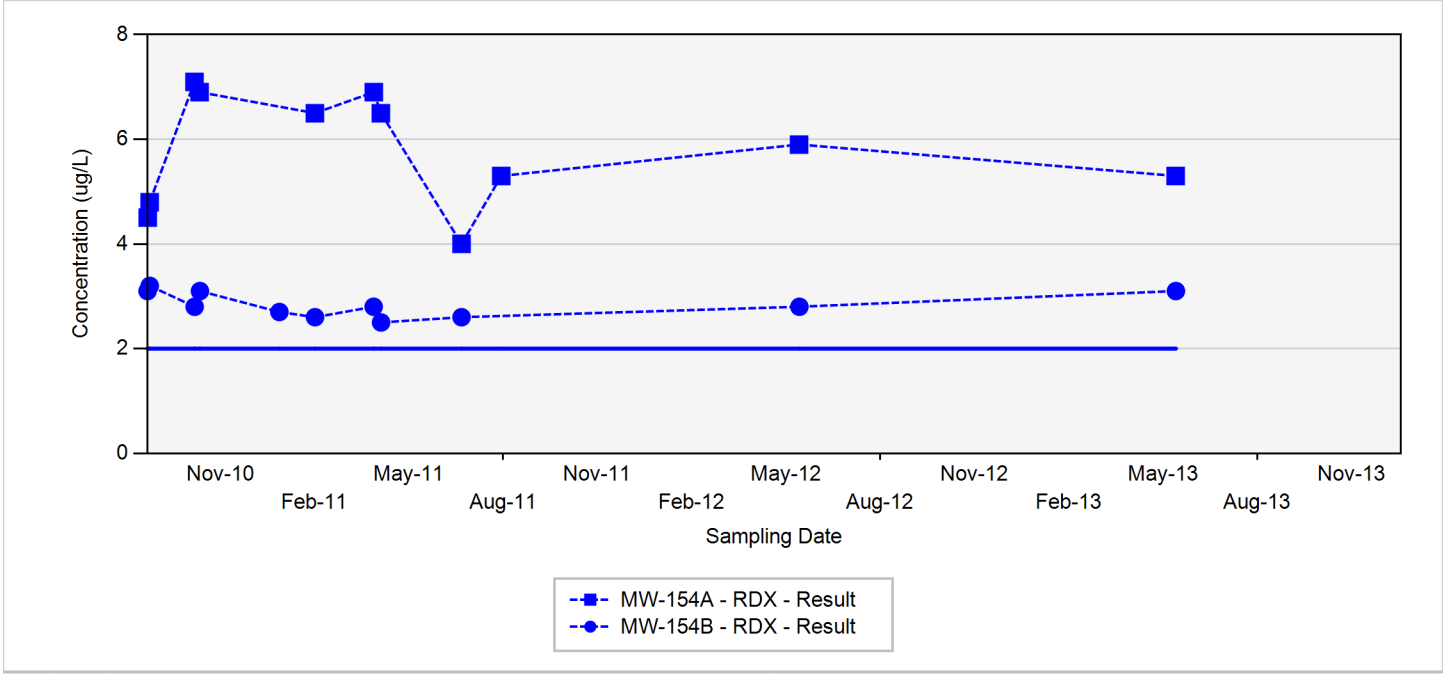
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

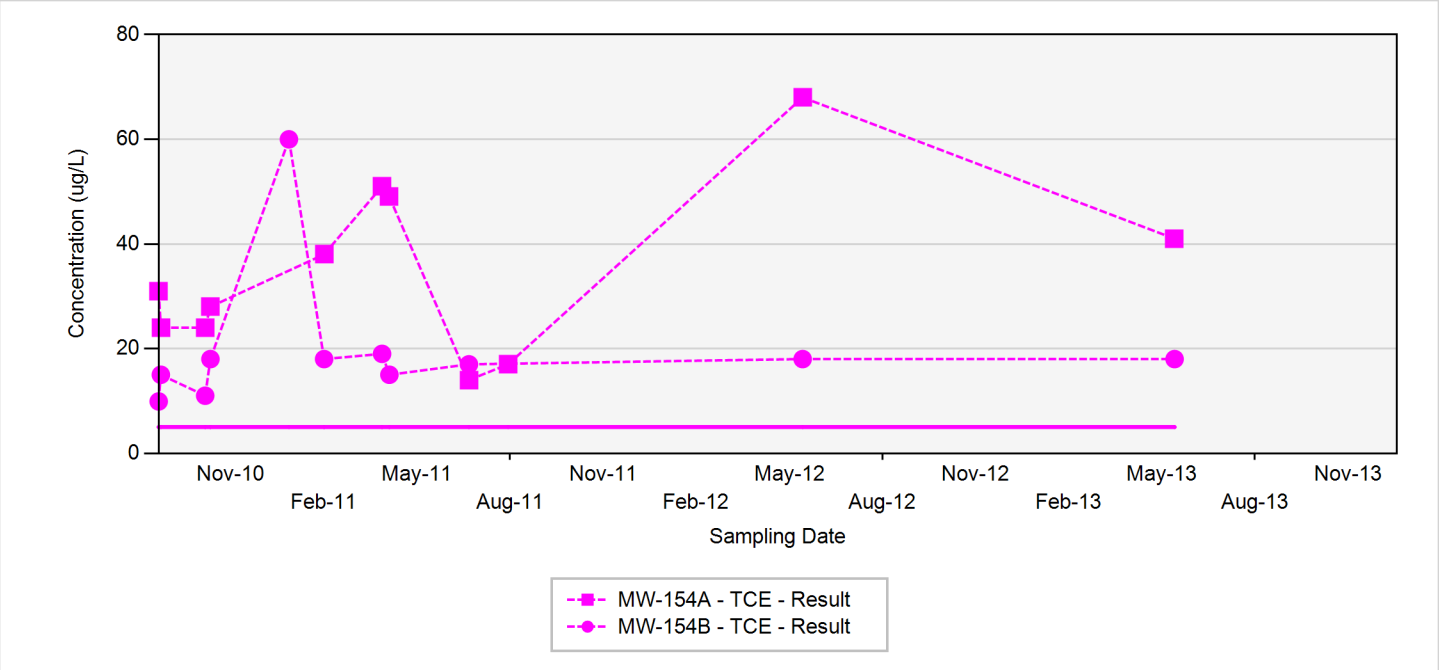
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-154





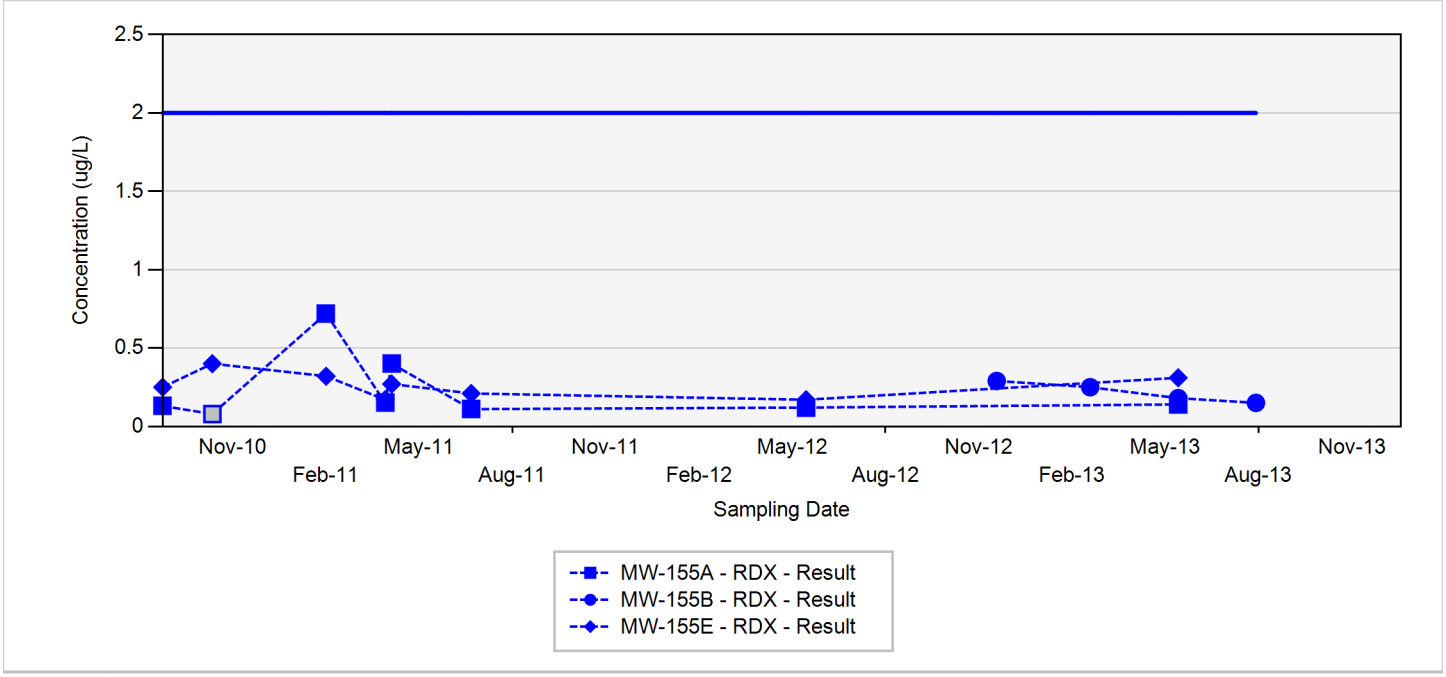
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

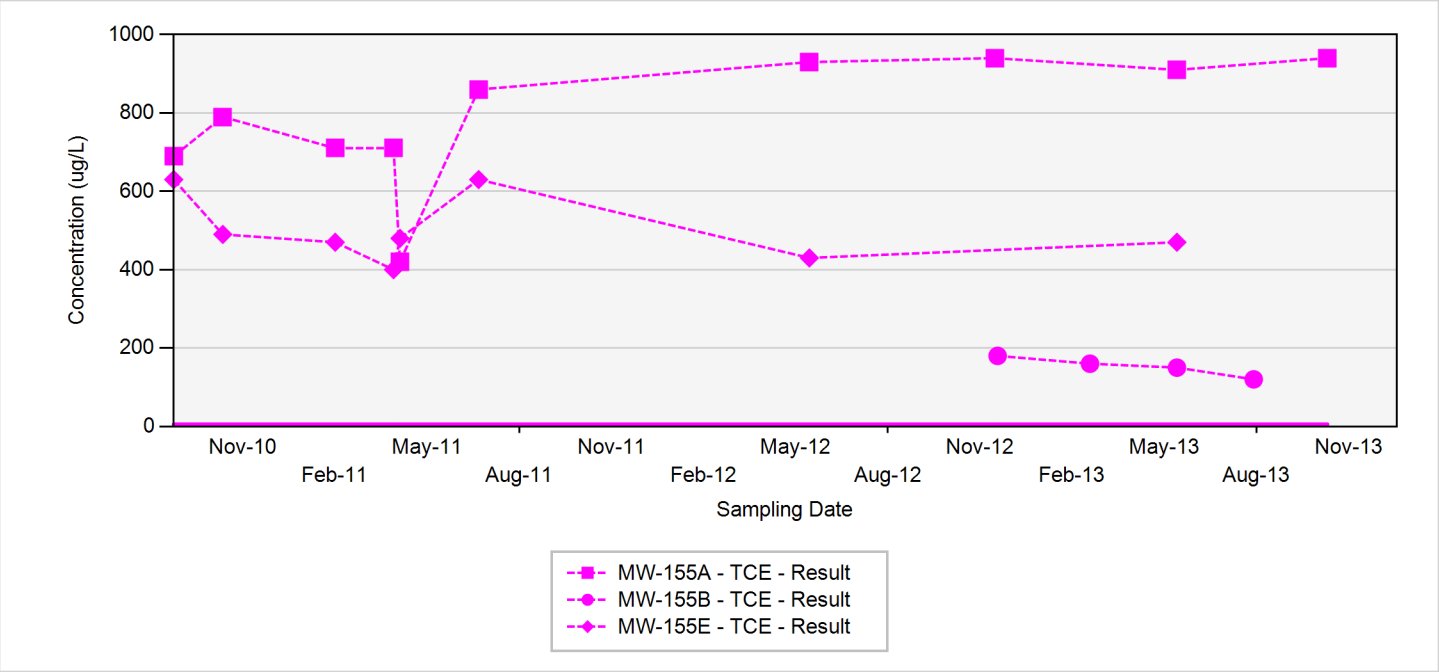
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-155





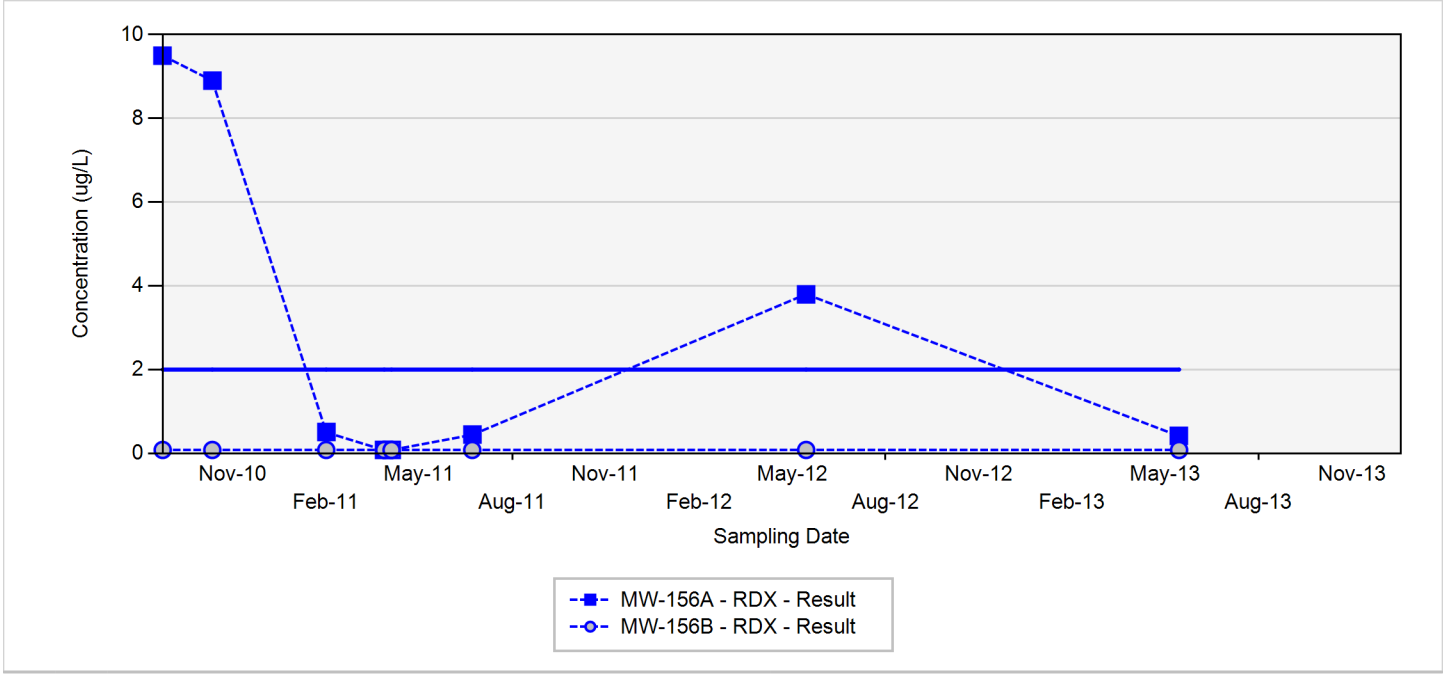
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

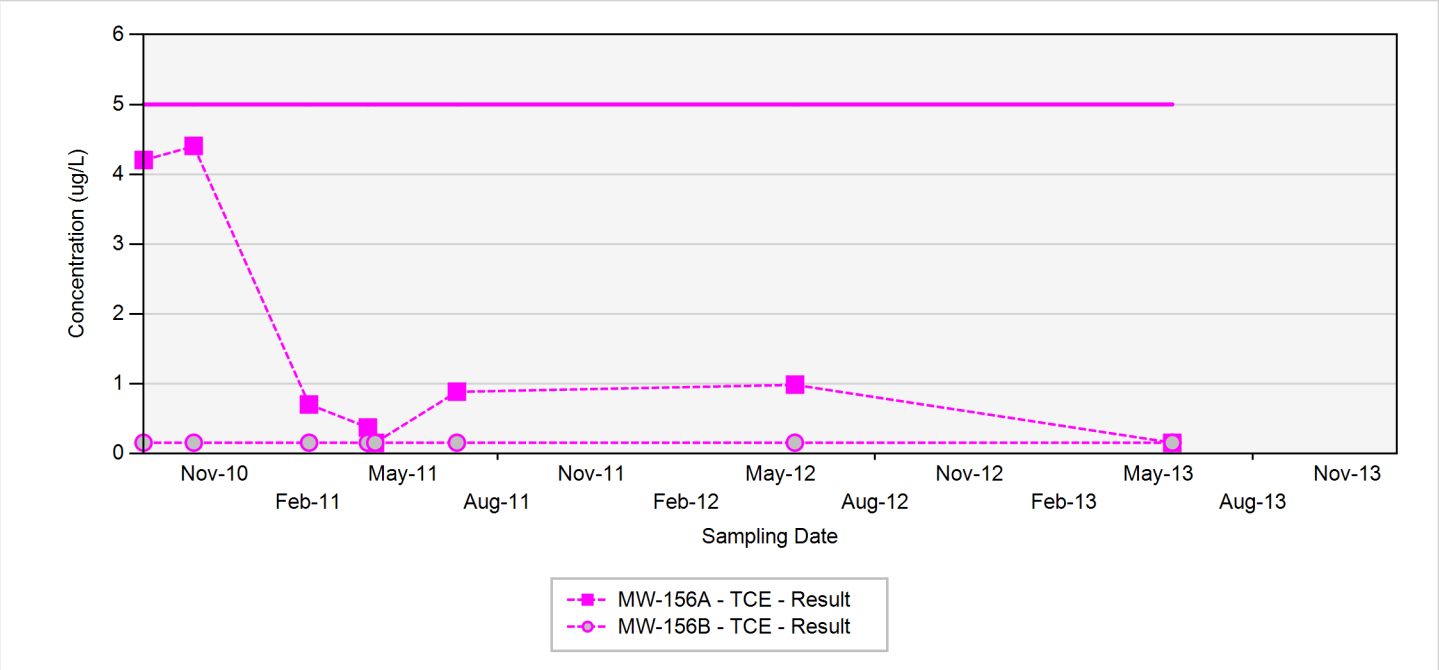
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-156





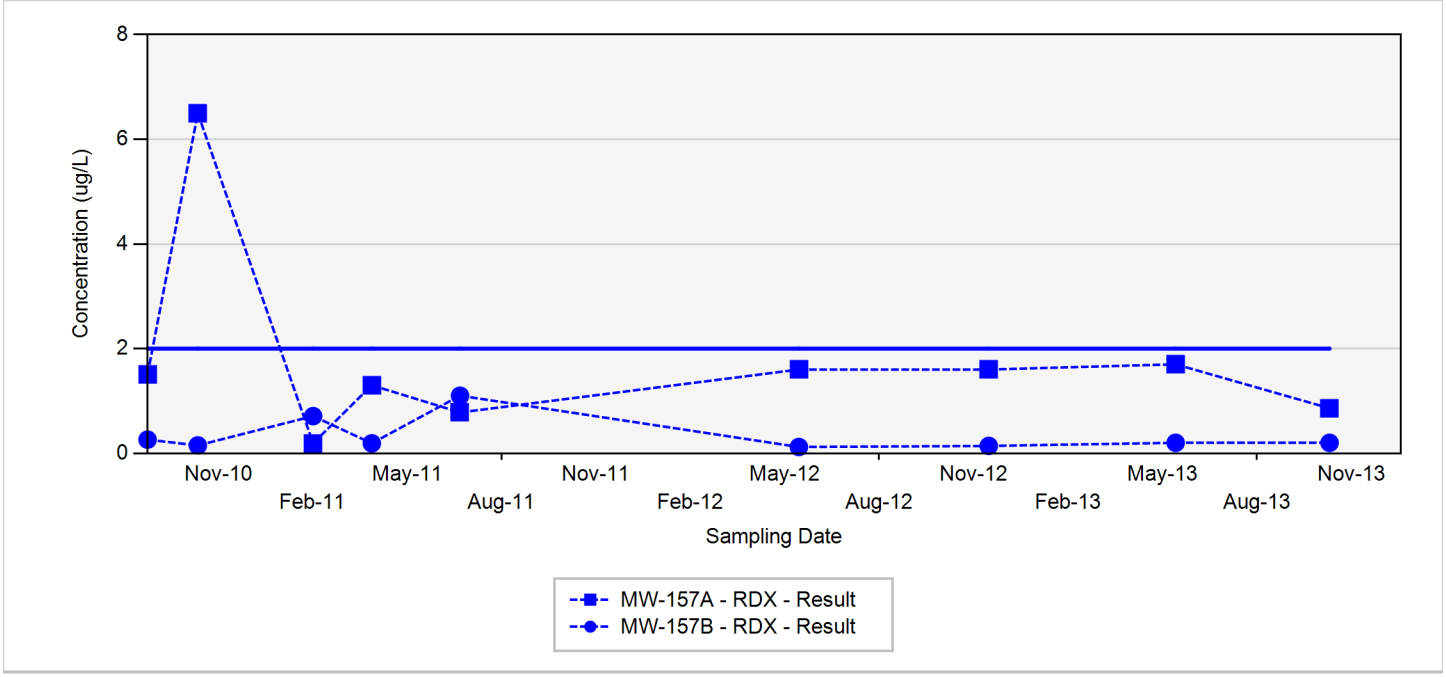
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

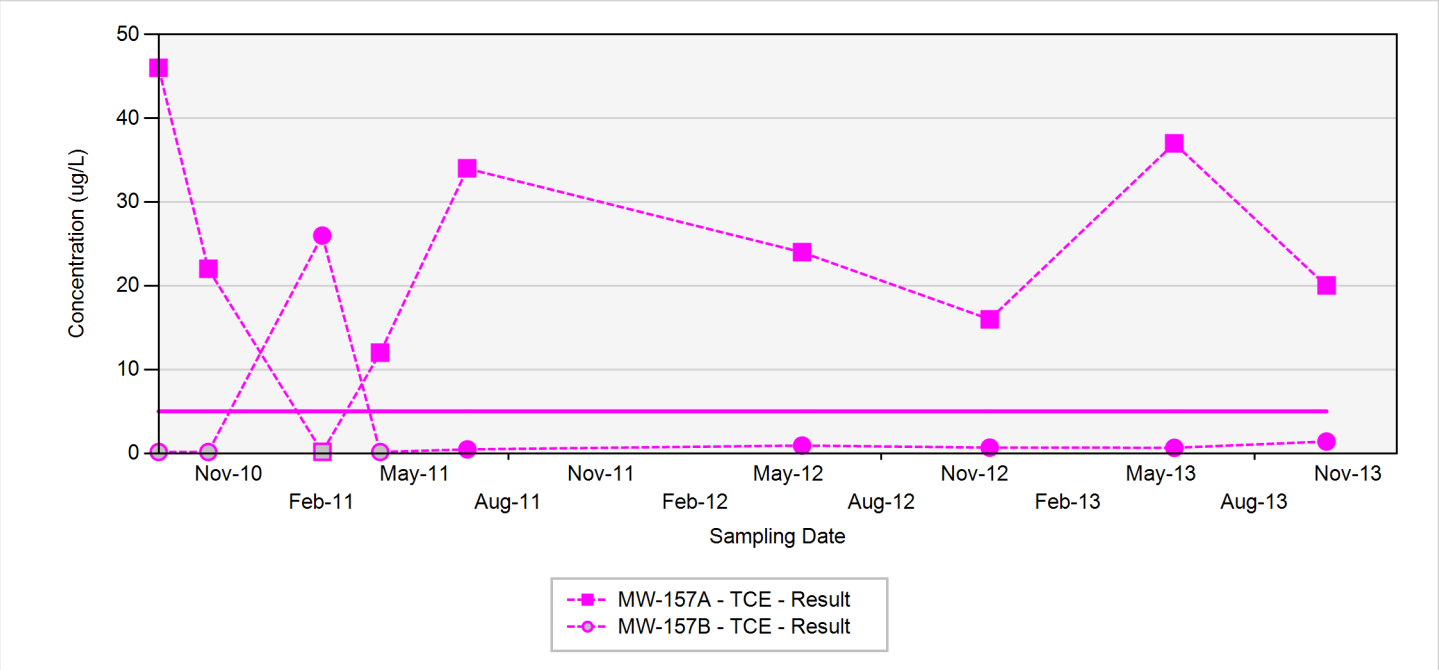
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-157





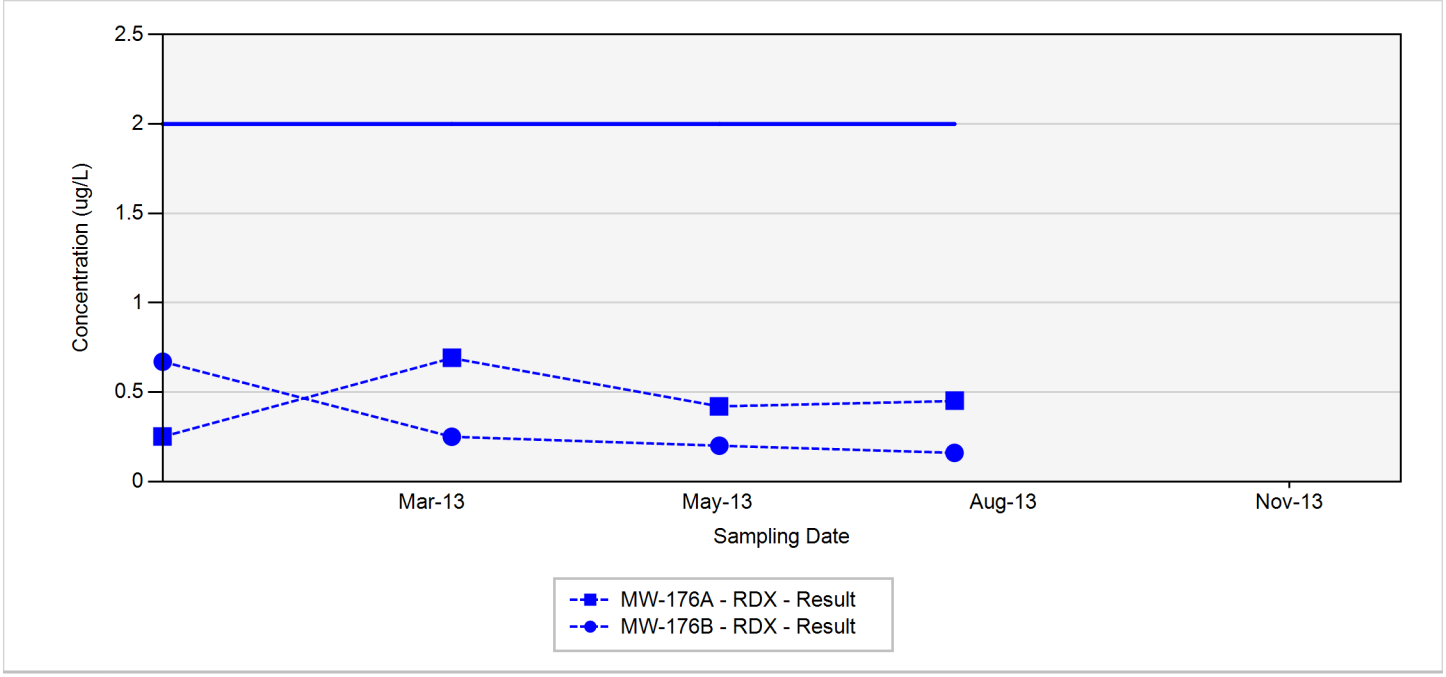
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

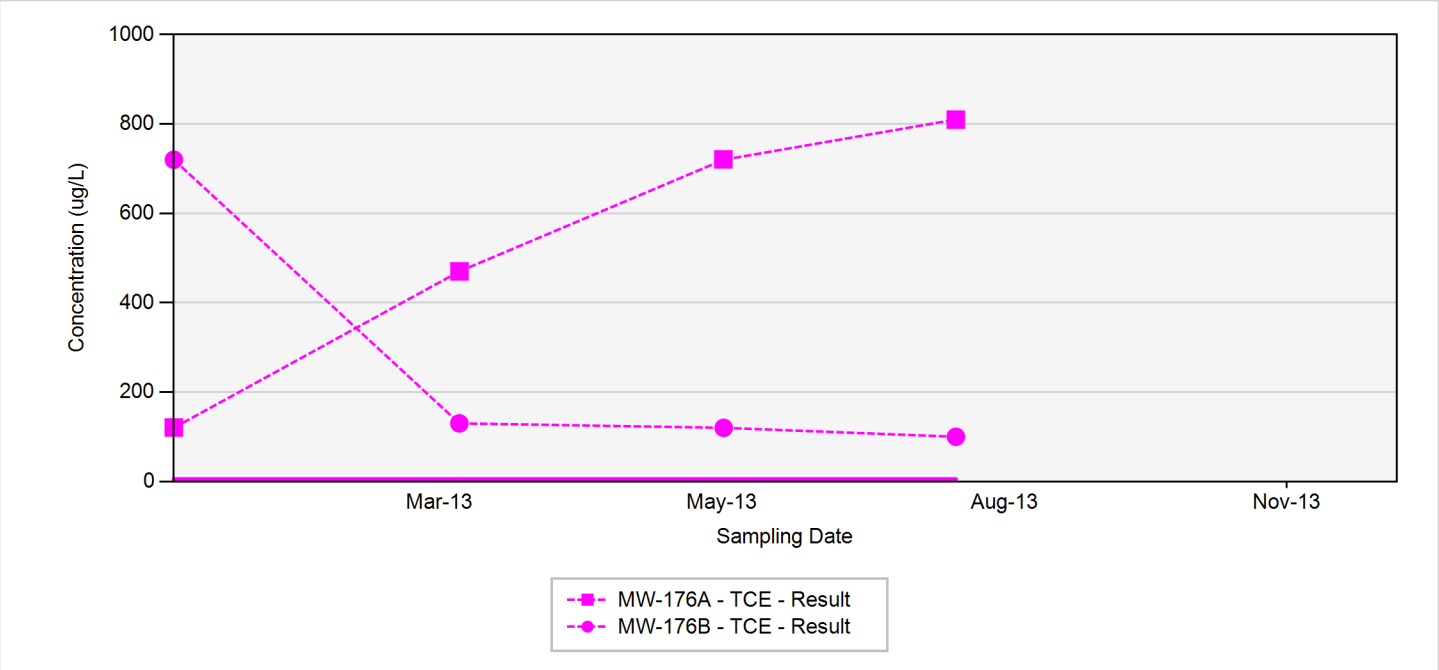
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-176





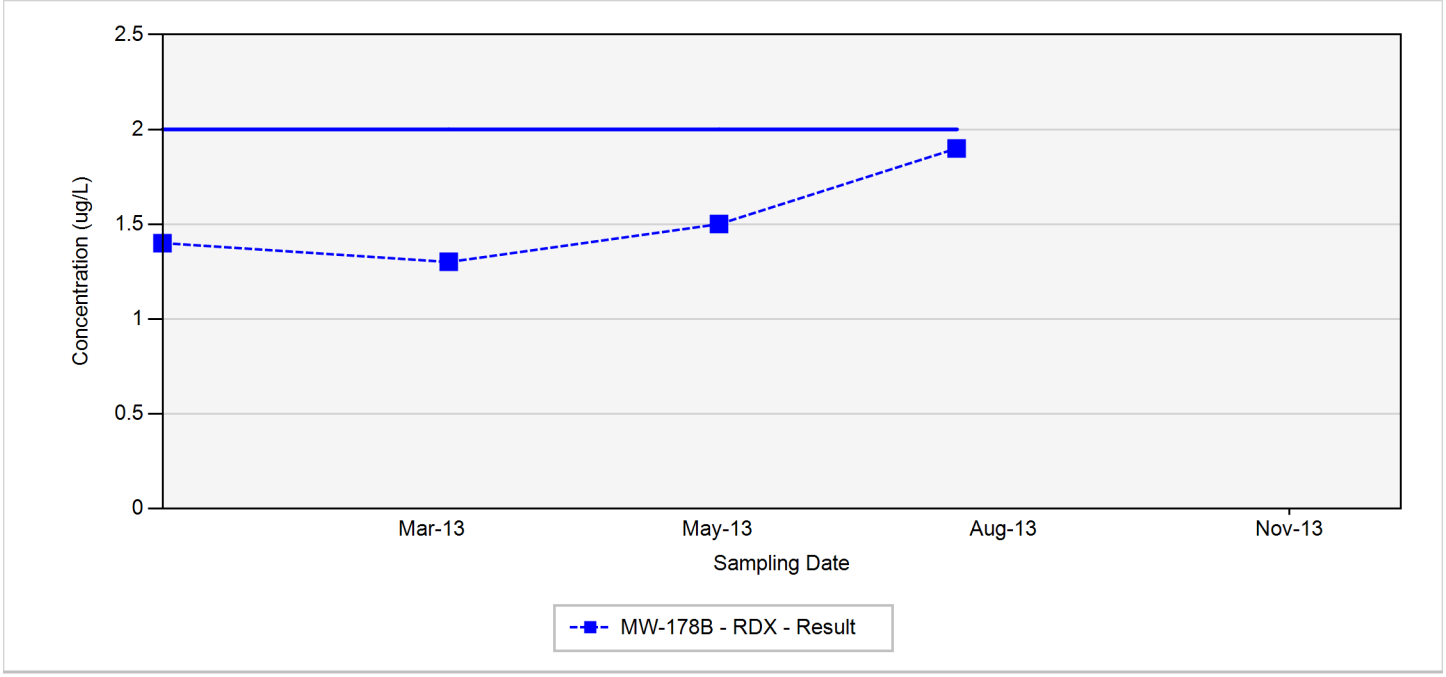
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

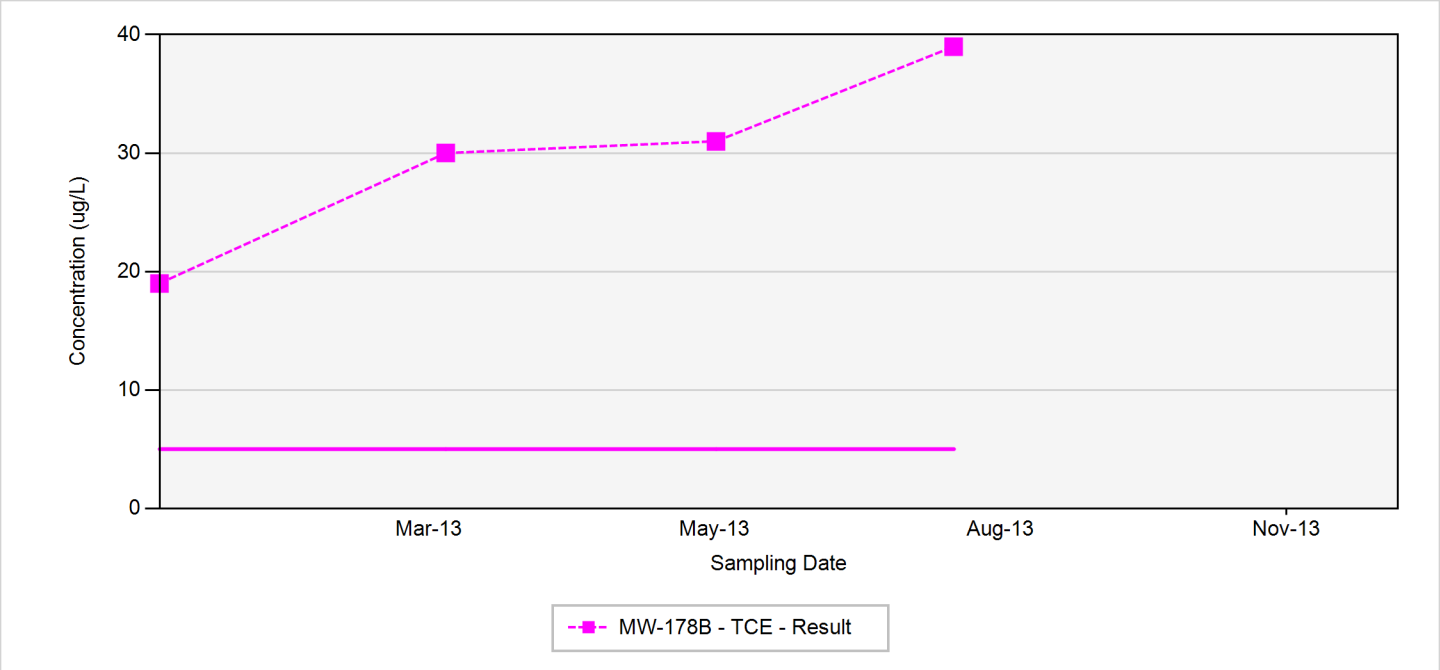
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-178





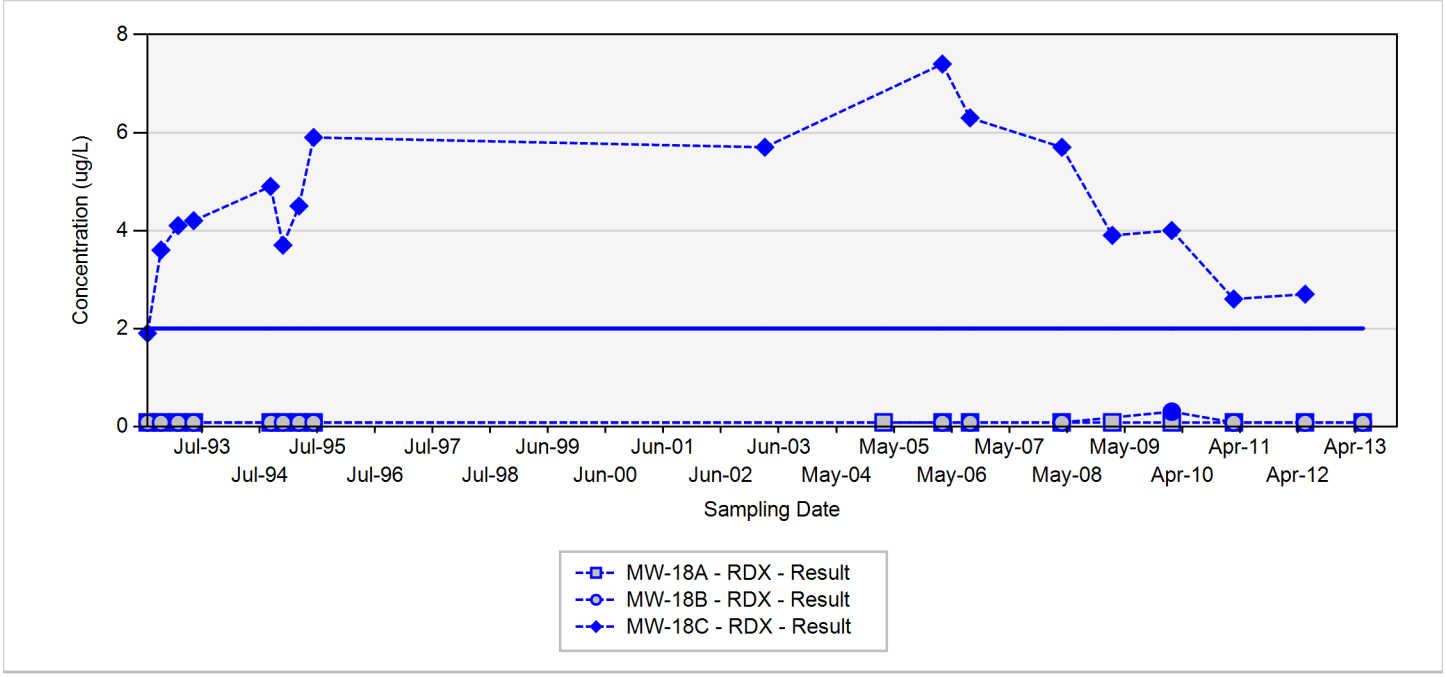
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

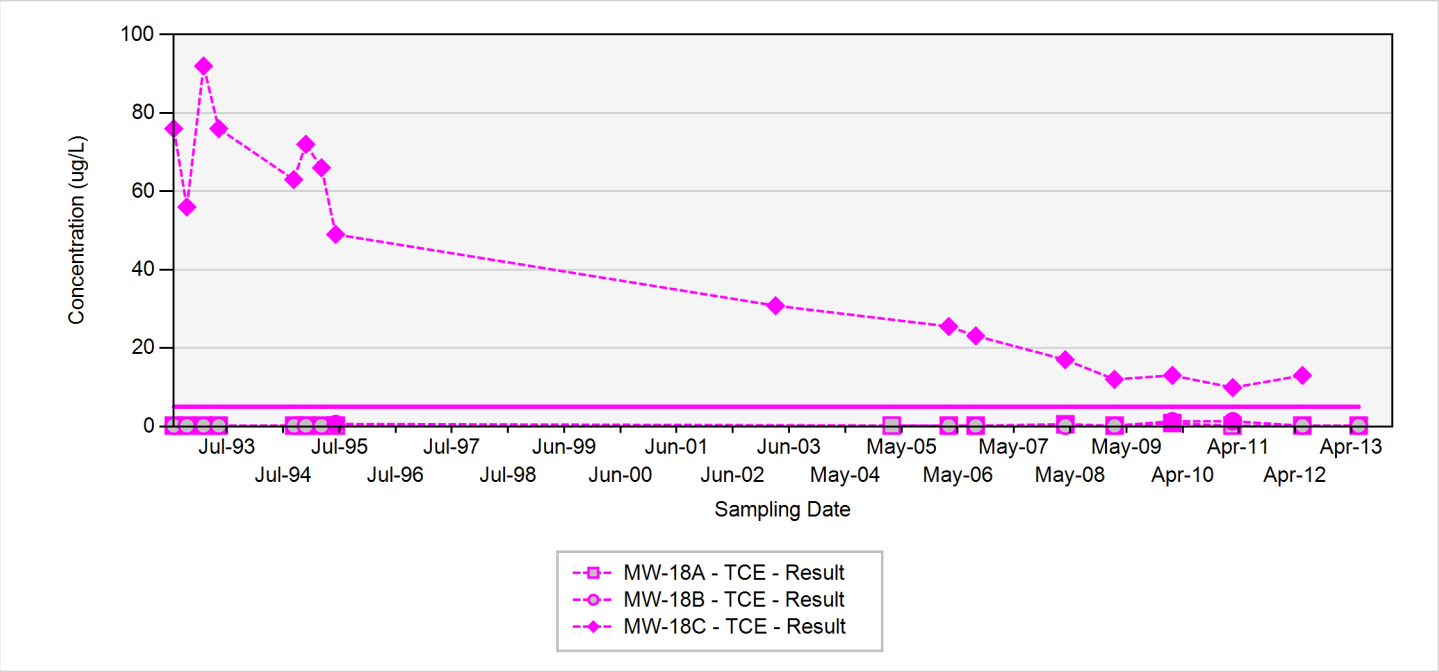
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-18





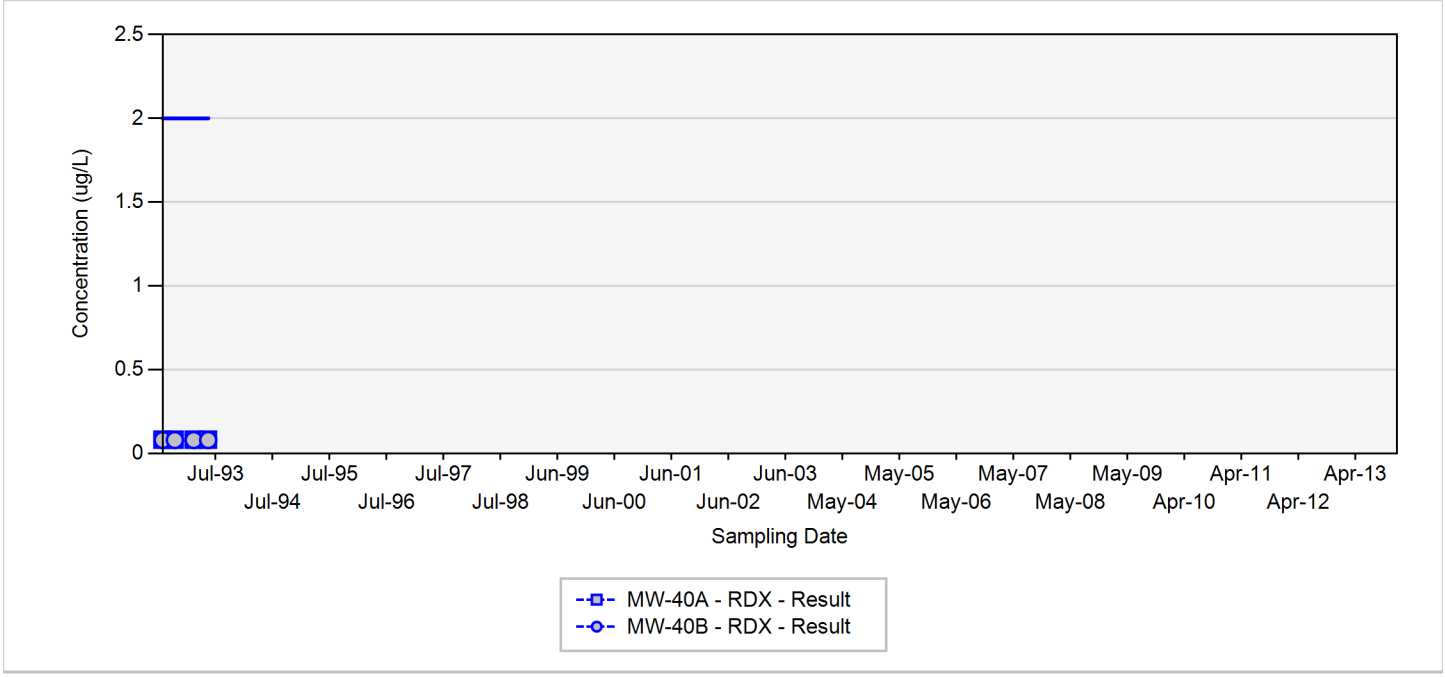
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

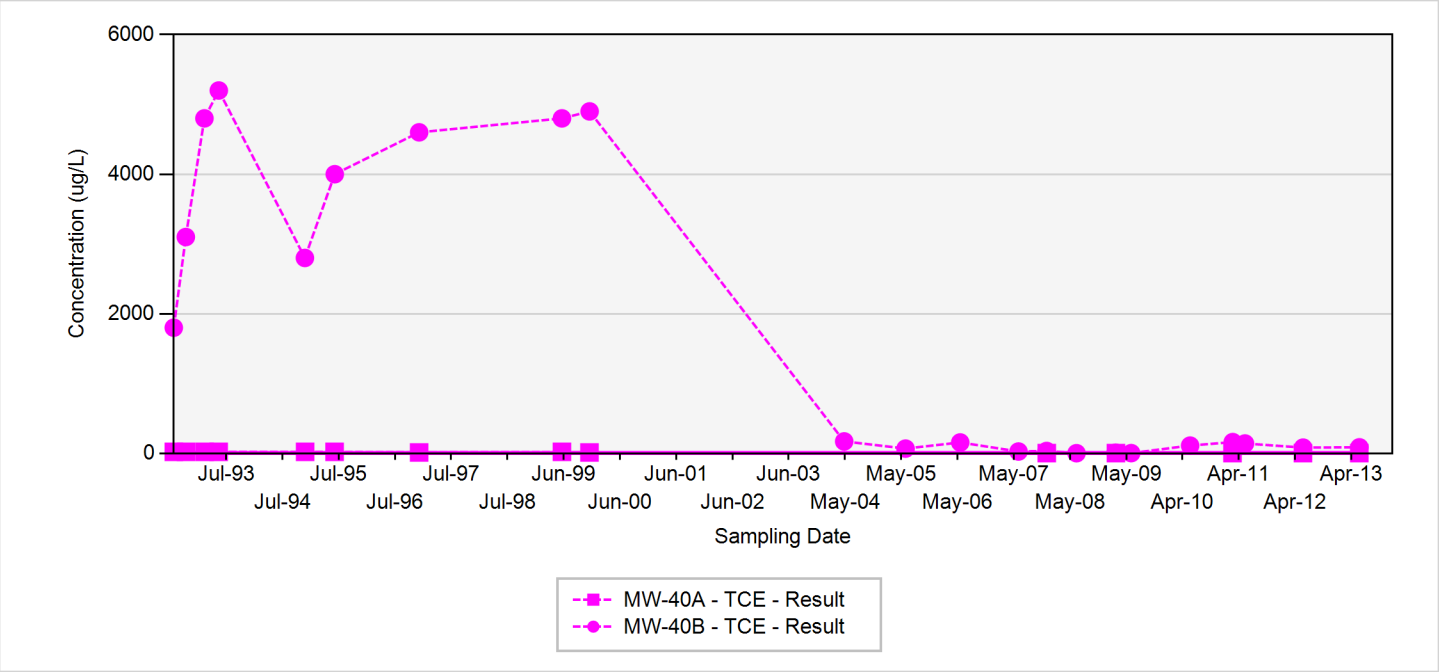
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-40





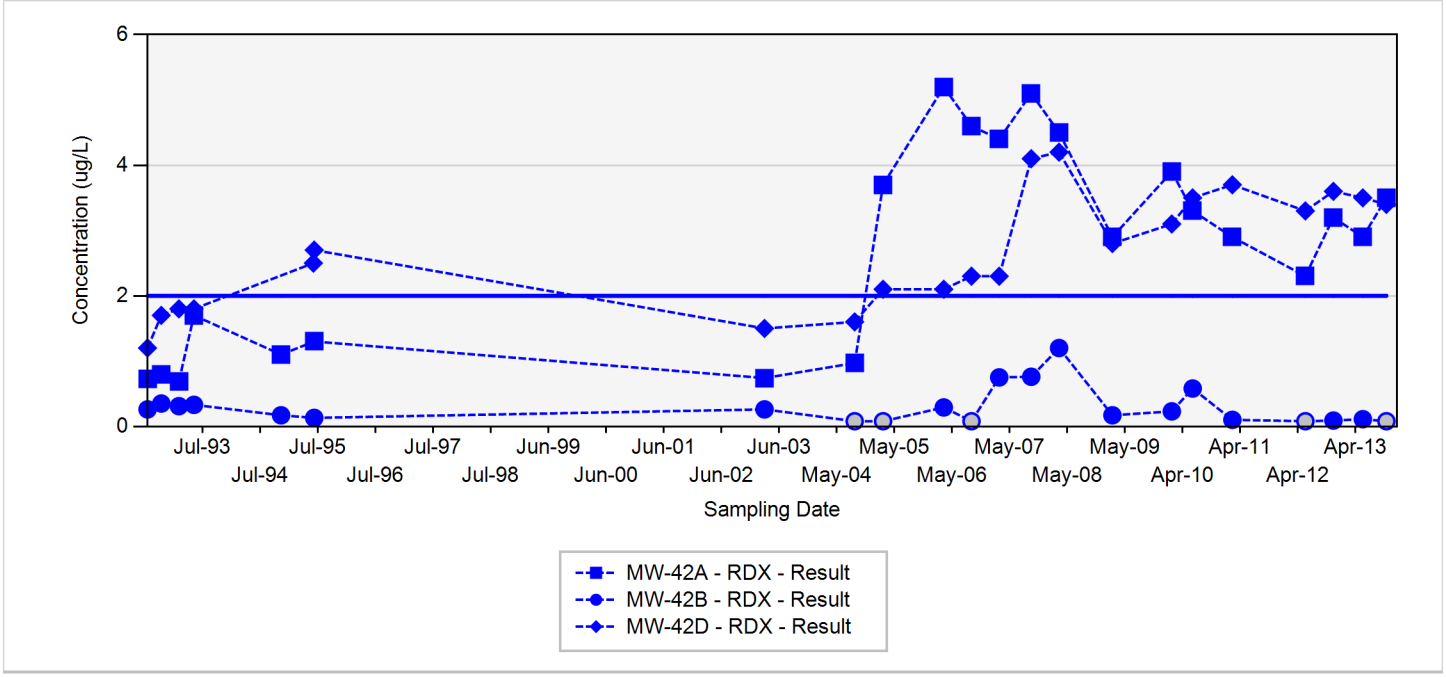
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

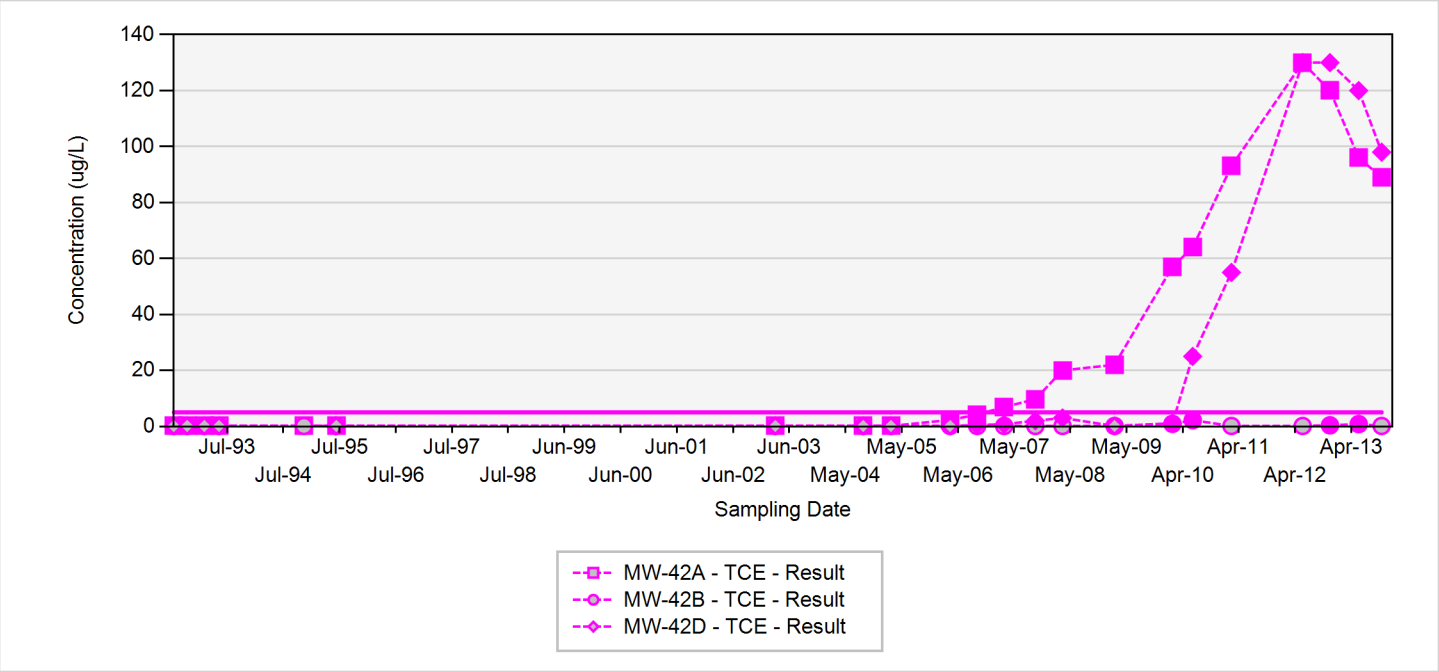
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-42





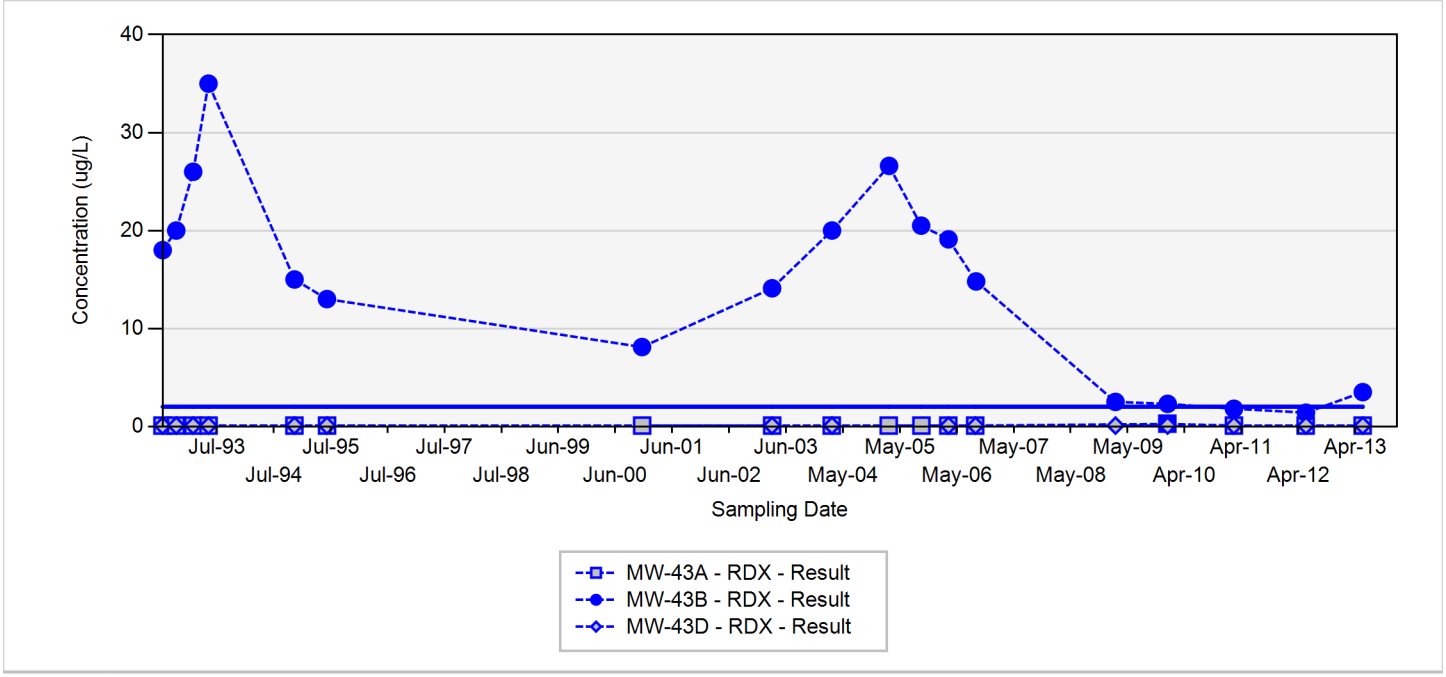
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

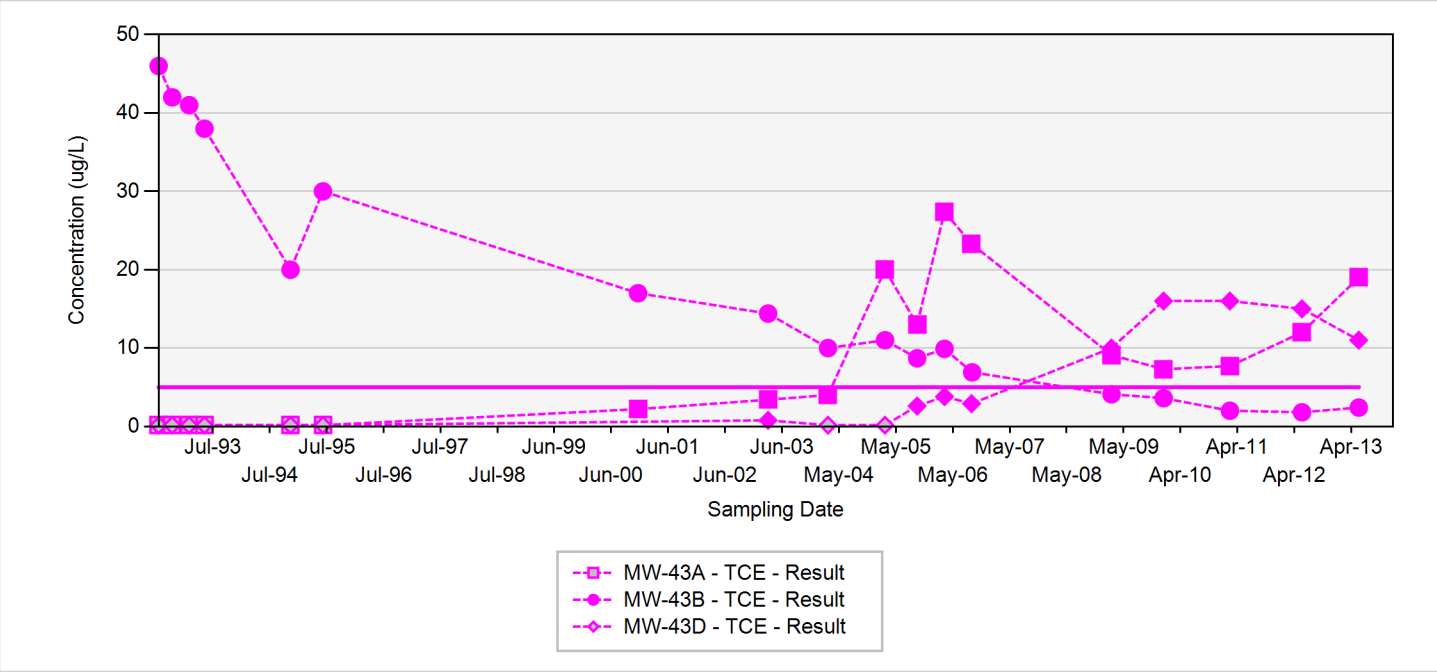
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-43





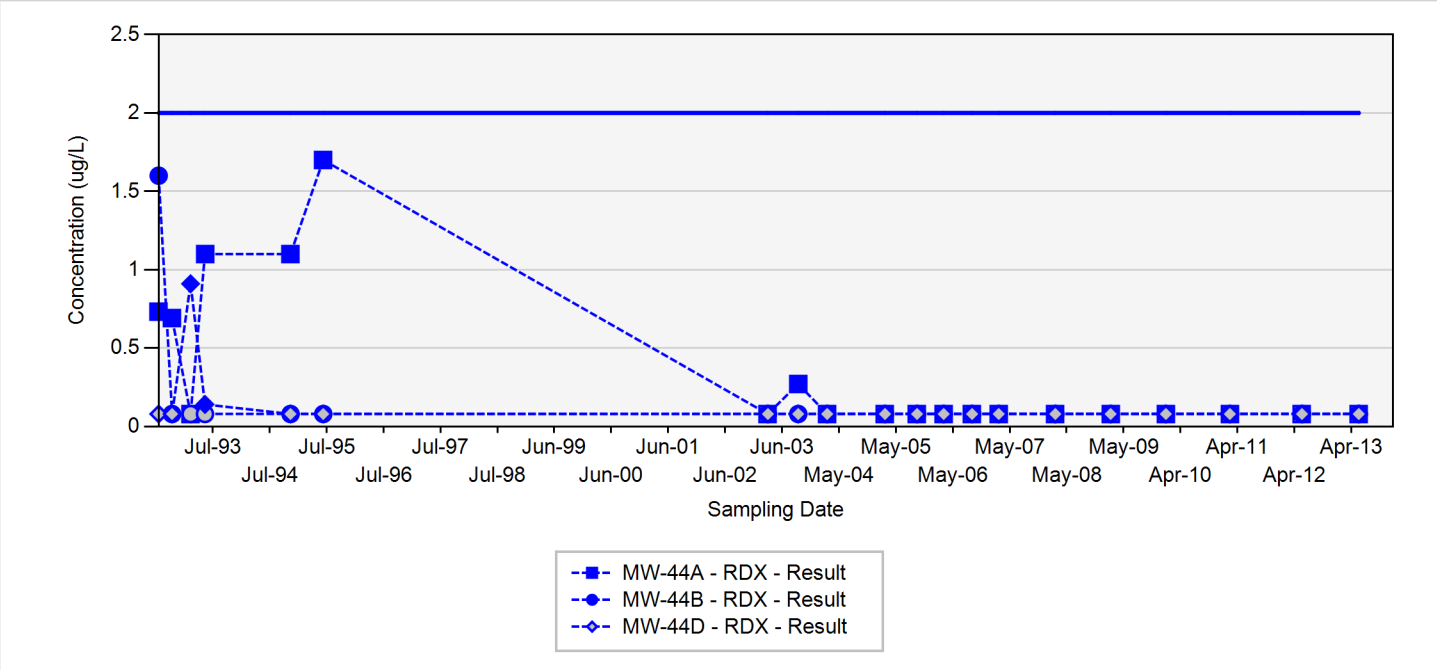
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

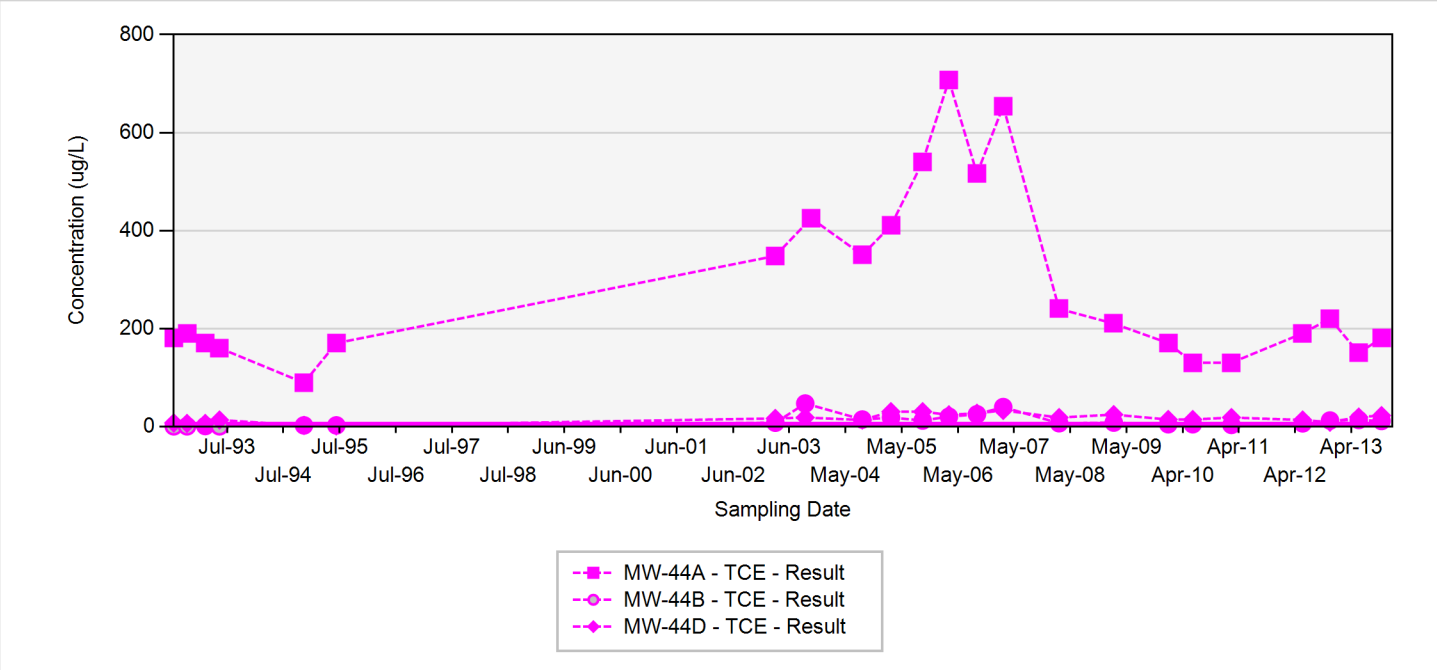
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-44





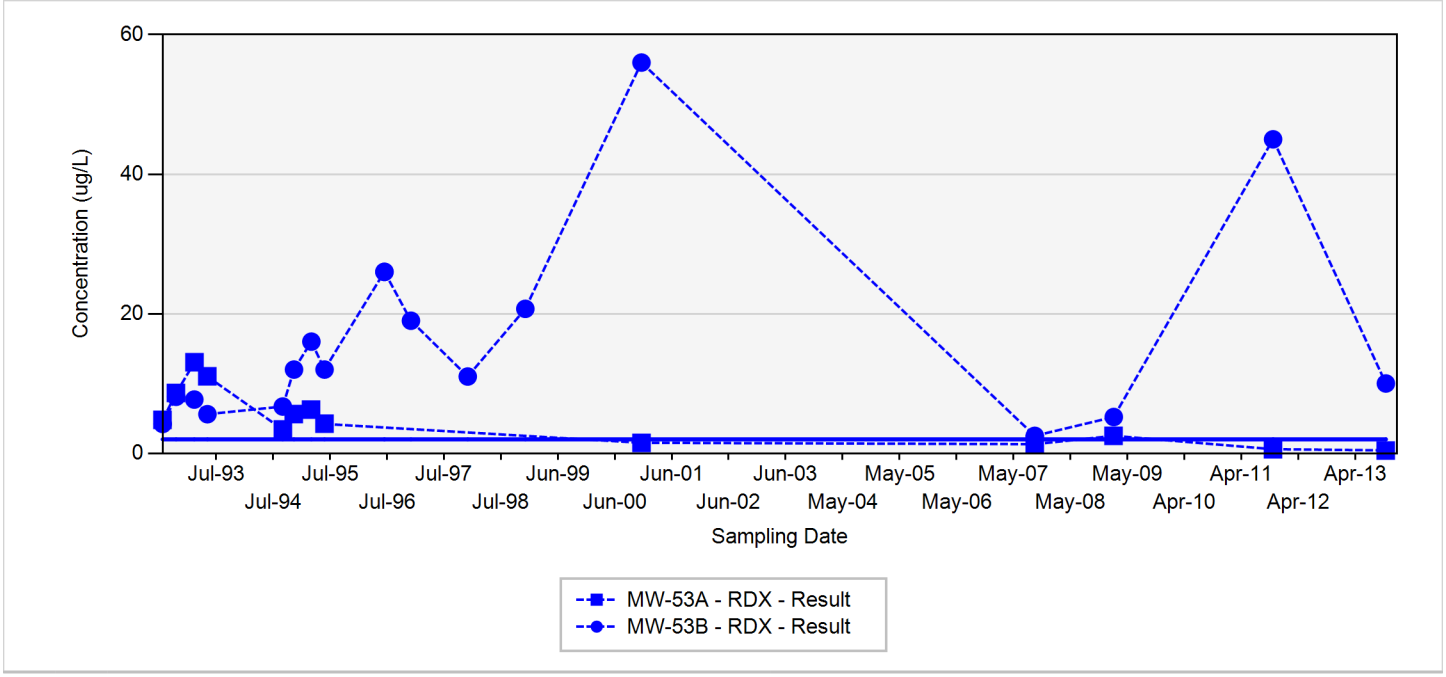
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

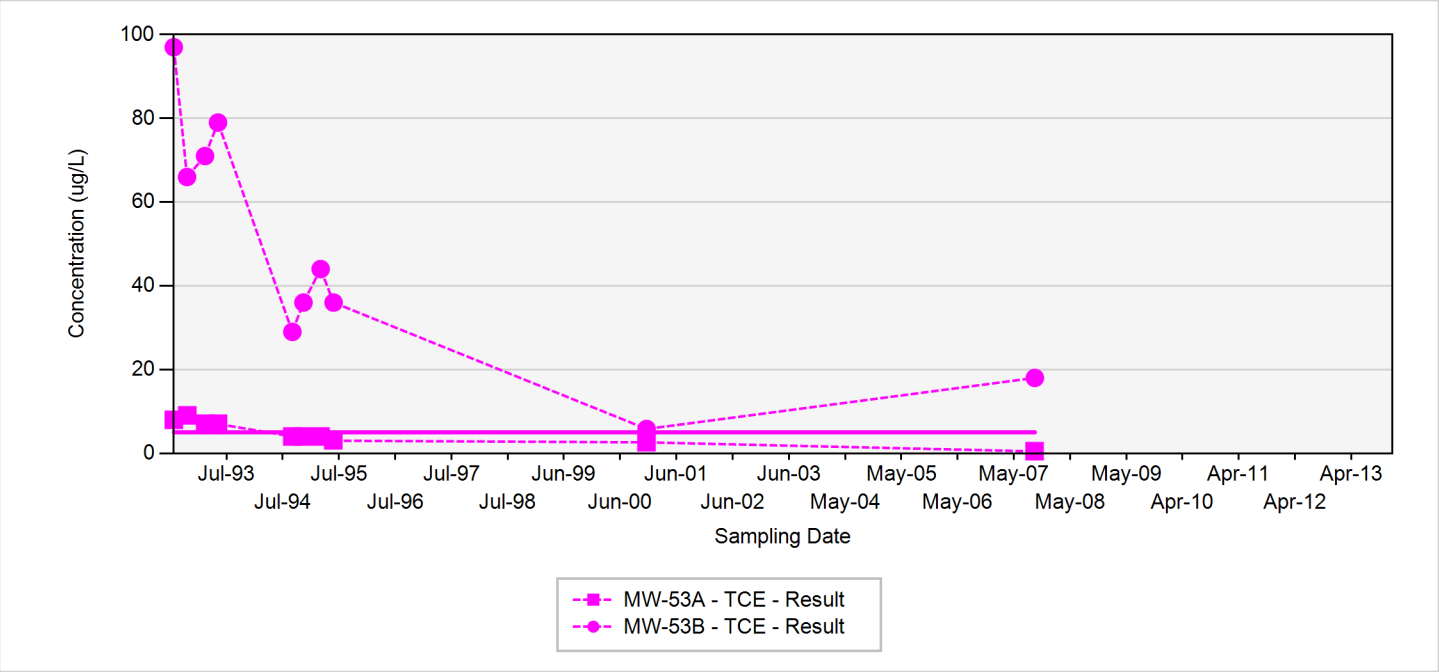
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-53





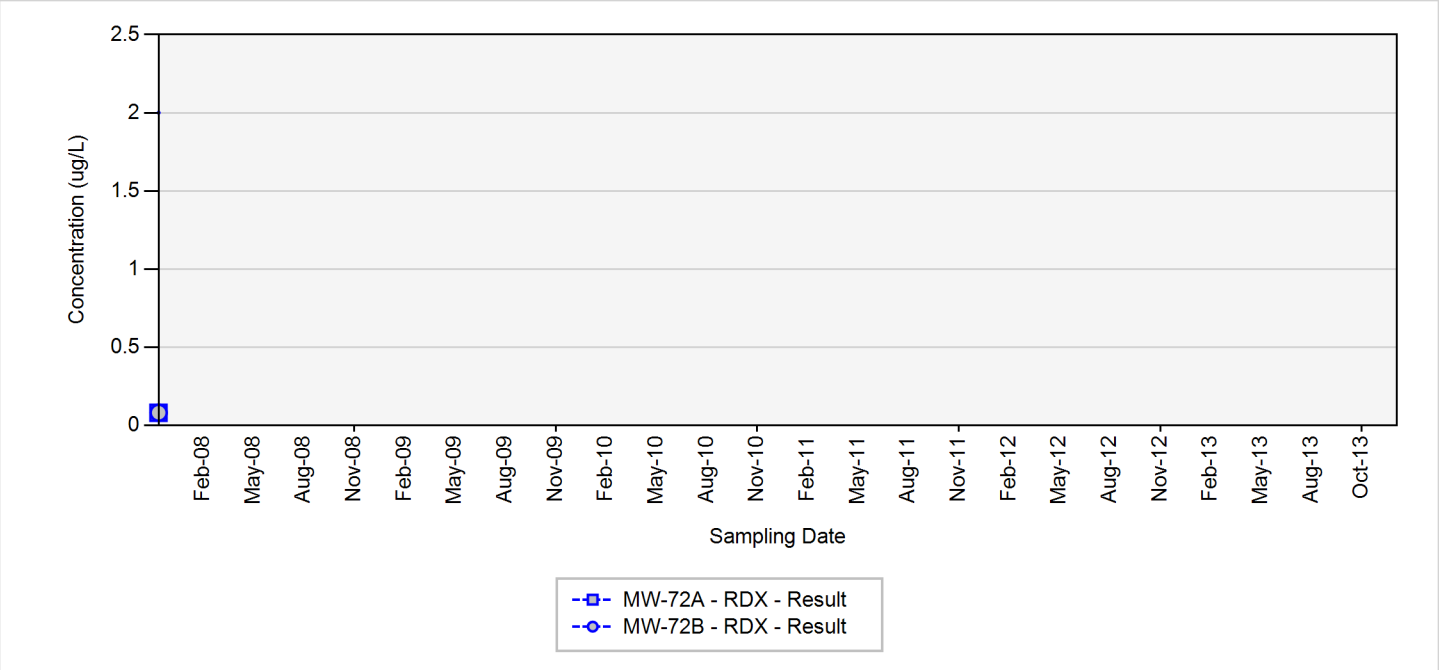
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

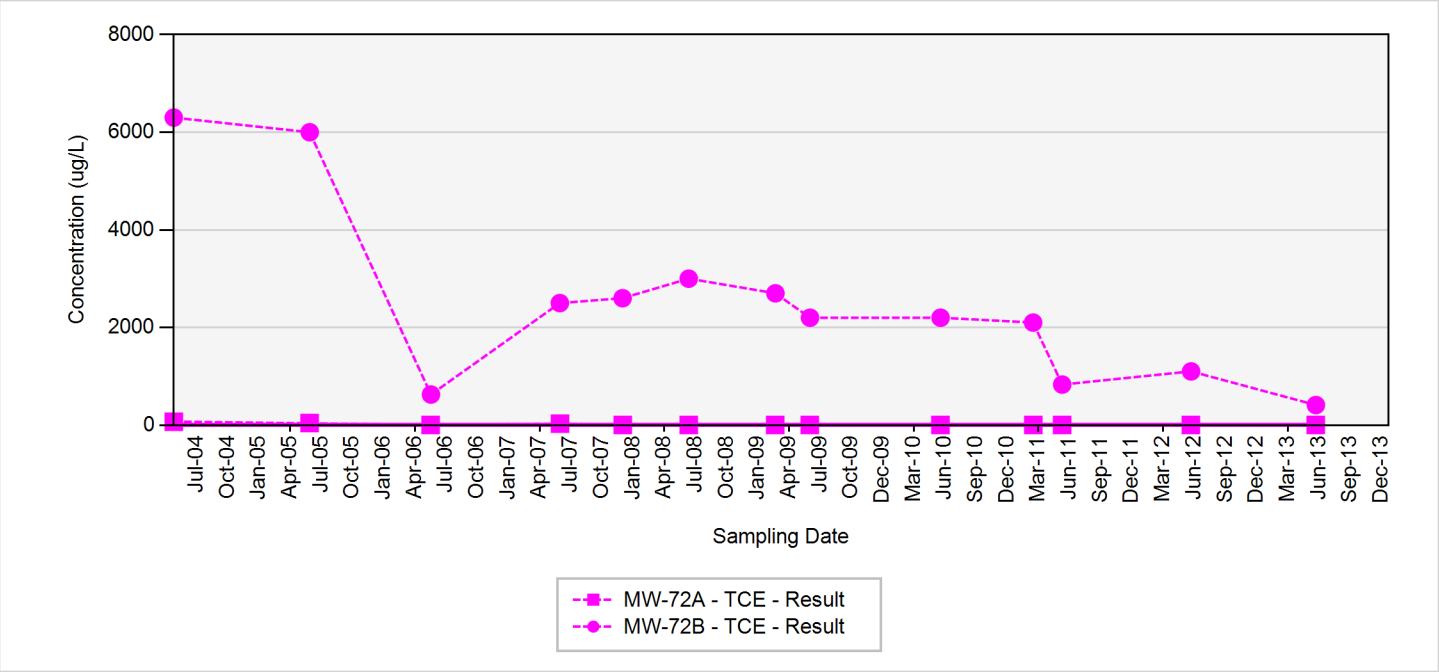
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior Plume Monitoring Wells

MW-72





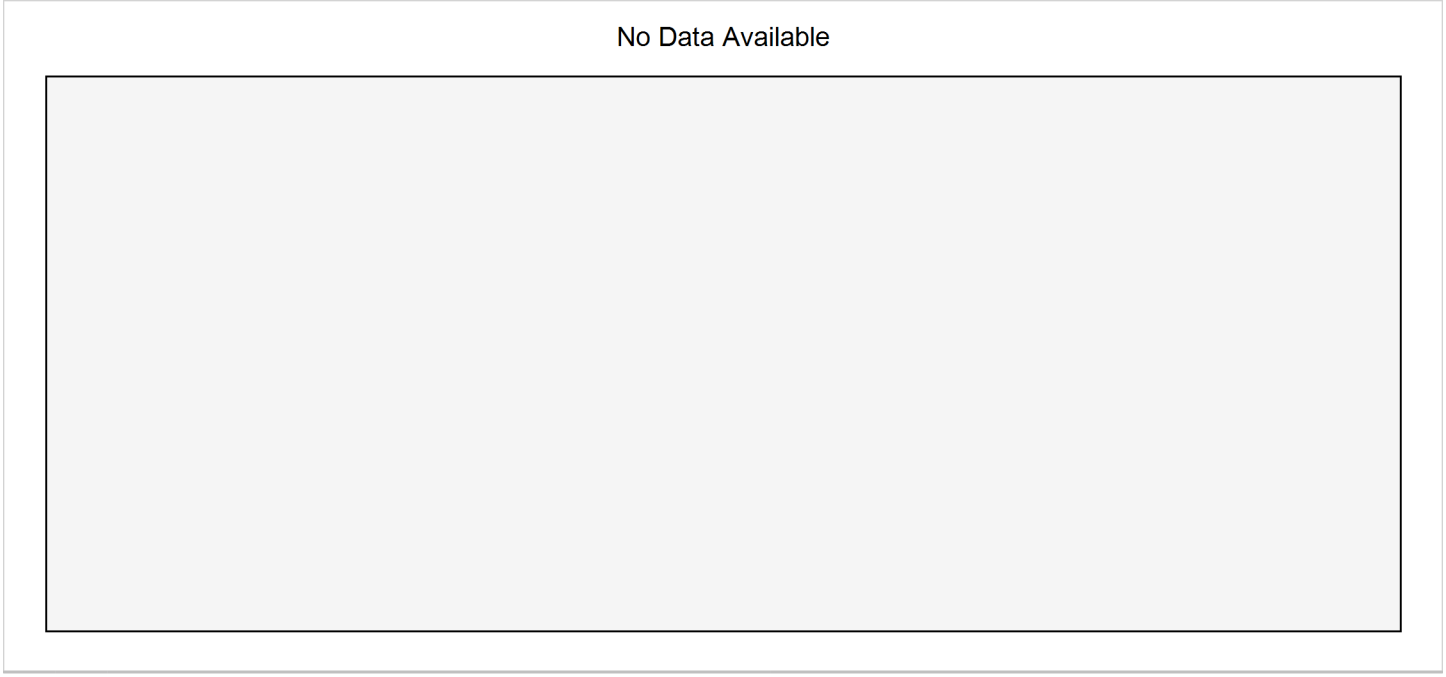
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

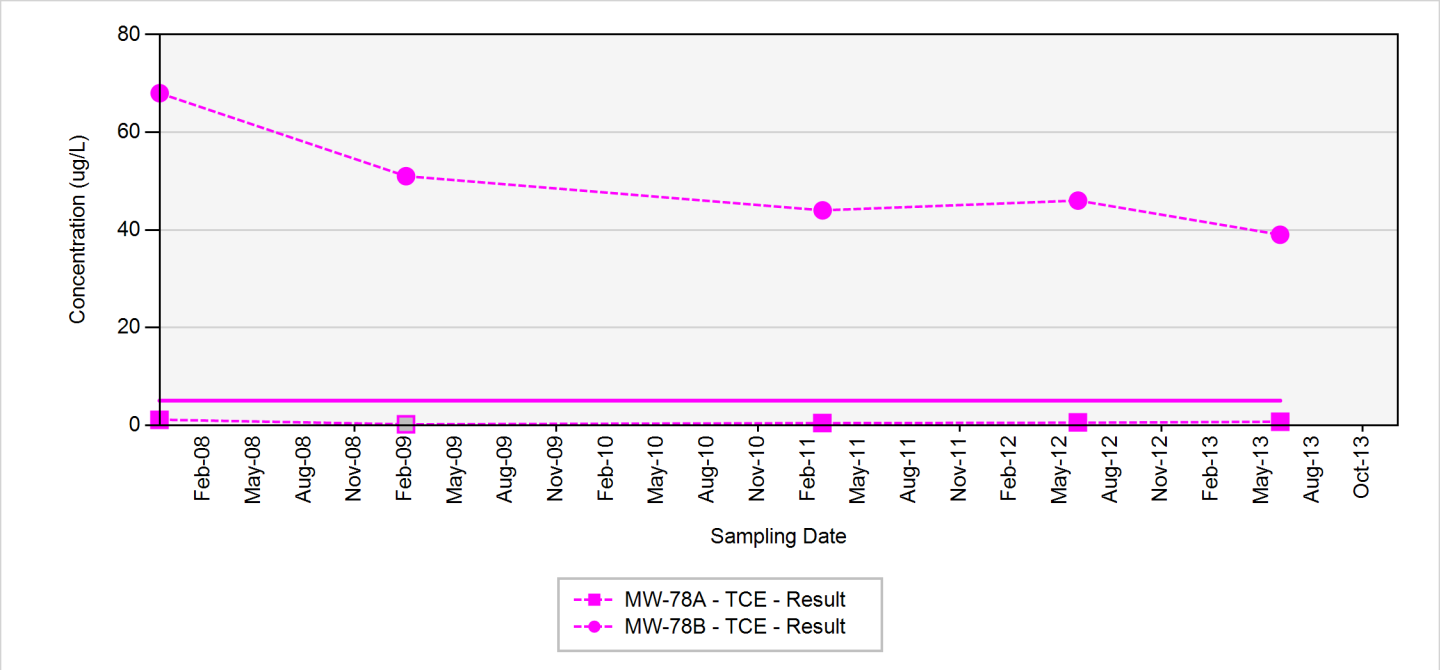
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.5
Concentration Trend Charts for Load Line 4/Atlas Missile Area Interior
Plume Monitoring Wells

MW-78





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

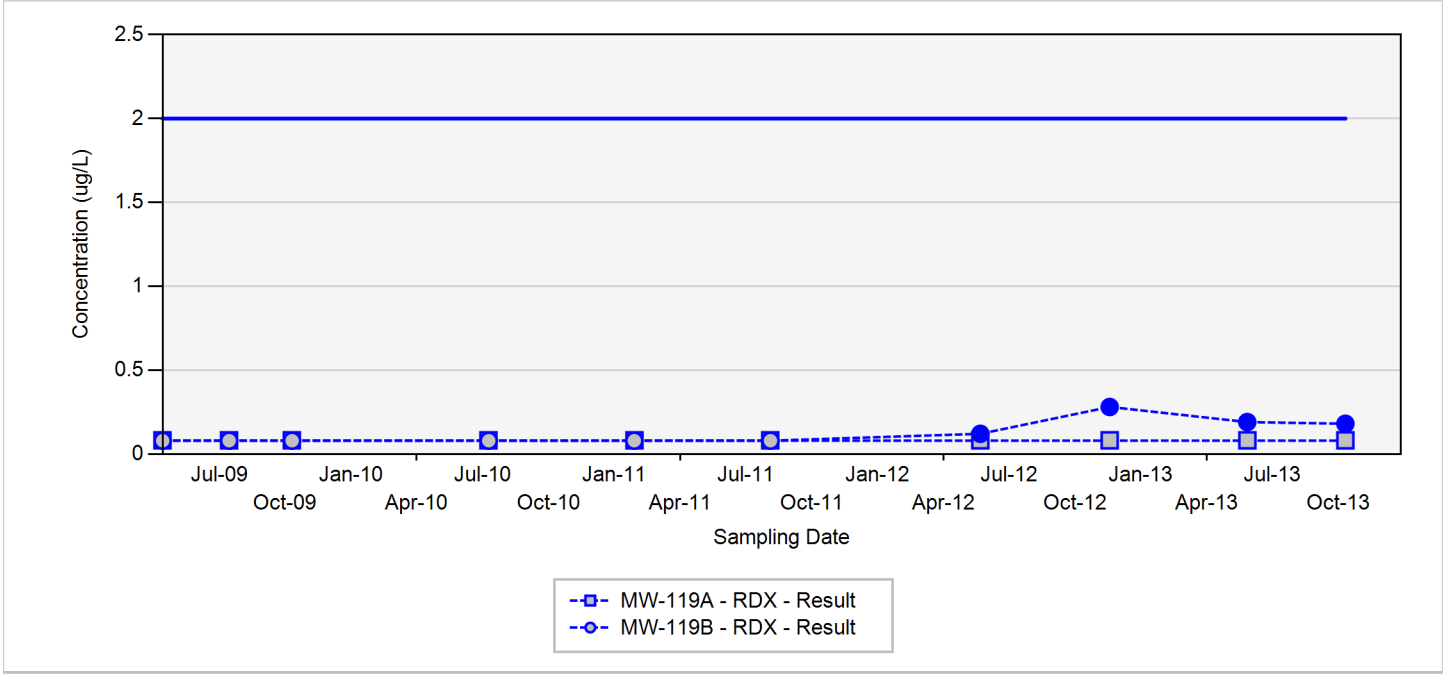
ug/L: micrograms per liter
Silver markers indicate non-detected results

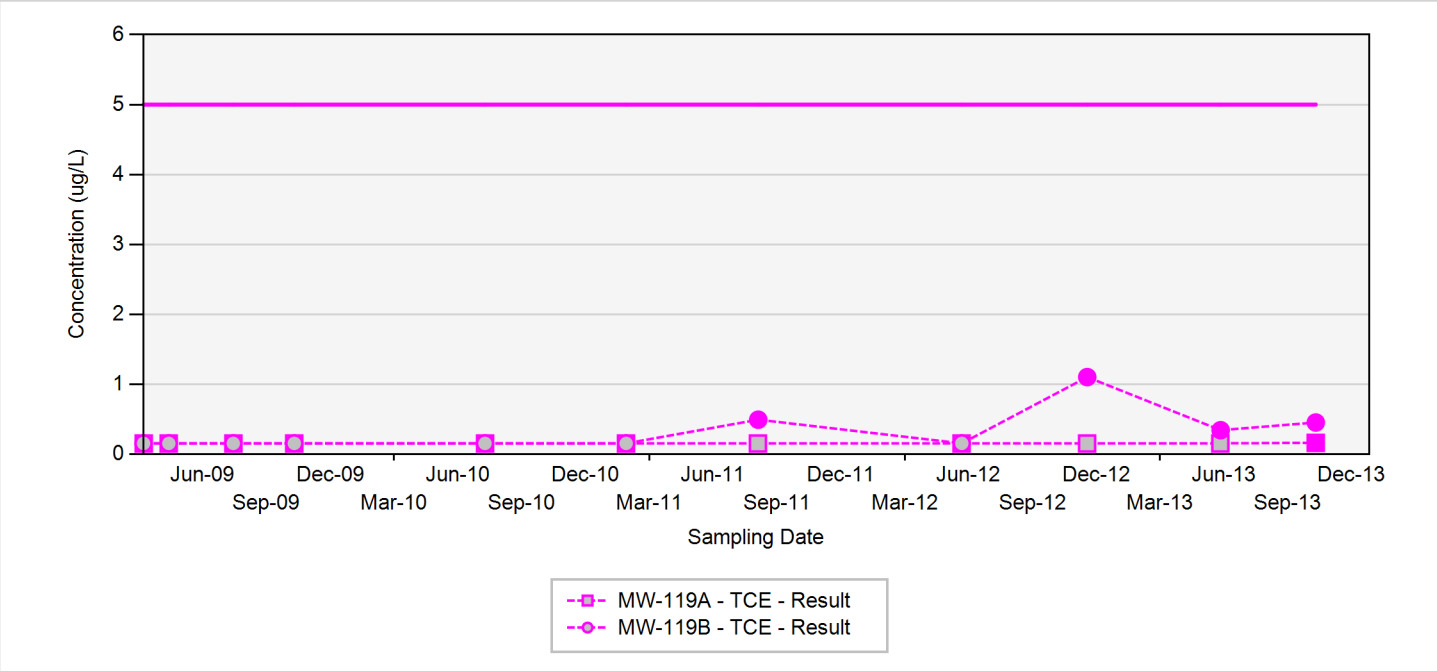
A.6 – Monitoring Wells associated with Focused Extraction Wells

This page was intentionally left blank.

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-119





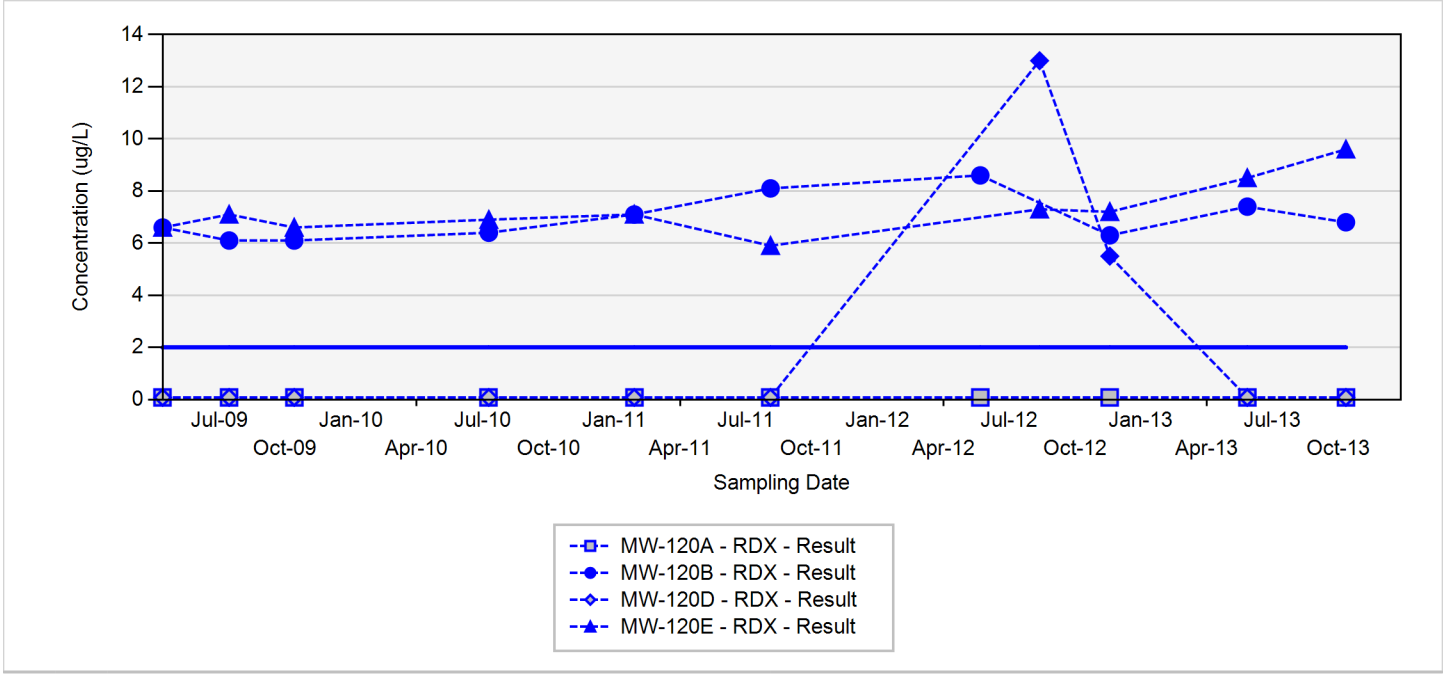
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

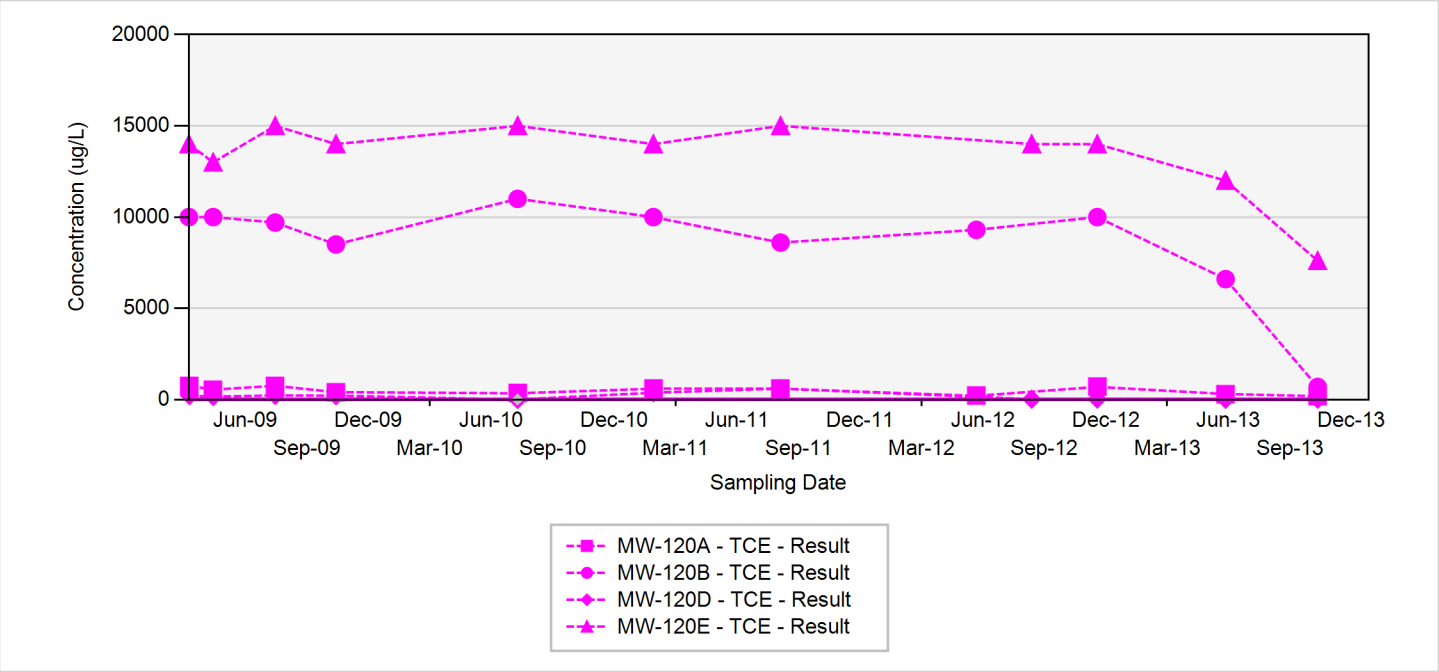
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-120





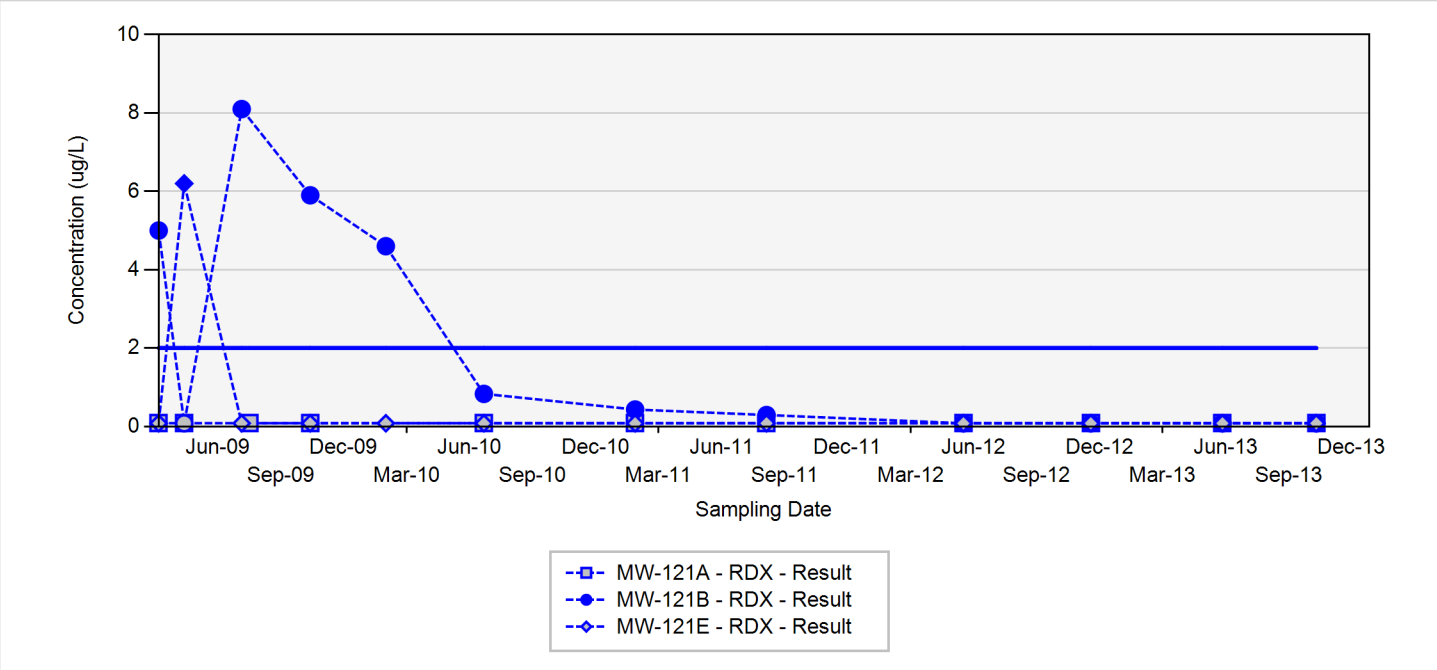
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

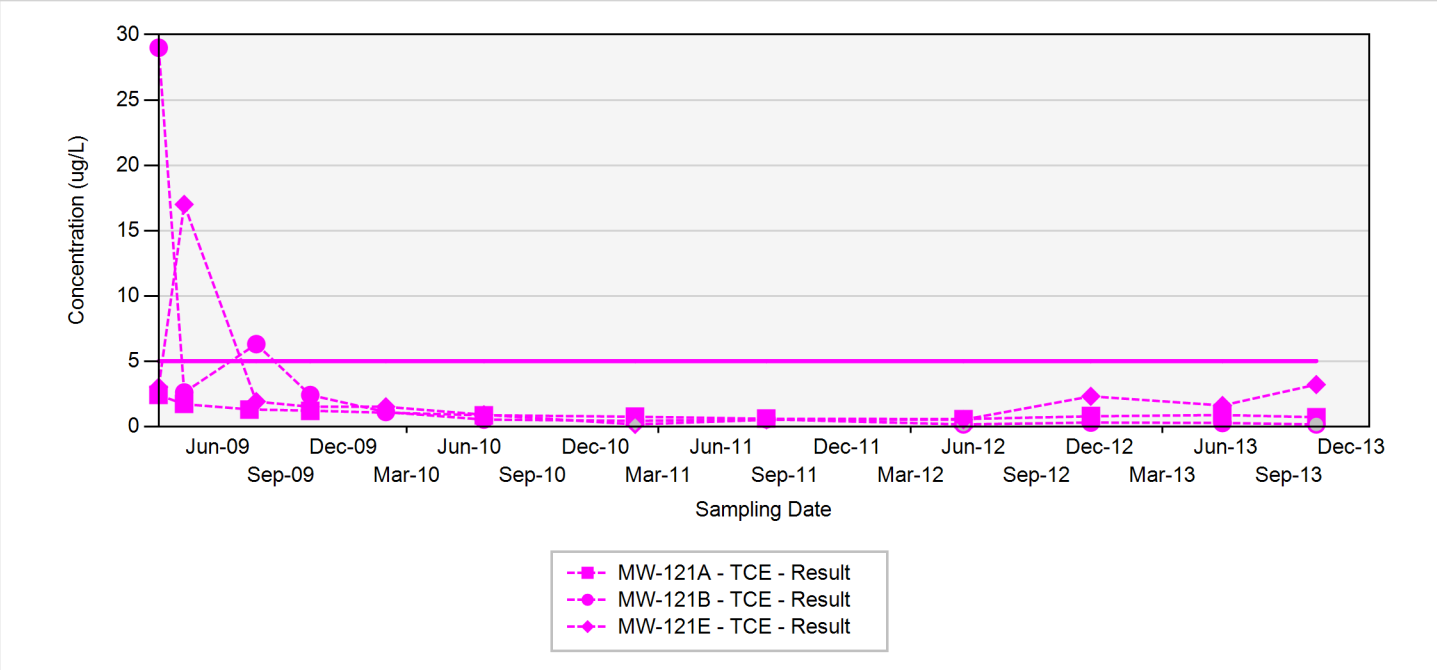
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-121





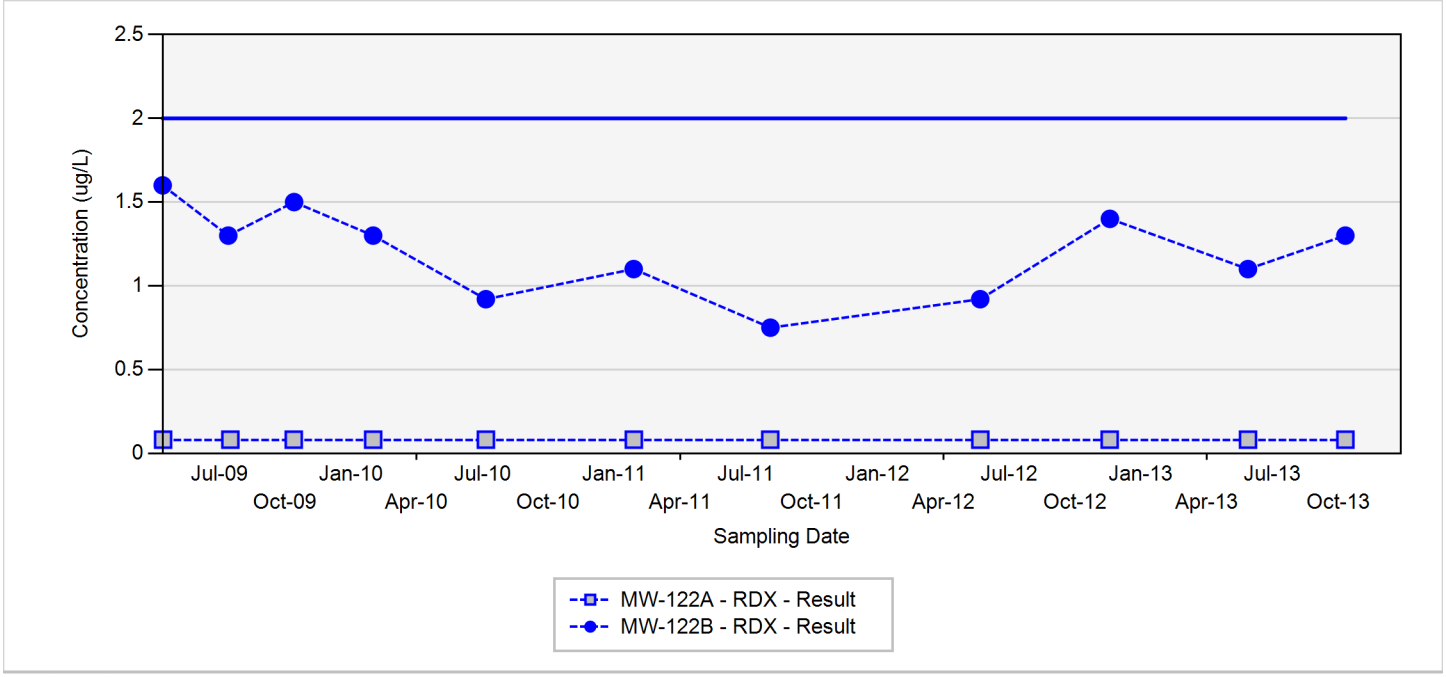
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

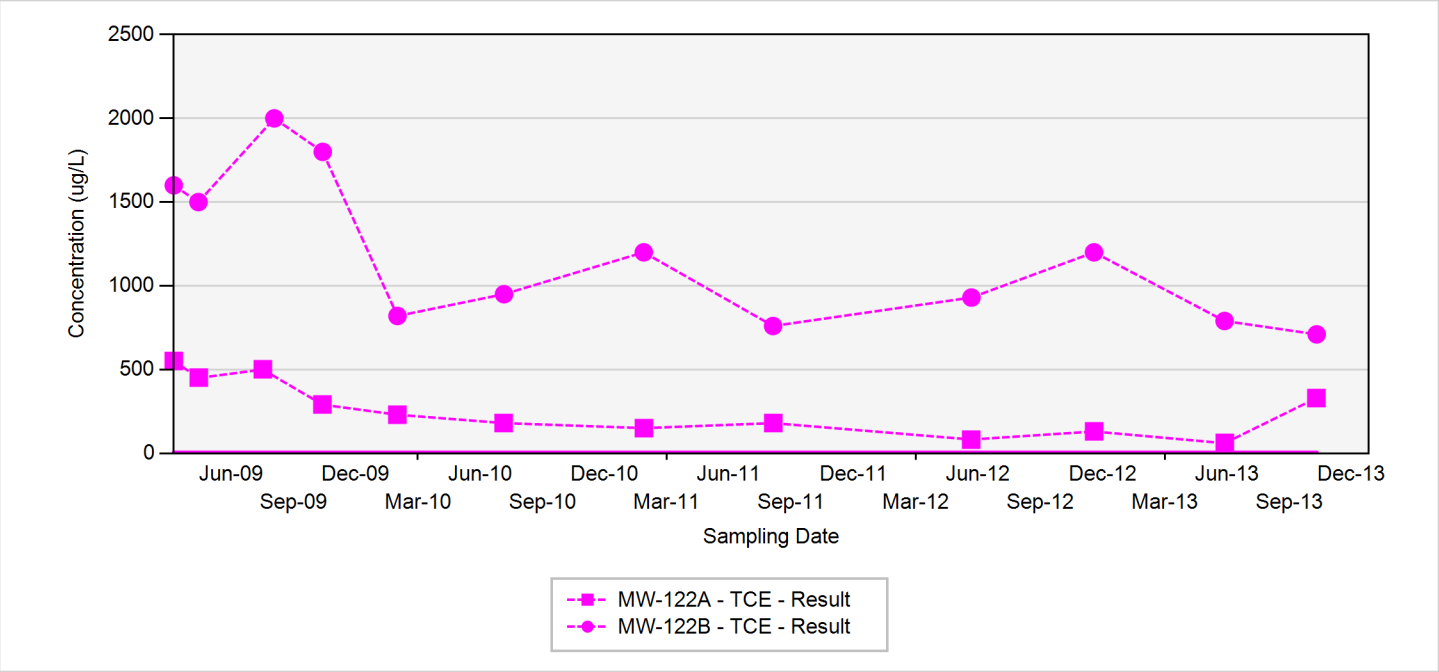
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-122





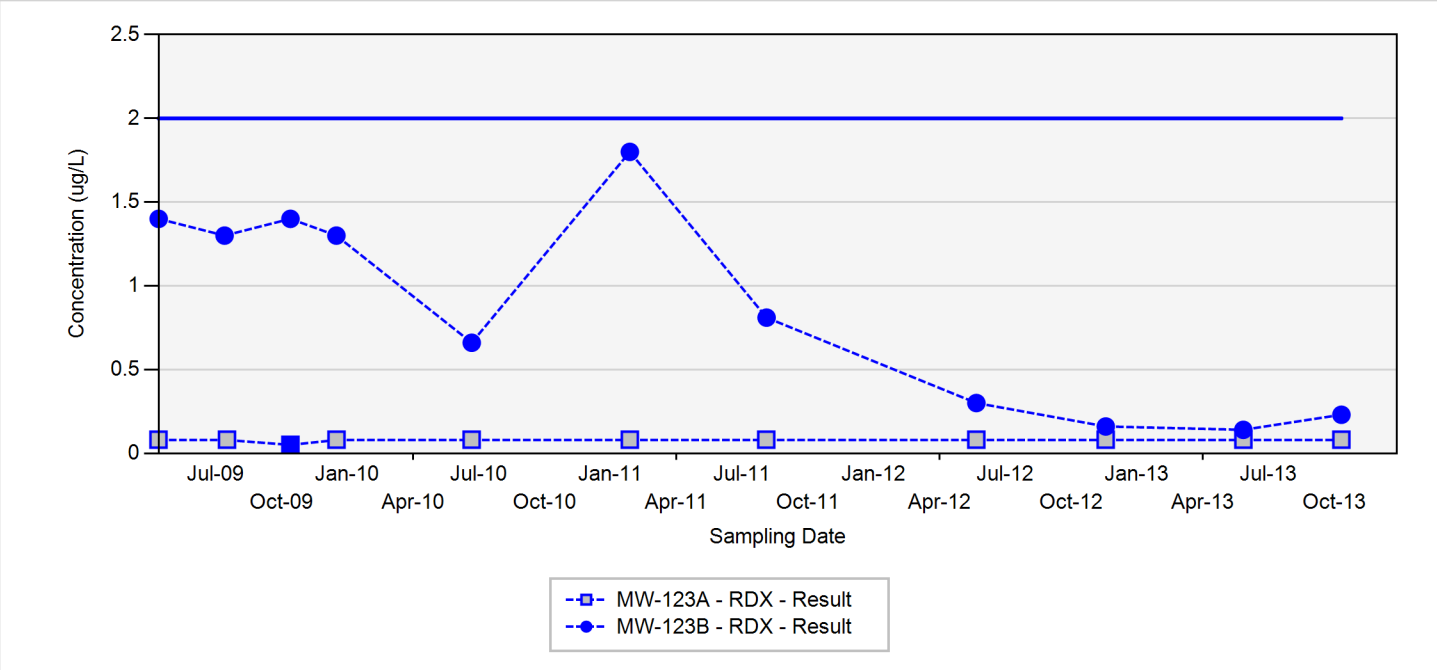
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

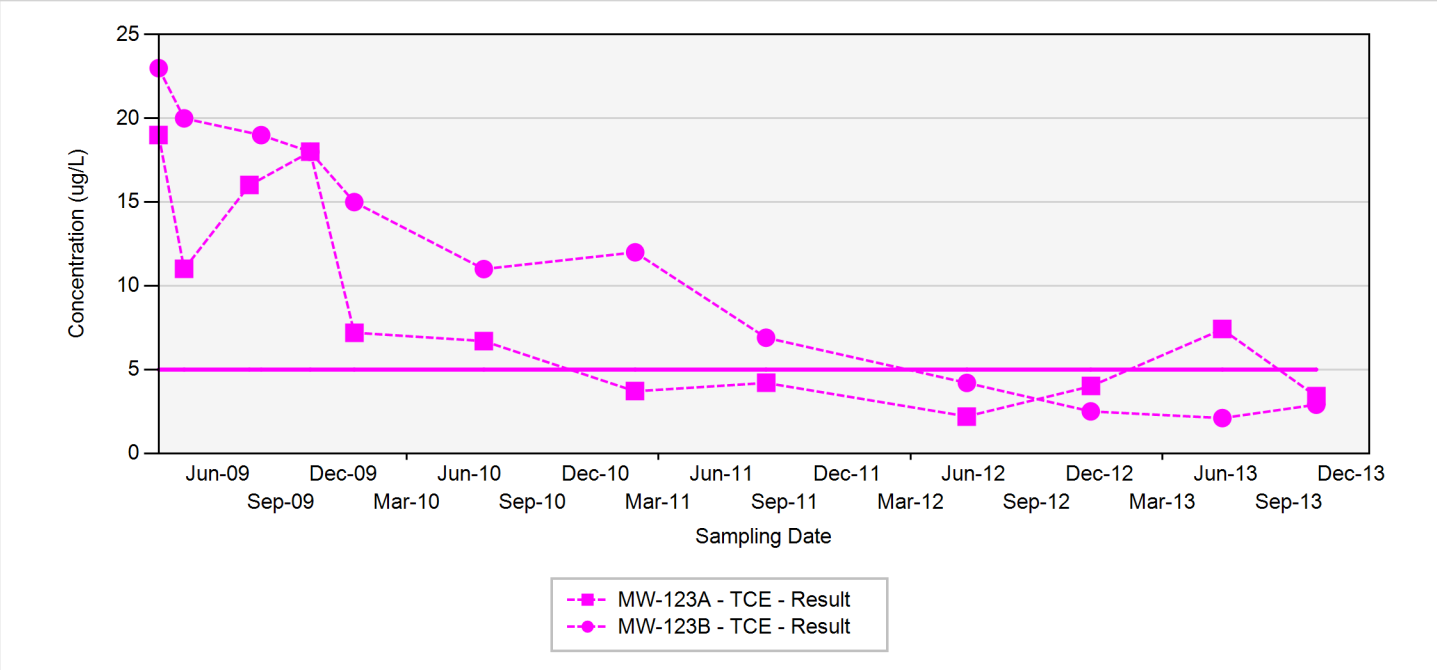
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-123





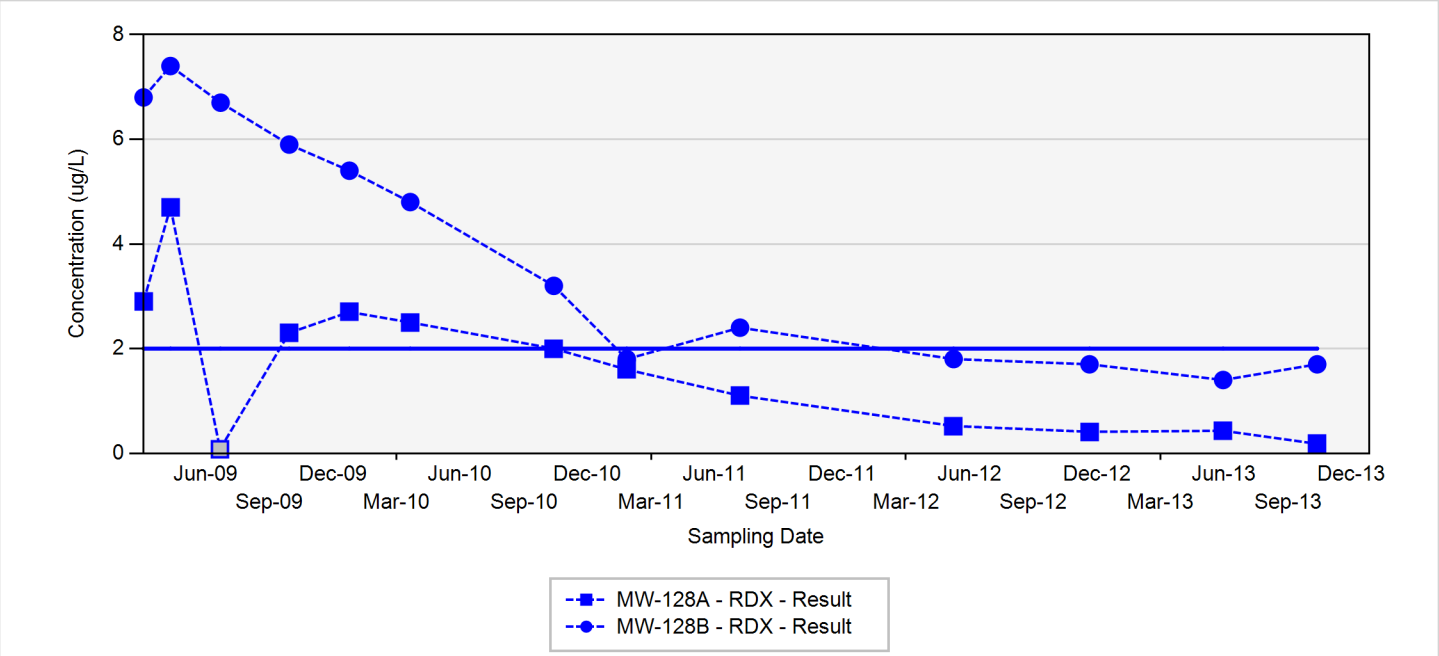
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 ug/L
Final Target Groundwater Cleanup Goals for RDX is 2 ug/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-128



No Data Available

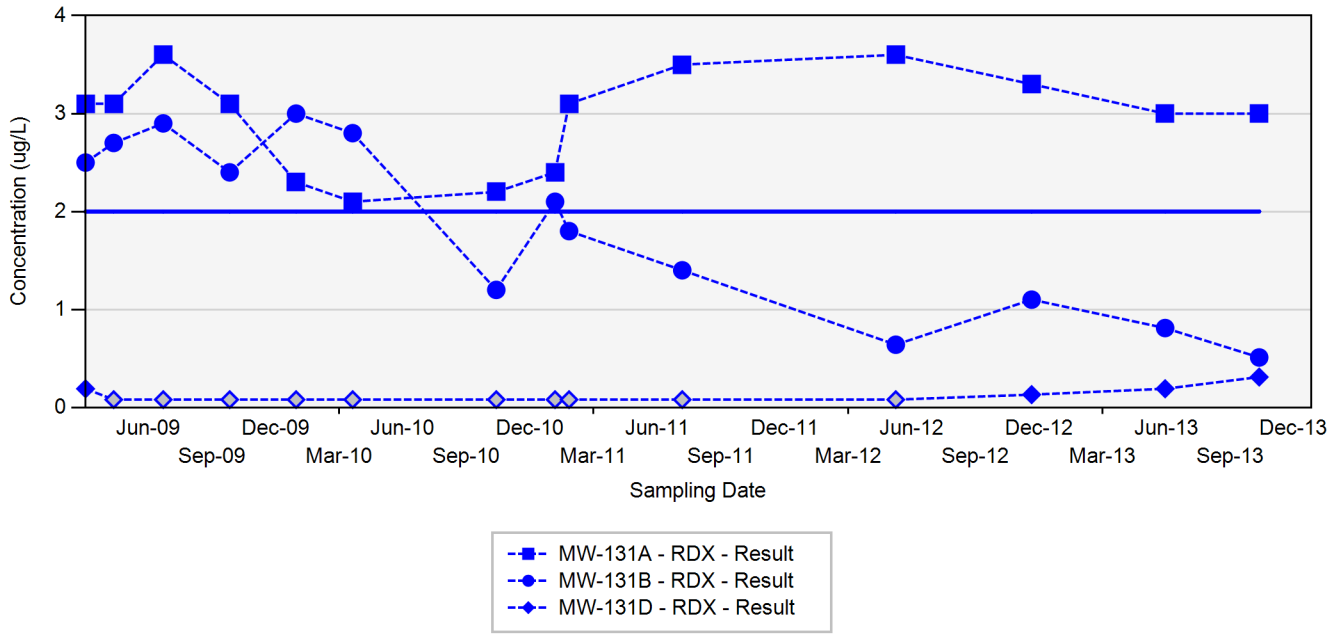
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-131



No Data Available

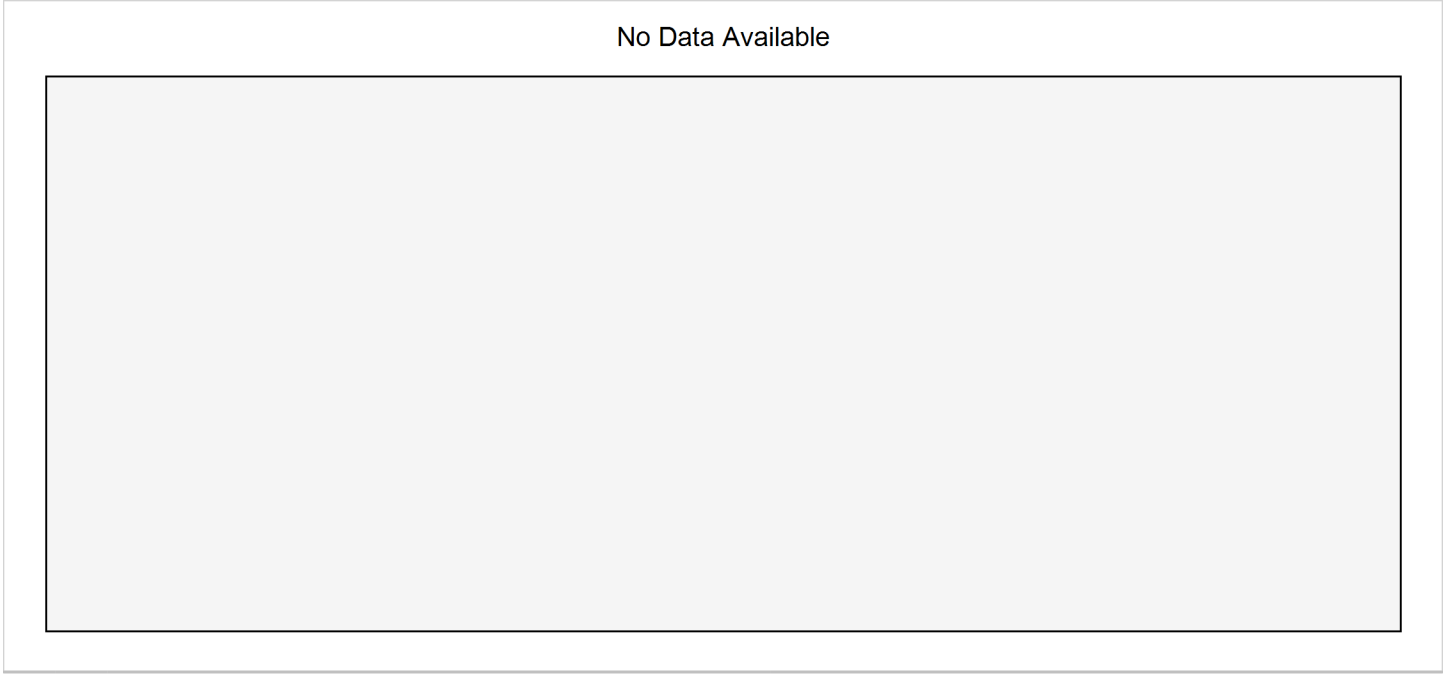
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

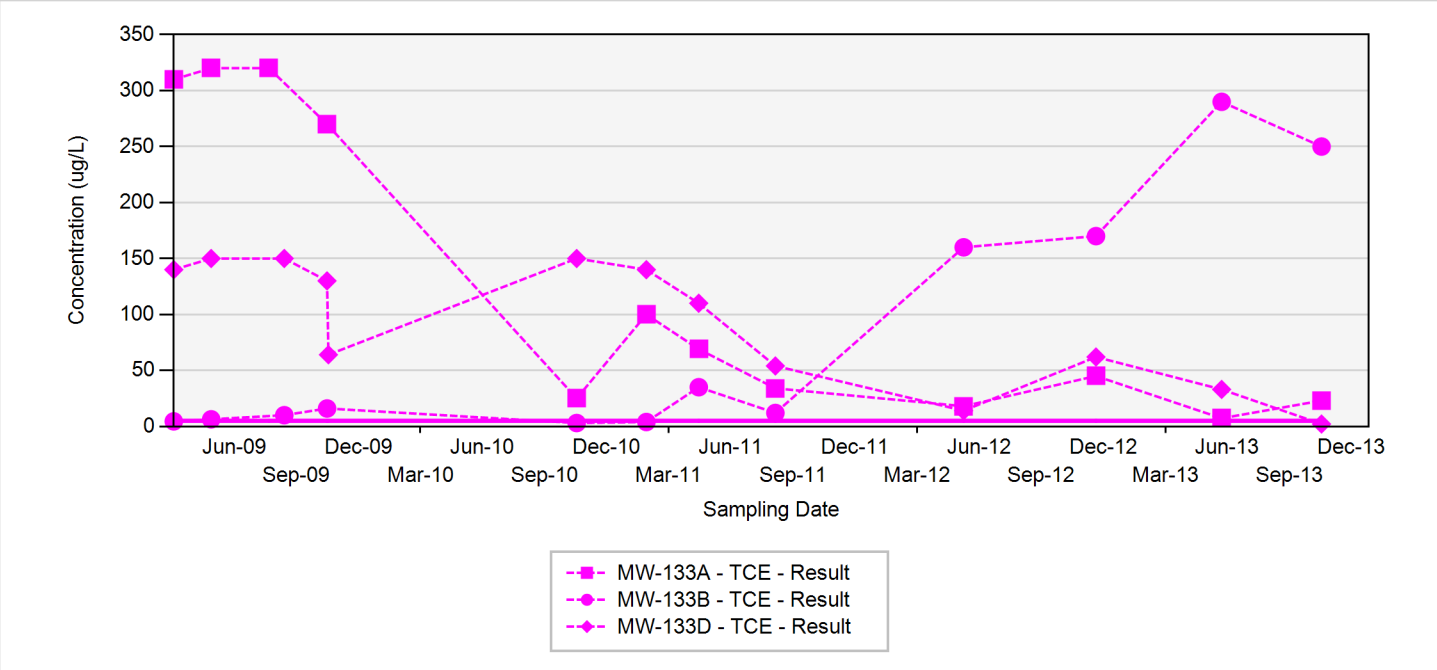
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-133





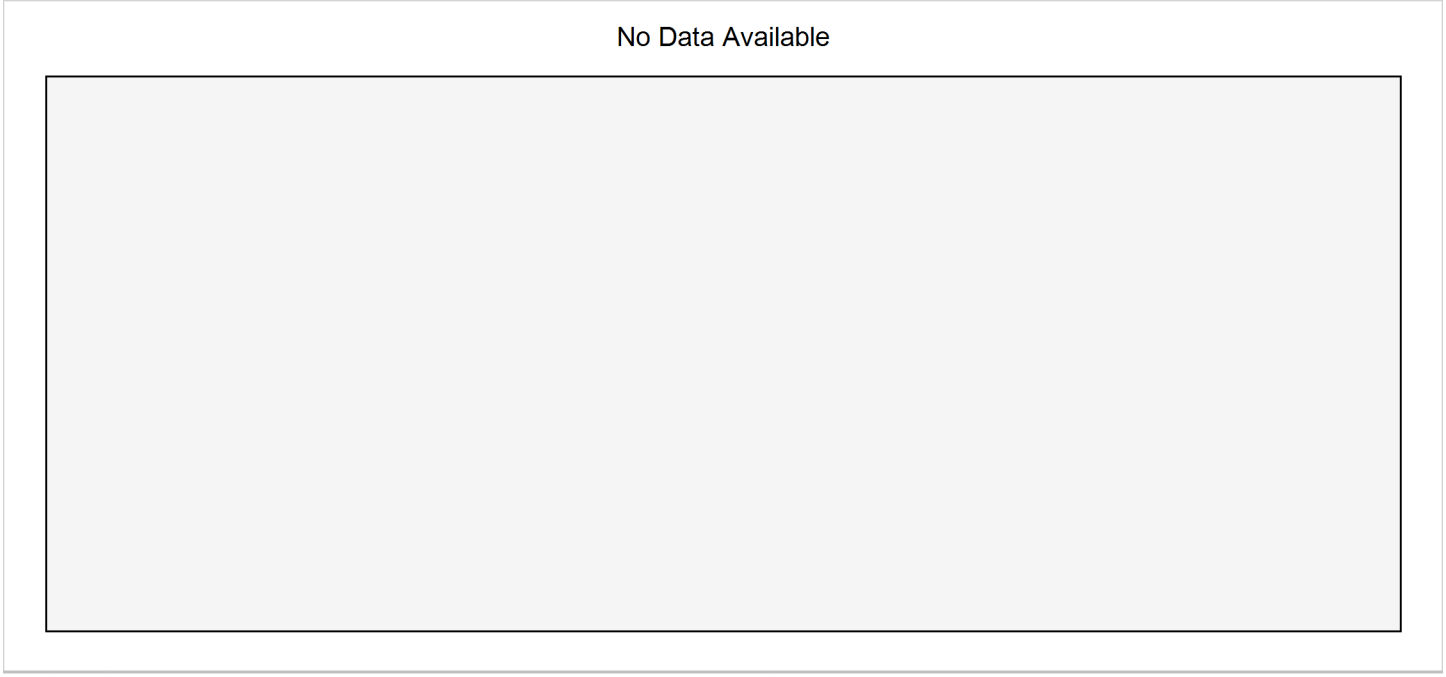
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

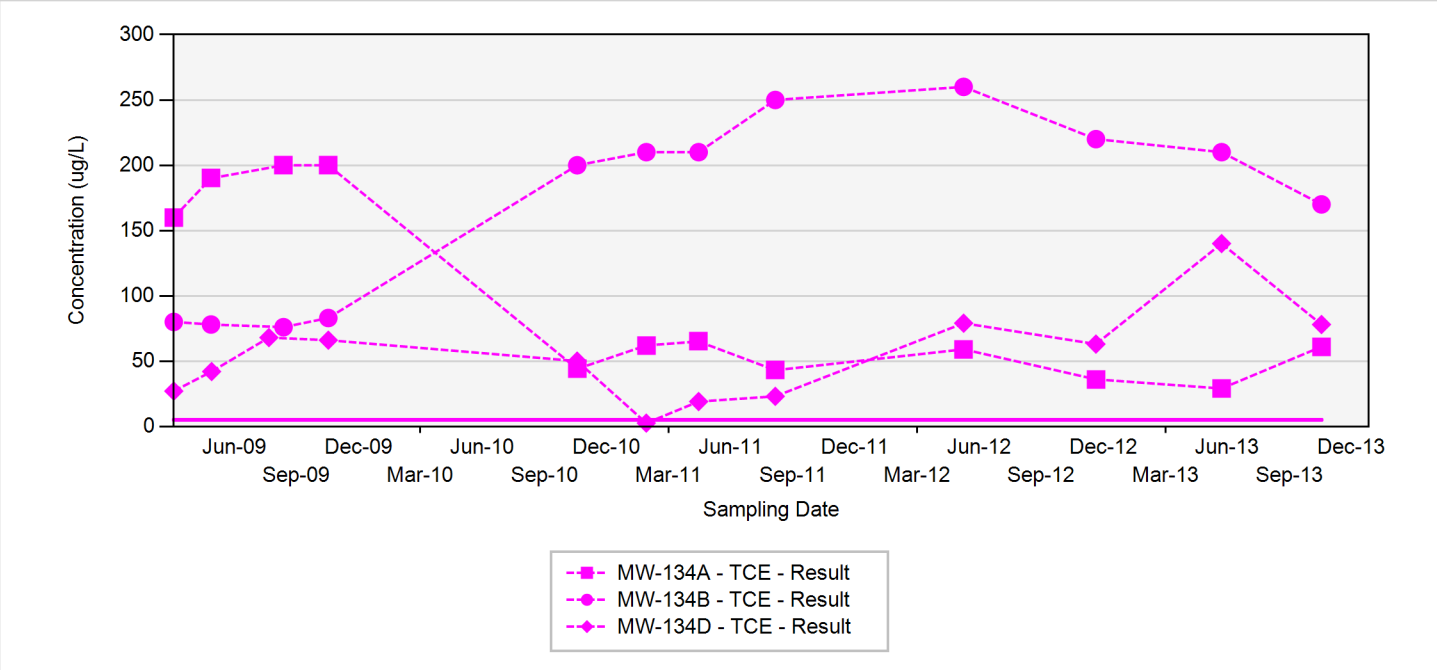
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-134





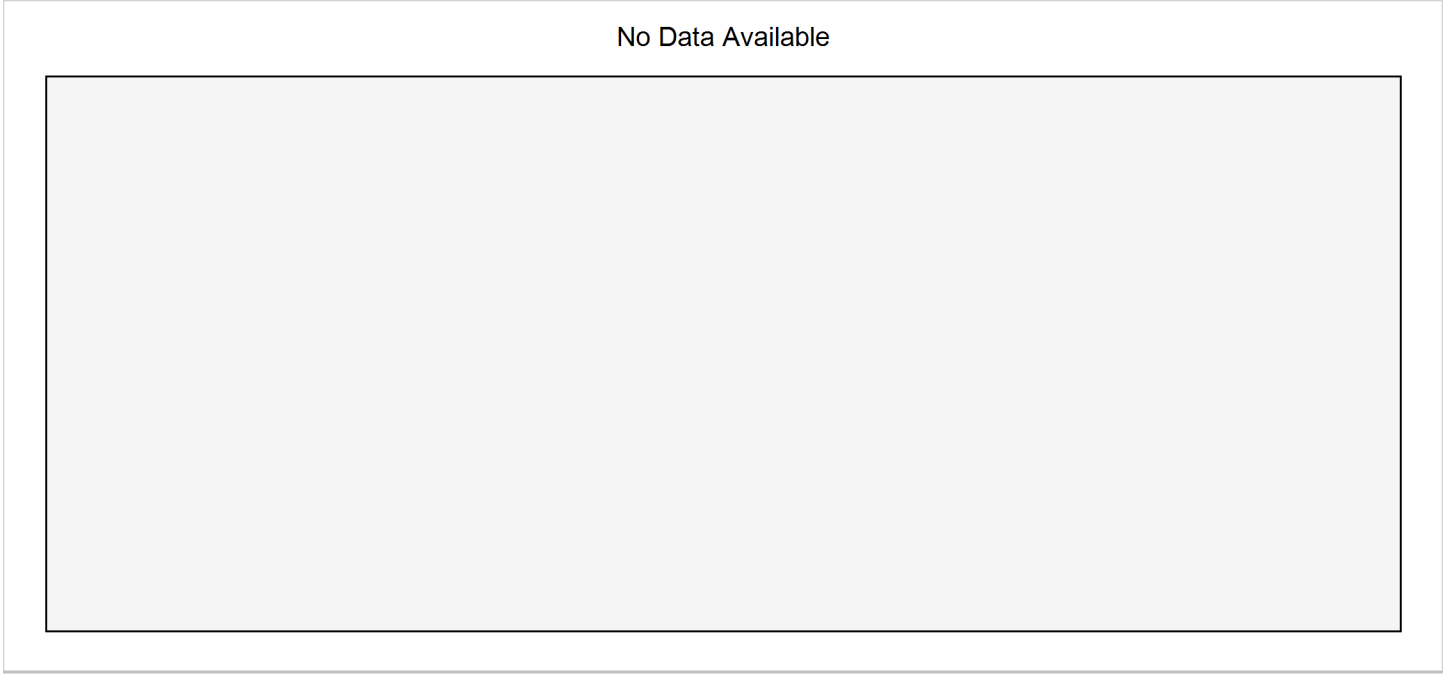
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

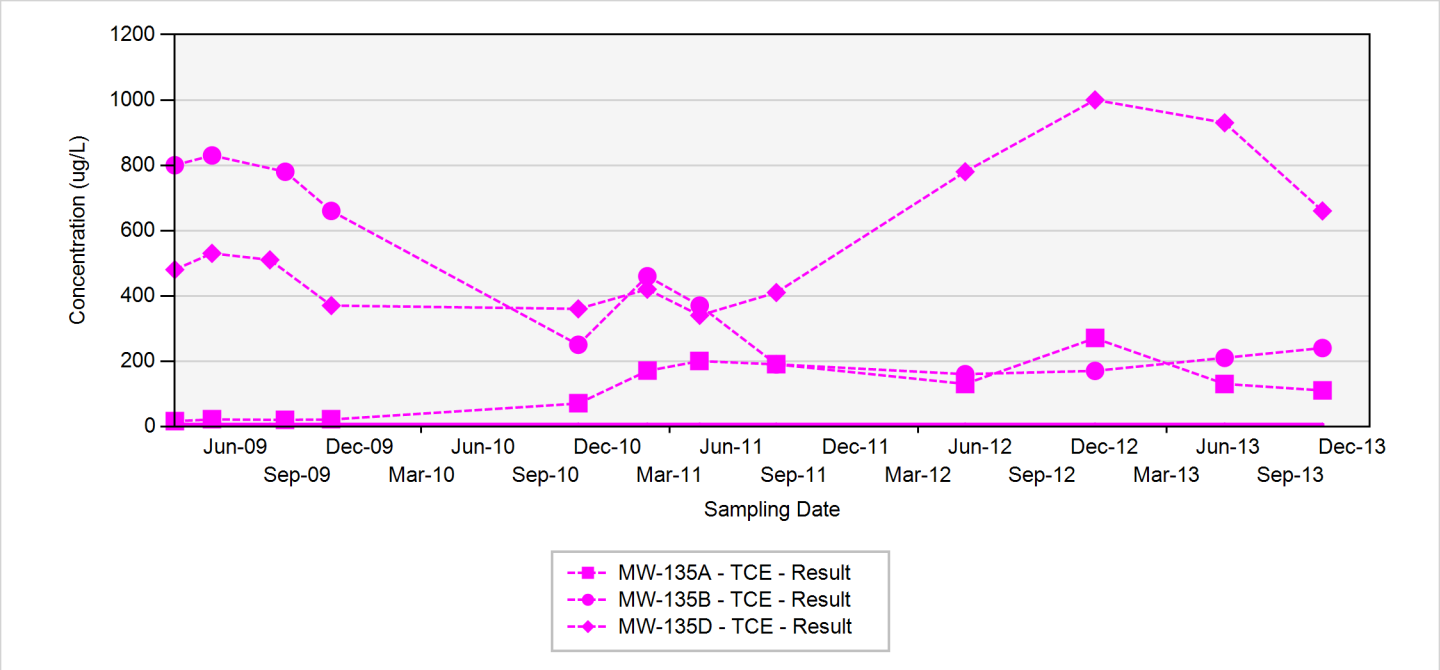
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.6
Concentration Trend Charts for Monitoring Wells associated with Focused Extraction Wells

MW-135





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

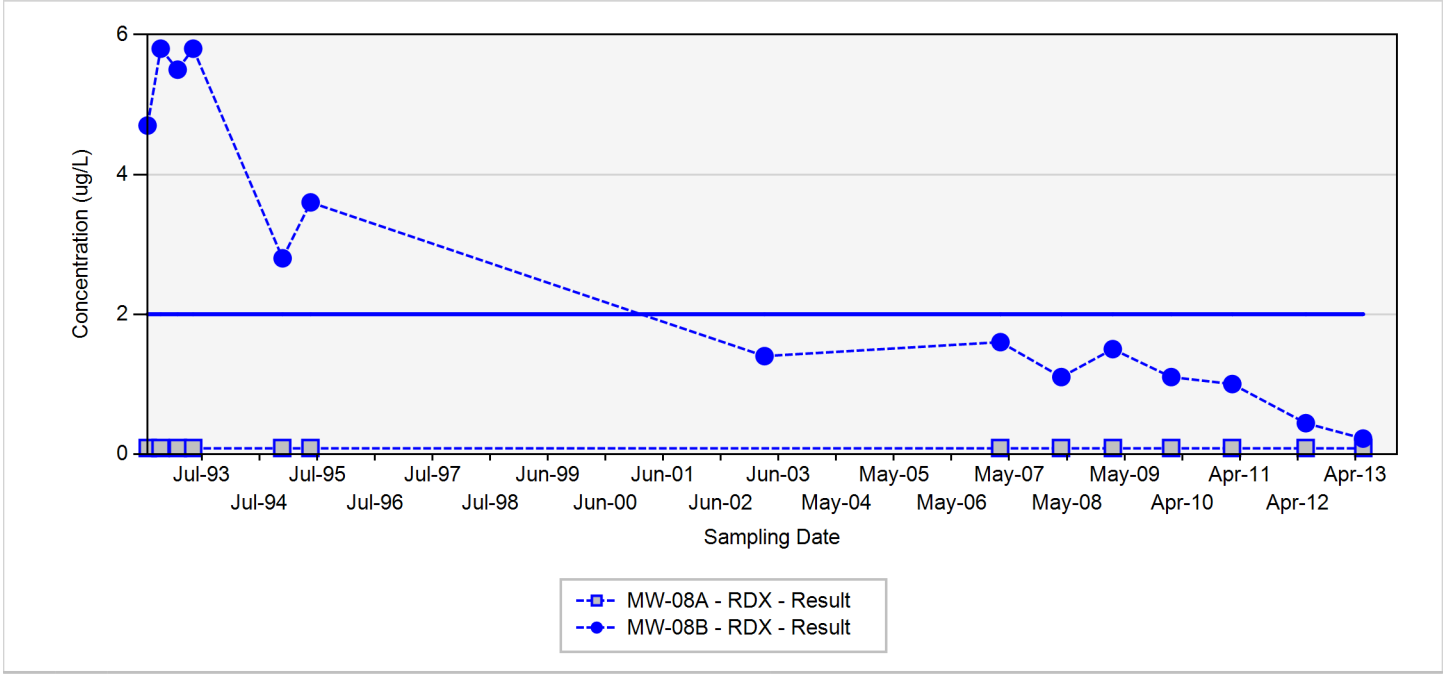
ug/L: micrograms per liter
Silver markers indicate non-detected results

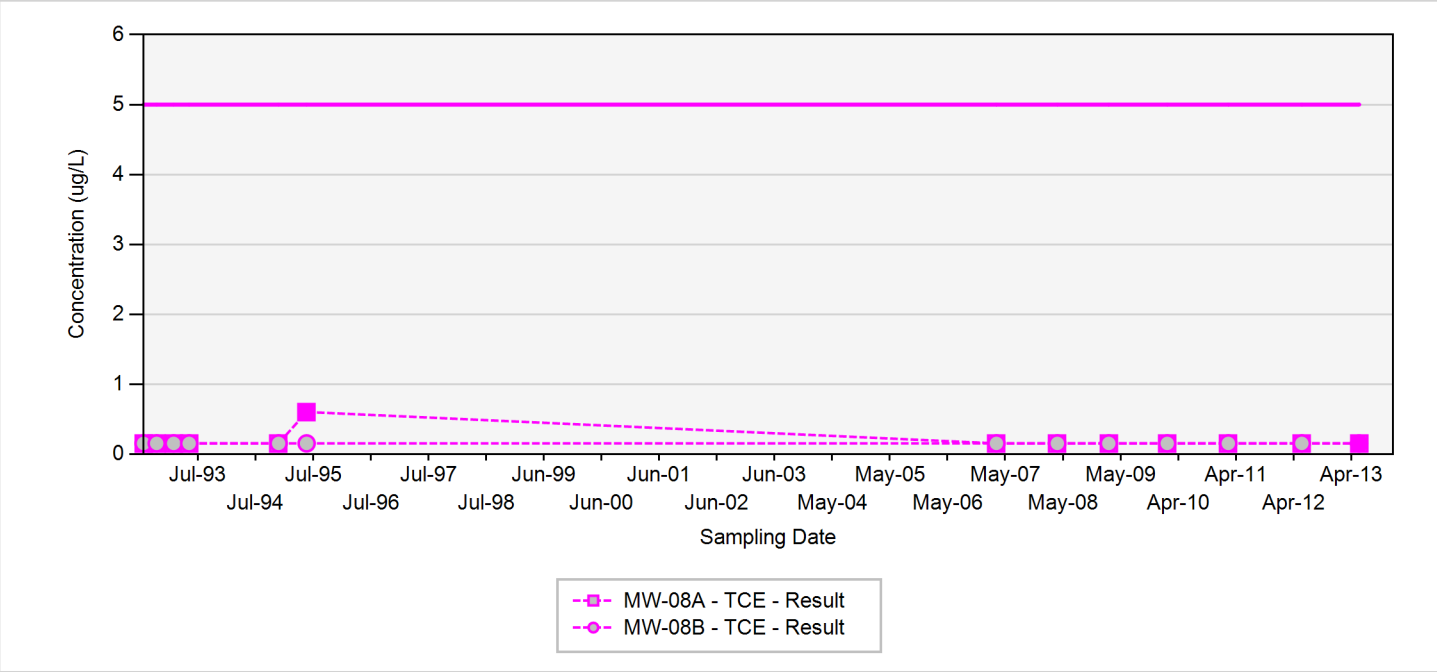
A.7 – Upgradient, Sidegradient, and Downgradient Monitoring Wells

This page was intentionally left blank.

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-08





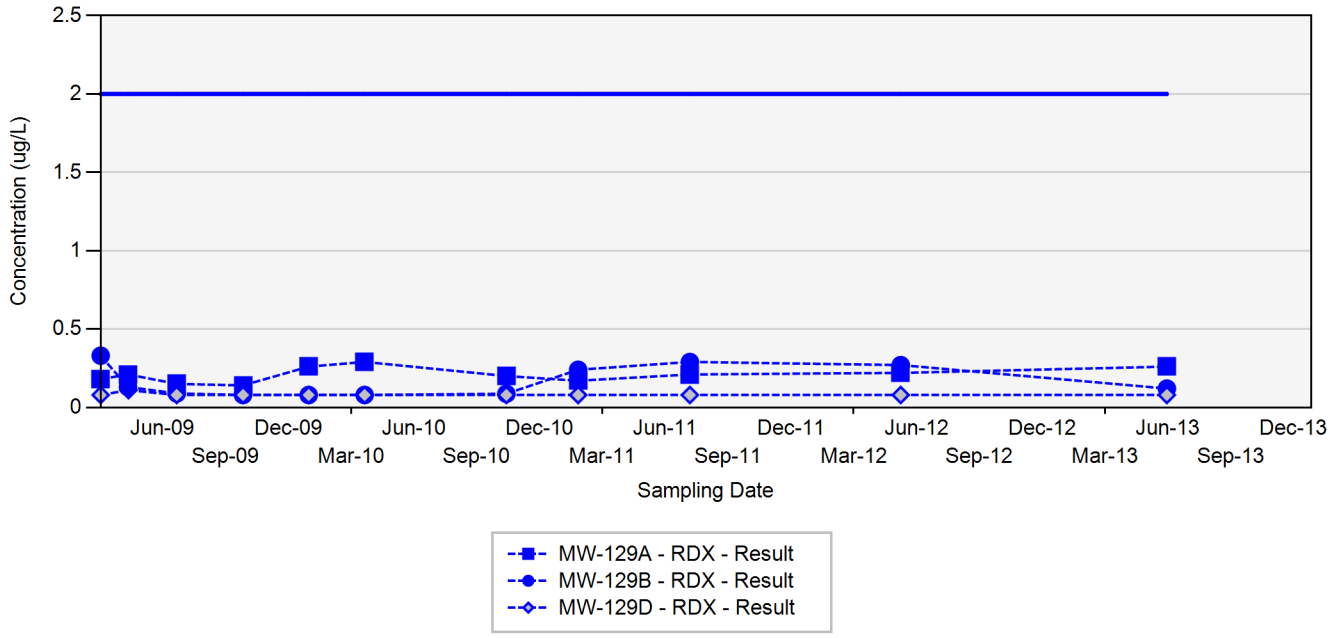
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-129



No Data Available

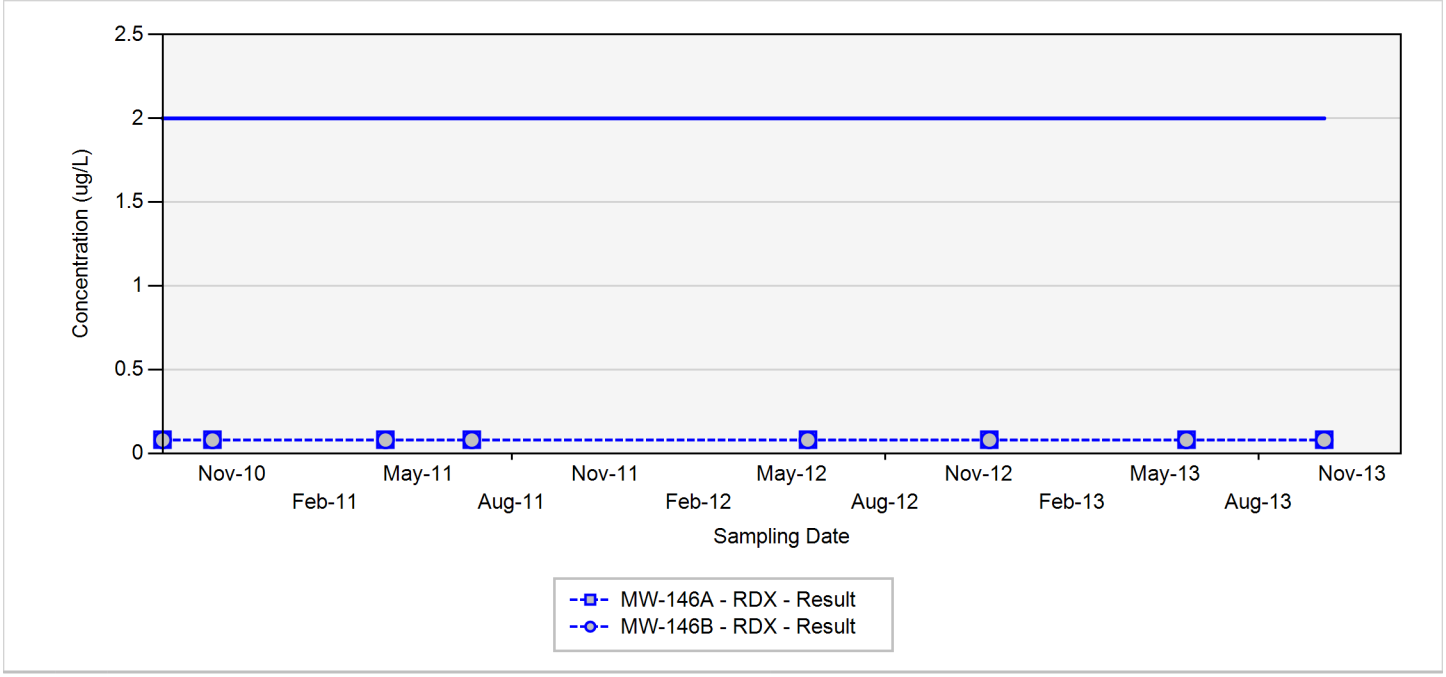
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

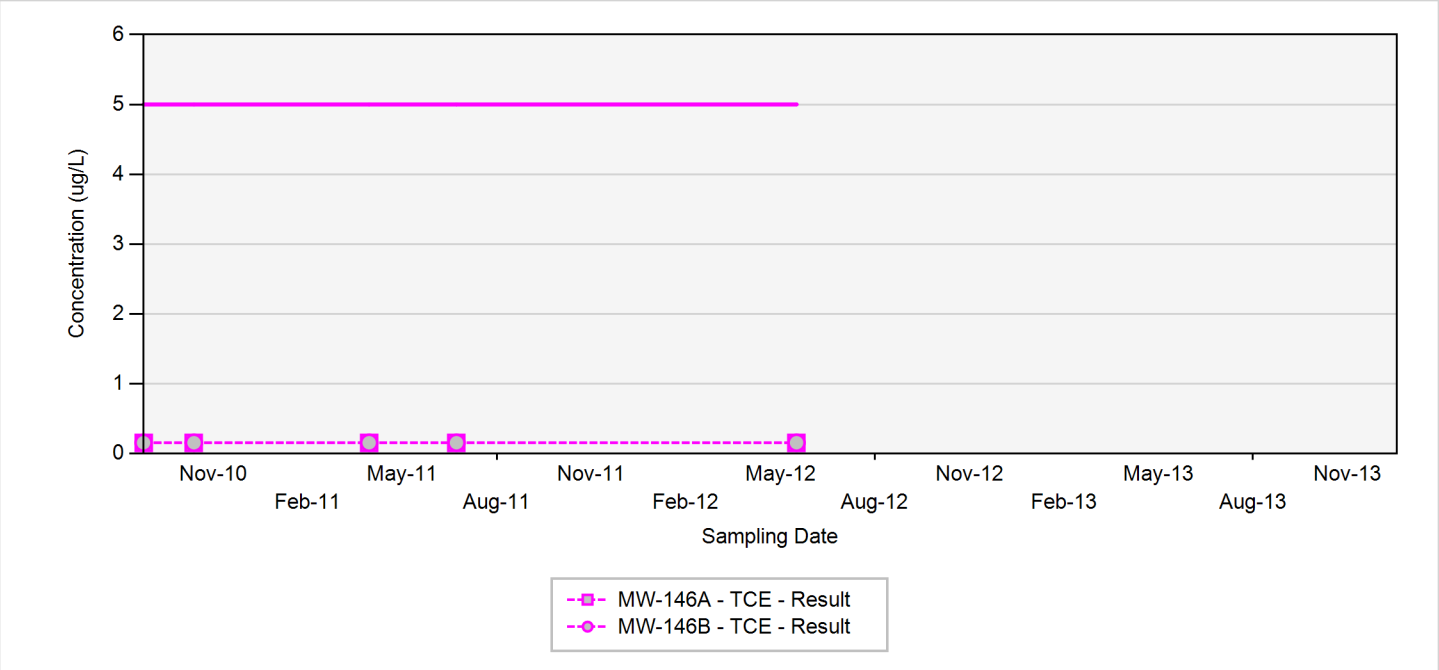
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-146





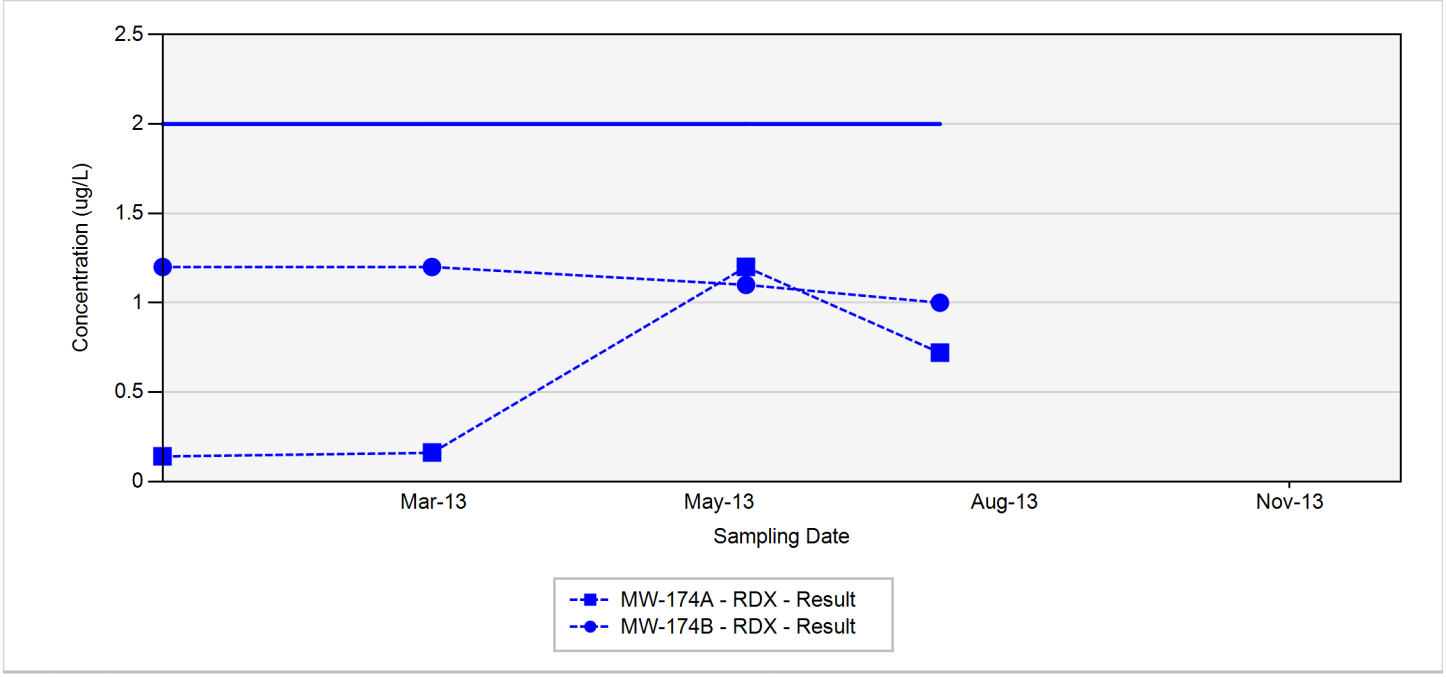
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-174



No Data Available

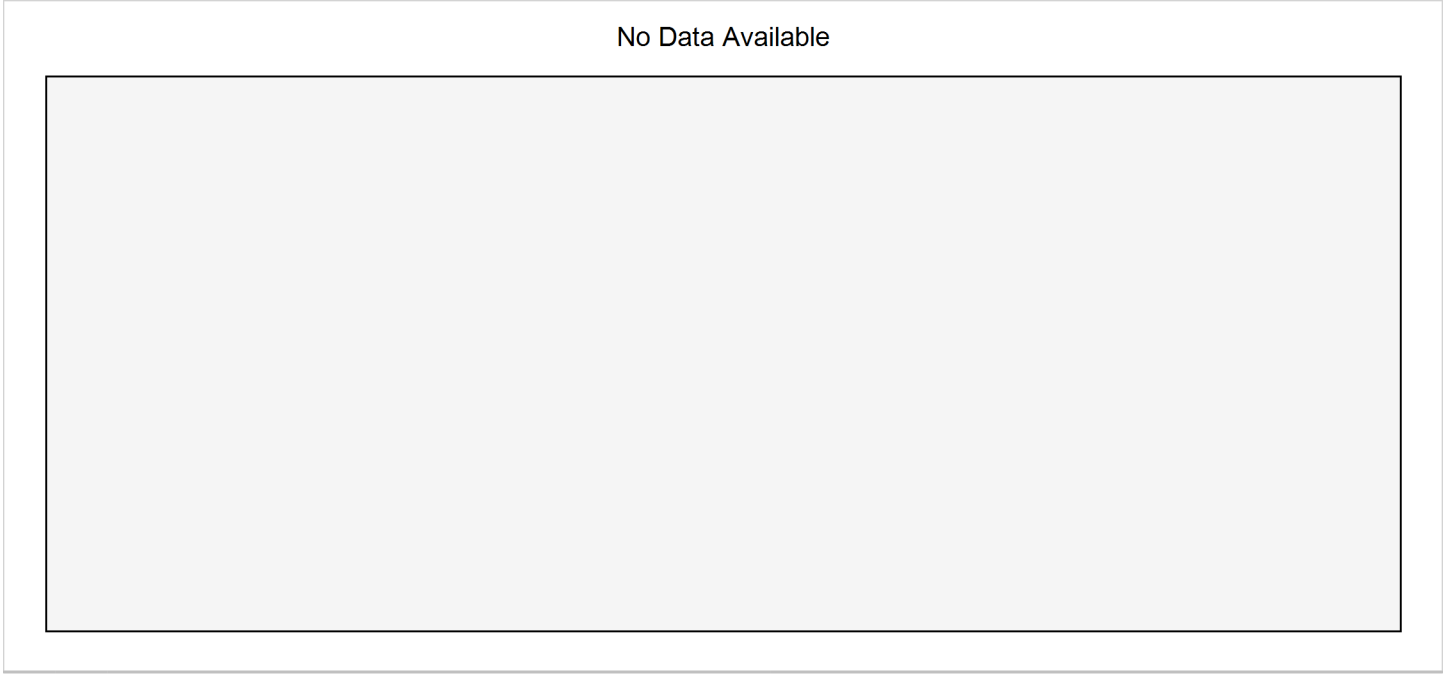
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

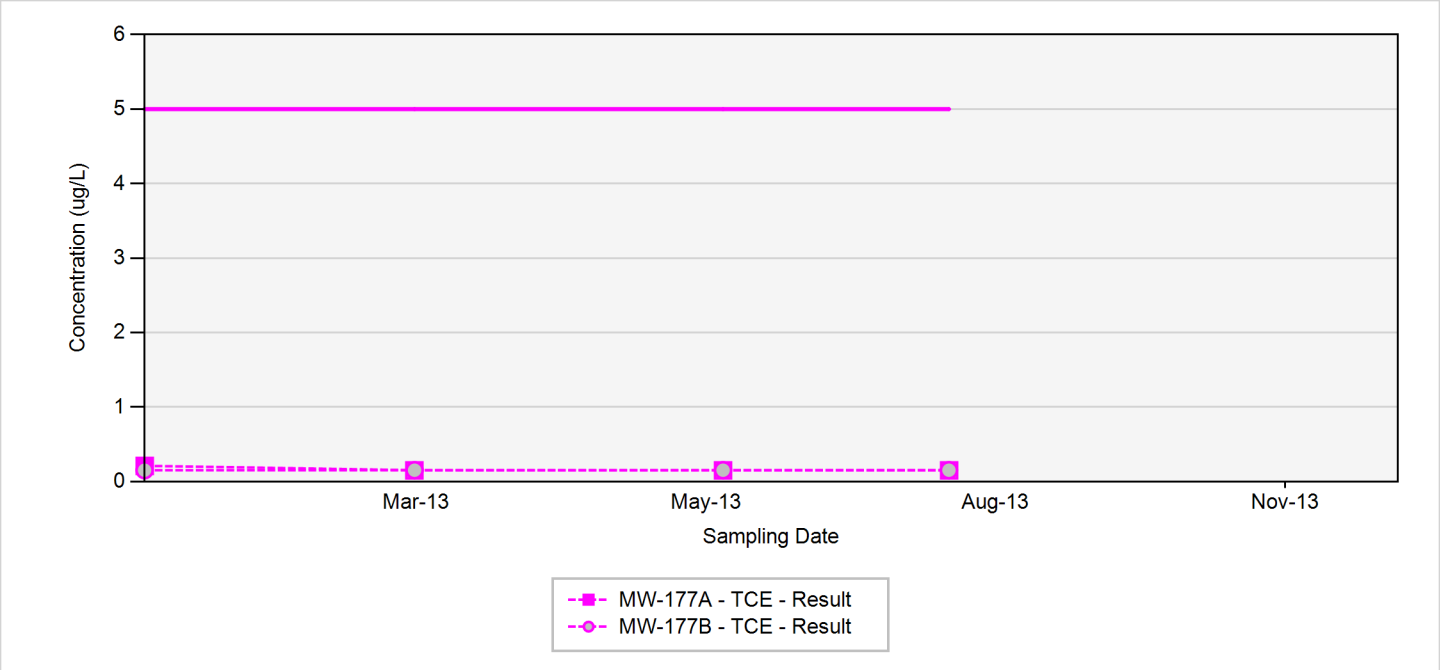
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-177





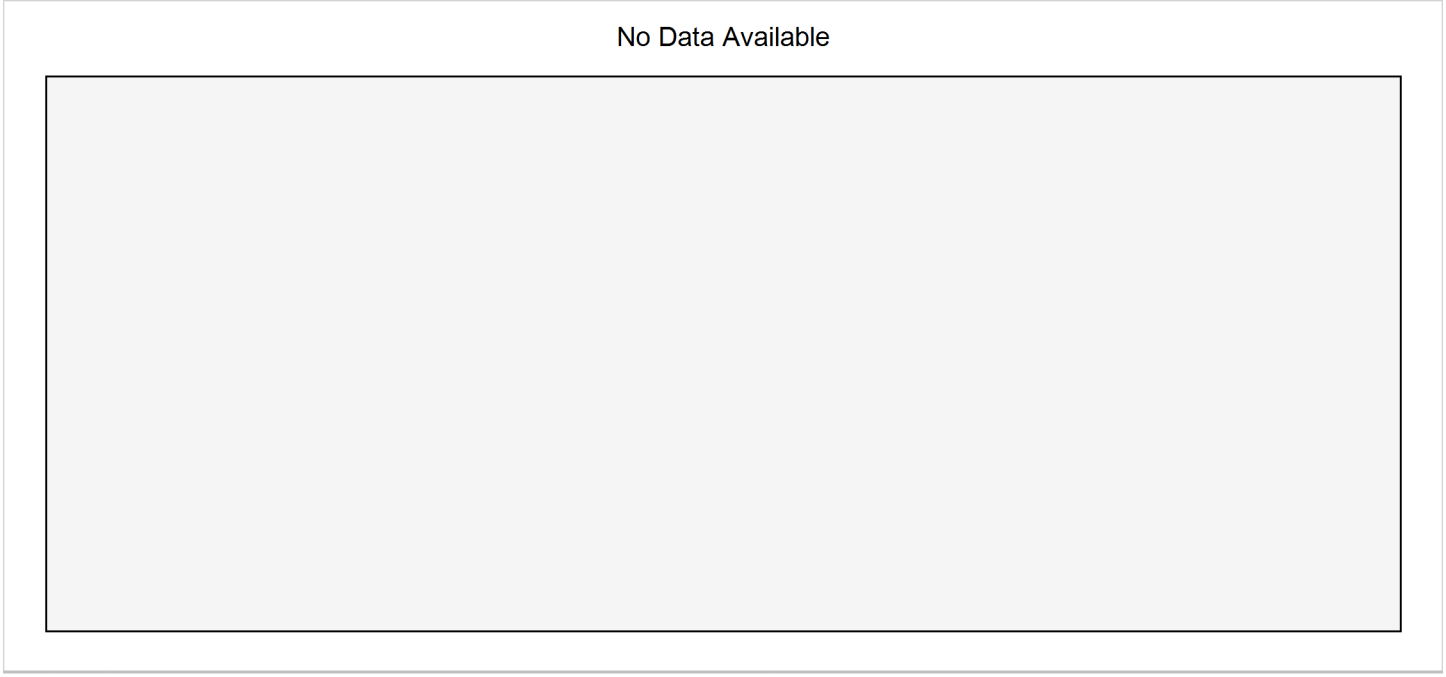
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

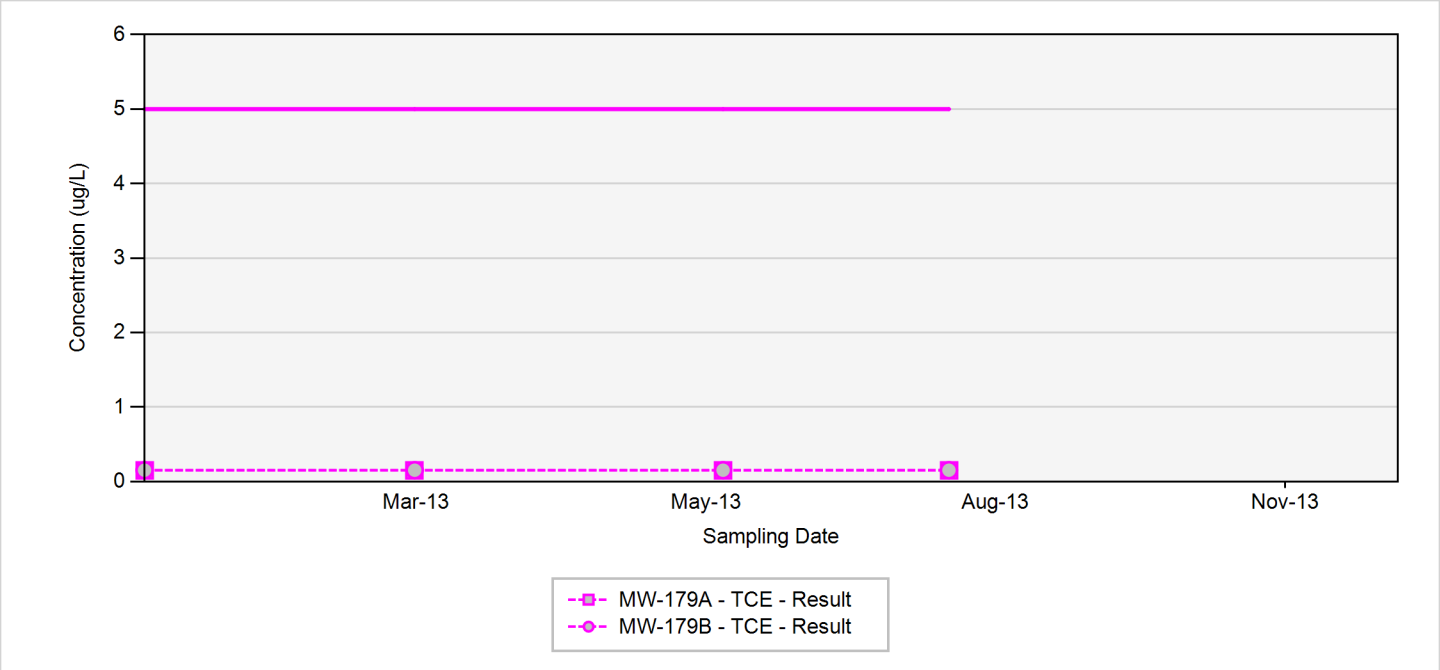
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-179





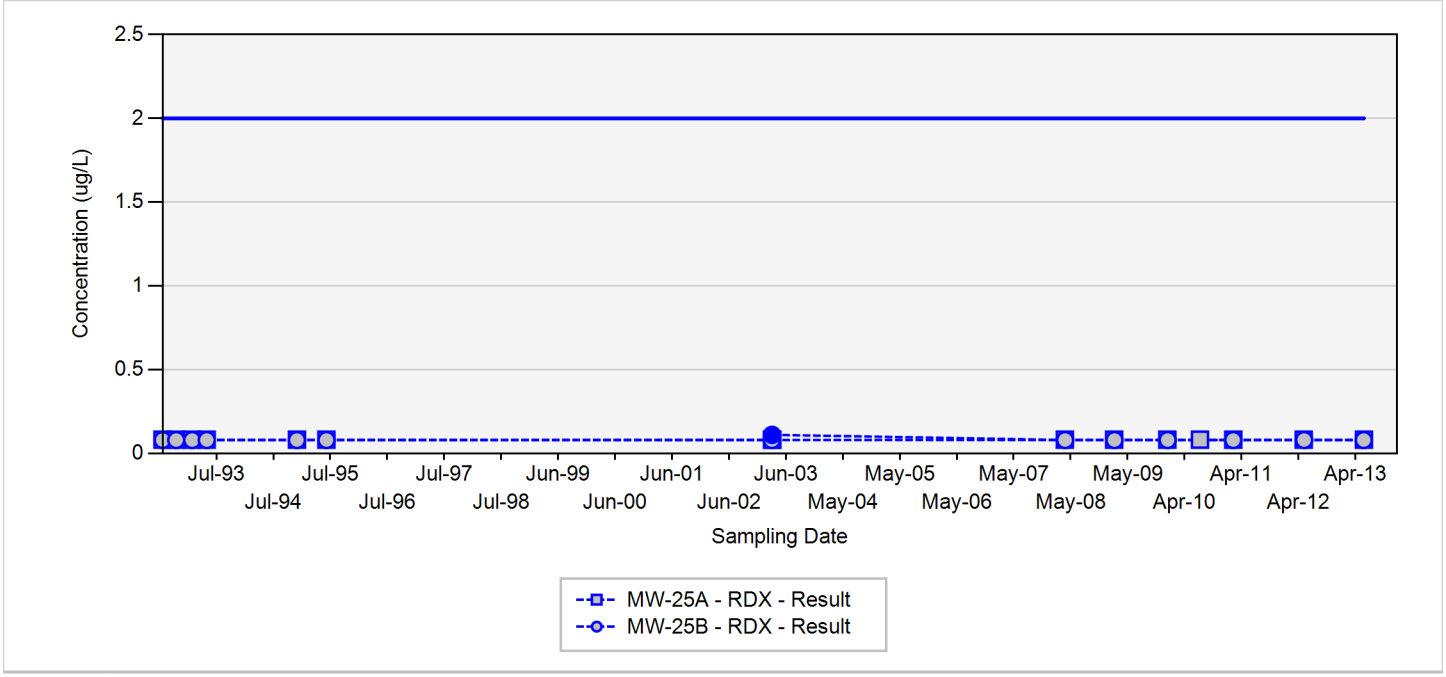
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

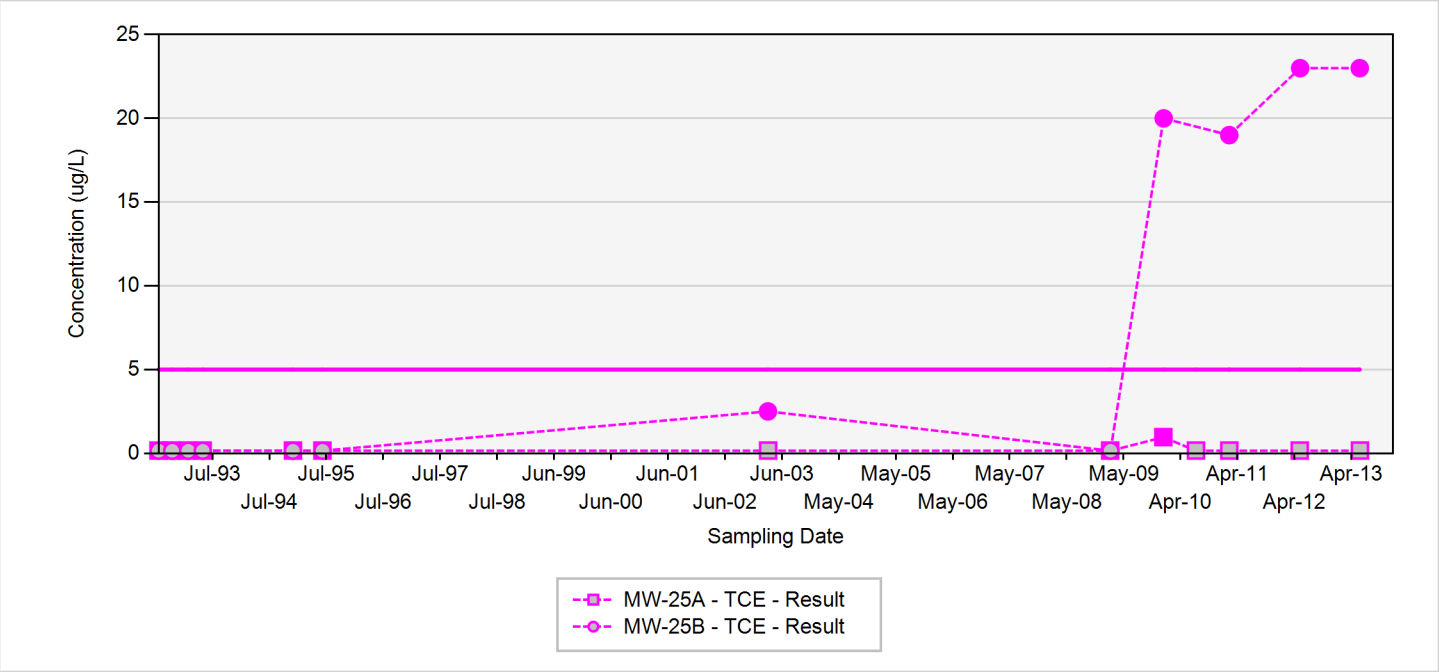
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-25





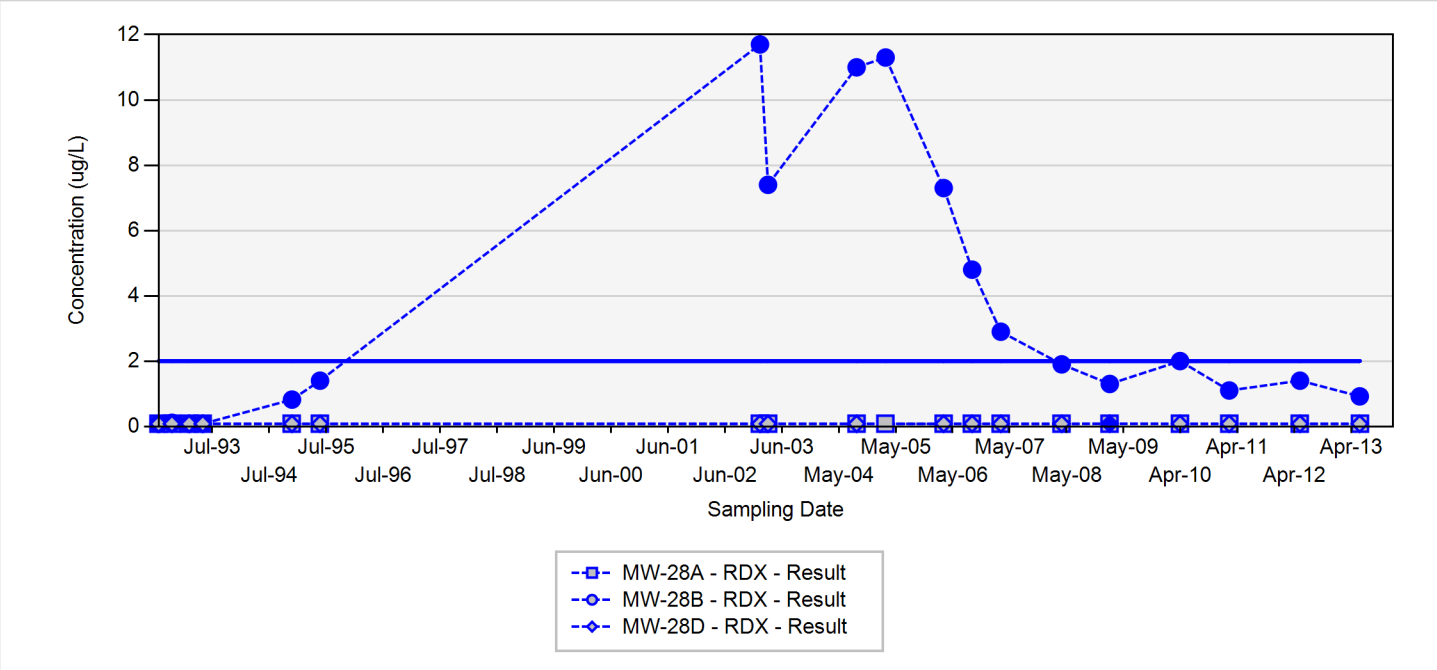
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

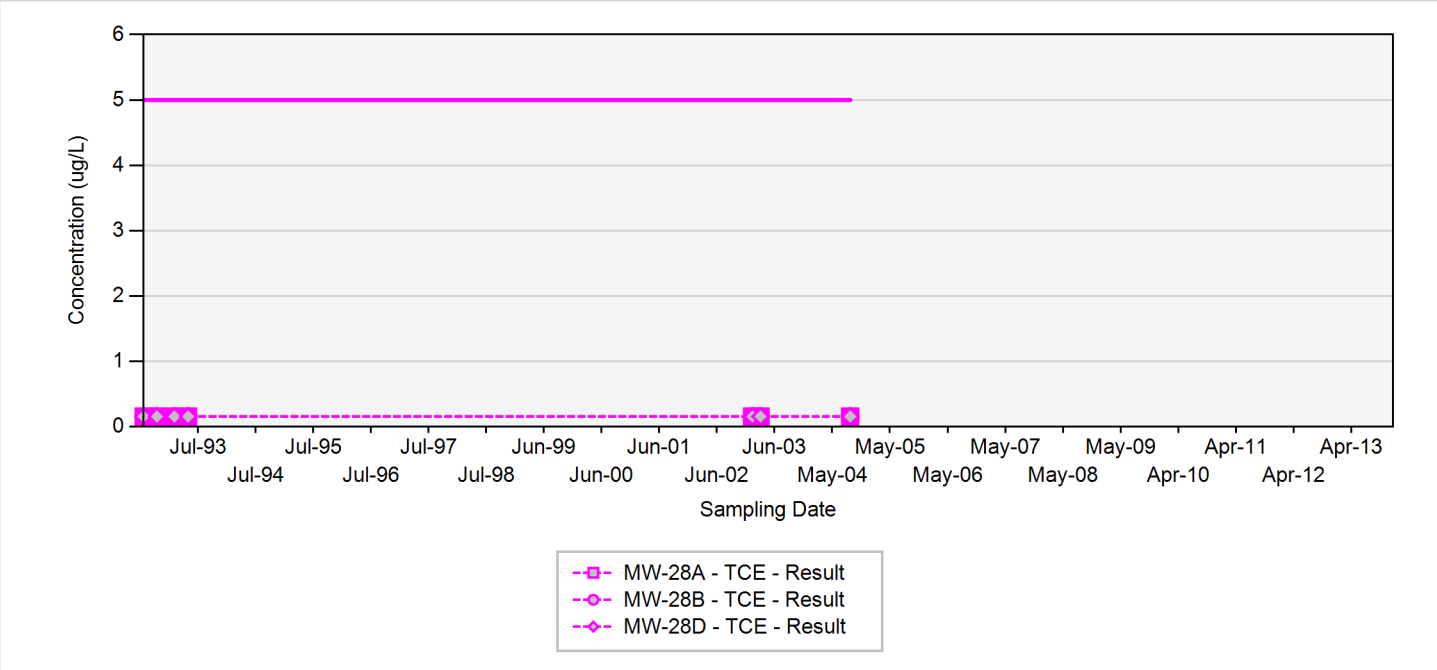
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-28





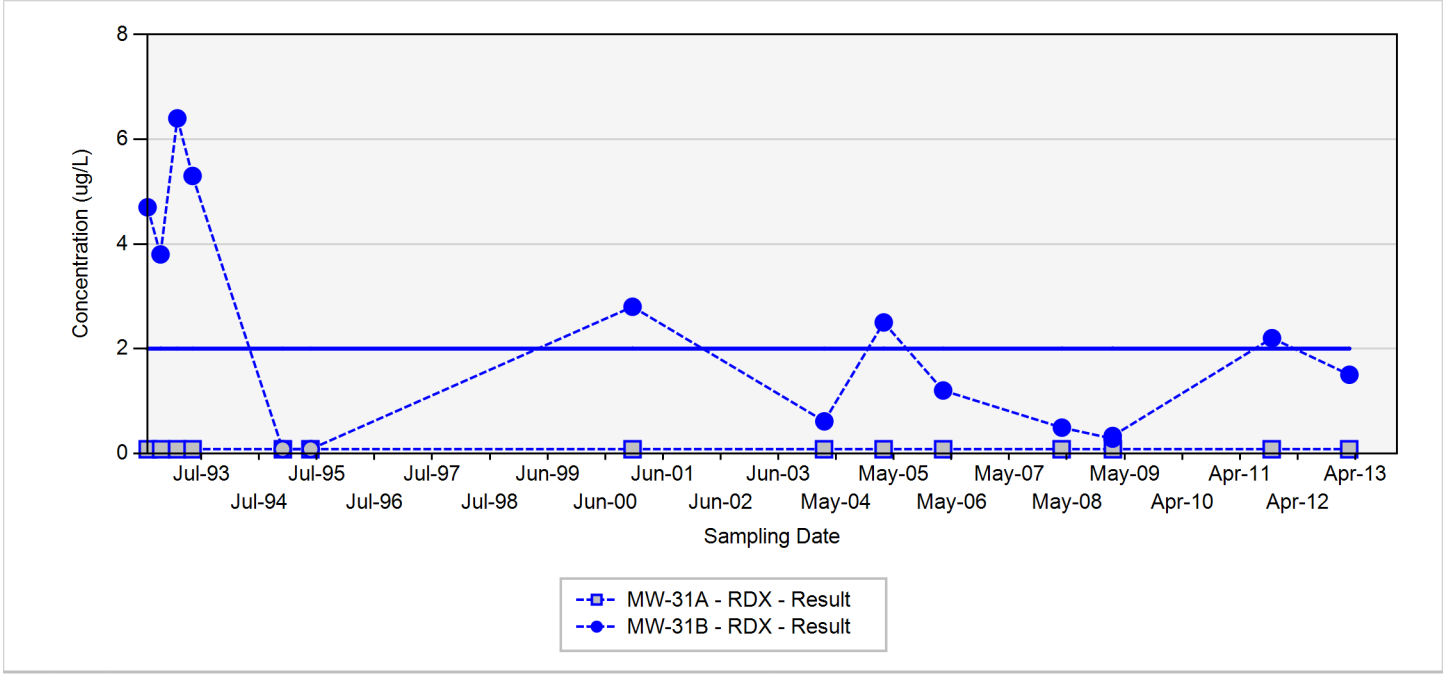
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

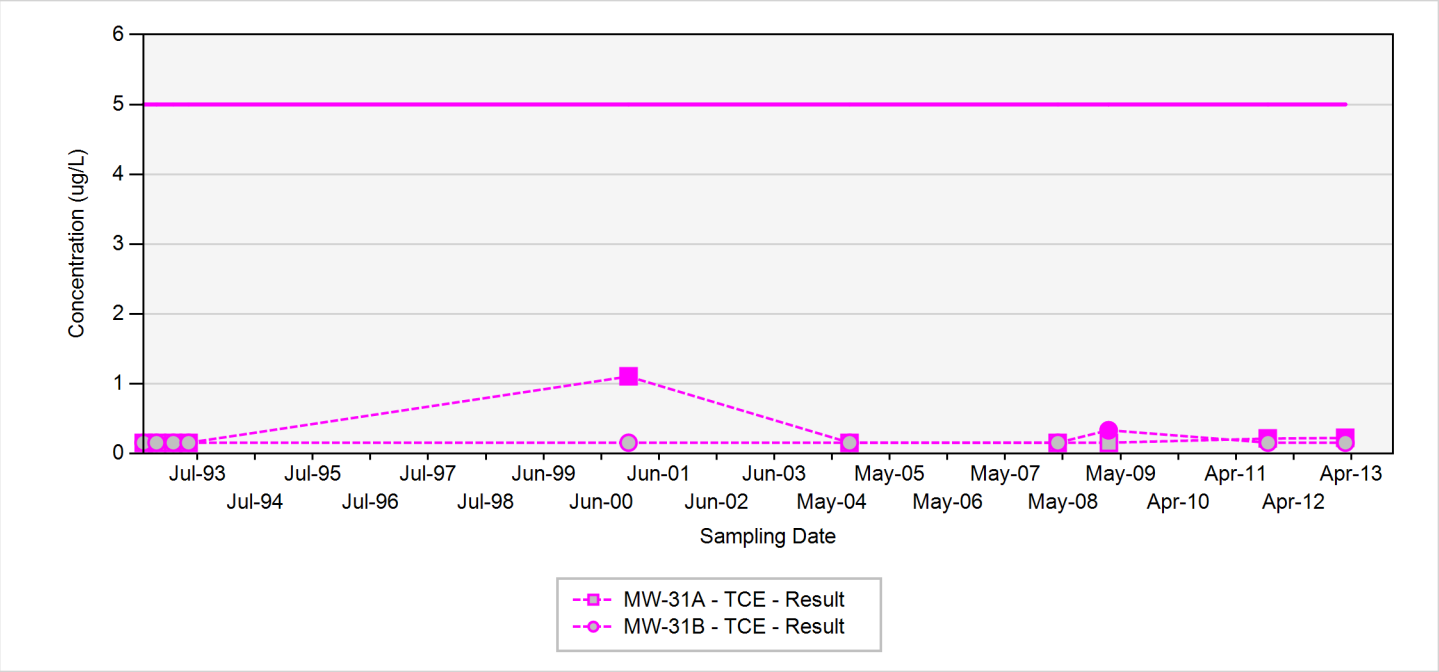
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-31





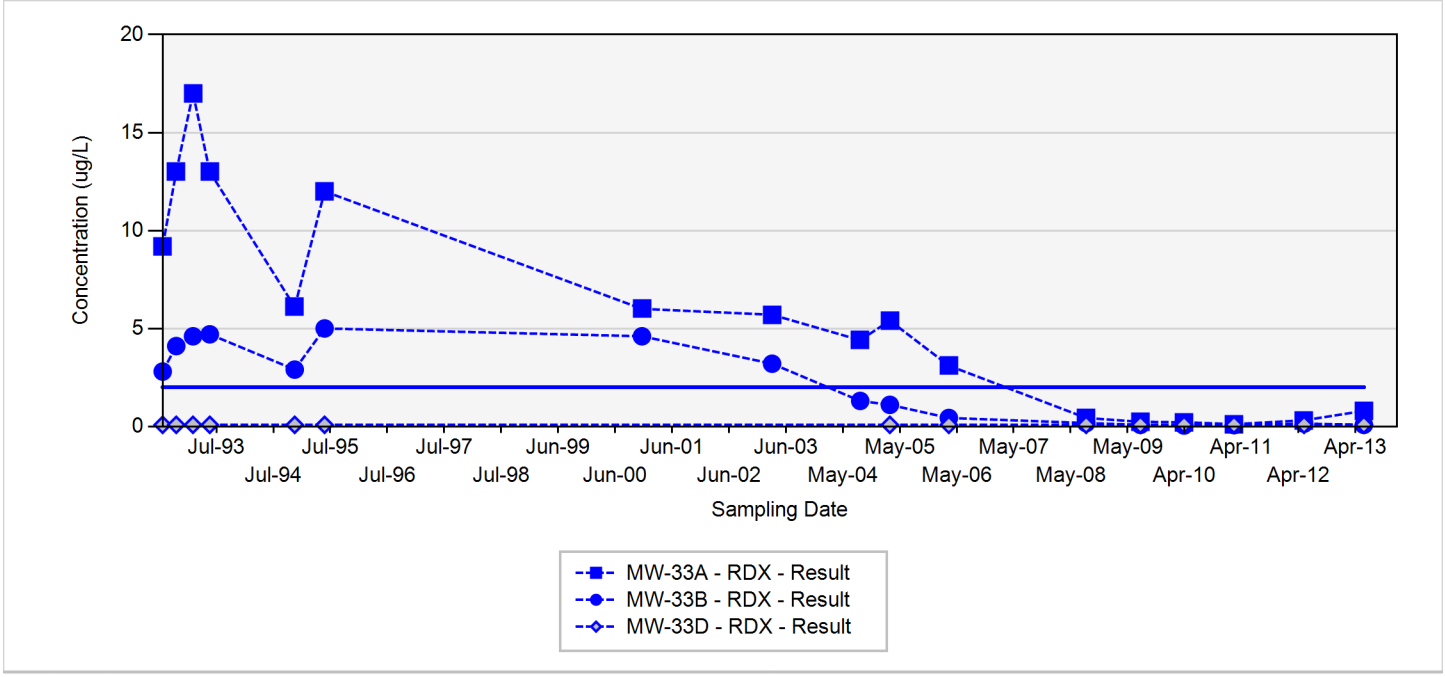
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

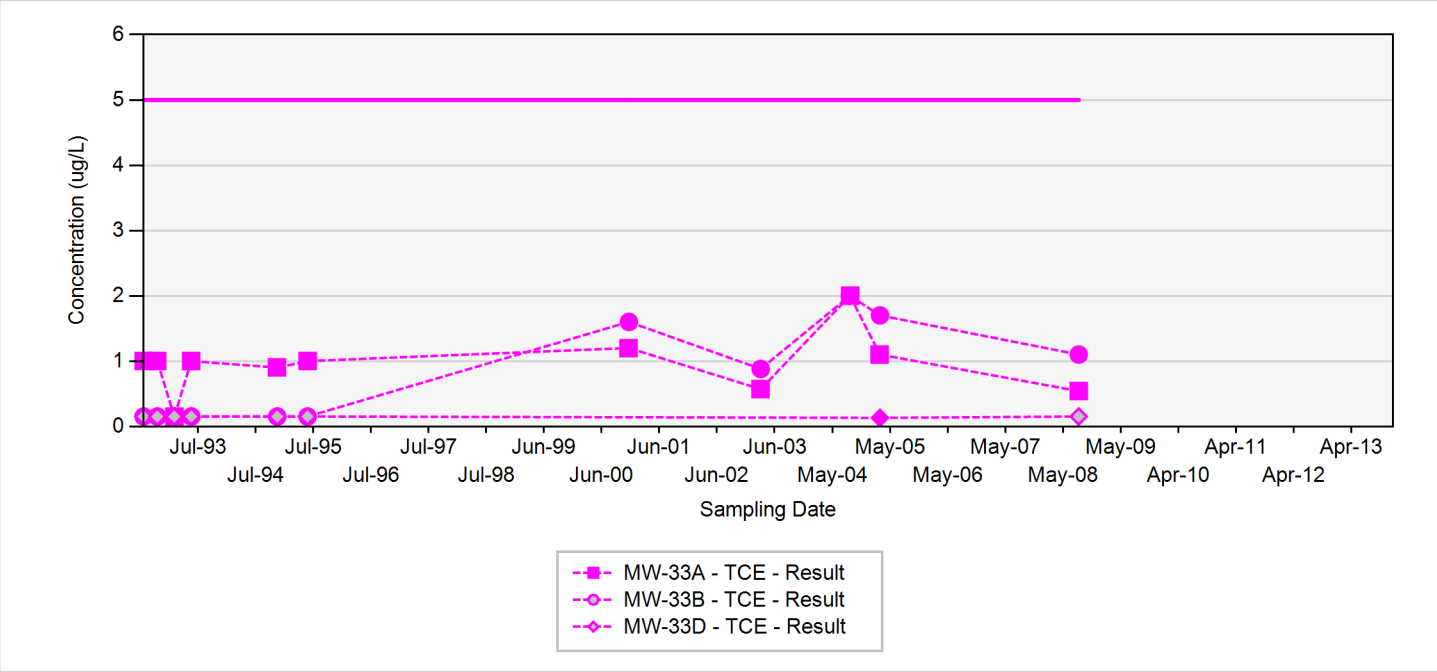
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-33





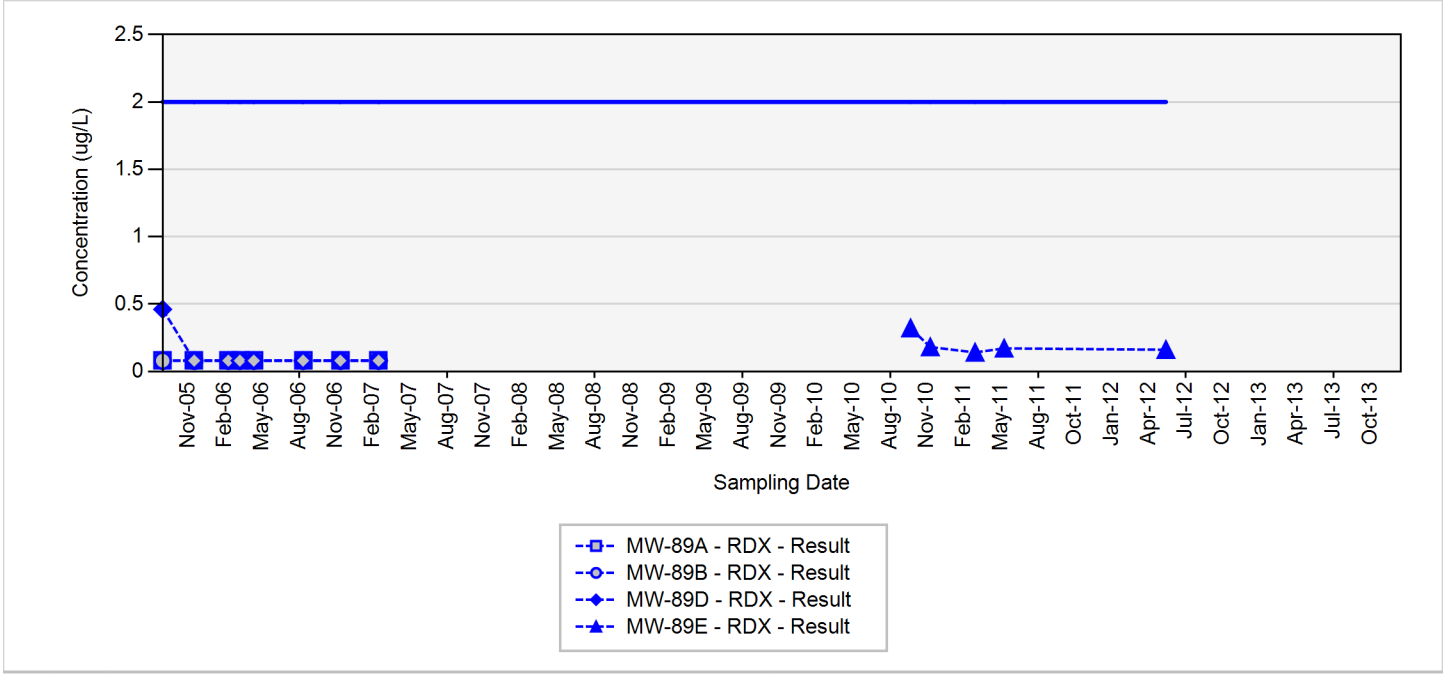
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

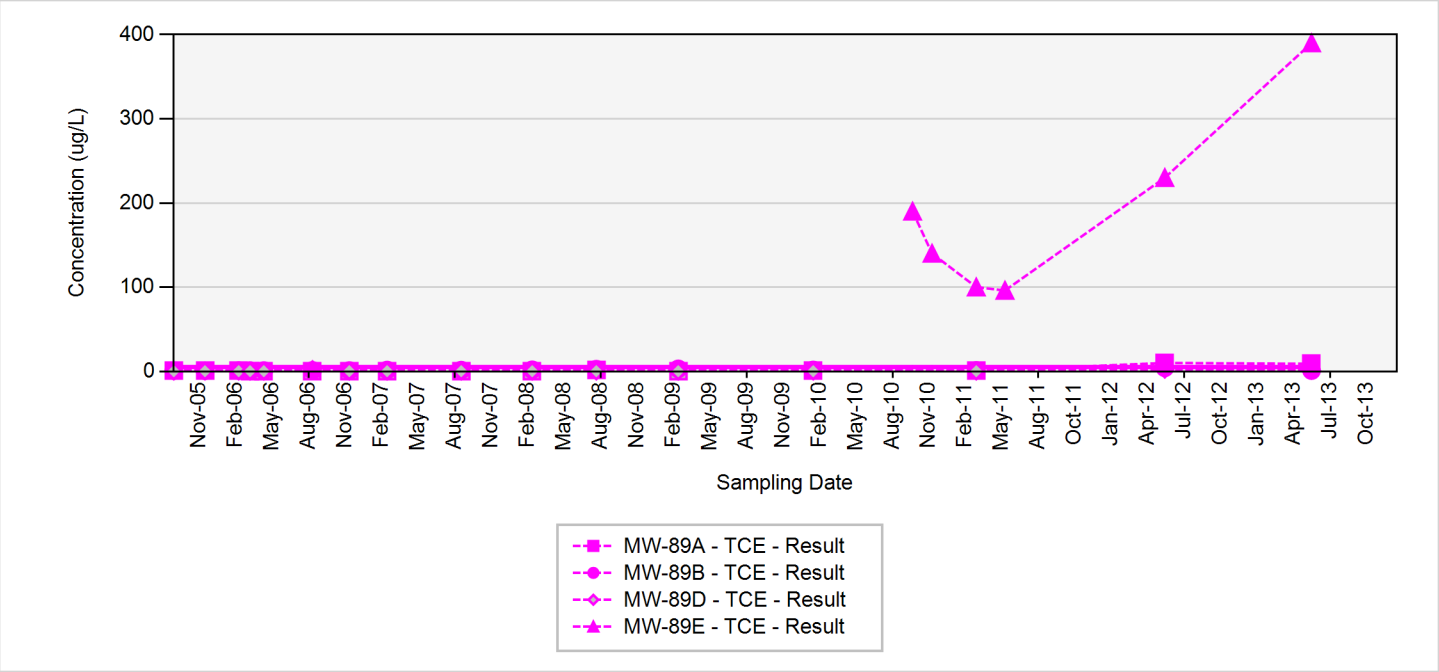
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-89





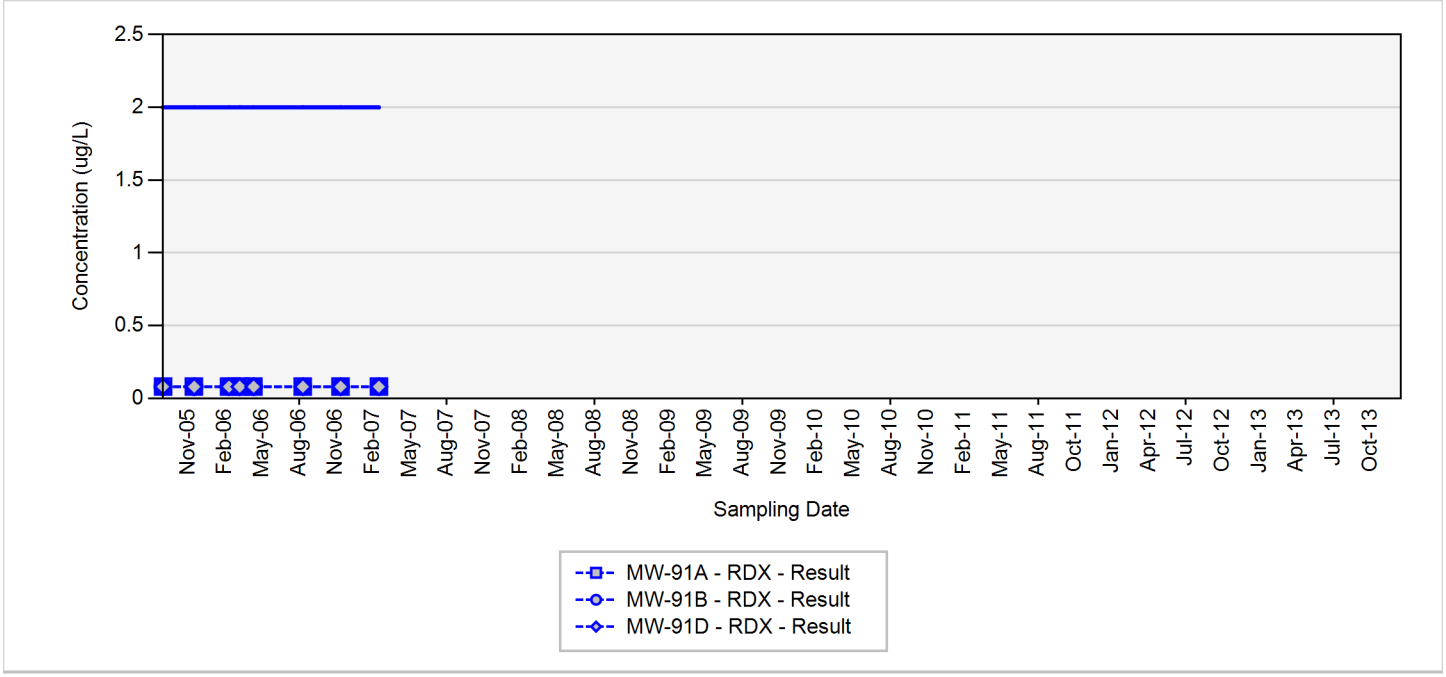
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

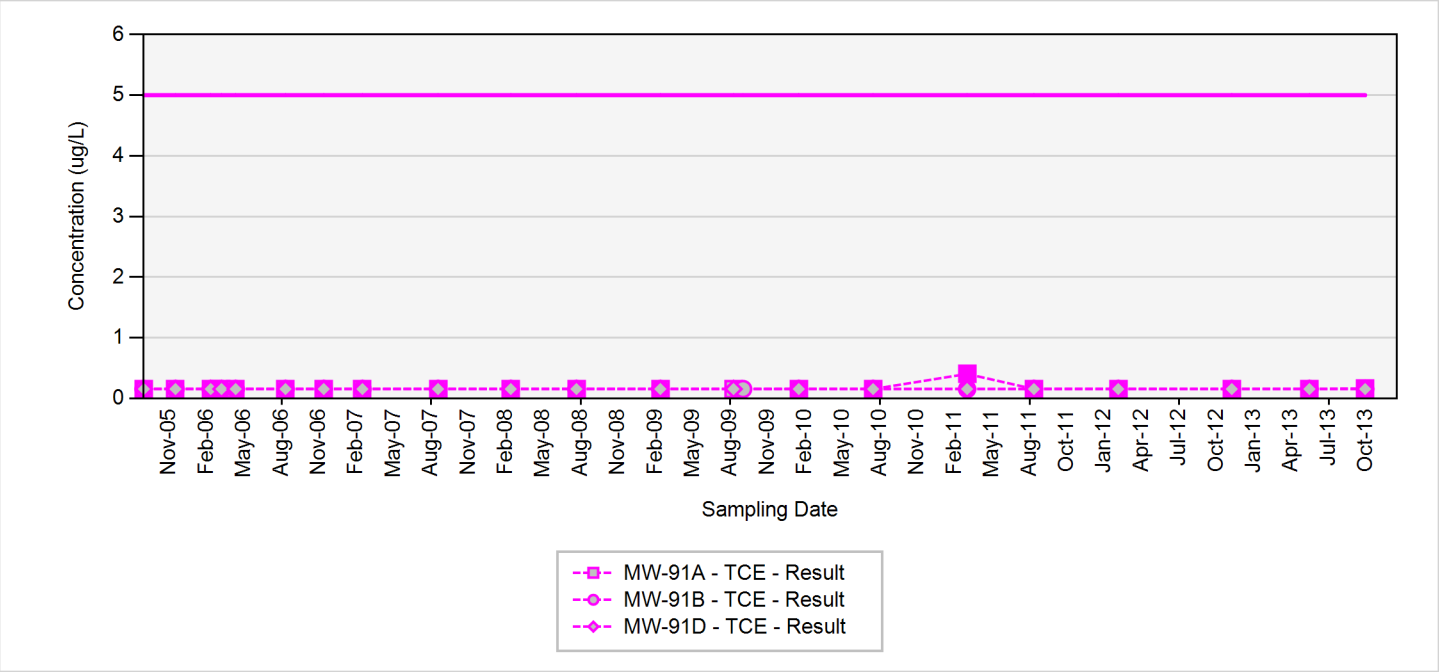
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-91





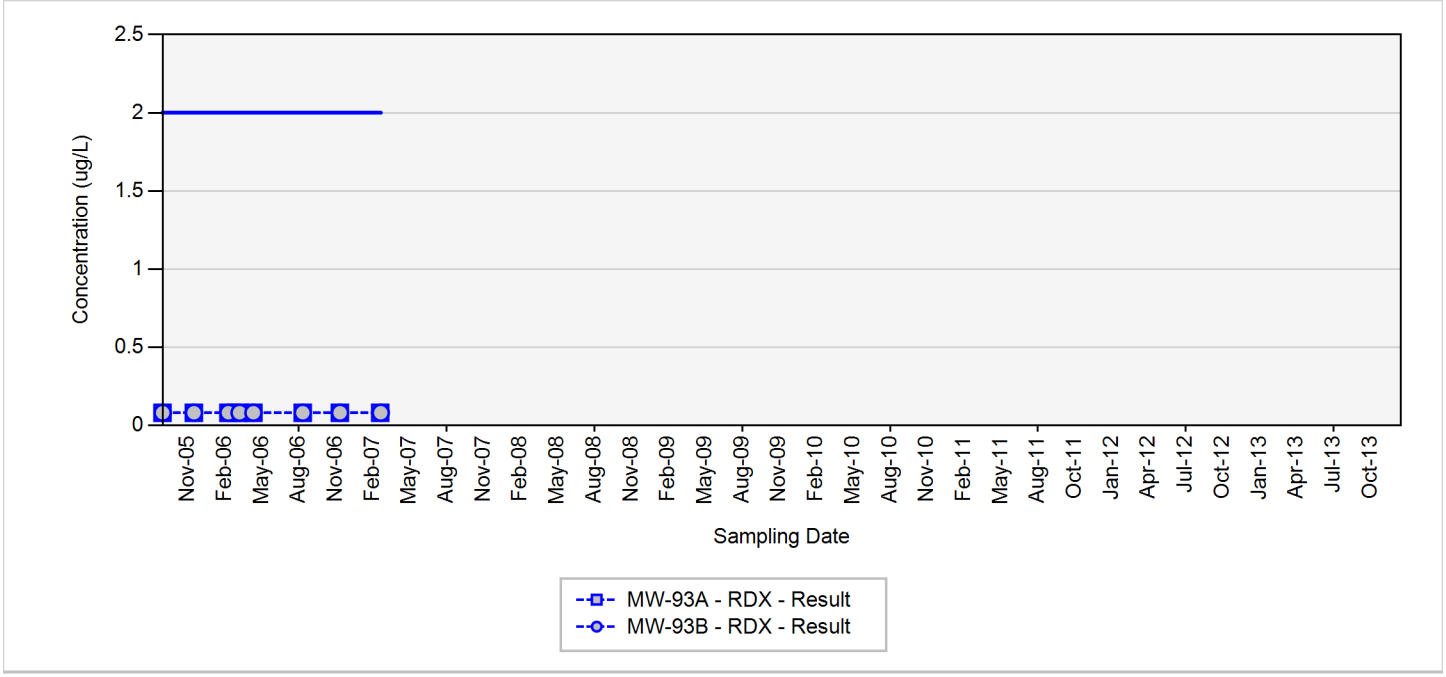
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

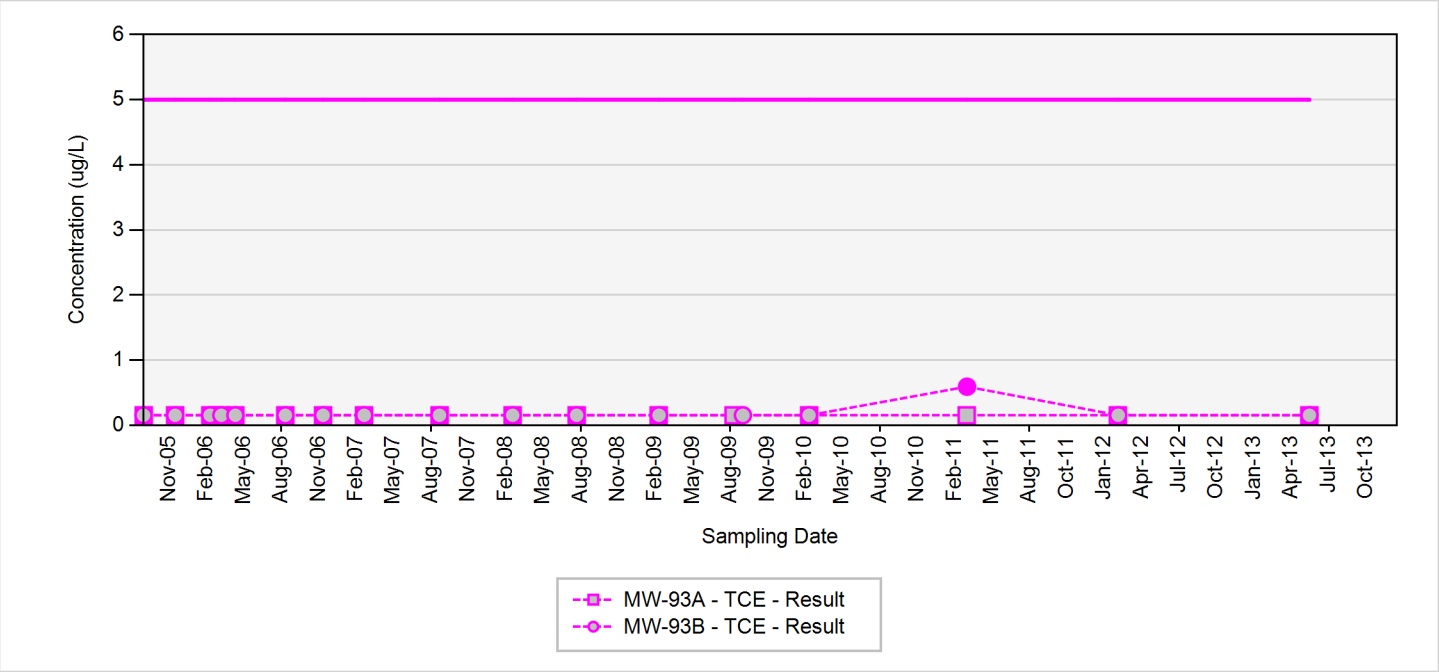
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.7
Concentration Trend Charts for Side and Downgradient Monitoring Wells

MW-93





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

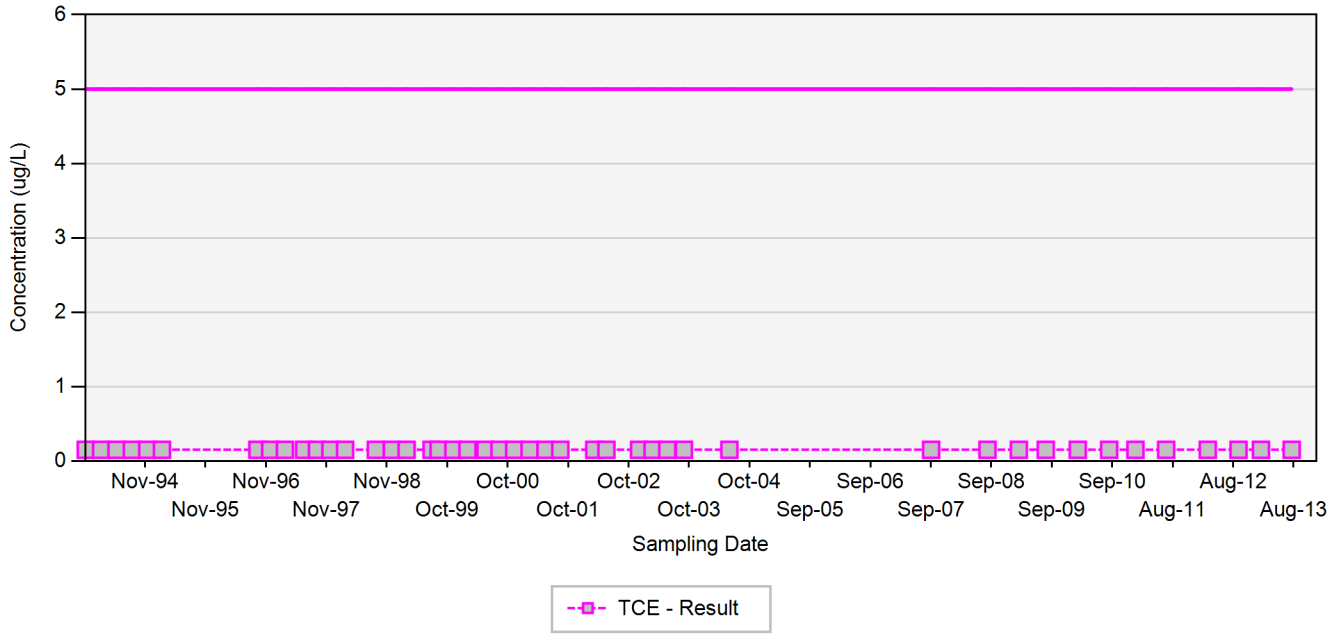
This page was intentionally left blank.

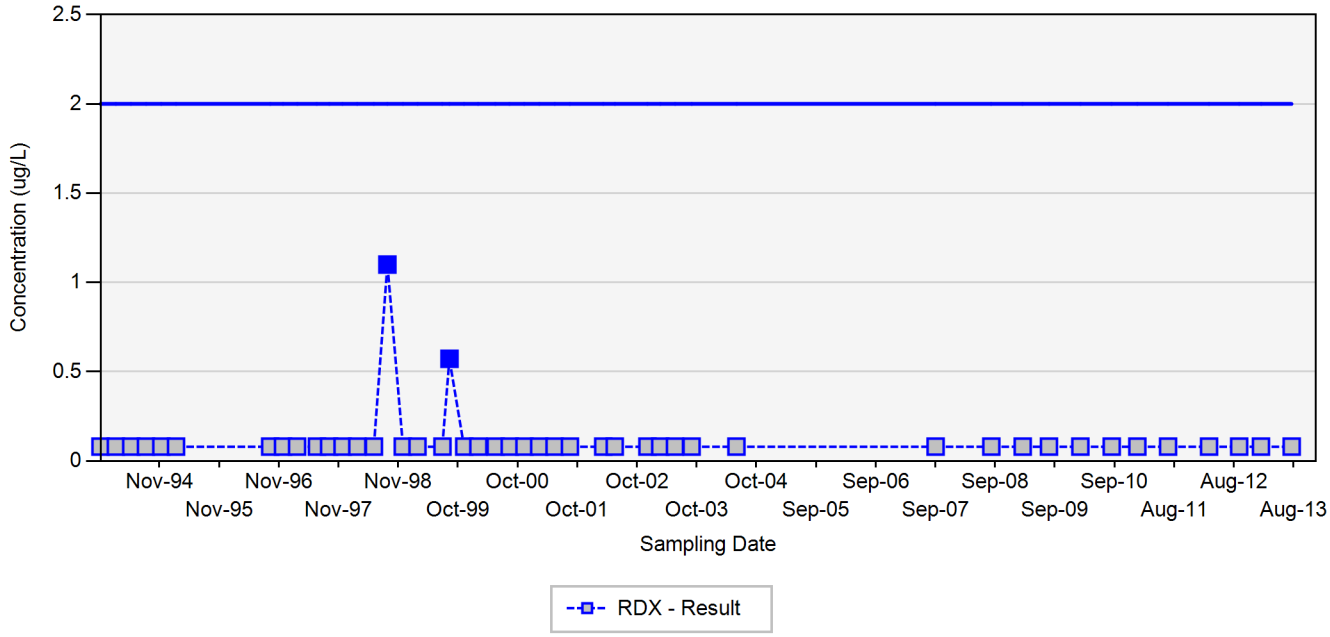
A.8 – Water Supply Wells

This page was intentionally left blank.

Appendix A.8
Concentration Trend Charts for Water Supply Wells

UNFL-09A





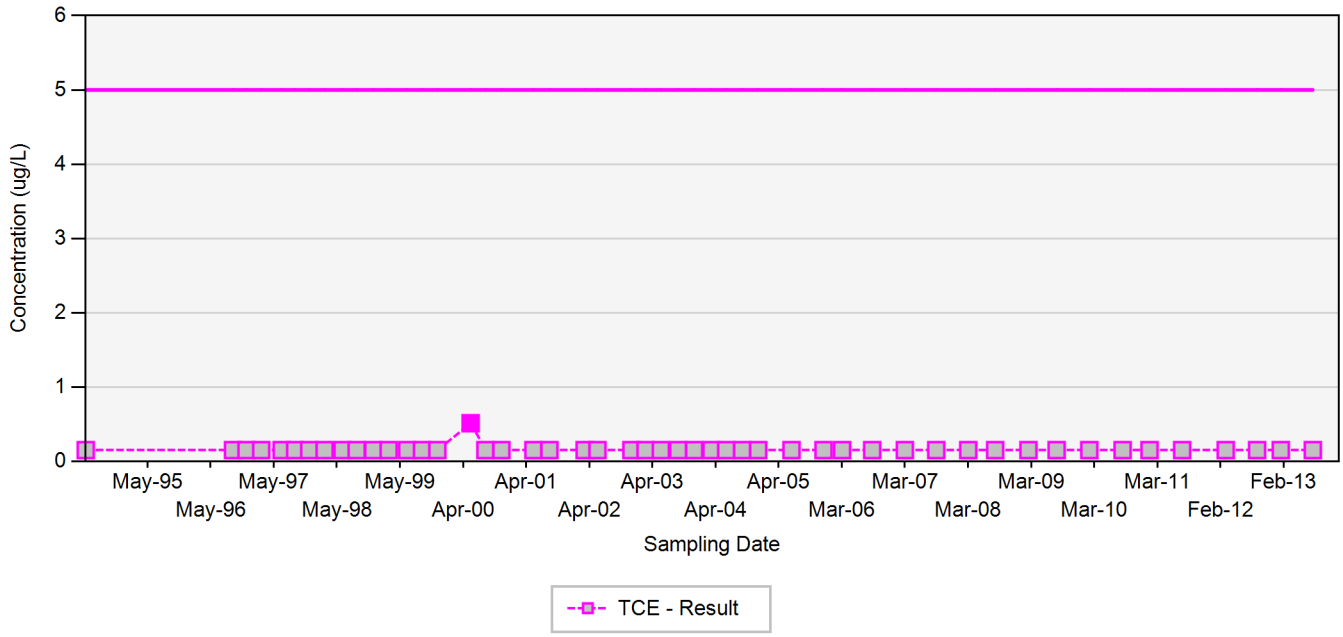
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

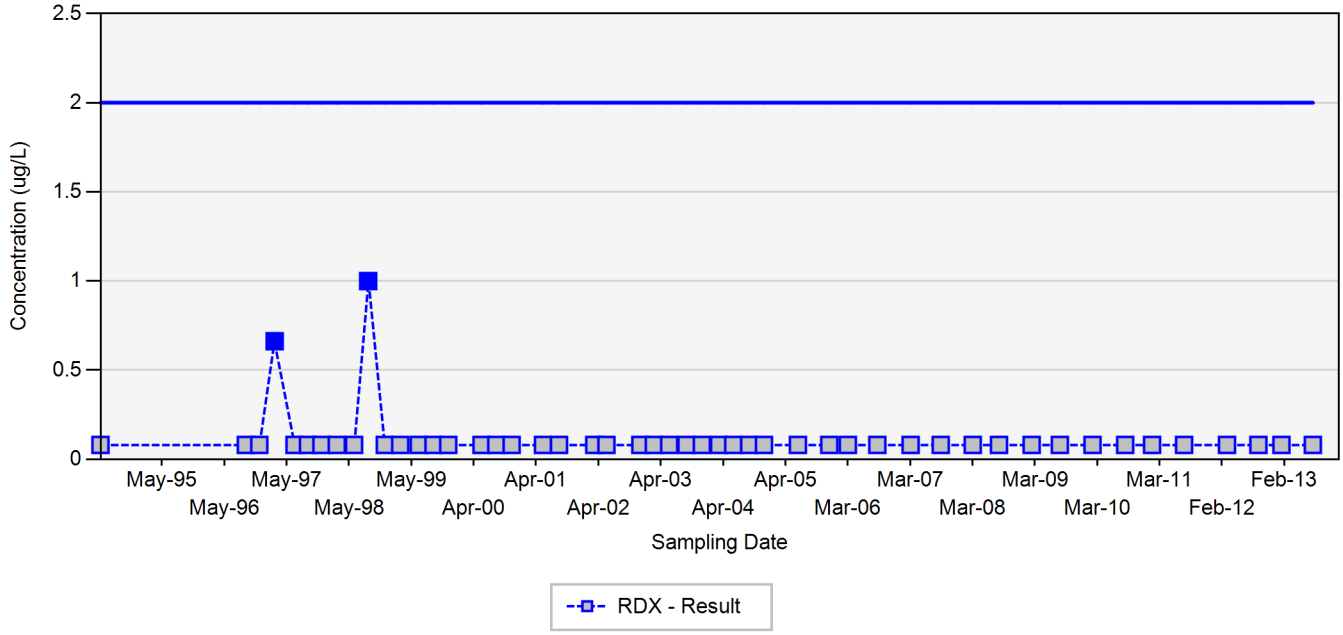
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

UNFL-10A





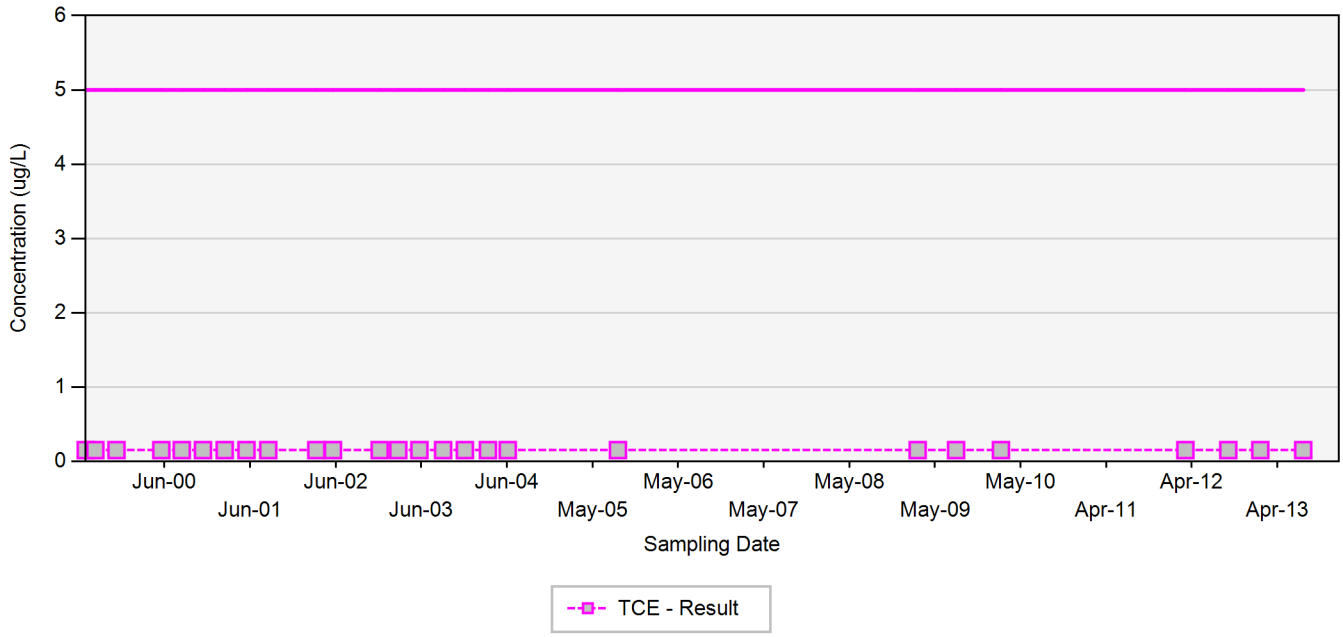
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

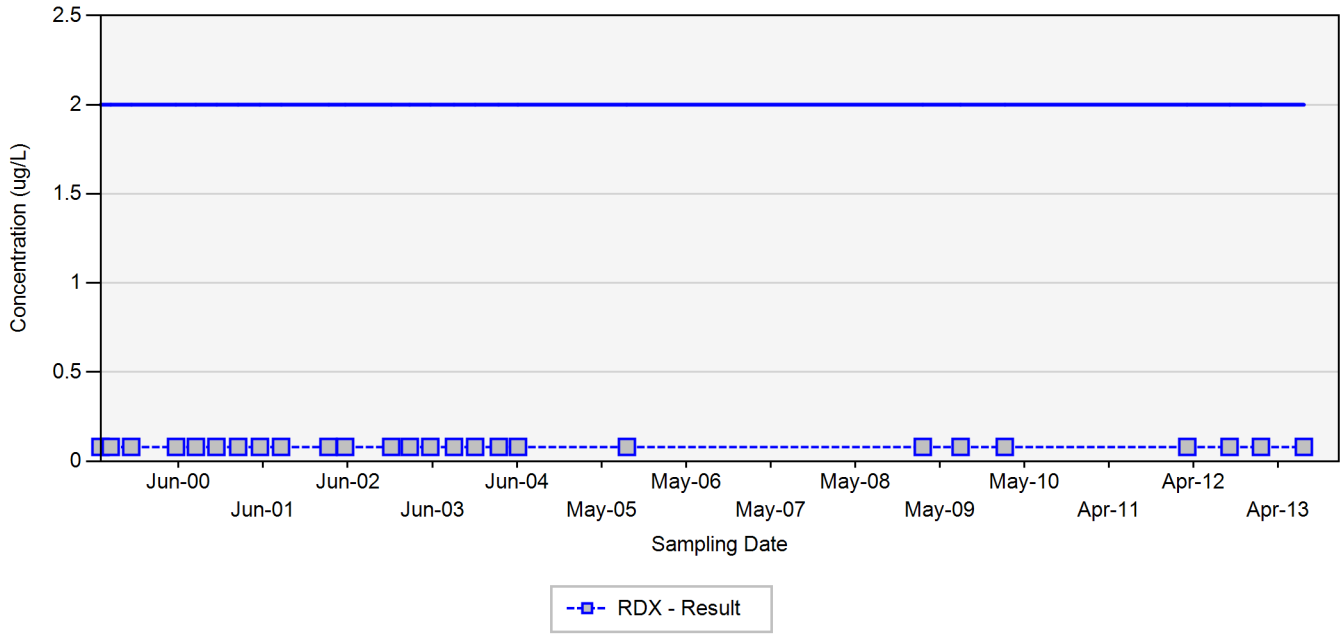
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

UNFL-27





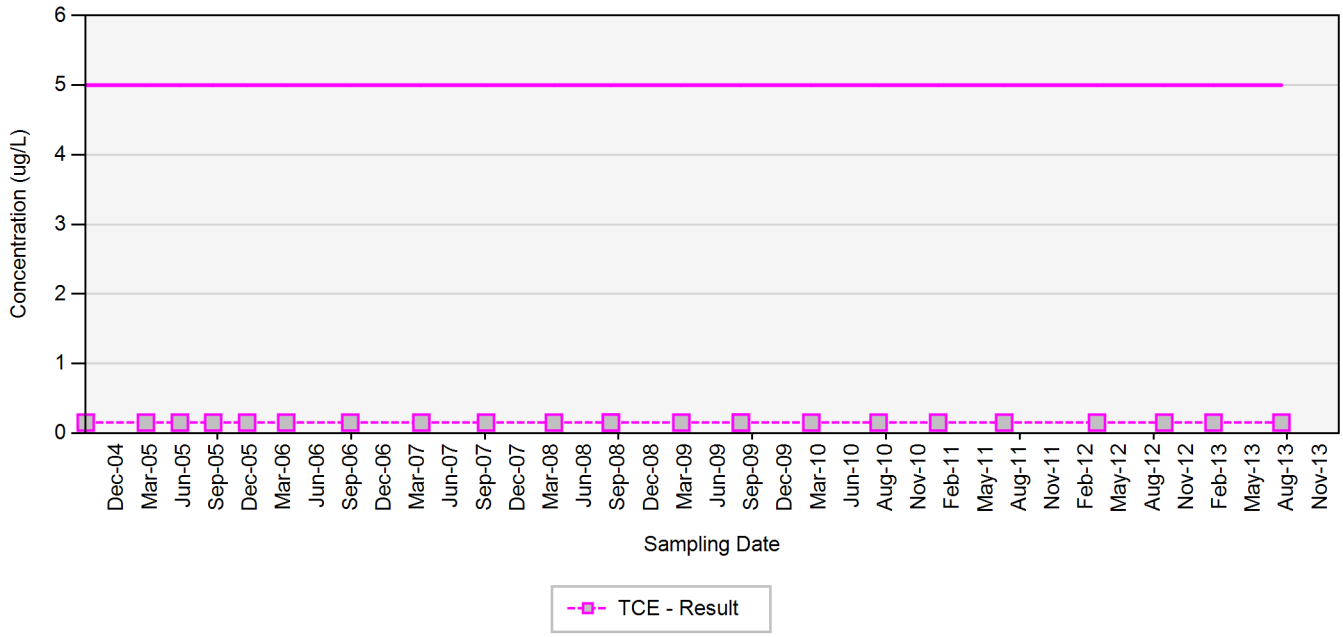
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

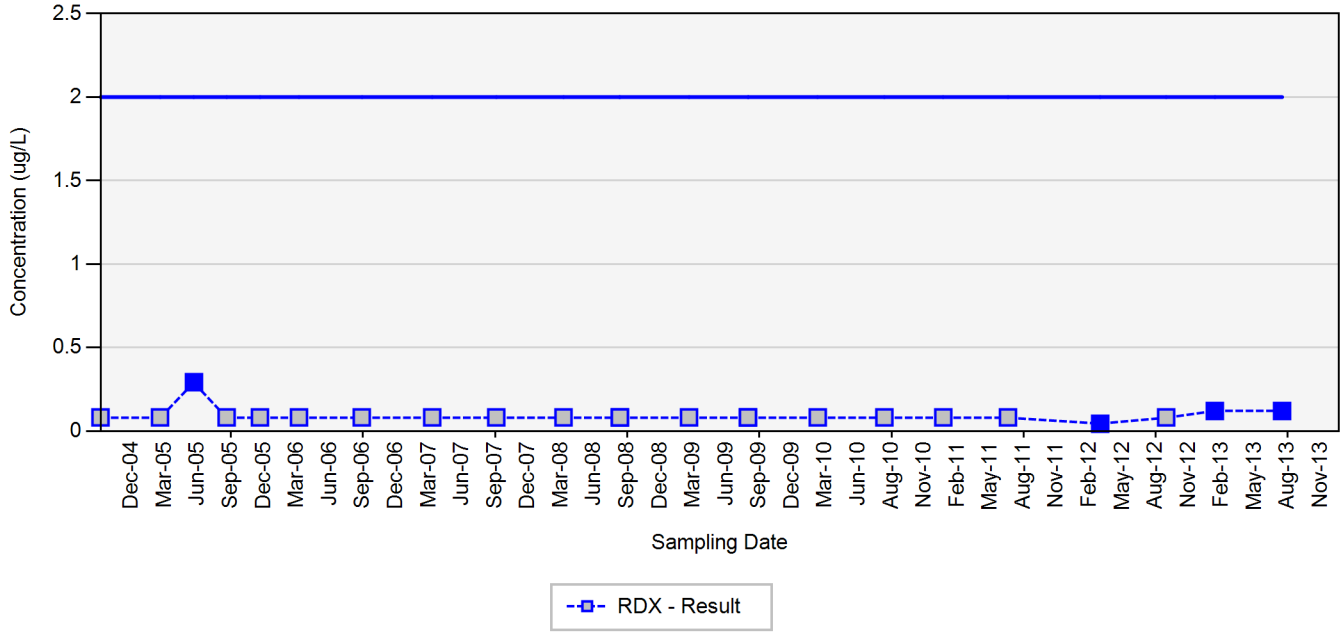
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-100





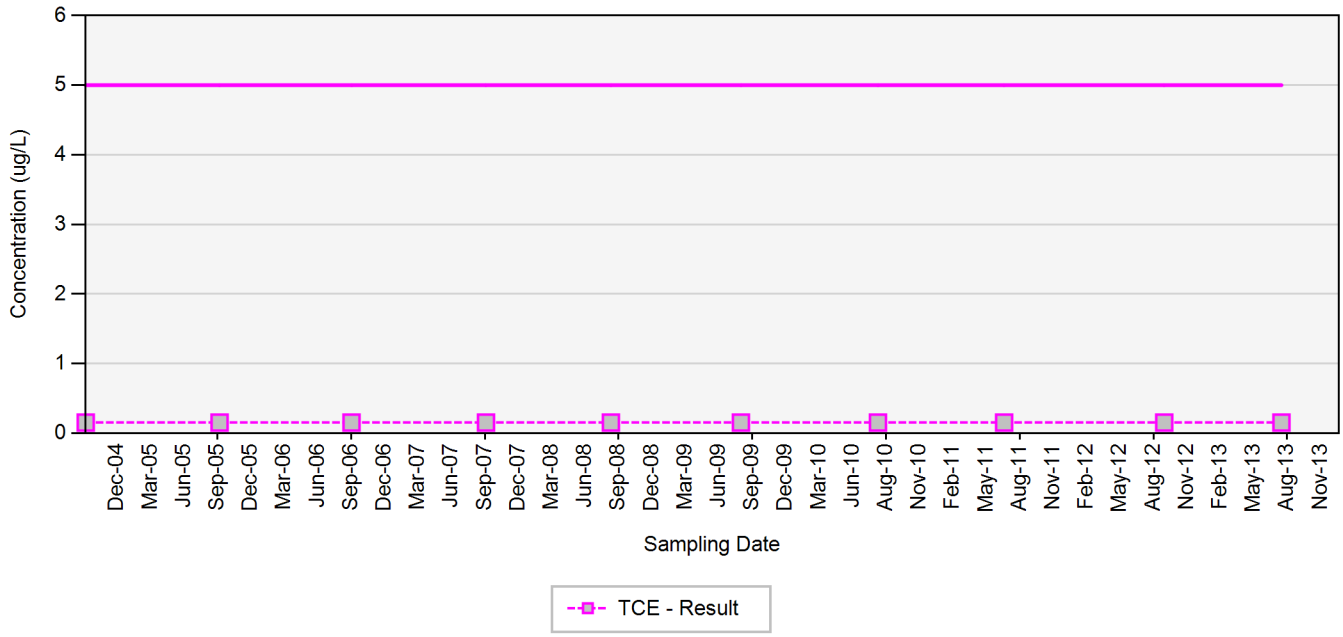
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

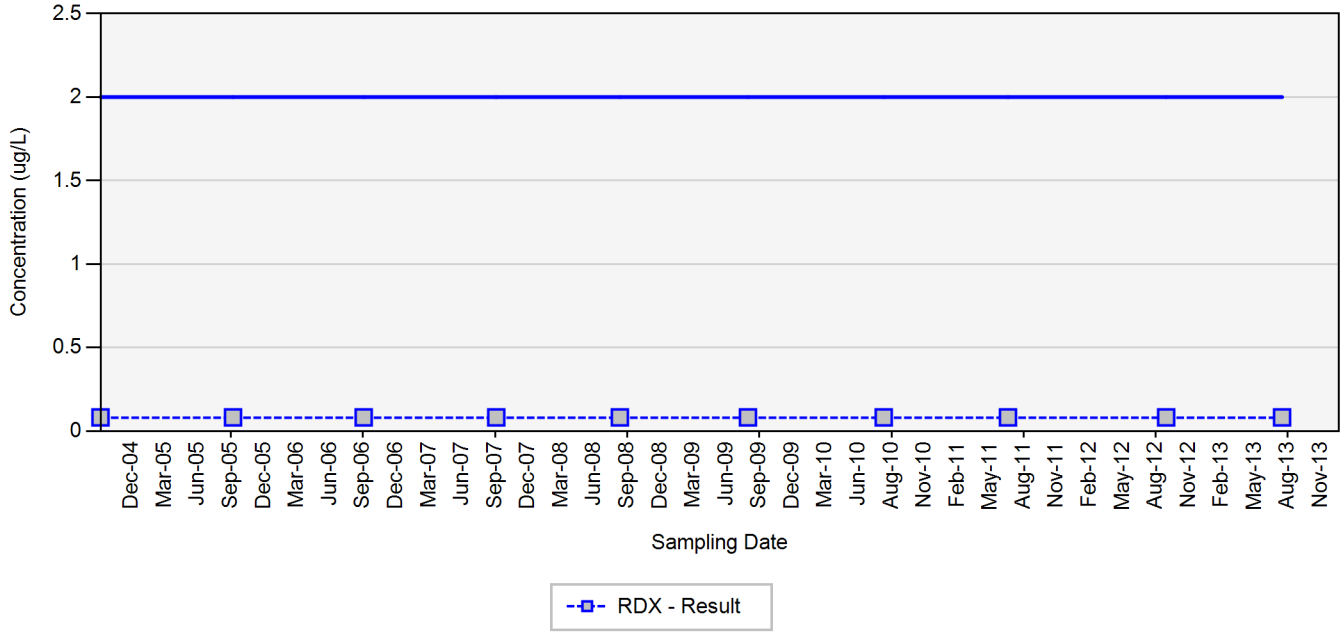
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-101





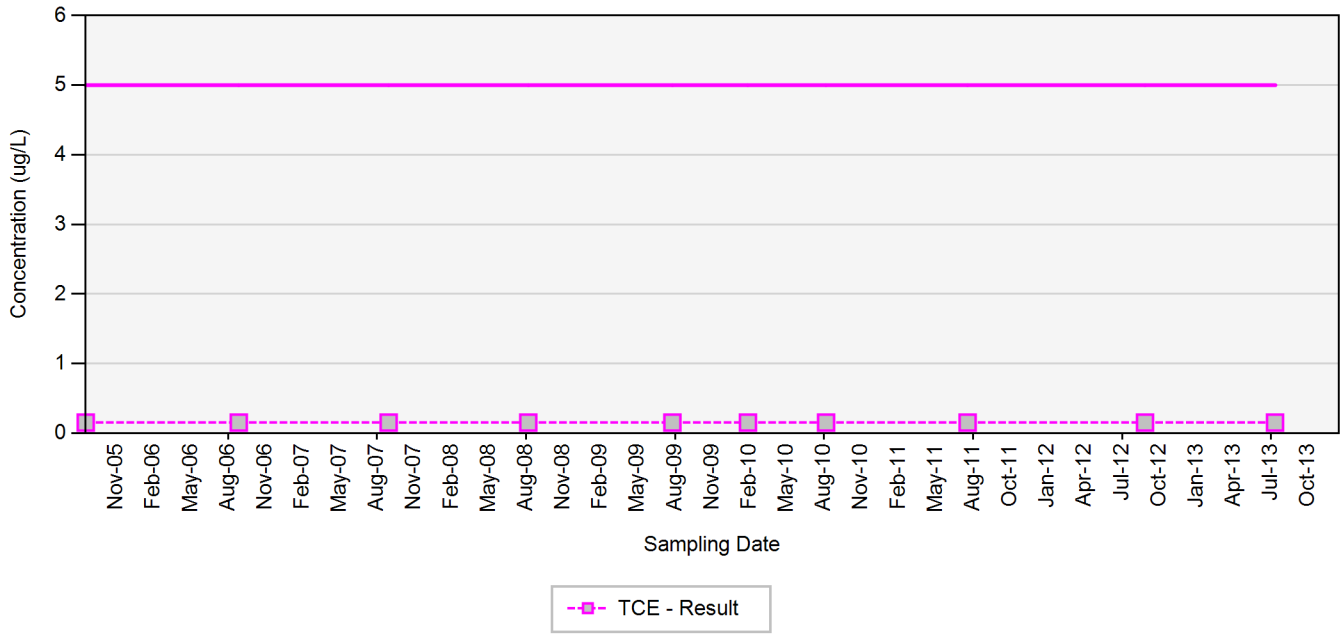
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

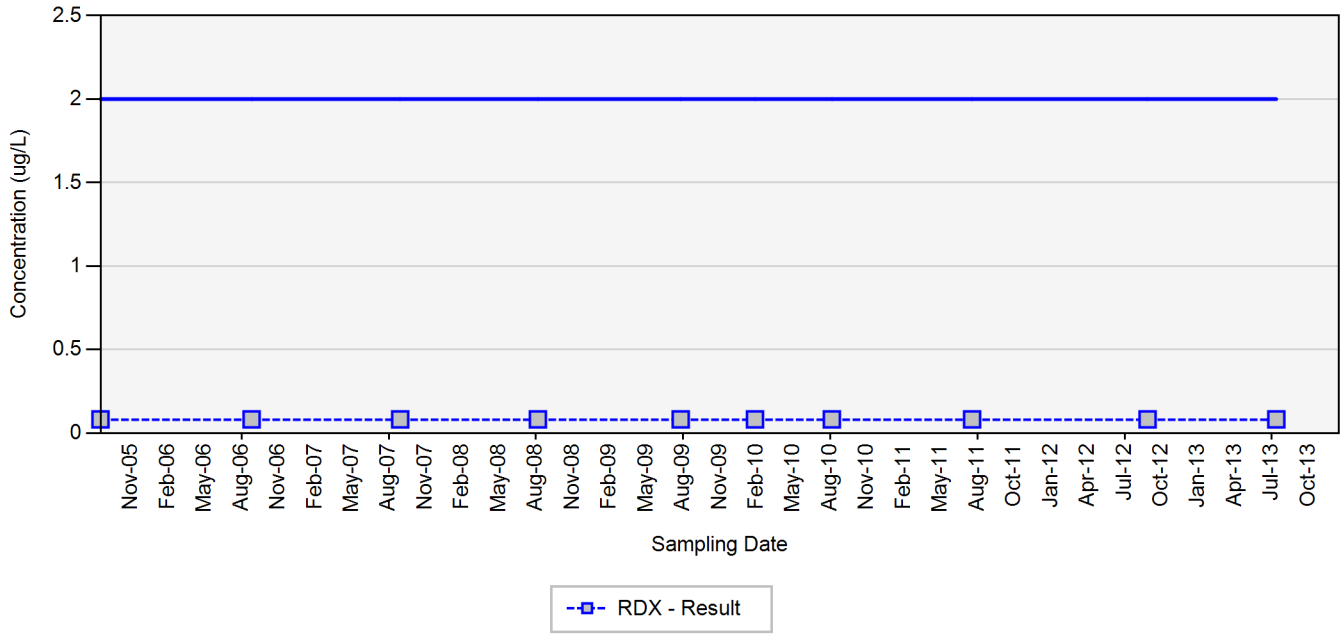
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-102





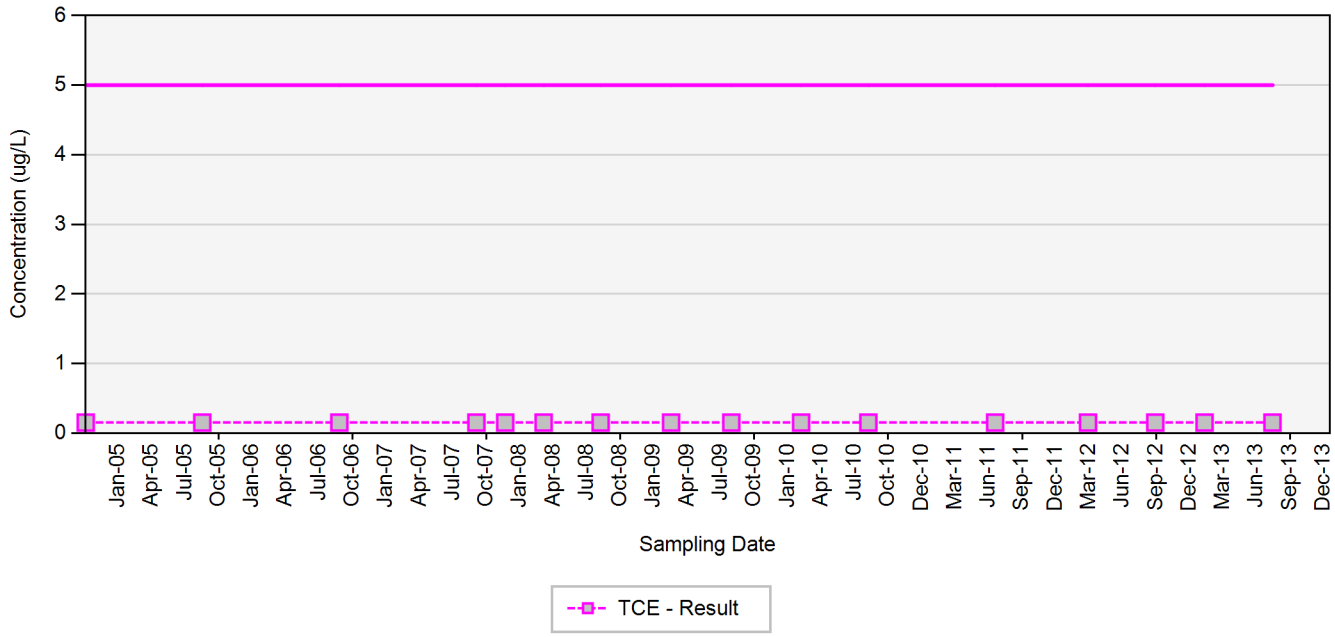
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

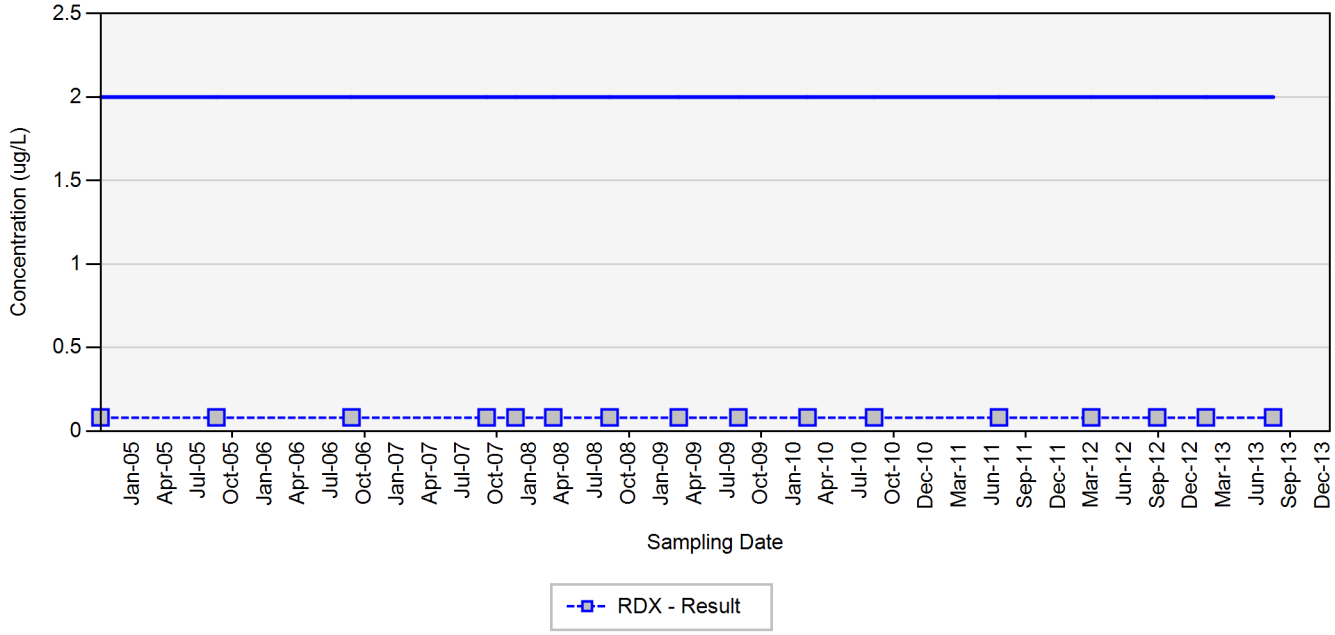
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-103





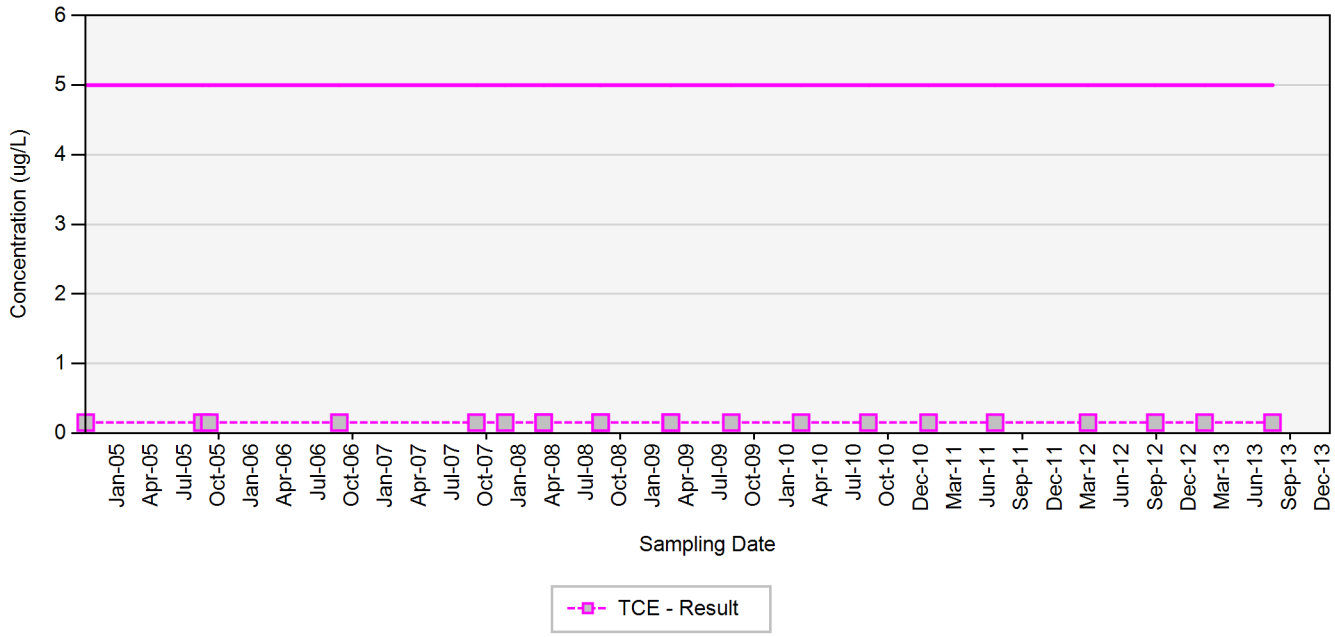
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

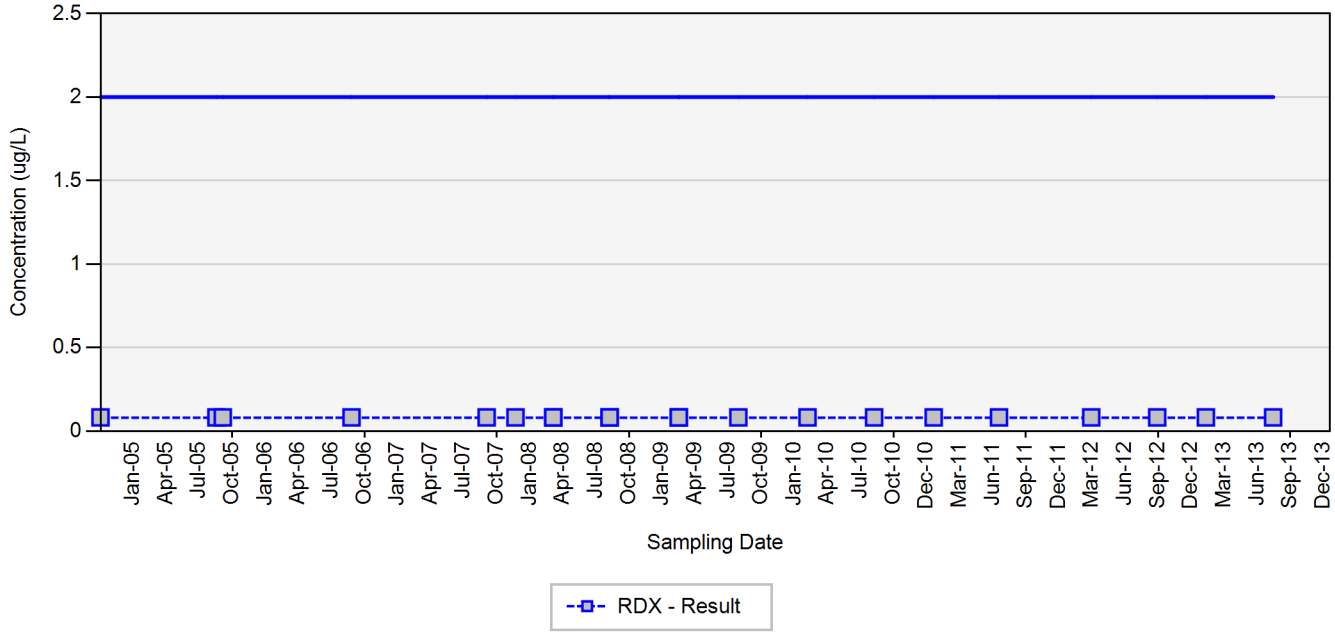
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-104





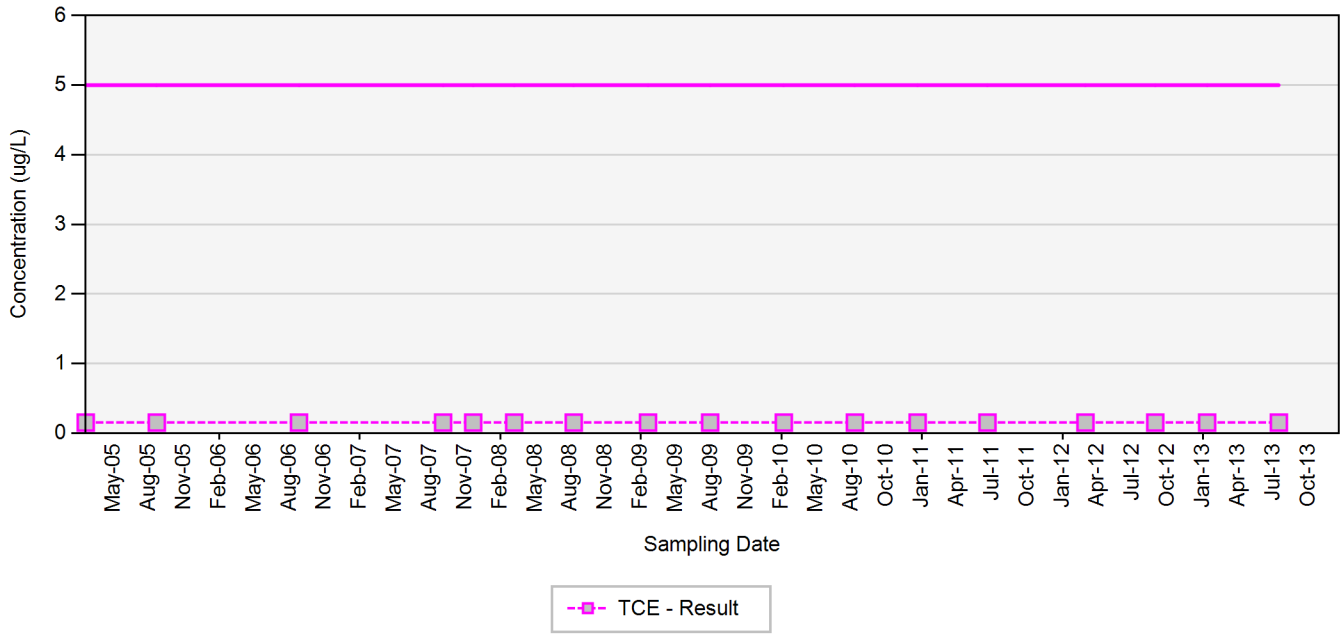
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

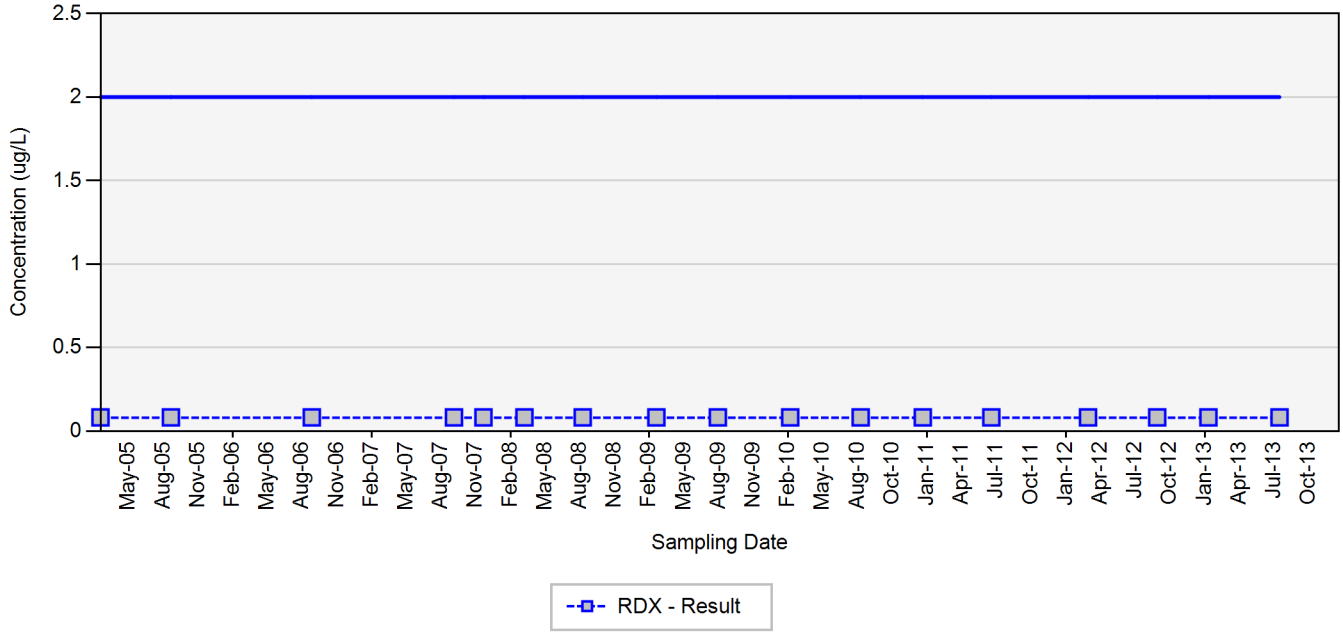
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-105





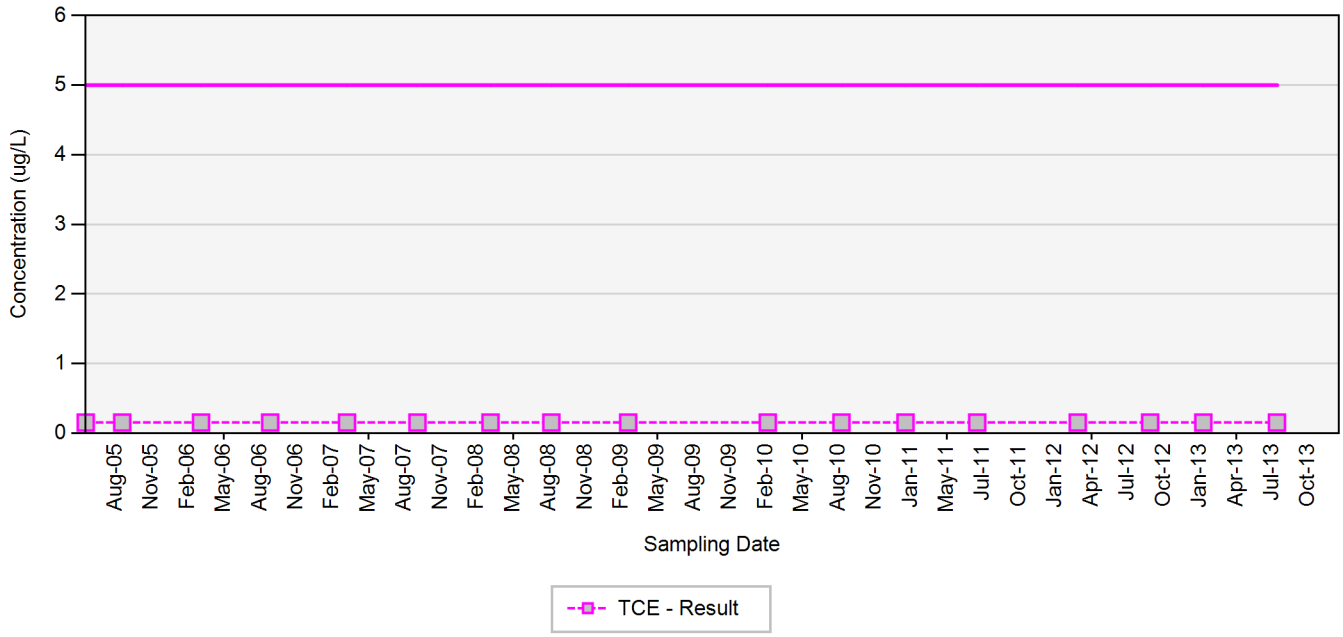
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

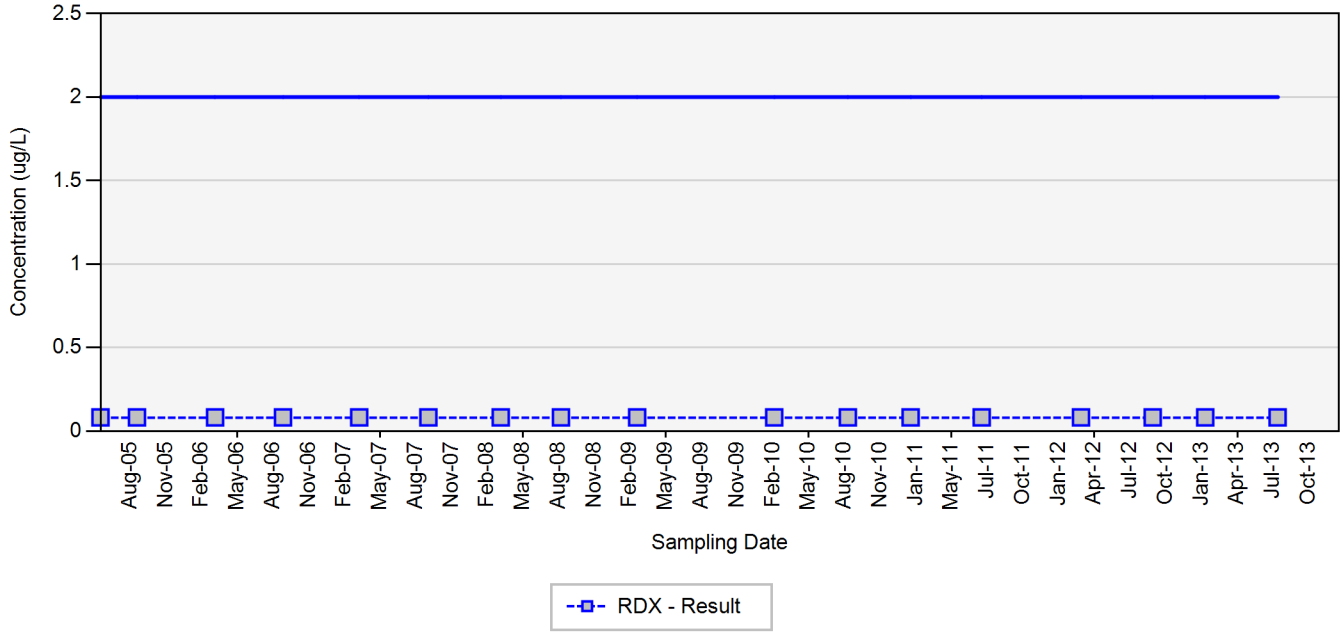
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-106





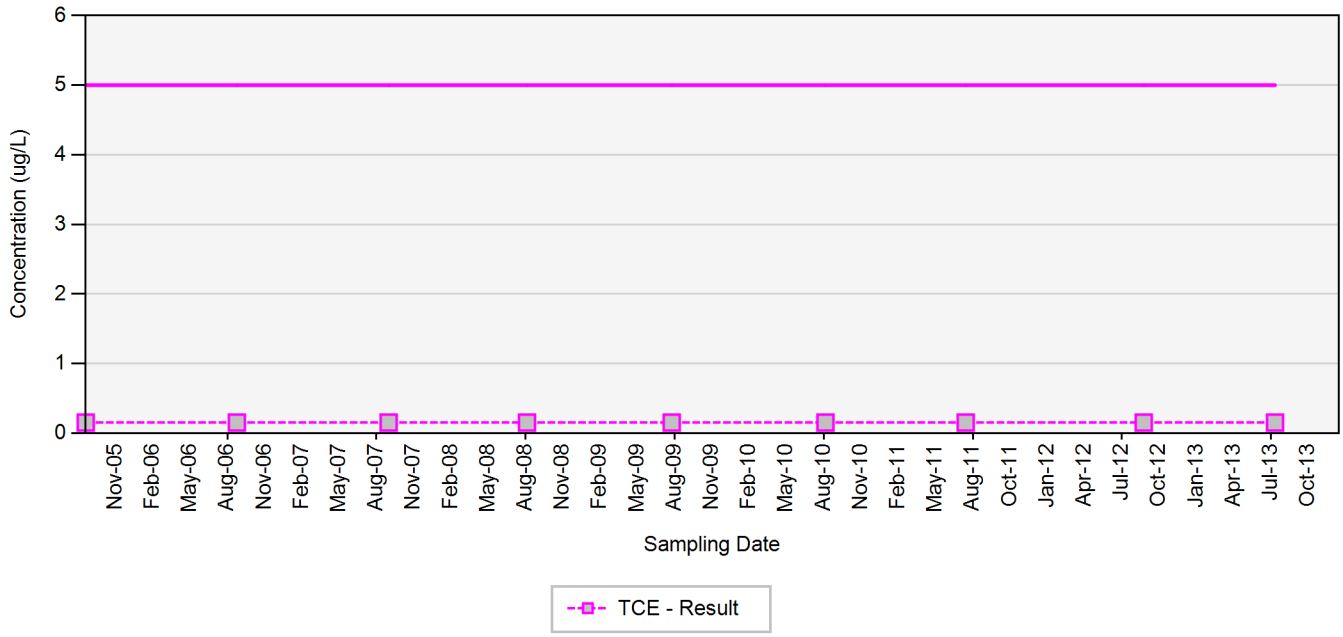
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

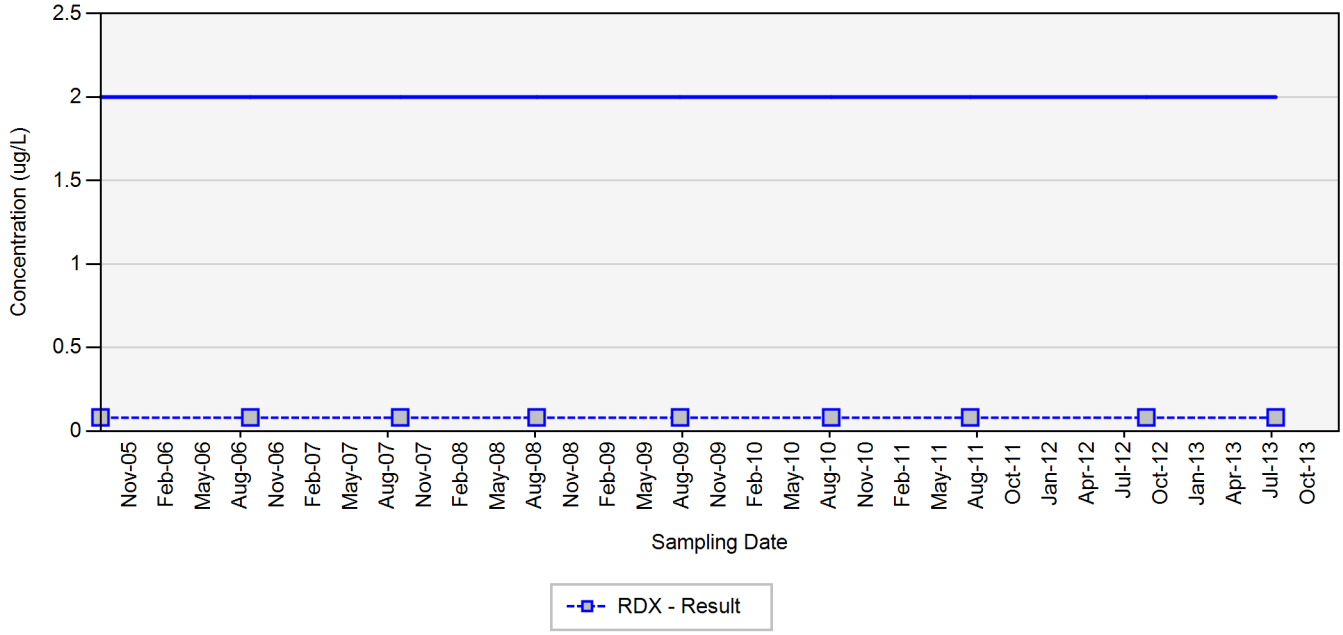
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-107





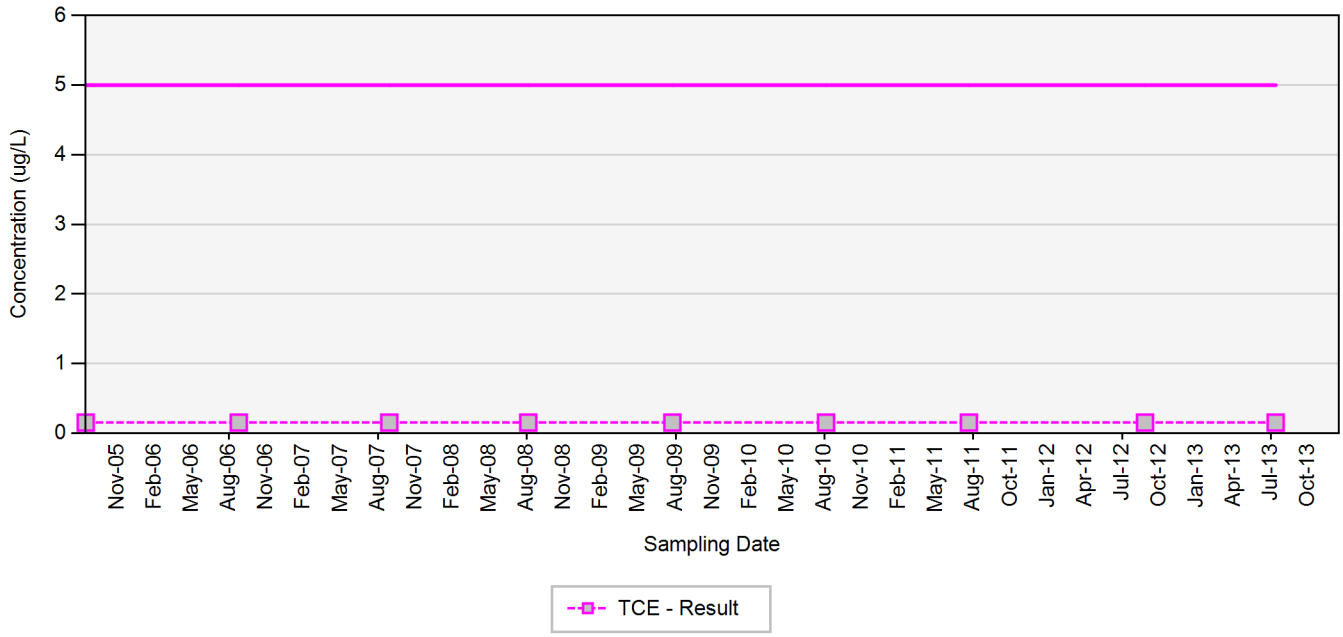
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

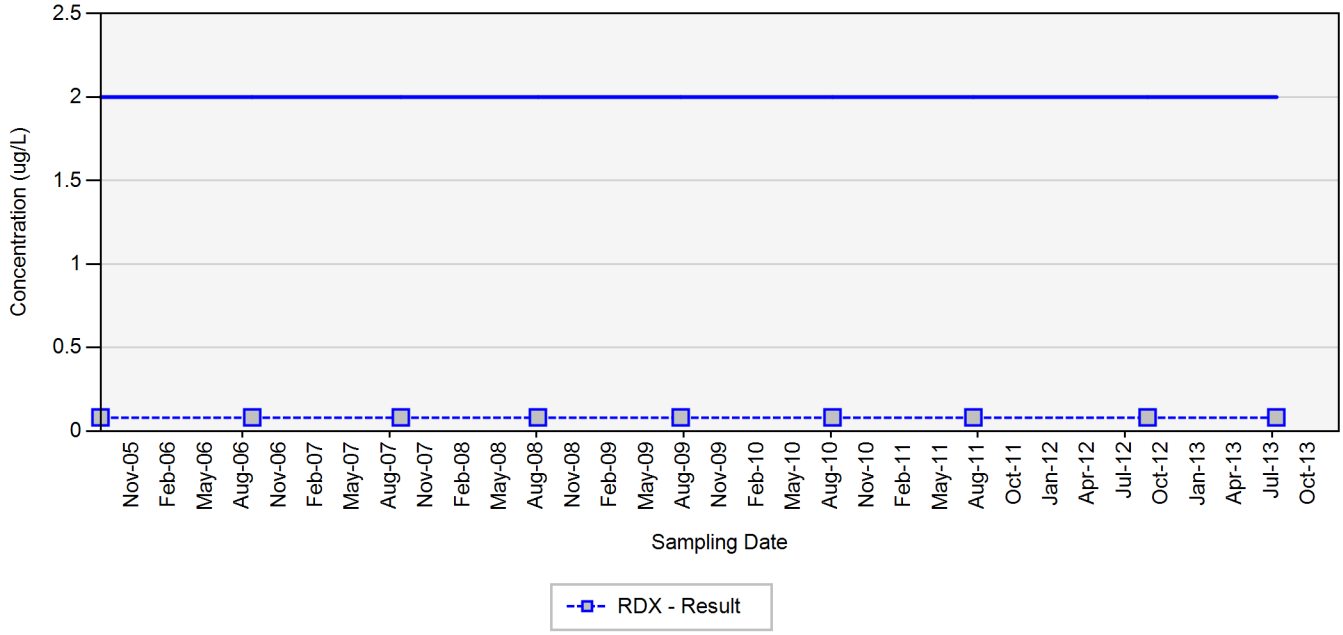
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-108





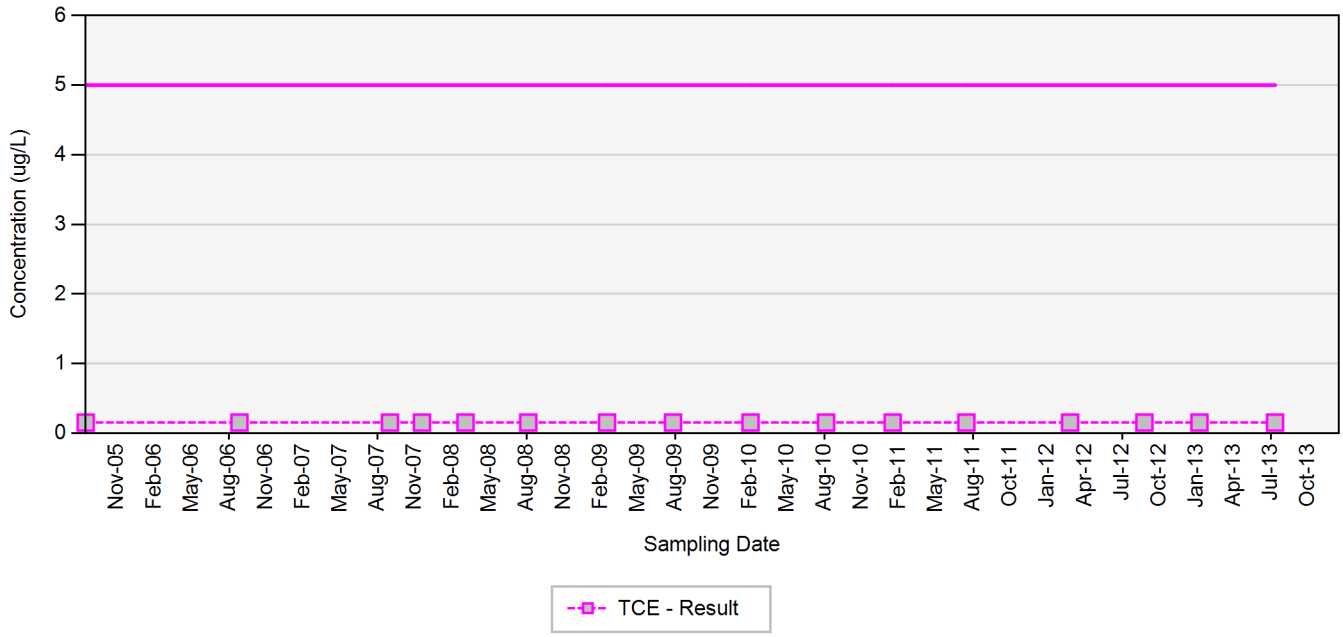
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

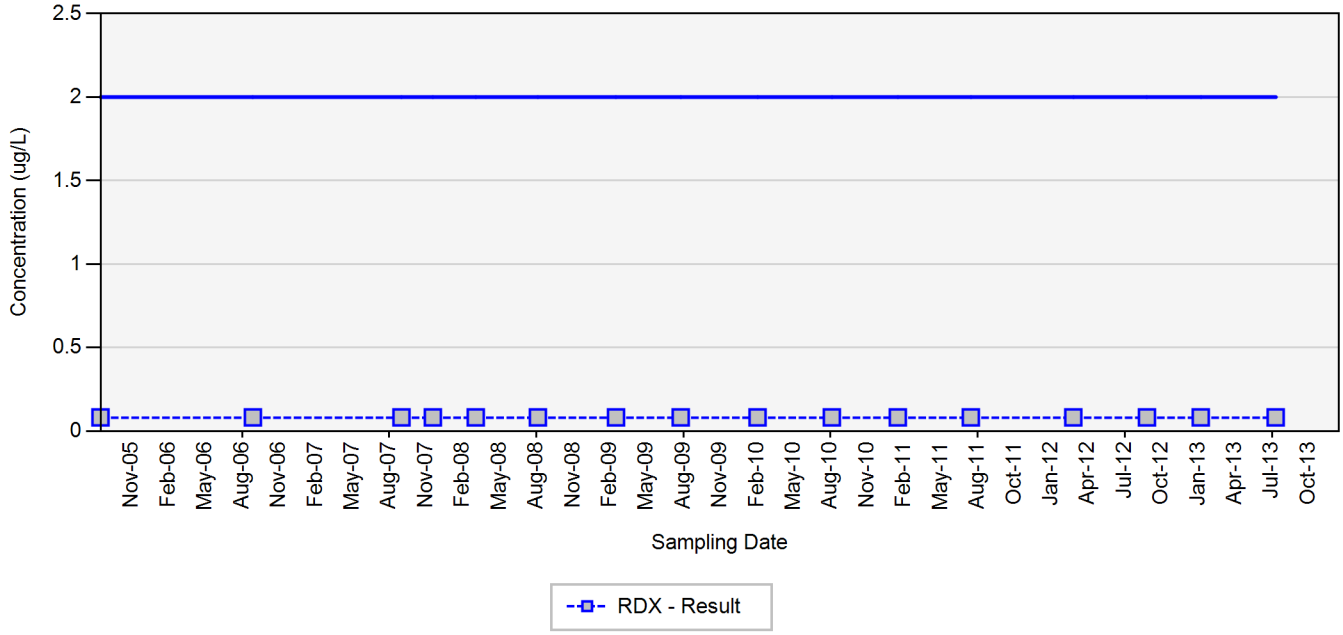
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-109





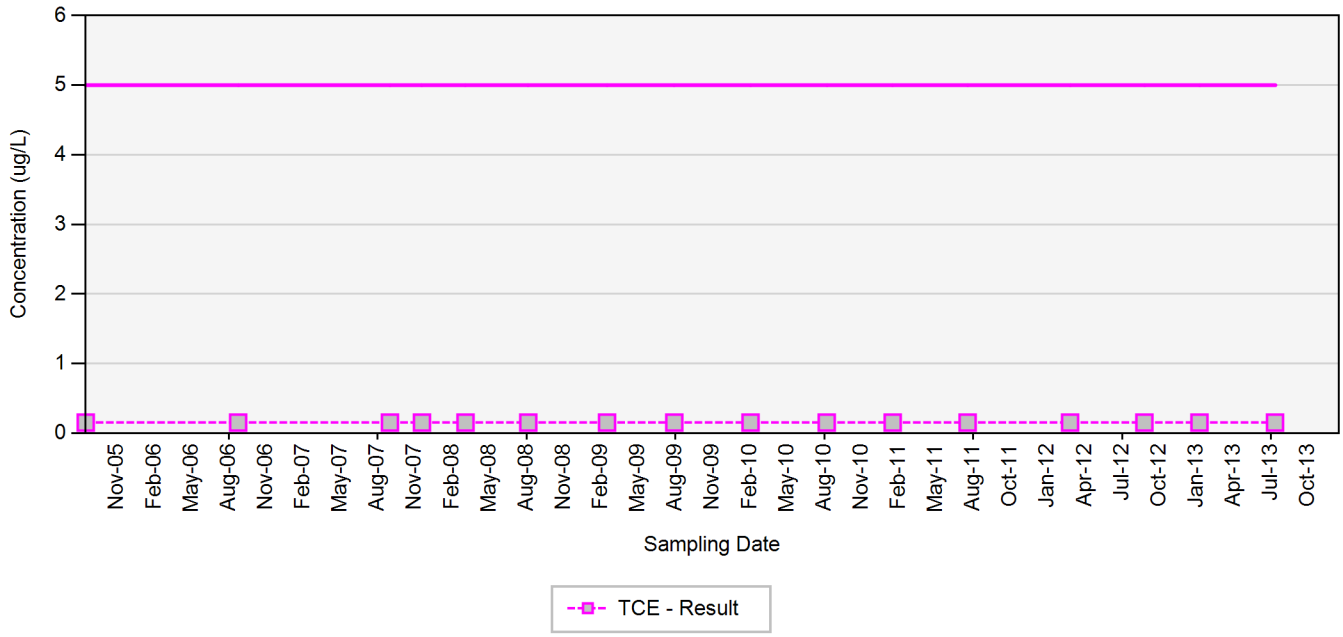
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

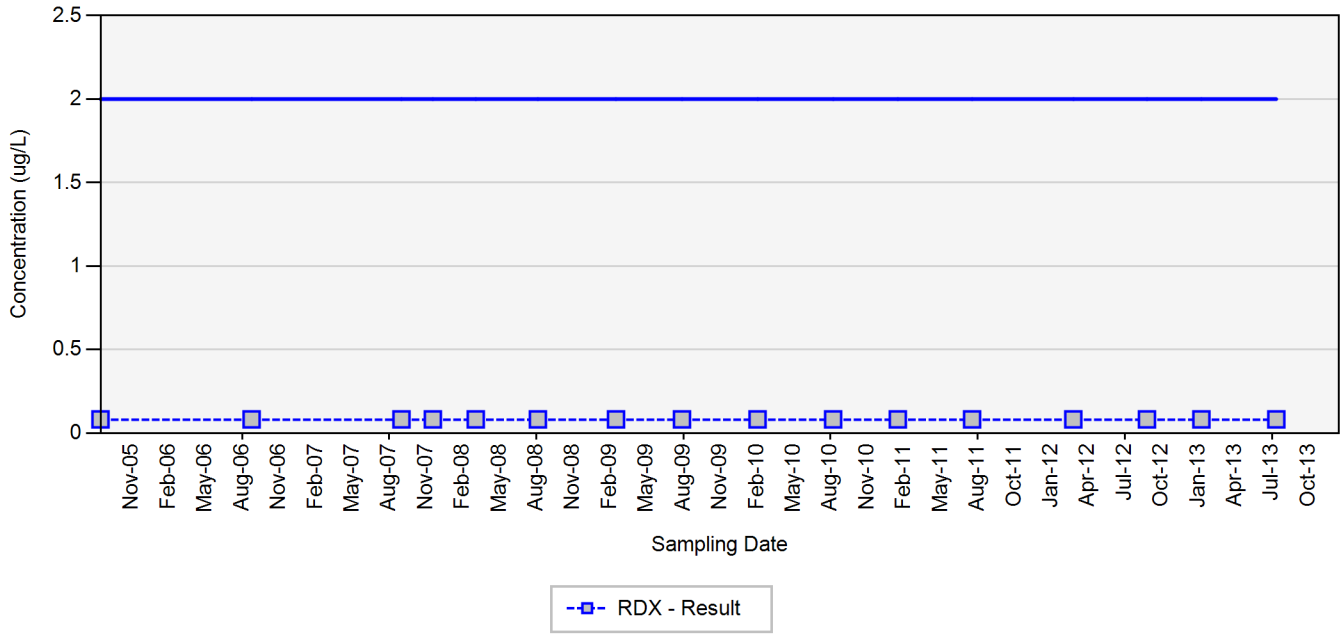
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-110





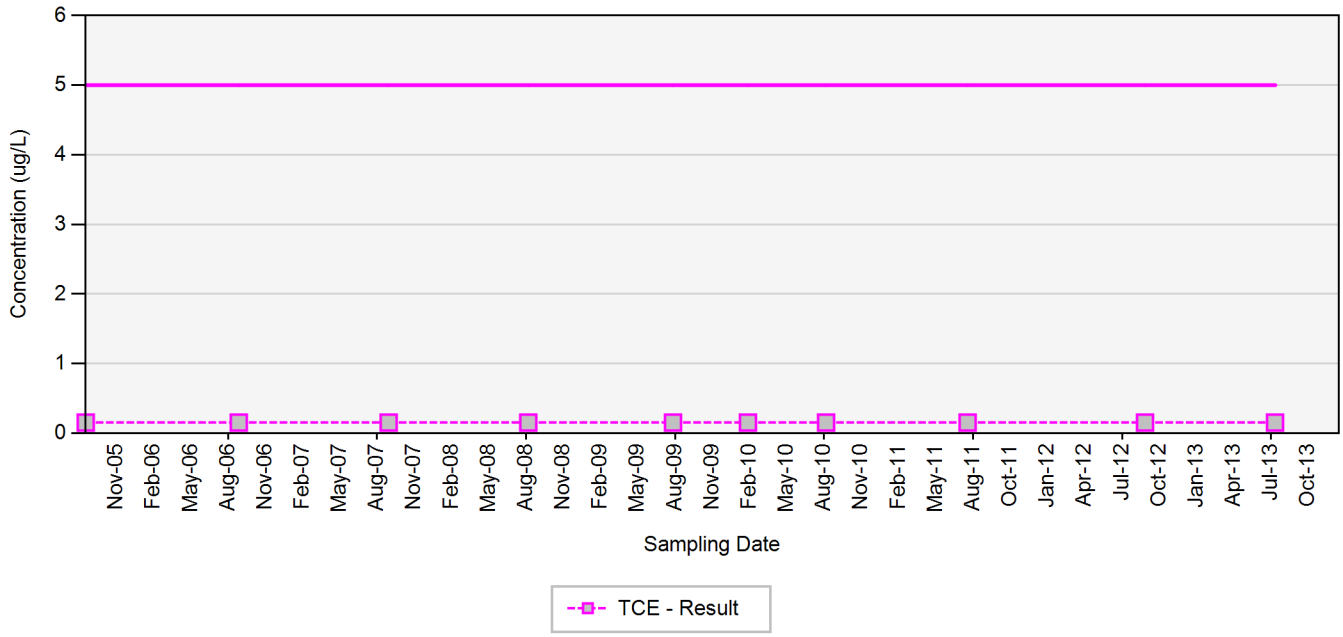
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

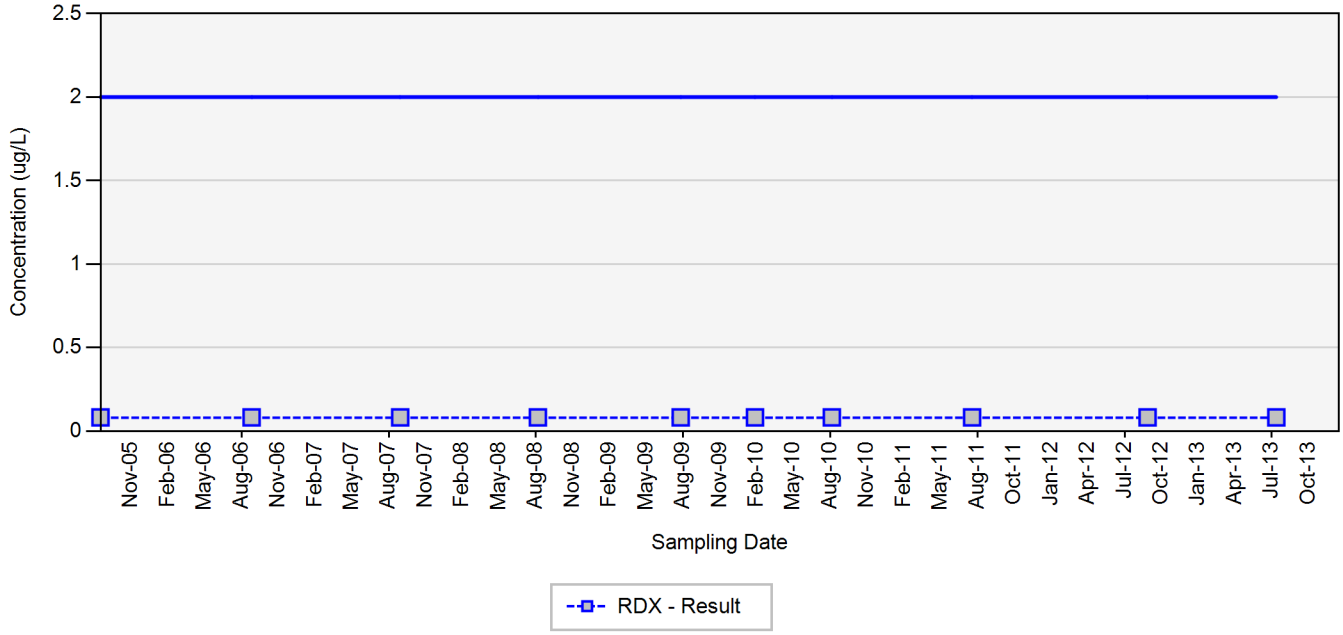
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-111





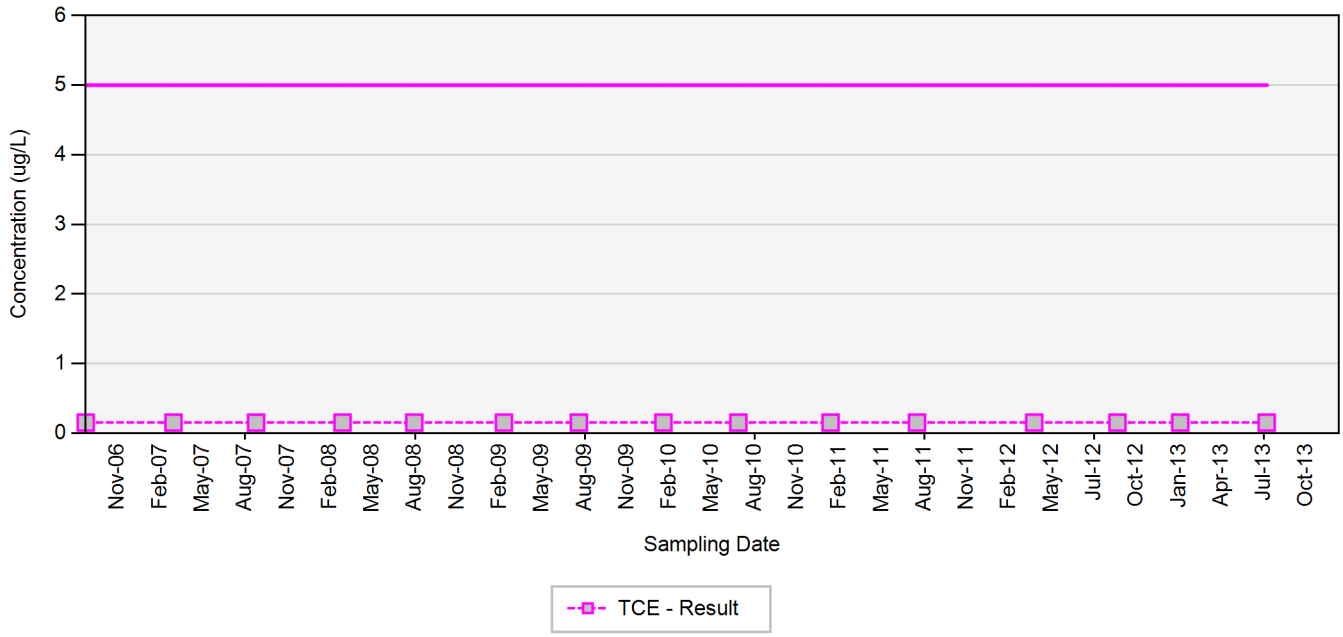
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

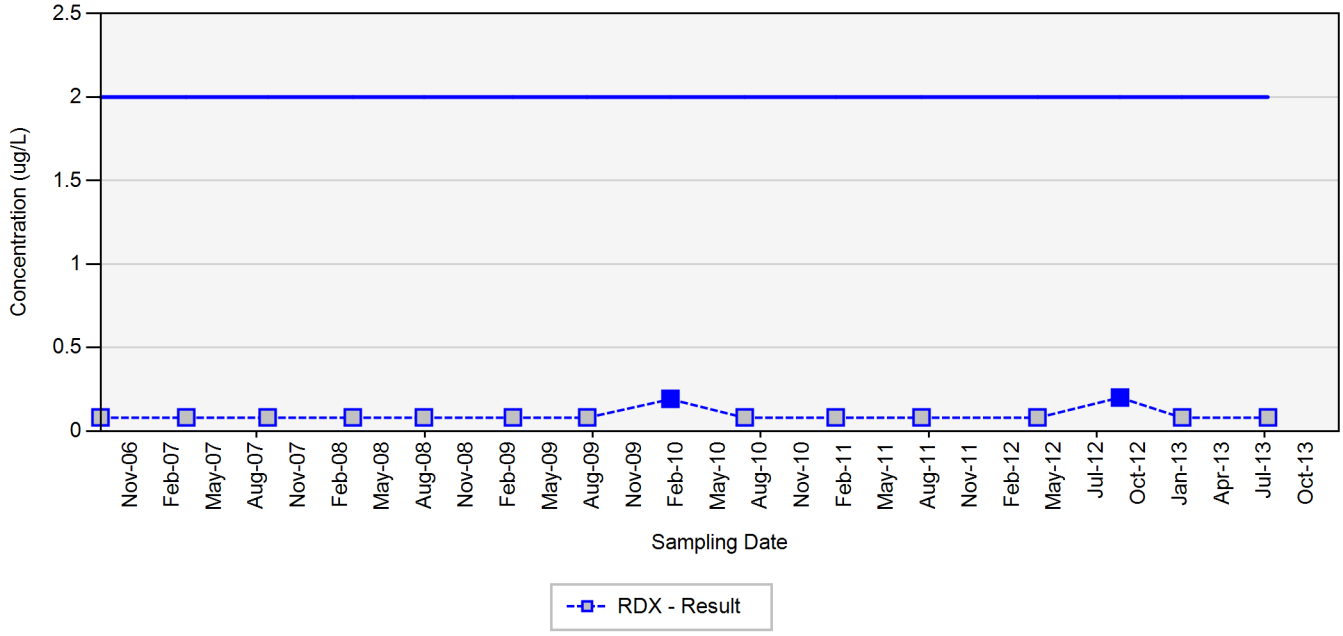
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-112





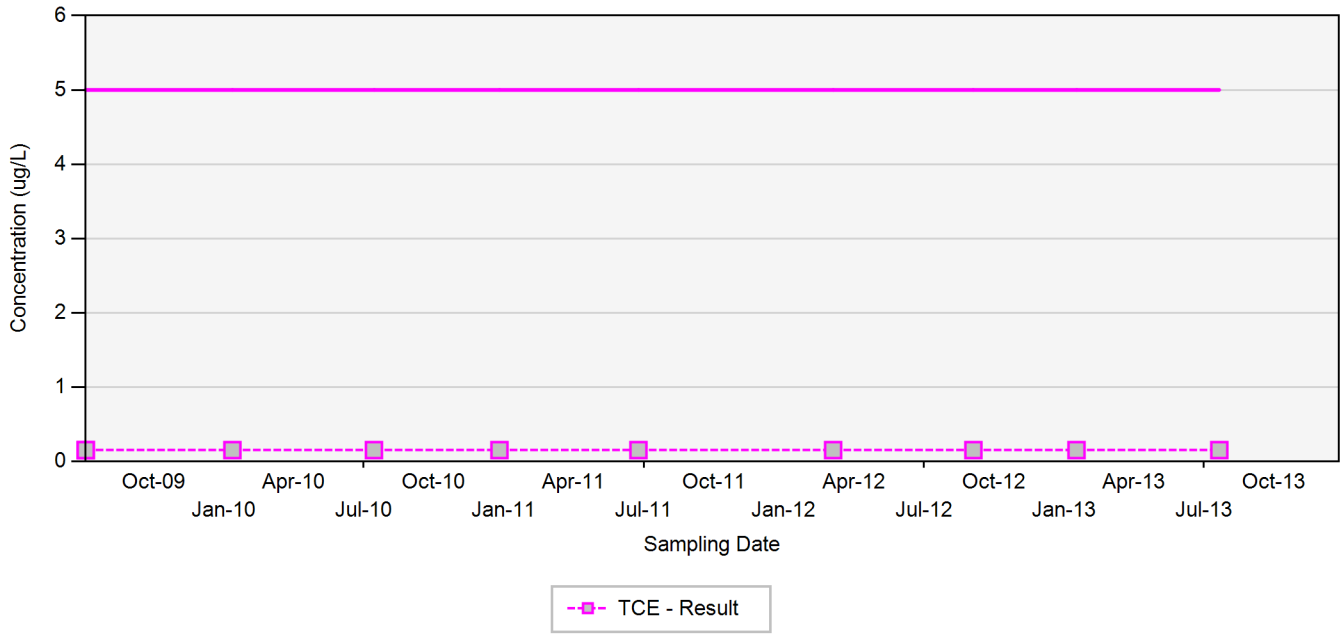
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

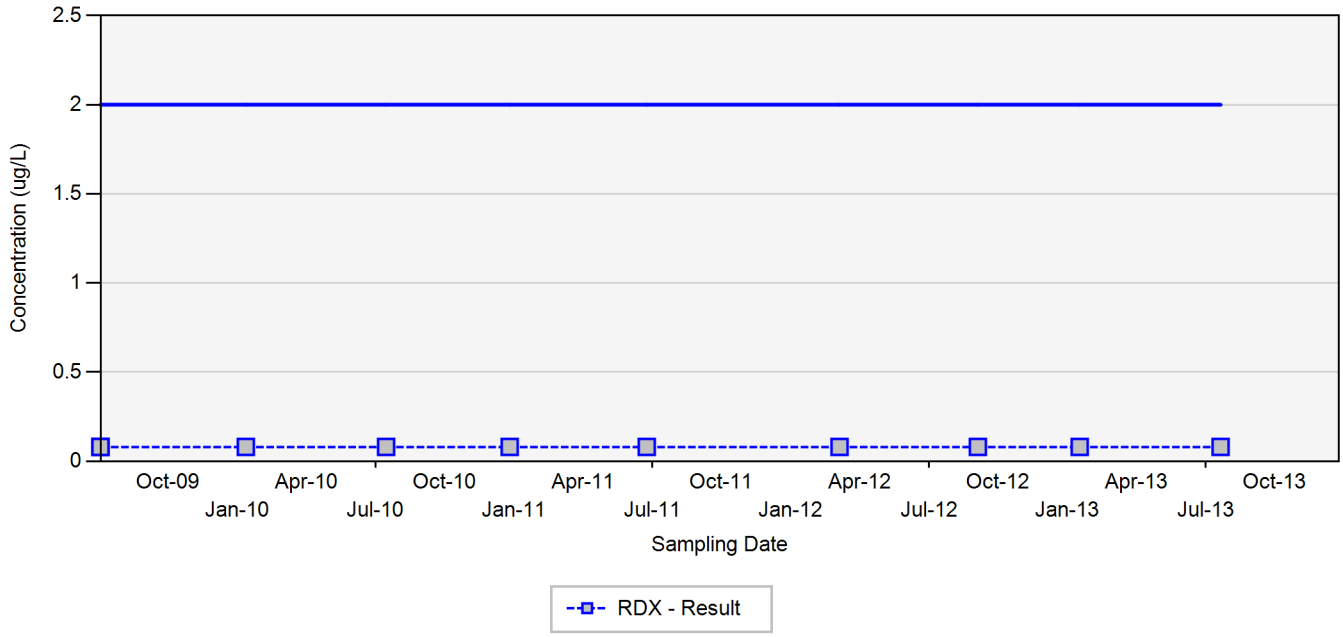
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-113





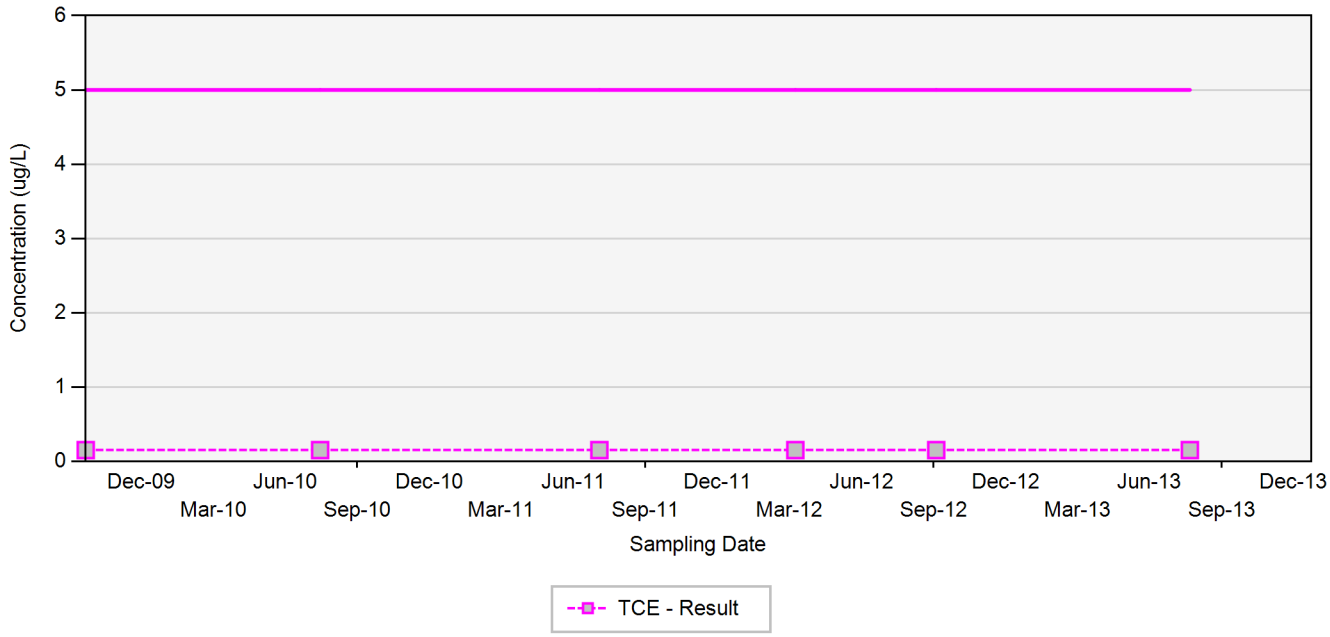
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

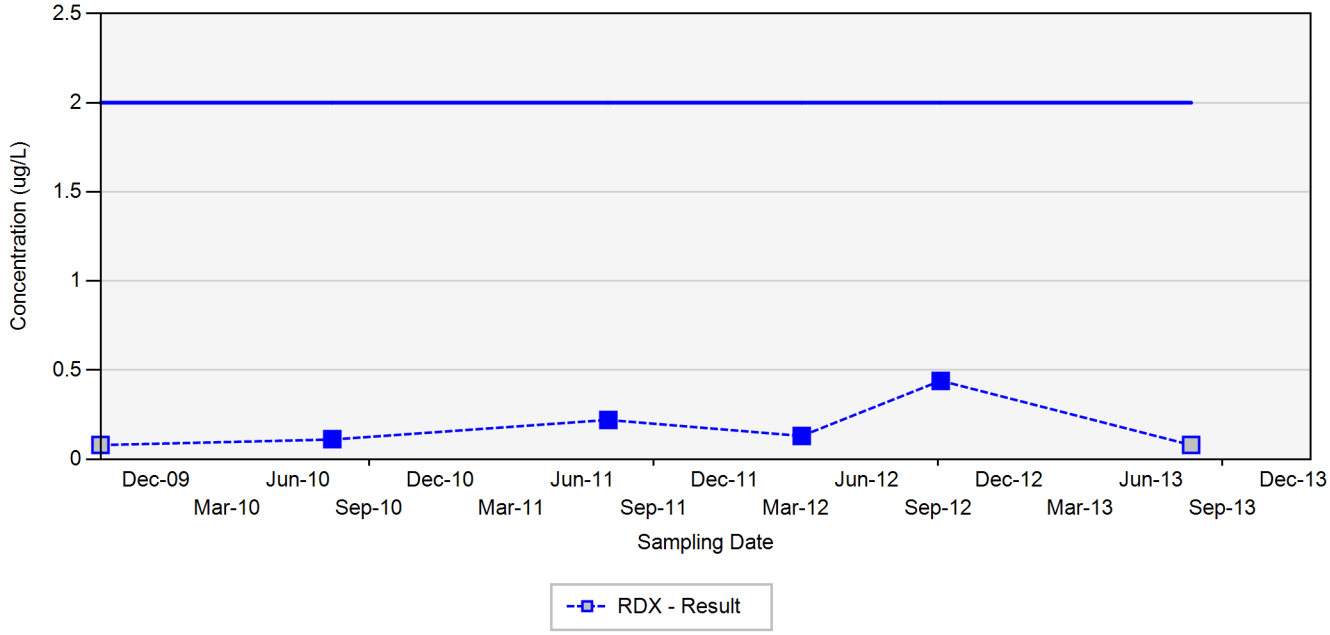
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-114





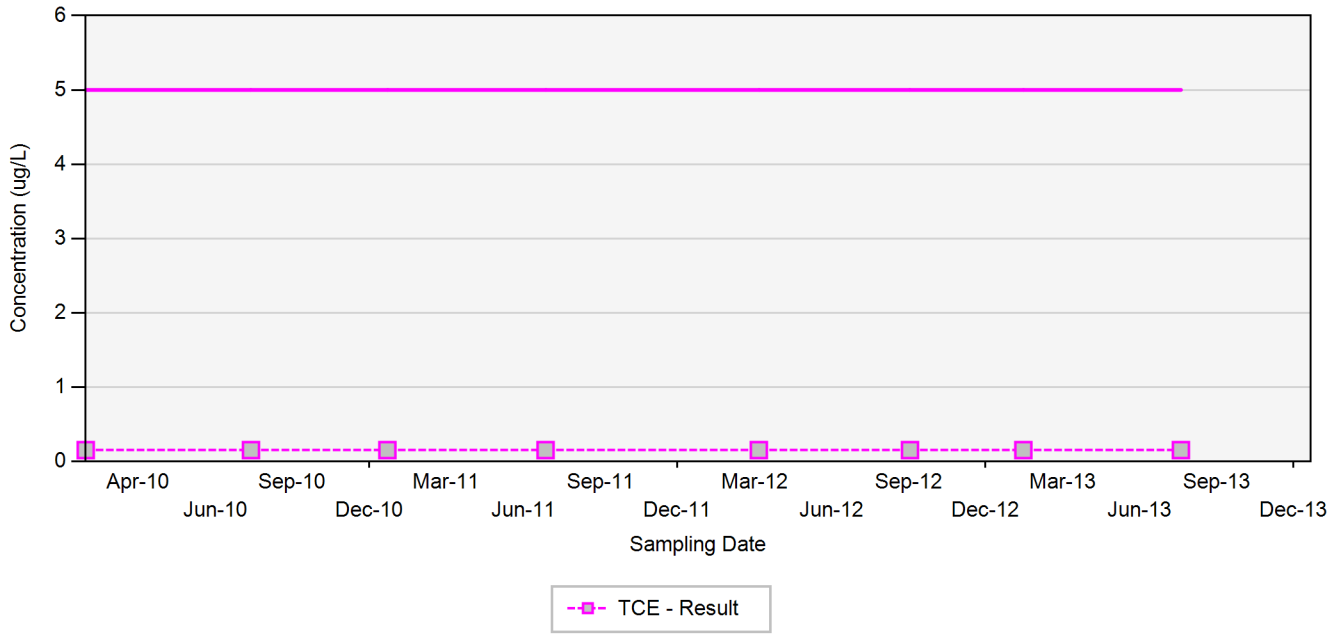
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

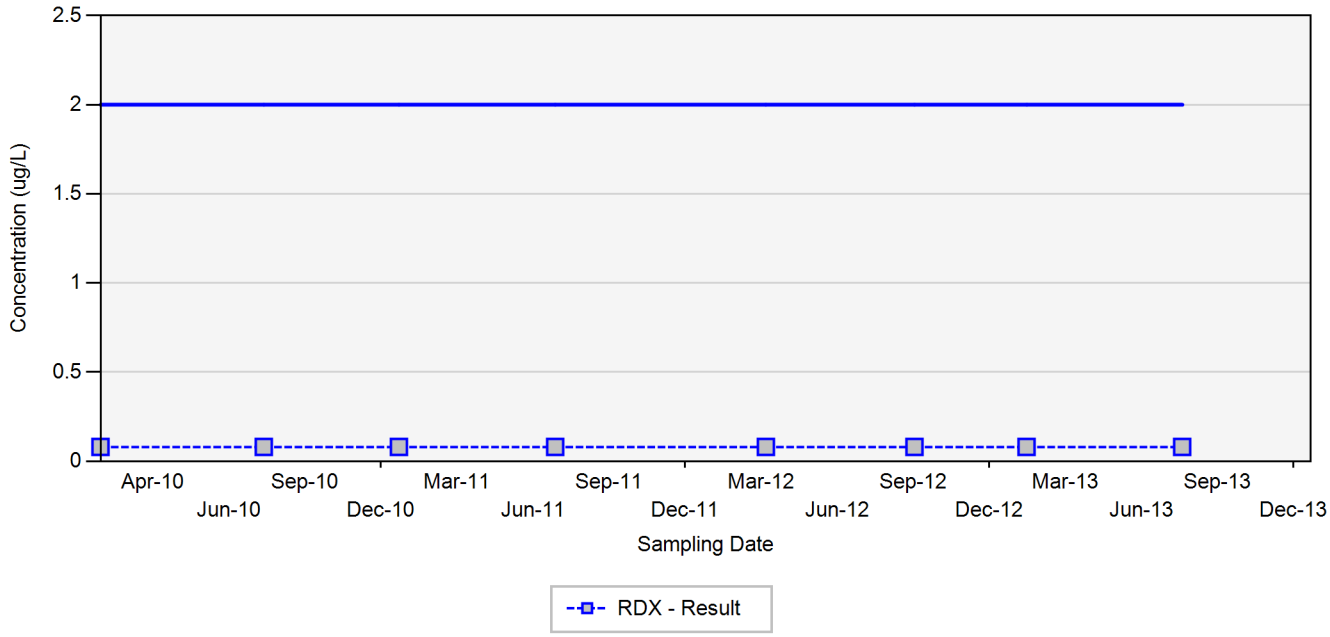
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-115





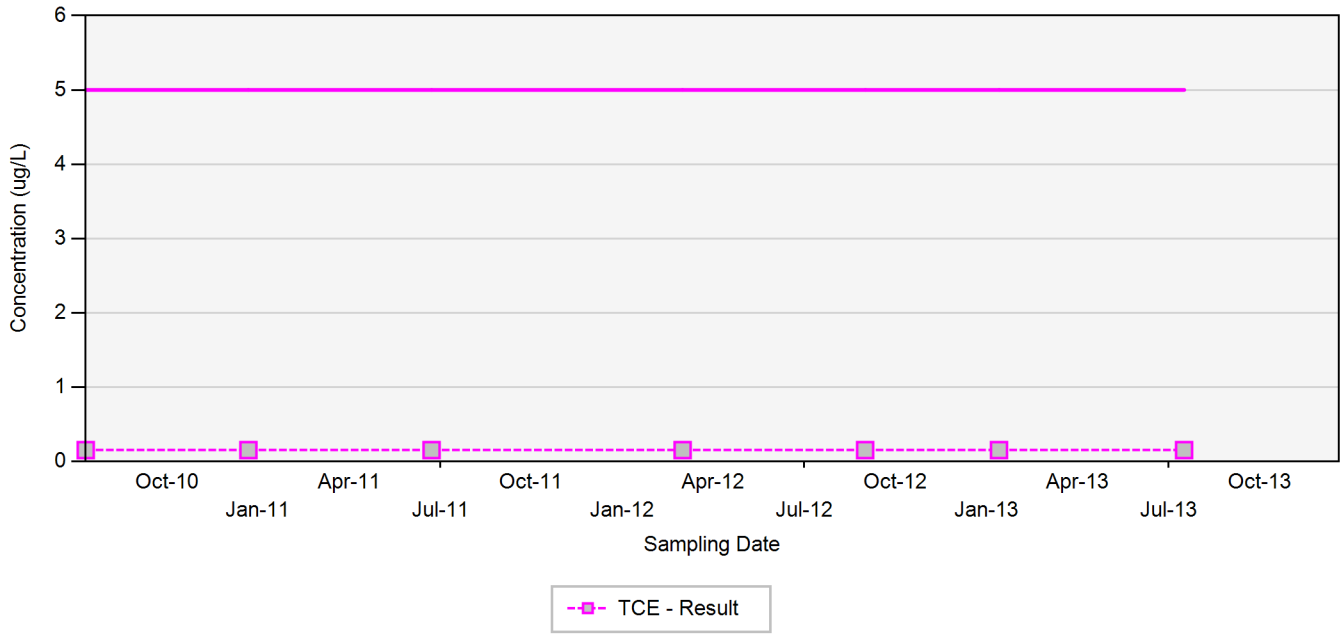
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

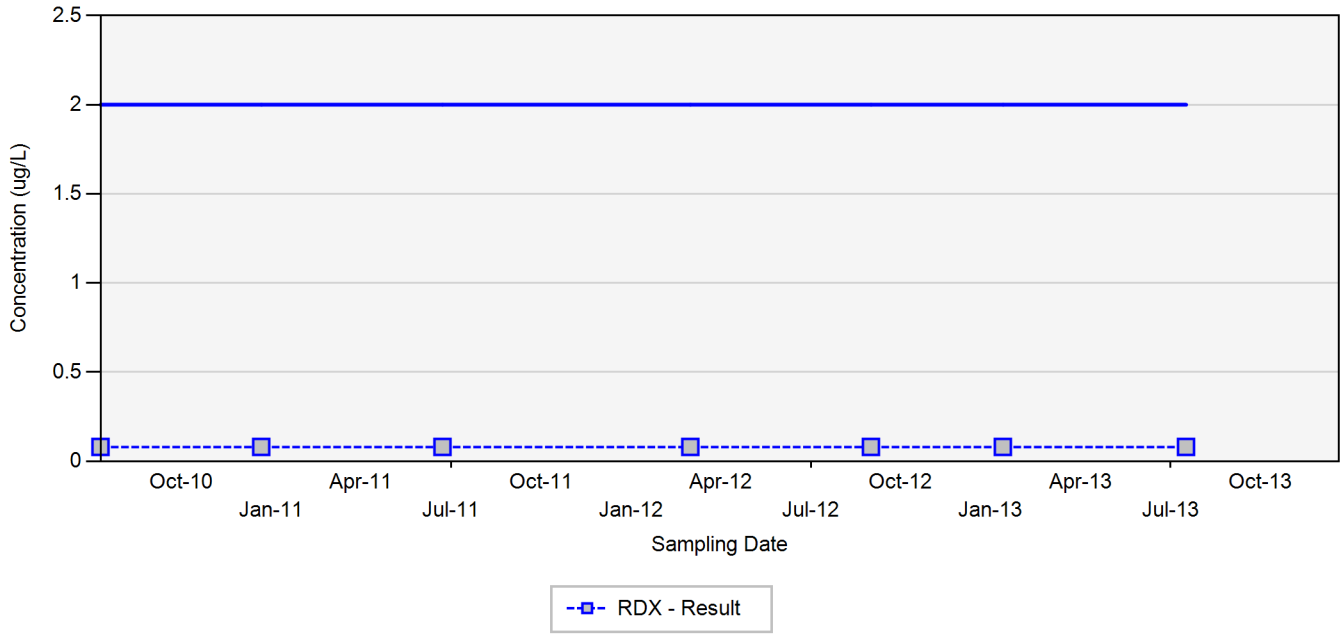
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-117





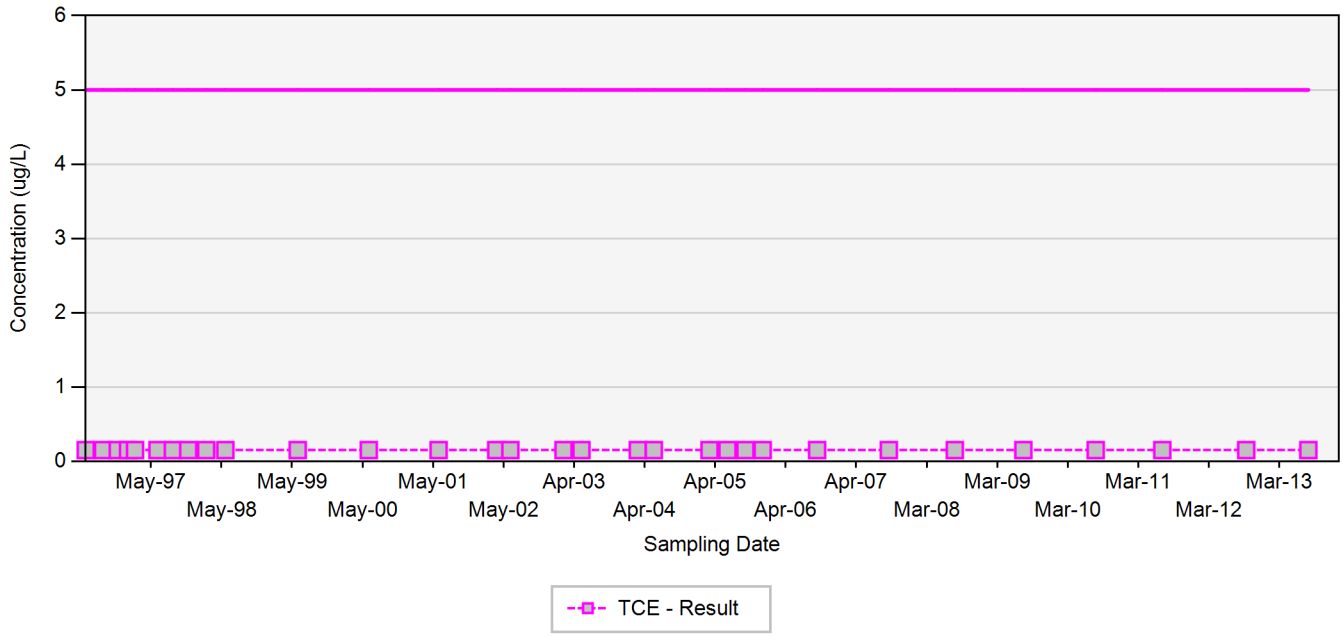
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

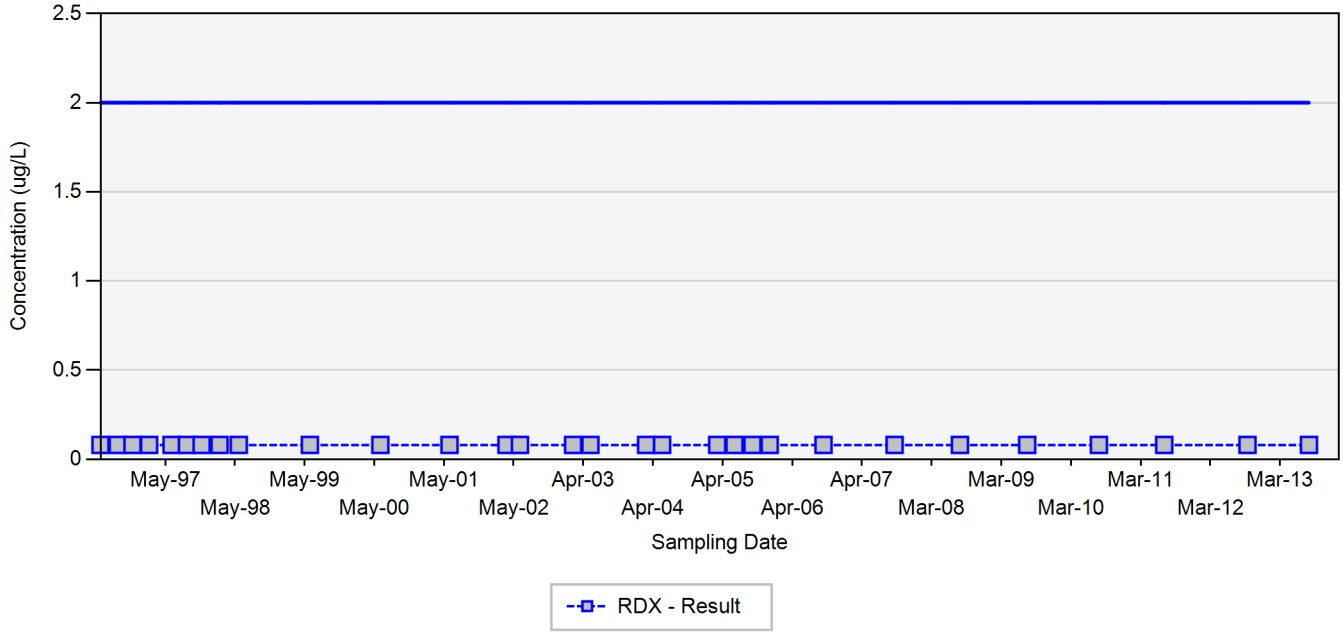
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-27





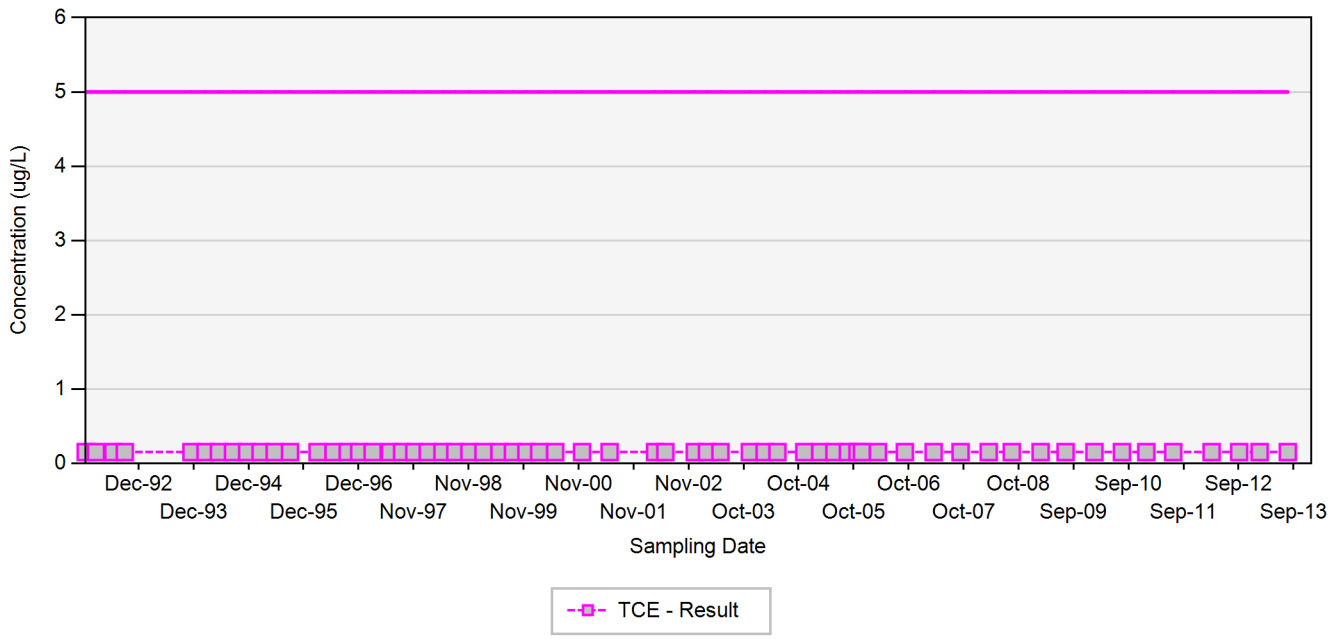
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

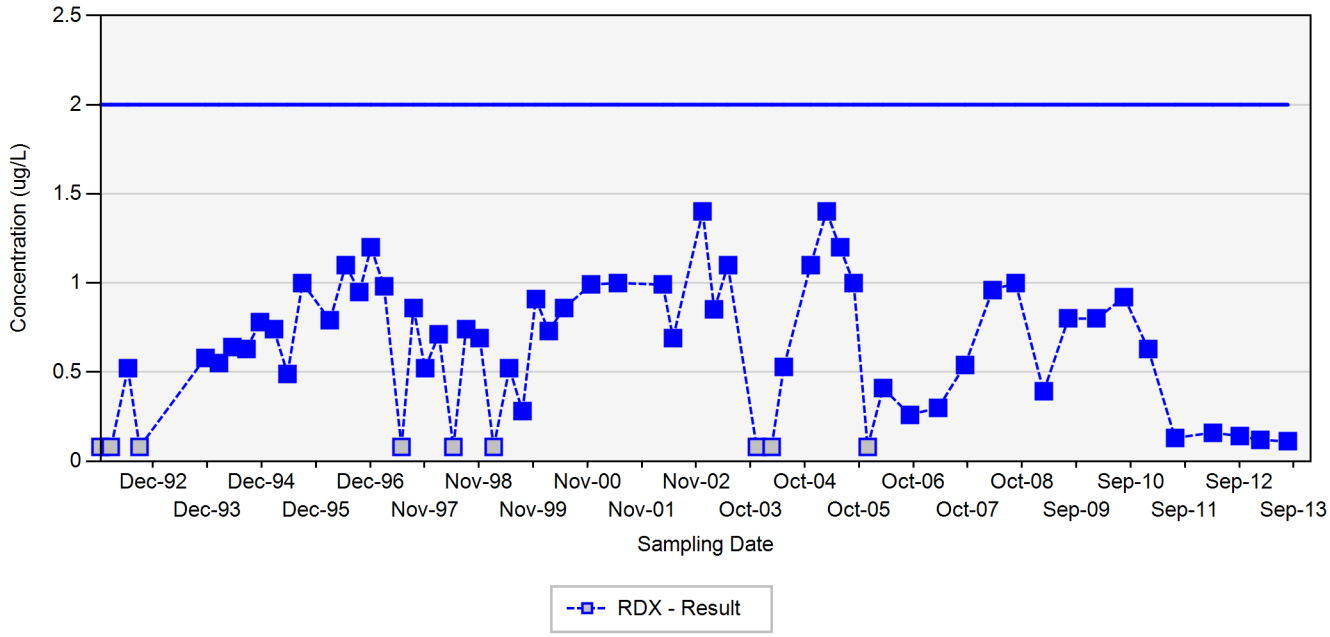
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-29





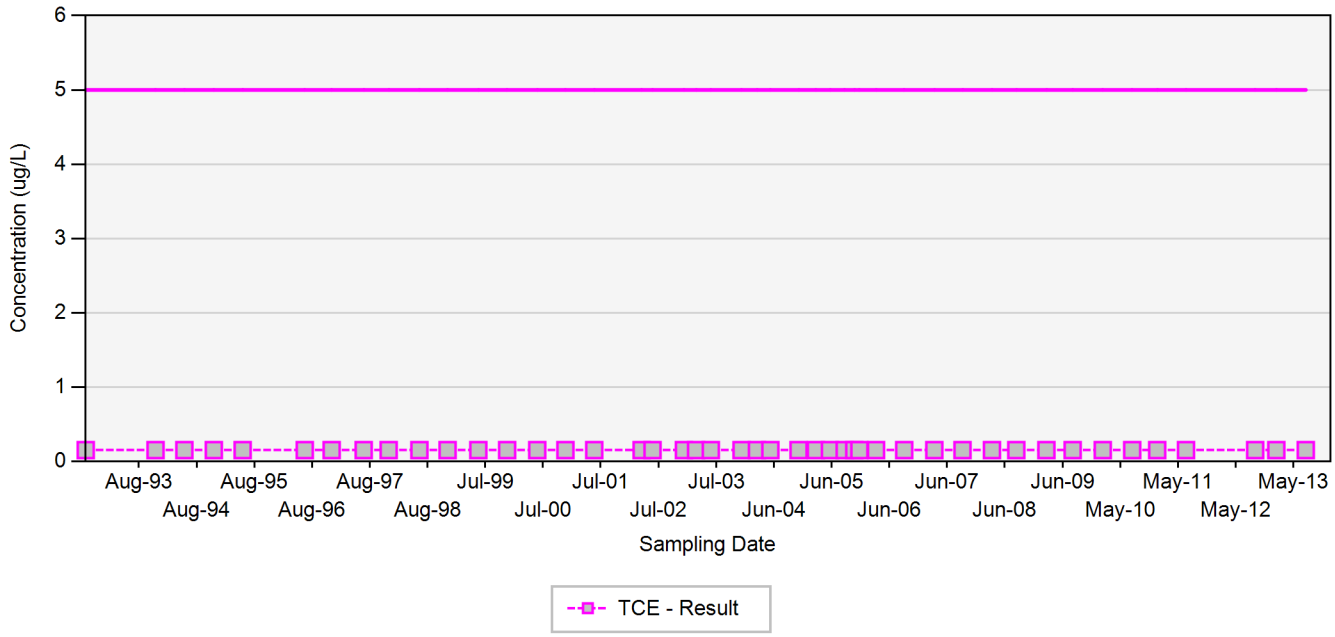
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

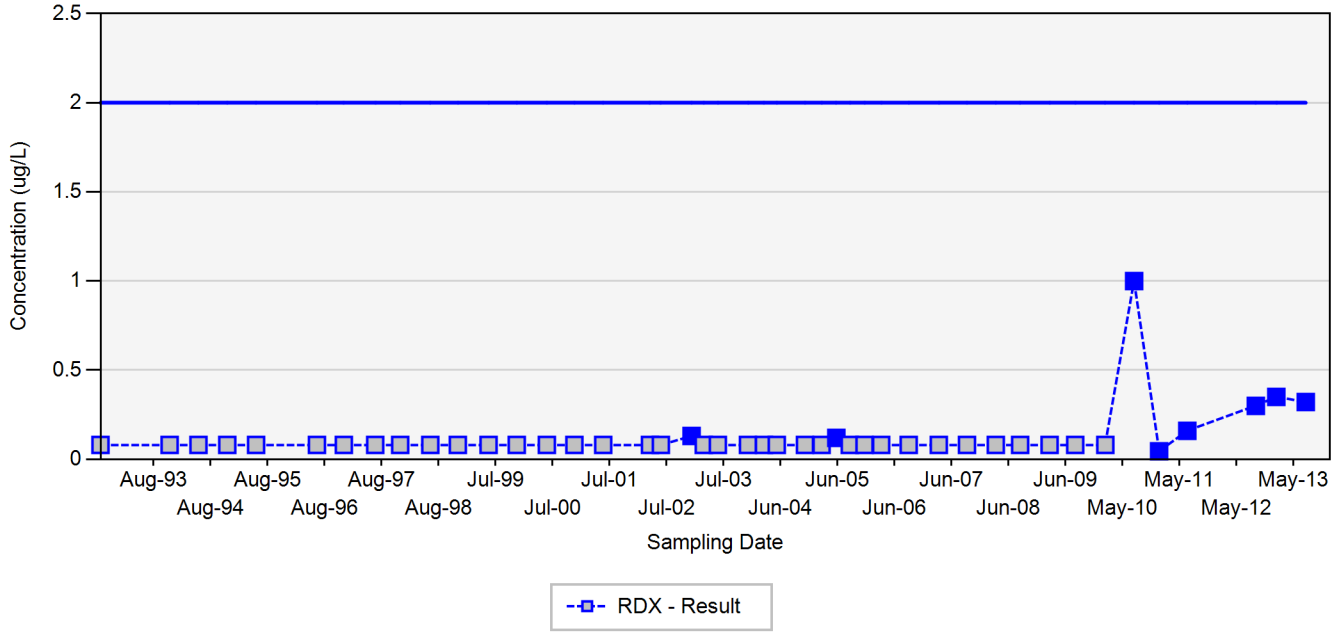
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-29A





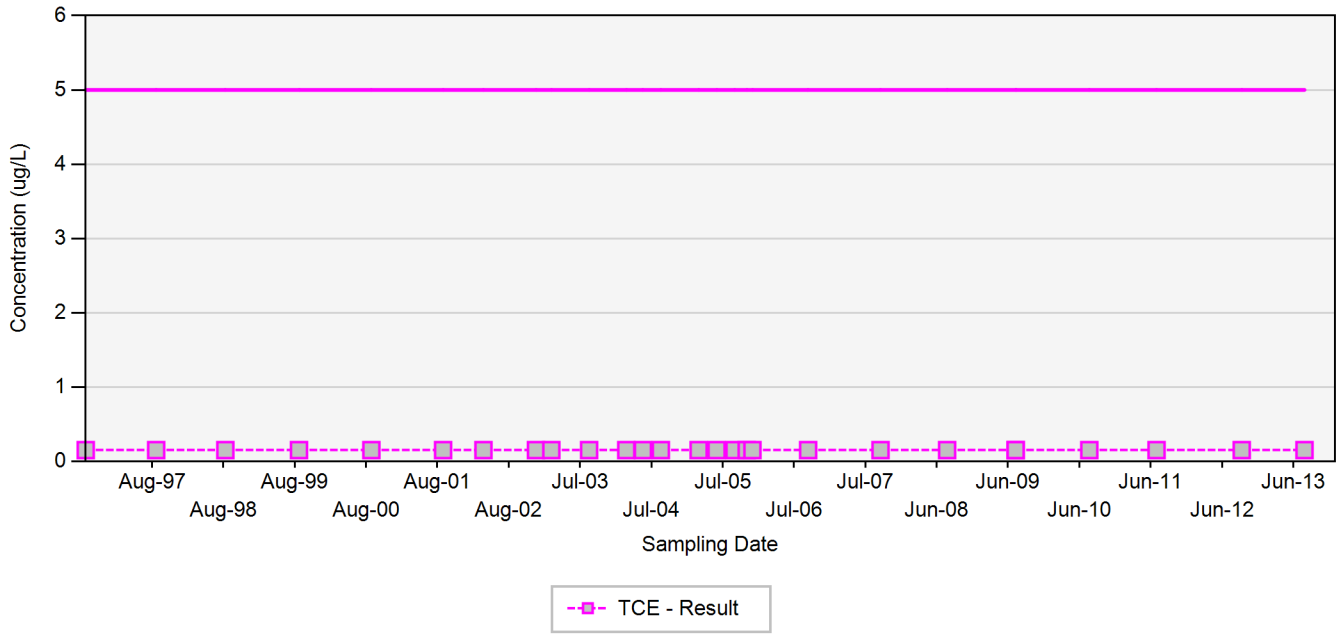
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

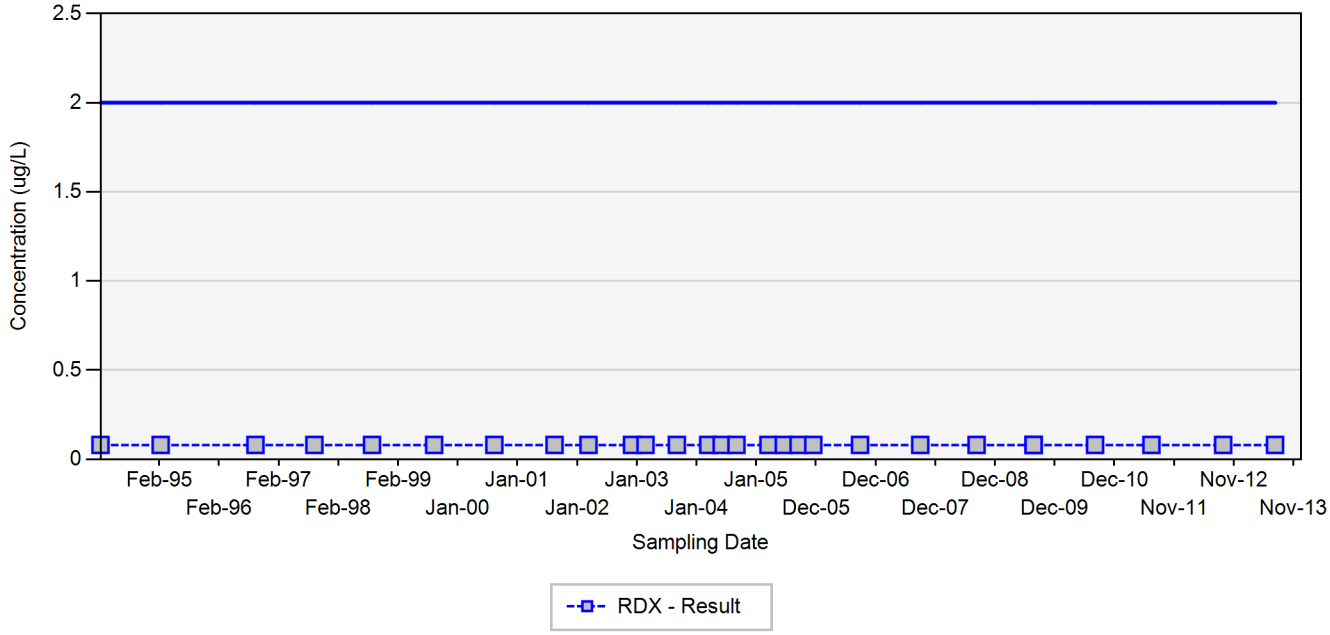
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-32





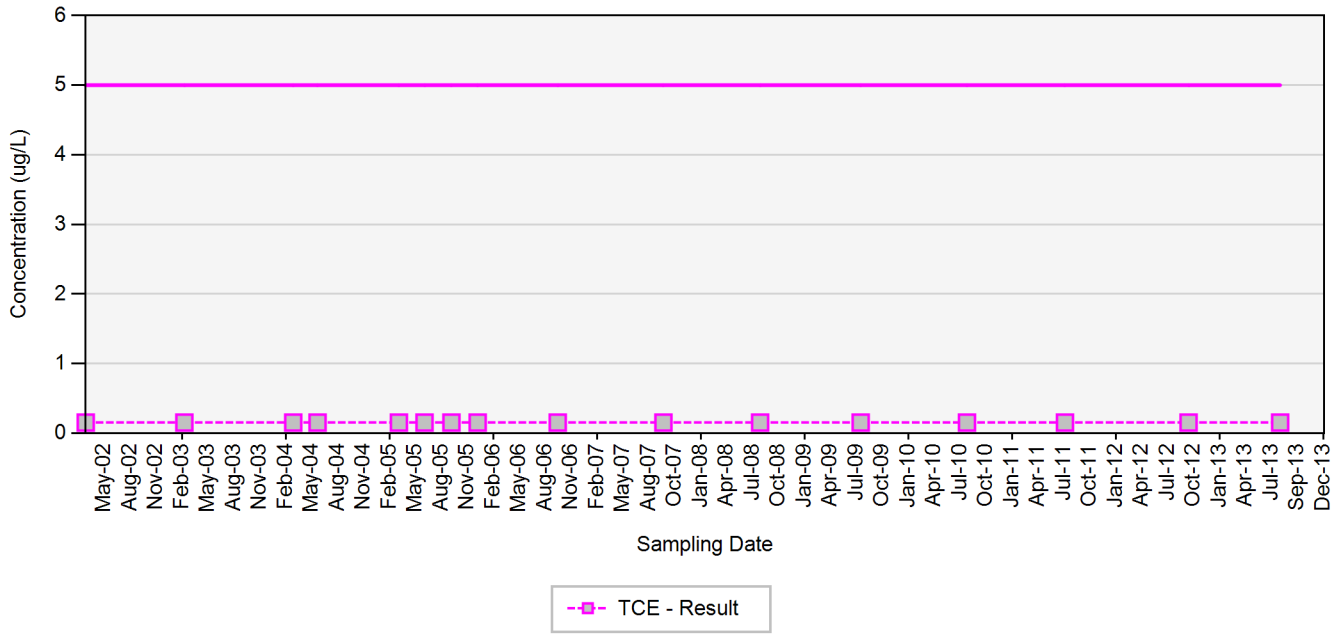
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

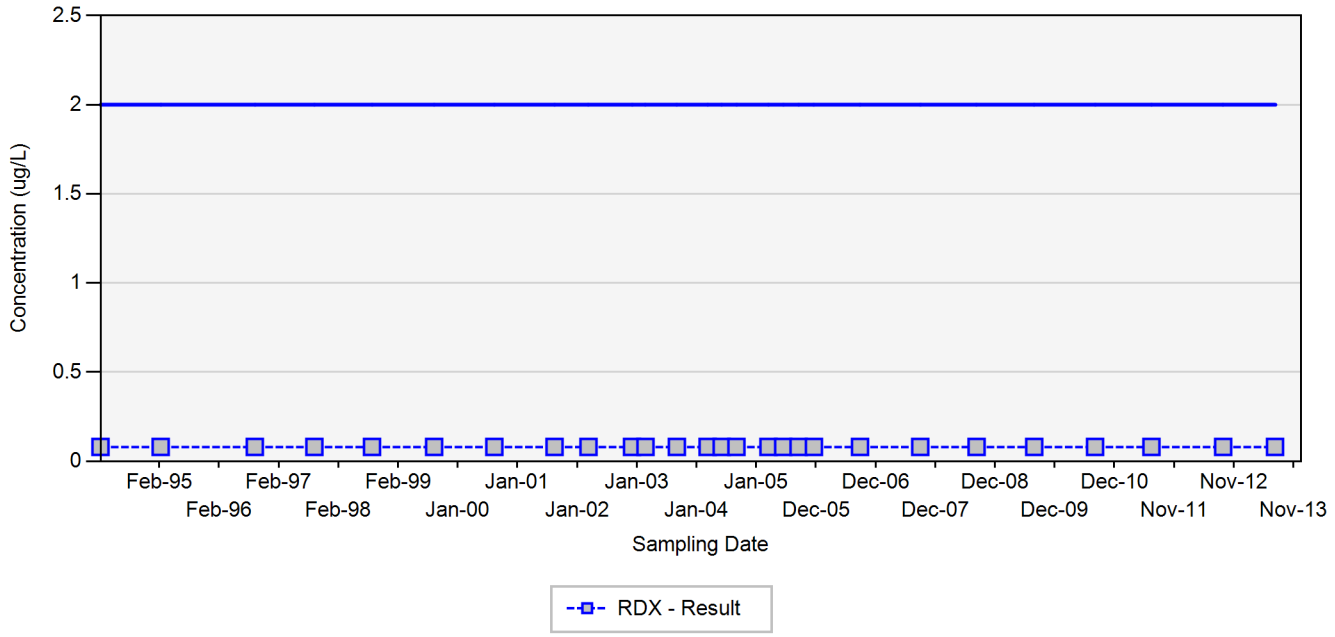
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-34





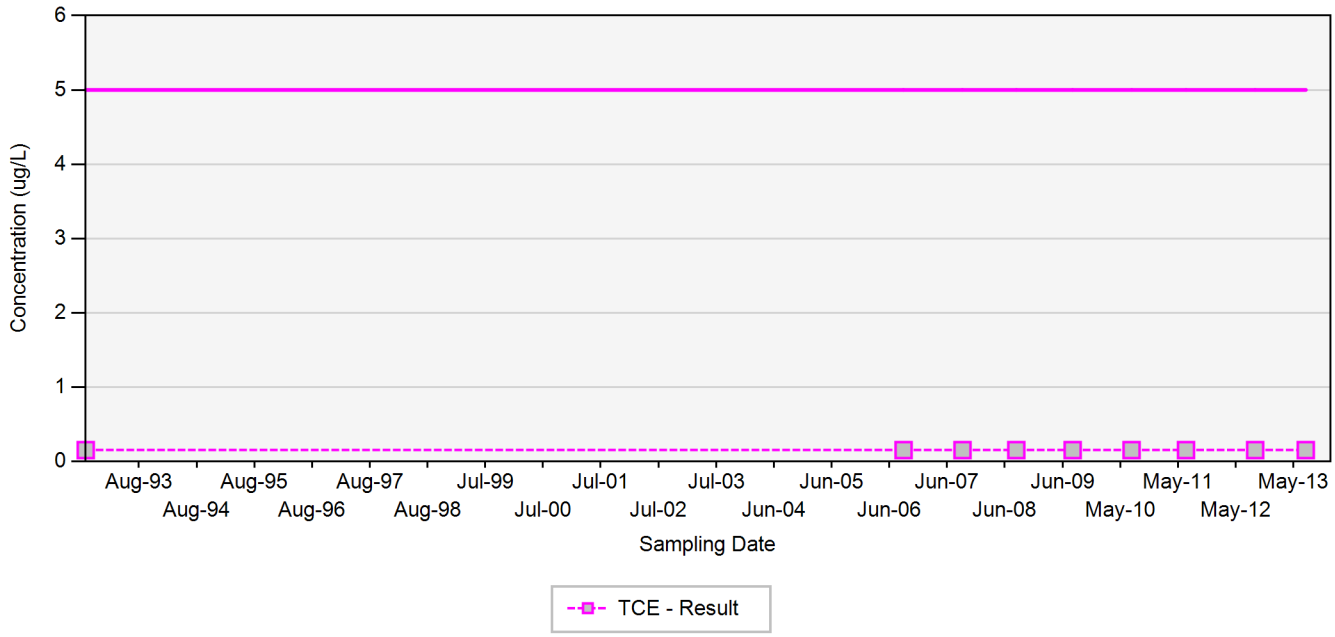
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

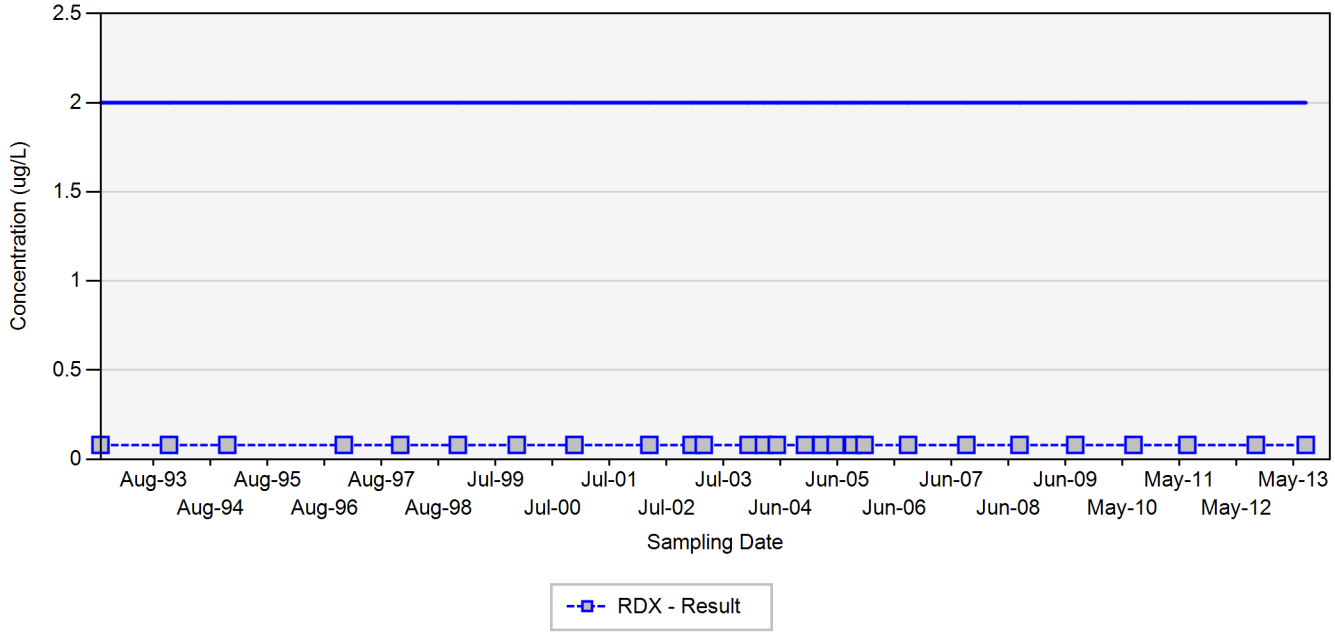
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-36





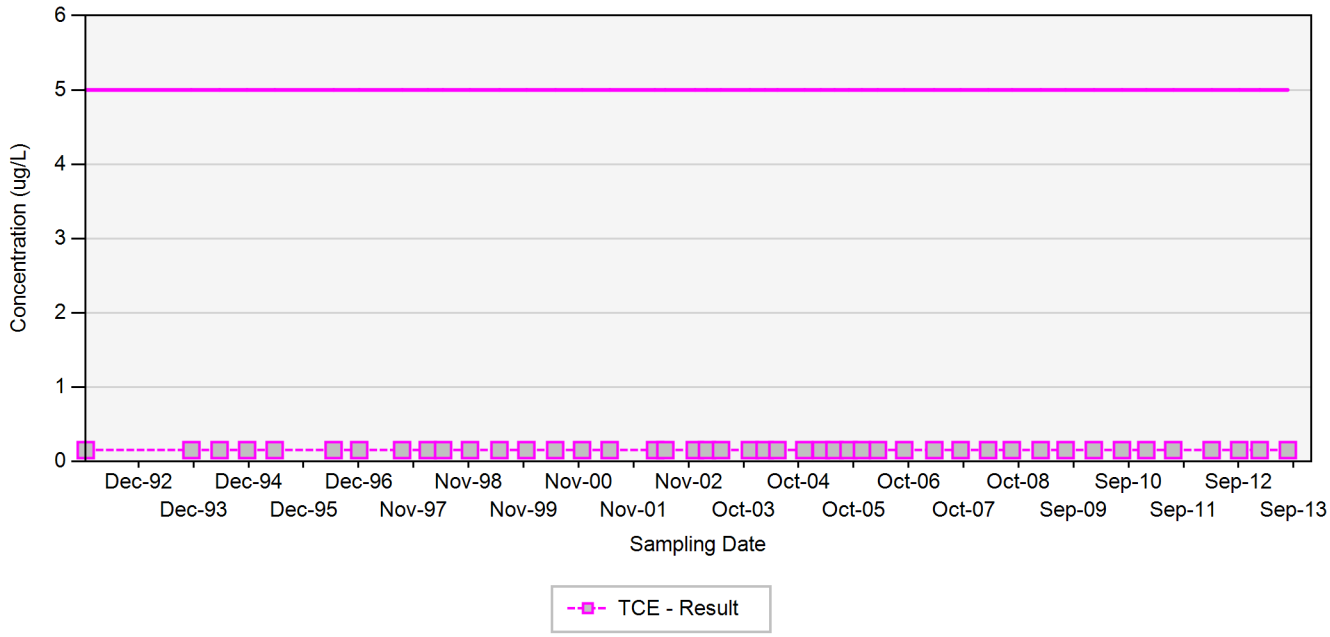
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

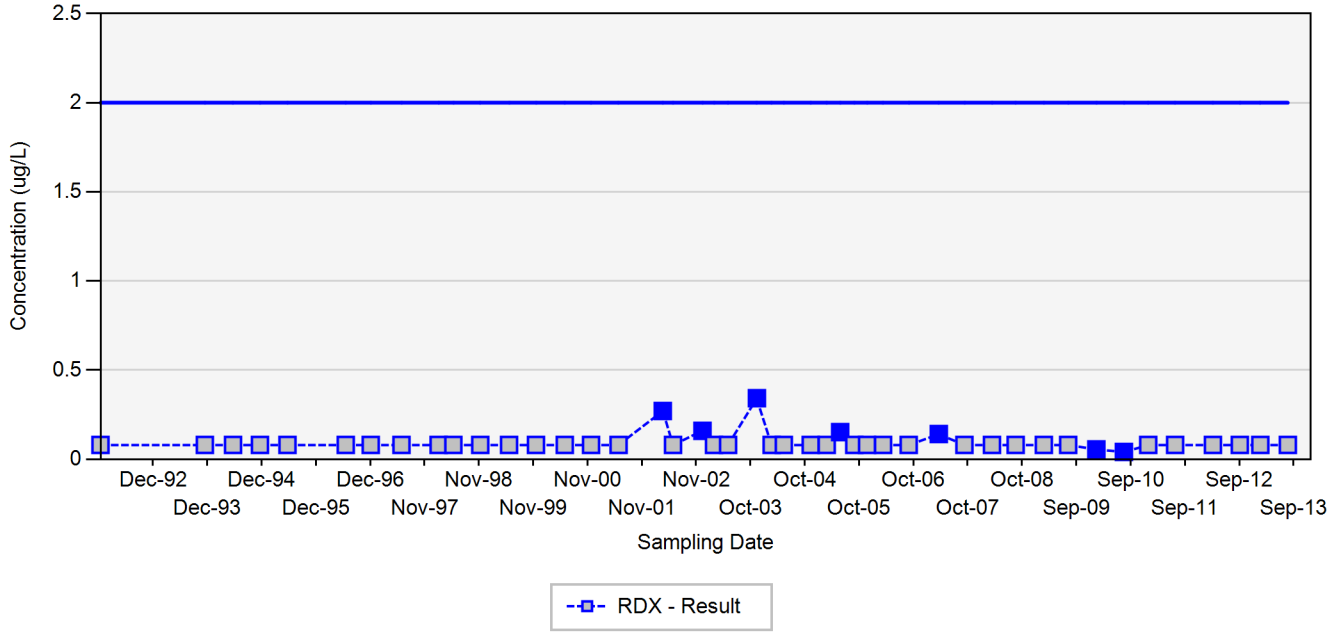
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-50A





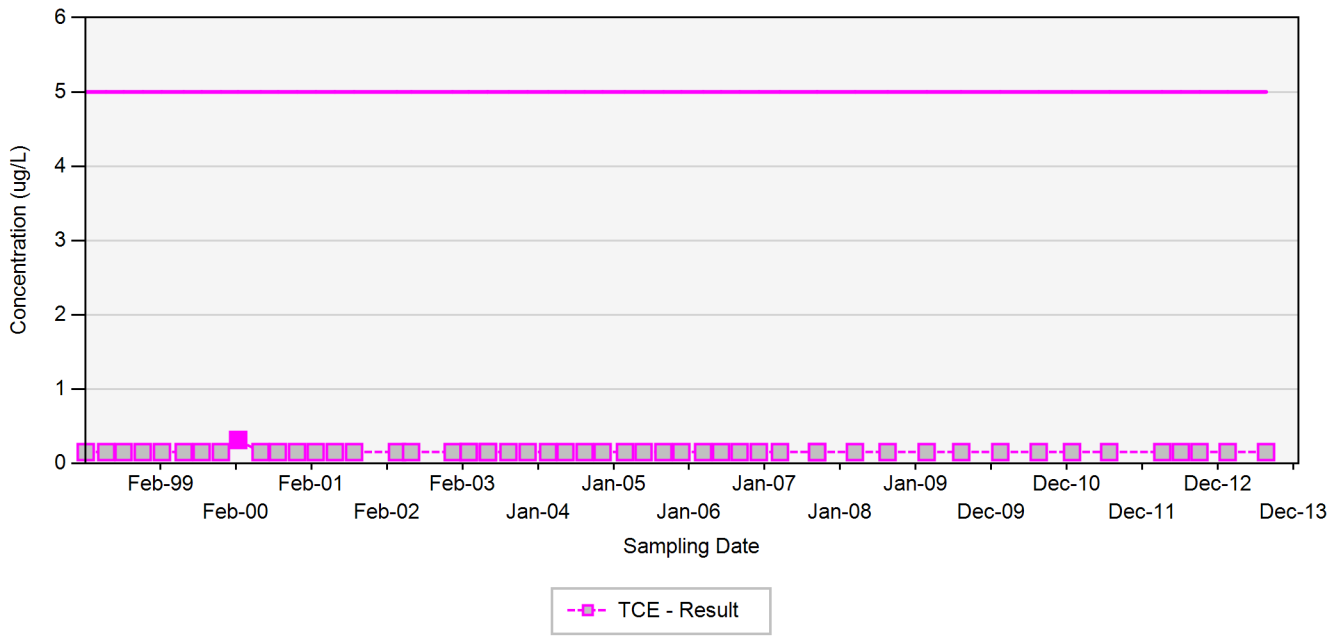
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

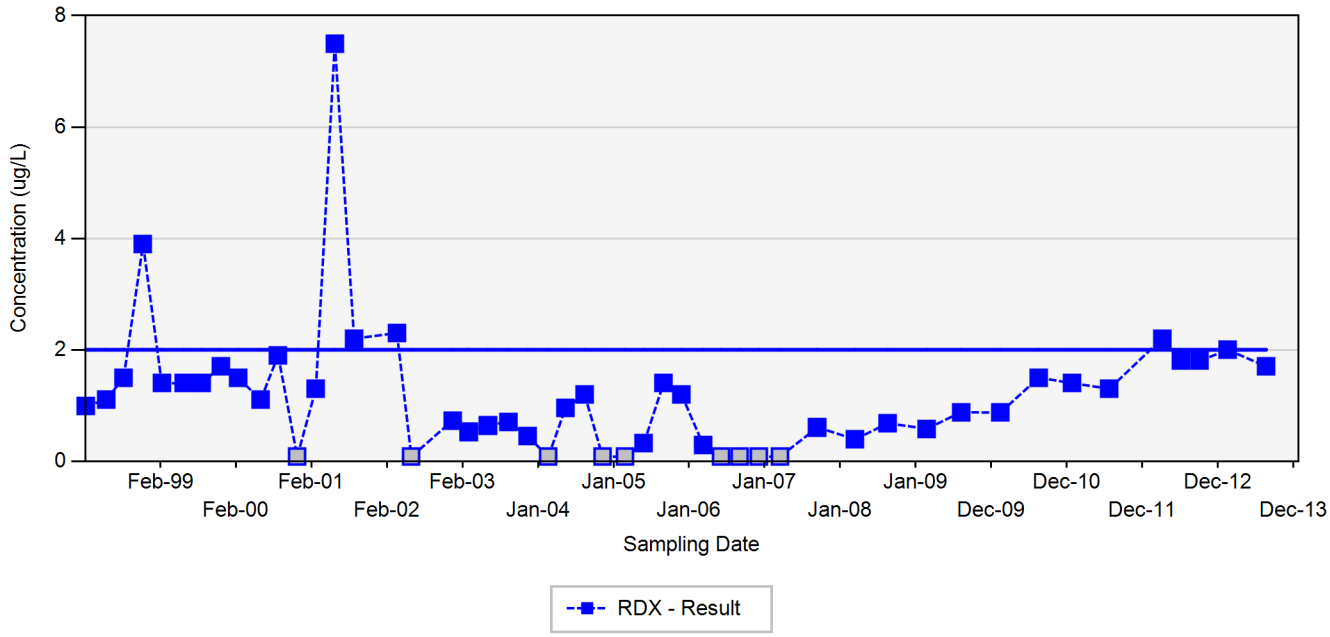
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-50B





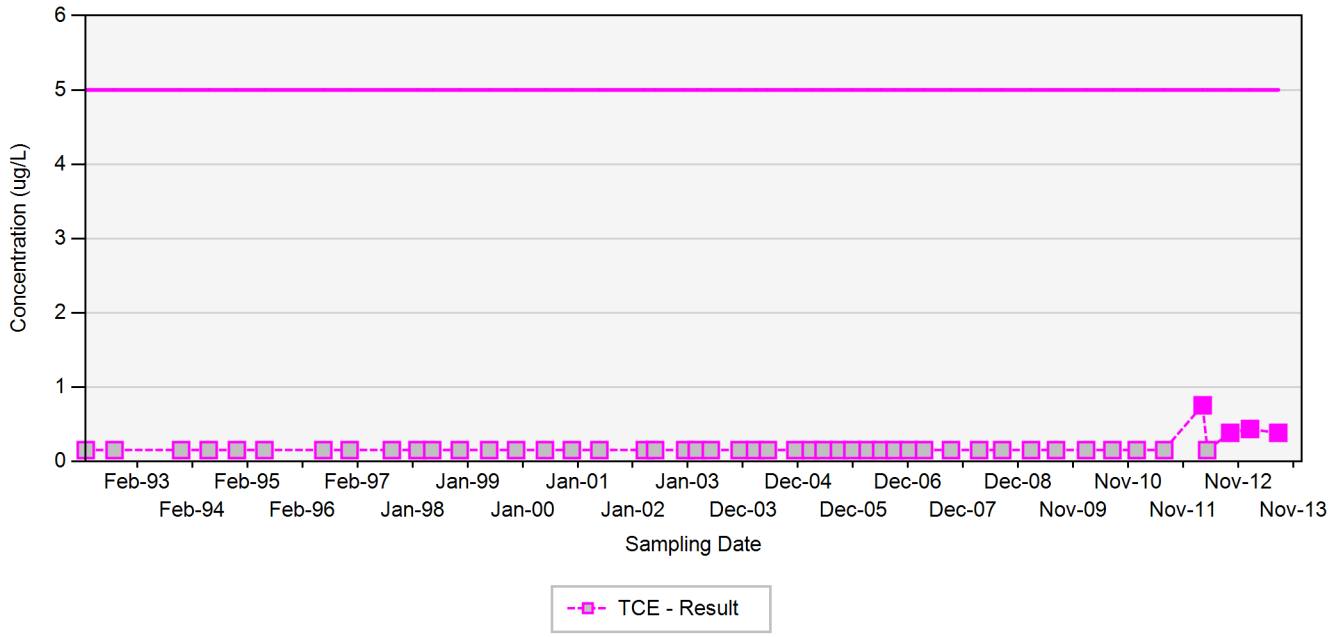
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

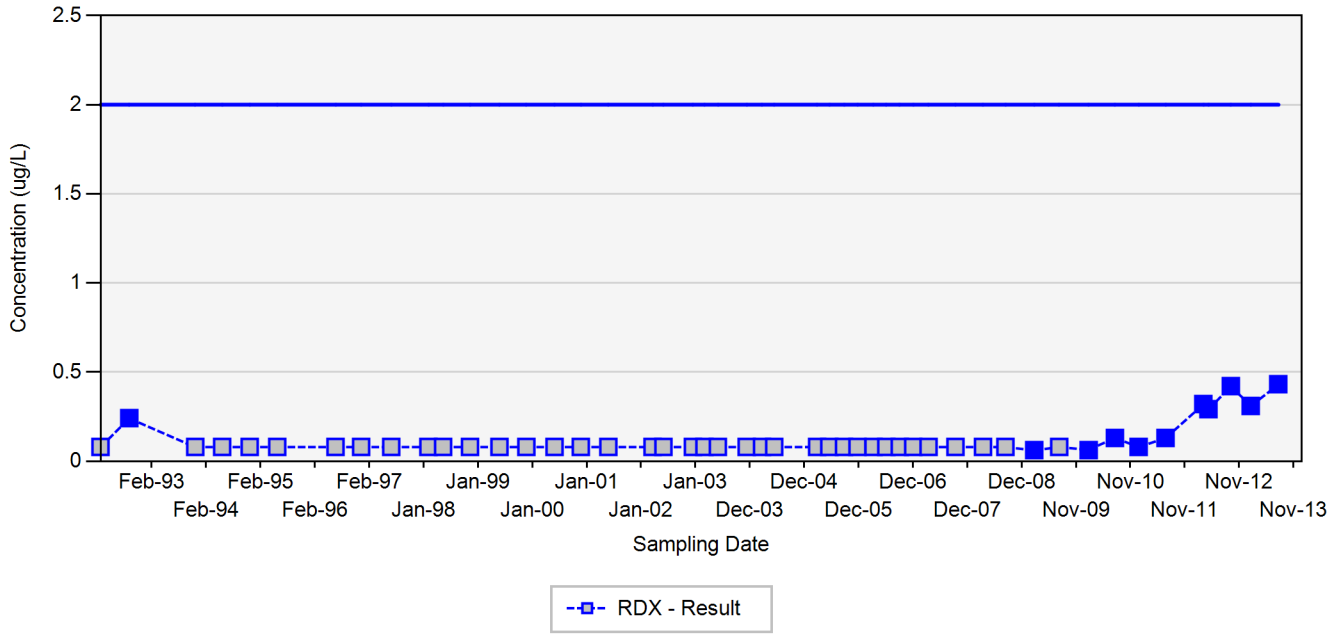
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-51





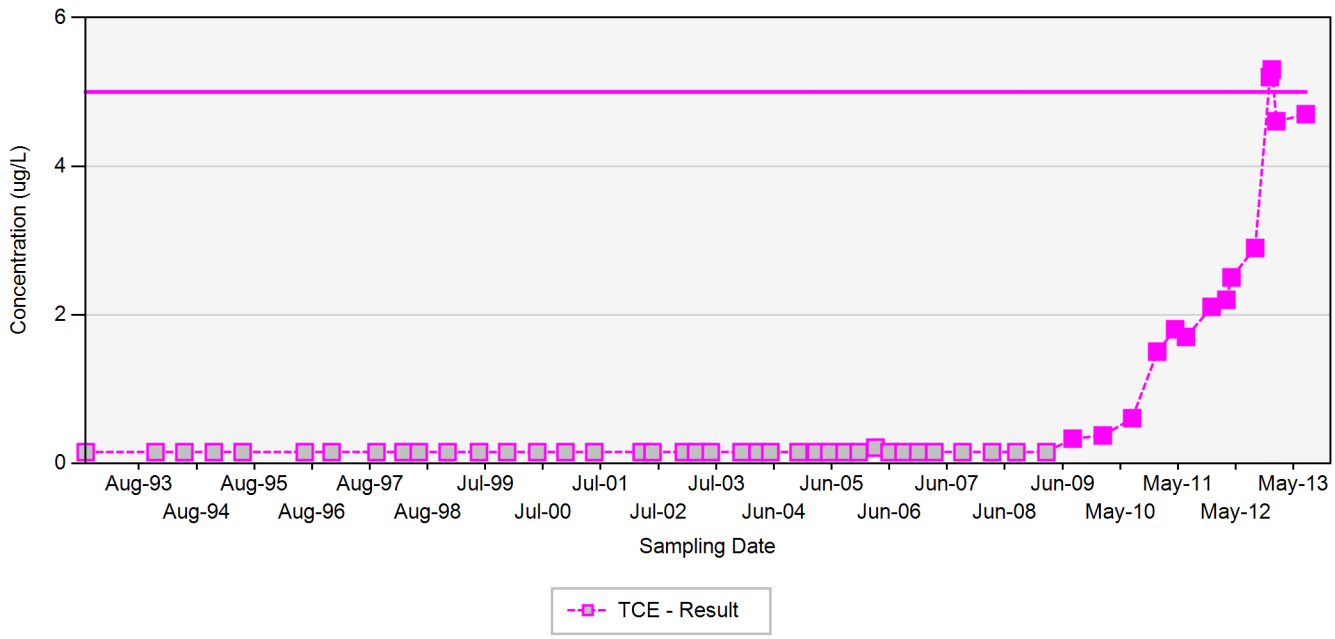
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

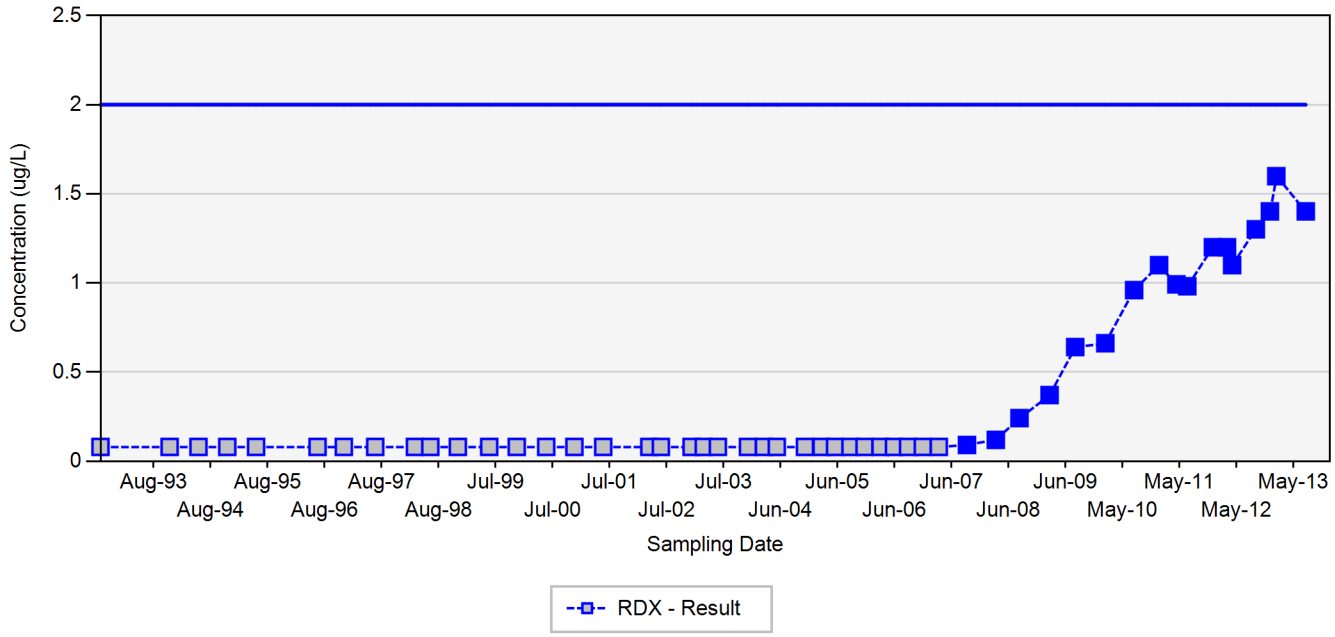
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-51A





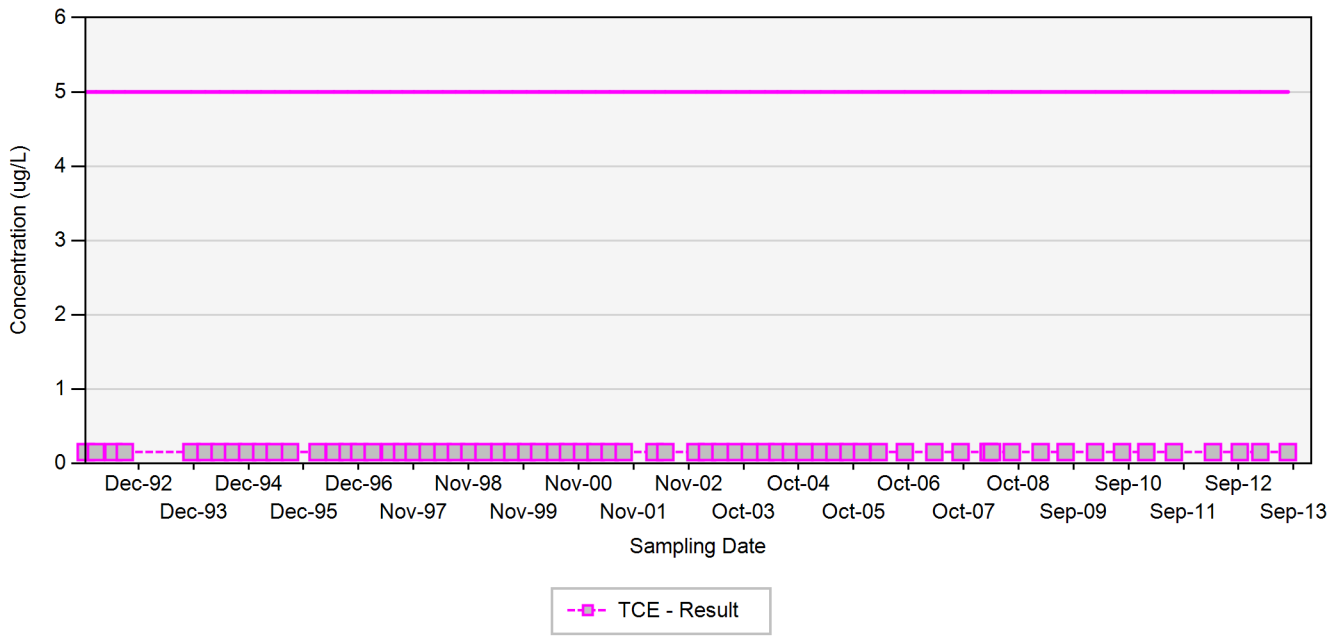
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

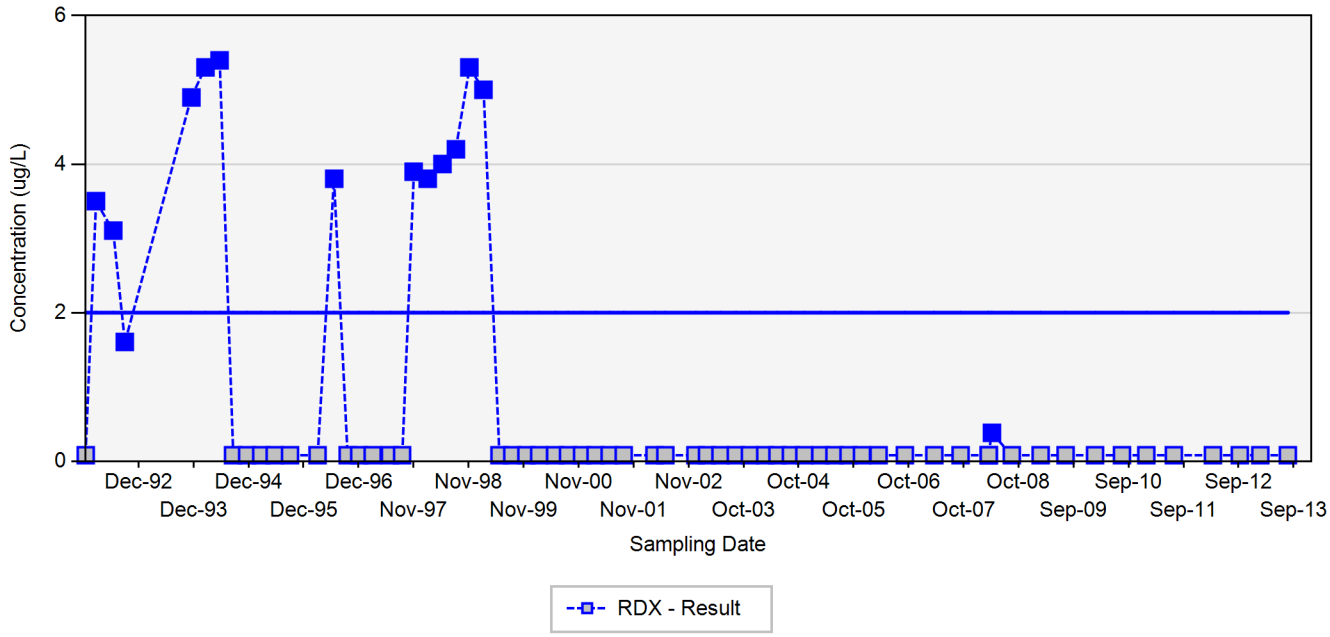
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-52A





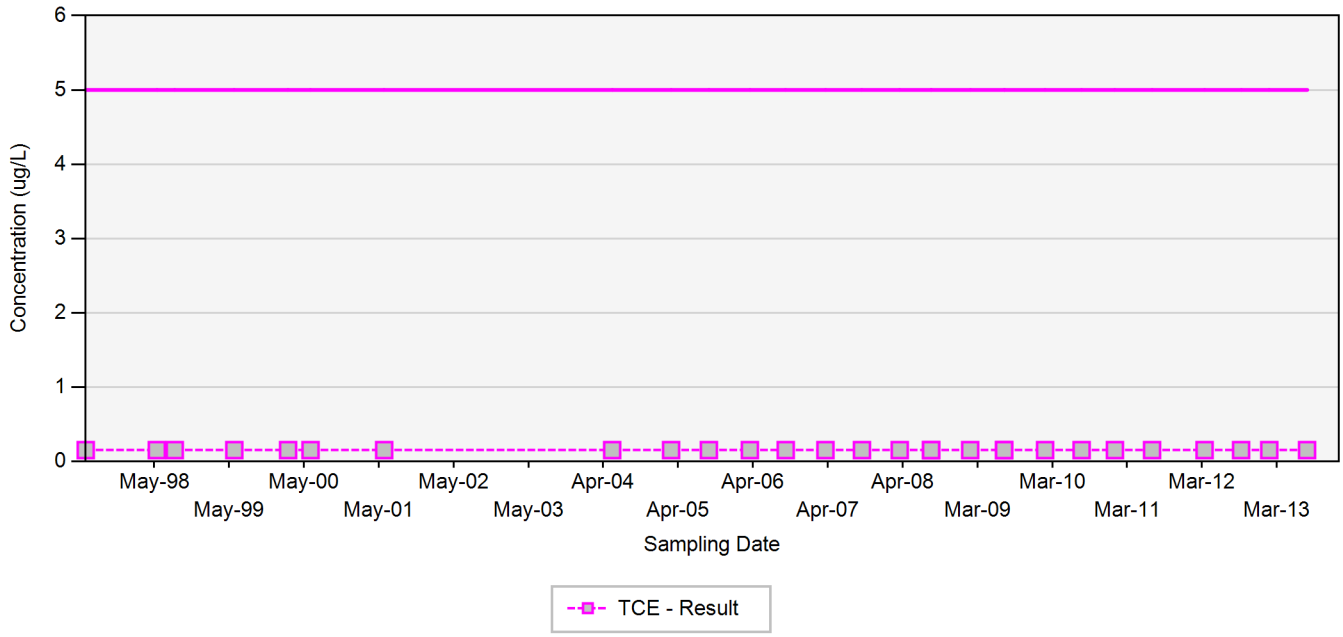
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

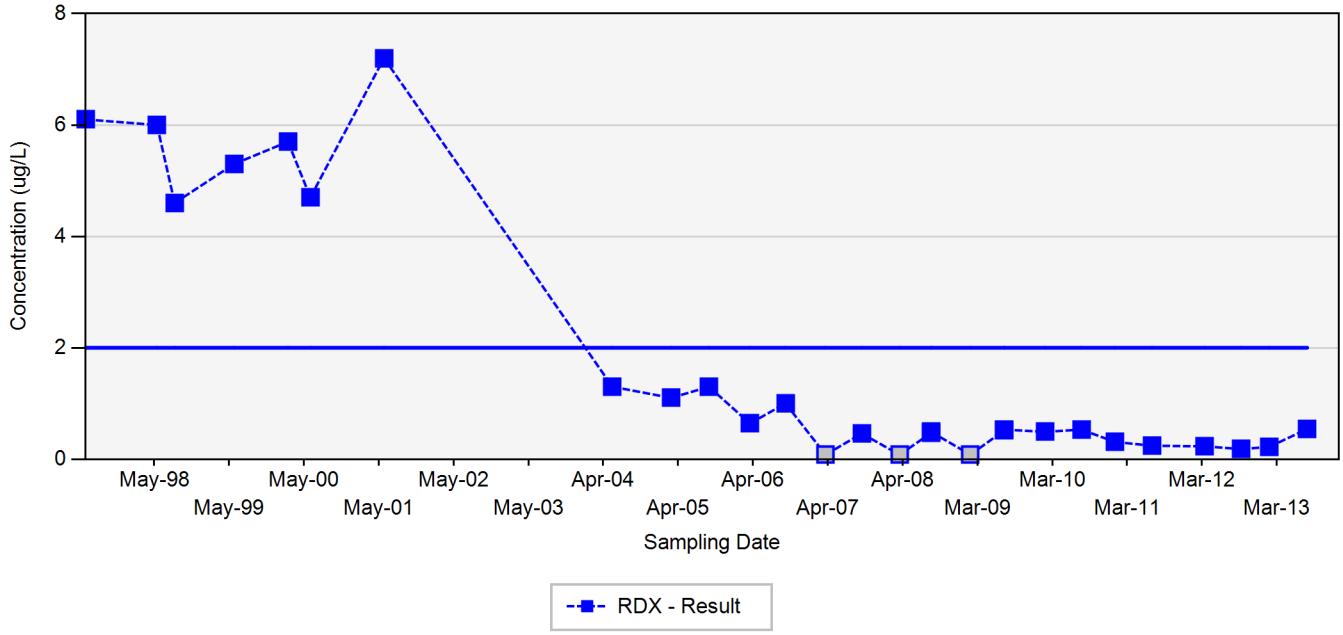
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-52A-B





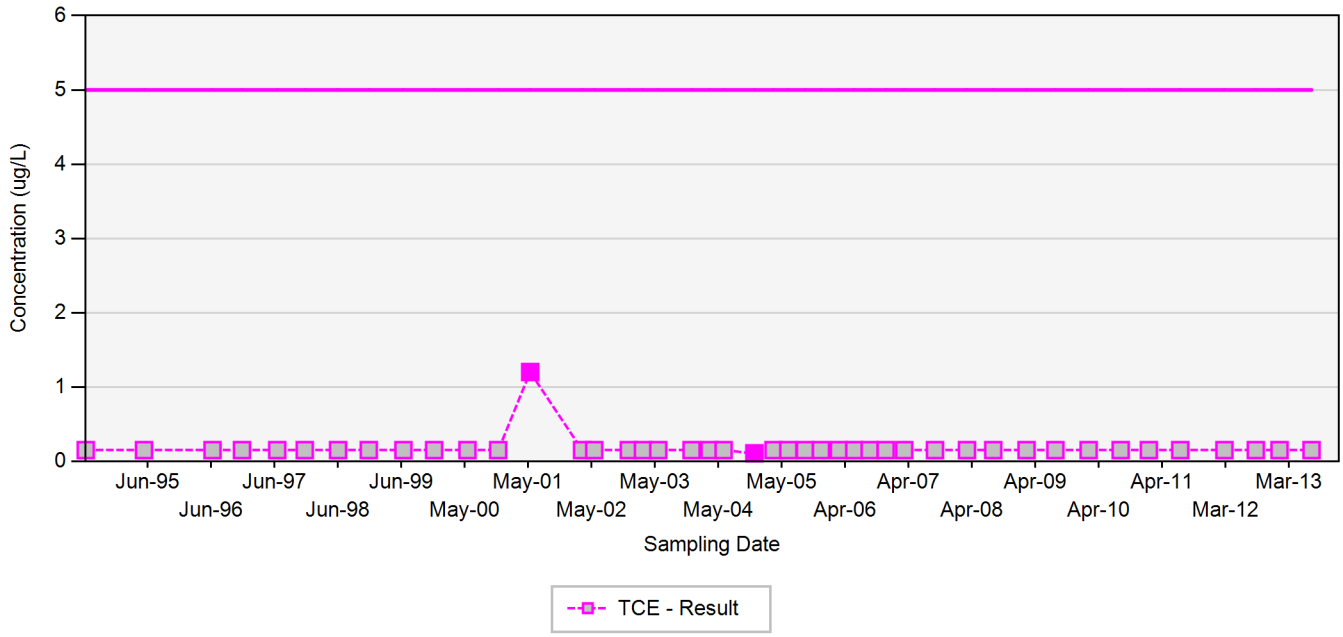
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

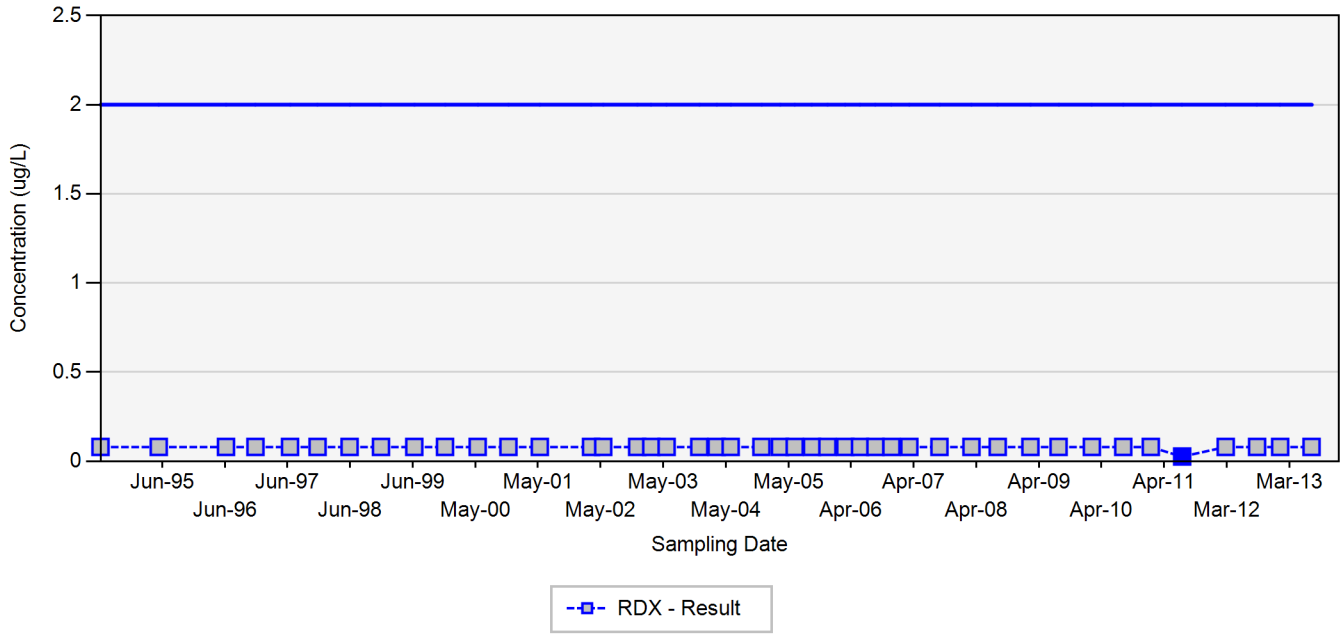
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-52B





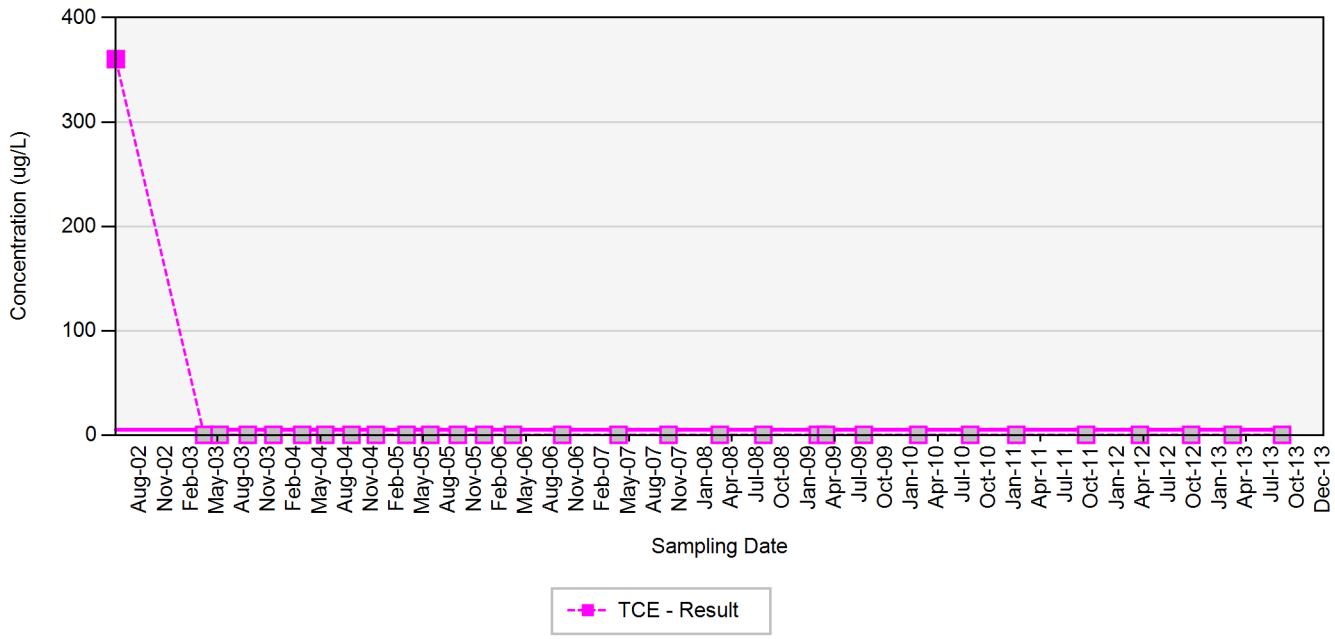
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

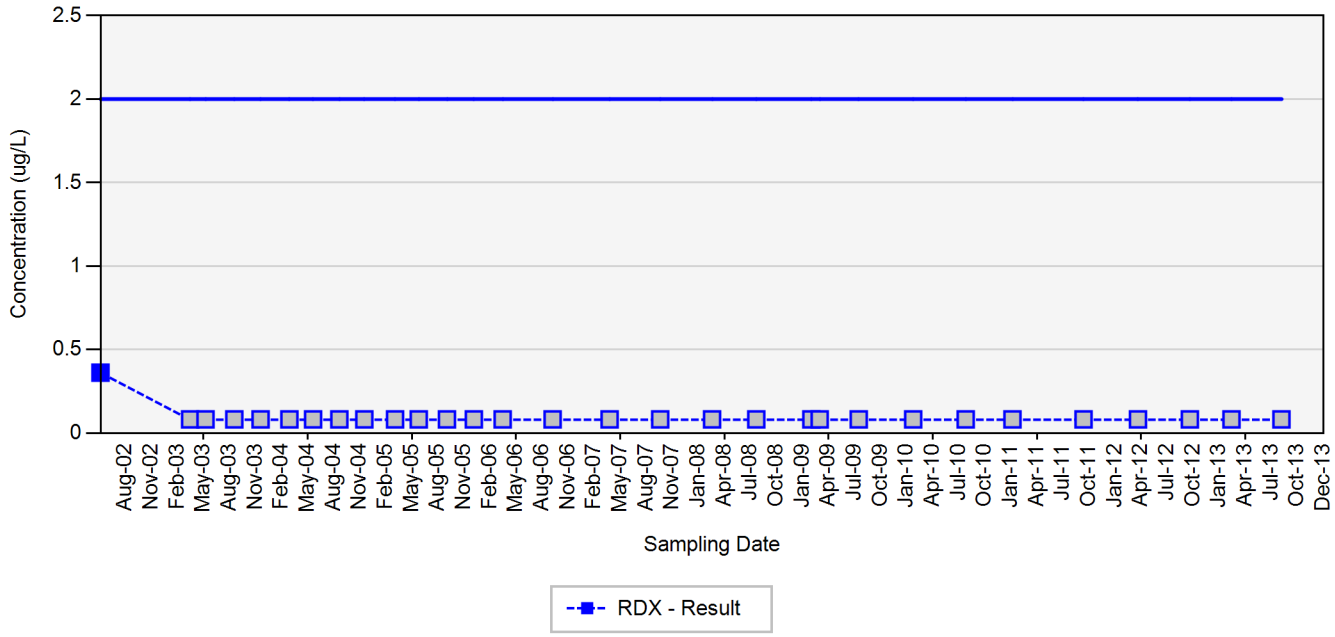
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-52C





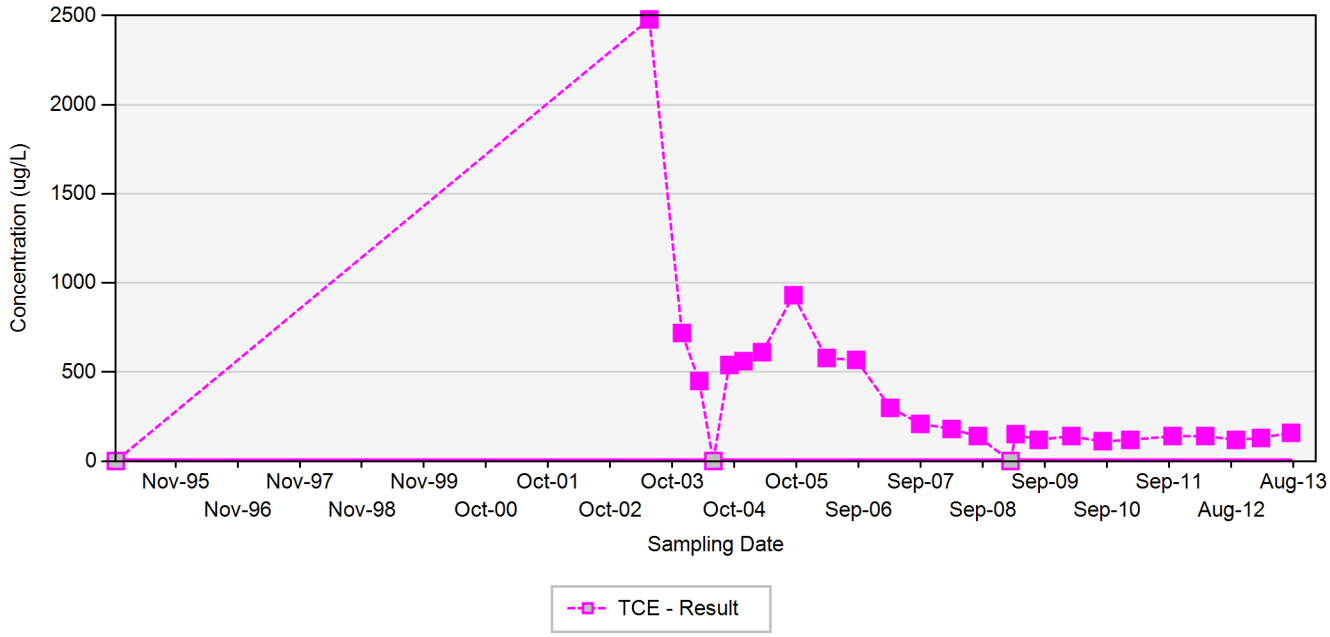
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

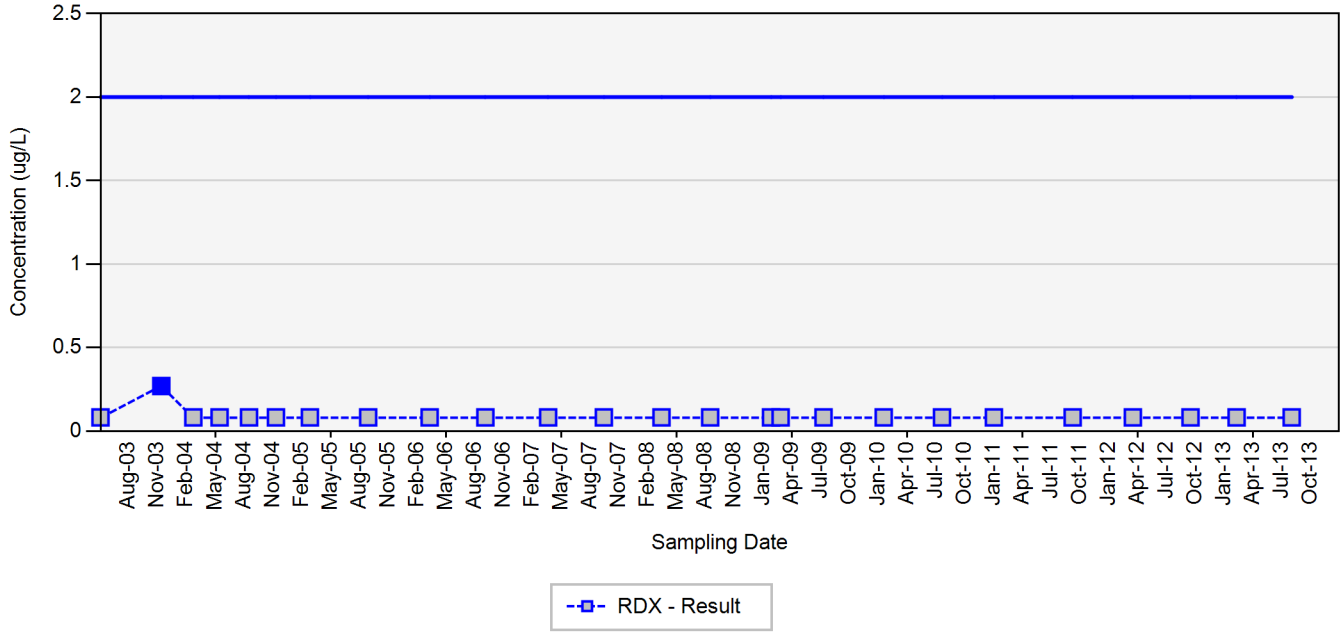
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-52C-B





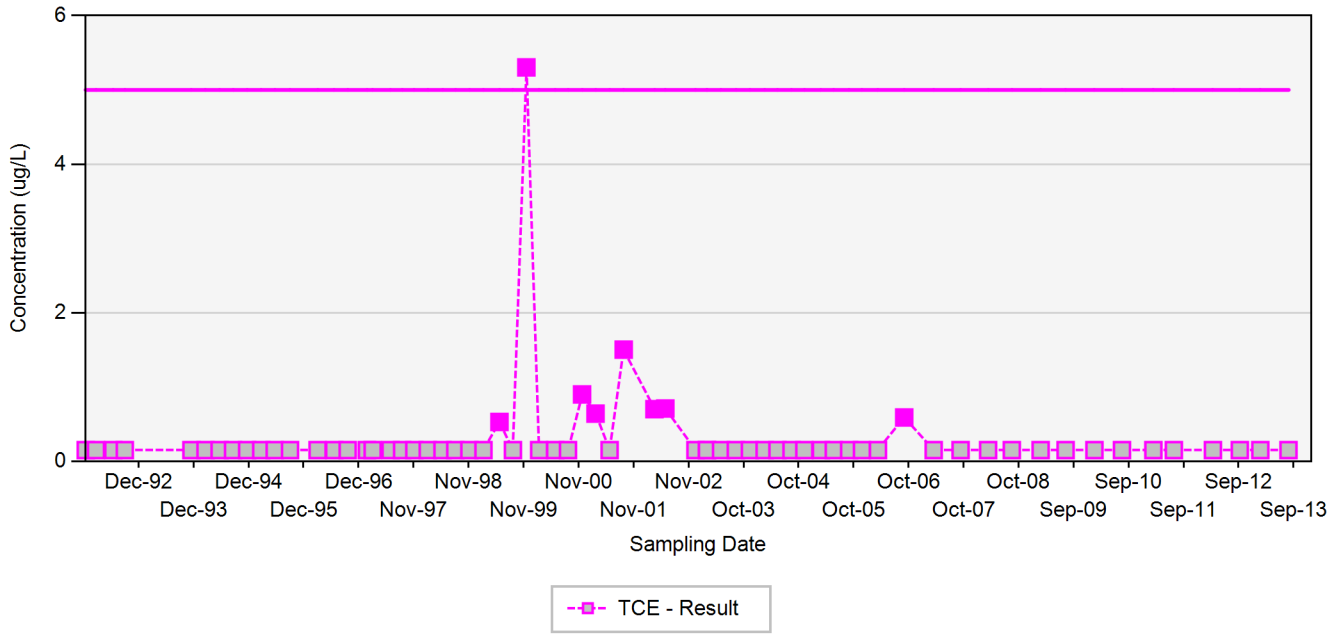
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

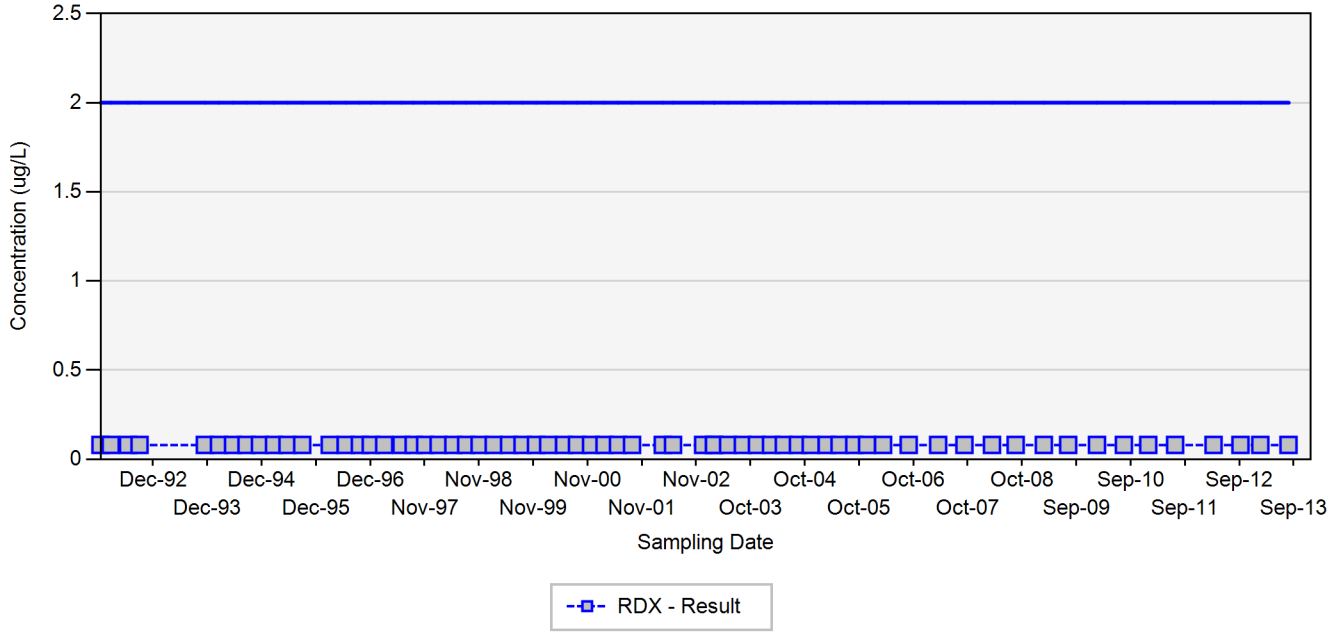
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-53





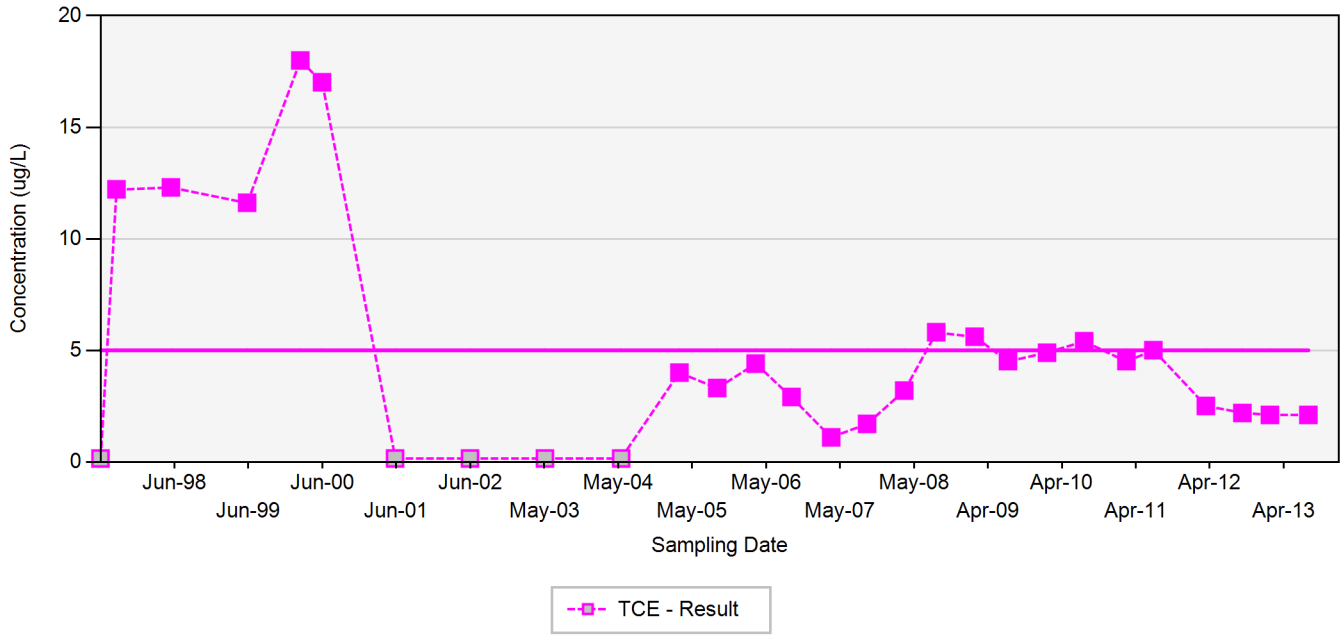
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

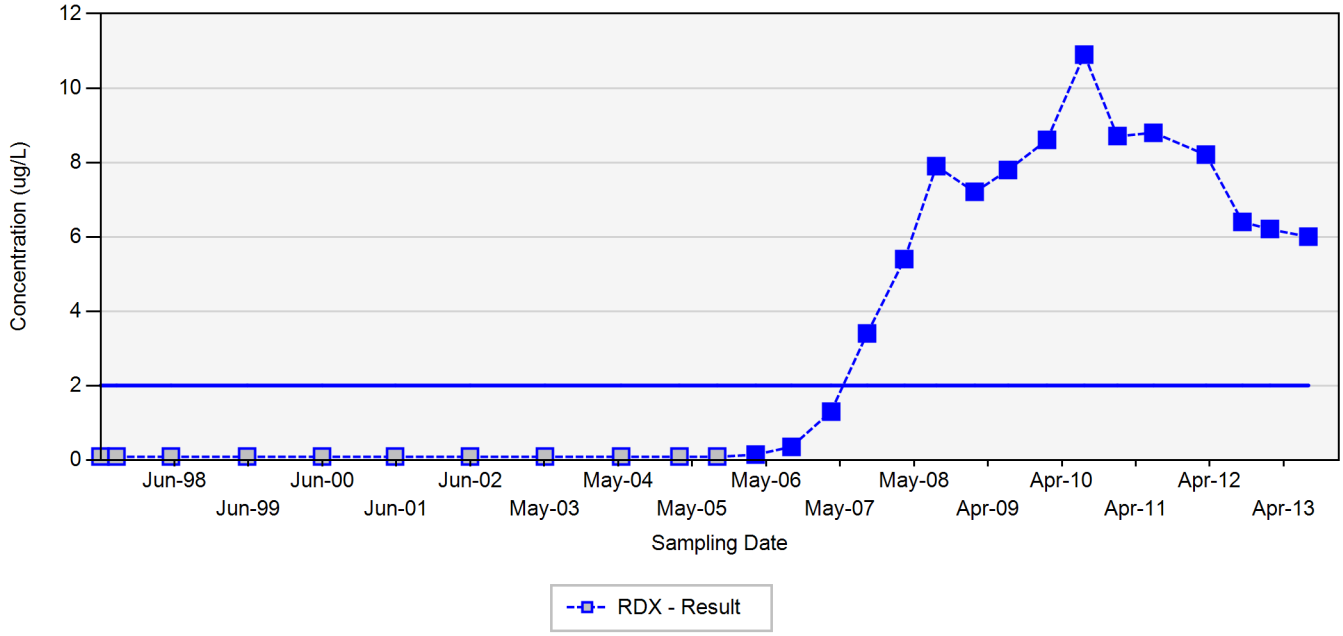
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-53-B





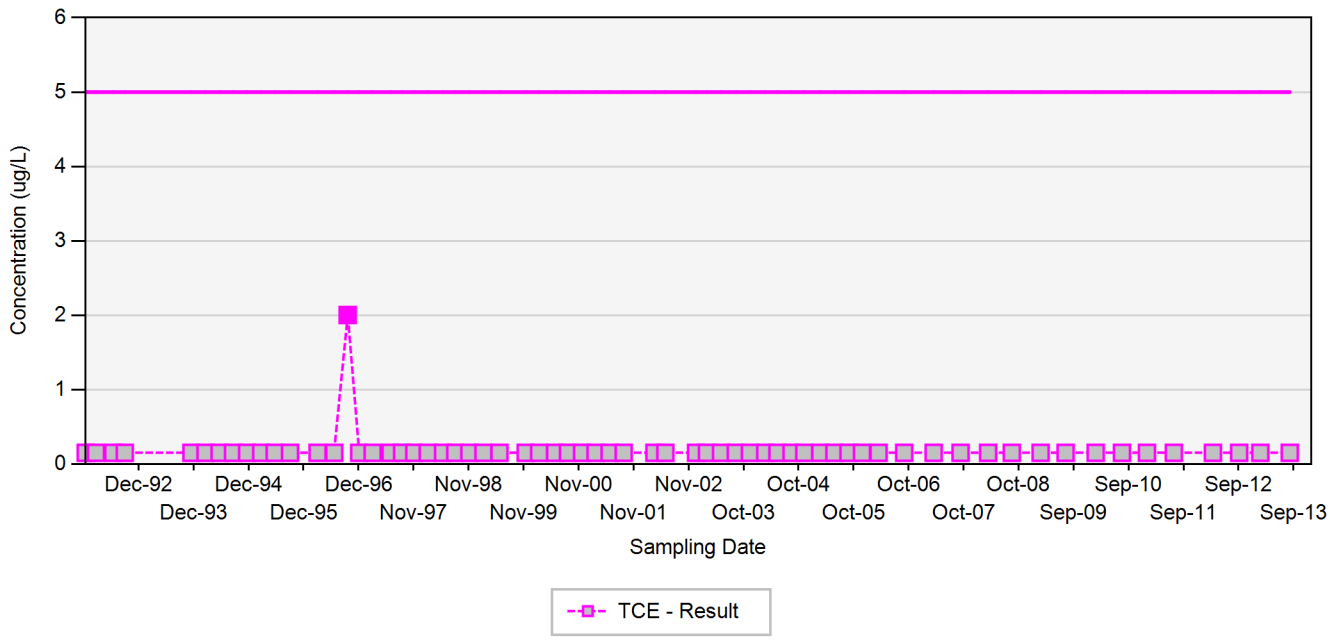
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

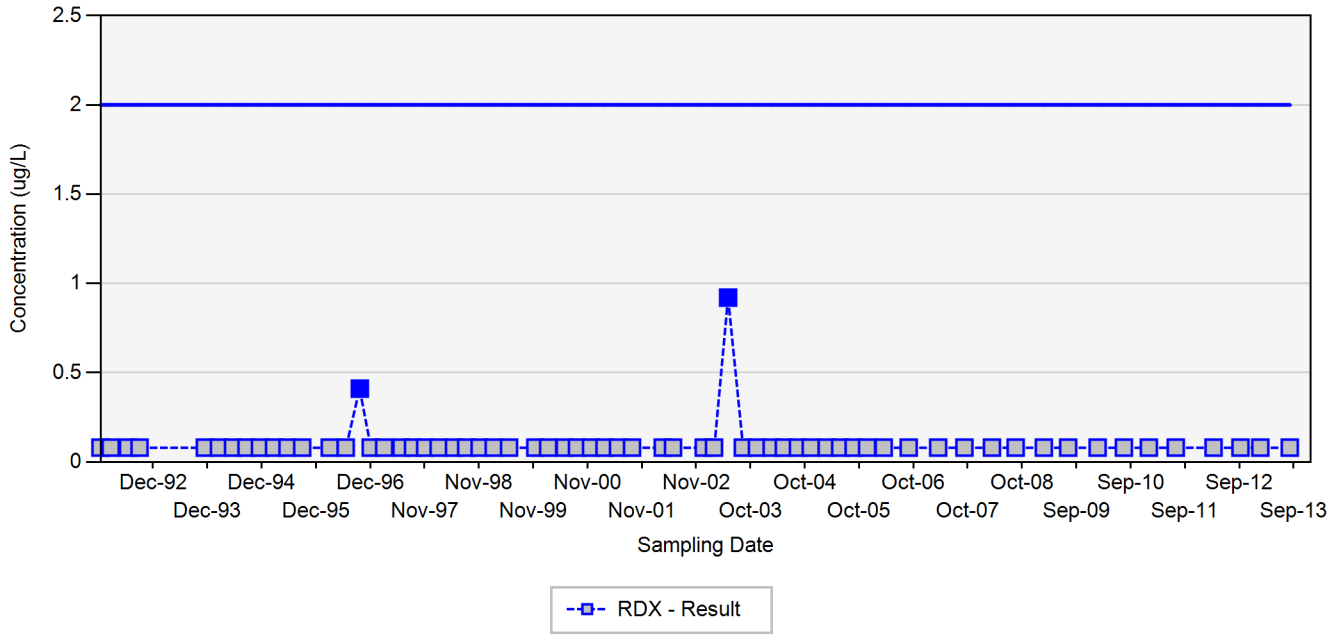
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-54





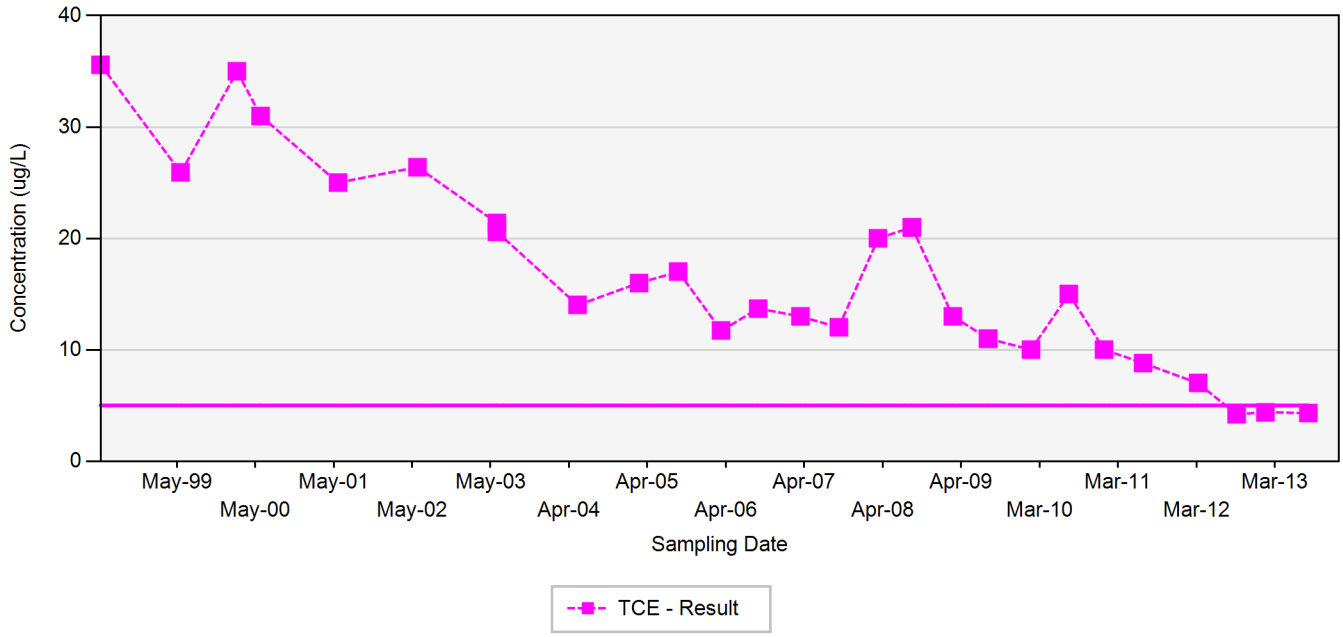
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

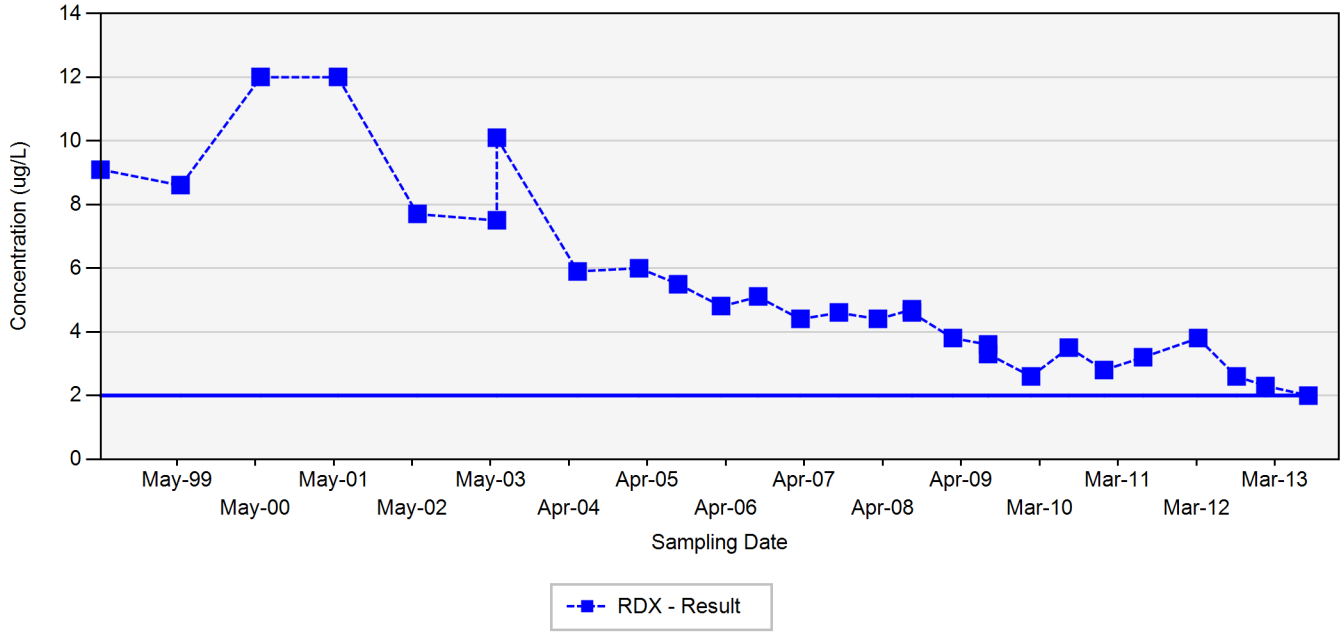
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-54-B





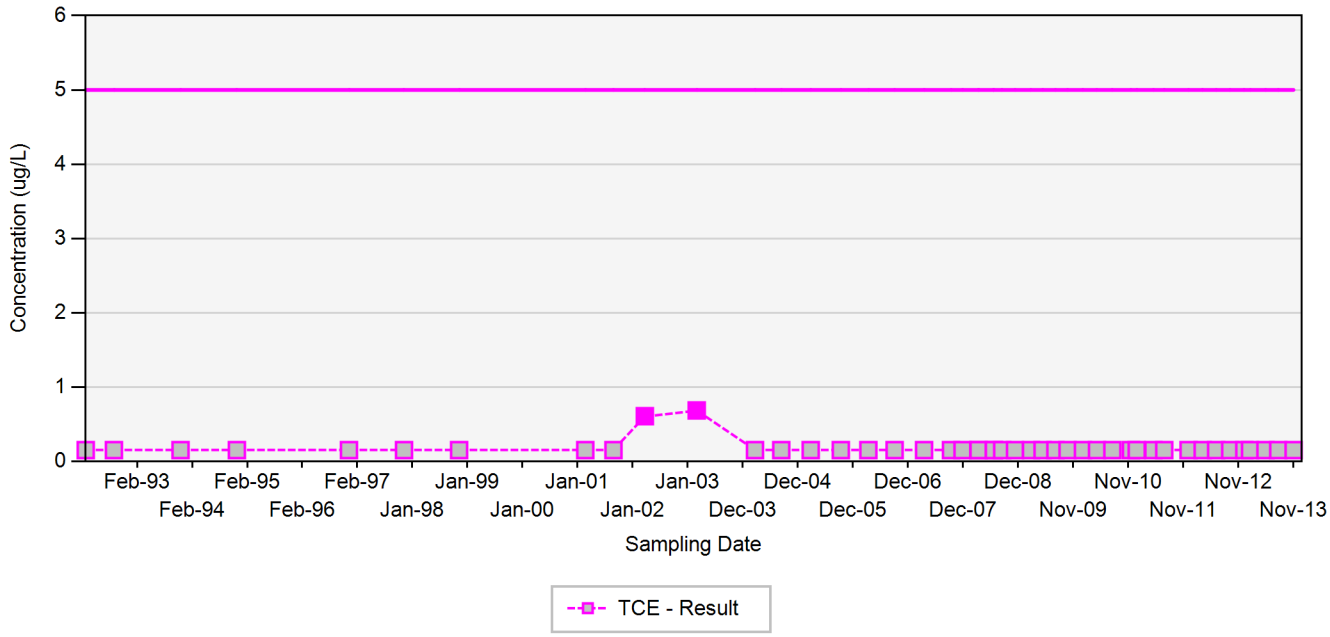
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

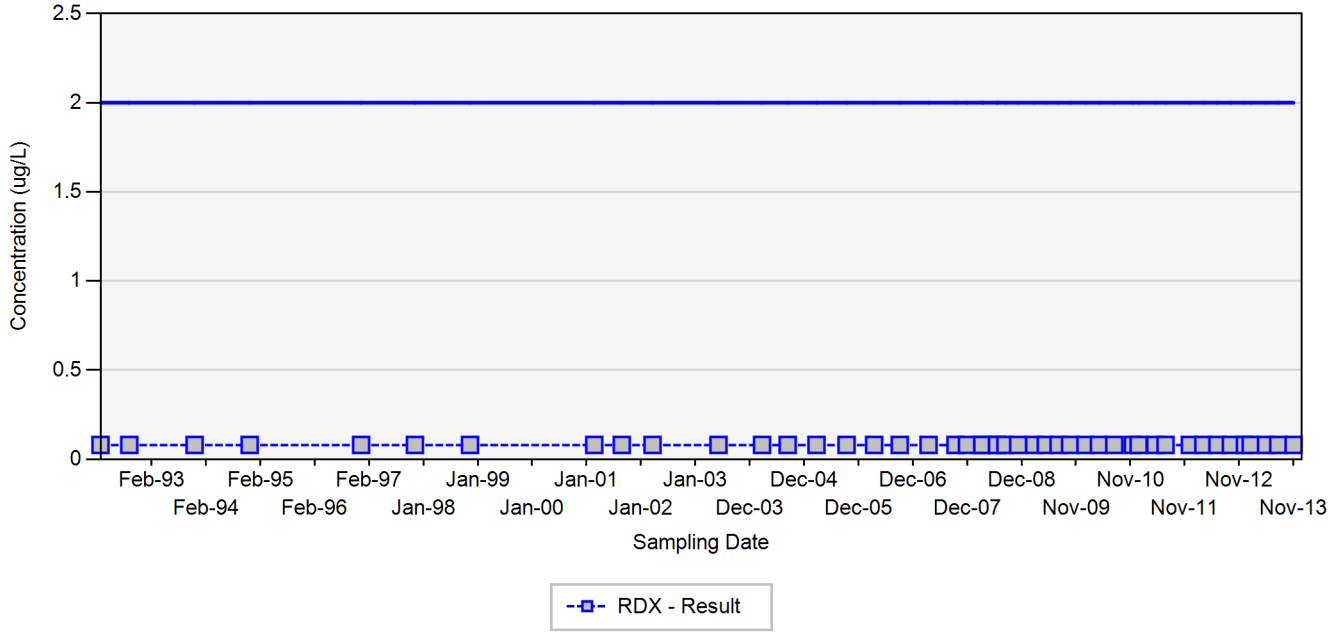
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-55





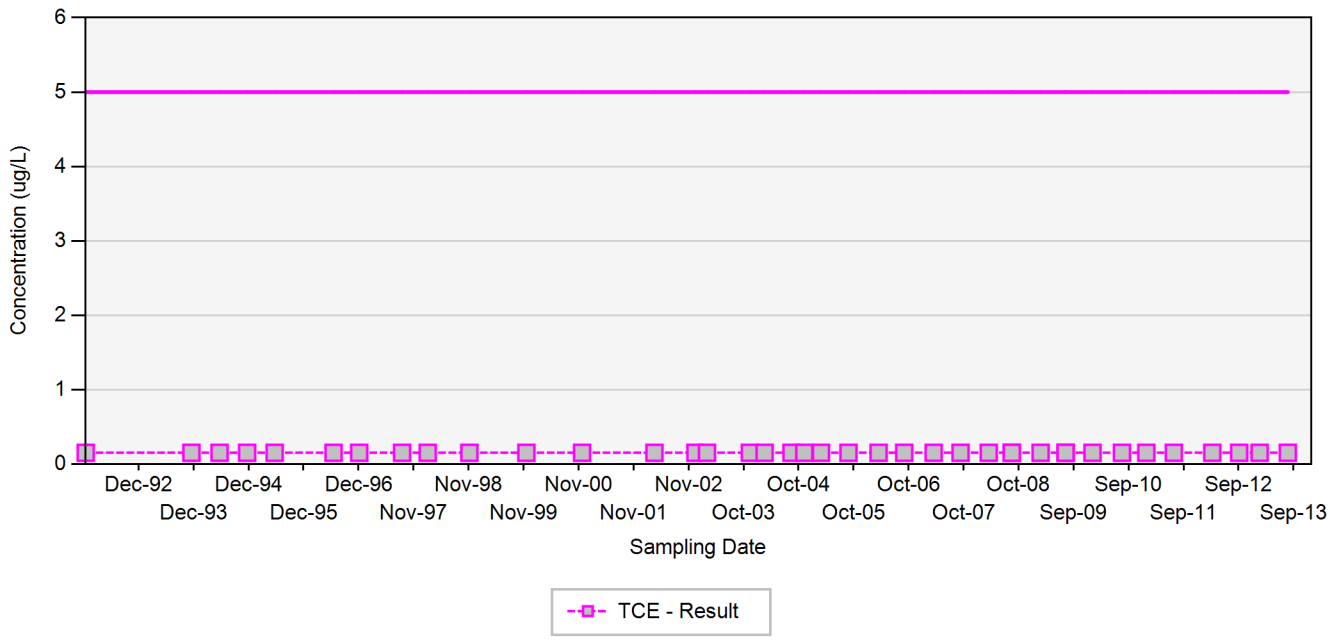
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

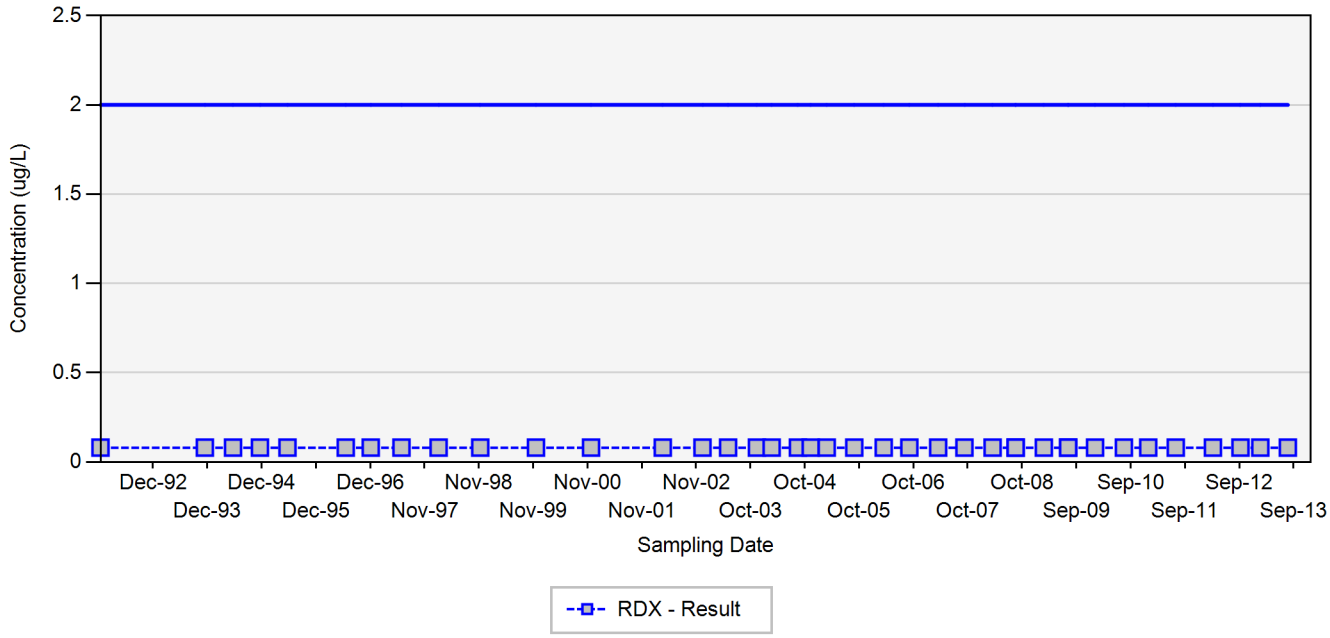
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-56





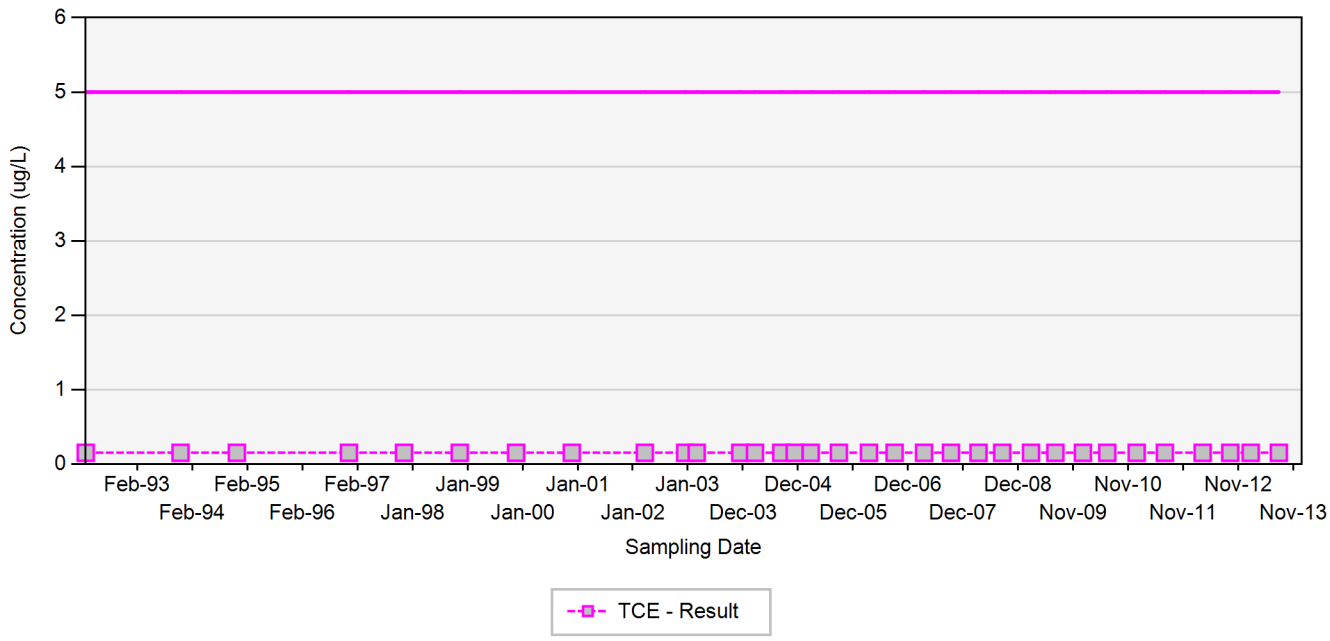
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

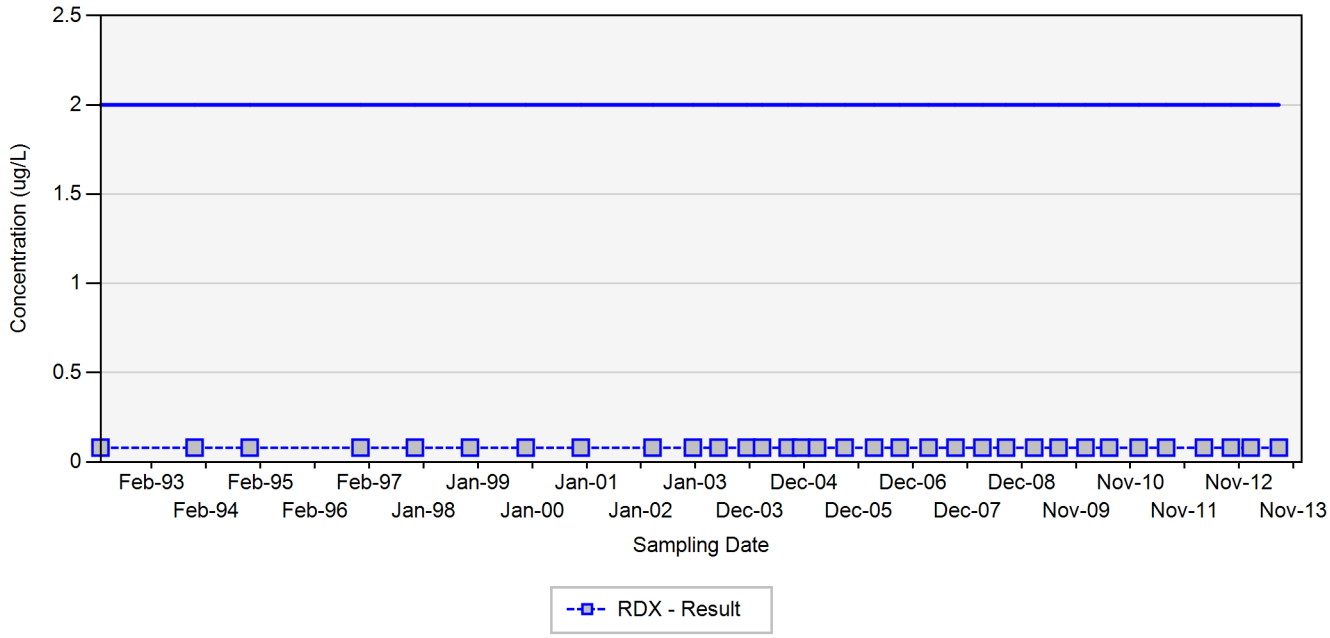
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-57





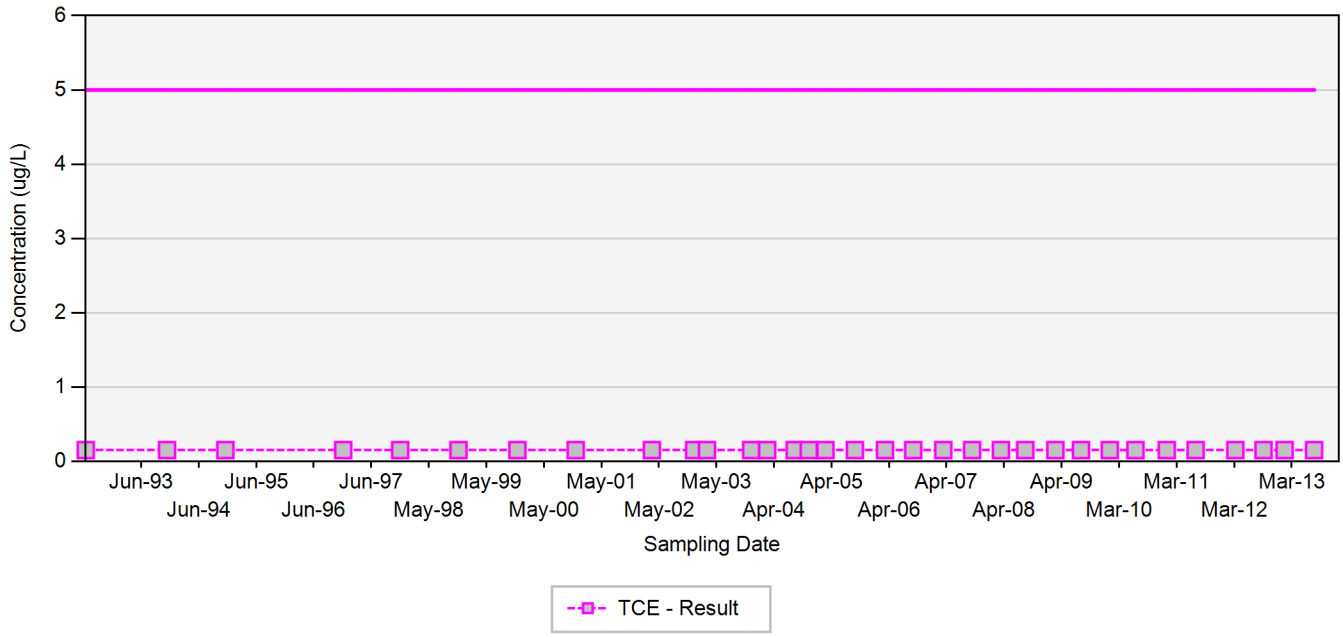
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

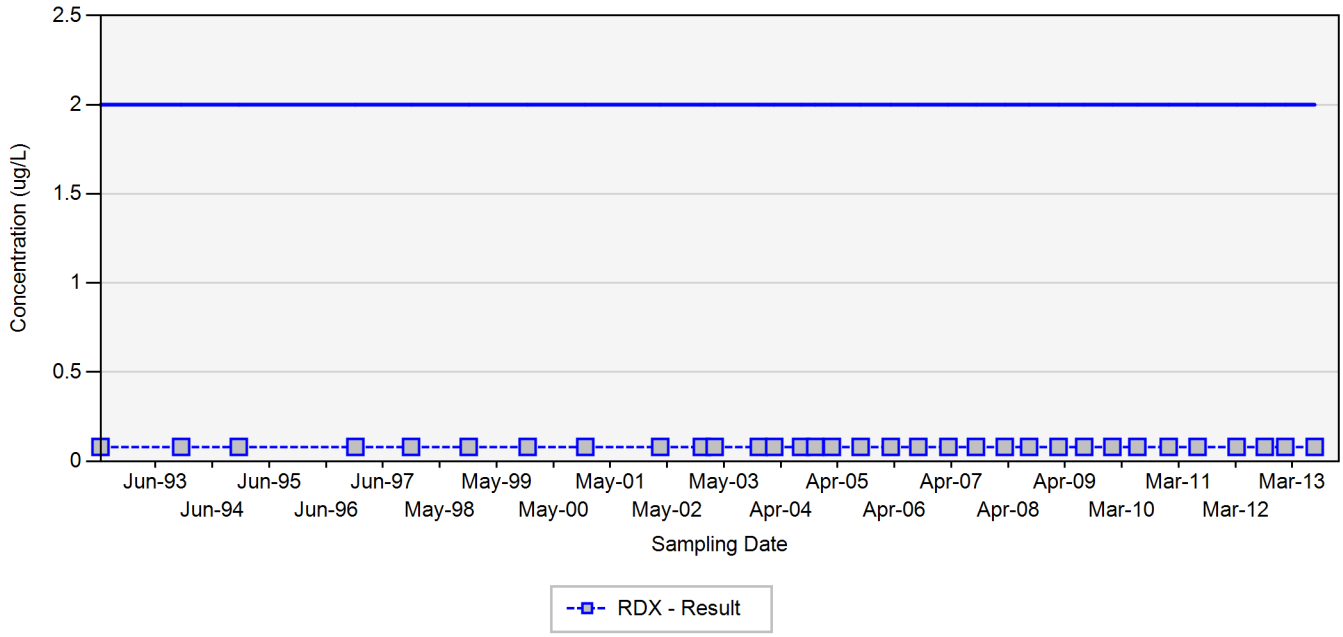
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-58





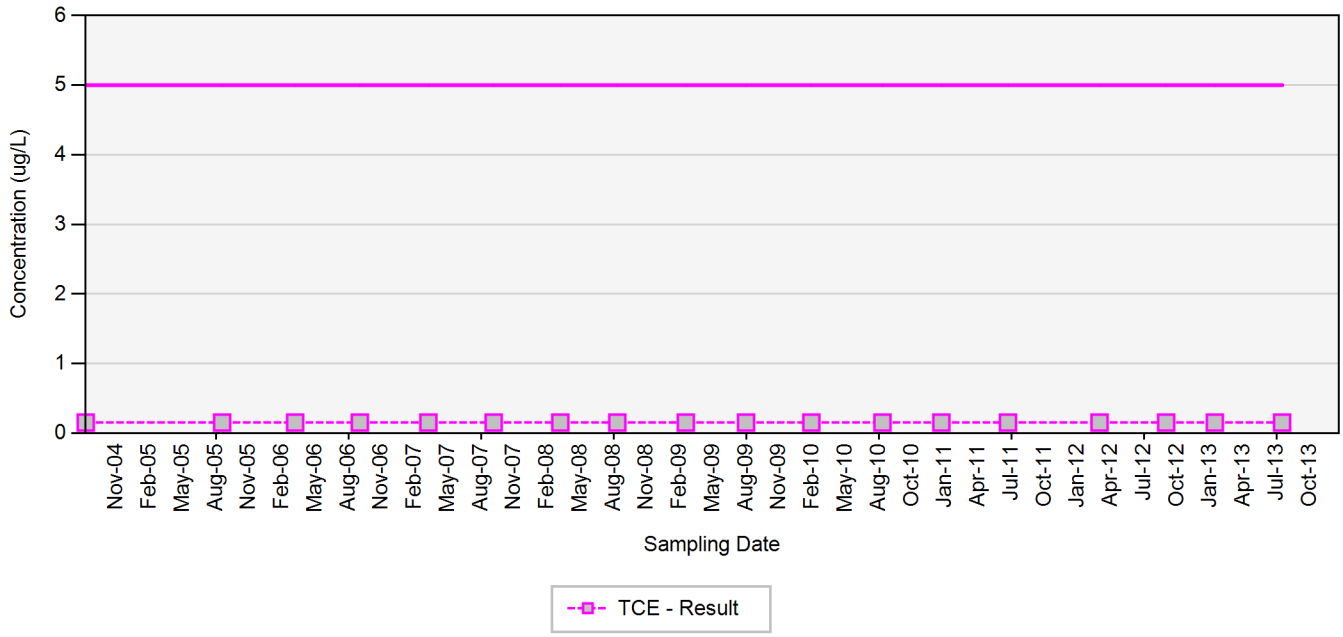
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

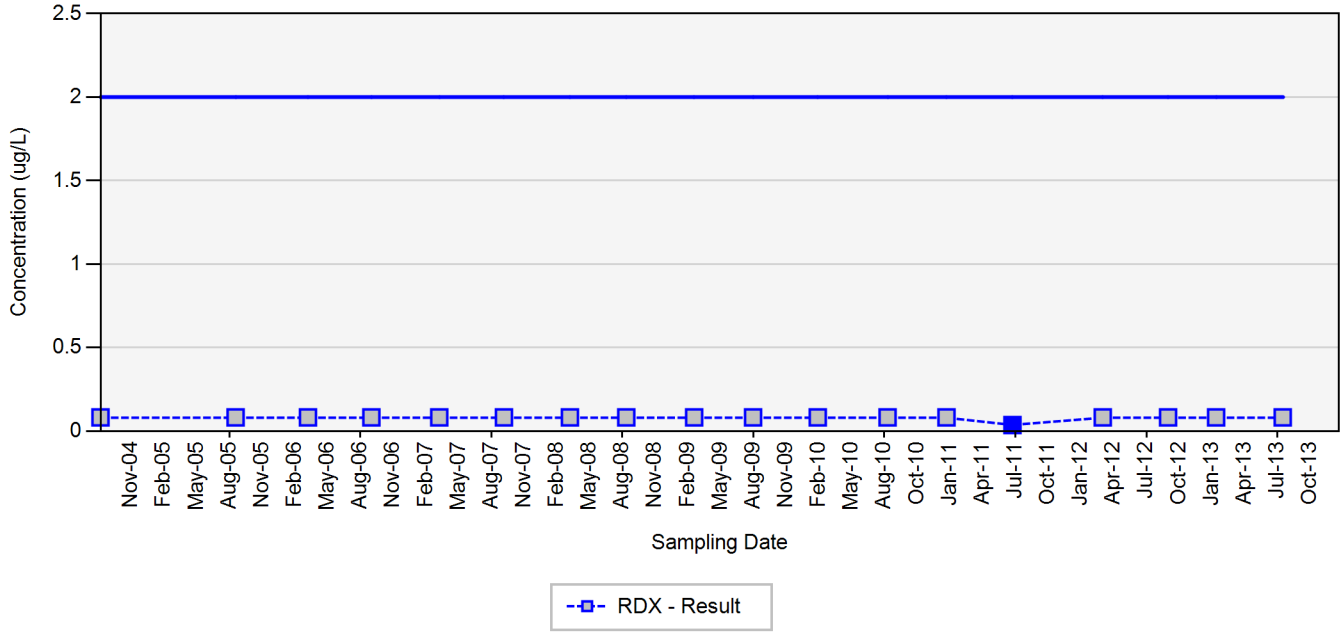
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-59





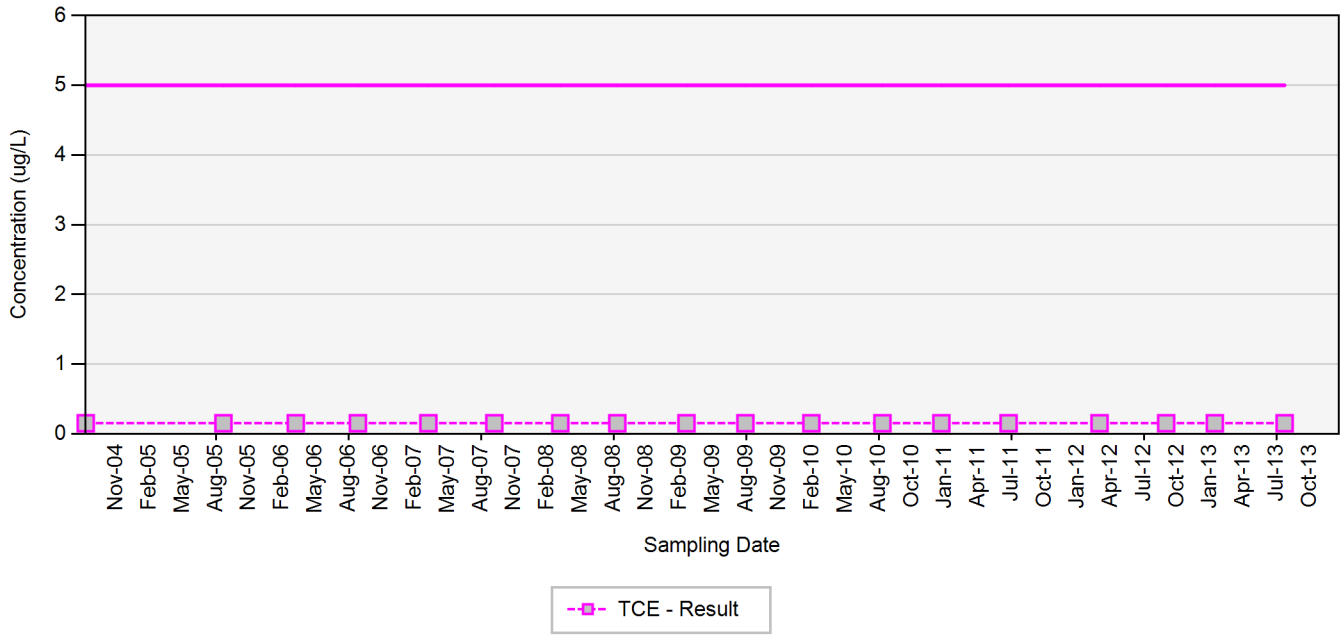
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

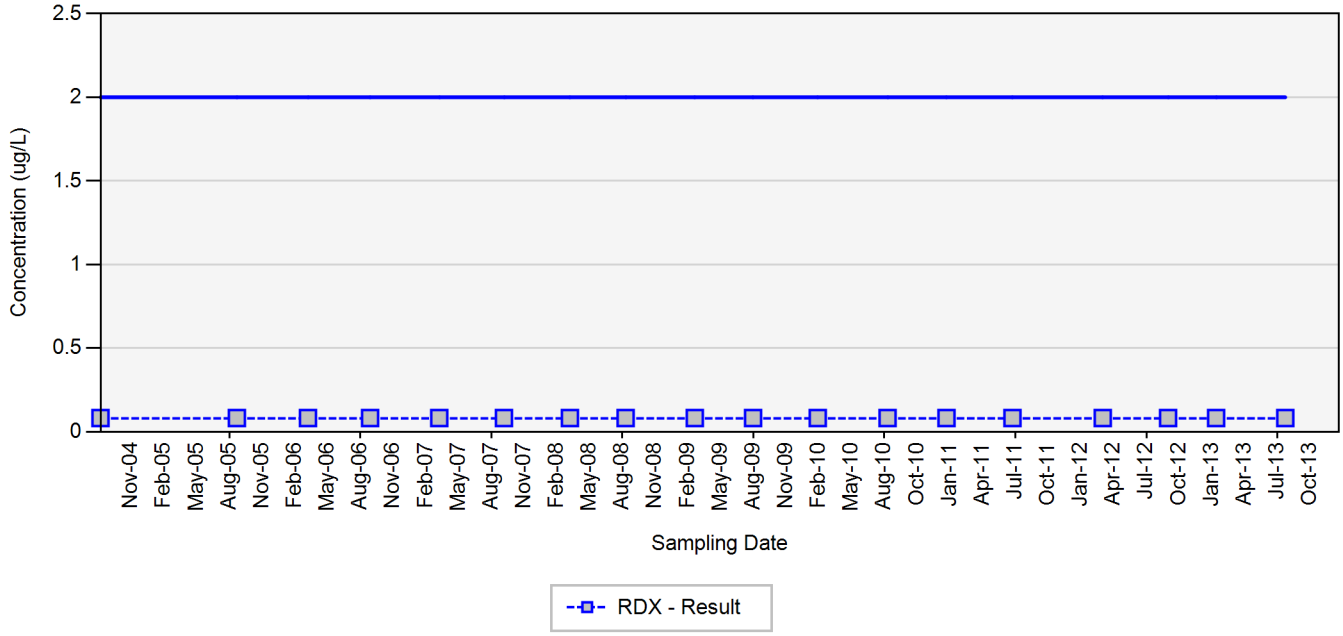
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-60





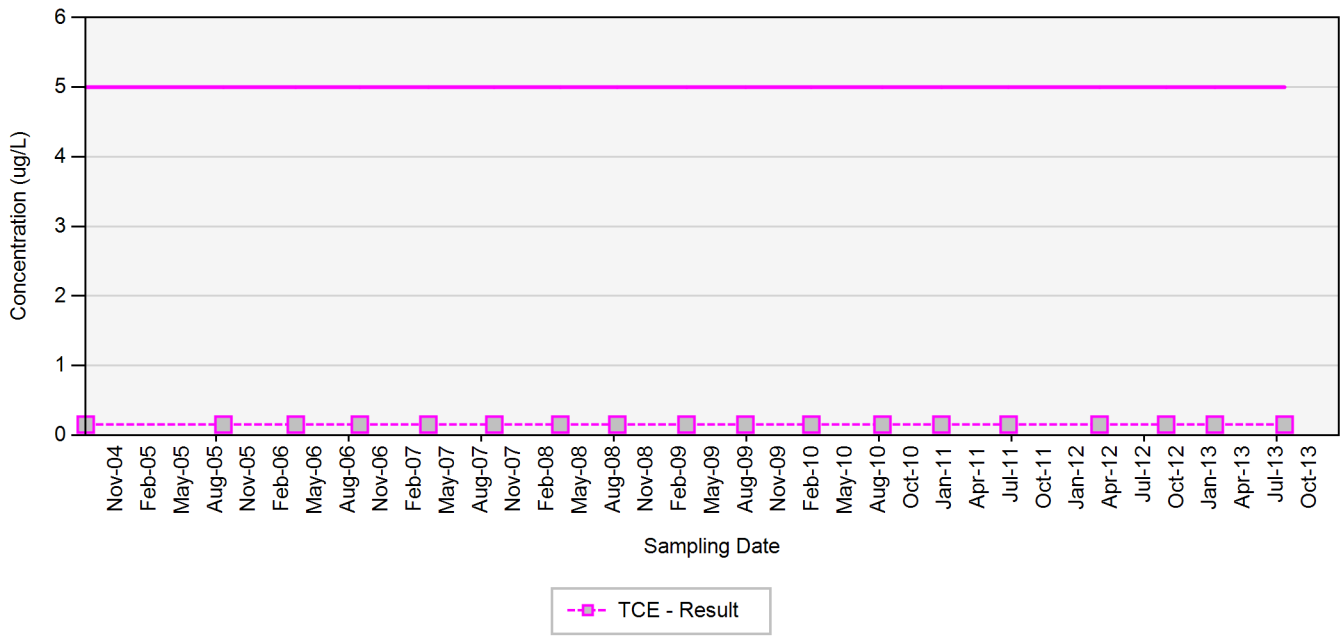
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

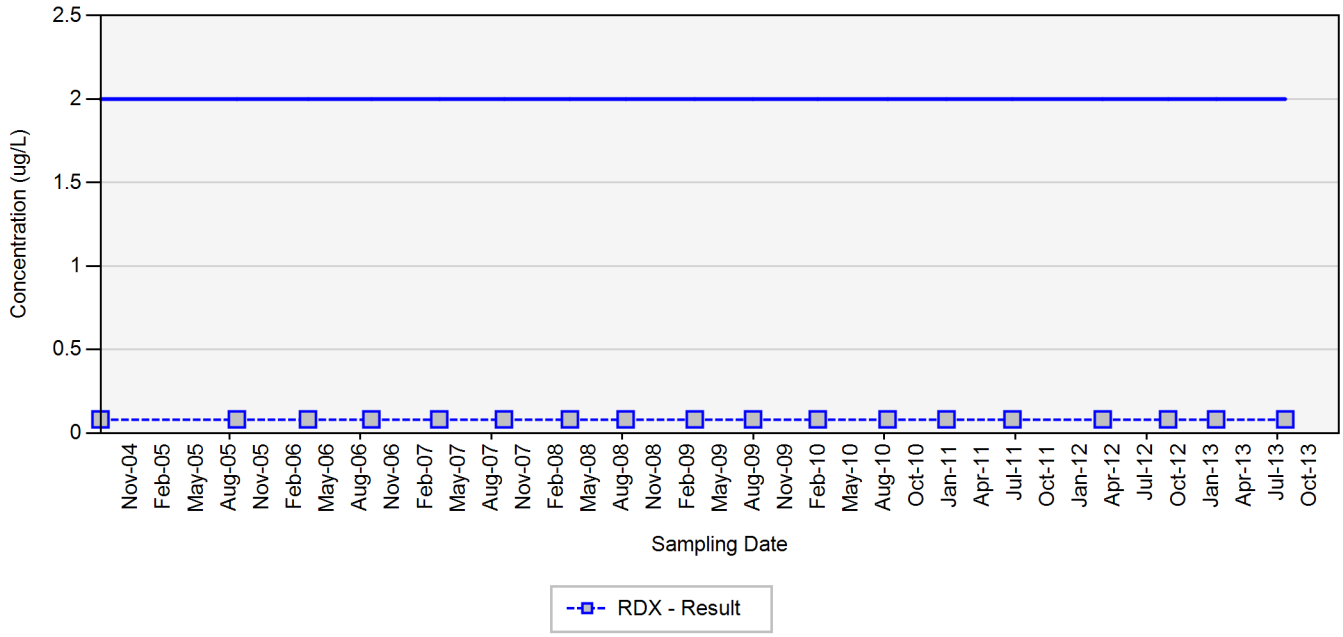
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-61





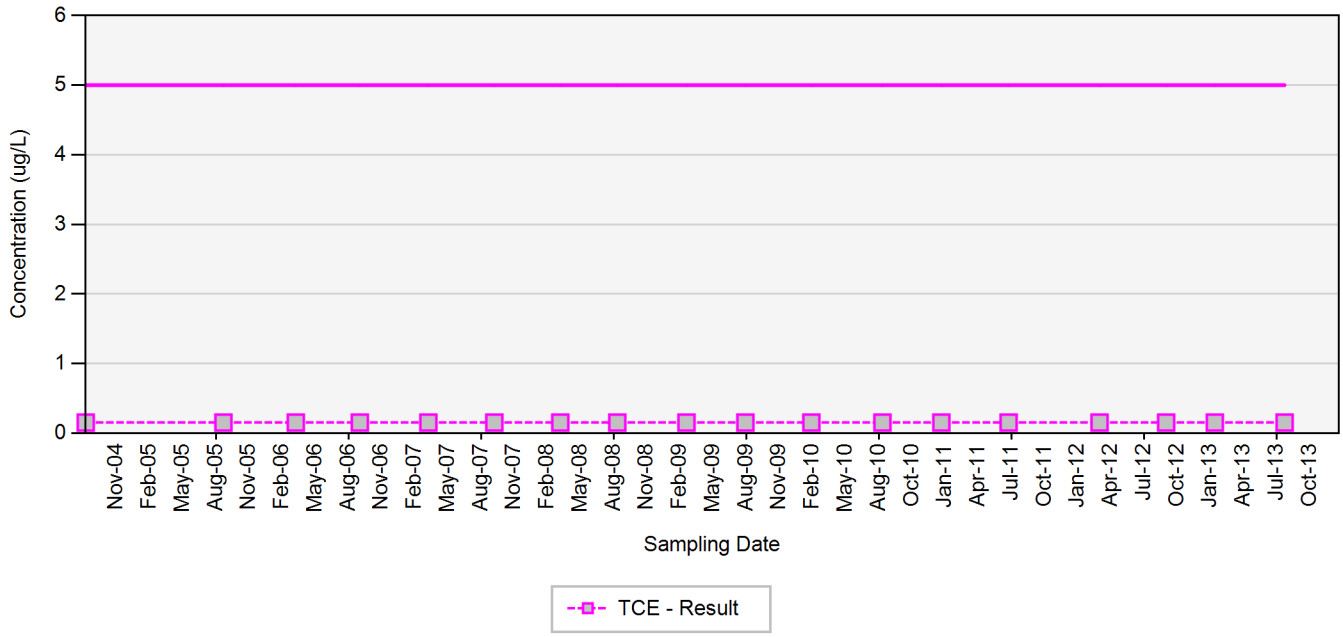
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

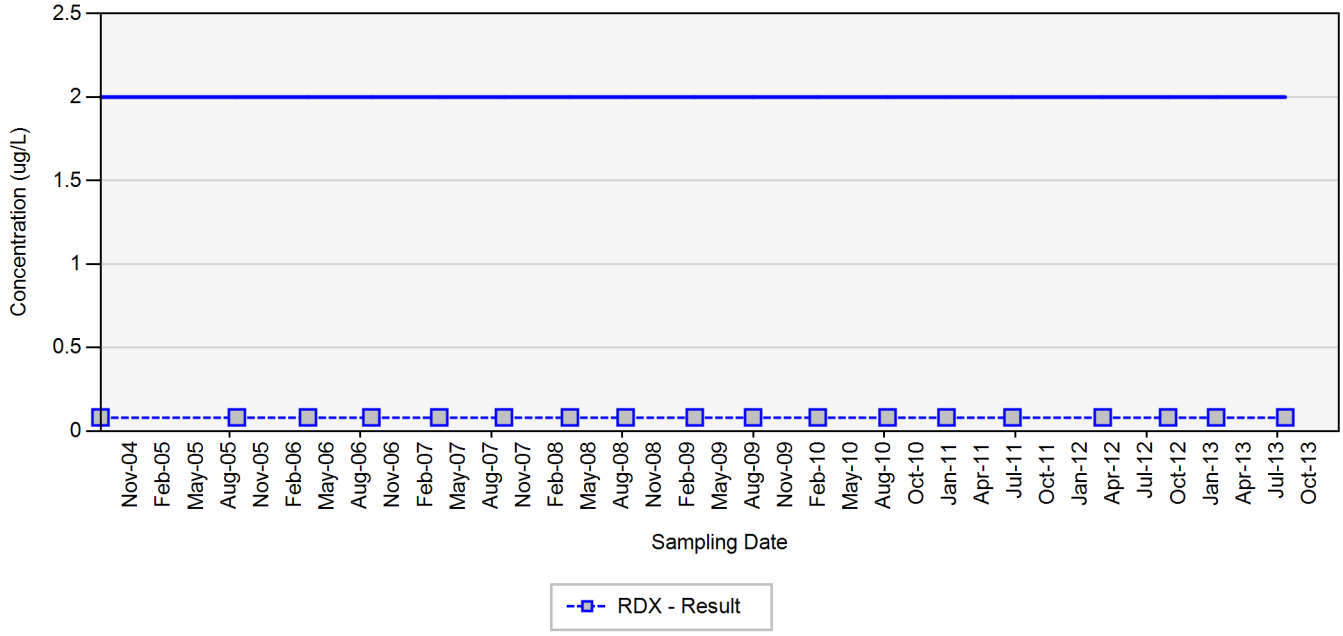
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-62





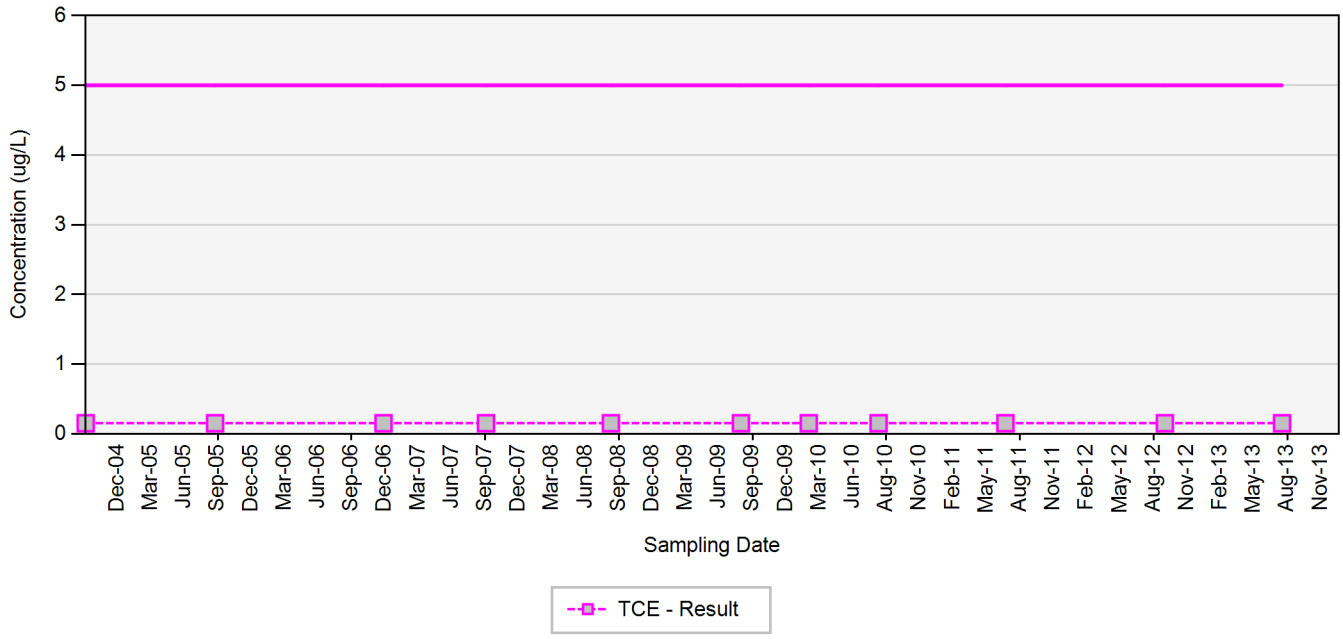
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

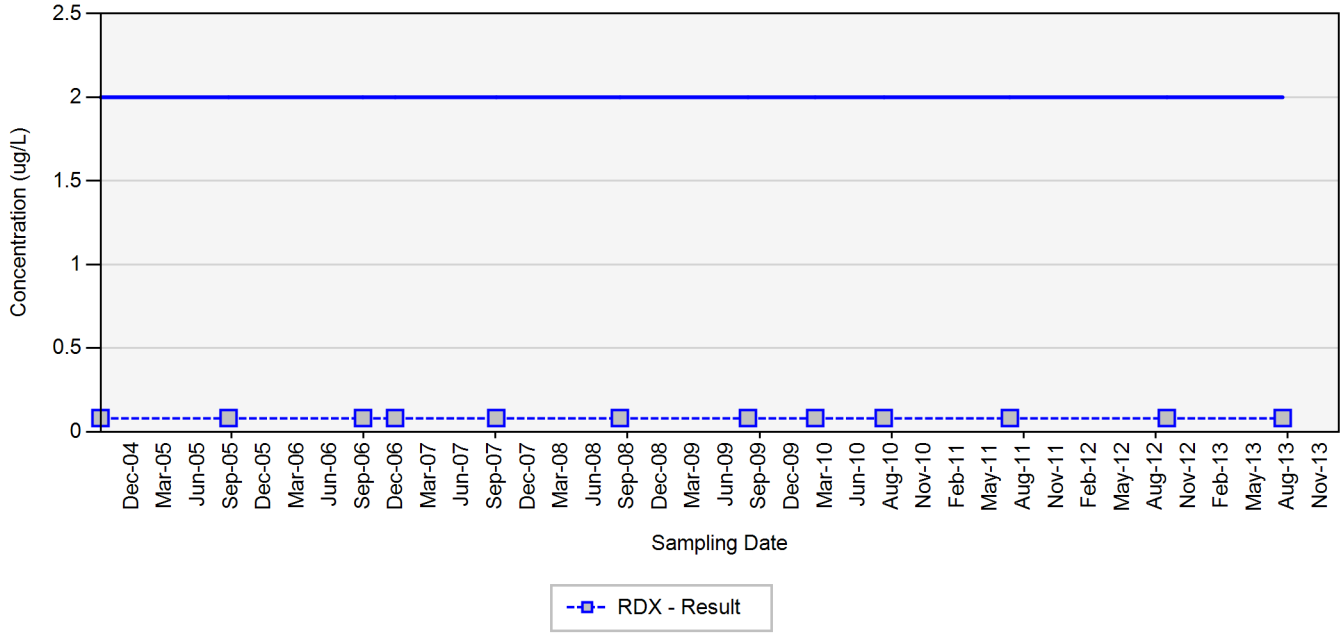
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-63





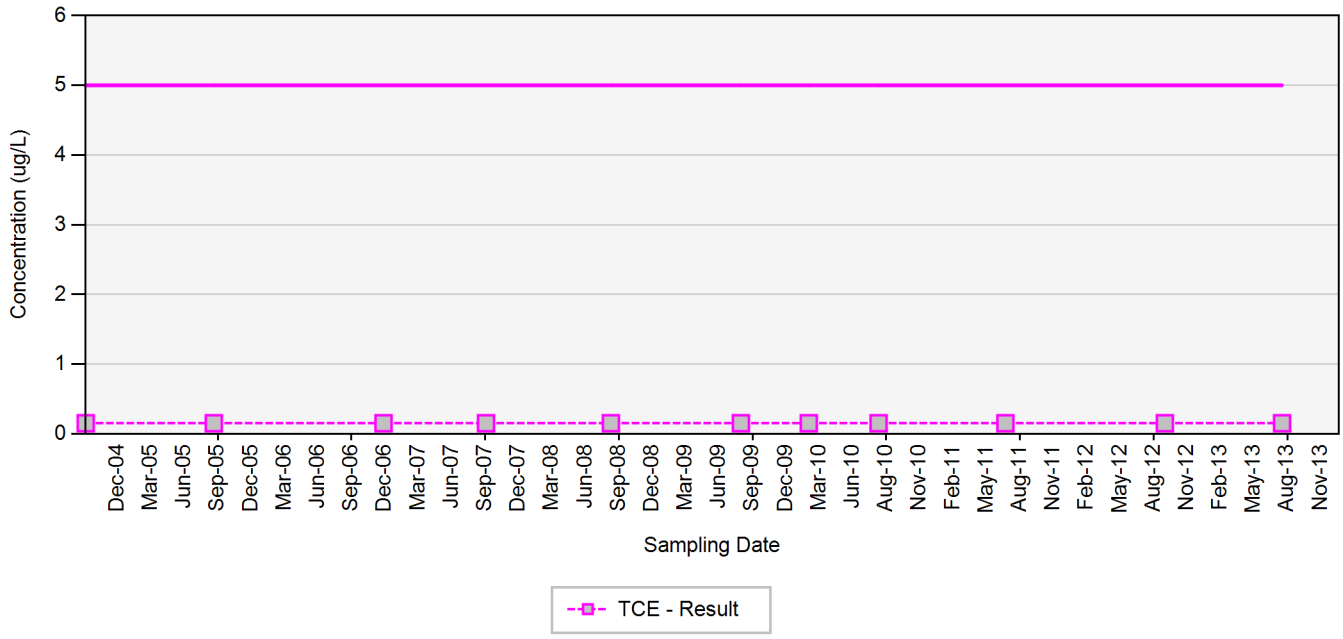
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

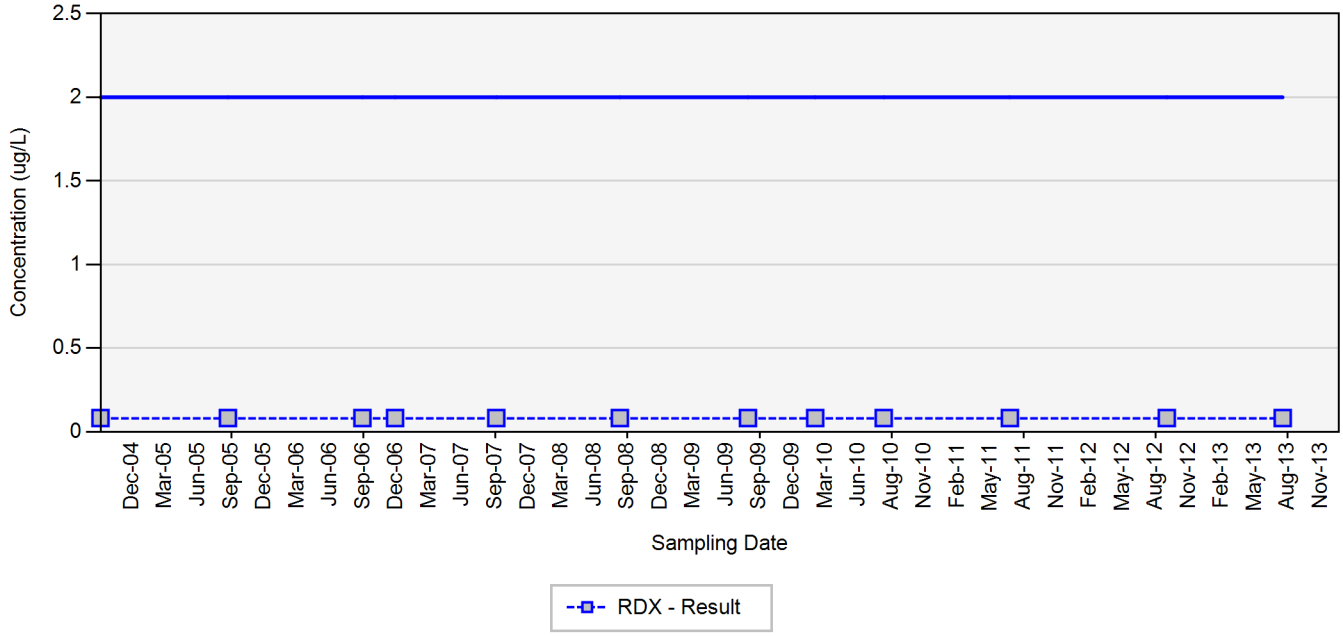
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-64





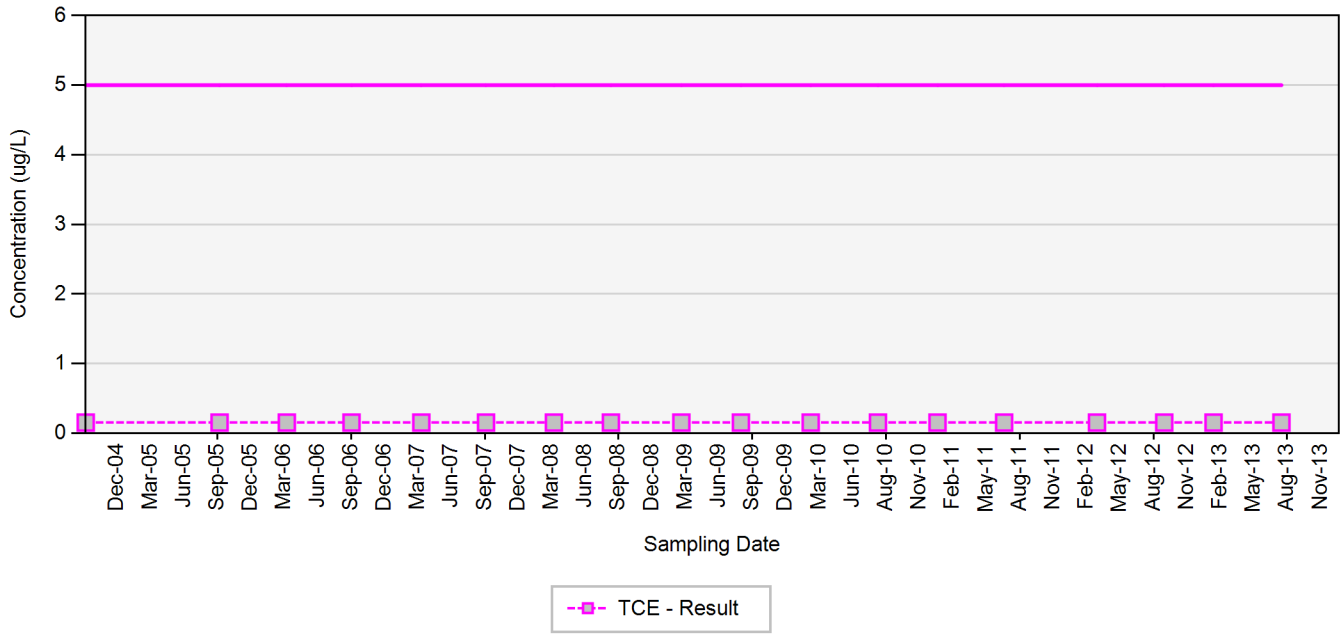
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

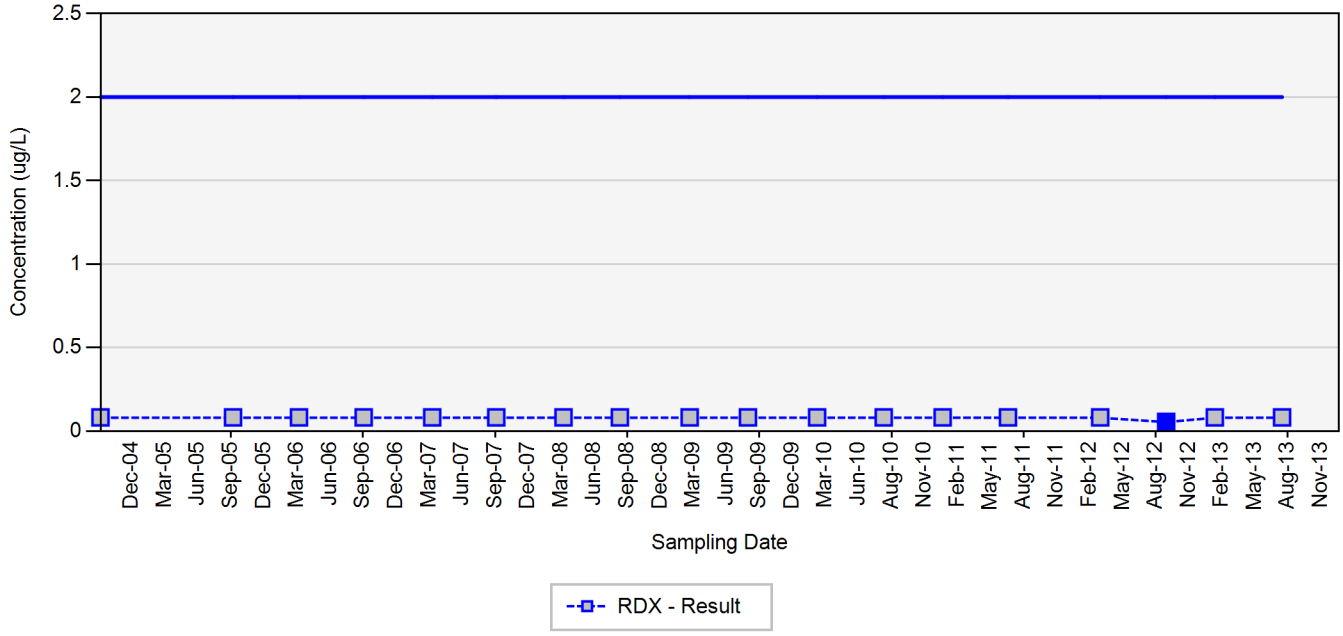
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-65





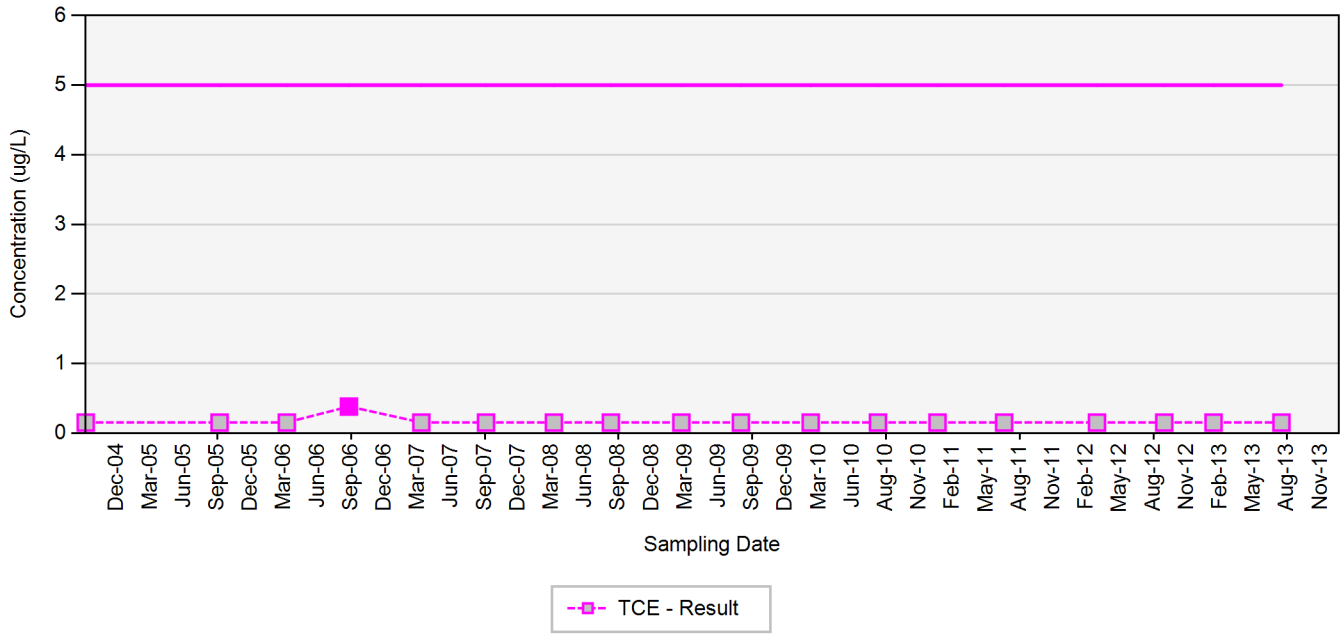
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

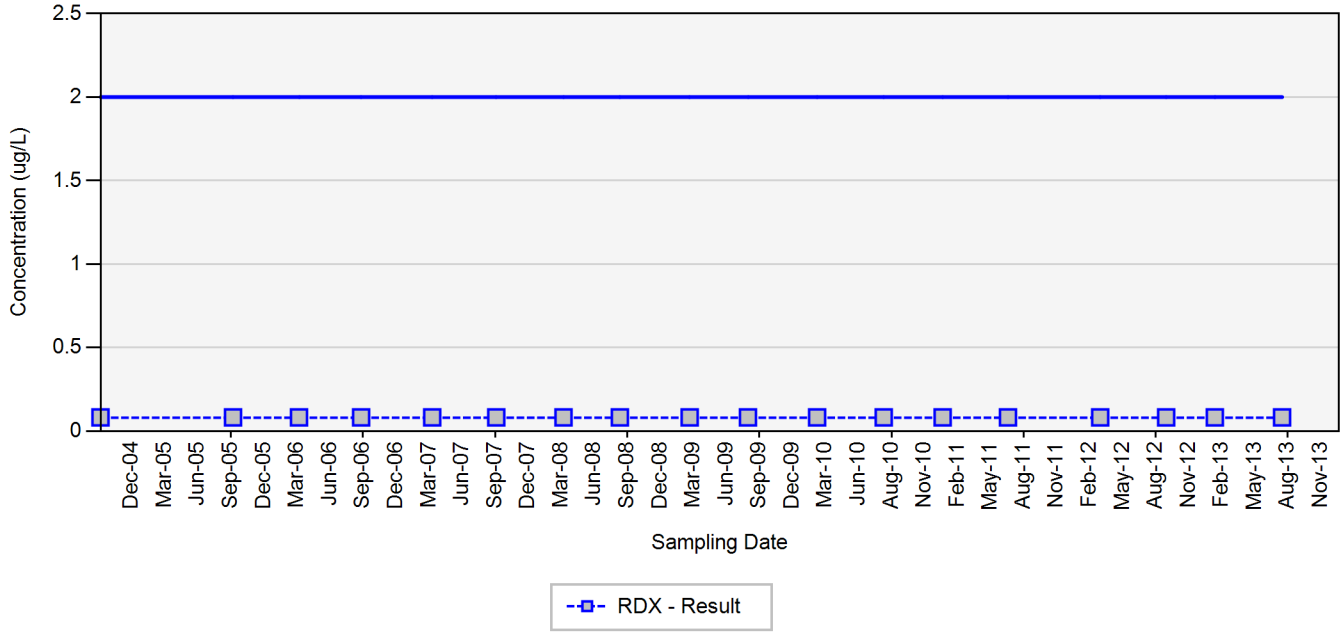
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-66





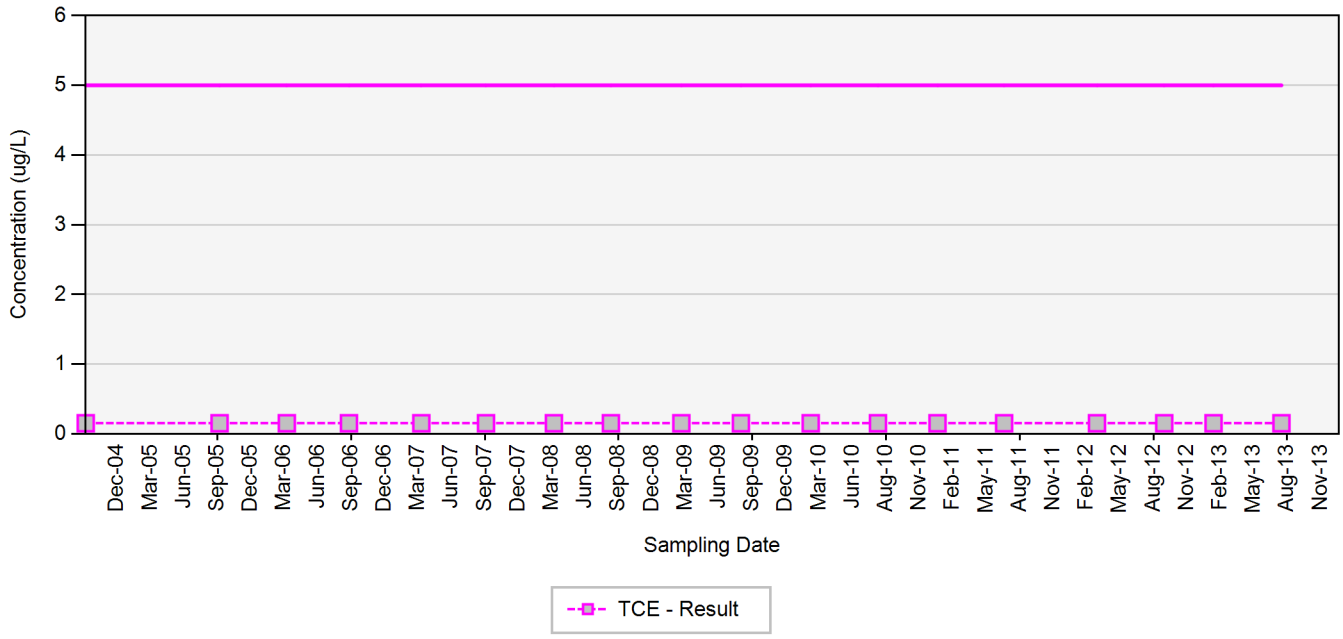
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

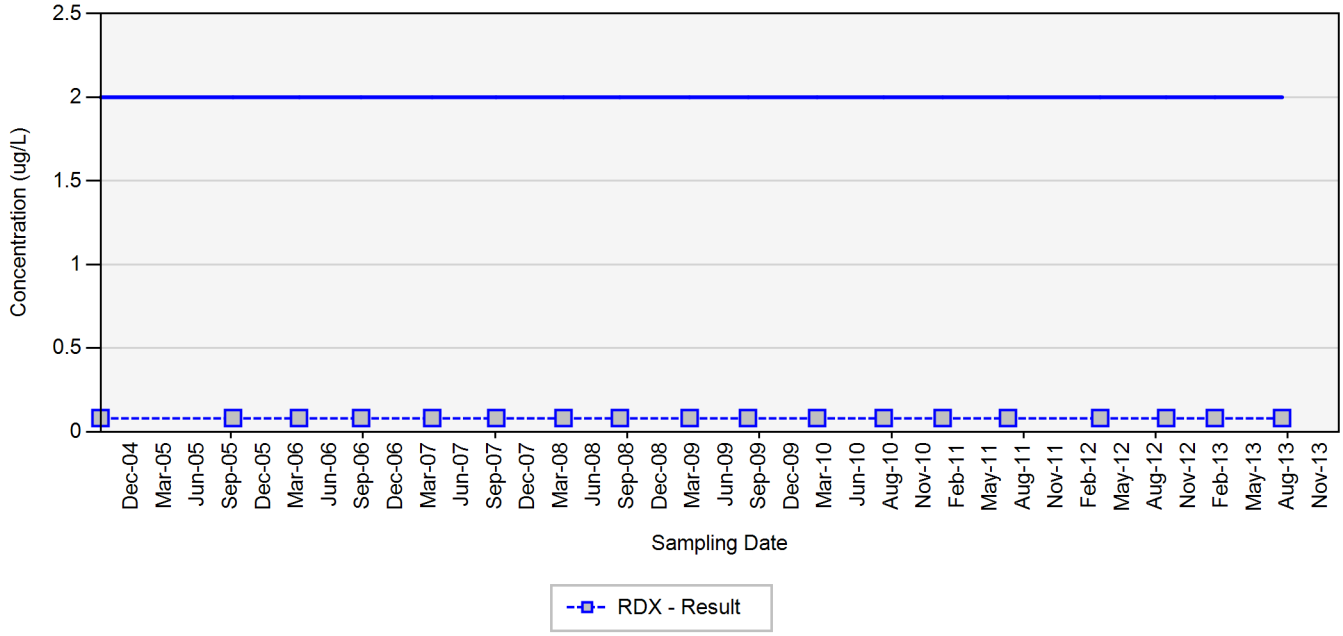
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-67





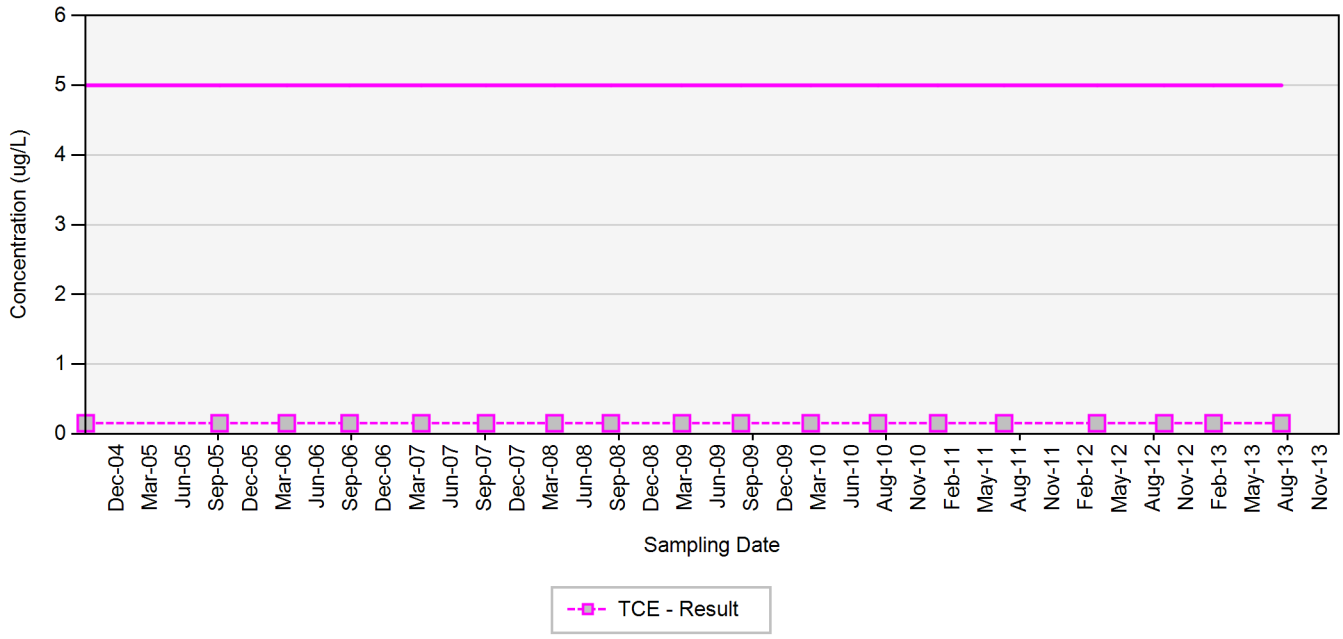
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

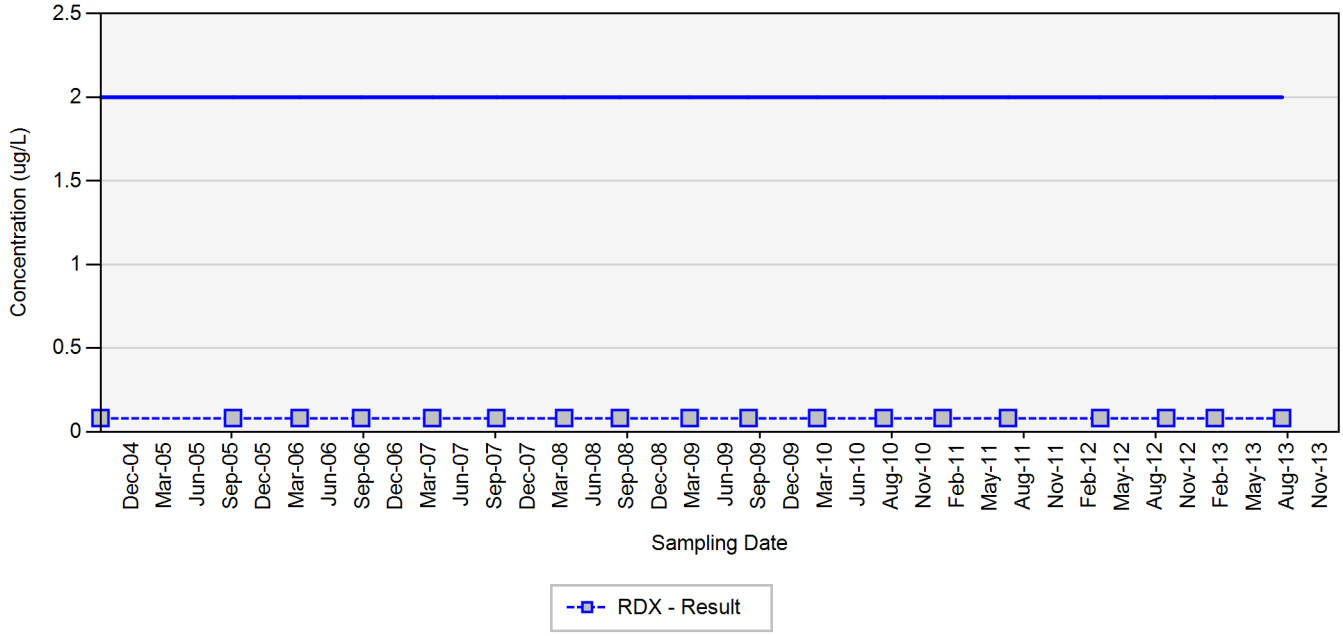
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-68





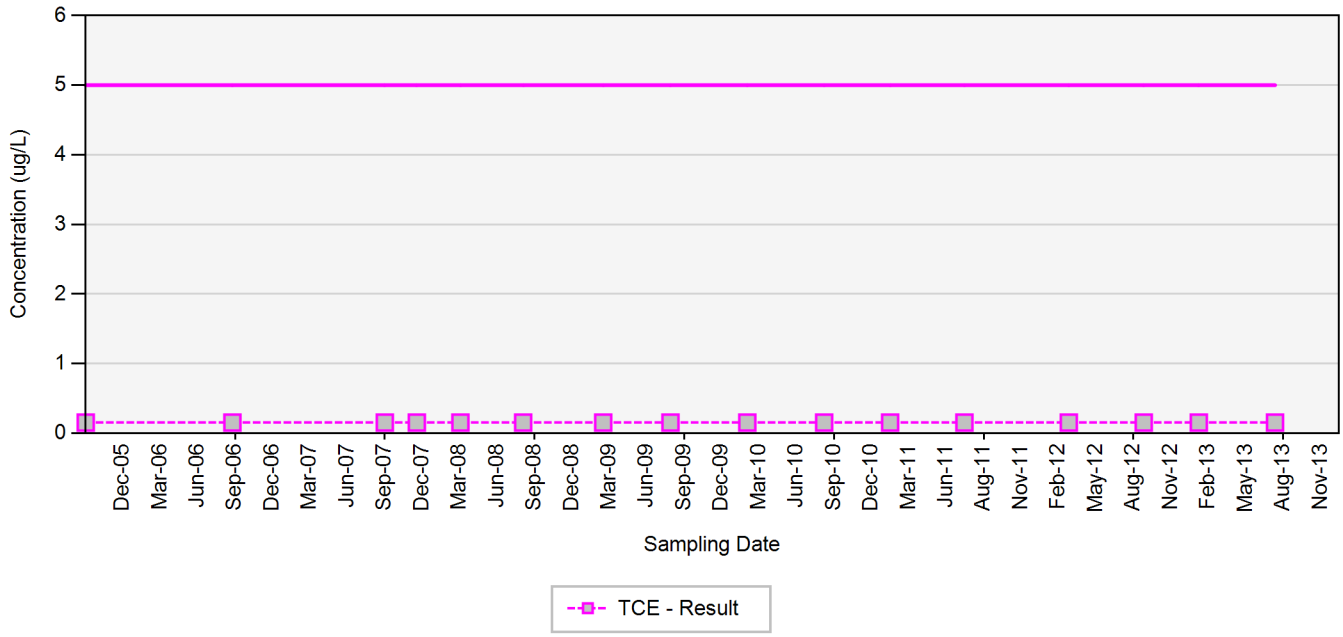
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

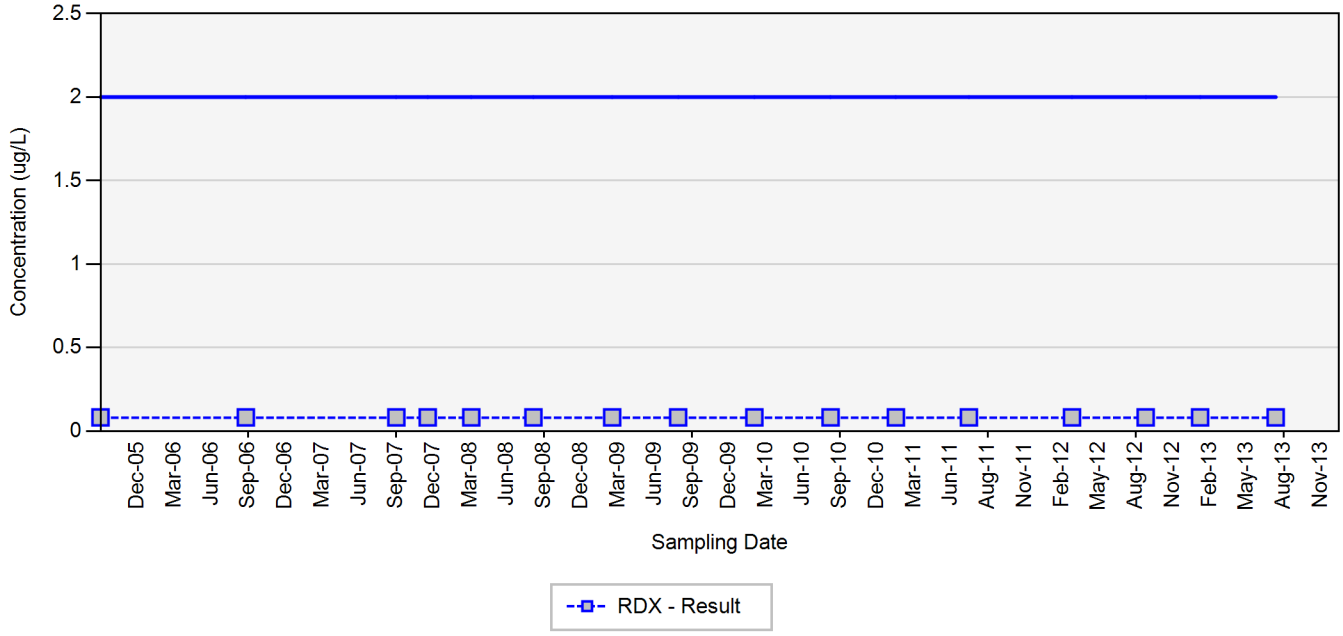
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-73





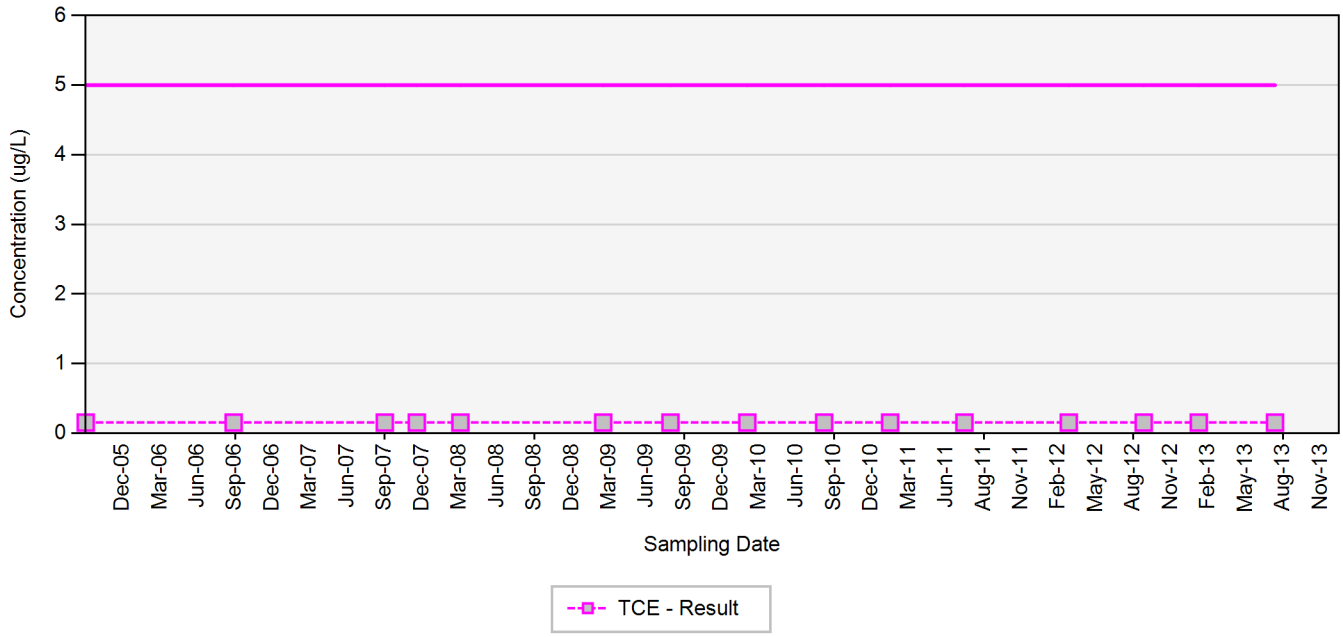
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

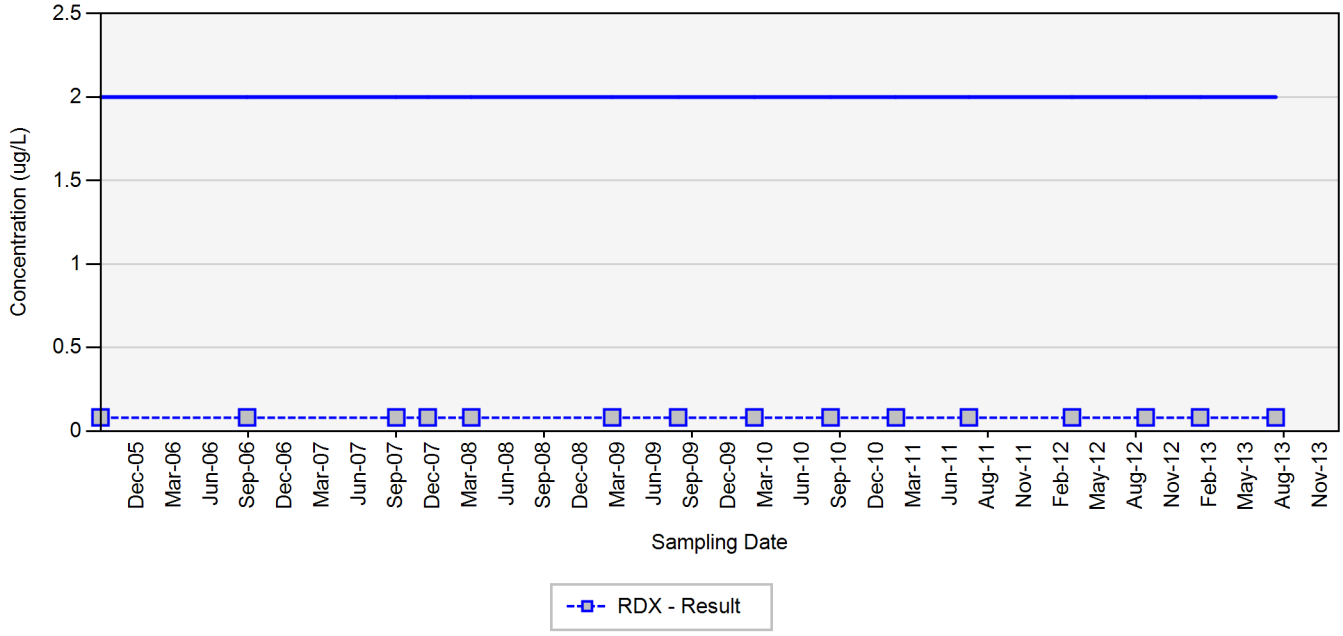
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-74





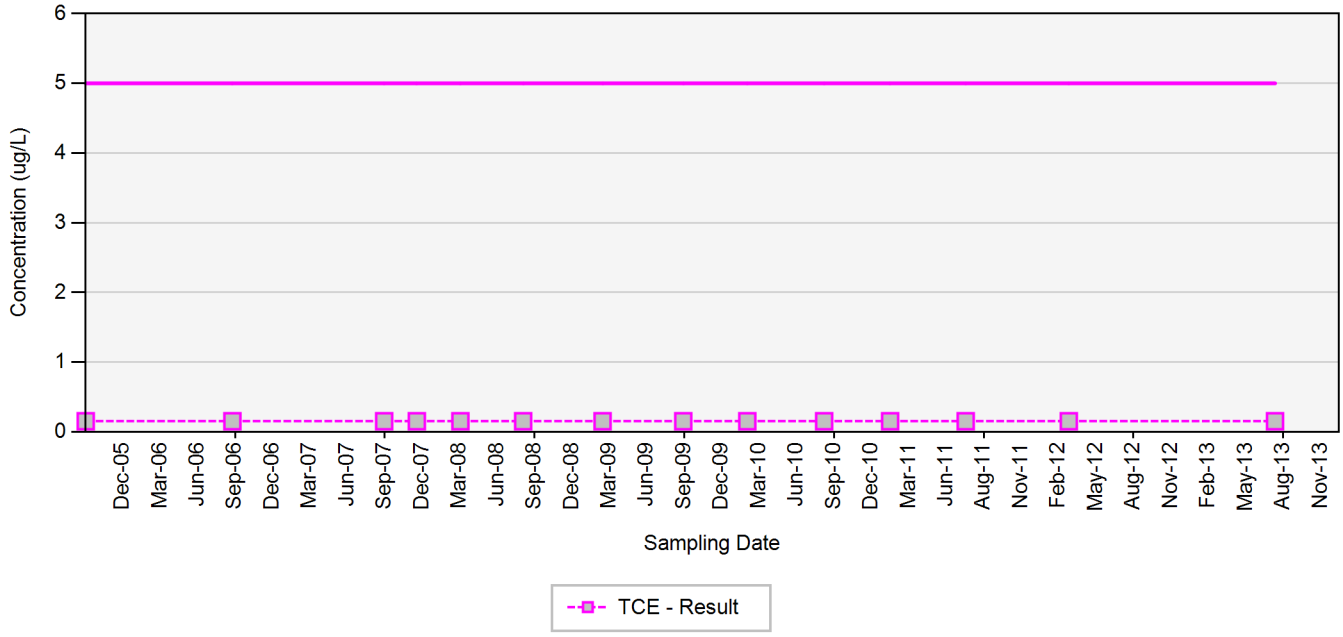
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

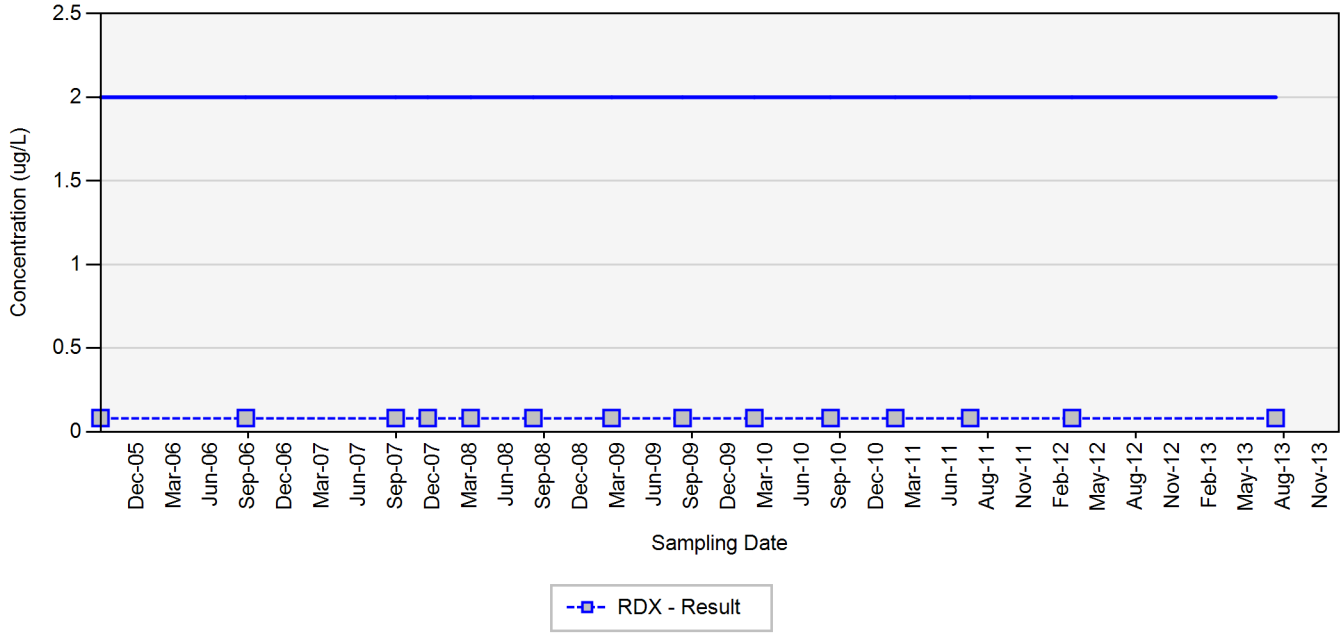
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-75





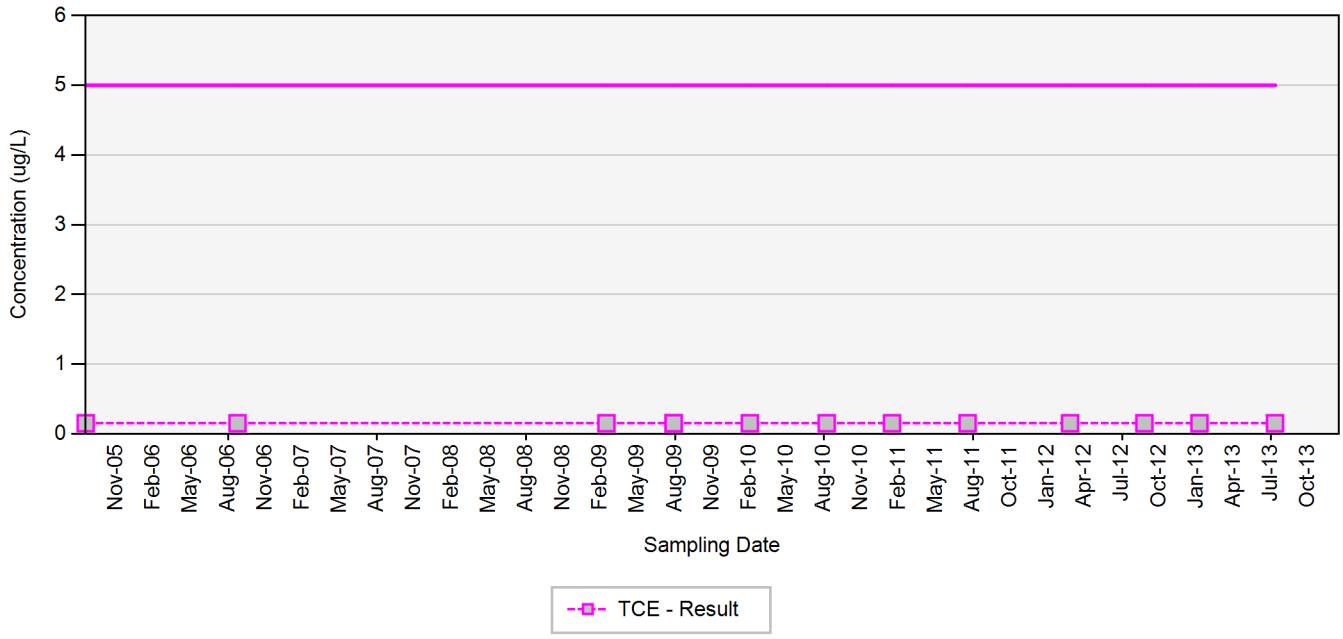
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

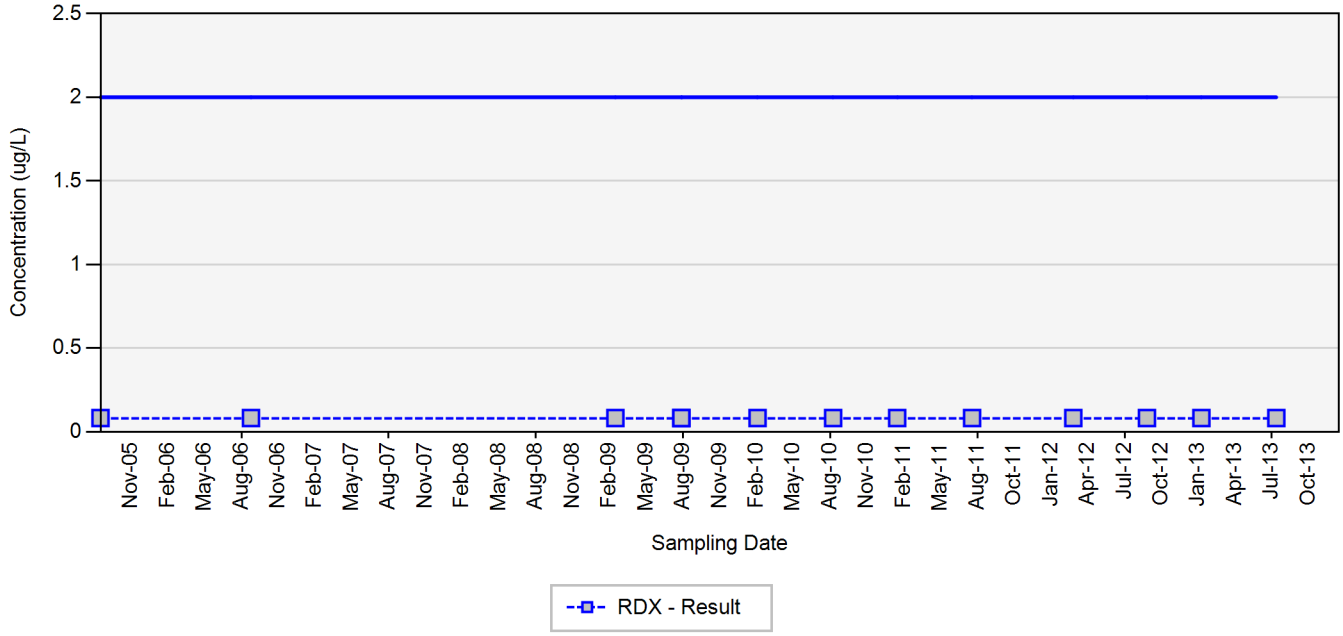
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-76





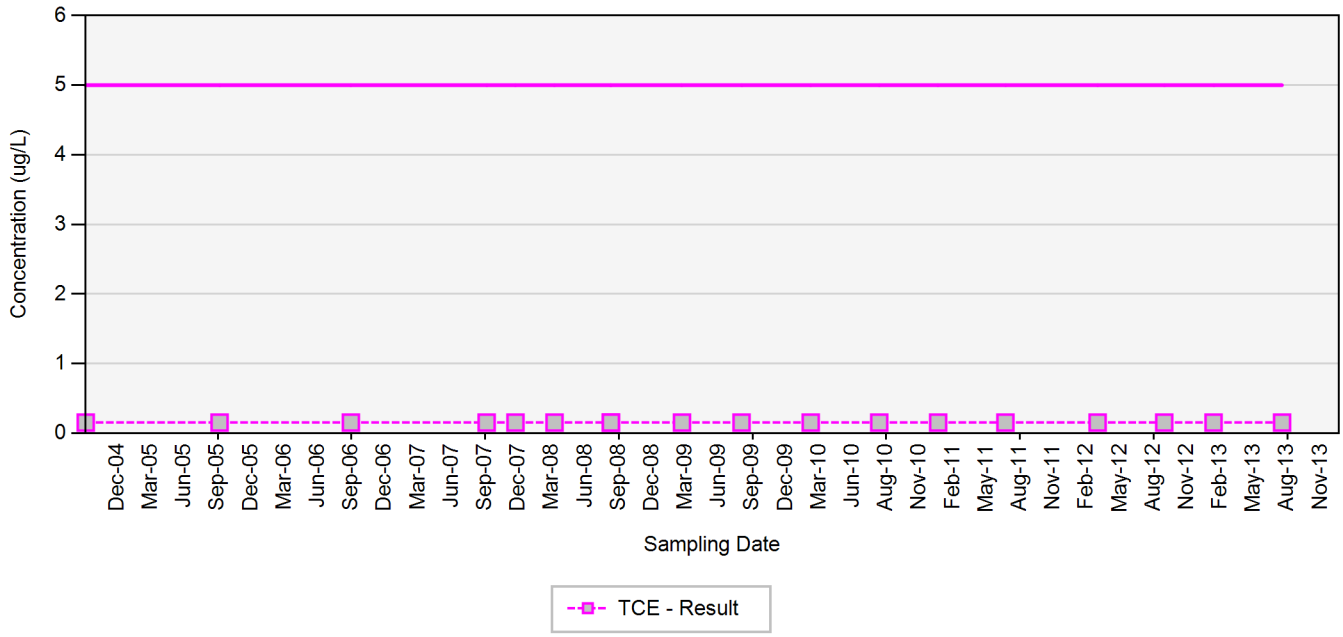
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

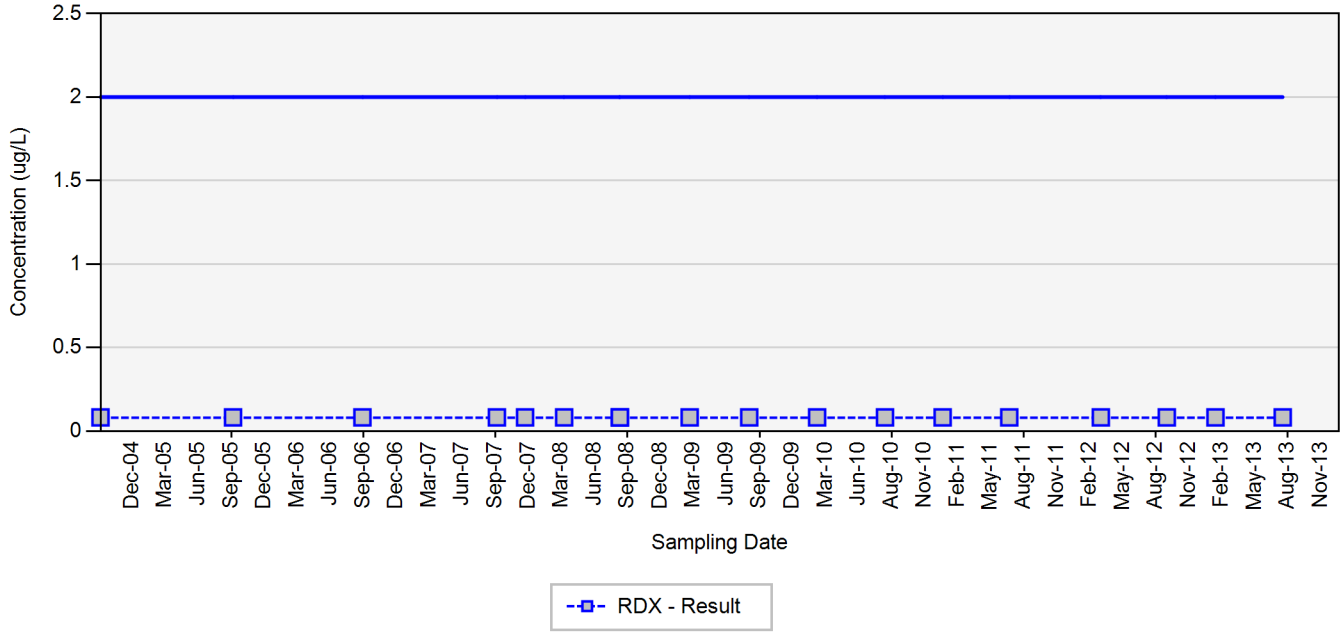
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-77





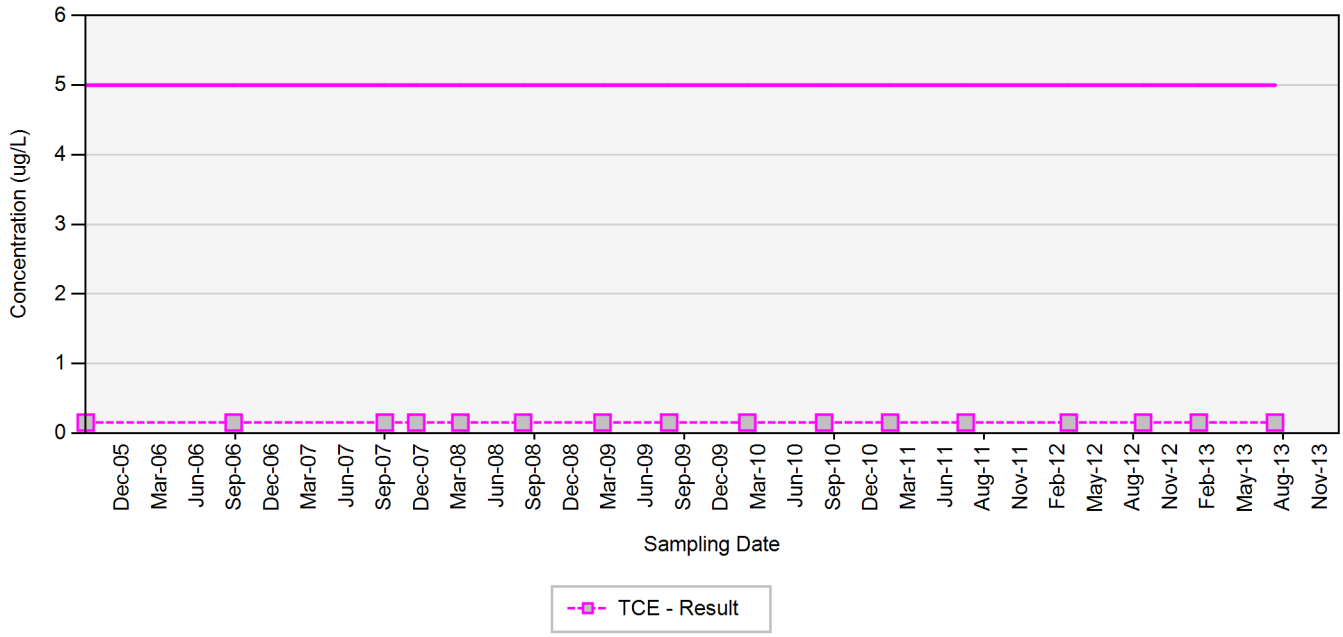
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

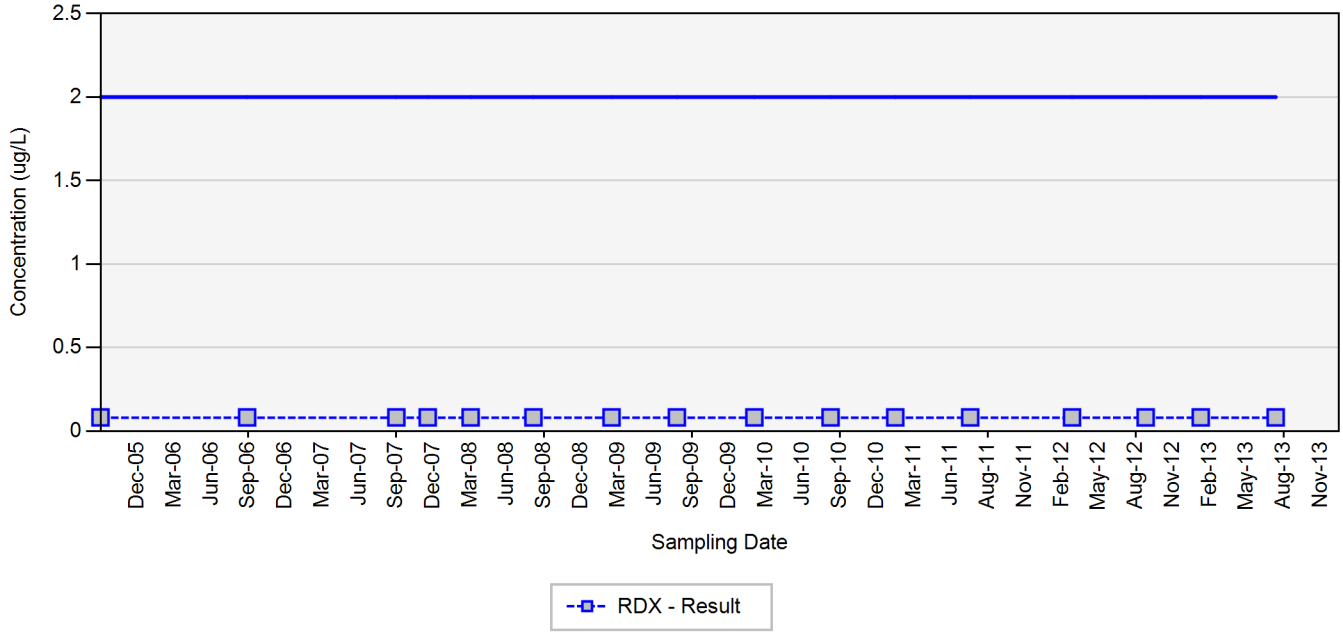
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-79





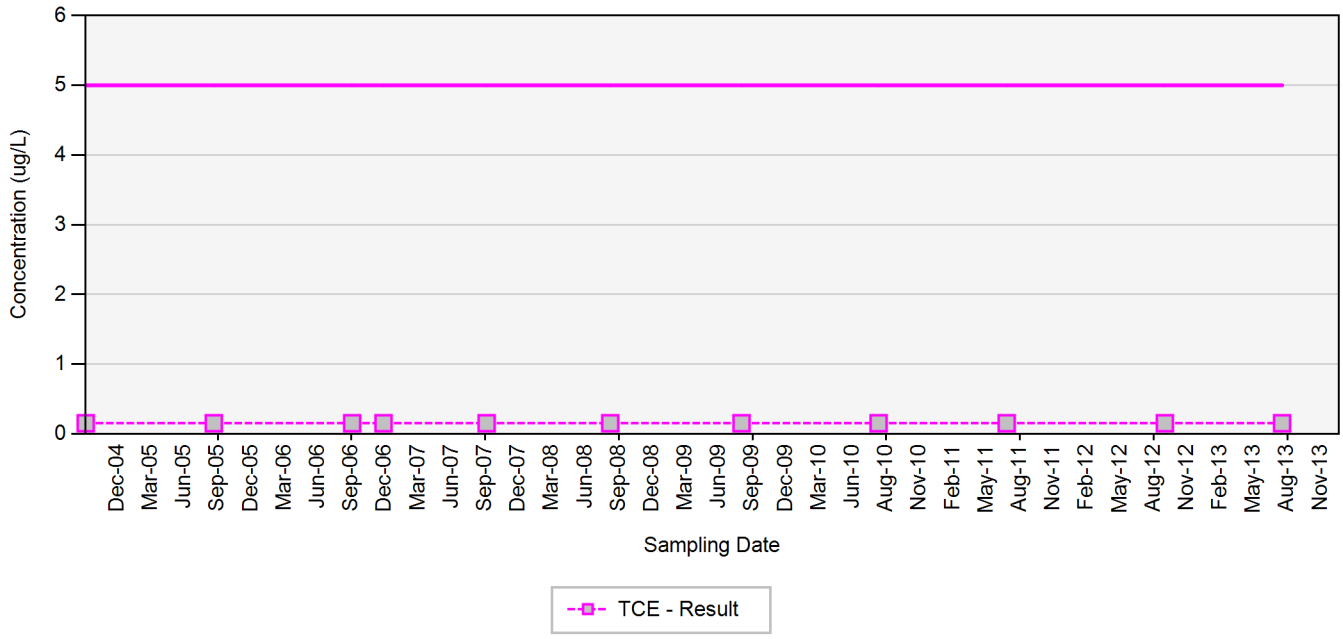
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

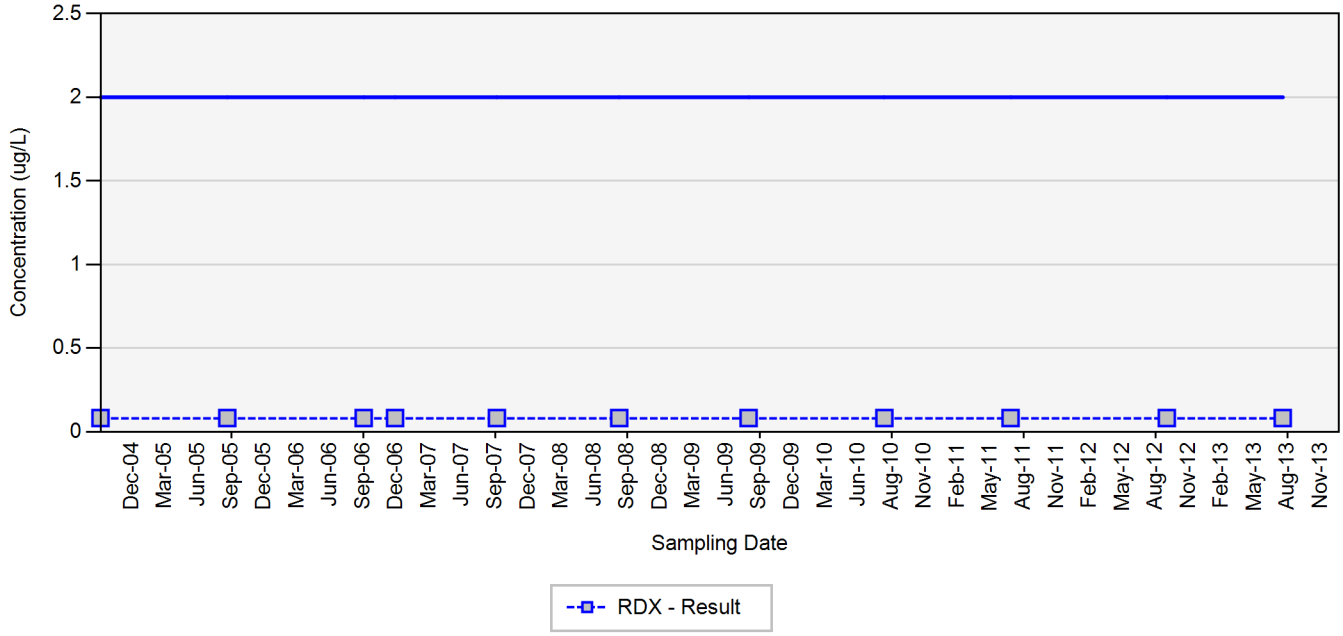
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-80





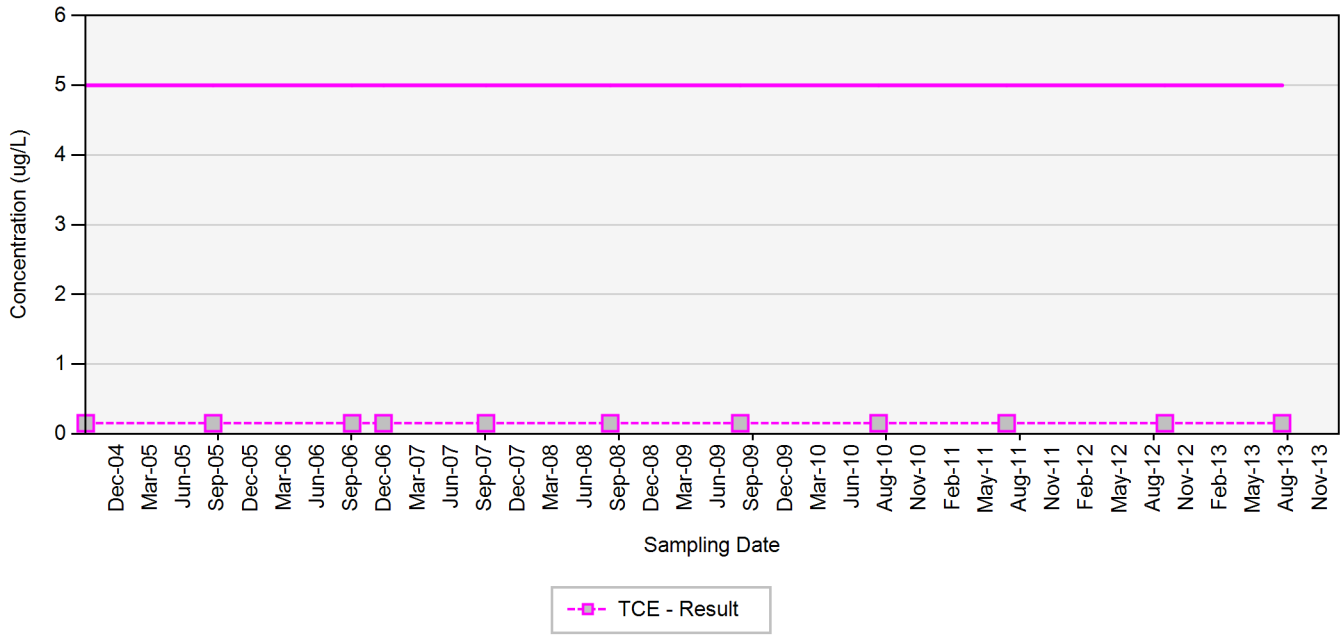
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

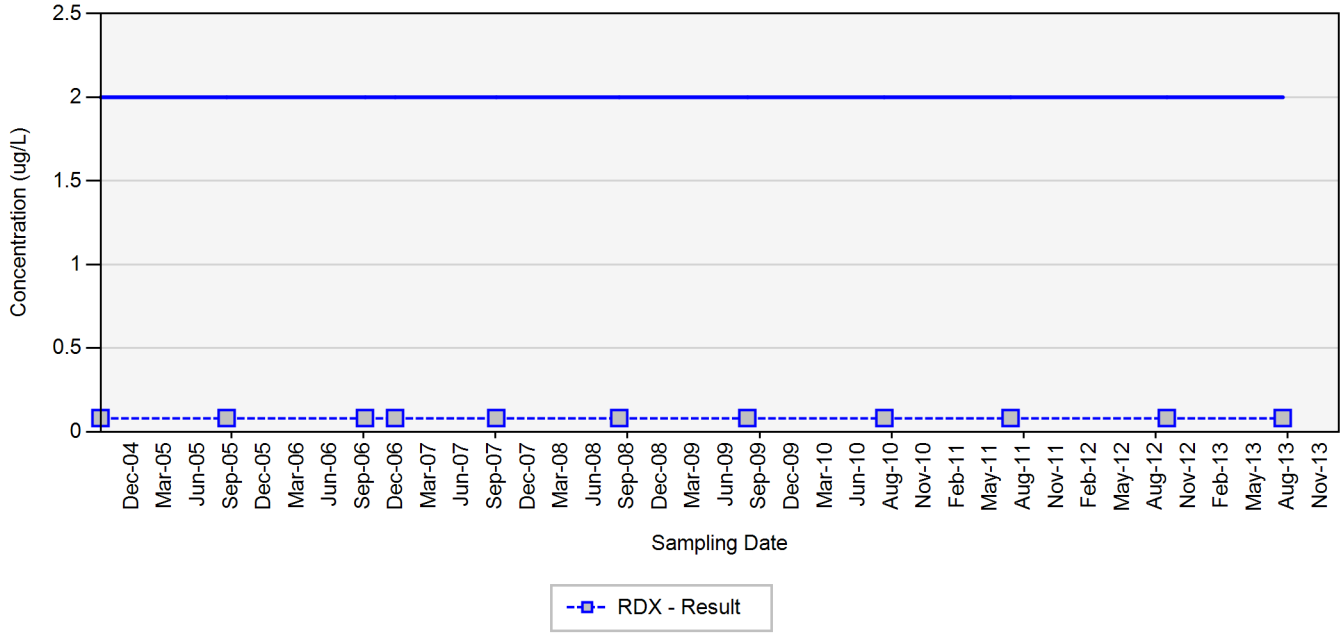
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-81





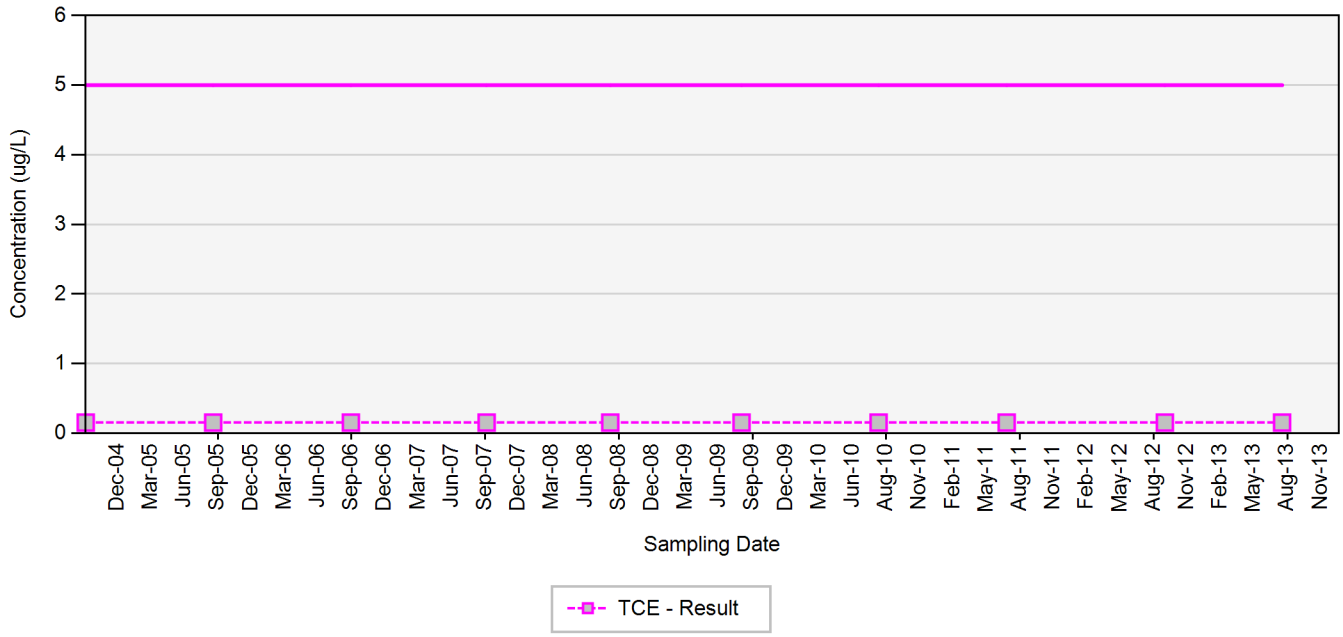
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

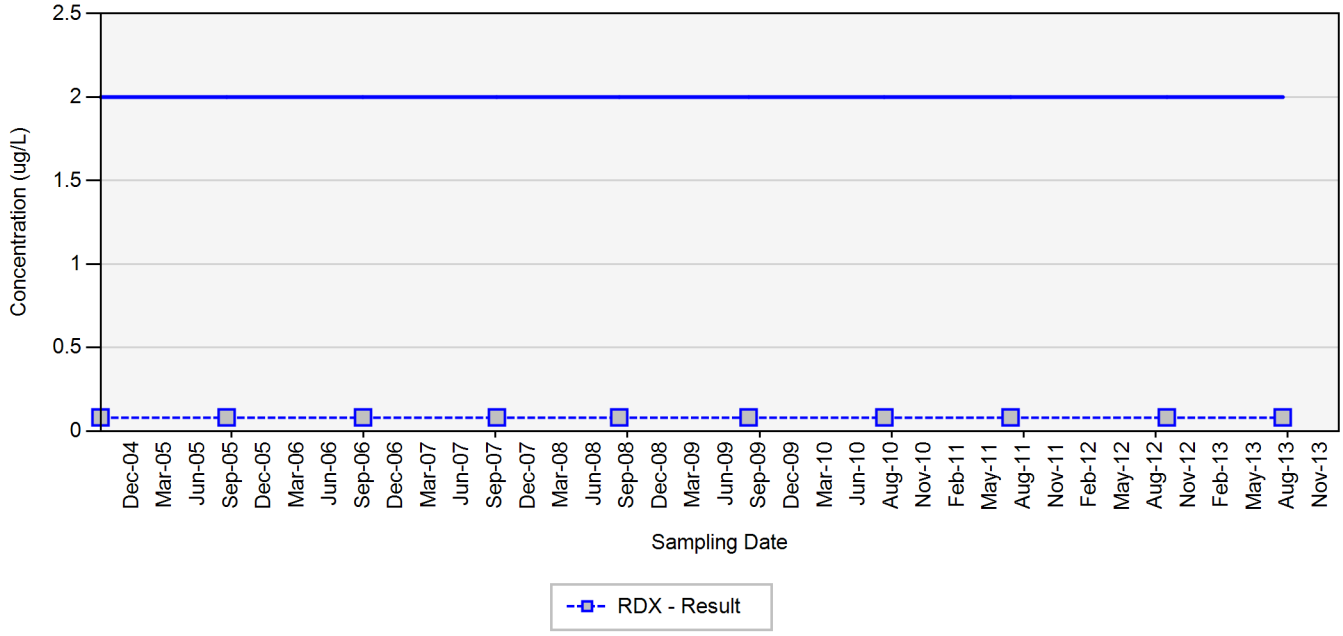
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-82





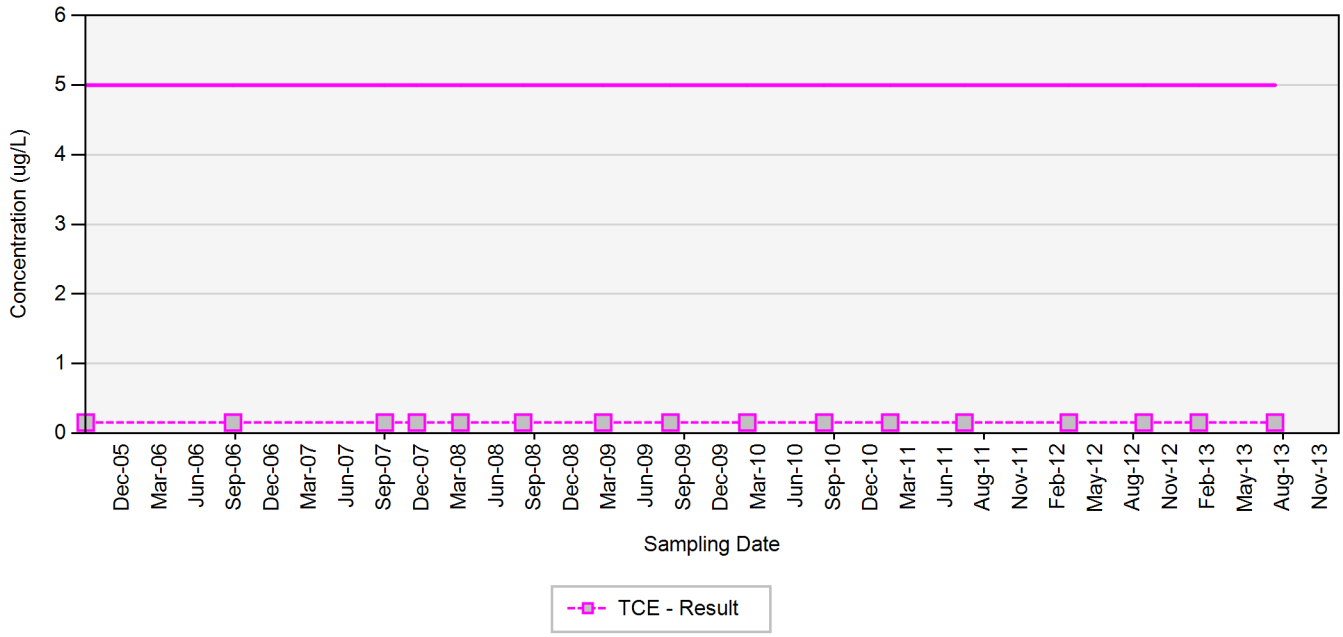
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

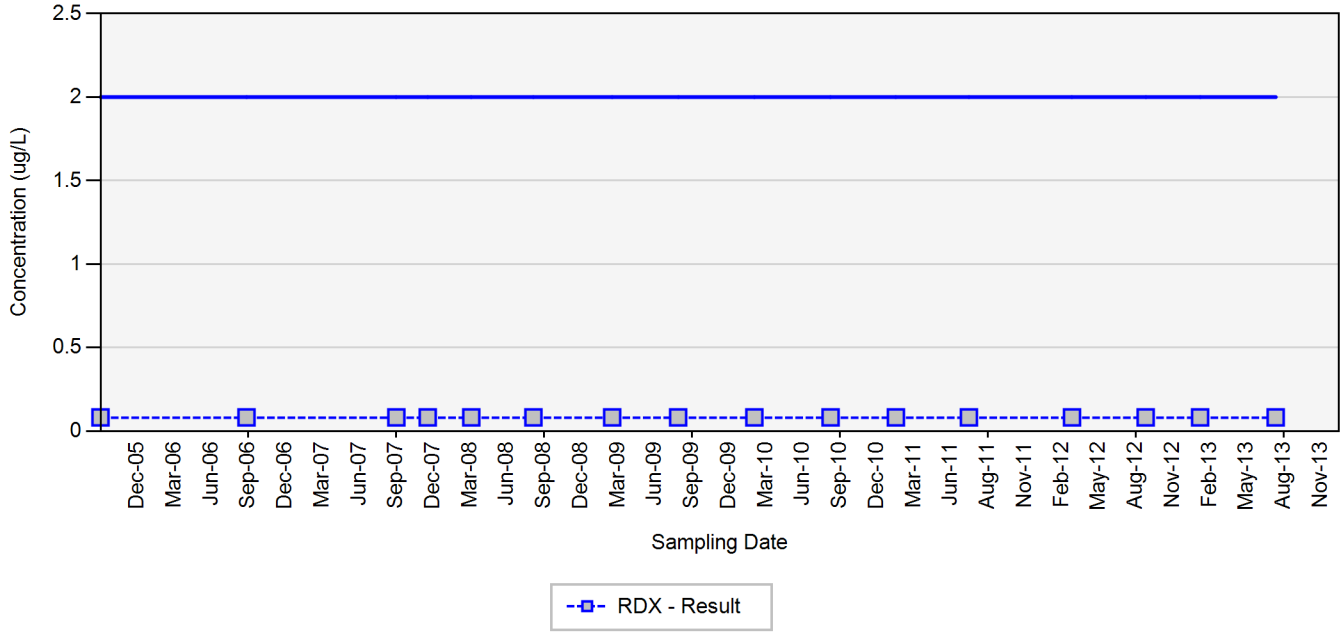
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-86





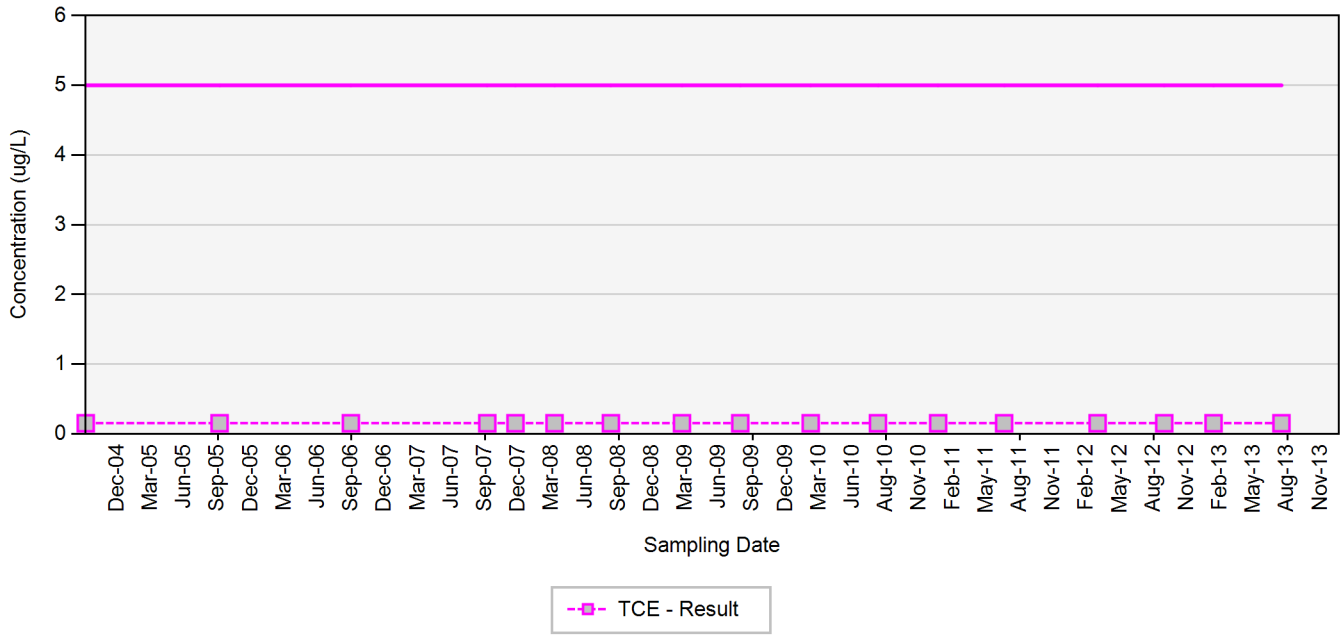
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

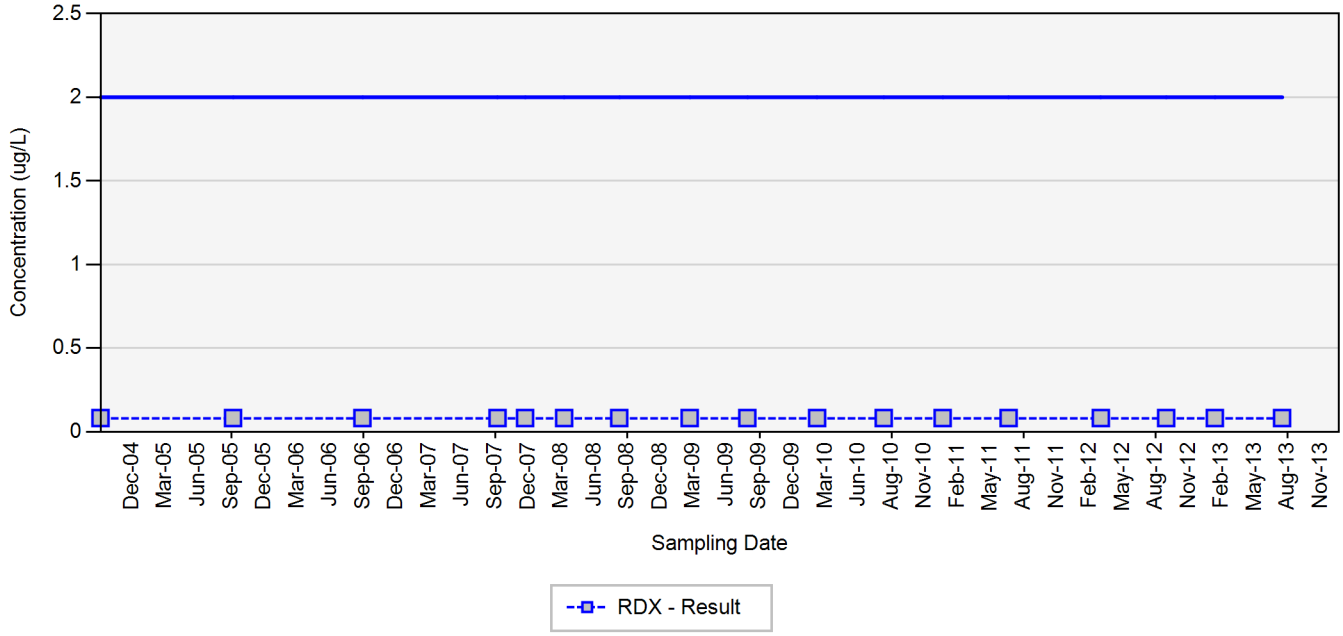
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-87





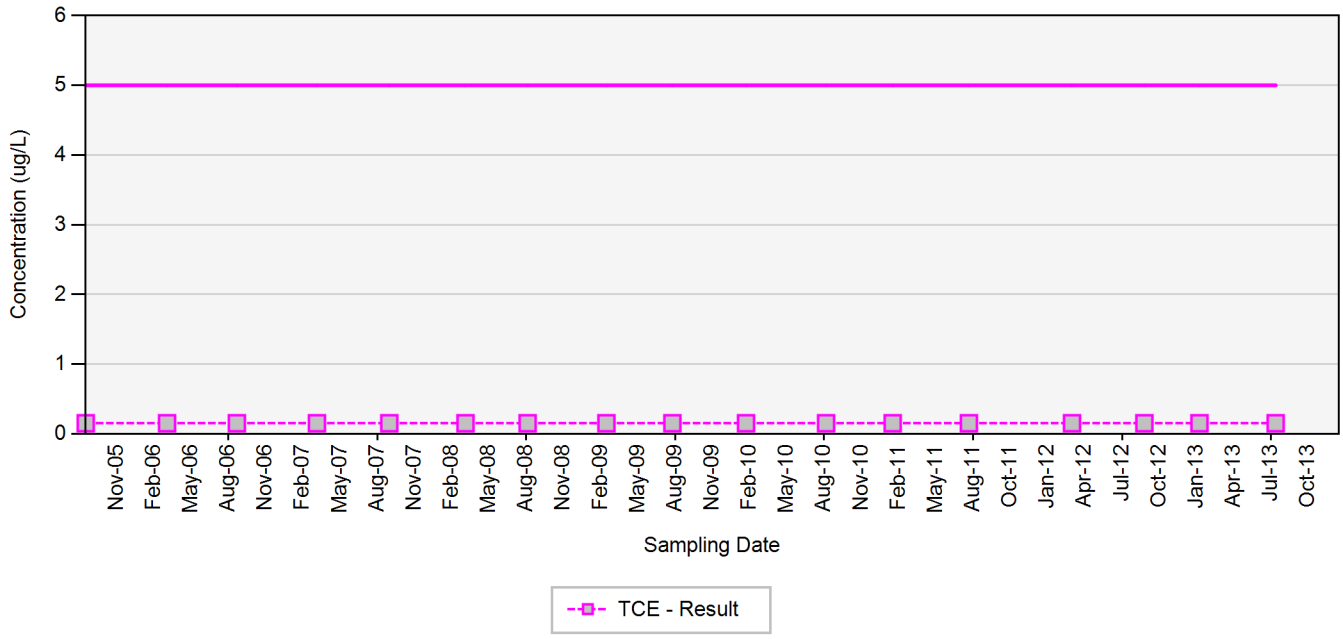
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

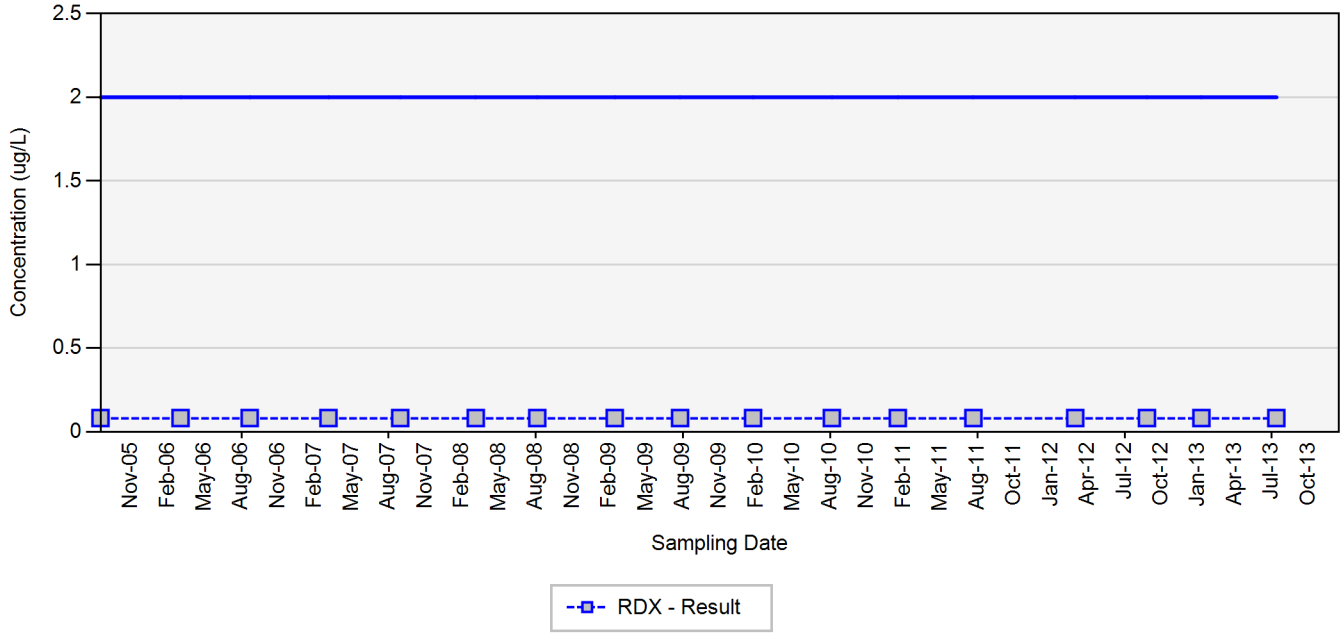
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-89





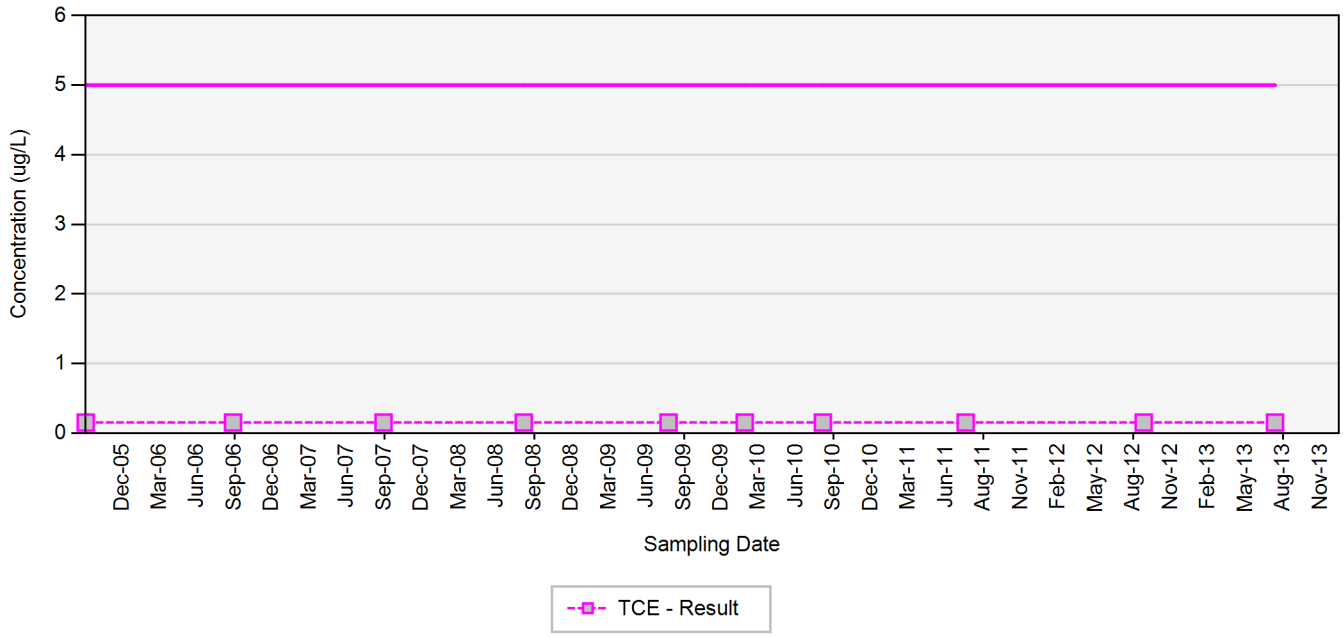
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

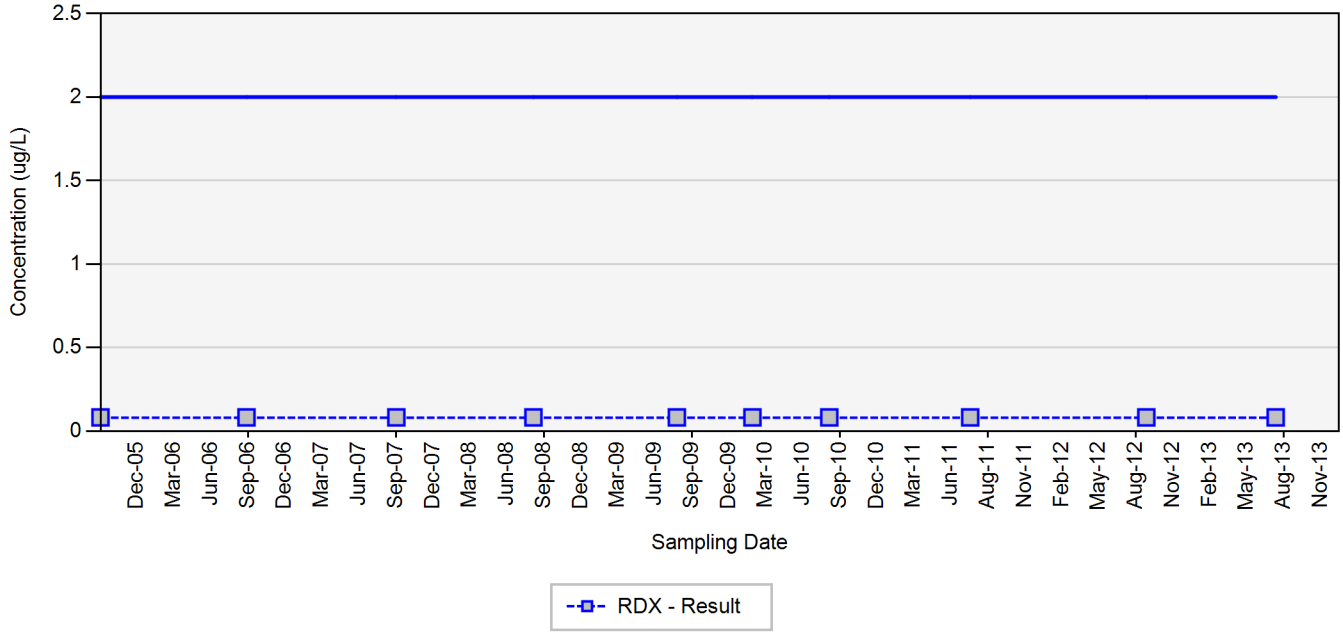
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-90





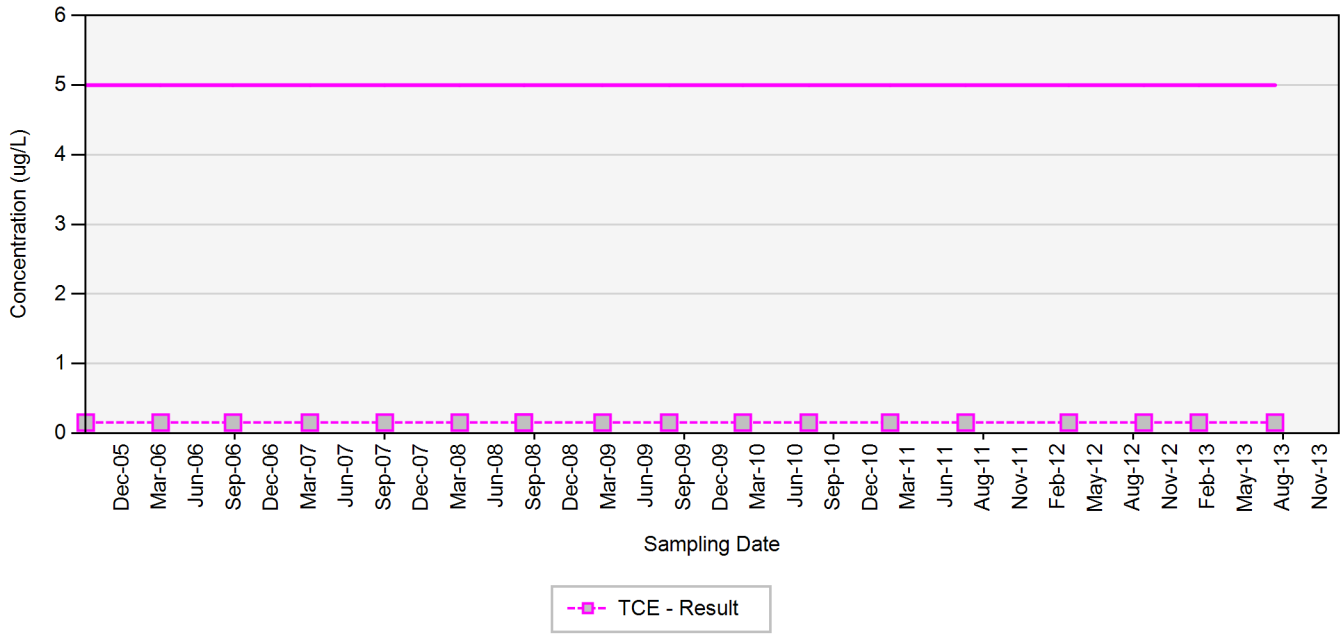
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

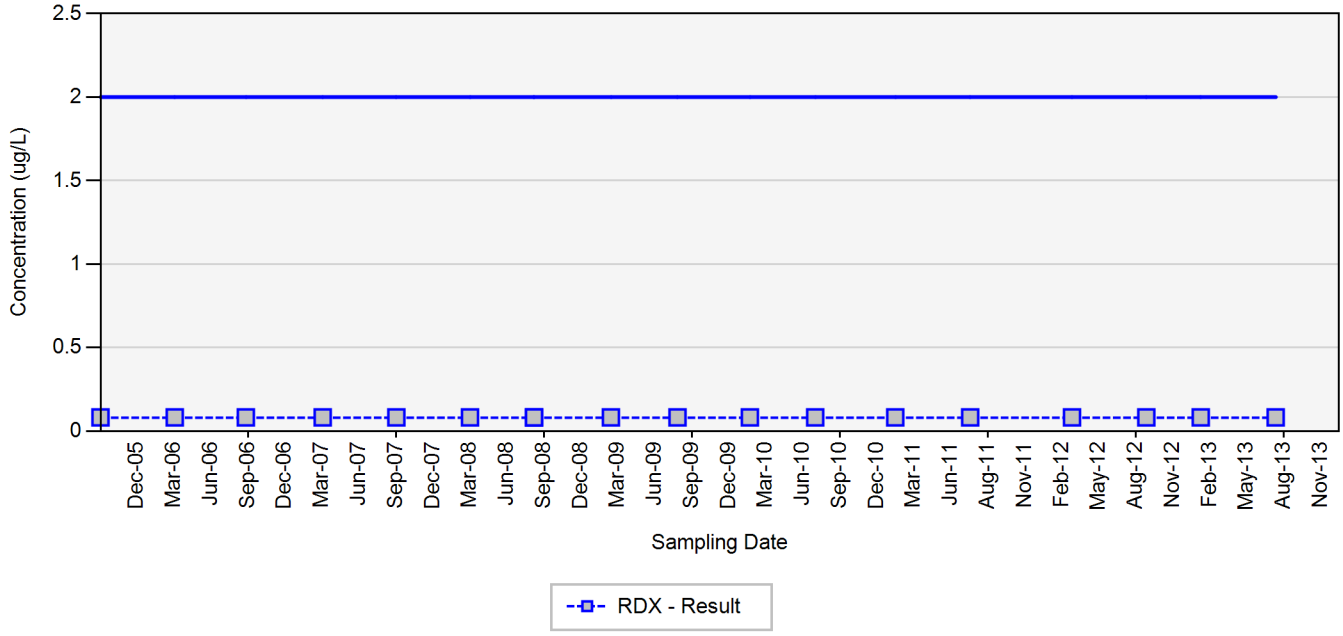
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-91





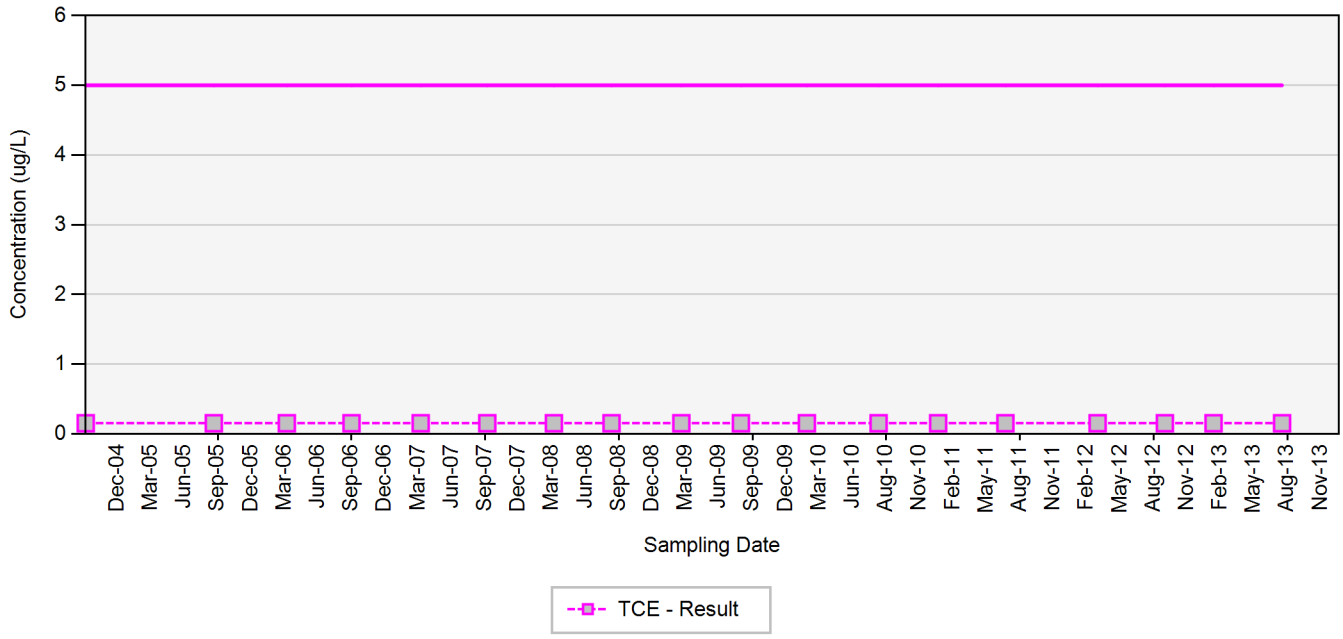
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

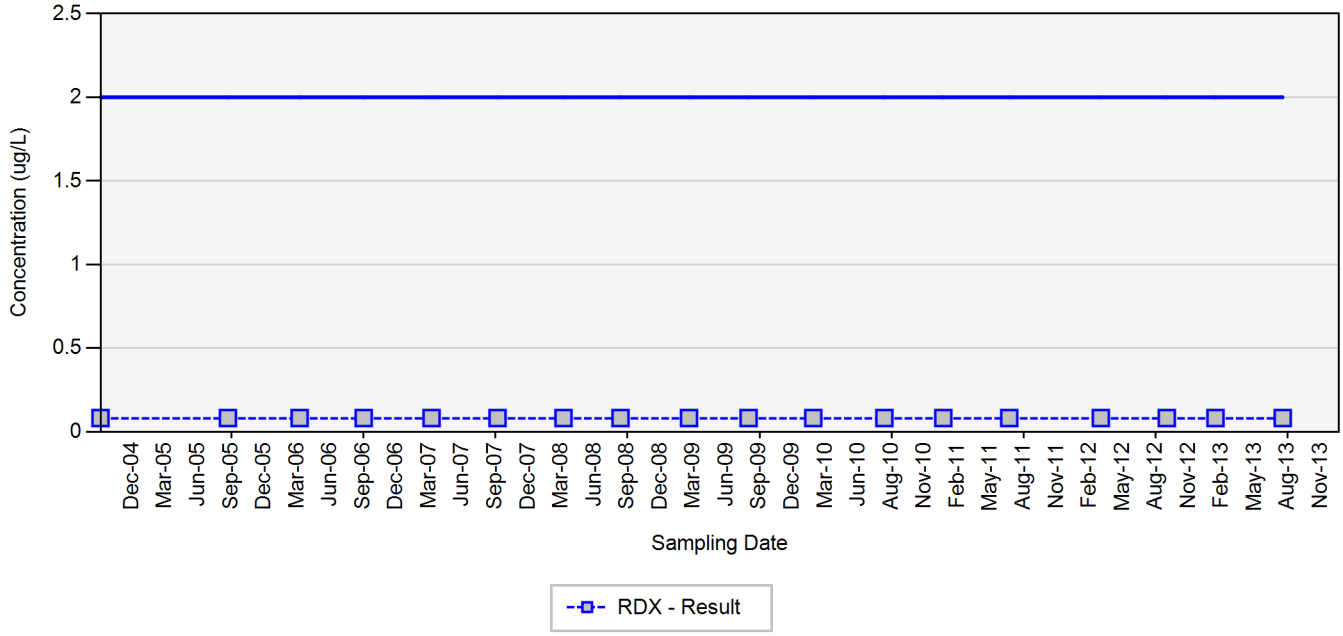
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-92





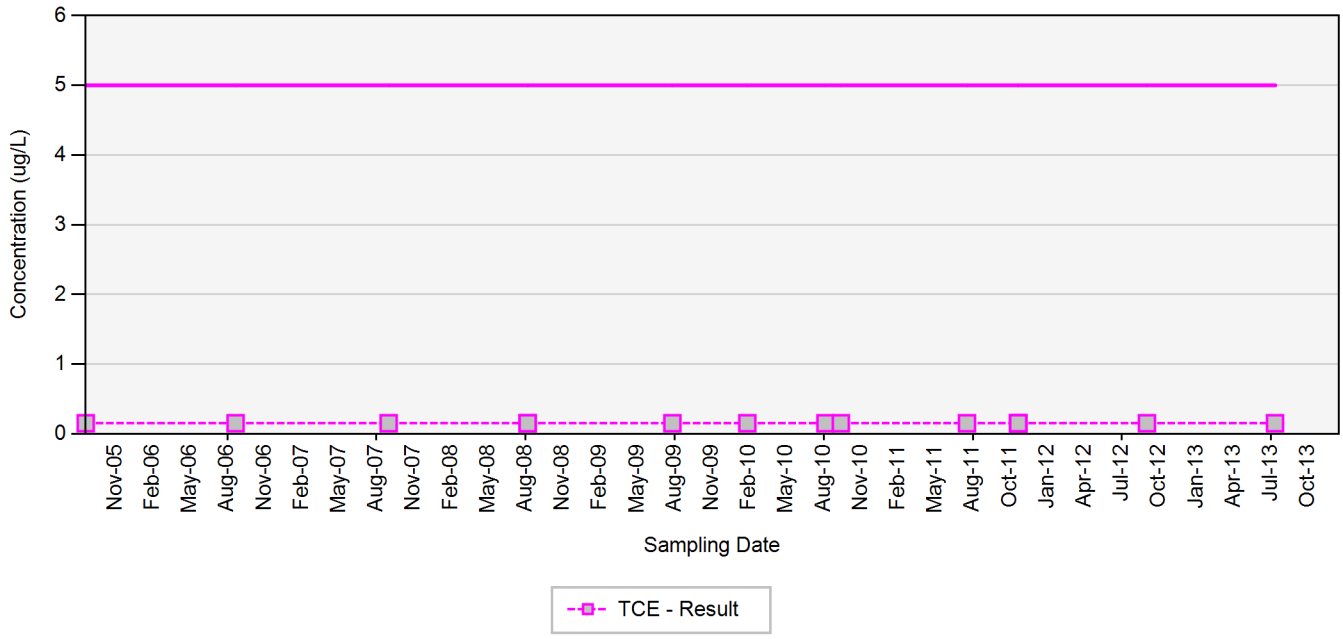
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

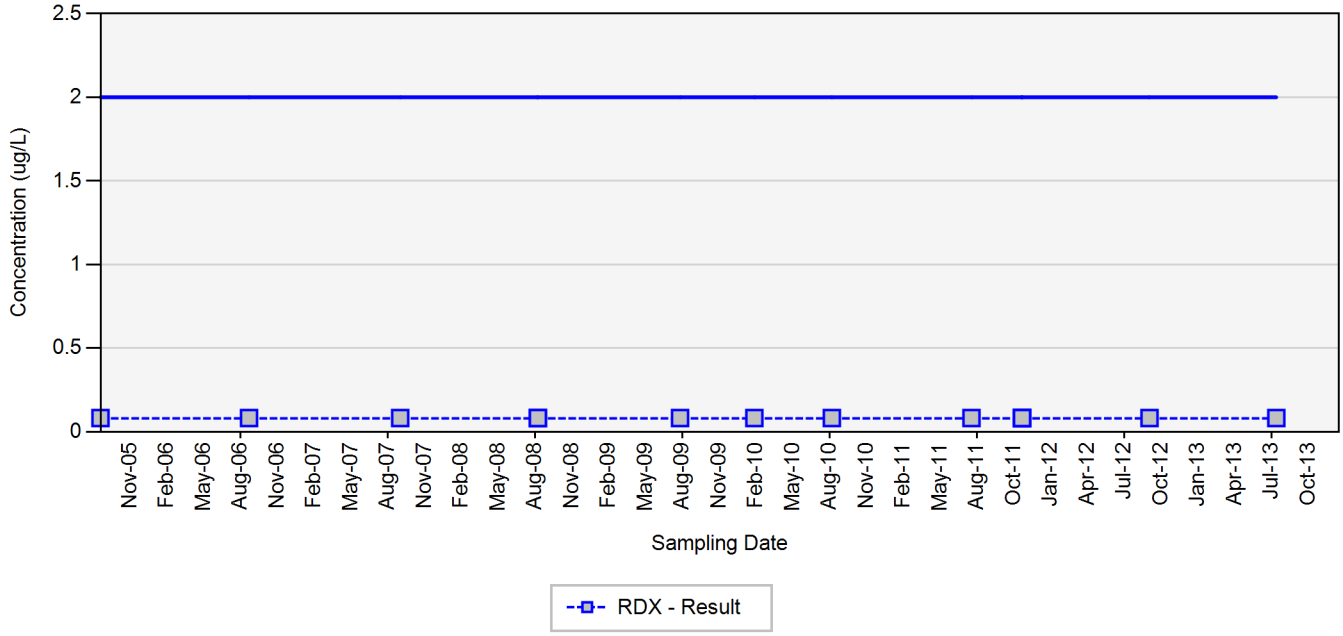
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-93





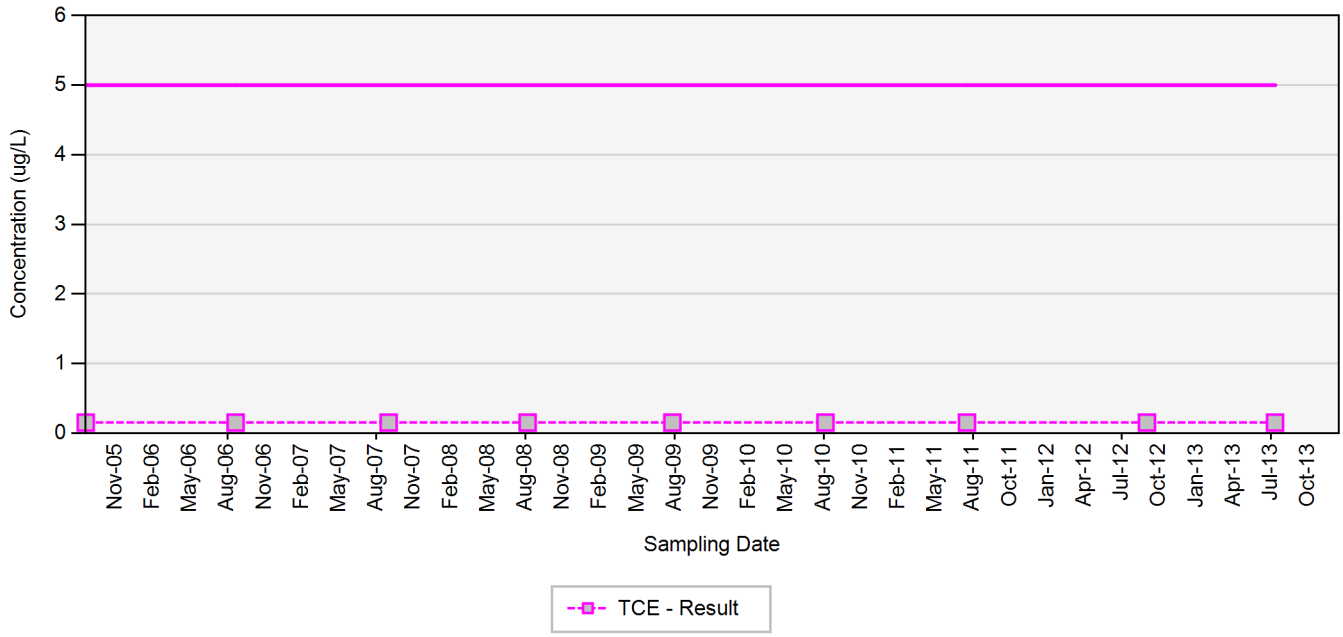
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

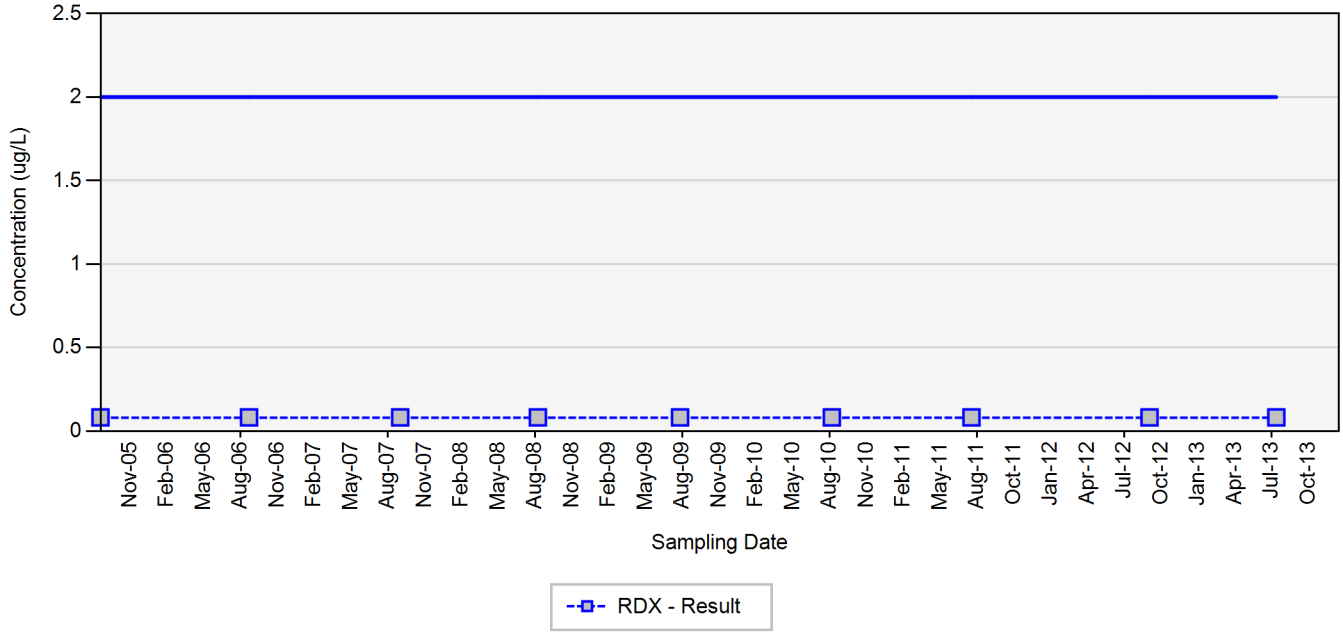
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-94





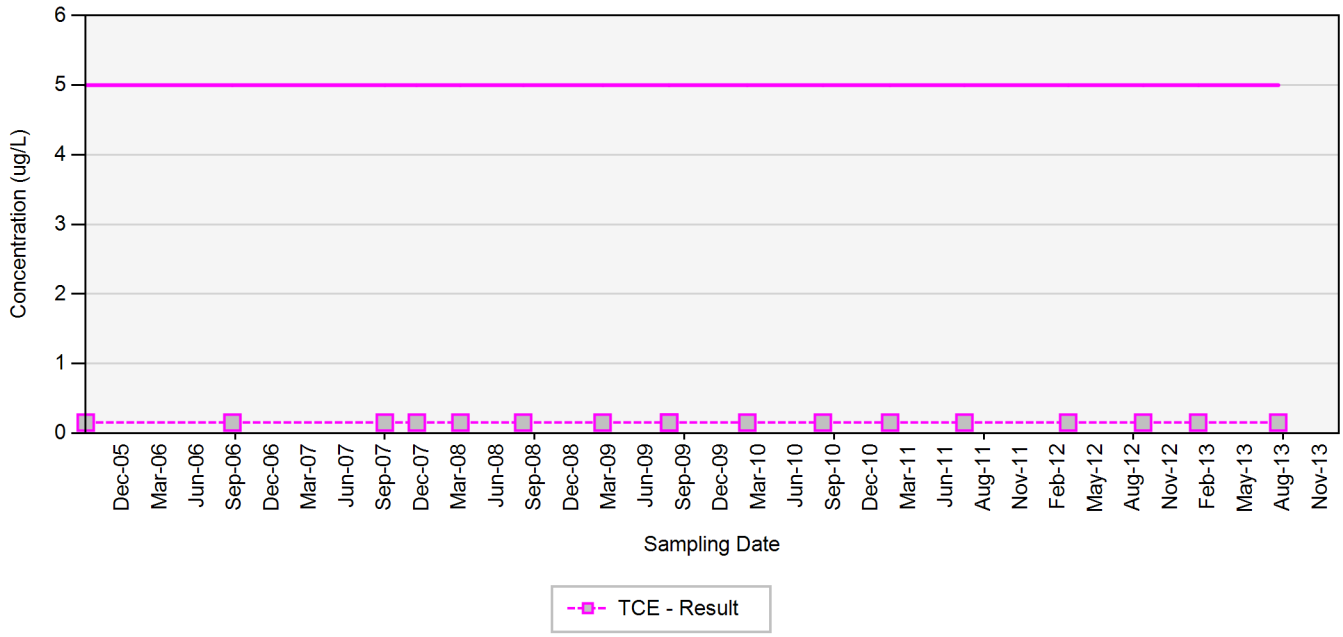
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

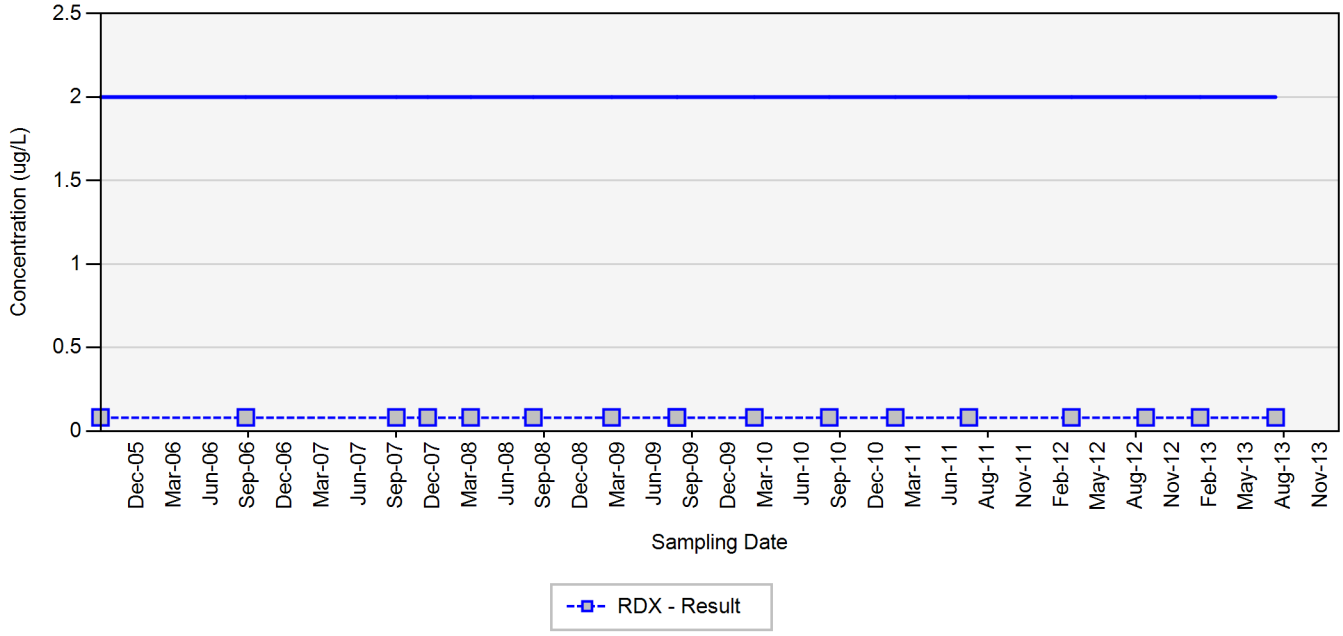
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-95





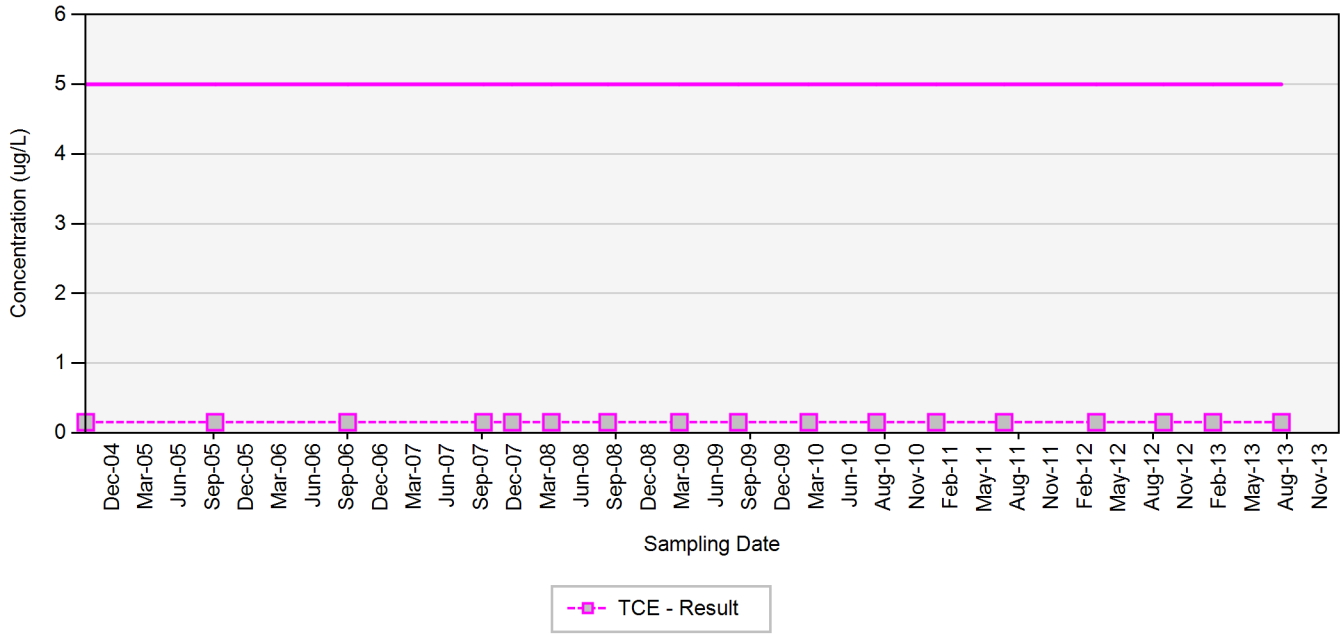
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

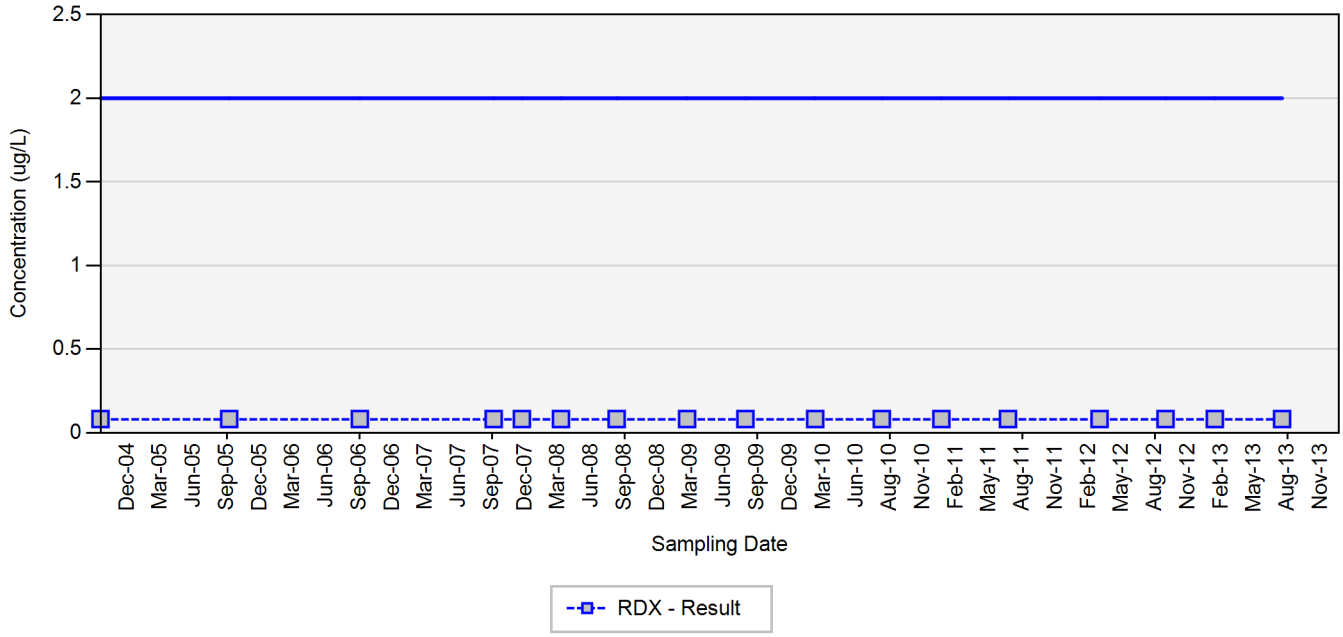
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-96





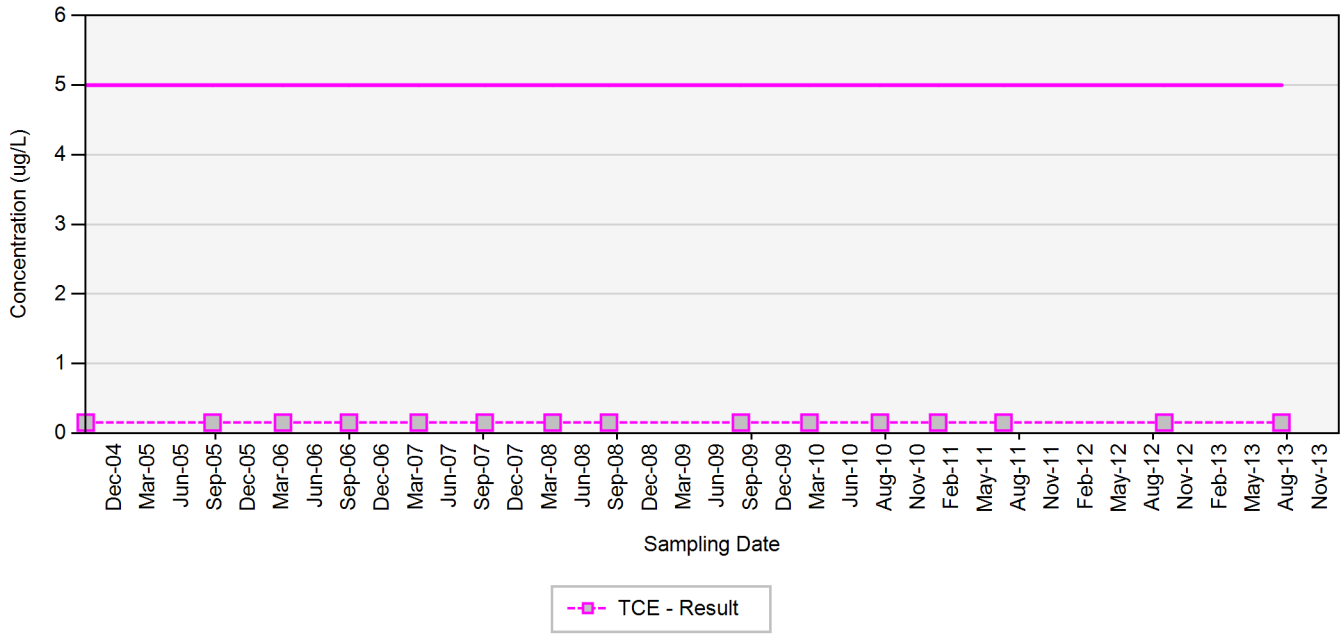
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

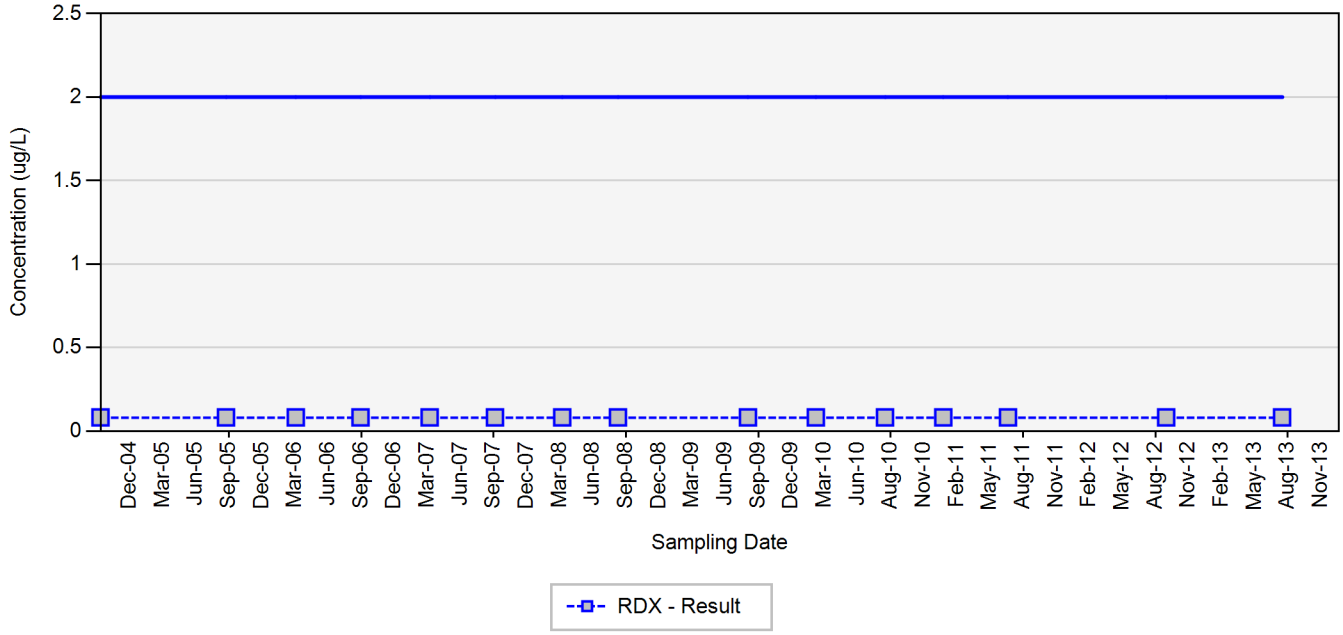
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-97





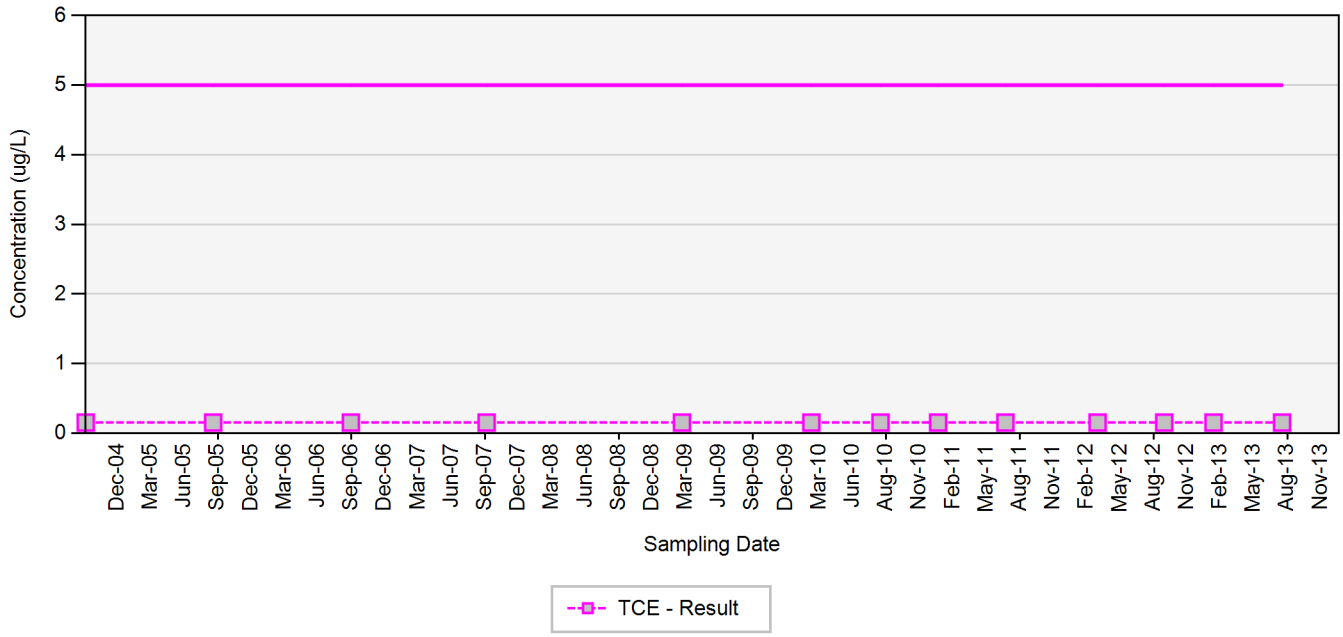
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

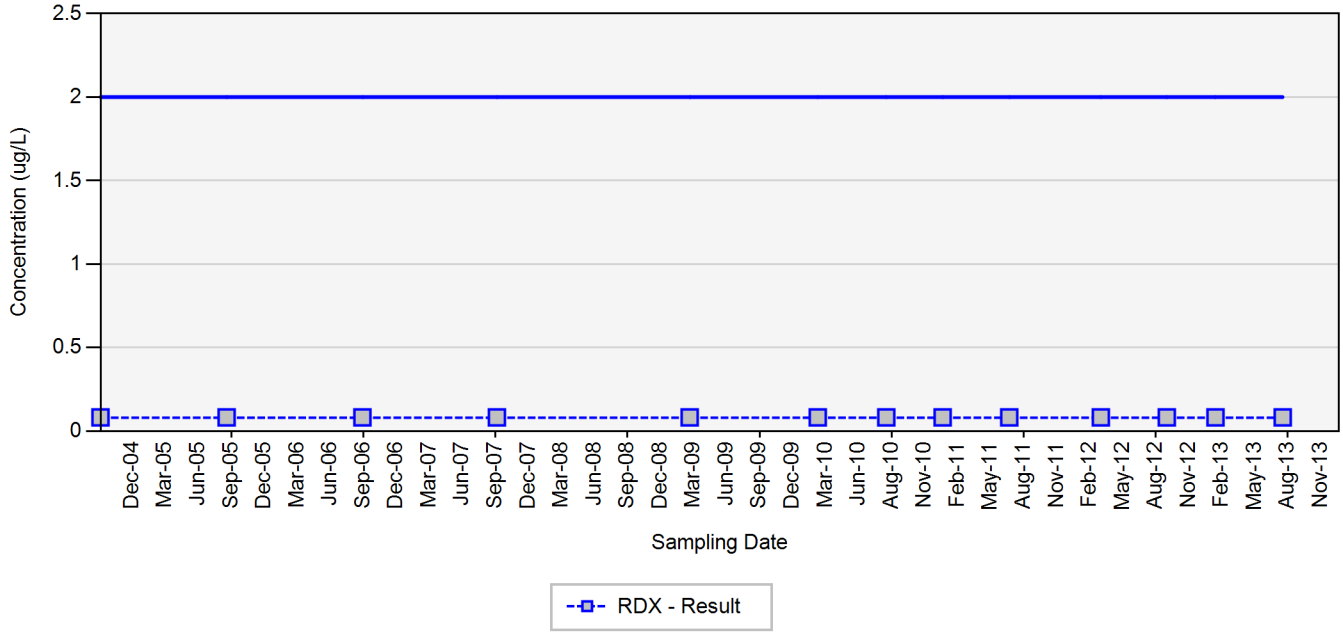
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix A.8
Concentration Trend Charts for Water Supply Wells

WSW-99





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goals for TCE is 5 UG/L
Final Target Groundwater Cleanup Goals for RDX is 2 UG/L

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart

ug/L: micrograms per liter
Silver markers indicate non-detected results

APPENDIX B

Statistical Charts

This page was intentionally left blank.

APPENDIX B
PREDICTION LIMIT ANALYSES
FORMER NEBRASKA ORDNANCE PLANT, MEAD, NEBRASKA

Statistical evaluations for the monitoring well cluster data were performed using an intrawell prediction interval. The U.S. Environmental Protection Agency (EPA) has approved statistical methods to calculate the prediction intervals for both parametric and nonparametric dataset so that issues with normality can be resolved easily. The prediction interval calculated by a method will include the percent probability that a future analytical value will be within that interval range (EPA, 1992). After sampling a well for a specified time and measuring the concentration of an analyte, the data can be used to construct an interval that will contain the next analyte concentration, assuming the distribution has not changed. The method also will assess whether future values are statistically representative of previous values. The following explanation of the calculation of prediction intervals for intrawell tests was taken from the *User's Guide for Sanitas™ for Groundwater, Version 9.4* (Sanitas, 2009).

In the Prediction Limit statistical analyses, all sampling rounds available prior to two years before the current round are used for determining background. This method is used to determine whether a single result is statistically representative of a group of results. The prediction interval is a calculated statistical interval that includes one or more results from the same population with a specified confidence.

This approach was used to compare background (all results from up to two years prior to the current sampling round) to "compliance" well data (most recent sampling event data). A result that exceeds the bounds of the predicted interval for that parameter represents statistically significant evidence that the result is not representative of the background group. The number of background results for a particular monitoring well is based on how many times the well was sampled during the period considered to be background. There will not always be a background result for each sampling round.

Parametric Prediction Interval

The parametric prediction interval is constructed if the background data all follow a normal or transformed-normal distribution. A minimum of four background values are used in constructing the interval. The estimate of the standard deviation that is used is an unbiased estimator. The usual estimate assumes only one source of variation. If other sources of variation exist (e.g., time effects or spatial variation in the data used for the background), then the parametric prediction interval is inappropriate. In these situations, a multivariate statistical procedure is suggested.

To determine whether a parametric or nonparametric prediction interval should be used, the distribution of data is evaluated by applying the Shapiro-Wilk (W test statistic) or Shapiro-Francia tests for normality to the raw data or, when applicable, to the ladder of powers transformed data. A discussion of normality testing and prediction interval

calculations can be found in the *User's Guide for Sanitas™ for Groundwater*, Version 9.4 (Sanitas, 2009).

If any of the comparison observations fall outside the bounds of the calculated Prediction Interval, this is statistically significant evidence that the comparison data are not representative of the background group of observations. An observation that falls above the upper prediction limit is called a statistically significant increase (SSI). Results for monitoring wells that showed an SSI are presented in Table B-1. An observation that falls below the lower prediction limit is called a statistically significant decrease (SSD). An SSI for an analyte is an indication of contamination in the monitoring well. The SSI must be evaluated against the maximum contaminant level (MCL) (or applicable project action limit) for the subject analyte to determine the importance of the detection. For example, during a particular sampling event, trichloroethene could have an SSI in a particular well, but if the concentration were one-tenth of the MCL, the result would not be significant for triggering new action (investigation or corrective action).

Nondetect observations are handled according to the following procedures (EPA, 1992):

- If less than 15 percent of the background observations are less than the detection limit, these will be replaced with one-half of the method detection limit before running the analysis;
- If more than 15 percent but less than 50 percent of the background data are less than the detection limit, the sample mean and sample standard deviation of the dataset are adjusted according to either Cohen's method or Atchison's method;
- If more than 50 percent of the background data are less than the detection limit, a nonparametric prediction interval will be computed; and
- If more than 90 percent of the background data are less than the detection limit, Sanitas™ provides an option to construct a Poisson-based prediction interval.

Nonparametric Prediction Limits

When the background data are not transformed-normal, or greater than 50 percent of the background data are less than the detection limit, nonparametric prediction intervals are utilized. The highest value from the background data is used as the upper limit of the prediction interval, and the lowest value from the background data is used as the lower limit of the prediction interval. A minimum of 19 background samples is required for a 5 percent false positive rate when comparing a single compliance observation ($k = 1$) to the prediction limit. Fewer than the required minimum background sample size will result in an inflated false positive rate that can be computed as $(1 - (n/(n+k)))$. Since the highest background value is always used as the upper prediction limit, the actual significance level decreases with increasing background sample size. Under EPA standards, the false positive rate is based upon the following formula:

$$1 - (n/(n+k))$$

Where:

n = the background sample size; and

k = the number of future values being compared to the limit.

Time Series Trend Analyses

A time series is a sequence of observations which are ordered in time (or space). One of the main features of time-series data is the "at a glance observation of data vs. time". Descriptive techniques may be extended to forecast future values. Trend is a long term movement in a time series. It is the underlying direction (an upward or downward tendency) and rate of change in a time series, when allowance has been made for the other components (Statsoft Inc., 2003).

The Mann-Kendall Test and the Sen's Slope Estimator were used to identify upward or downward trends in the data for individual monitoring wells. A summary of trending results for monitoring wells and water supply wells are presented in Table B-1 and in charts included in this Appendix. The following description of the Mann-Kendall Test and the Sen's Slope Estimator is taken from *The Power of Statistical Tests for Trend Detection* (Onoz, 2002), *Elementary Statistics* (Statsoft Inc., 2003), *Spring Water Quality* (St. John's River Water Management District, 2006), and the *User's Guide for Sanitas™ for Groundwater*, Version 9.4 (Sanitas, 2009).

Mann-Kendall Test

This test establishes the existence of an increasing or decreasing trend and is coupled with the Sen's Slope Estimator which computes the magnitude of the trend. The Mann-Kendall Test is a linear estimator. For the Mann-Kendall Test, the null hypothesis (H_o) states that the sample population is randomly ordered in time (i.e., the trend neither increases nor decreases); and the alternate hypothesis (H_A) is that the sample population exhibits a monotonic trend in time (i.e., the trend either increases or decreases).

The Mann-Kendall Test is based on the standard deviation (**S**). Each pair of observed values yi, yj (i > j) of the random variable is inspected to find out whether yi > yj or yi < yj. For n > 10, the sampling distribution (**Z**) is as follows (Onoz, 2002). **Z** follows the standard normal distribution where:

$$Z = \begin{cases} \dfrac{S-1}{\sqrt{\mathrm{var}(S)}} & if\ S > 0 \\ 0\ if\ S = 0 \\ \dfrac{S+1}{\sqrt{\mathrm{var}(S)}} & if\ S < 0 \end{cases}$$

Under the H_0 that there is no trend displayed by the time series, the distribution of S is then expected to have a zero-mean and variance.

A level of statistical significance (α) is chosen (i.e., 95 percent). A value of $Z_{1-\alpha/2}$ is determined using a standard normal distribution table. If $|Z| > Z_{1-\alpha/2}$ the series is said to display a trend significant to α. This means that there is a probability of α that a trend was falsely identified. By introducing the expected variance of S in the determination of Z, the Mann-Kendall test is able to reject what might appear to be trends over small periods of time that may appear to exhibit a short trend. For example, if a 3-year period of time displays a consistent increase in P, the expected variance of S is small enough that the test will likely reject the presence of a trend in this isolated time series because it is not statistically significant to observe such phenomena.

Sen's Slope Estimator

The Sen's Slope Estimator is a nonparametric, linear slope estimator that is most effective on monotonic data (St. John's River Water Management District, 2006). It provides an estimate of the rate of change of concentration levels over time (Sanitas, 2009). This approach involves computing slopes for all the pairs of ordinal time points and then using the median of these slopes as an estimate of the overall slope. Sen's slope is insensitive to outliers and can be used to detect if there is a trend in the data. The Sen's Slope Estimator uses a linear model for trends for $N > 10$: $f(t) = Qt + C$ to compute the magnitude component of the trend analysis.

References

Onoz, Bihrat, 2002. *The Power of Statistical Tests for Trend Detection*. Turkish Journal of Engineering and Environmental Science. June. URL – http://journals.tubitak.gov.tr/engineering/issues/muh-03-27-4/muh-27-4-5-0206-6.pdf

Sanitas Technologies, Inc. (Sanitas), 2009. *User's Guide for Sanitas™ for Groundwater*. September.

Statsoft, Inc. 2003. Elementary Statistics. *http://www.statsoft.com/textbook/stbasic.html#t-test%20for%20dependenta*

St. John's River Water Management District, 2006. *Spring Water Quality*. http://www.sjrwmd.org/programs/plan_monitor/gw_assess/springs/waterquality.html.

U.S. Environmental Protection Agency (EPA), 1992. *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance*. Office of Solid Waste Management Division. July.

This page was intentionally left blank.

TABLE B-1

This page was intentionally left blank.

Table B-1
2013 Trends and Statistical Significant Results
Former Nebraska Ordnance Plant, Mead, Nebraska

MONITORING WELLS		TCE			RDX		
	Location	Trend	SSI 2013 Quarter(s)	Result in µg/L	Trend	SSI 2013 Quarter(s)	Result in µg/L
MW-02B	Interior Plume □MW	--	--	100	--	--	5.2
MW-03A	LL1 interior plume	Decreasing	--	ND	Increasing	--	2.3
MW-03B	LL1 interior plume	--	--	ND	--	--	0.43
MW-04B	Interior Plume □MW	--	--	--	--	--	13.0
MW-08B	Side/Down/Up Gradient	--	2nd	0.15 J	Decreasing	--	0.22 J
MW-09A	Interior Plume □MW	--	--	55.0 and 64.0 J	--	--	--
MW-09B	Interior Plume □MW	--	--	38.0 and 43	--	--	--
MW-09D	Interior Plume □MW	--	--	480 and 320	--	--	--
MW-100A	Compliance □MW	--	--	--	Decreasing	--	0.095 J
MW-100B	Compliance □MW	--	--	--	Decreasing	--	0.10 J
MW-104A	Interior Plume □MW	--	--	320	--	--	0.89 and 0.58
MW-104B	Interior Plume □MW	--	2nd	620	--	--	0.45 and 0.59
MW-105B	Interior Plume □MW	Decreasing	--	23.0 and 26	--	--	ND and ND
MW-109A	Interior Plume □MW	--	2nd	17.0	--	2nd	4.3
MW-109B	Interior Plume □MW	--	--	18.0	--	2nd	4.0
MW-111A	Interior Plume □MW	--	--	6.6	--	2nd	0.23 J
MW-111B	Interior Plume □MW	Decreasing	--	7.4	Decreasing	--	0.12 J
MW-118A	Perimeter □MW	Increasing	--	--	Increasing	--	0.75 and 0.59
MW-118B	Perimeter □MW	Increasing	--	--	Increasing	--	0.79 and 0.78
MW-119B	Focused Extraction □MW	--	--	0.34 J and 0.45 J	--	--	0.19 J and 0.18 J
MW-120B	Focused Extraction □MW	--	--	6600 and 690	--	--	7.4 and 6.8
MW-120D	Focused Extraction □MW	--	--	11.0 and 15.0	--	--	ND and ND
MW-120E	Focused Extraction □MW	--	--	12000 and 7600	--	2nd and 4th	8.5 and 9.6
MW-121A	Focused Extraction □MW	Decreasing	--	0.87 J and 0.70 J	--	--	ND and ND
MW-121B	Focused Extraction □MW	Decreasing	--	0.26 J and ND	Decreasing	--	ND and ND
MW-122A	Focused Extraction □MW	Decreasing	--	60.0 and 330	--	--	ND and ND
MW-122B	Focused Extraction □MW	Decreasing	--	790 and 710	--	--	1.1 and 1.3
MW-123A	Focused Extraction □MW	Decreasing	--	7.4 and 3.4	--	--	ND and ND
MW-123B	Focused Extraction □MW	Decreasing	--	2.1 and 2.9	Decreasing	--	0.14 J and 0.23 J
MW-124B	Interior Plume □MW	Decreasing	--	12000 and 13000	Decreasing	--	26.0 and 19
MW-125A	Interior Plume □MW	Decreasing	--	460 and 470	--	--	ND and ND
MW-125B	Interior Plume □MW	--	--	2500 and 3800 J	Decreasing	--	11.0 and 7.5 J
MW-125D	Interior Plume □MW	--	--	53.0 and 91.0	--	--	ND and 0.11 J
MW-126B	Interior Plume □MW	--	--	7500	--	--	19.0
MW-126D	Interior Plume □MW	--	--	200	--	--	ND
MW-127B	Interior Plume □MW	Decreasing	--	69.0	--	--	0.31 J
MW-127E	Interior Plume □MW	Decreasing	--	11.0	--	--	5.6 J
MW-128A	Focused Extraction □MW	--	--	--	Decreasing	--	0.43 J 0.18 J
MW-128B	Focused Extraction □MW	--	--	--	Decreasing	--	1.4 and 1.7
MW-130A	Interior Plume □MW	--	--	--	Decreasing	--	1.2

Table B-1
2013 Trends and Statistical Significant Results
Former Nebraska Ordnance Plant, Mead, Nebraska

MONITORING WELLS		TCE			RDX		
	Location	Trend	SSI 2013 Quarter(s)	Result in µg/L	Trend	SSI 2013 Quarter(s)	Result in µg/L
MW-131B	Focused Extraction □MW	--	--	--	Decreasing	--	0.81 and 0.51
MW-133B	Focused Extraction □MW	Increasing	--	290 and 250	--	--	--
MW-133D	Focused Extraction □MW	Decreasing	--	33.0 and 2.1	--	--	--
MW-134B	Focused Extraction □MW	--	--	210 and 170	--	--	--
MW-134D	Focused Extraction □MW	--	--	140 and 78	--	--	--
MW-135A	Focused Extraction □MW	--	--	130 and 110	--	--	--
MW-135B	Focused Extraction □MW	Decreasing	--	210 and 240 J	--	--	--
MW-135D	Focused Extraction □MW	--	--	930 and 630	--	--	--
MW-136D	Interior Plume □MW	--	--	140 and 200	--	--	--
MW-136E	Interior Plume □MW	Decreasing	--	89.0 and 77.0	--	--	--
MW-139B	Interior Plume □MW	Decreasing	--	240 and 300	--	--	--
MW-140A	Interior Plume □MW	--	--	0.60 J and 0.66J	--	--	--
MW-141A	Interior Plume □MW	--	--	6600 and 9100	--	--	0.75 and ND
MW-142A	Interior Plume □MW	--	--	1900 and 1400	--	--	0.59 and 0.93
MW-144E	Interior Plume □MW	--	--	--	--	--	92.0 and 120
MW-148B	Interior Plume □MW	--	--	ND	--	--	36.0
MW-150B	Interior Plume □MW		4th	ND 0.16 J	--	--	6.5 and 13.0
MW-152B	Interior Plume □MW	--	--	9.3	--	--	1.3
MW-21A	Interior Plume □MW	Increasing	--	6.7 and 11.0	--	--	ND and ND
MW-21B	Interior Plume □MW	Decreasing	--	72.0 and 84.0	--	--	9.6 and 9.5
MW-21D	Interior Plume □MW	Increasing	--	24.0 and 70.0	--	--	ND and ND
MW-24A	Interior Plume □MW	Increasing	--	640 and 180	--	--	ND and ND
MW-24B	Interior Plume □MW	--	--	27.0 and 24.0	Increasing	--	15.0 and 14.0
MW-25B	Sidegradient MW	--	--	23.0	--	--	ND
MW-29A	Interior Plume □MW	--	--	--	--	--	2.0
MW-32B	Interior Plume □MW	Decreasing	--	ND	Increasing	--	5.9
MW-32D	Interior Plume □MW	--	--	ND	Increasing	--	5.8
MW-33A	Sidegradient □MW	--	--	--	Decreasing	--	0.79
MW-35A	Perimeter □MW	--	--	--		--	0.34 J and 0.56
MW-40A	Interior Plume □MW	Decreasing	--	1.8	--	--	--
MW-40B	Interior Plume □MW	Decreasing	--	85.0	--	--	--
MW-42A	Interior Plume □MW	Increasing	--	96.0 and 89.0		--	2.9 and 3.5
MW-42D	Interior Plume □MW	Increasing	--	120 and 98	Increasing	--	3.5 and 3.4
MW-43A	Interior Plume □MW	Increasing	--	19.0	--	--	ND
MW-43B	Interior Plume □MW	Decreasing	--	2.4	Decreasing	--	3.5
MW-43D	Interior Plume □MW	Increasing	--	11.0	Decreasing	--	ND
MW-44A	Interior Plume □MW	--	--	150 and 180	Decreasing	--	ND
MW-44D	Interior Plume □MW	--	--	19.0 and 22.0	Decreasing	--	ND
MW-80B	Perimeter □MW	Decreasing	--	1.4 and ND	--	--	
MW-83A	Perimeter □MW	--	--	--	--	--	0.21 J and 0.29 J

Table B-1
2013 Trends and Statistical Significant Results
Former Nebraska Ordnance Plant, Mead, Nebraska

MONITORING WELLS		TCE			RDX		
	Location	Trend	SSI 2013 Quarter(s)	Result in µg/L	Trend	SSI 2013 Quarter(s)	Result in µg/L
MW-85A	Perimeter □MW	--	--	--	--	--	0.72 and 0.67
MW-85B	Perimeter □MW	--	--	--	--	--	1.1 and 1.0
MW-86D	Compliance □MW	--	--	--	--	--	0.59
MW-89A	Sidegradient □MW	--	--	--	--	--	8.9
MW-89B	Sidegradient □MW	Increasing	--	--	--	--	0.80 J
MW-89D	Sidegradient □MW	--	--	--	--	--	1.3
MW-90A	Interior Plume □MW	Increasing	--	550 and 360	--	2nd and 4th	0.62 and 0.56
MW-90B	Interior Plume □MW	Increasing	--	52.0 J and 120	Increasing	--	0.13 J and 0.16 J
MW-90D	Interior Plume □MW	Increasing	--	280 and 260	--	--	0.26 J 0.33 J
MW-95D	Perimeter □MW	Increasing	--	--	--	--	0.089 J and 0.16 J
MW-99B	Interior Plume □MW	--	--	--	Decreasing	--	1.4
MW-99D	Interior Plume □MW	--	--	--	Decreasing	--	3.3
WATER SUPPLY WELLS		TCE			RDX		
	Location	Trend	SSI 2013 Quarter(s)	Result in µg/L	Trend	SSI 2013 Quarter(s)	Result in µg/L
WSW-29	--	Increasing	--	ND and ND		--	0.12 J and 0.11 J
WSW-29A	--	Increasing	--	ND and ND	Increasing	--	0.35 J and 0.32 J
WSW-50B	--	Increasing	--	ND and ND		--	2 and 1.7
WSW-51	--	Increasing	--	0.43 J and 0.38 J	Increasing	3rd	0.31 J and 0.43
WSW-51A	--	Increasing	--	4.6 and 4.7	Increasing	--	1.6 and 1.4
WSW-52A-B	--	Increasing	--	ND and ND	Decreasing	--	0.22 J and 0.54
WSW-52C-B	--	Decreasing	--	130 and 160	--	--	ND and ND
WSW-53-B	--	---	--	2.1 and 2.1	Increasing	--	6.2 and 6.1
WSW-54-B	--	Decreasing	--	4.4 and 4.3	Decreasing	--	2.3 and 2
WSW-65	--	---	--	ND and ND	--	--	ND and ND
WSW-100	--	---	--	ND and ND	--	--	0.12 J and 0.12 J
WSW-112	--	Increasing	--	ND and ND	--	--	ND and ND

This page was intentionally left blank.

Monitoring Well TCE Charts

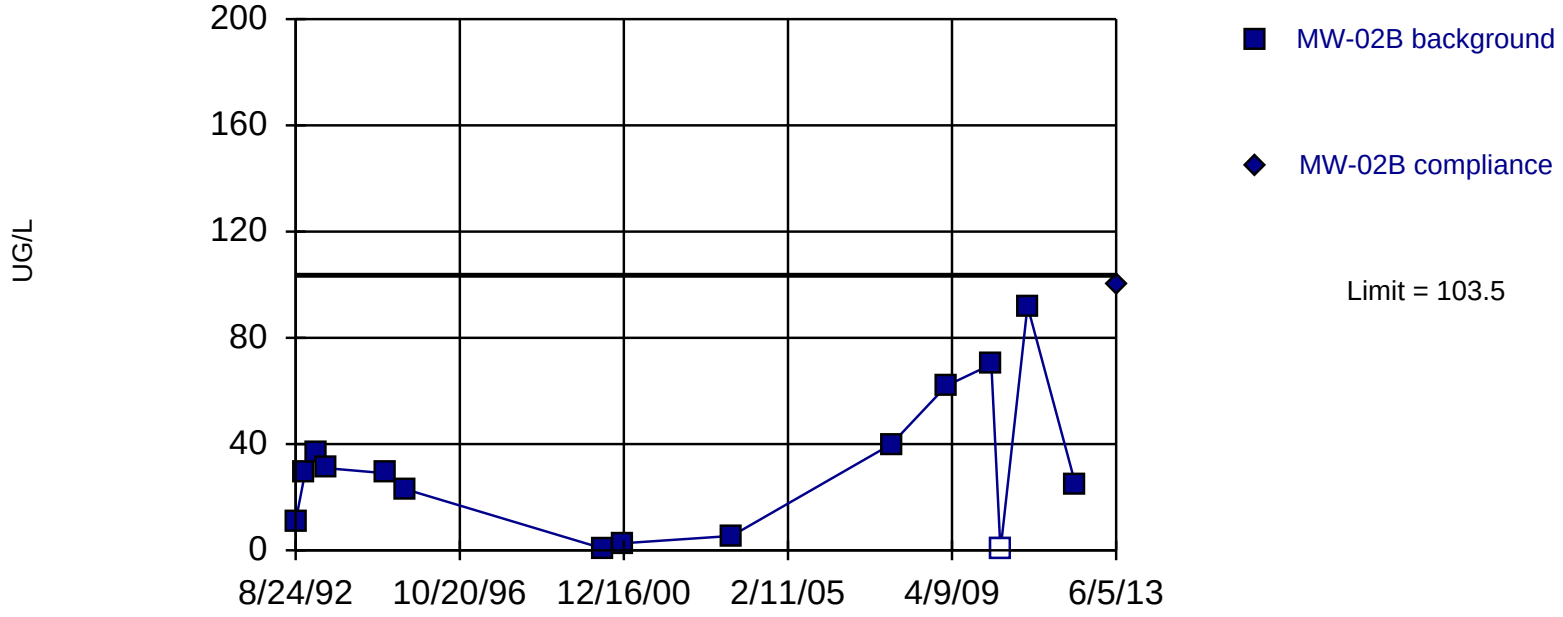
This page was intentionally left blank.

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=30.52, Std. Dev.=26.94, n=15, 6.667% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9066, critical = 0.881. Report alpha = 0.01. Most recent point compared to limit.

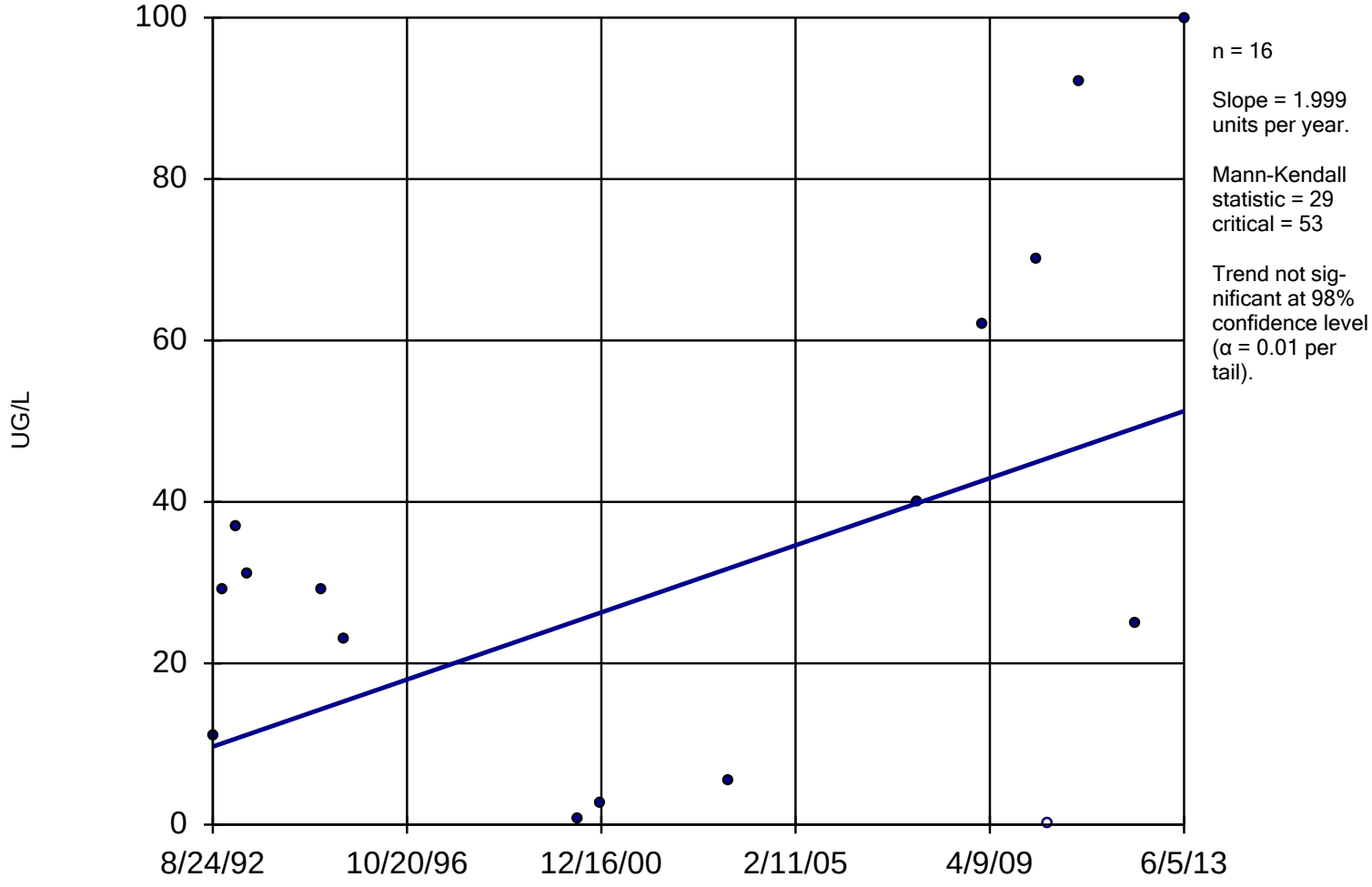
Constituent: TCE Analysis Run 1/28/2014 2:25 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-02B



Constituent: TCE Analysis Run 1/28/2014 2:36 PM

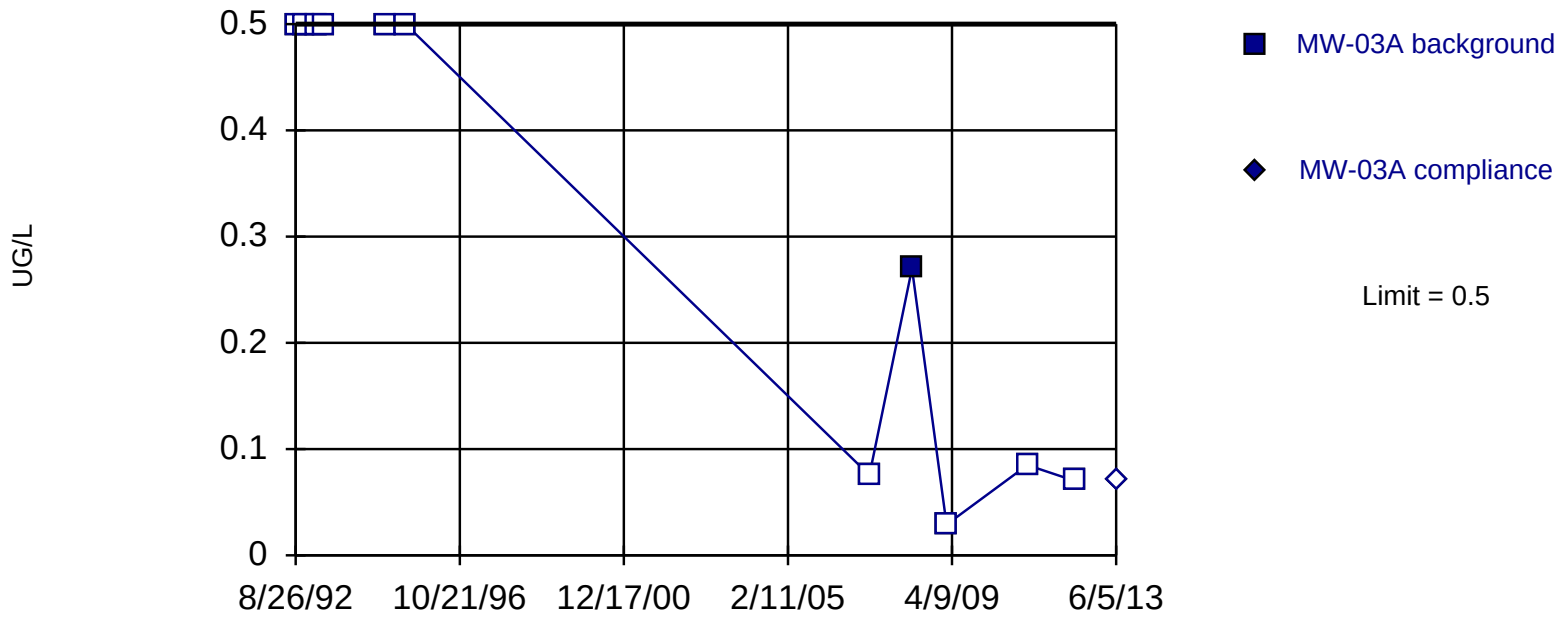
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 90.91% NDs. Report alpha = 0.08333. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

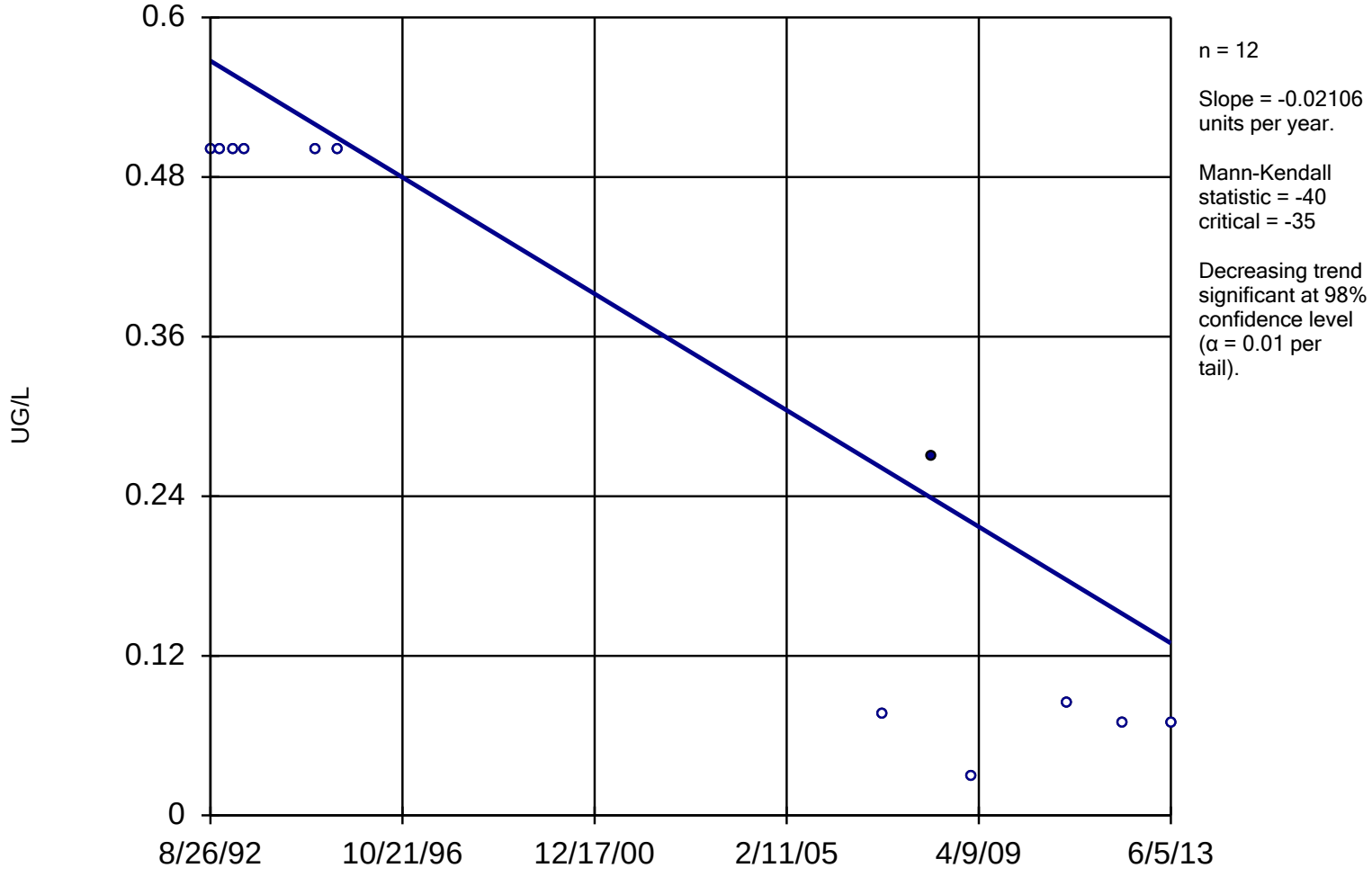
Constituent: TCE Analysis Run 1/28/2014 2:25 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-03A



Constituent: TCE Analysis Run 1/28/2014 2:36 PM

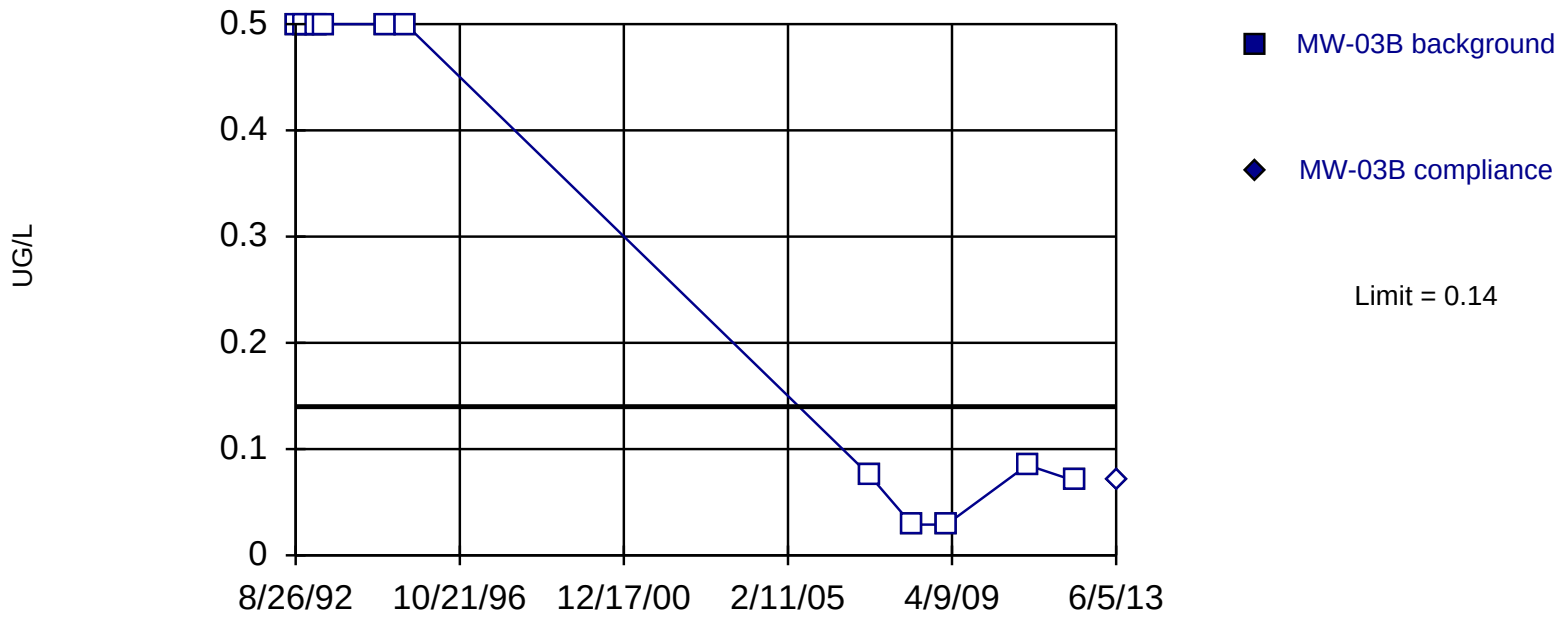
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 11) were censored; limit is most recent reporting limit. Report alpha = 0.08333. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

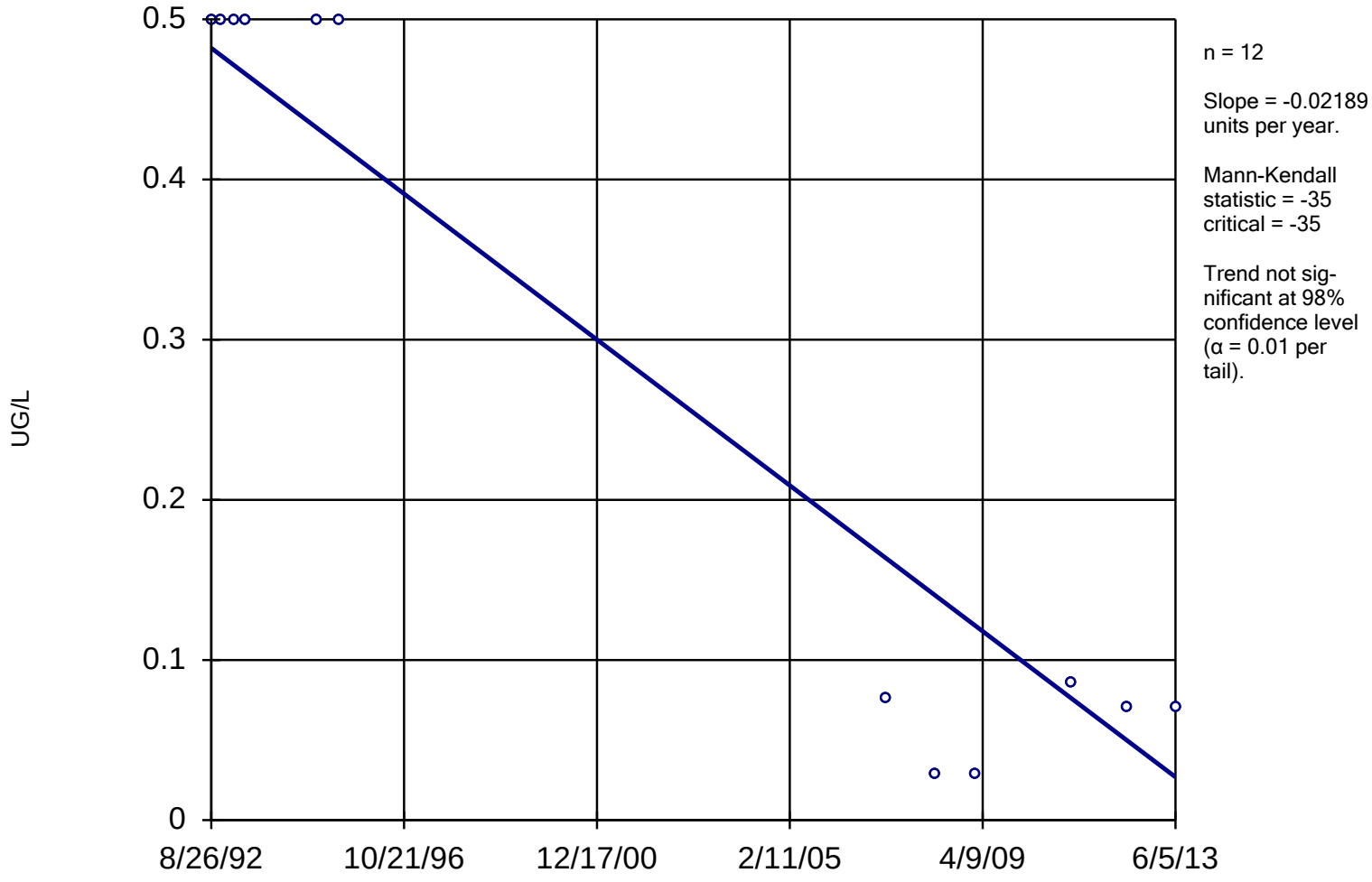
Constituent: TCE Analysis Run 1/28/2014 2:25 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-03B



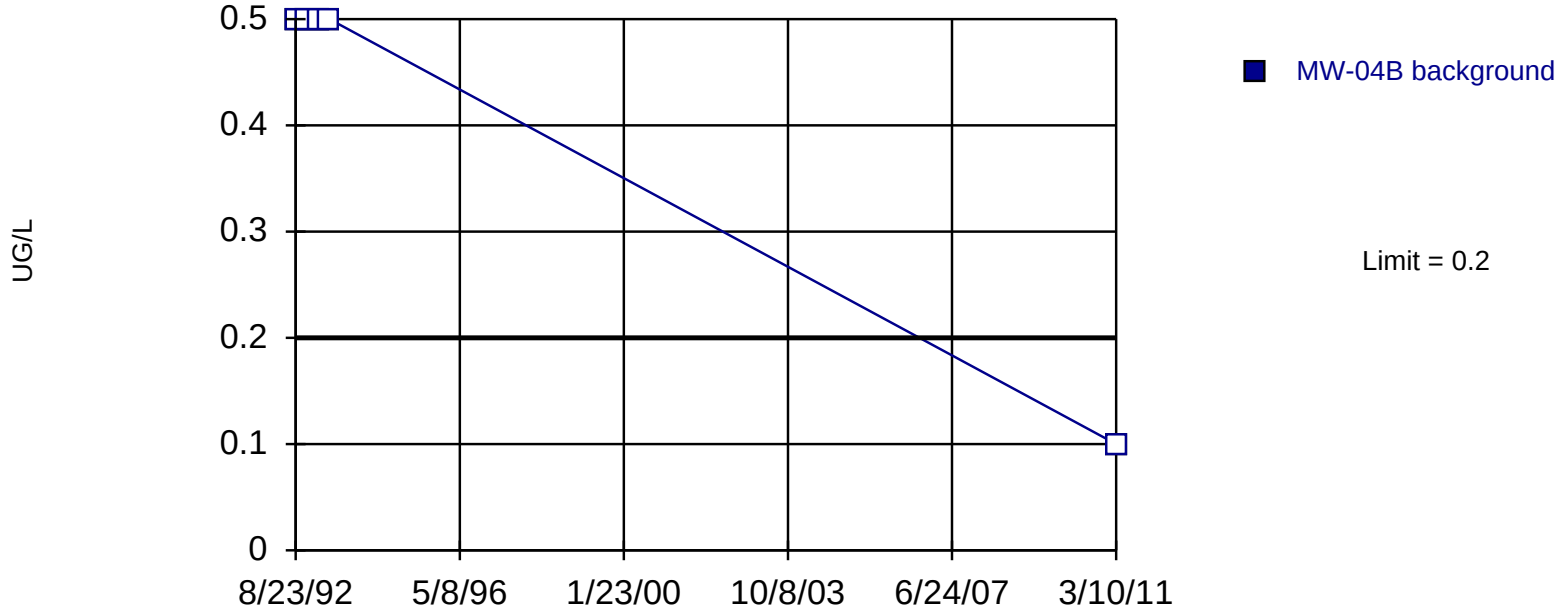
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-04B



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 5) were censored; limit is most recent reporting limit. Report alpha = 0.1667. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

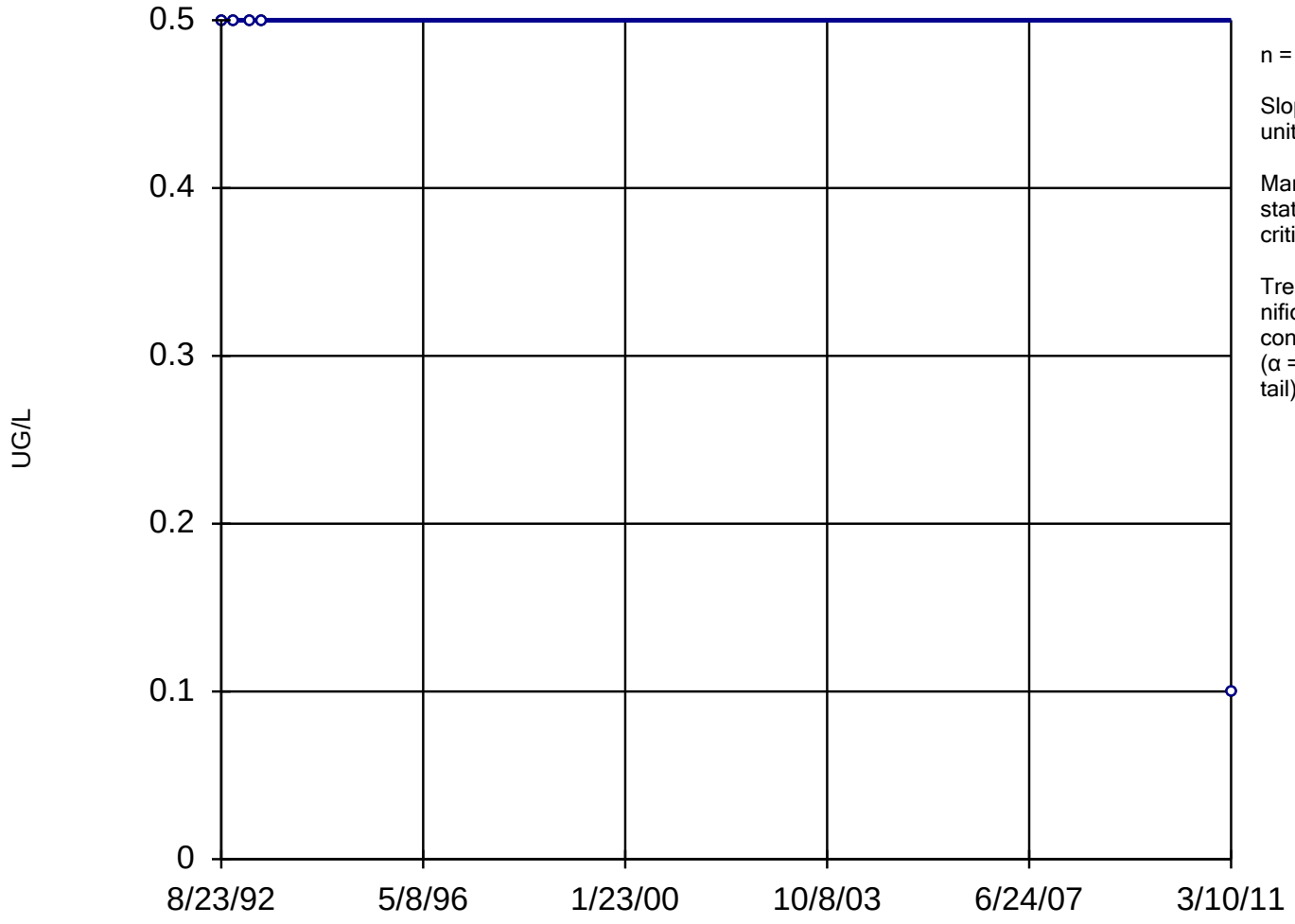
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-04B



n = 5

Slope = 0
units per year.

Mann-Kendall
statistic = -4
critical = -10

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

Constituent: TCE Analysis Run 1/28/2014 2:36 PM

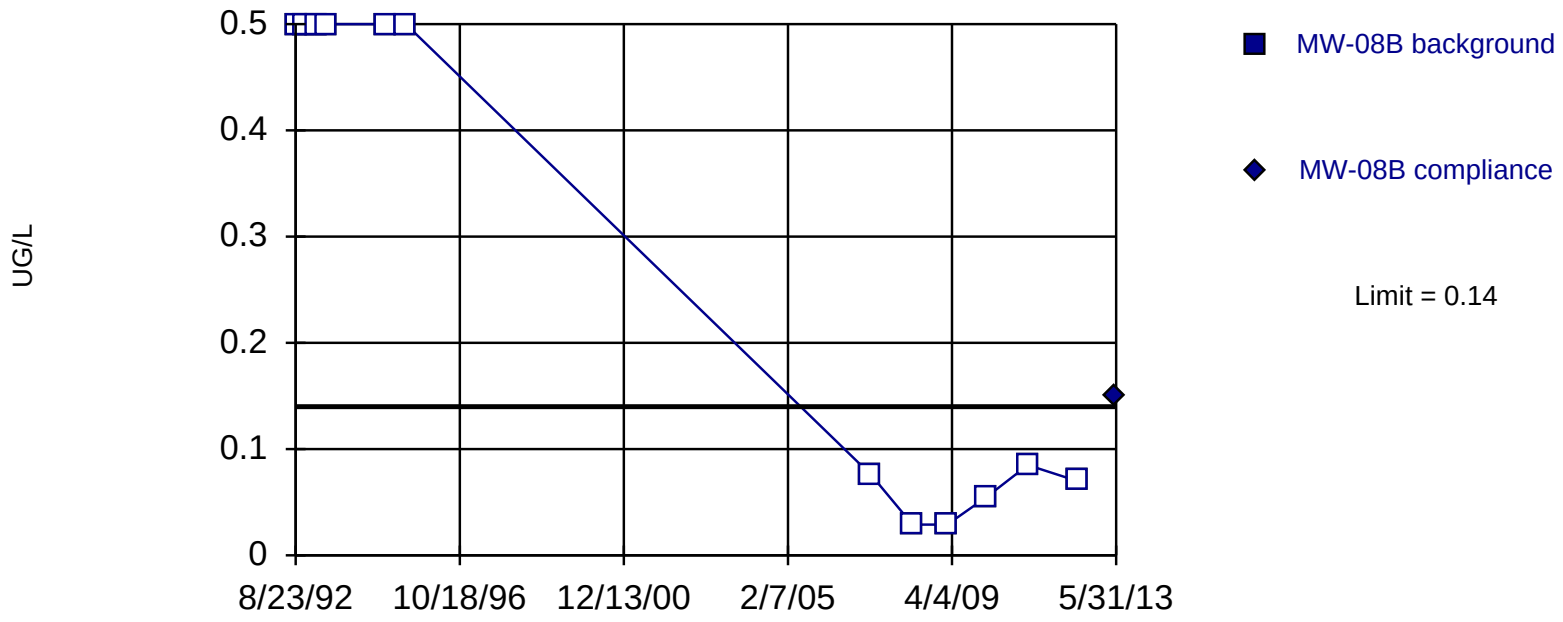
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 12) were censored; limit is most recent reporting limit. Report alpha = 0.07692. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

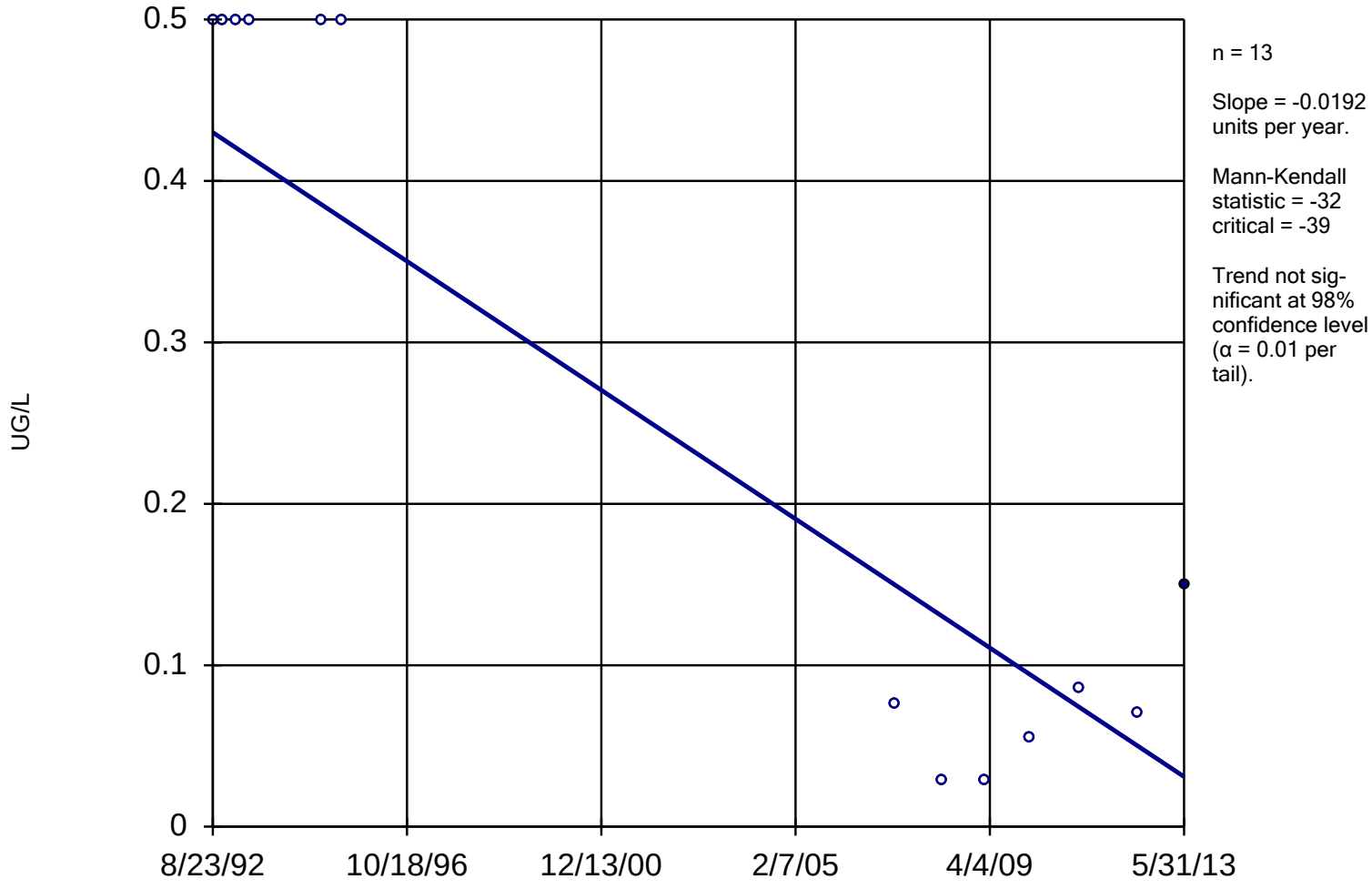
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-08B



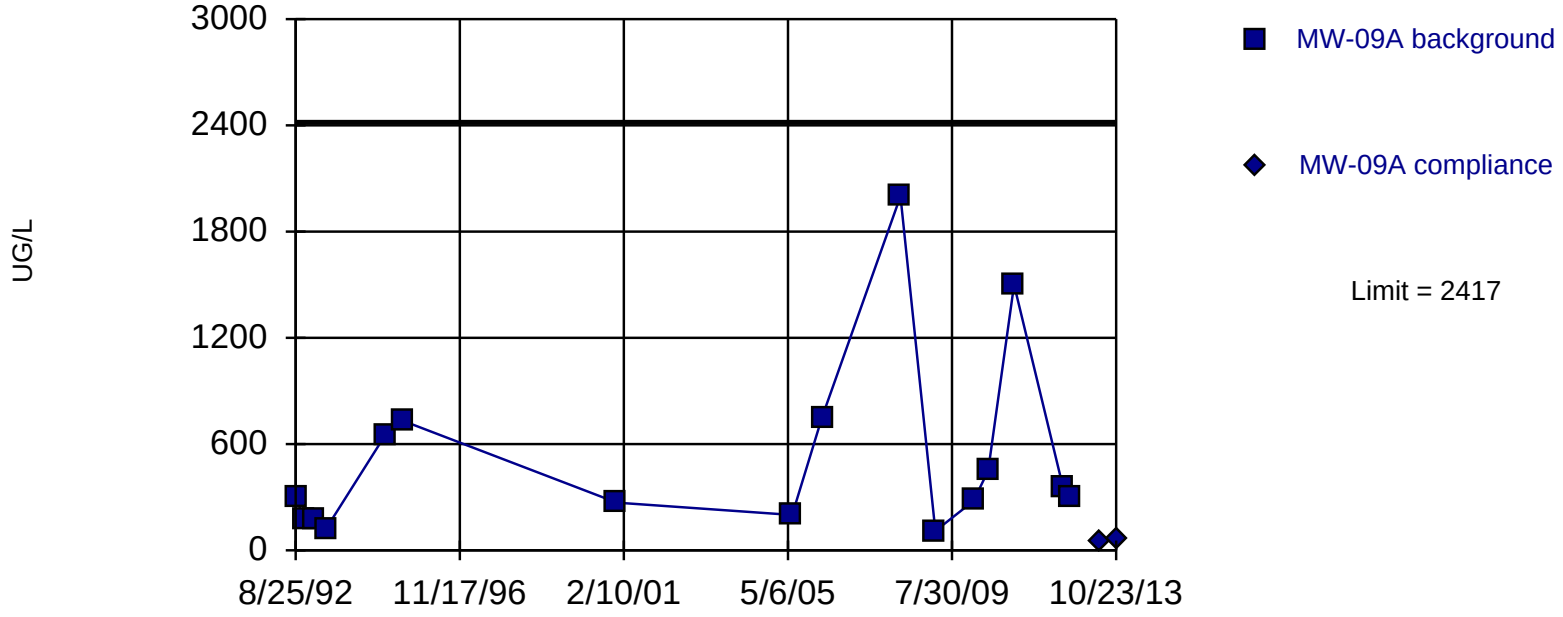
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



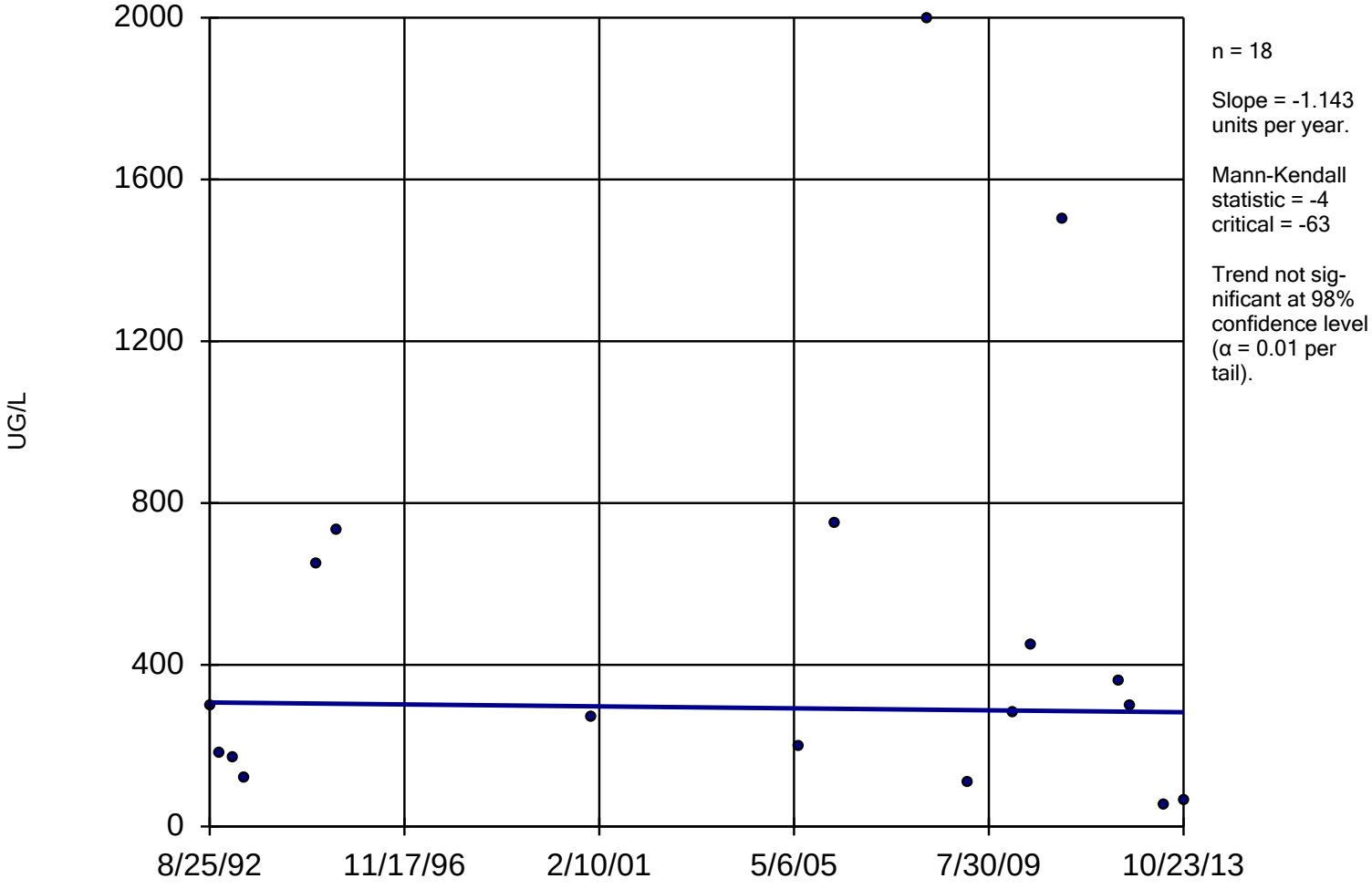
Background Data Summary (based on cube root transformation): Mean=7.421, Std. Dev.=2.237, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.896, critical = 0.887. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-09A



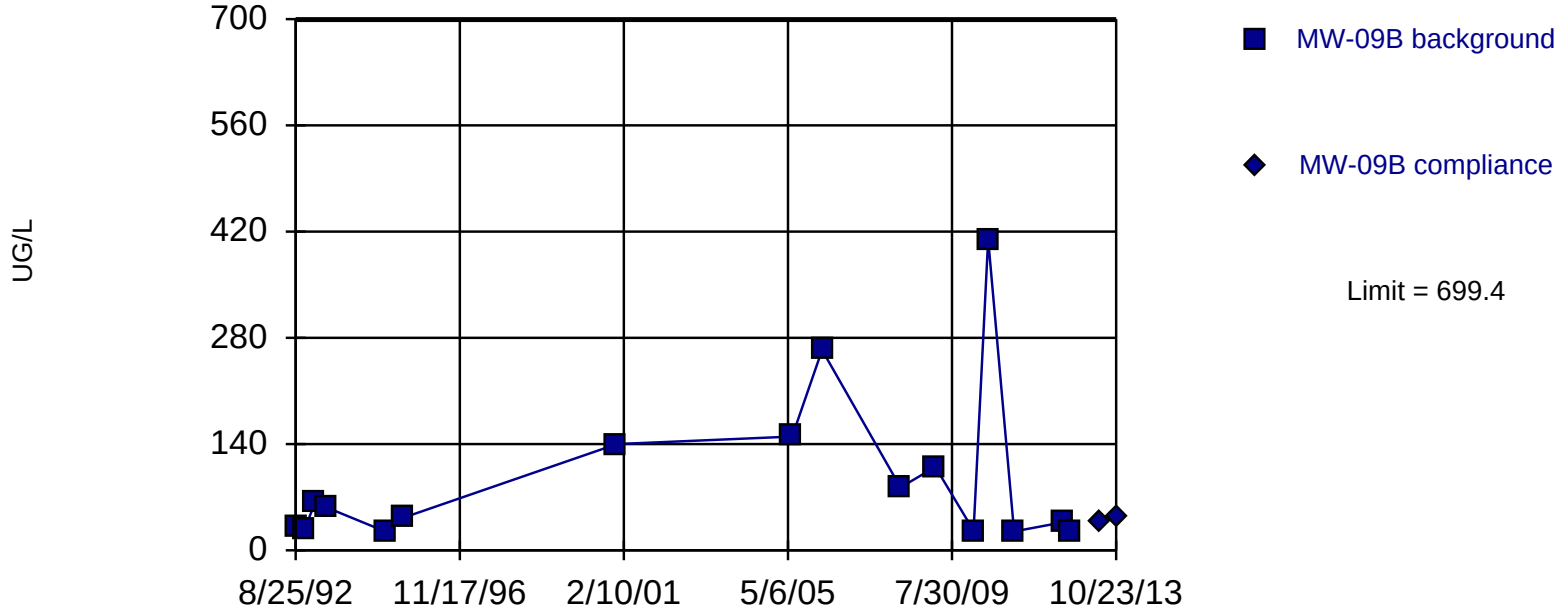
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



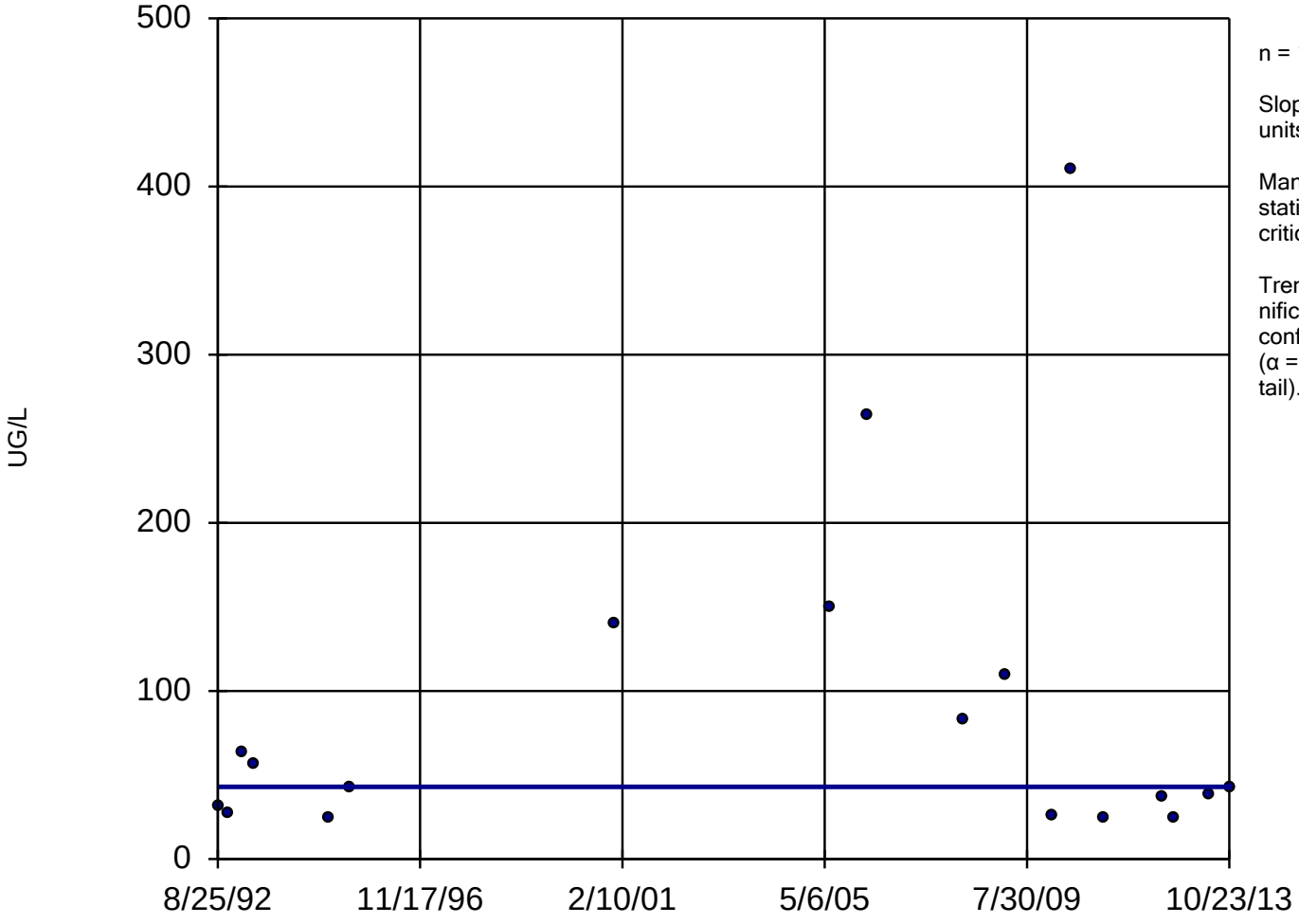
Background Data Summary (based on natural log transformation): Mean=4.118, Std. Dev.=0.9068, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8873, critical = 0.887. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-09B



n = 18

Slope = 0
units per year.

Mann-Kendall
statistic = -1
critical = -63

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

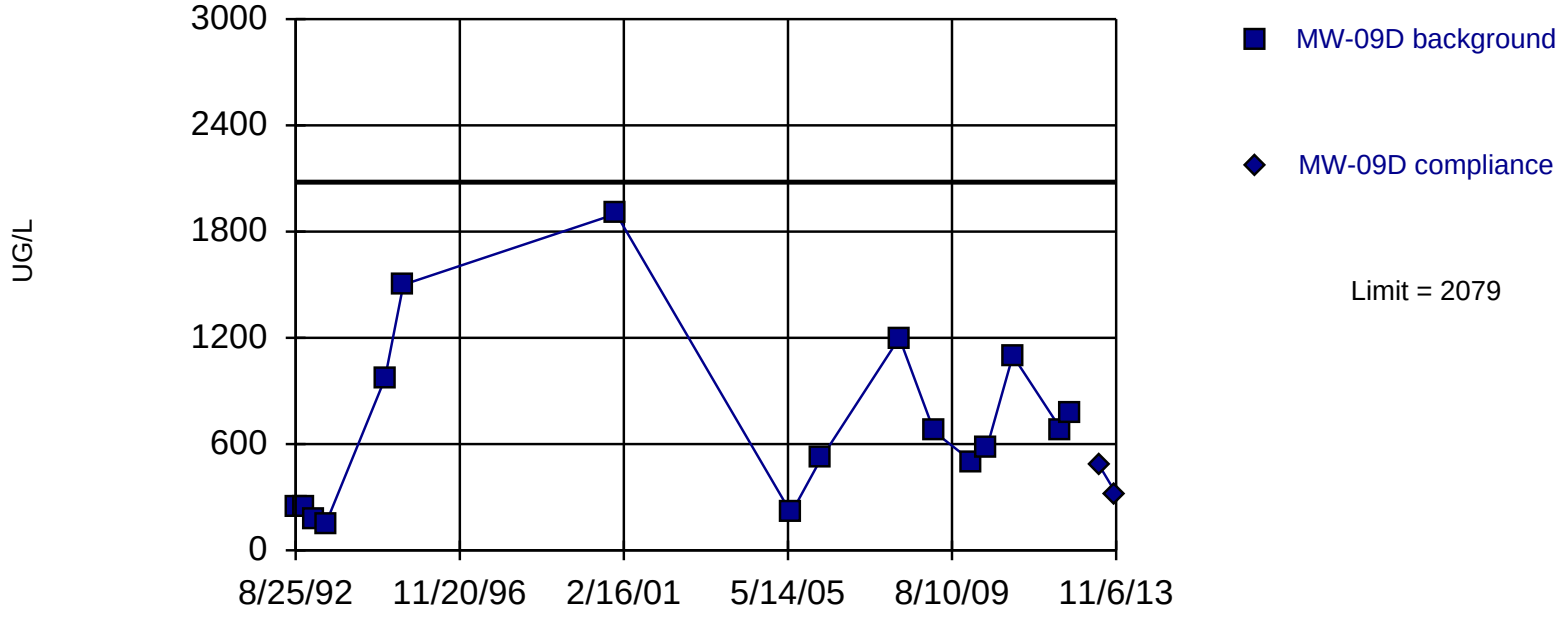
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



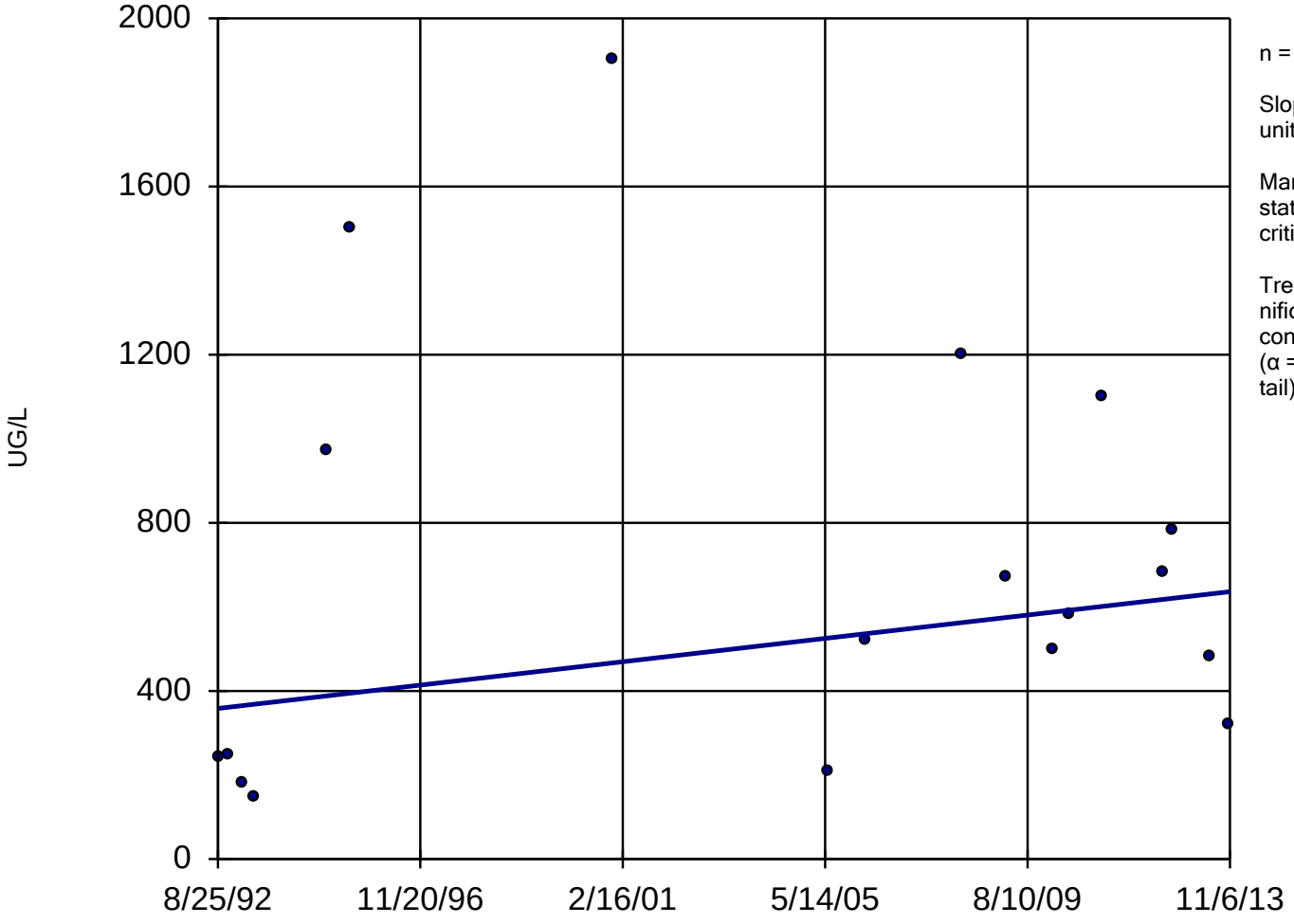
Background Data Summary: Mean=714.3, Std. Dev.=508.7, n=16. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9096, critical = 0.887. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-09D



n = 18

Slope = 13.1 units per year.

Mann-Kendall statistic = 21
critical = 63

Trend not significant at 98% confidence level (α = 0.01 per tail).

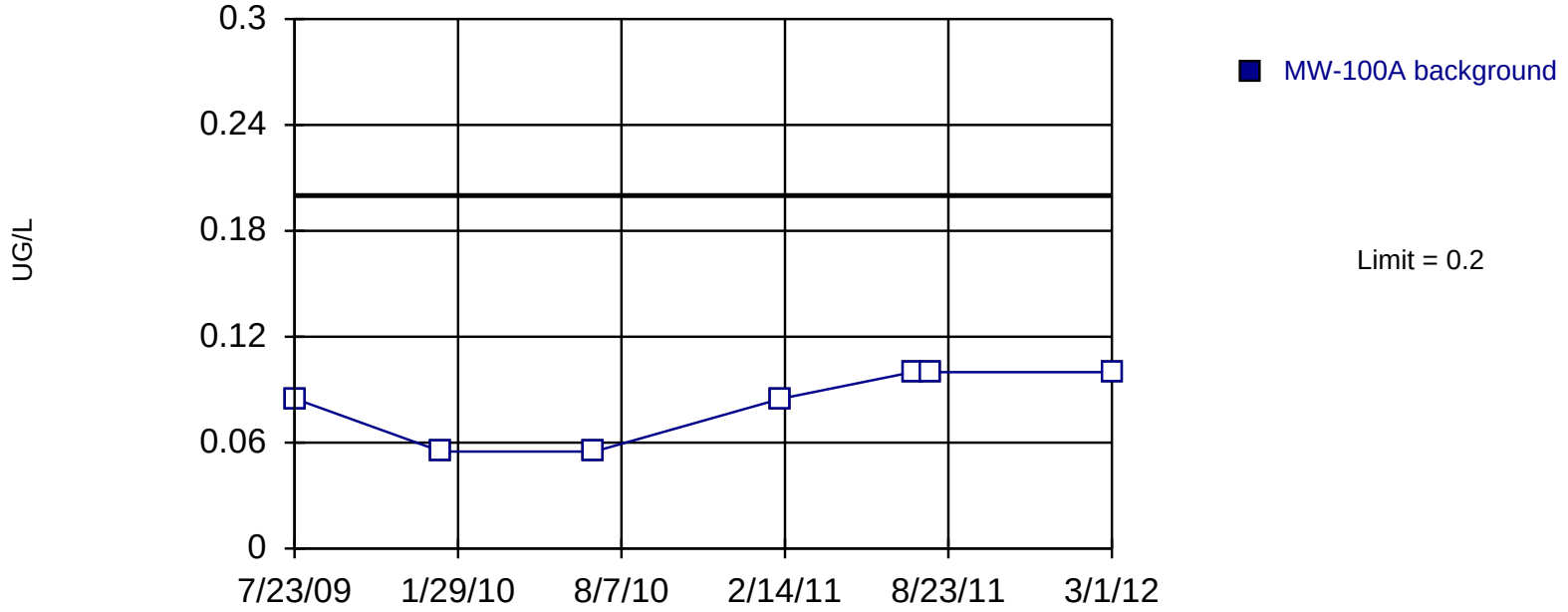
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-100A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 7) were censored; limit is most recent reporting limit. Report alpha = 0.125. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

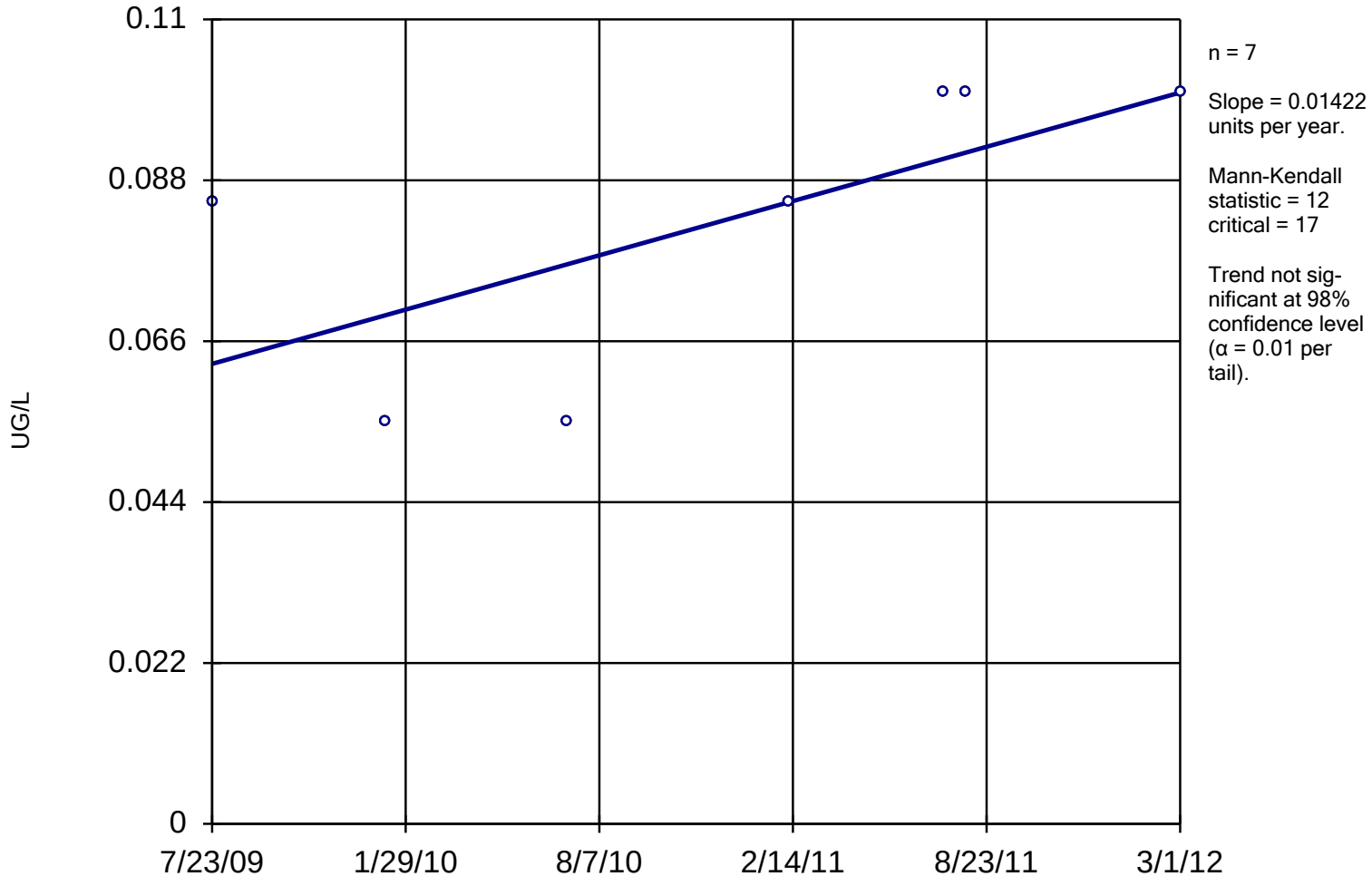
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-100A



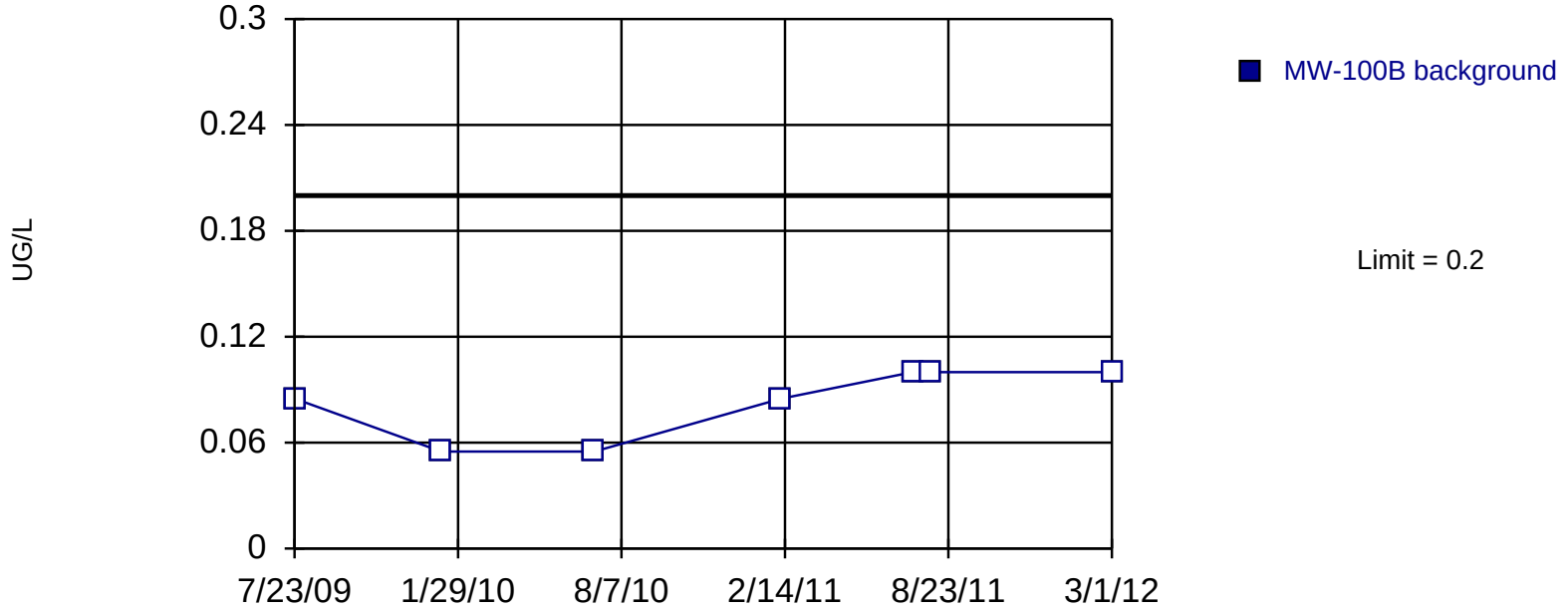
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-100B



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 7) were censored; limit is most recent reporting limit. Report alpha = 0.125. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

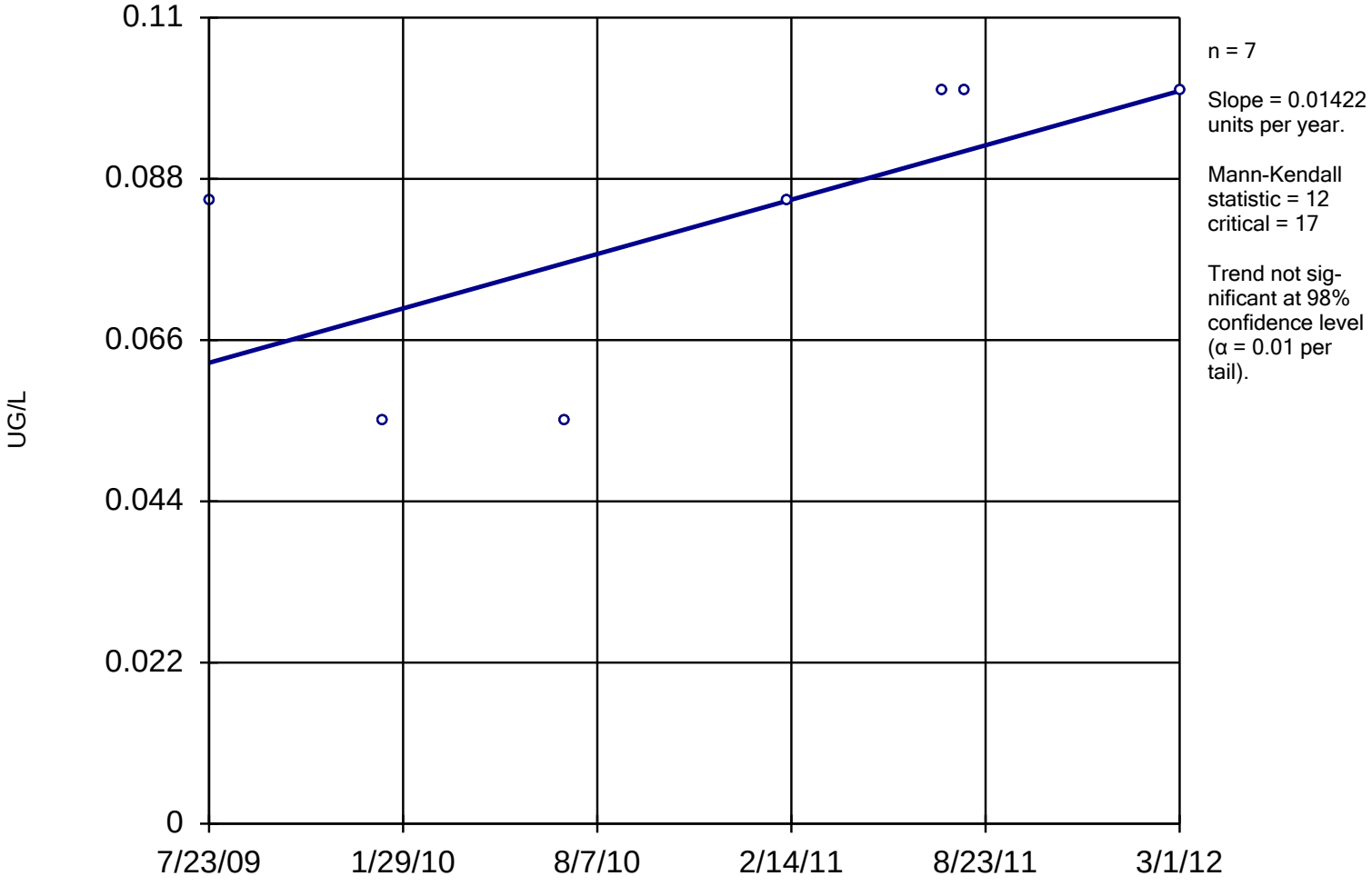
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-100B



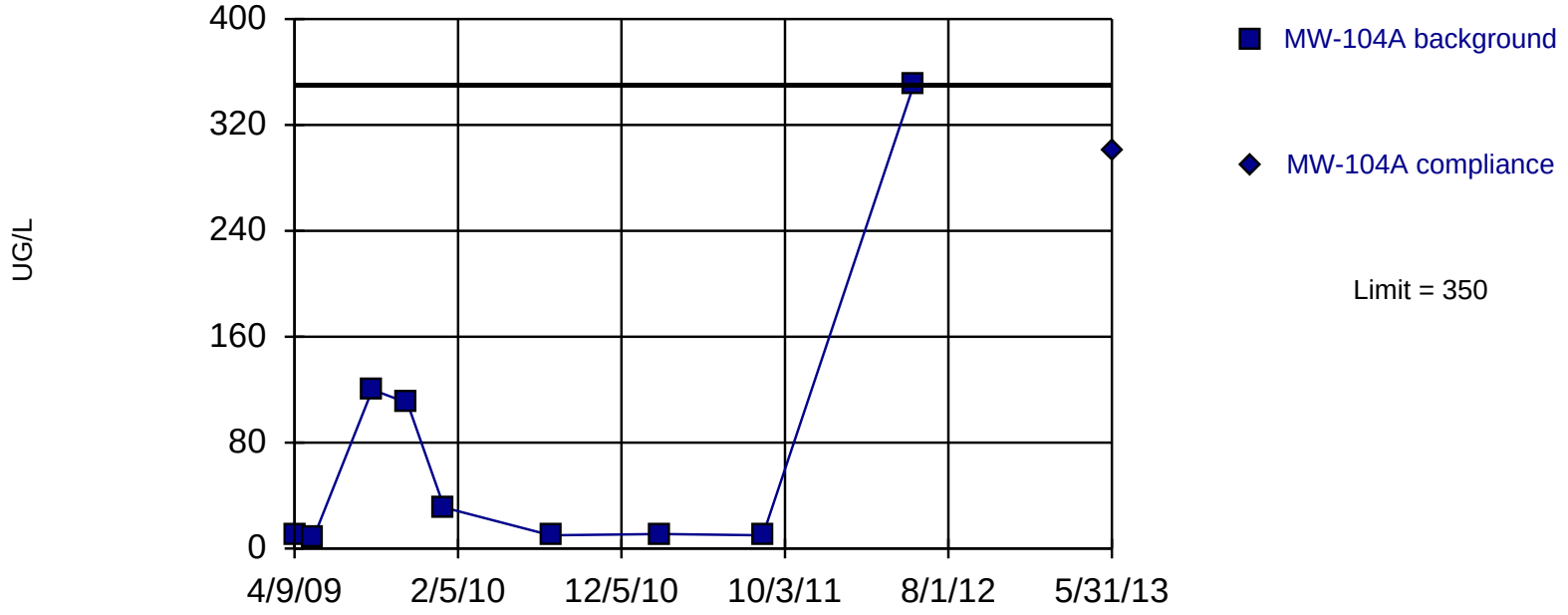
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Non-parametric



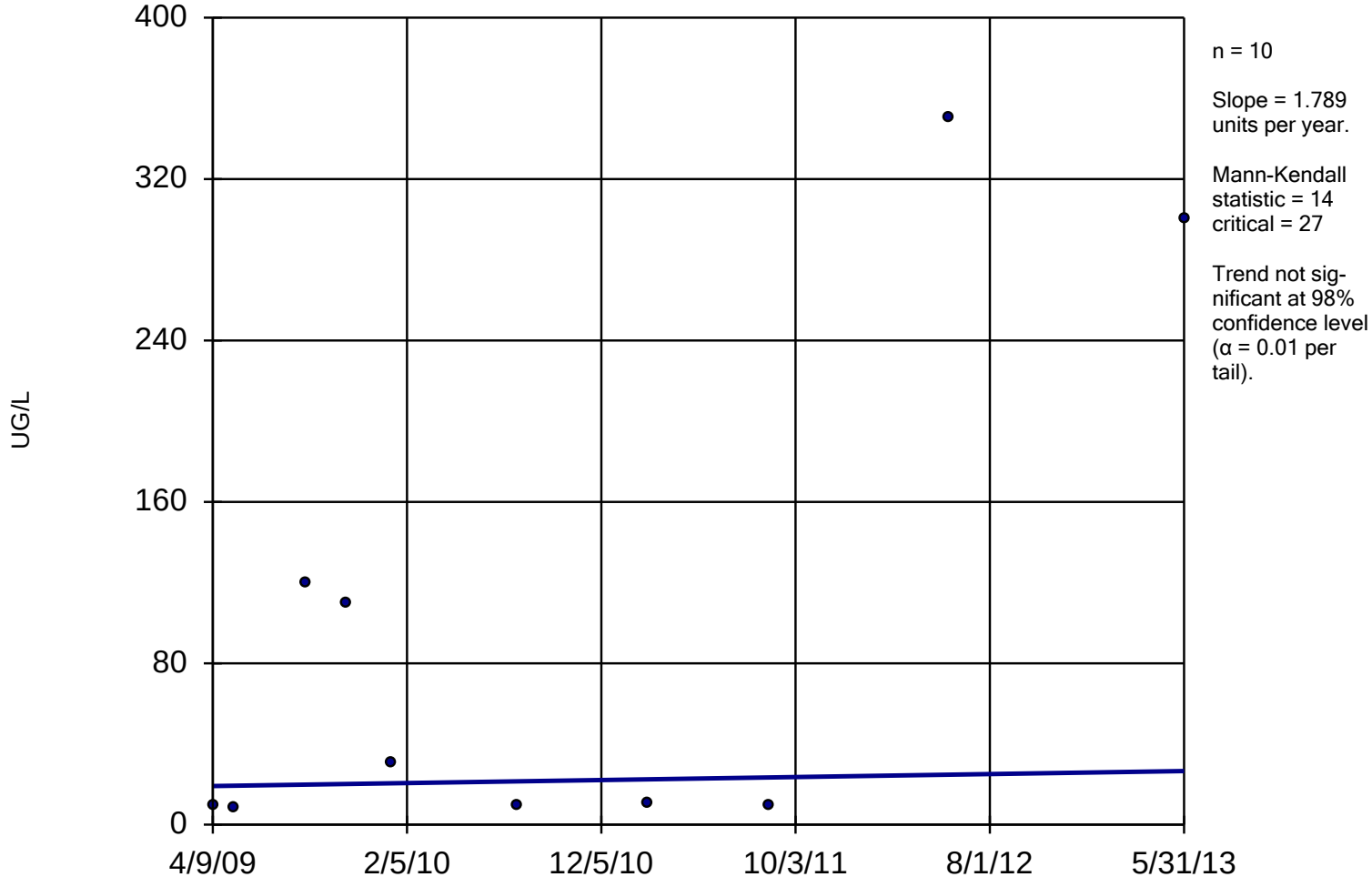
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 9 background values. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-104A



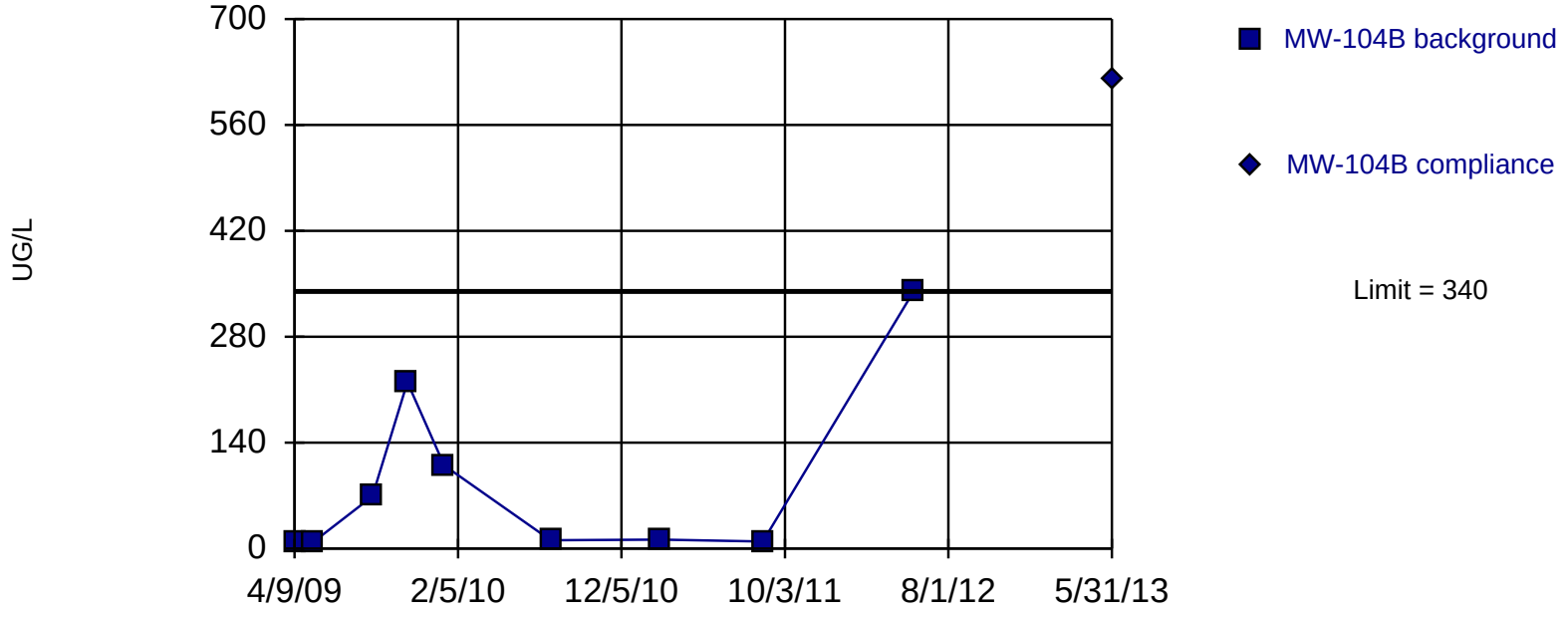
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



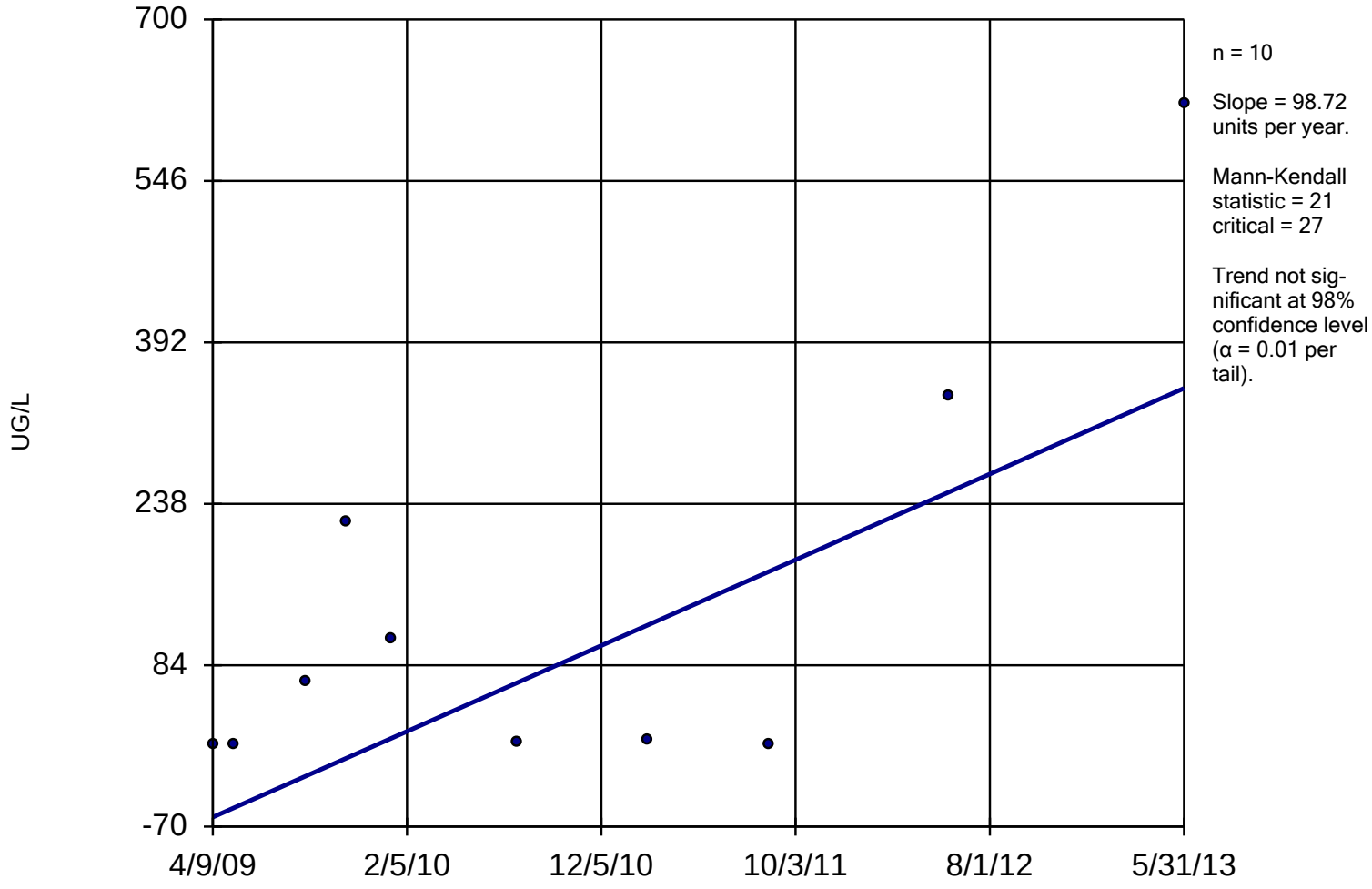
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 9 background values. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-104B



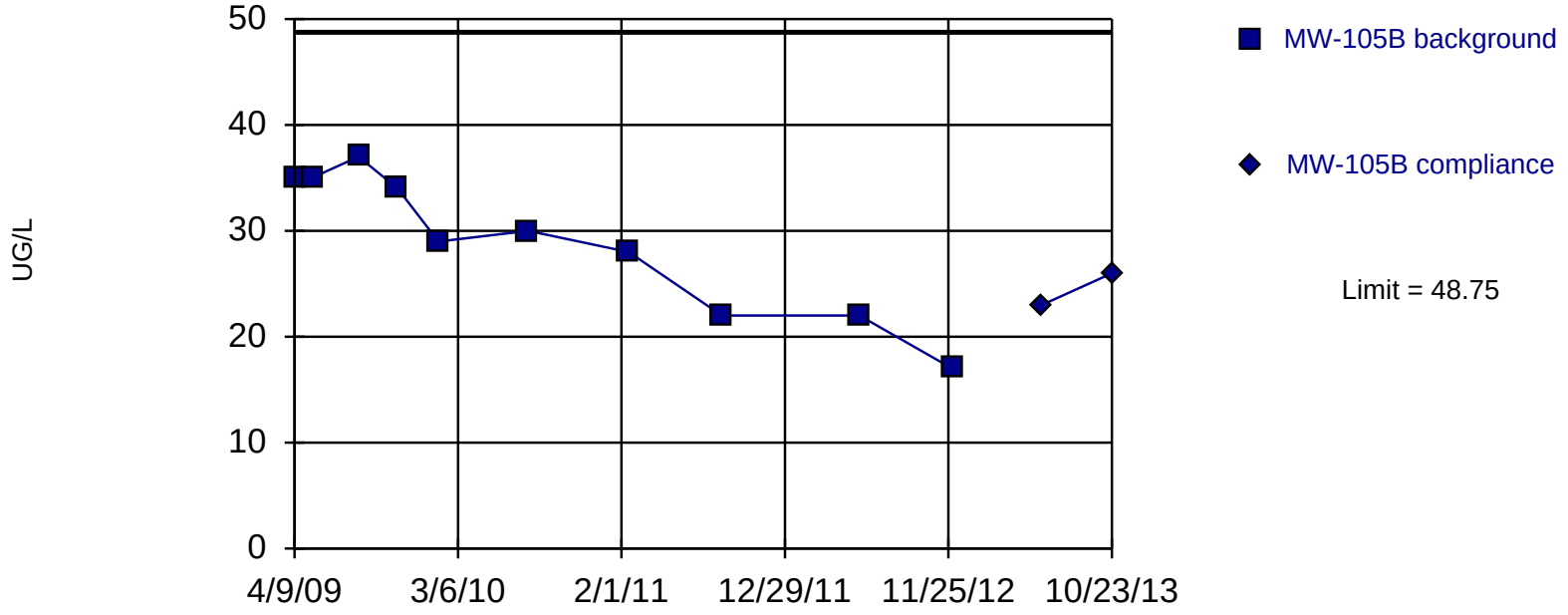
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



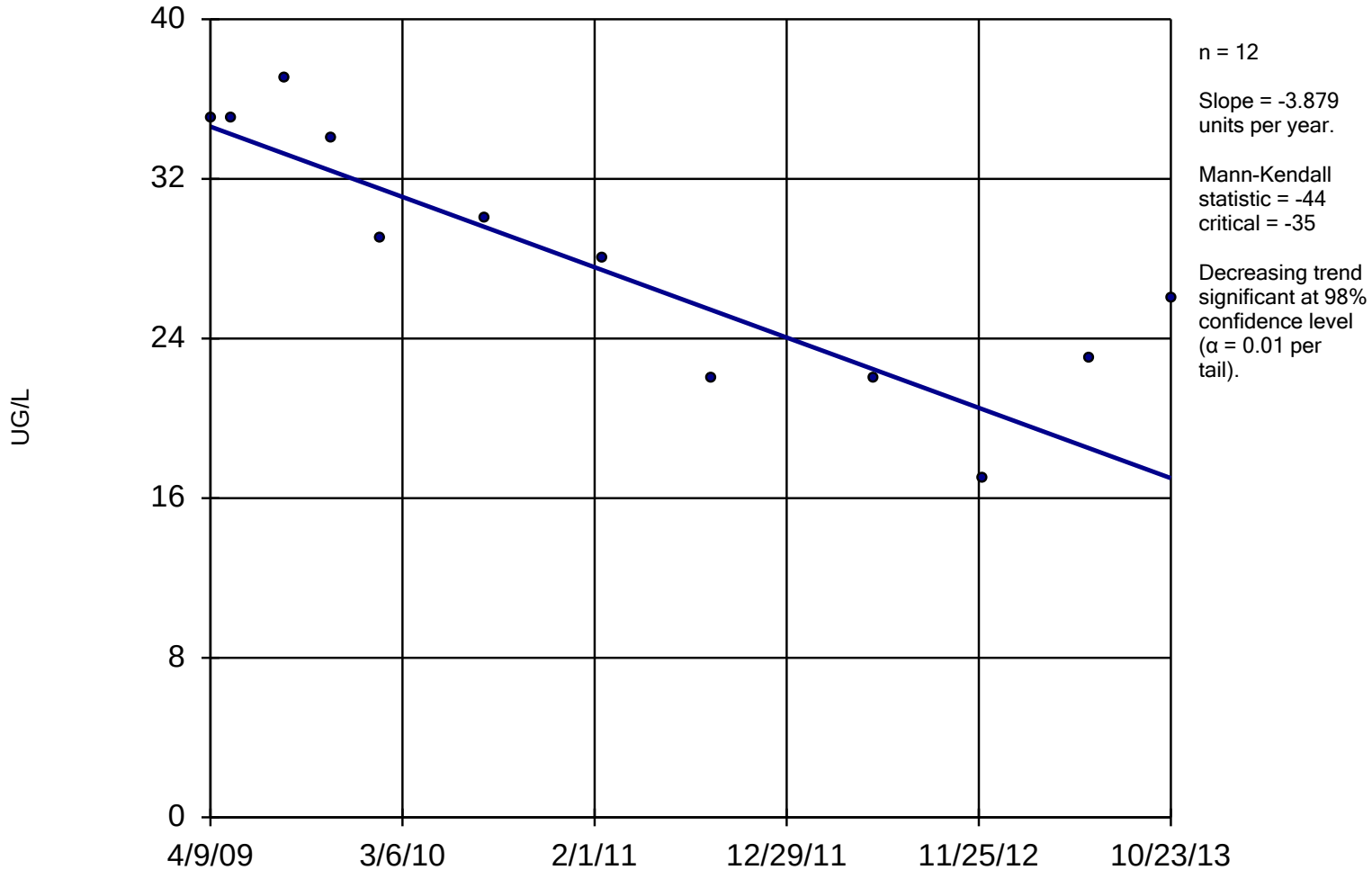
Background Data Summary: Mean=28.9, Std. Dev.=6.707, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9213, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-105B



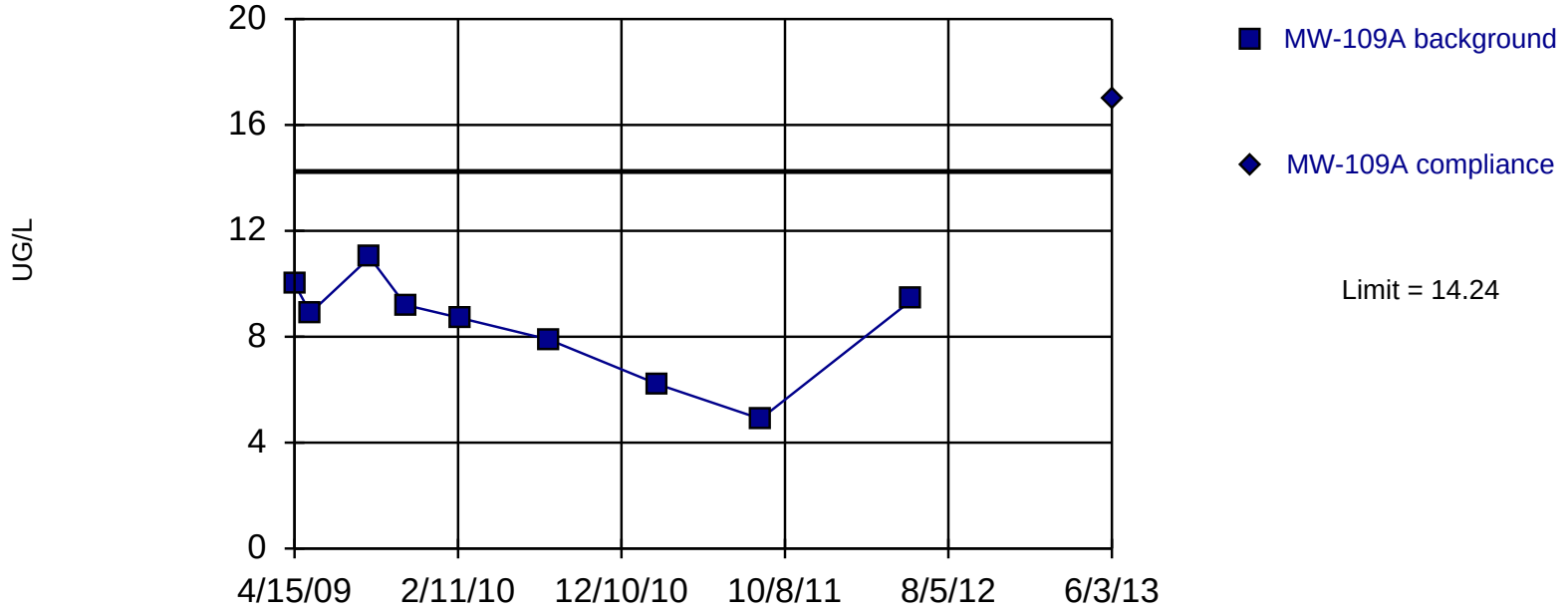
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Exceeds Limit

Prediction Limit

Intrawell Parametric



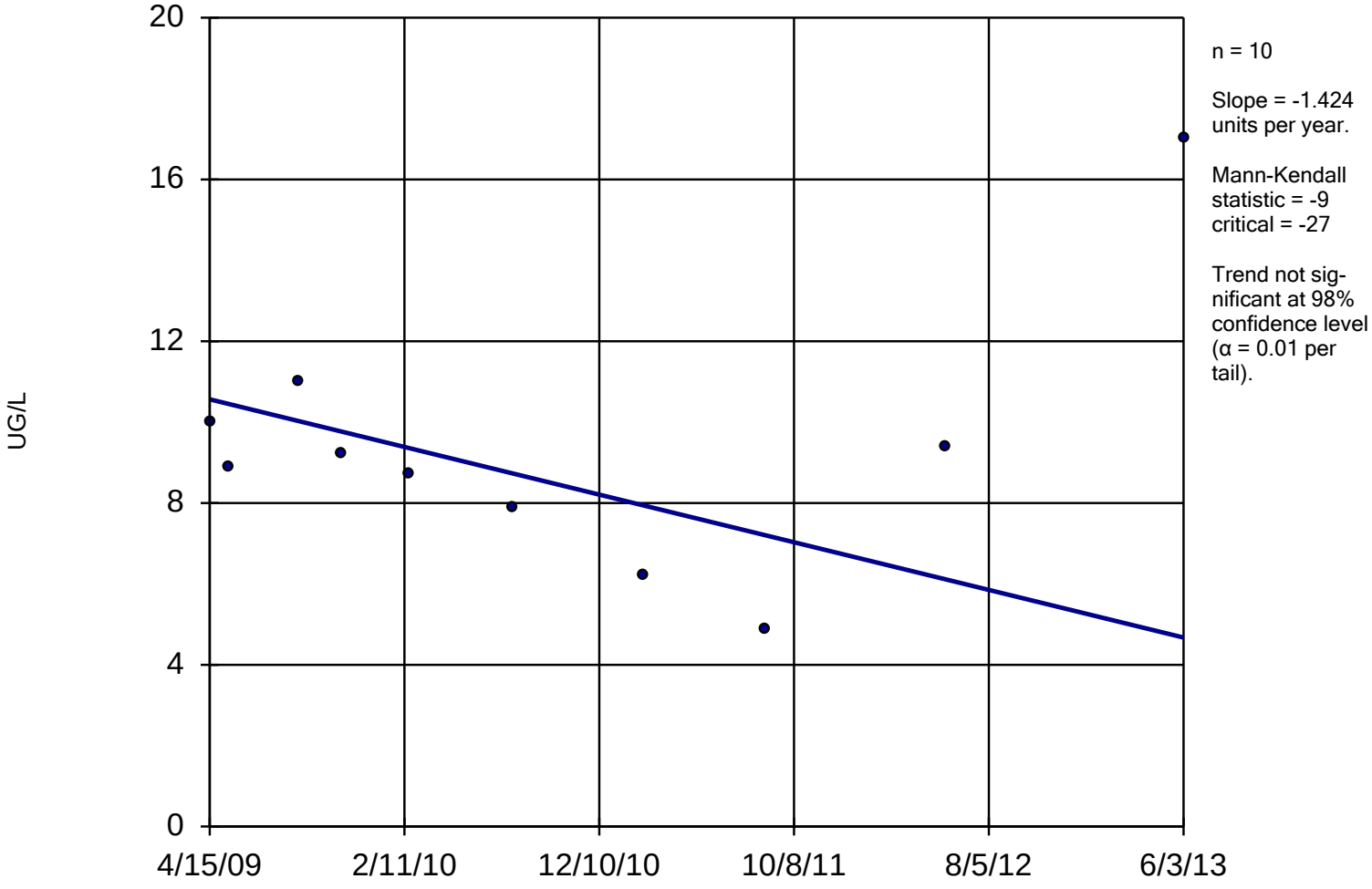
Background Data Summary: Mean=8.467, Std. Dev.=1.891, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9339, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-109A



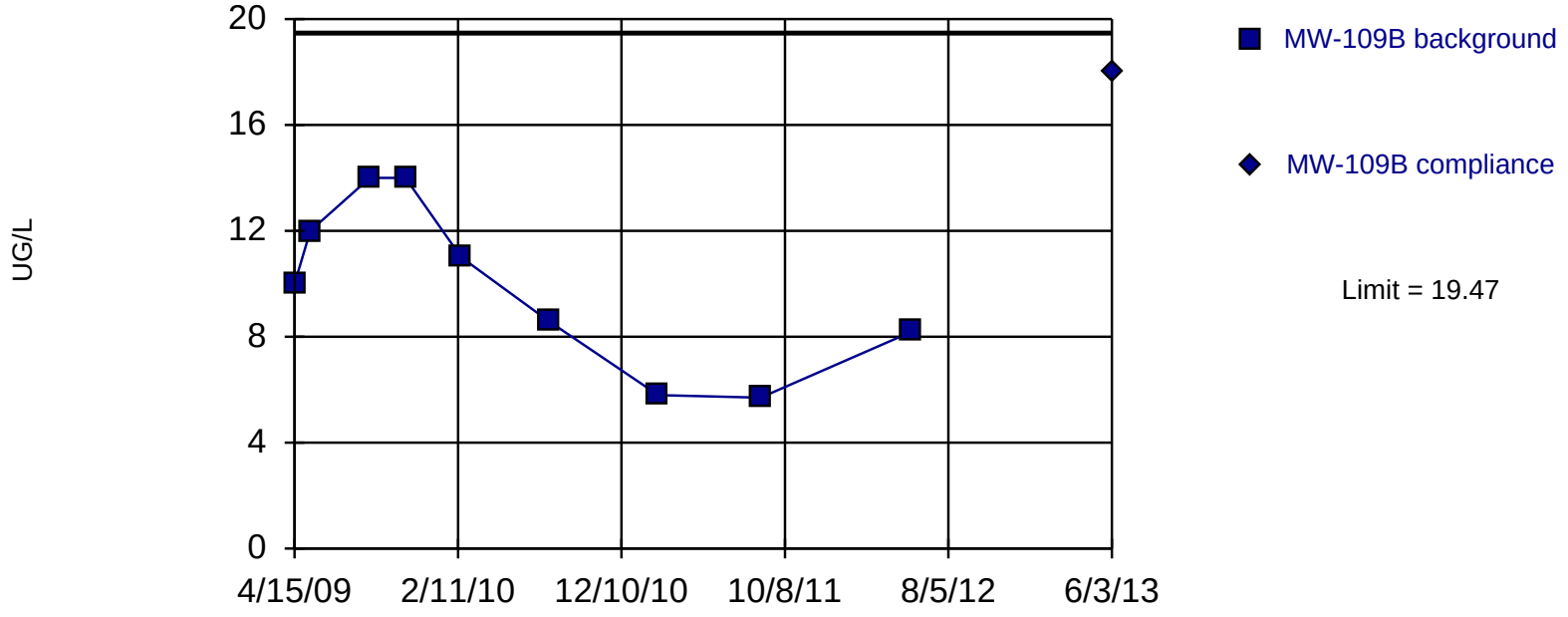
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



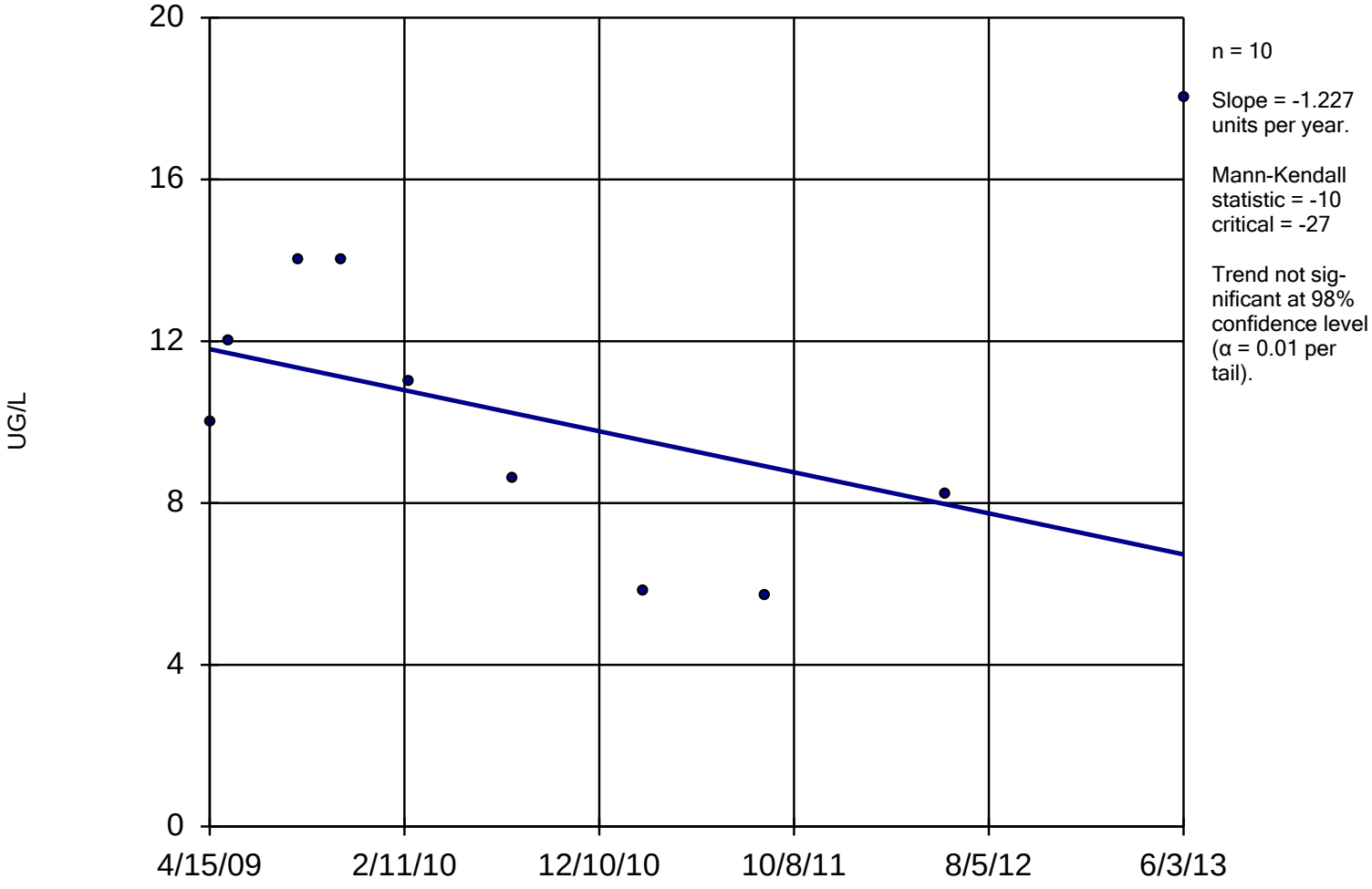
Background Data Summary: Mean=9.922, Std. Dev.=3.128, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9285, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-109B



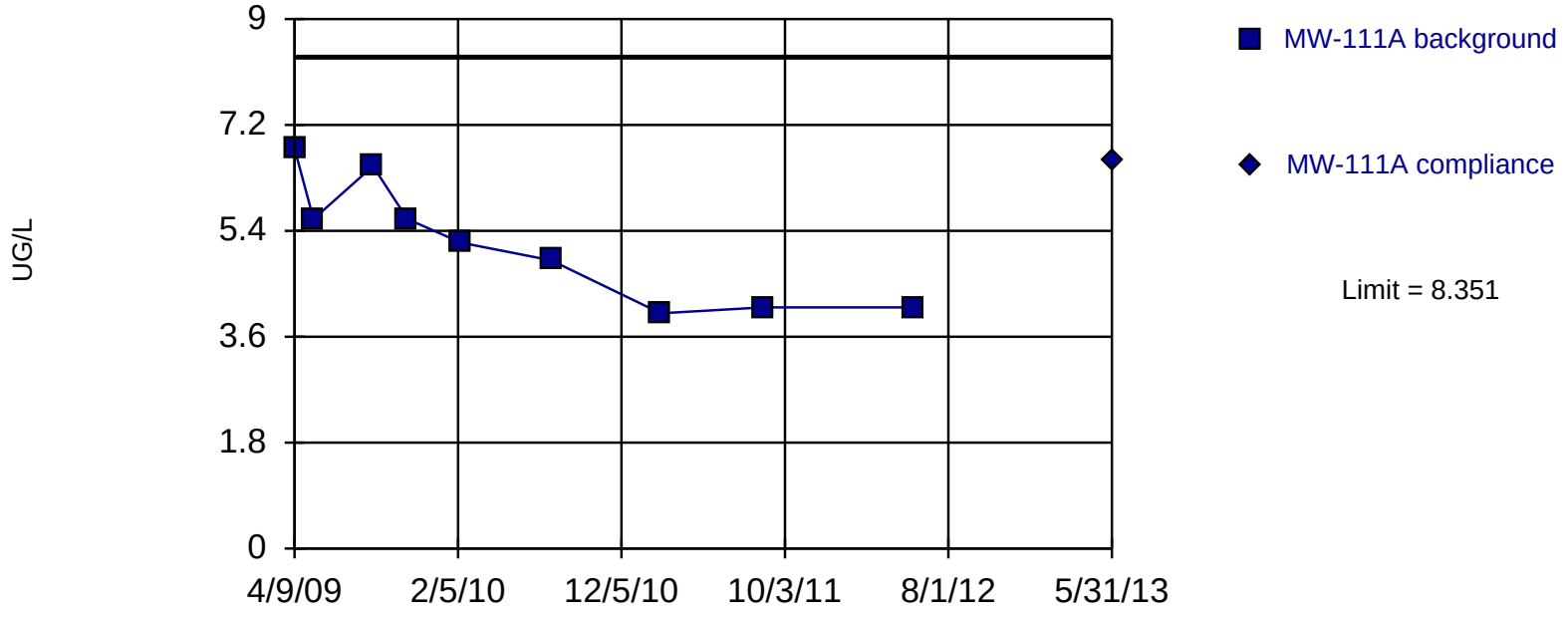
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



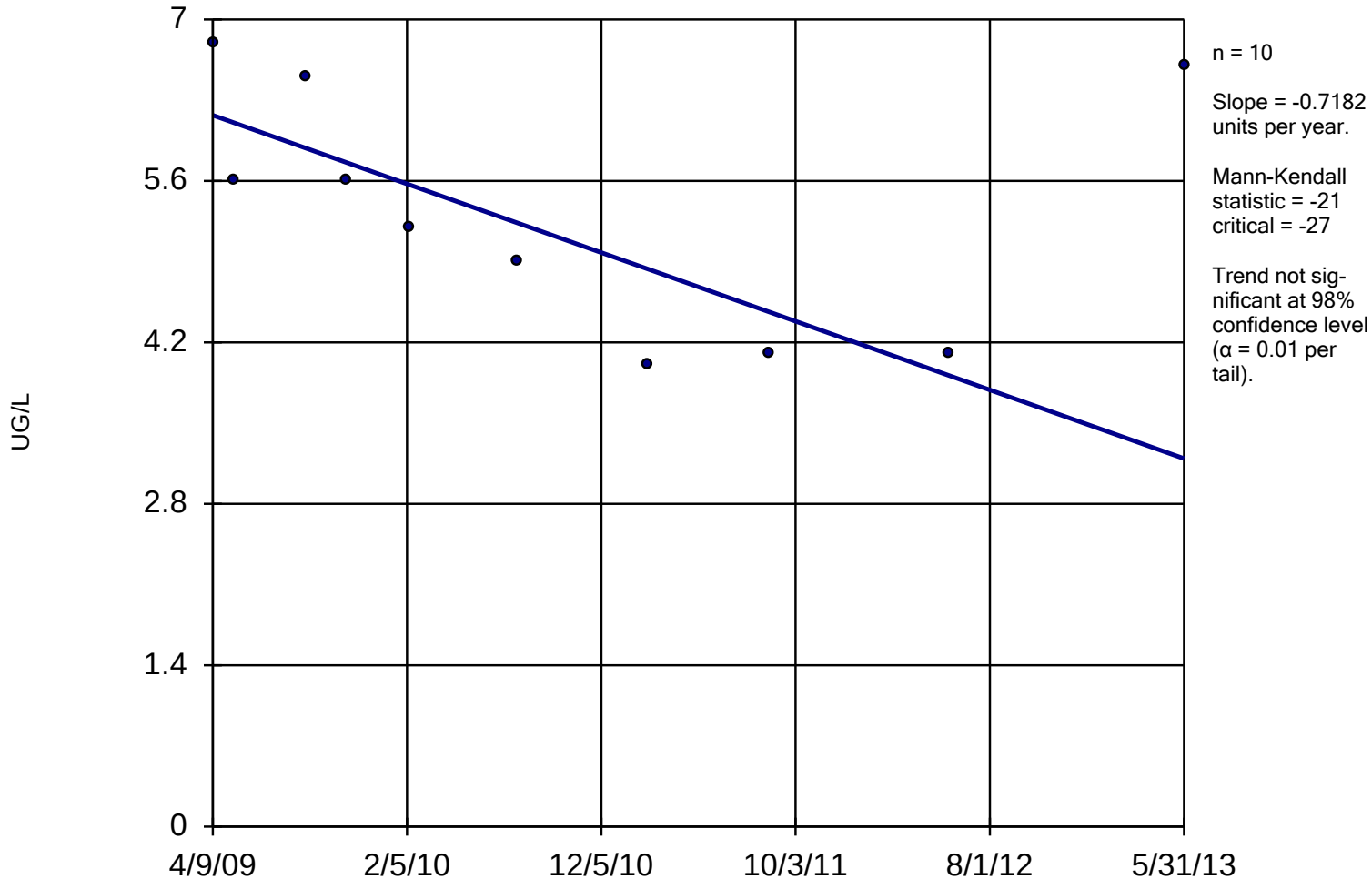
Background Data Summary: Mean=5.2, Std. Dev.=1.032, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9136, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-111A



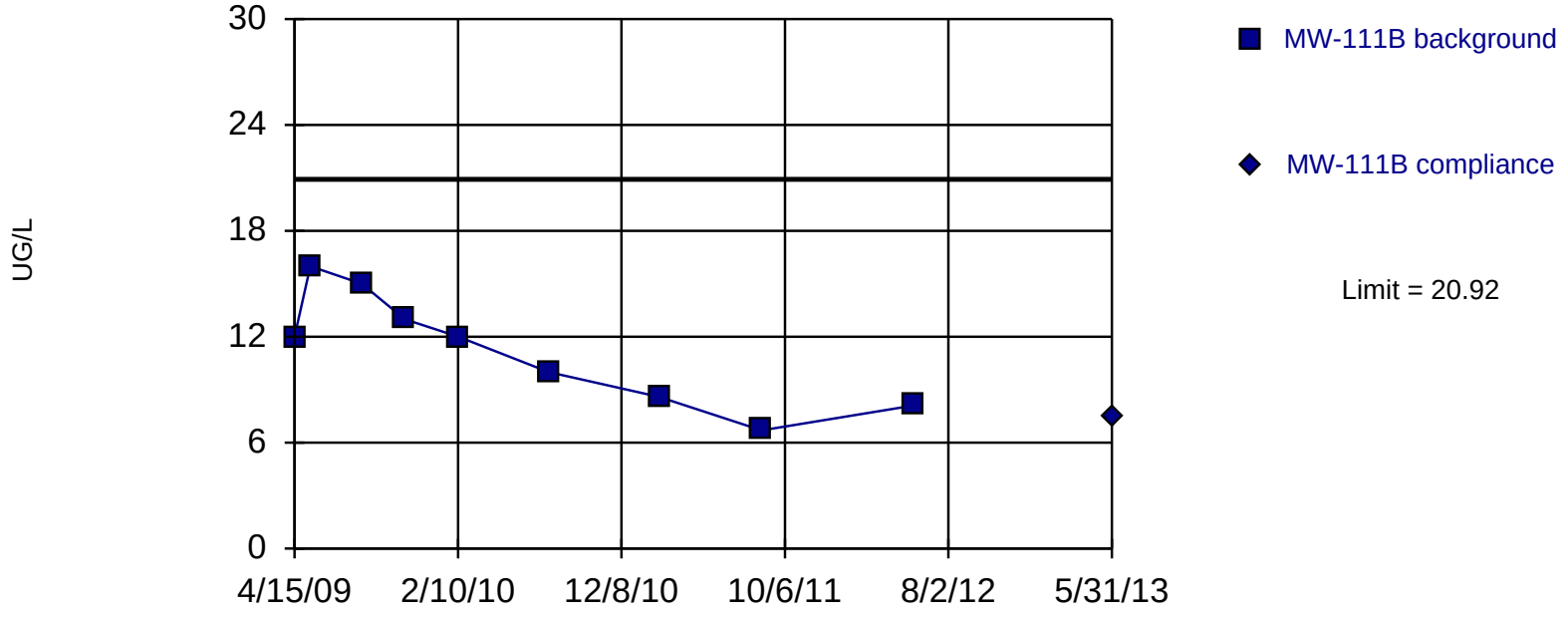
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



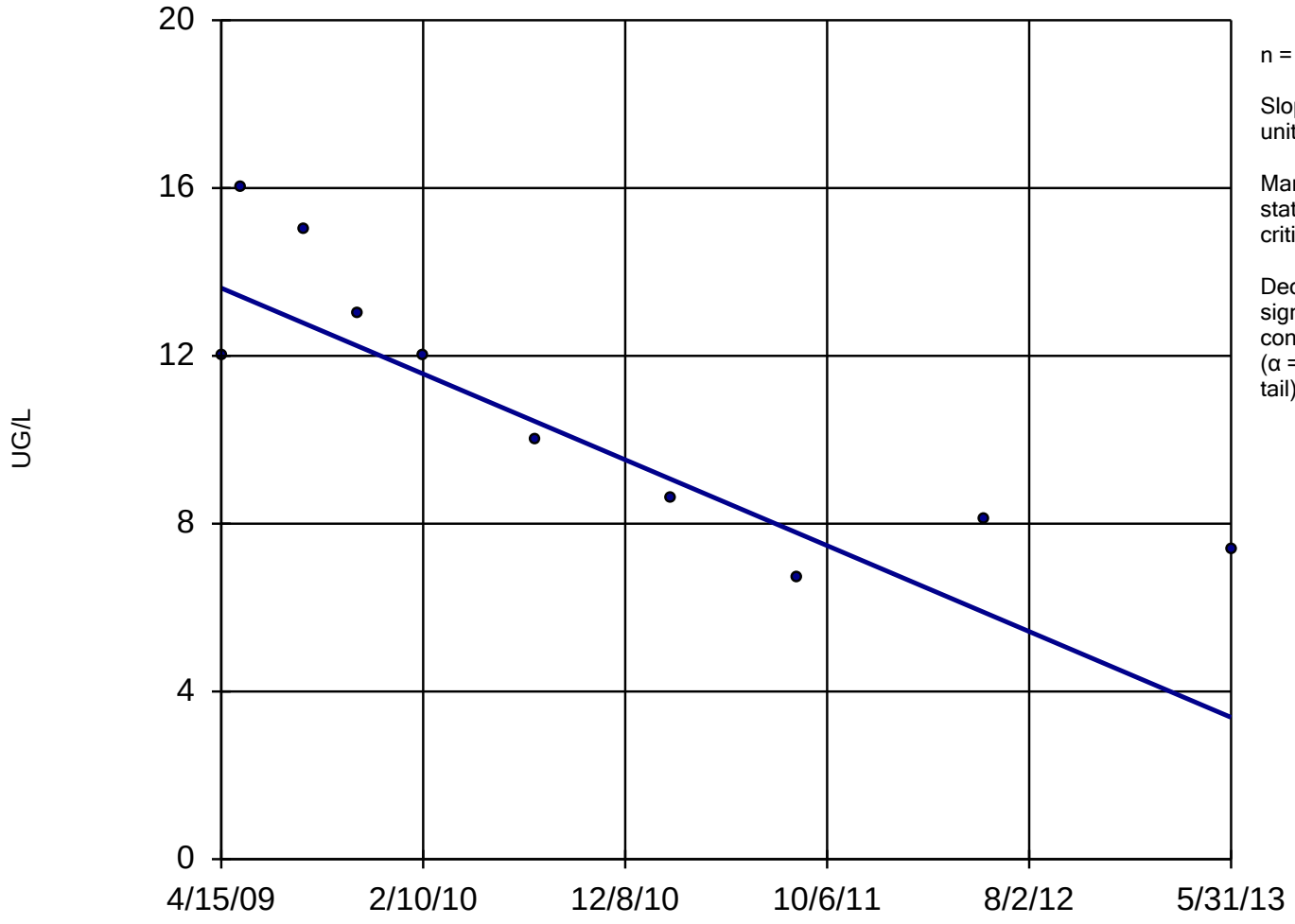
Background Data Summary: Mean=11.27, Std. Dev.=3.163, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9618, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-111B



n = 10

Slope = -2.479 units per year.

Mann-Kendall statistic = -34
critical = -27

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

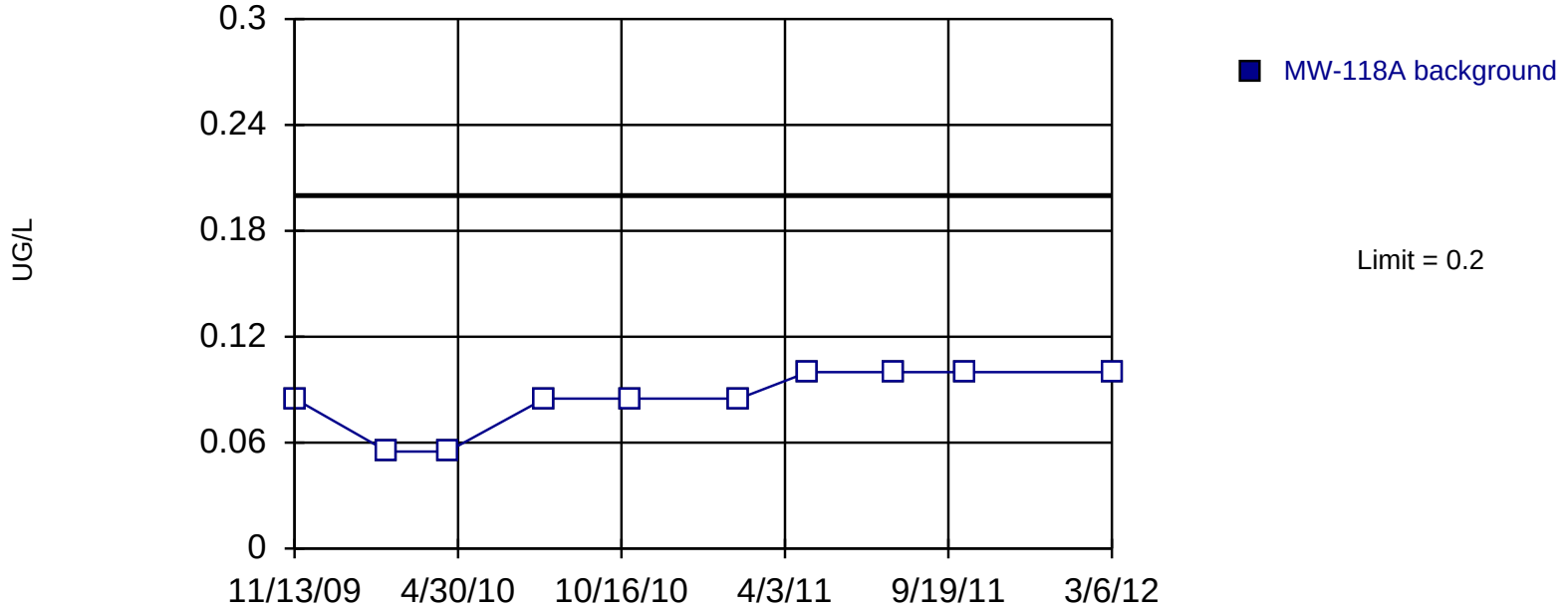
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-118A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Report alpha = 0.09091. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

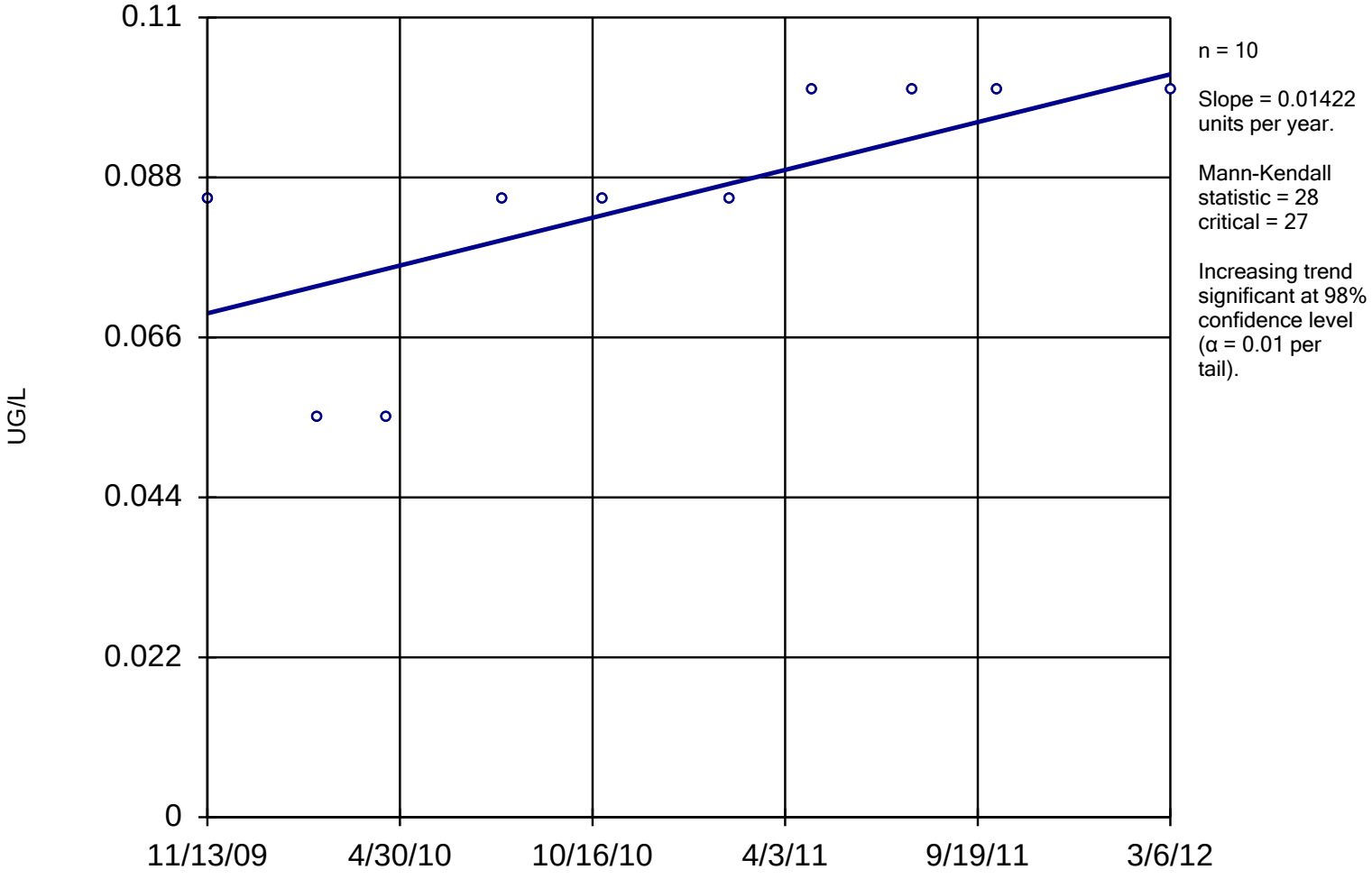
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-118A



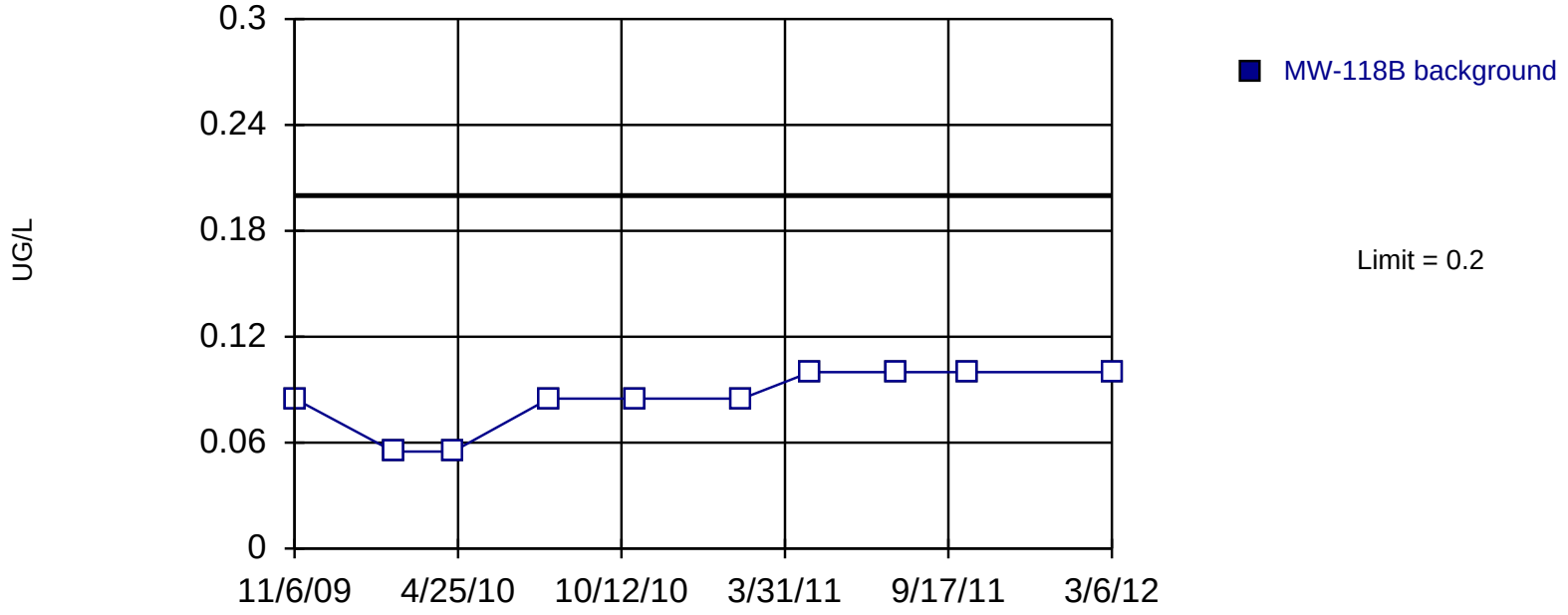
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-118B



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Report alpha = 0.09091. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

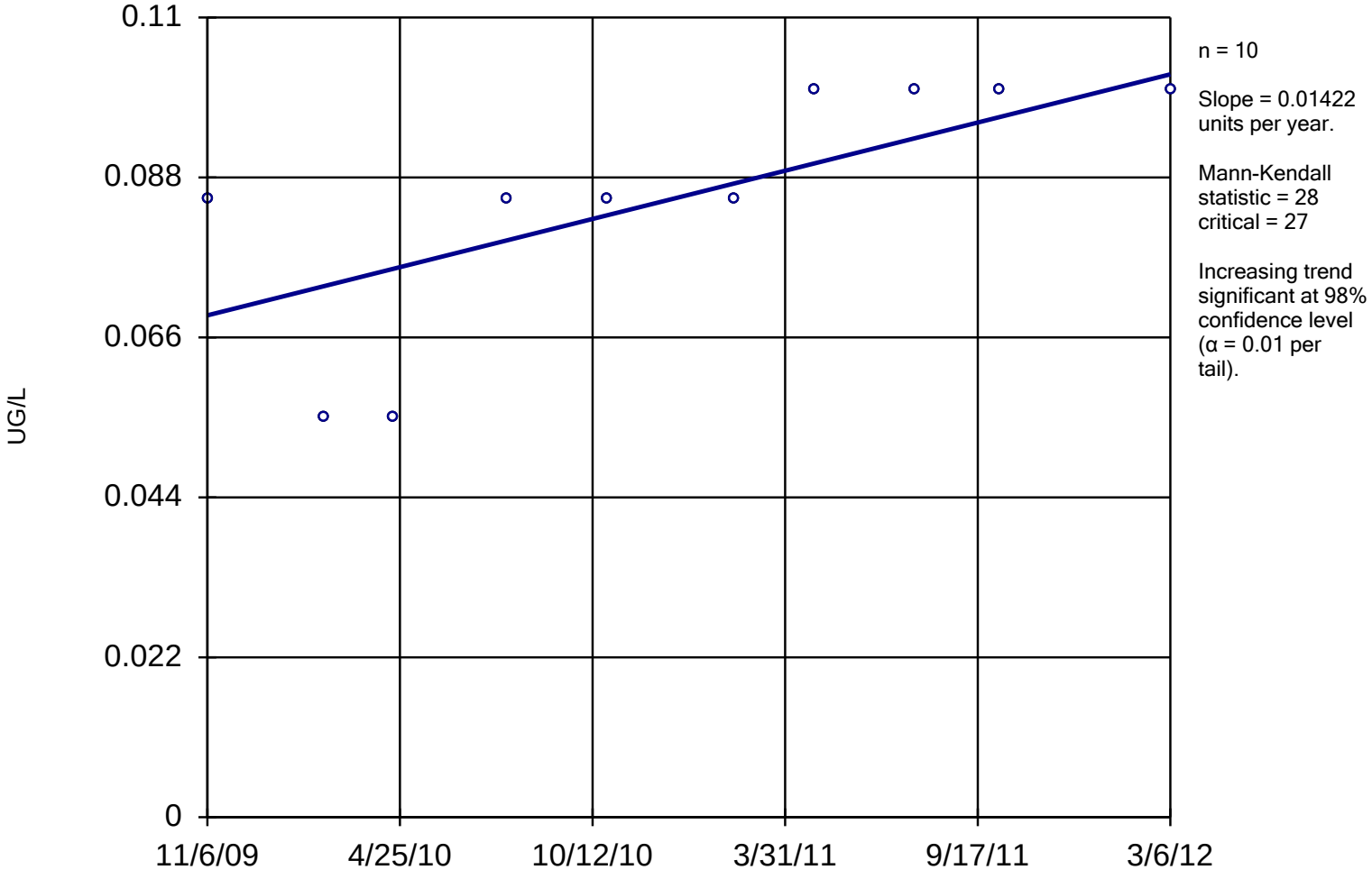
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-118B



Constituent: TCE Analysis Run 1/28/2014 2:36 PM

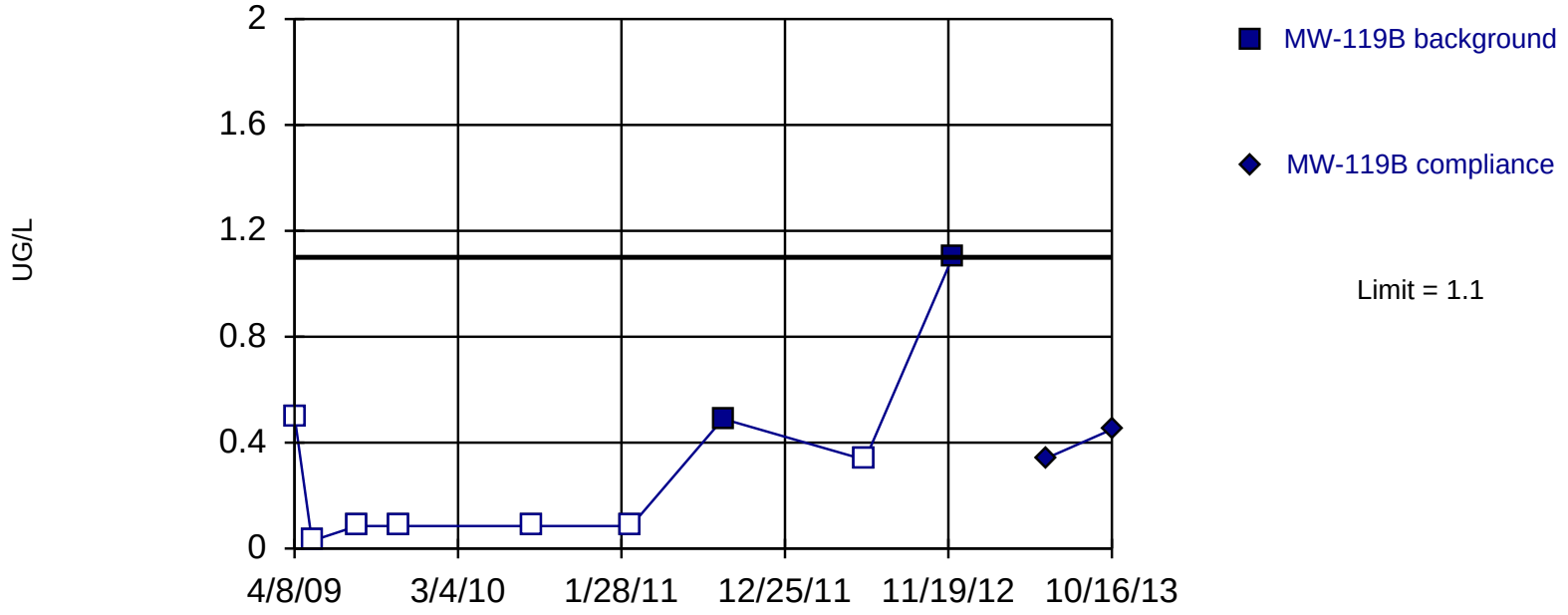
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 9 background values. 77.78% NDs. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

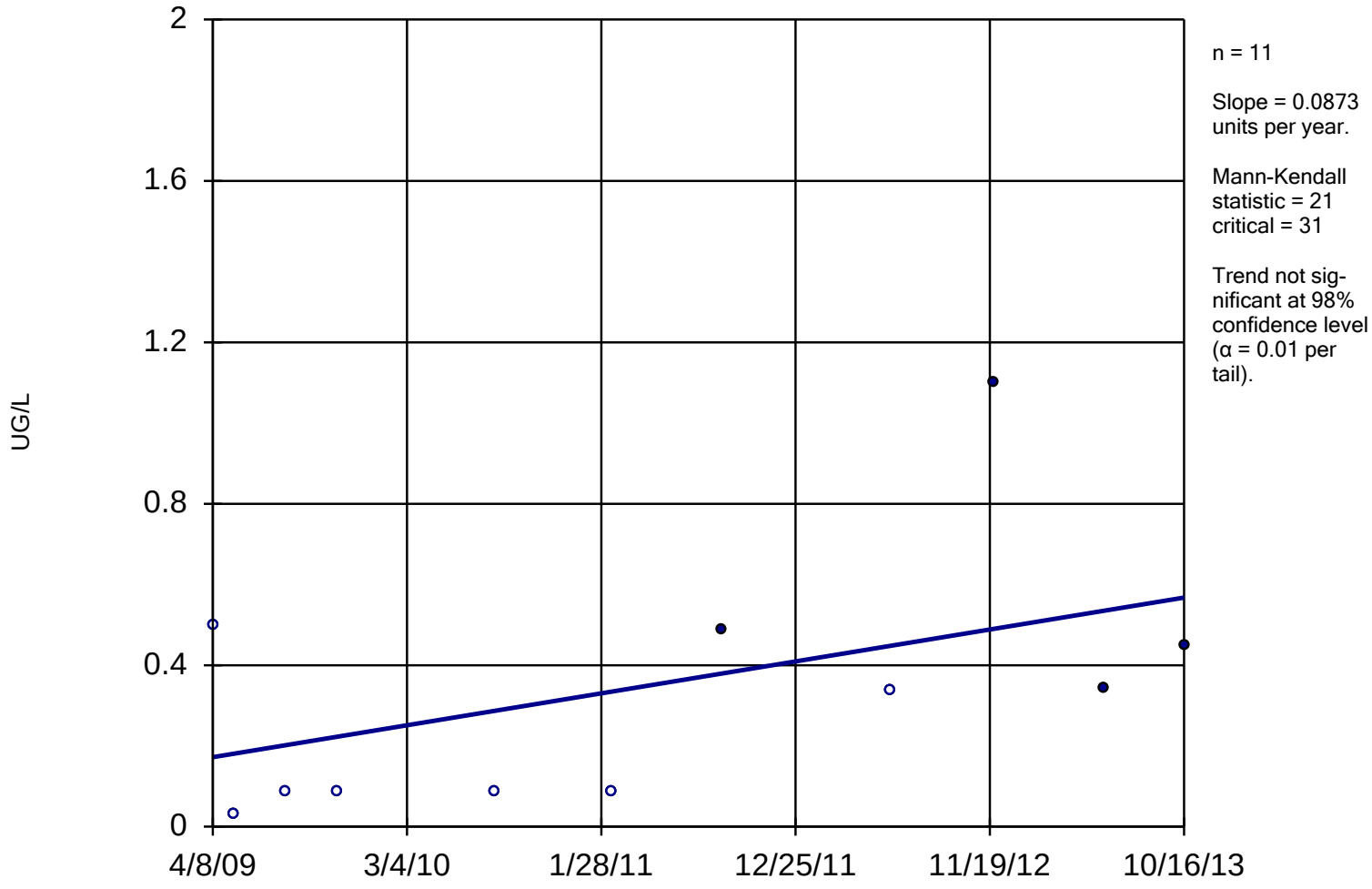
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-119B



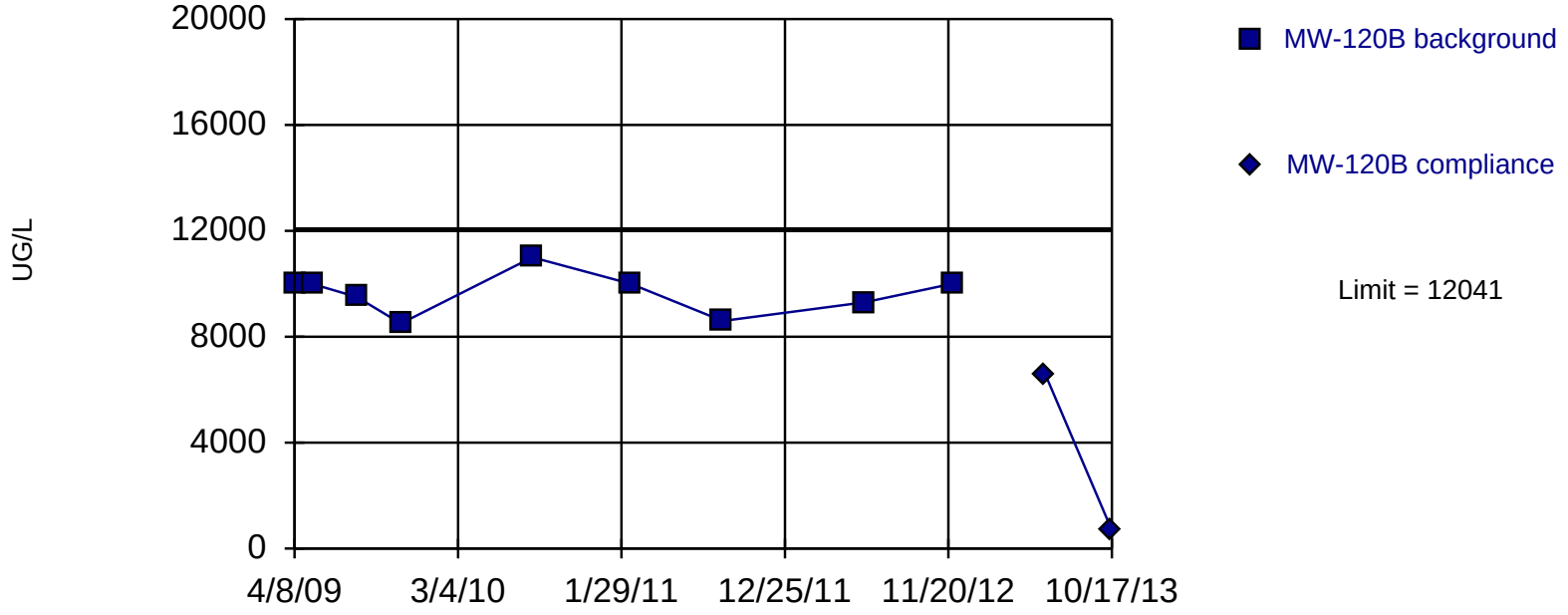
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



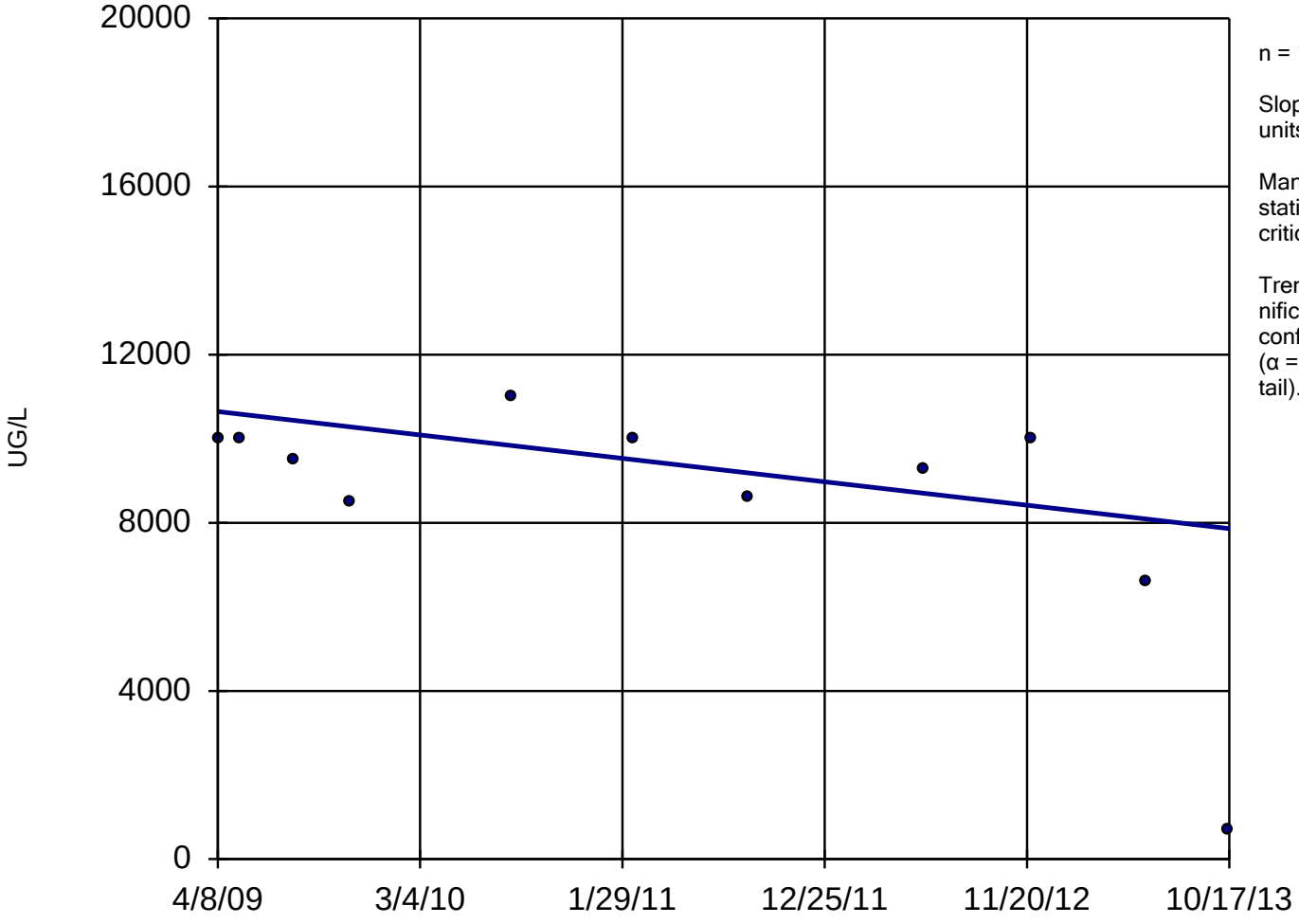
Background Data Summary: Mean=9656, Std. Dev.=781.2, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9135, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-120B



n = 11

Slope = -614.9 units per year.

Mann-Kendall statistic = -23
critical = -31

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:36 PM

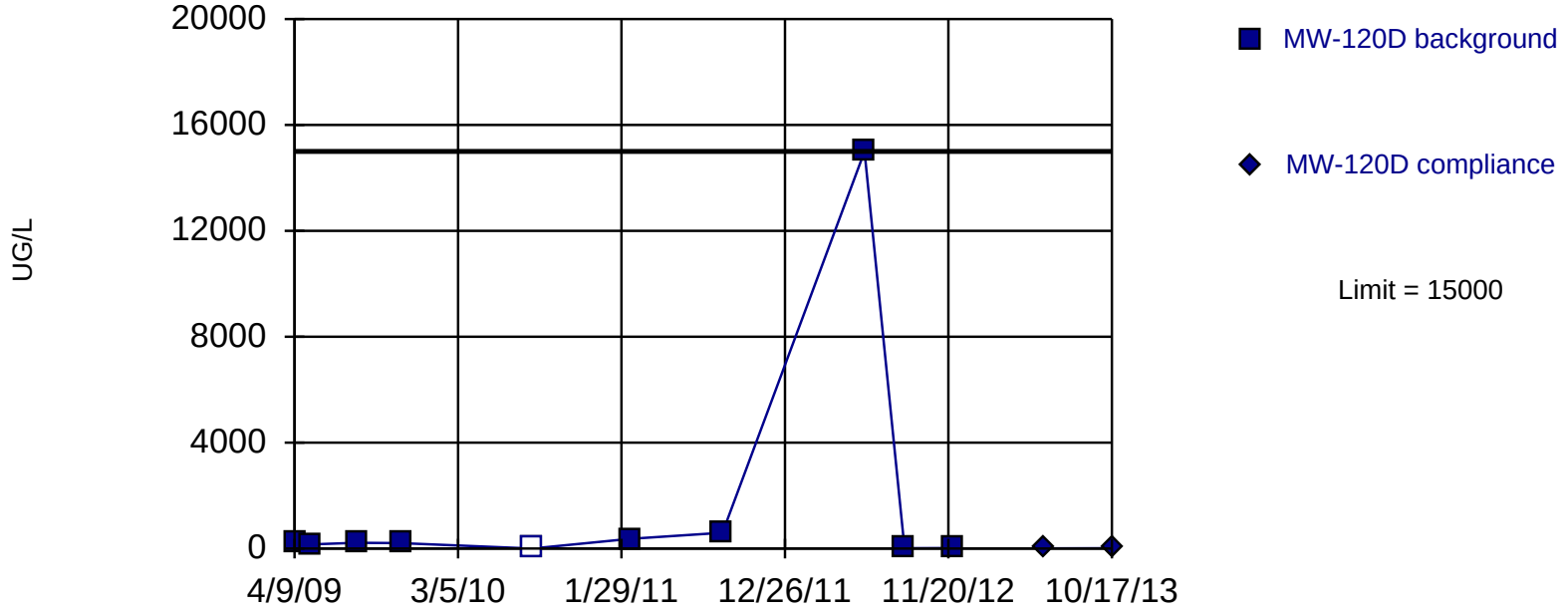
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used after natural log transformation resulted in a parametric limit of 1067953, which exceeds 10 times the highest background value (user-adjustable cutoff). Limit is highest of 10 background values. 10% NDs. Report alpha = 0.09091. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

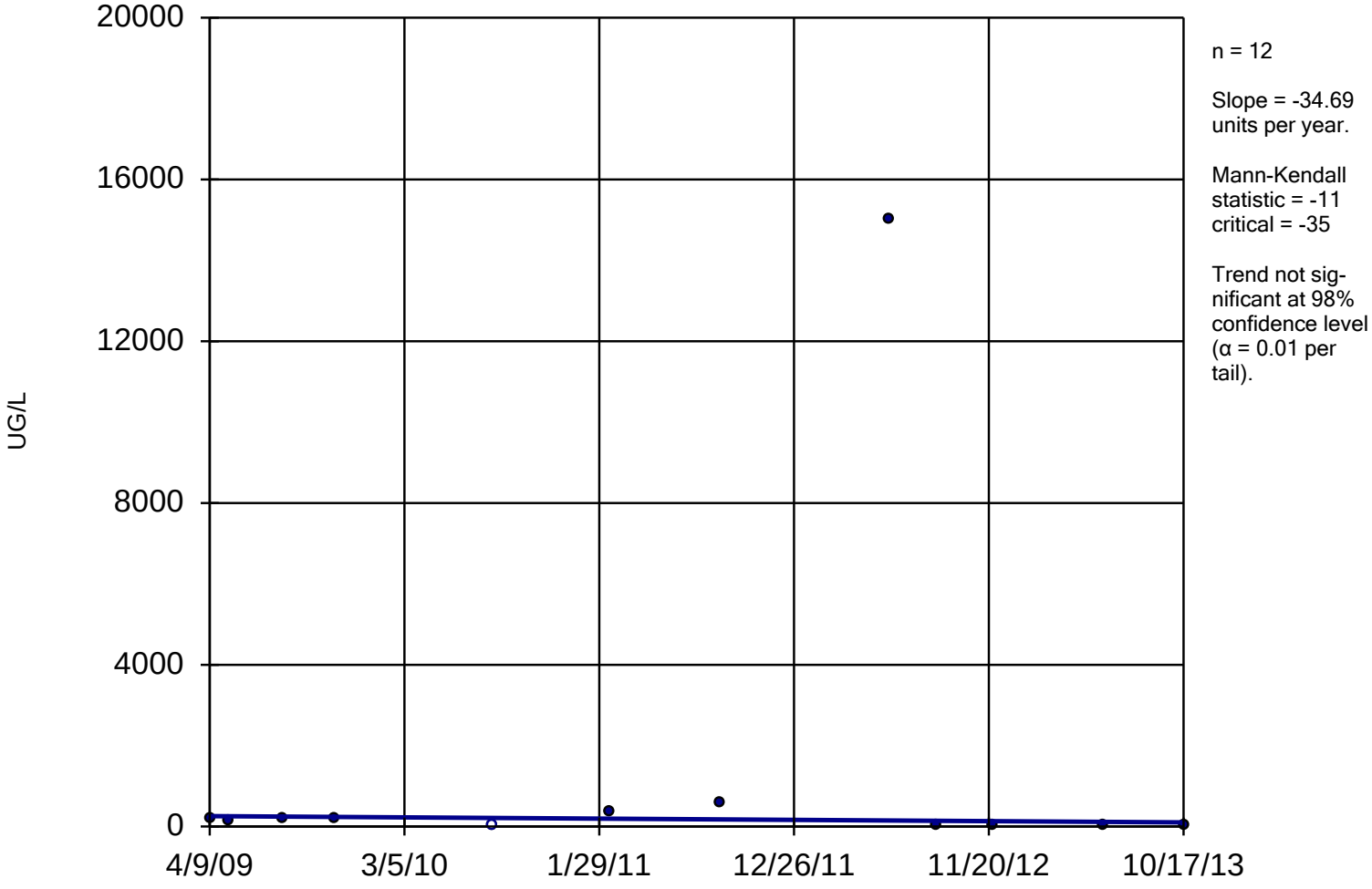
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-120D



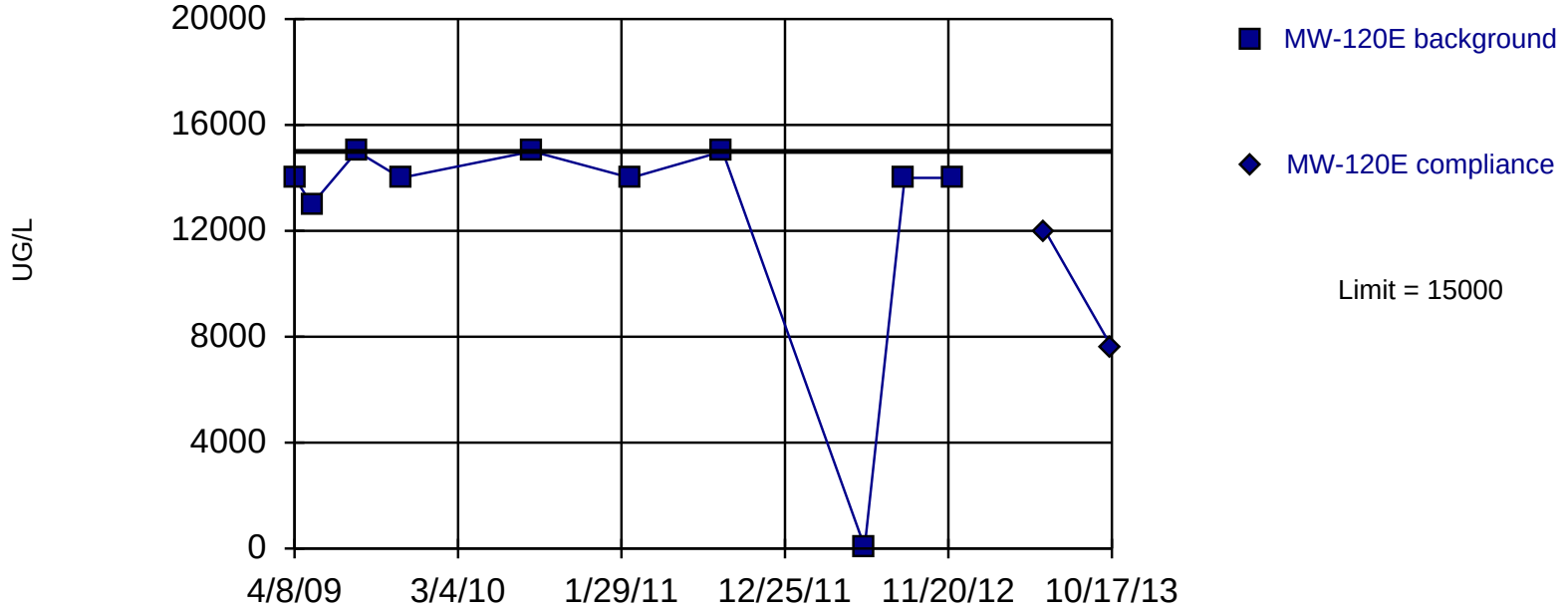
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Non-parametric



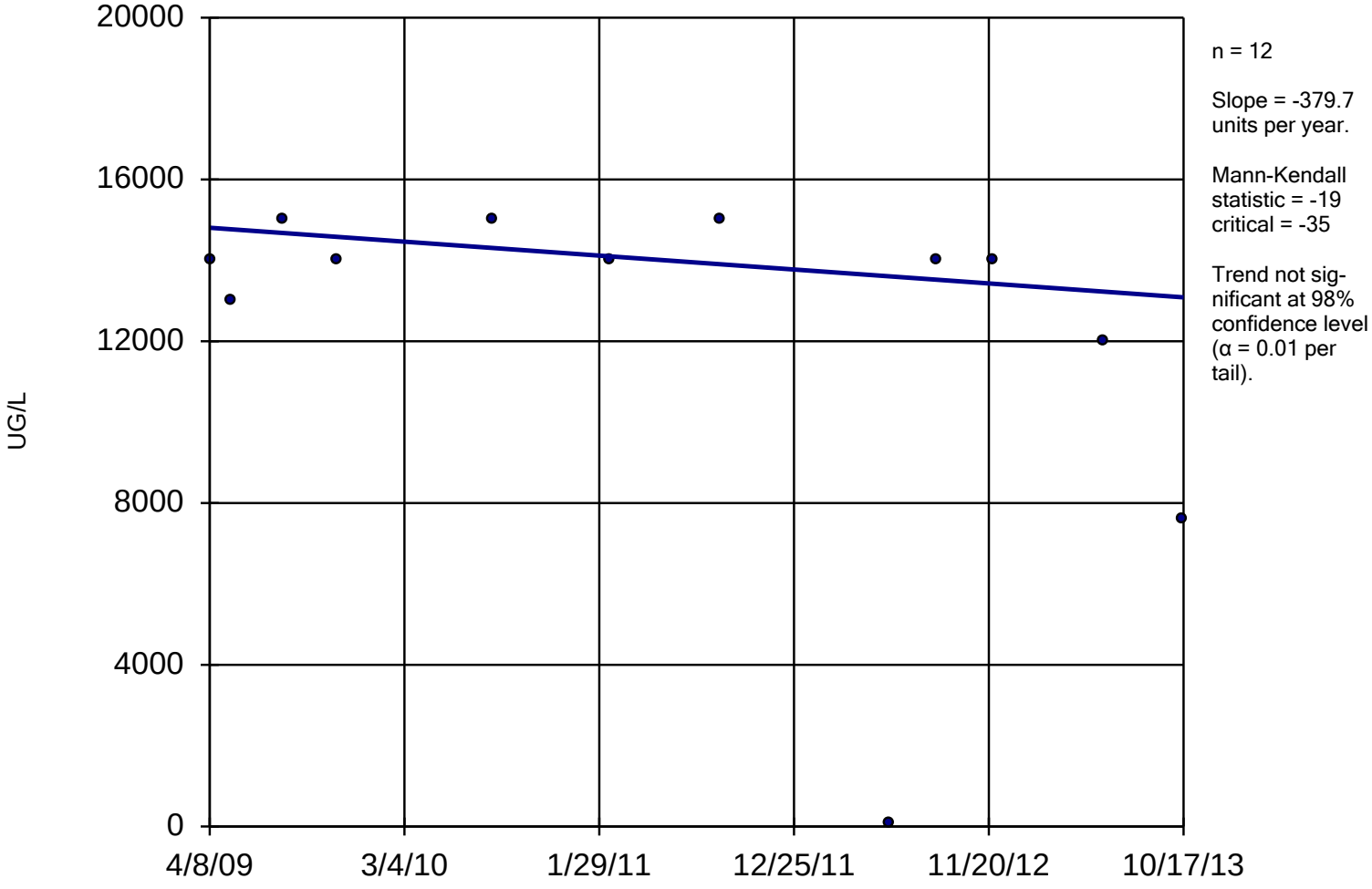
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 10 background values. Report alpha = 0.09091. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-120E



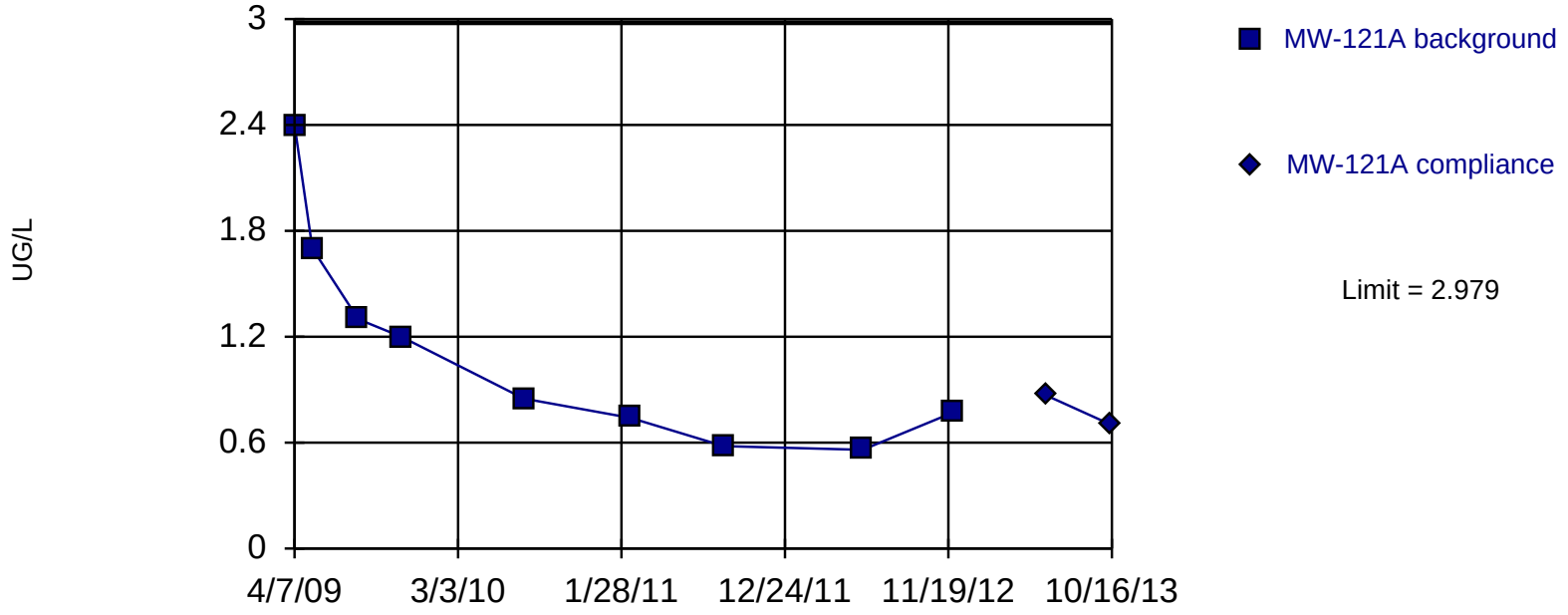
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



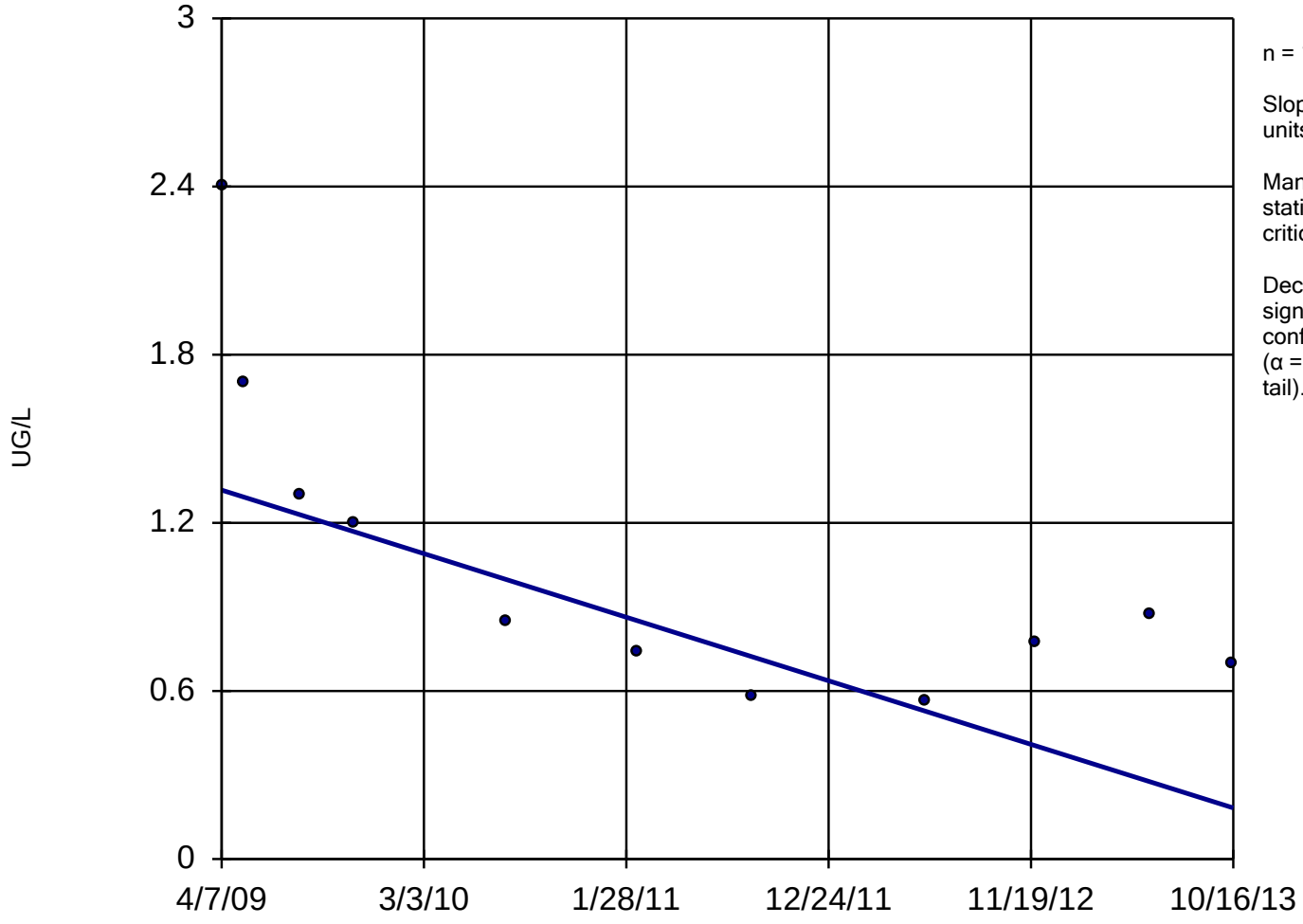
Background Data Summary: Mean=1.122, Std. Dev.=0.6081, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8632, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-121A



n = 11

Slope = -0.2504 units per year.

Mann-Kendall statistic = -35
critical = -31

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:36 PM

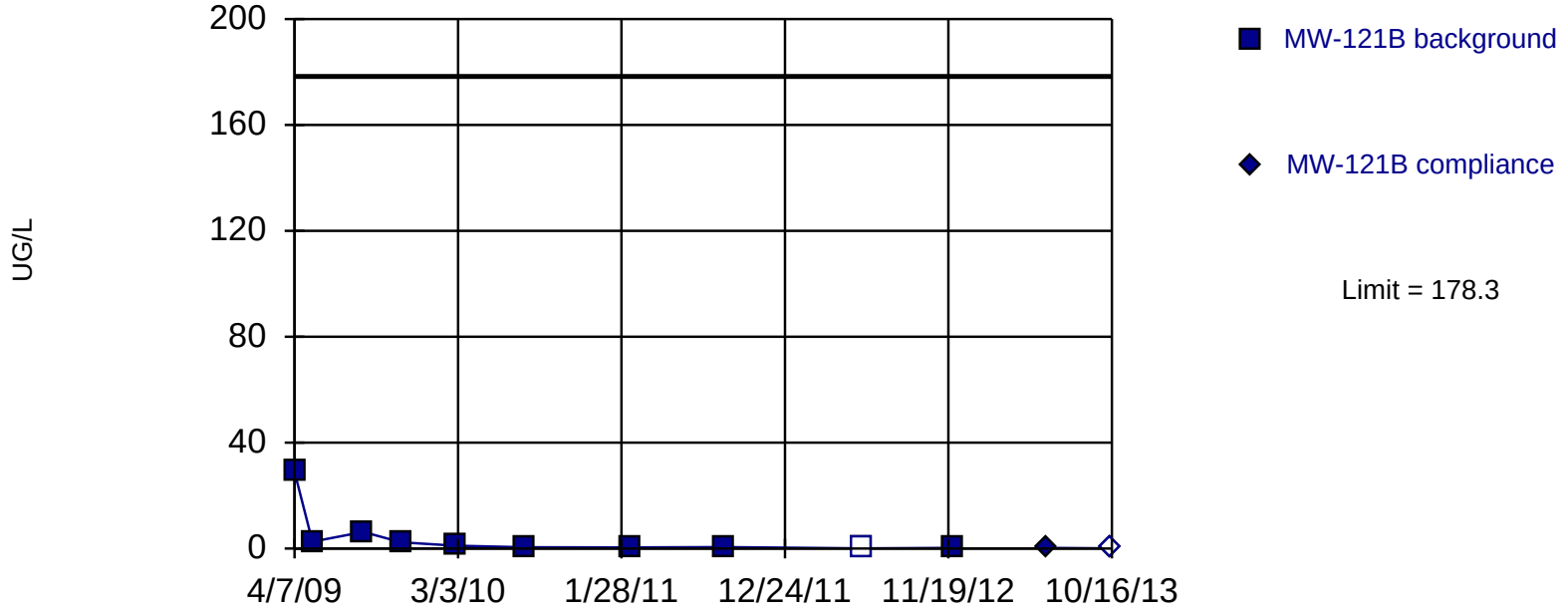
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=0.1099, Std. Dev.=1.715, n=10, 10% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9745, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

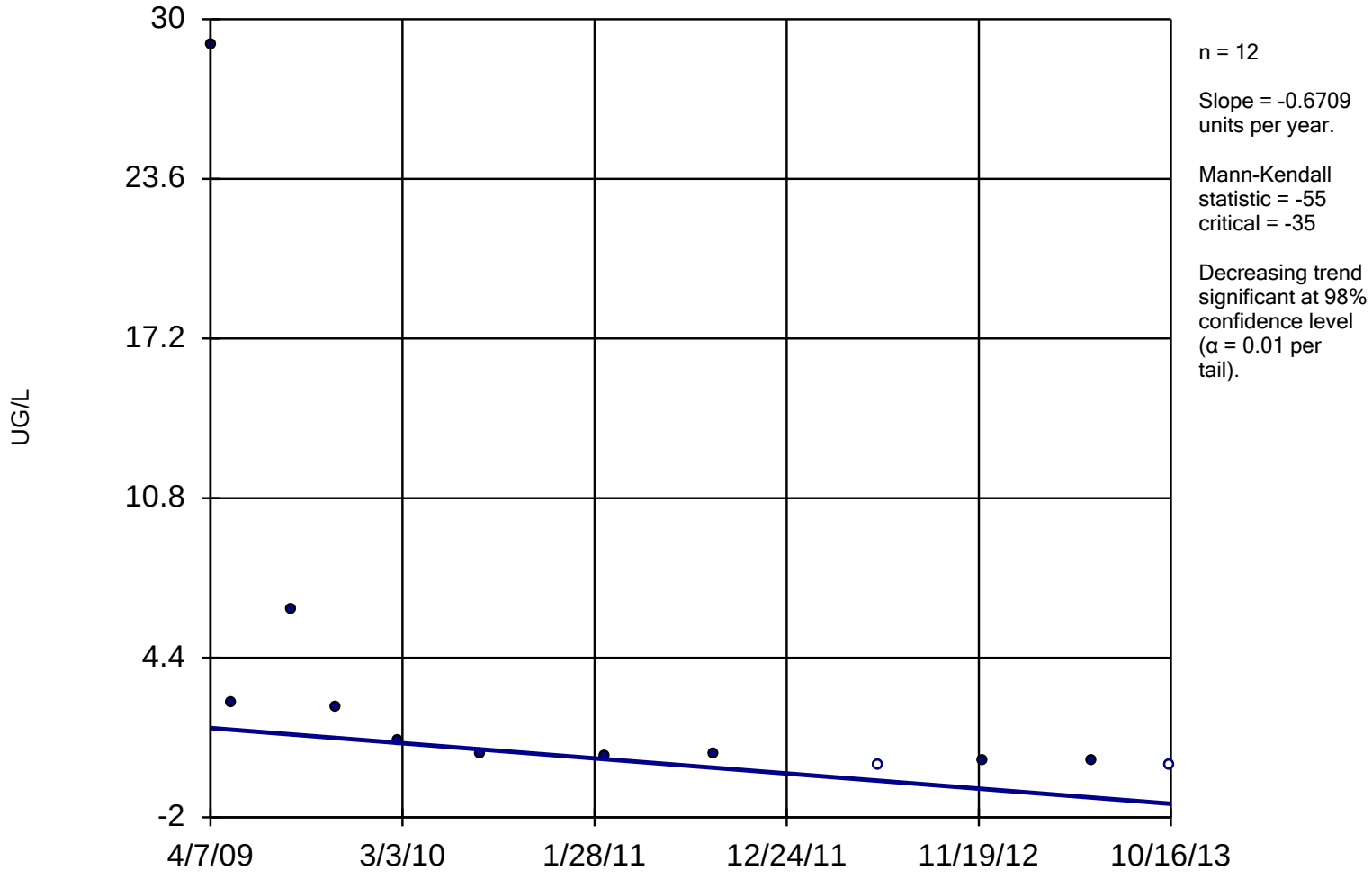
Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-121B



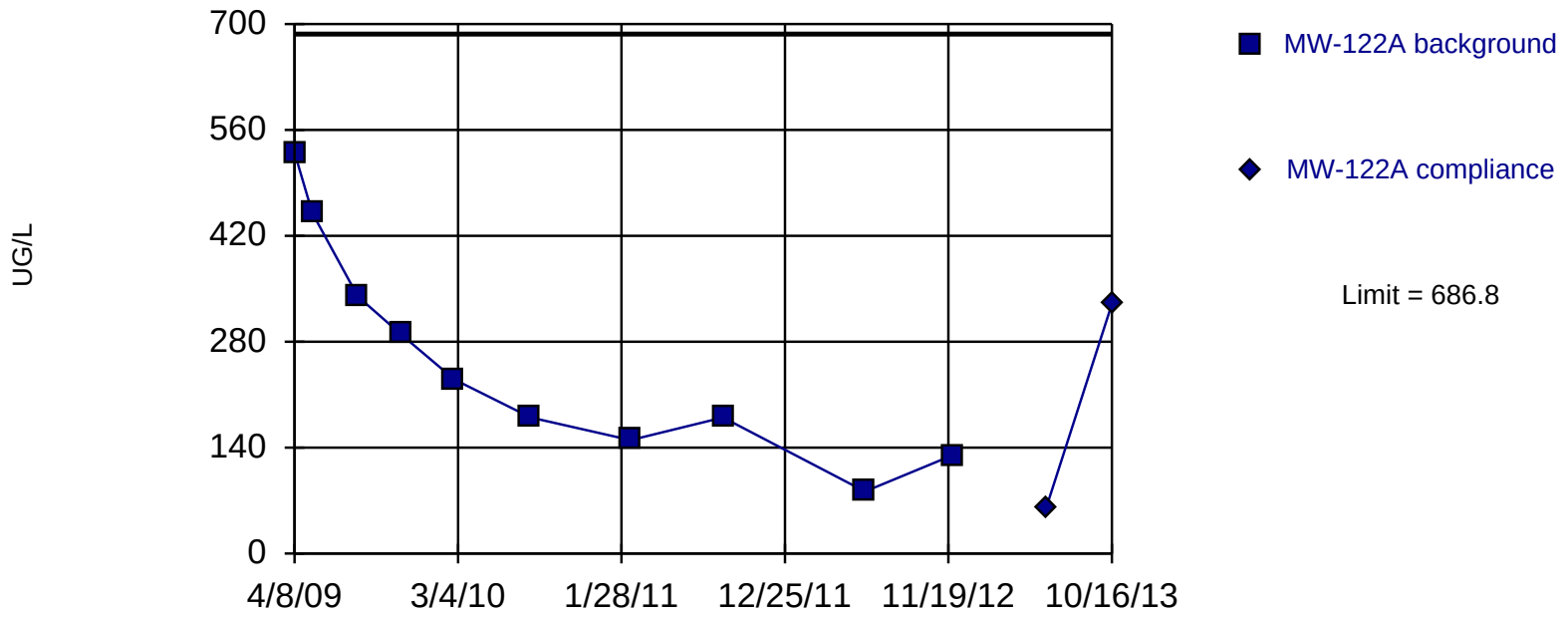
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



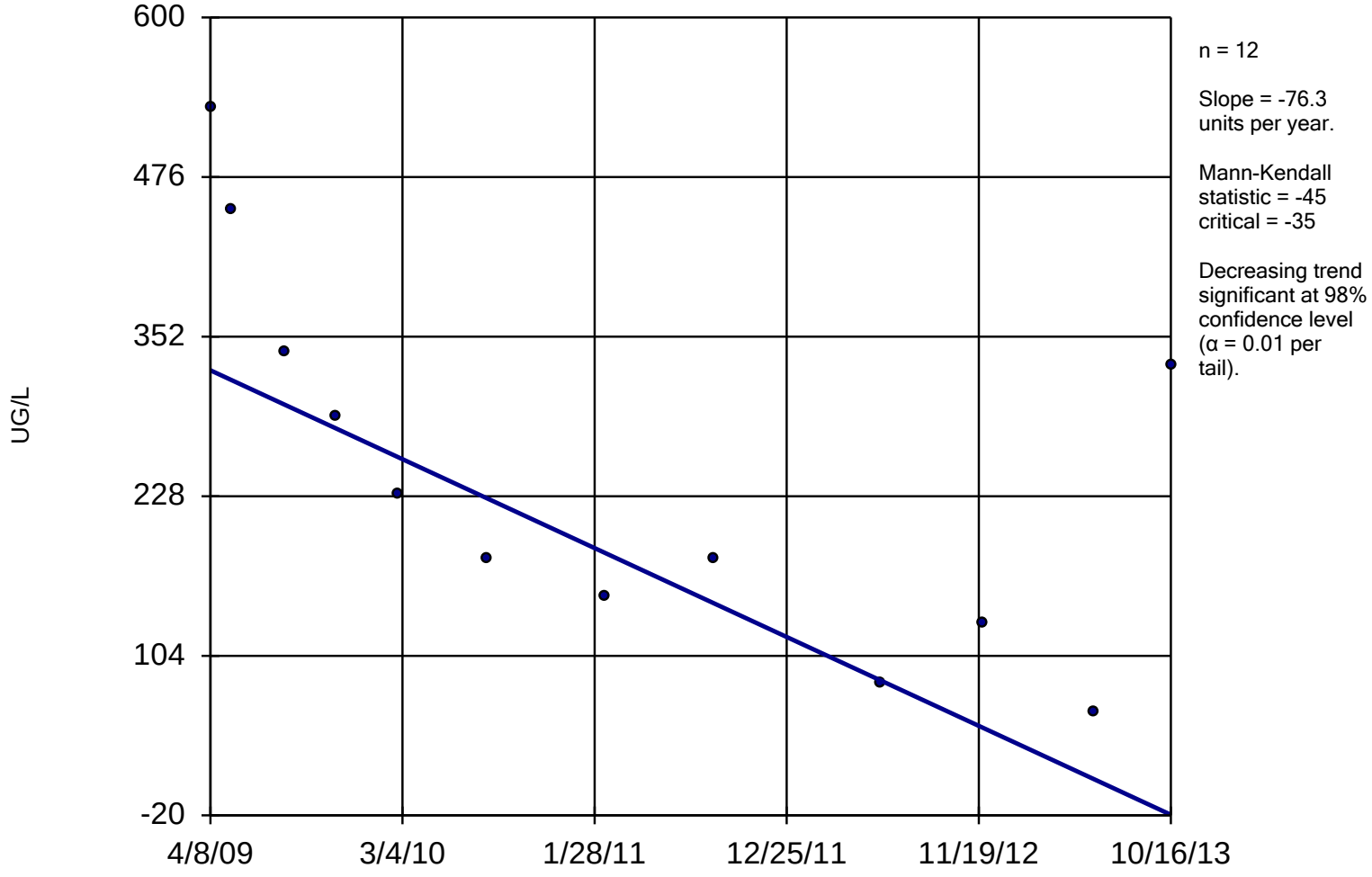
Background Data Summary: Mean=256.2, Std. Dev.=145.5, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9194, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-122A



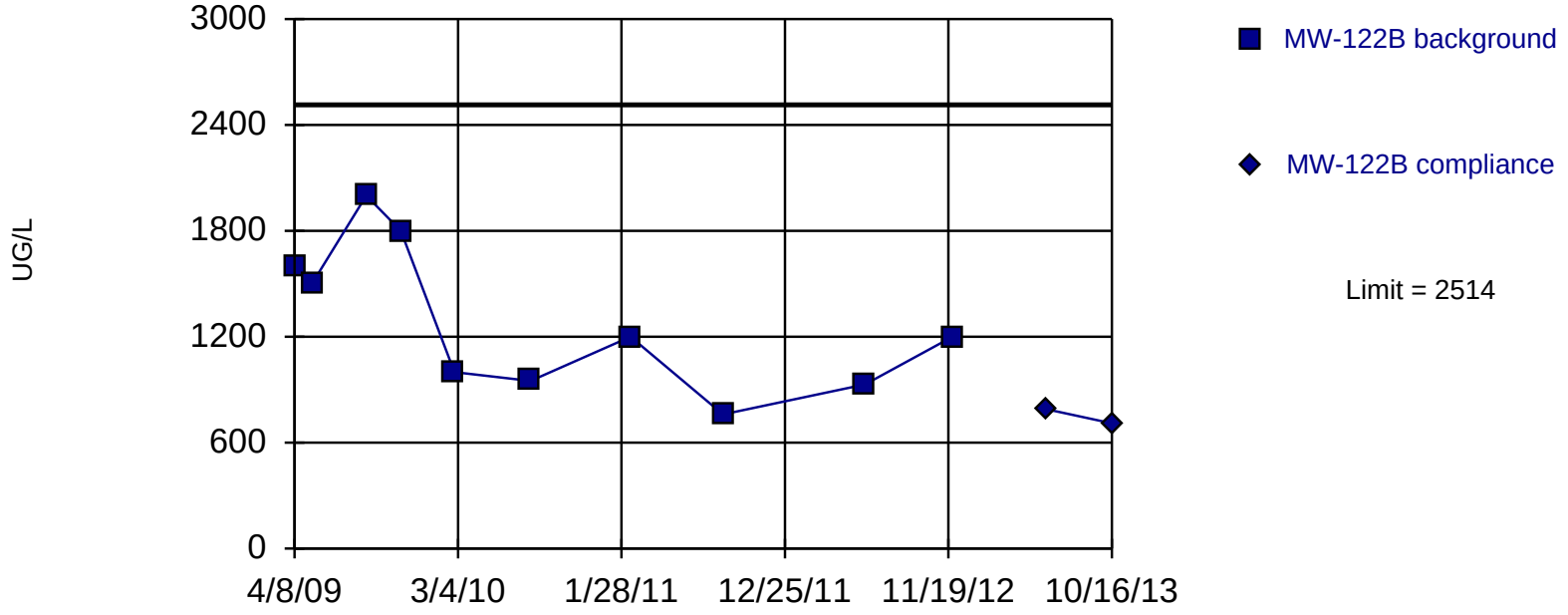
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



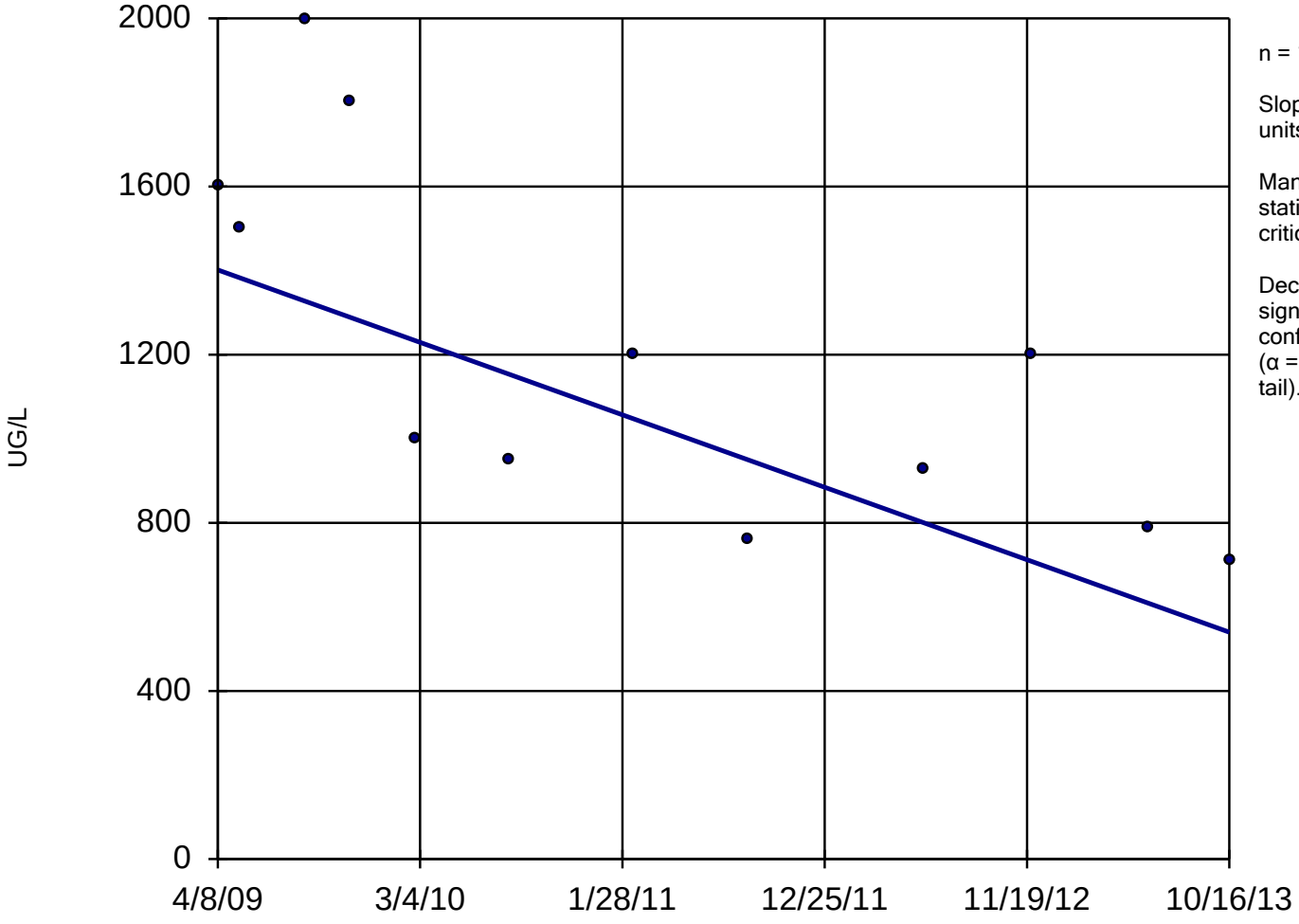
Background Data Summary: Mean=1294, Std. Dev.=412.4, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9381, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-122B



n = 12

Slope = -190.4 units per year.

Mann-Kendall statistic = -41
critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

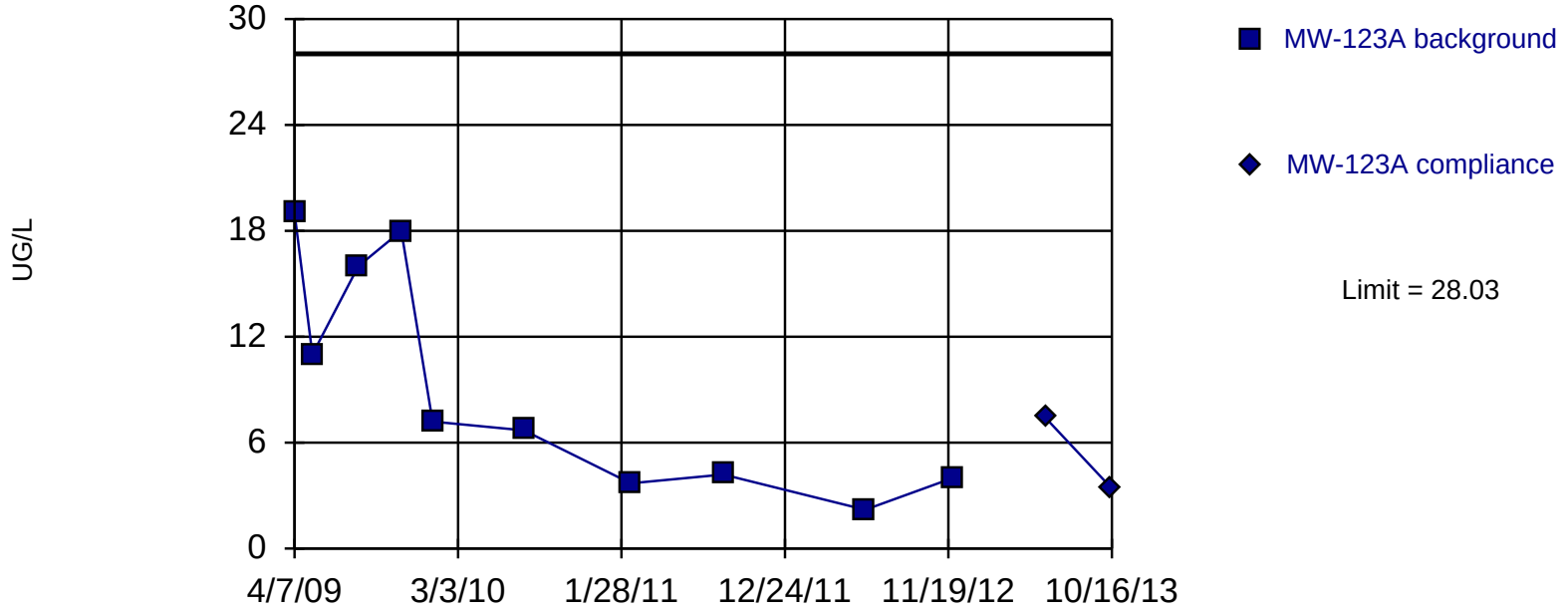
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



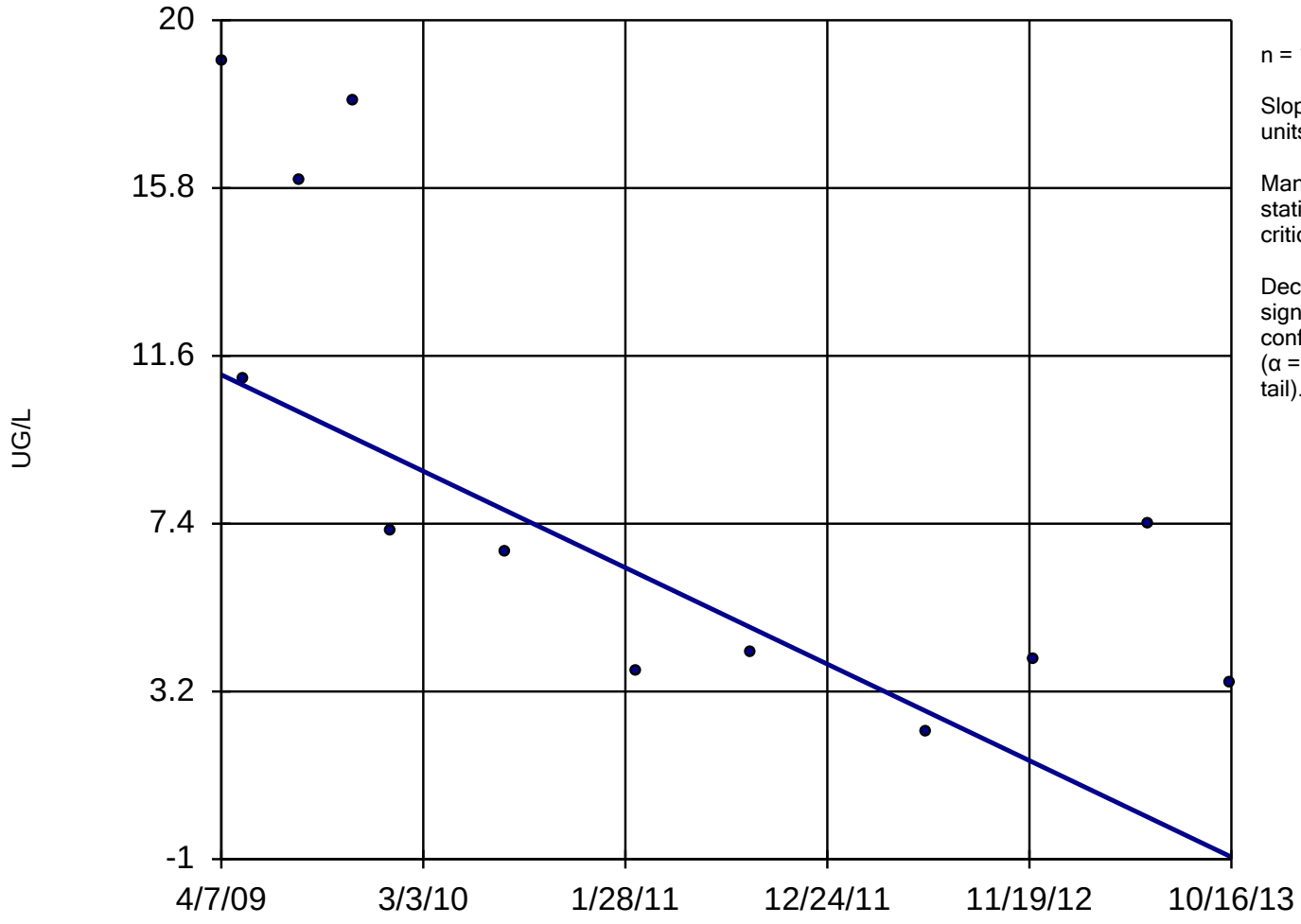
Background Data Summary: Mean=9.2, Std. Dev.=6.364, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8662, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-123A



n = 12

Slope = -2.665 units per year.

Mann-Kendall statistic = -40
critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

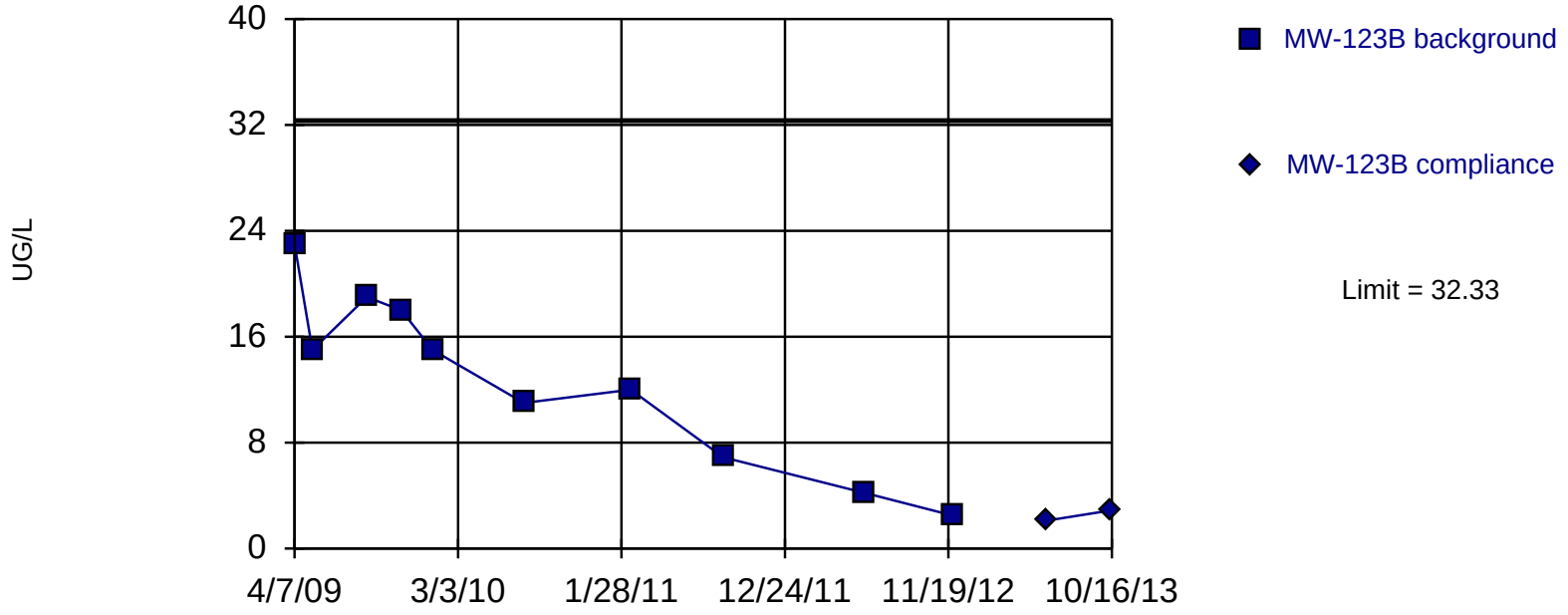
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



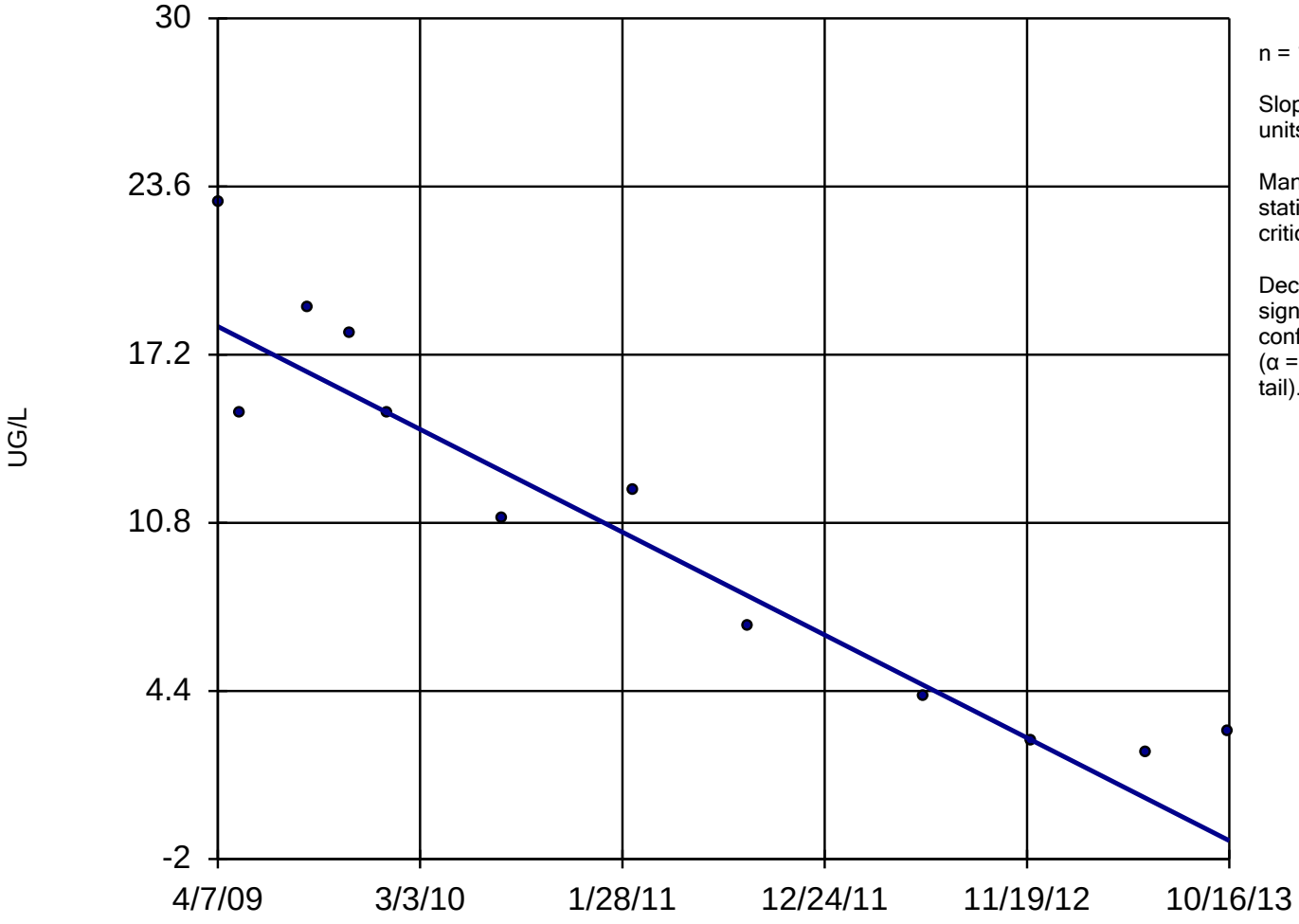
Background Data Summary: Mean=12.66, Std. Dev.=6.648, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.968, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-123B



n = 12

Slope = -4.322 units per year.

Mann-Kendall statistic = -55
critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

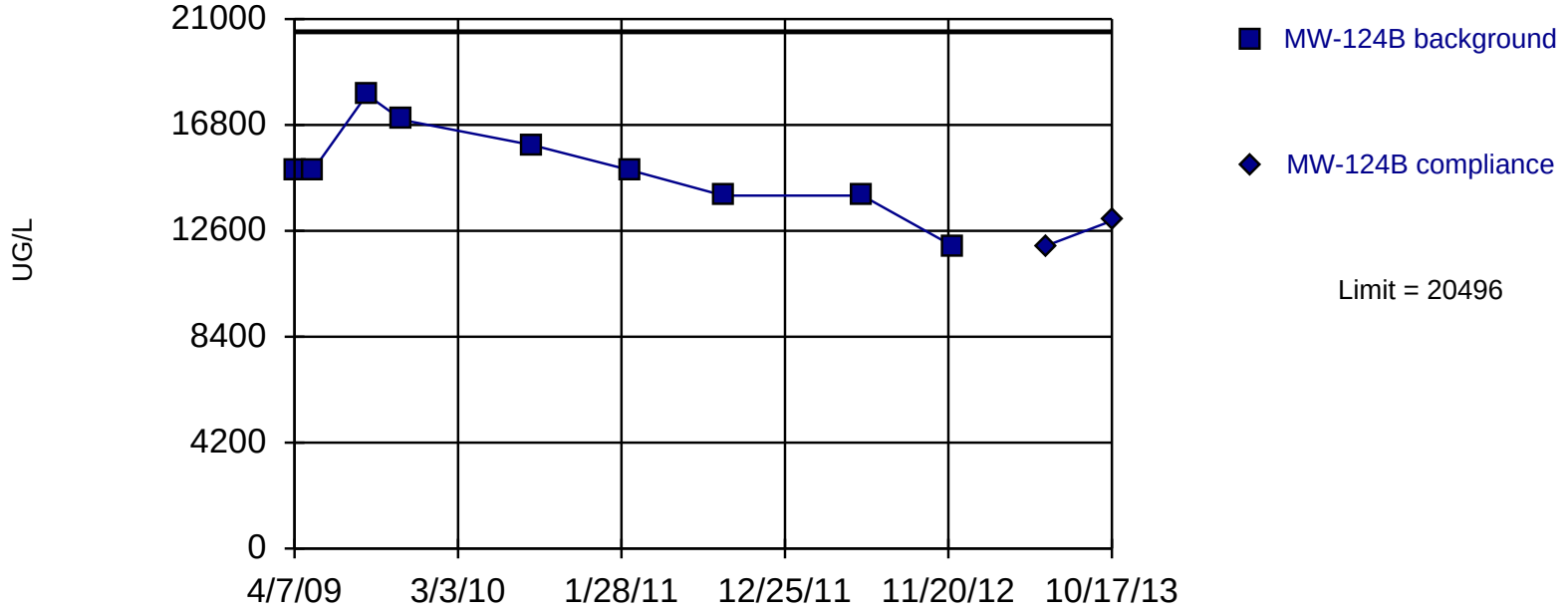
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



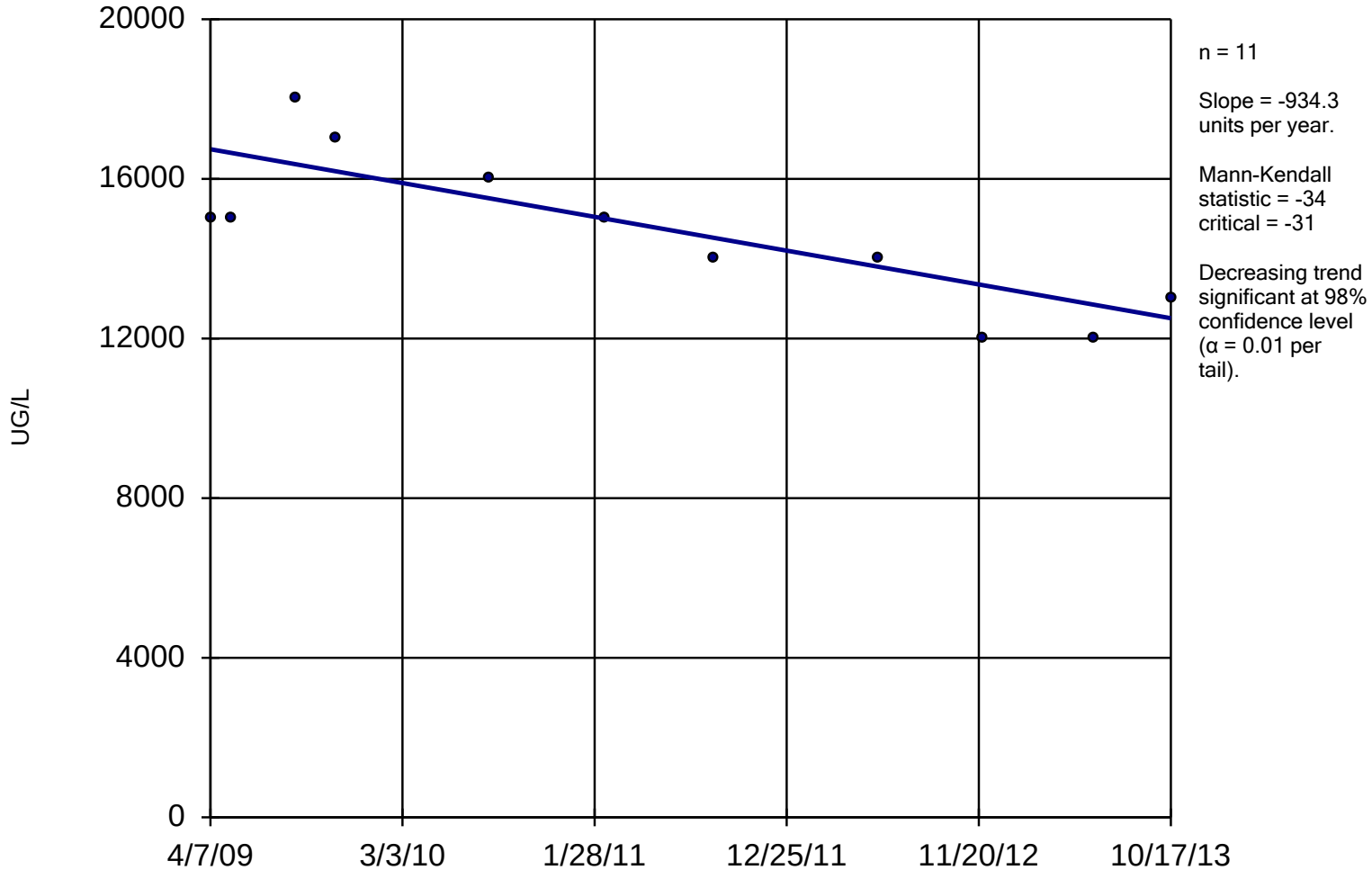
Background Data Summary: Mean=15111, Std. Dev.=1764, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9652, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-124B



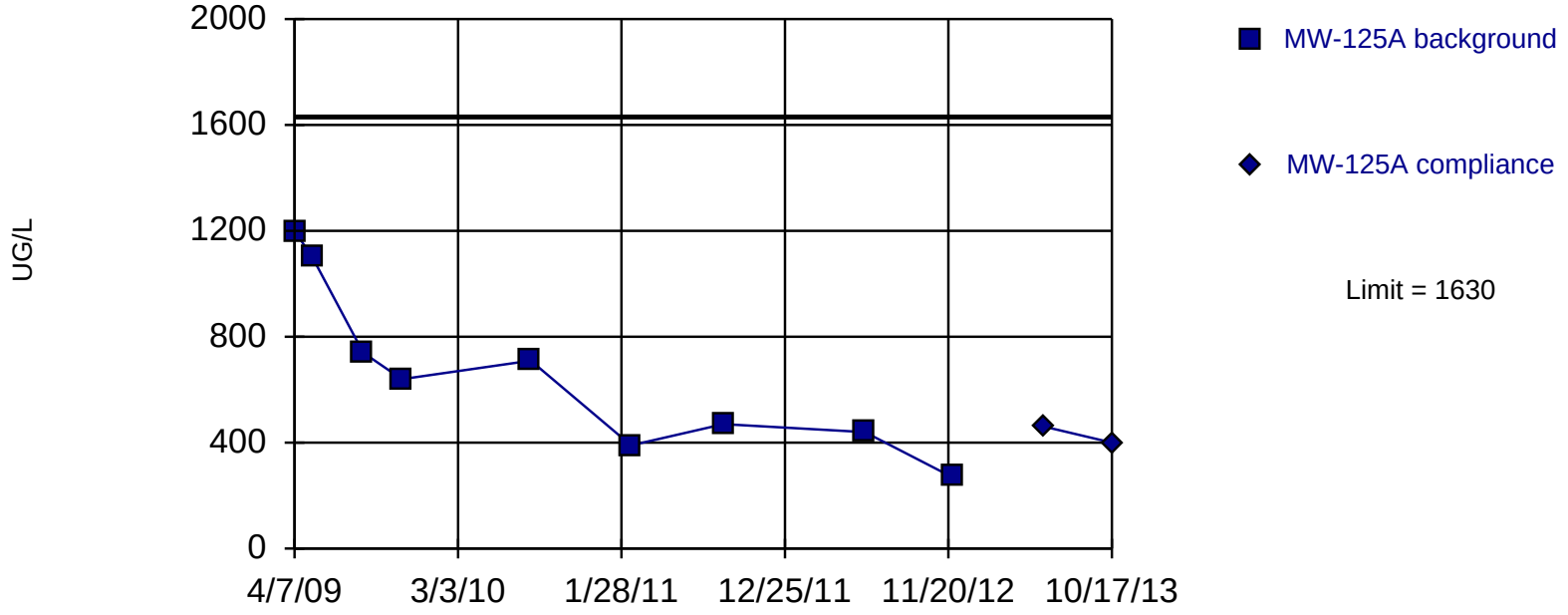
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



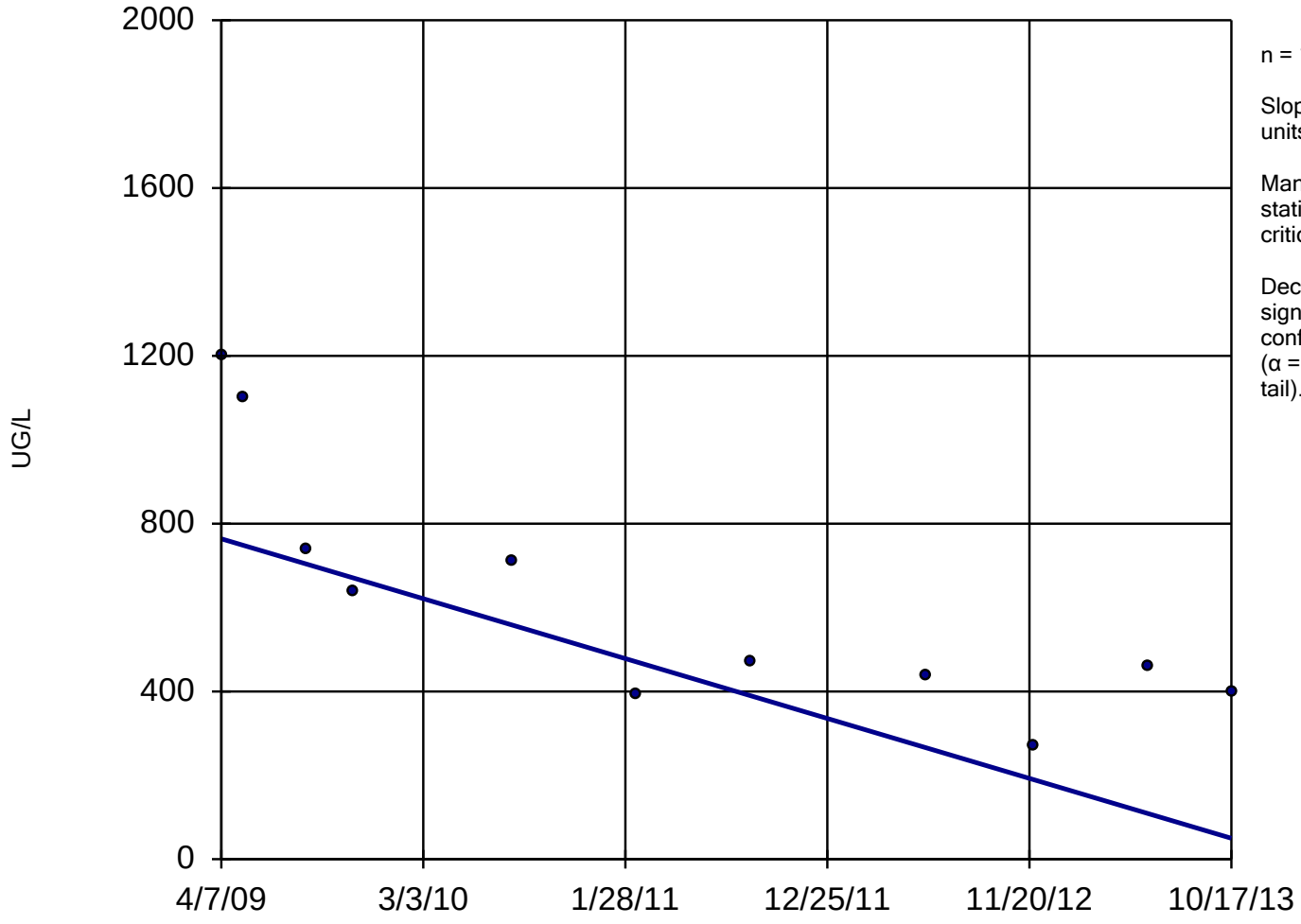
Background Data Summary: Mean=662.2, Std. Dev.=317, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9198, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-125A



n = 11

Slope = -157.5 units per year.

Mann-Kendall statistic = -39
critical = -31

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

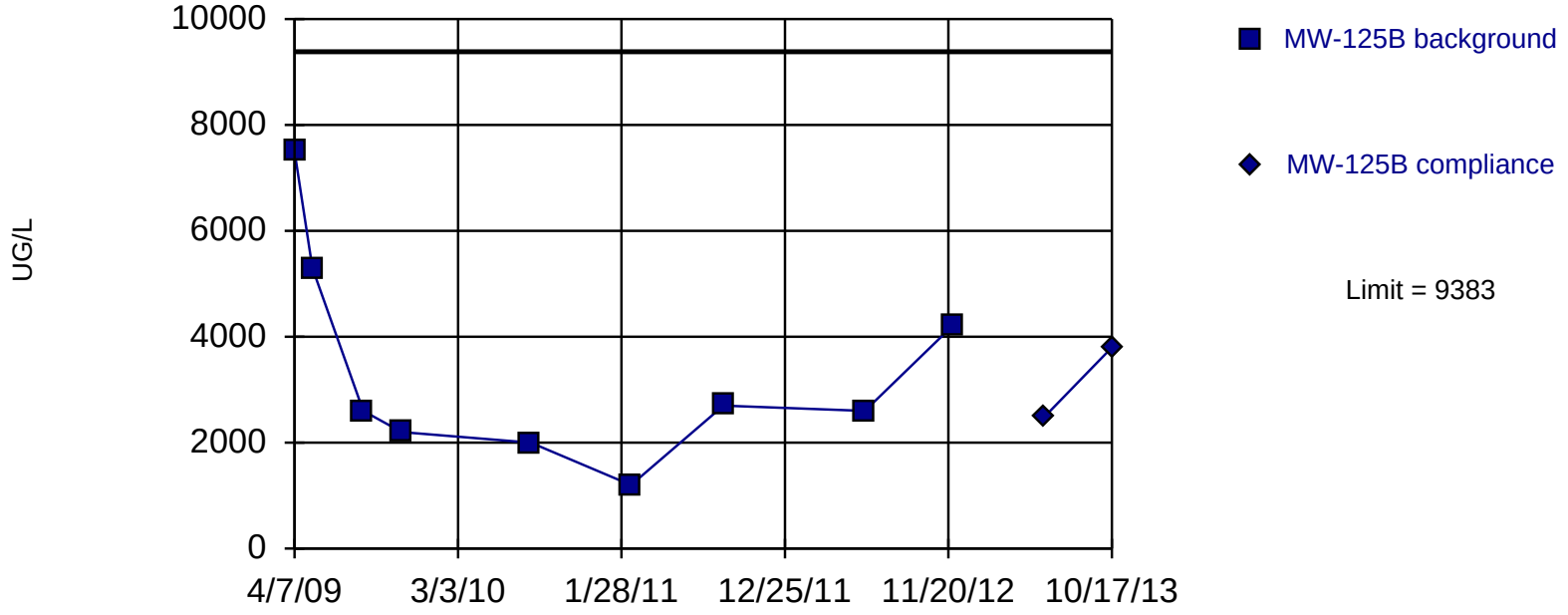
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



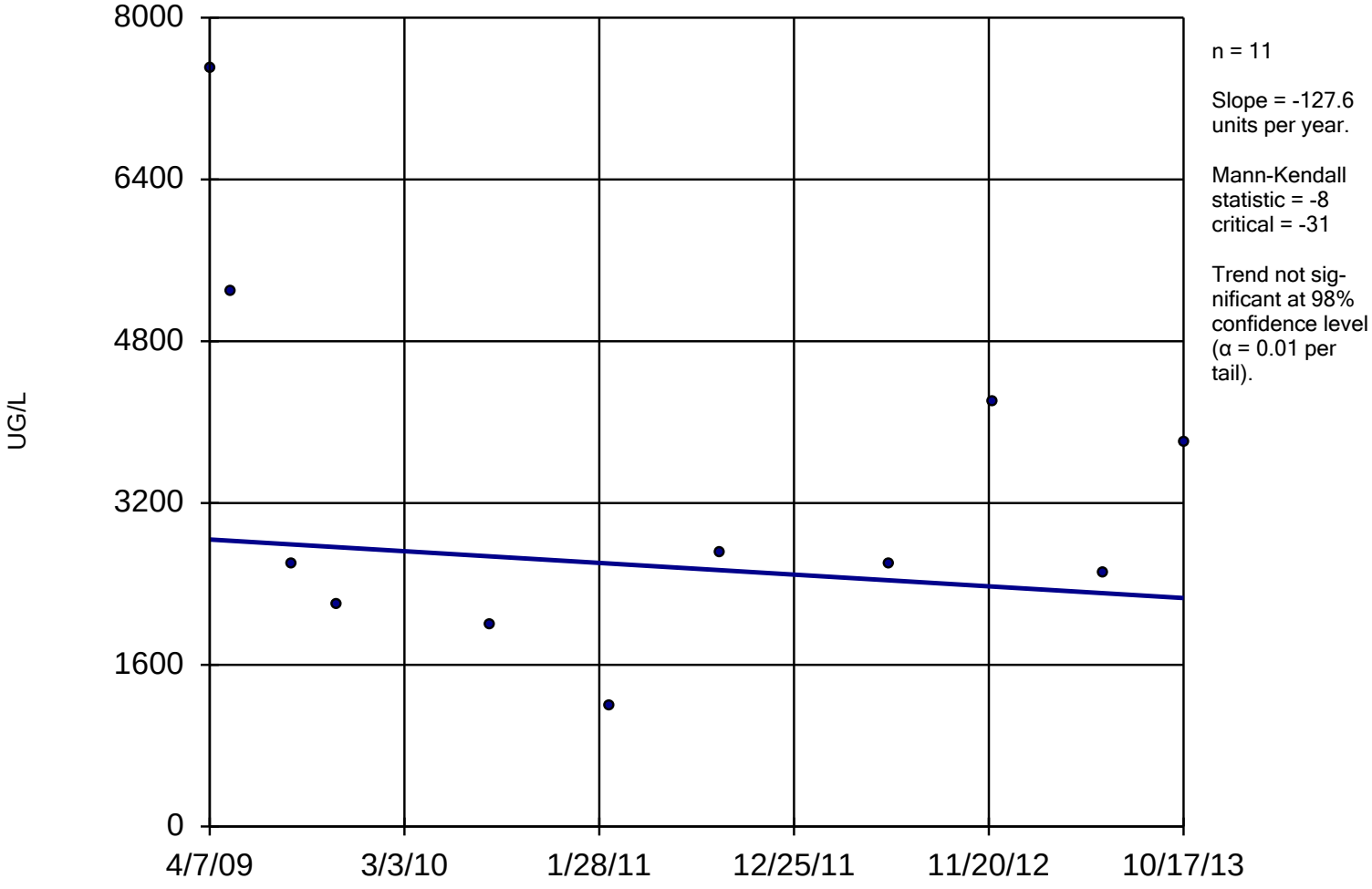
Background Data Summary: Mean=3367, Std. Dev.=1970, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8654, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-125B



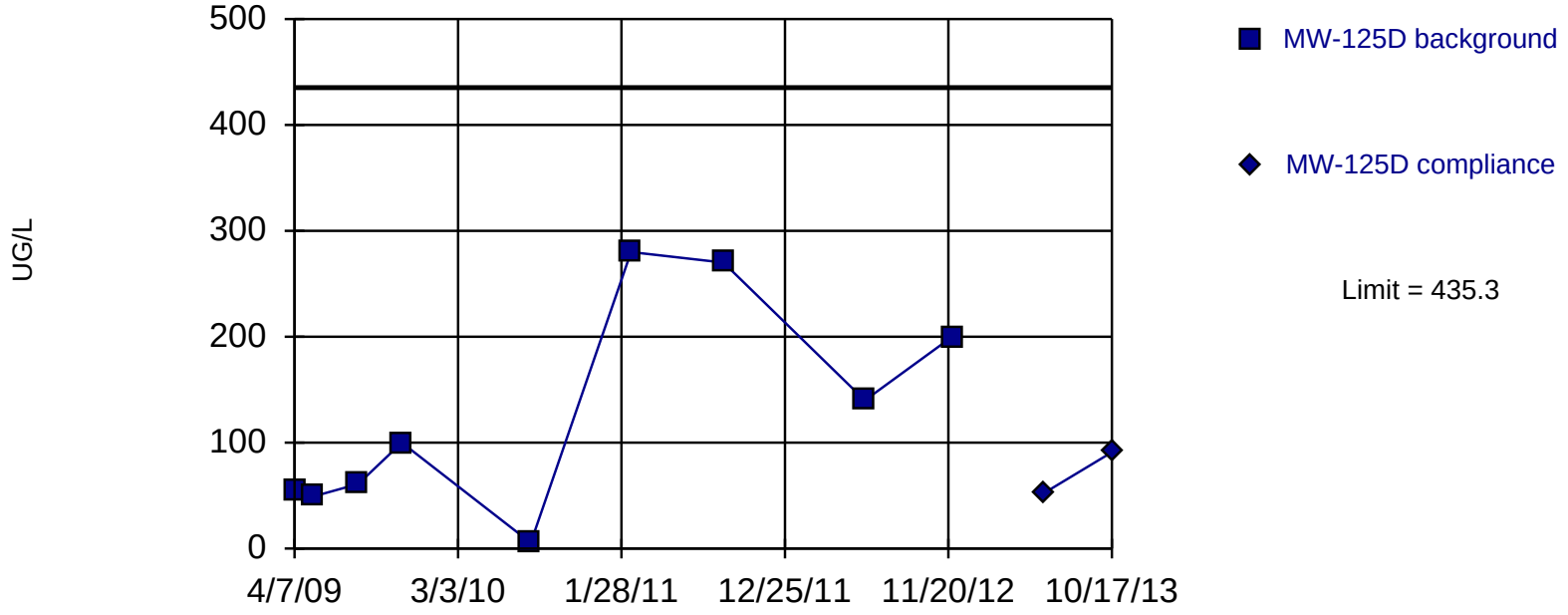
Constituent: TCE Analysis Run 1/28/2014 2:36 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



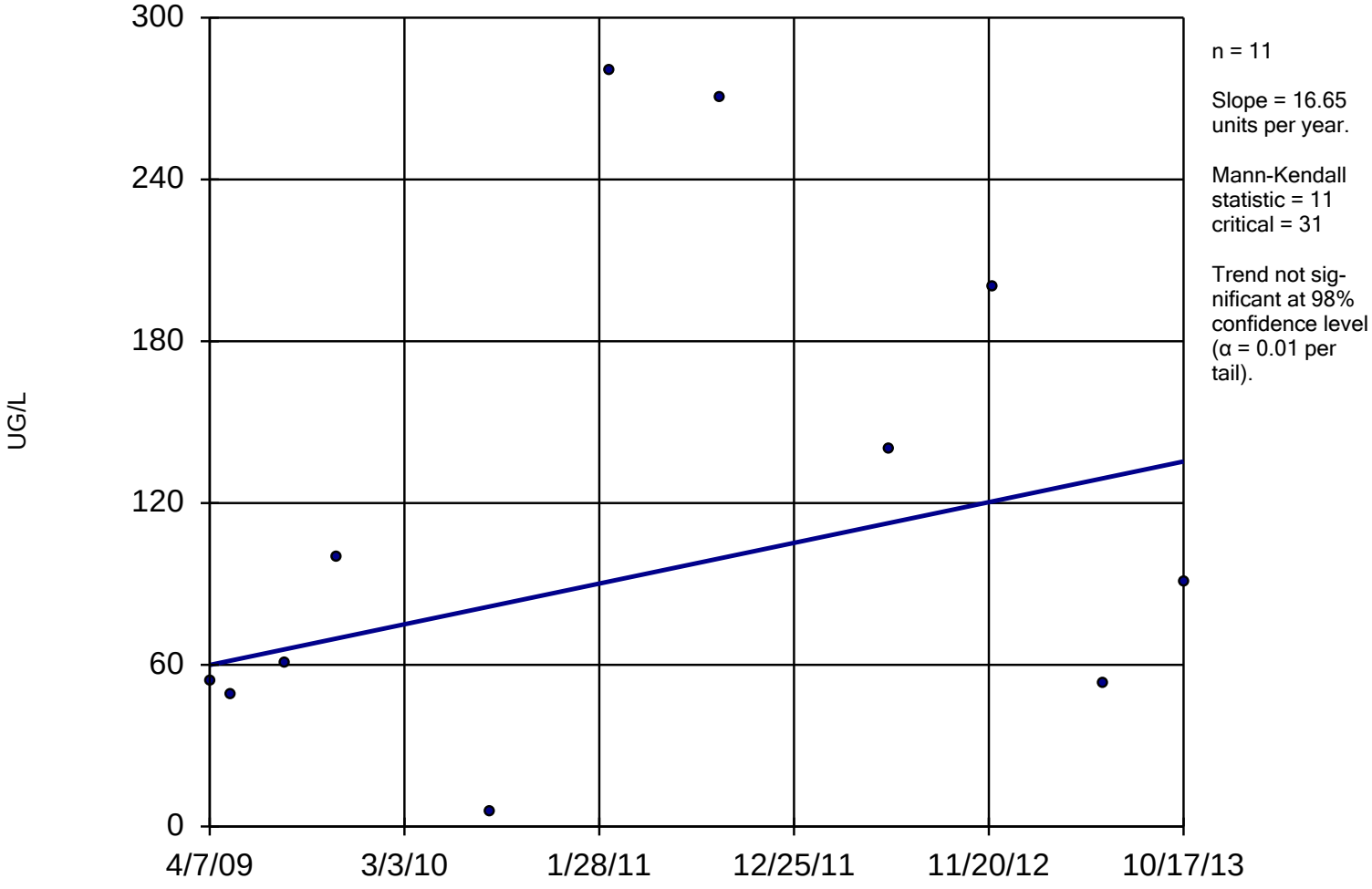
Background Data Summary: Mean=128.8, Std. Dev.=100.4, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9023, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-125D



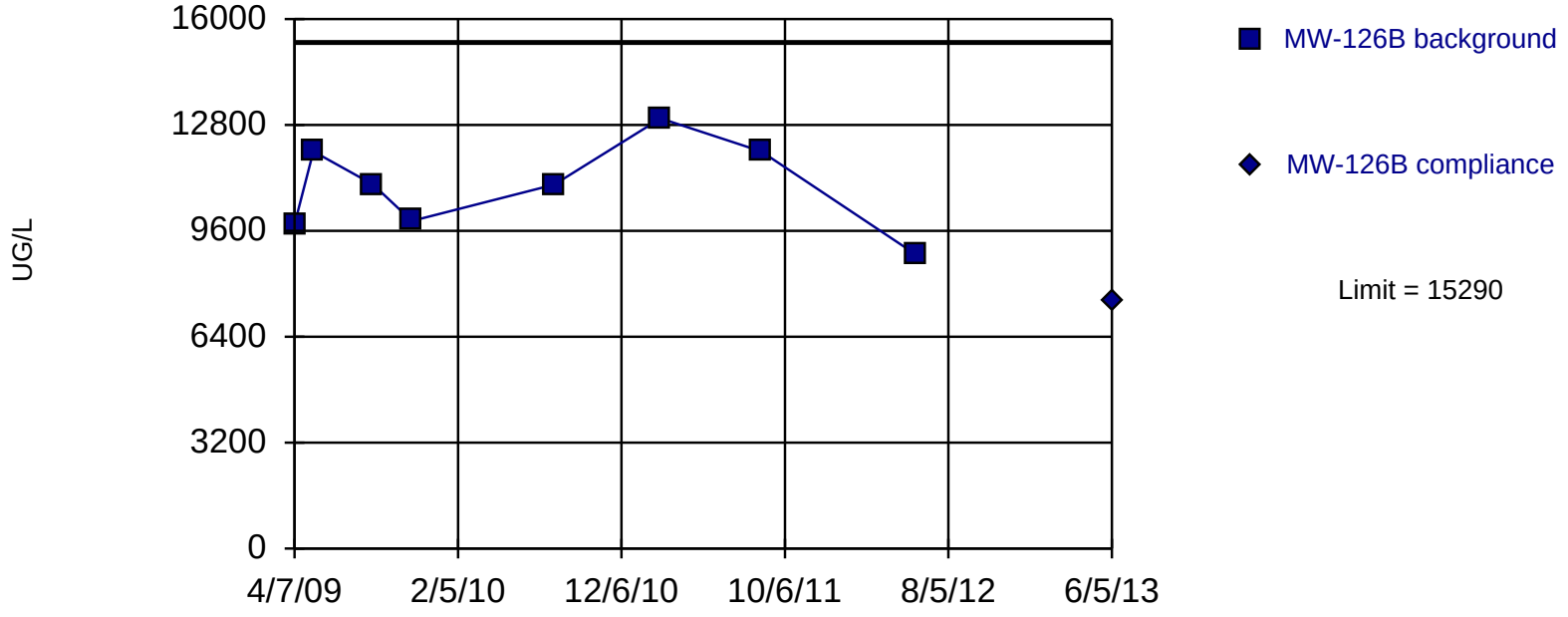
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



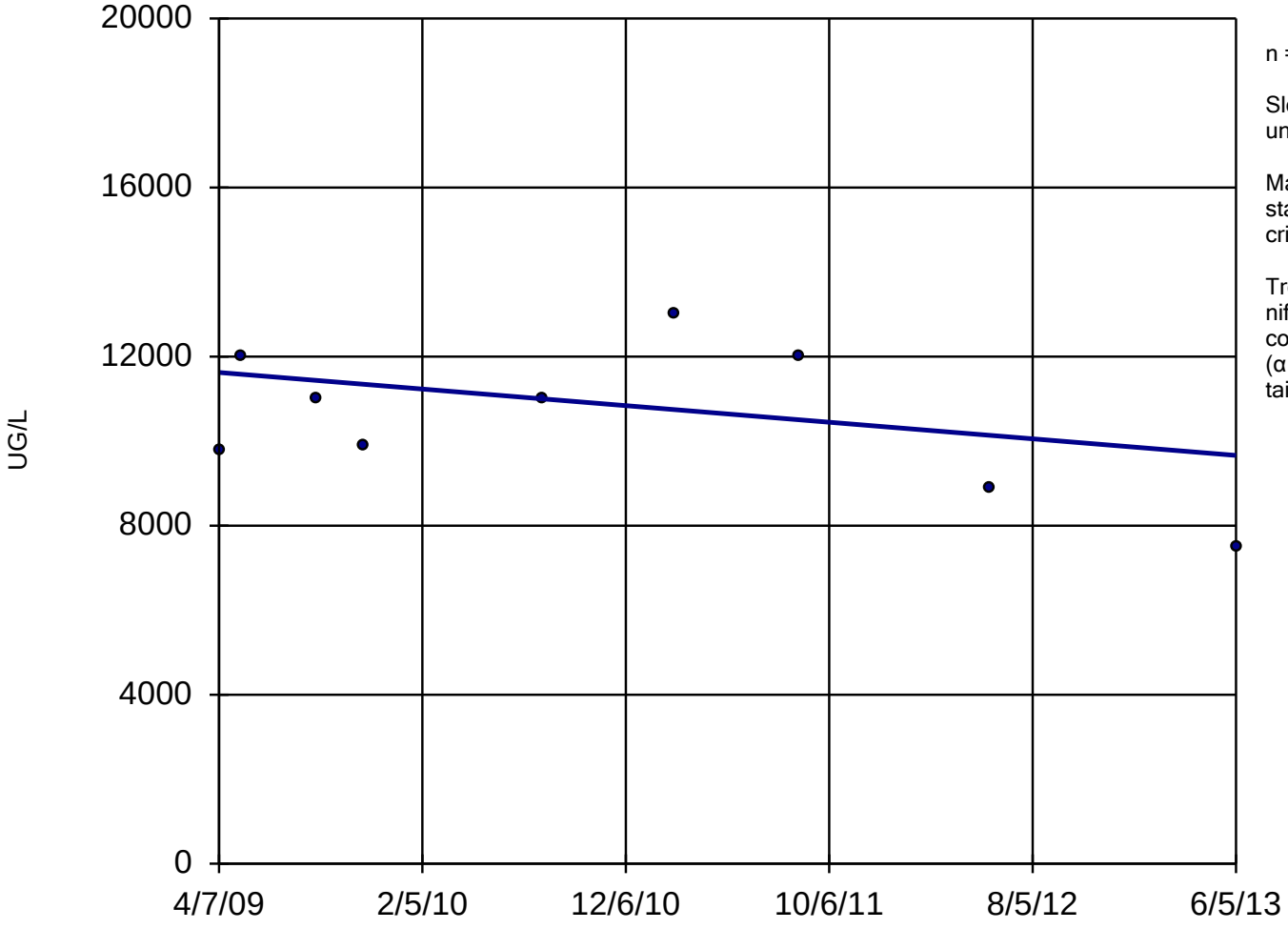
Background Data Summary: Mean=10950, Std. Dev.=1365, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9629, critical = 0.818. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-126B



n = 9

Slope = -471.1 units per year.

Mann-Kendall statistic = -6
critical = -23

Trend not significant at 98% confidence level (α = 0.01 per tail).

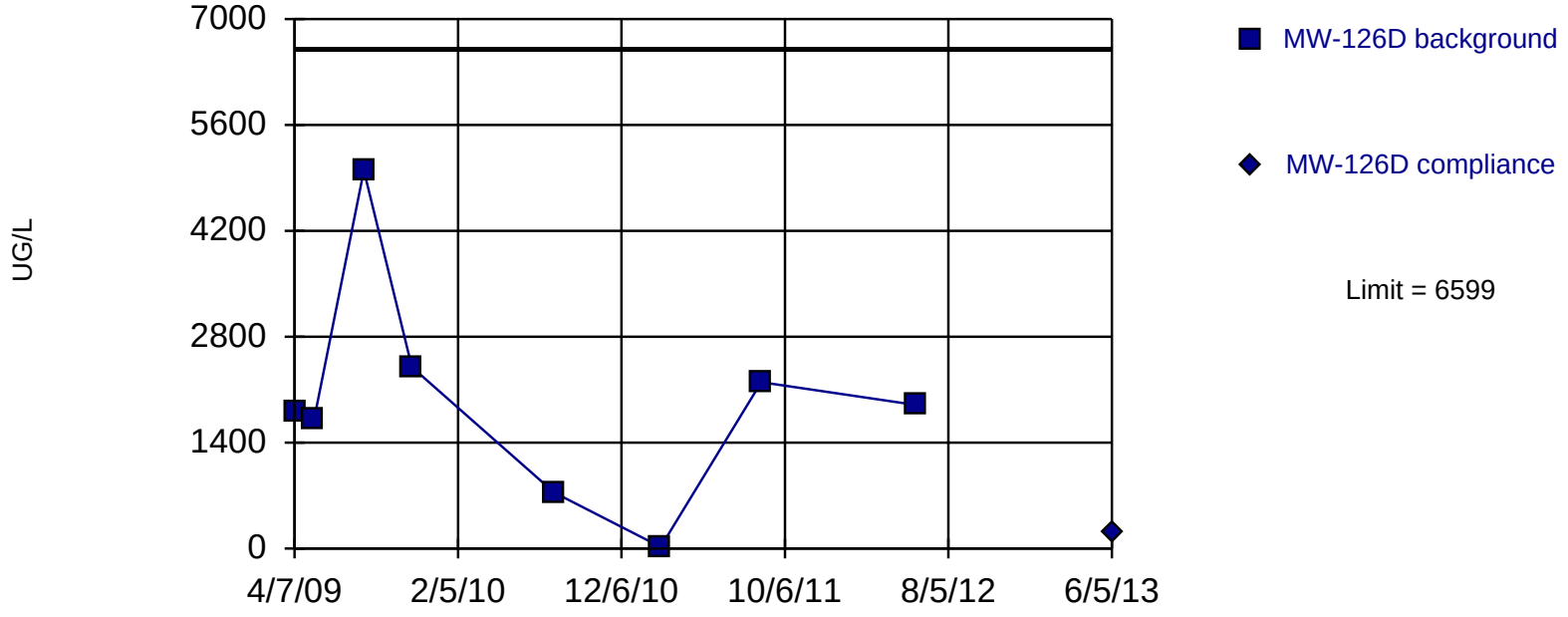
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



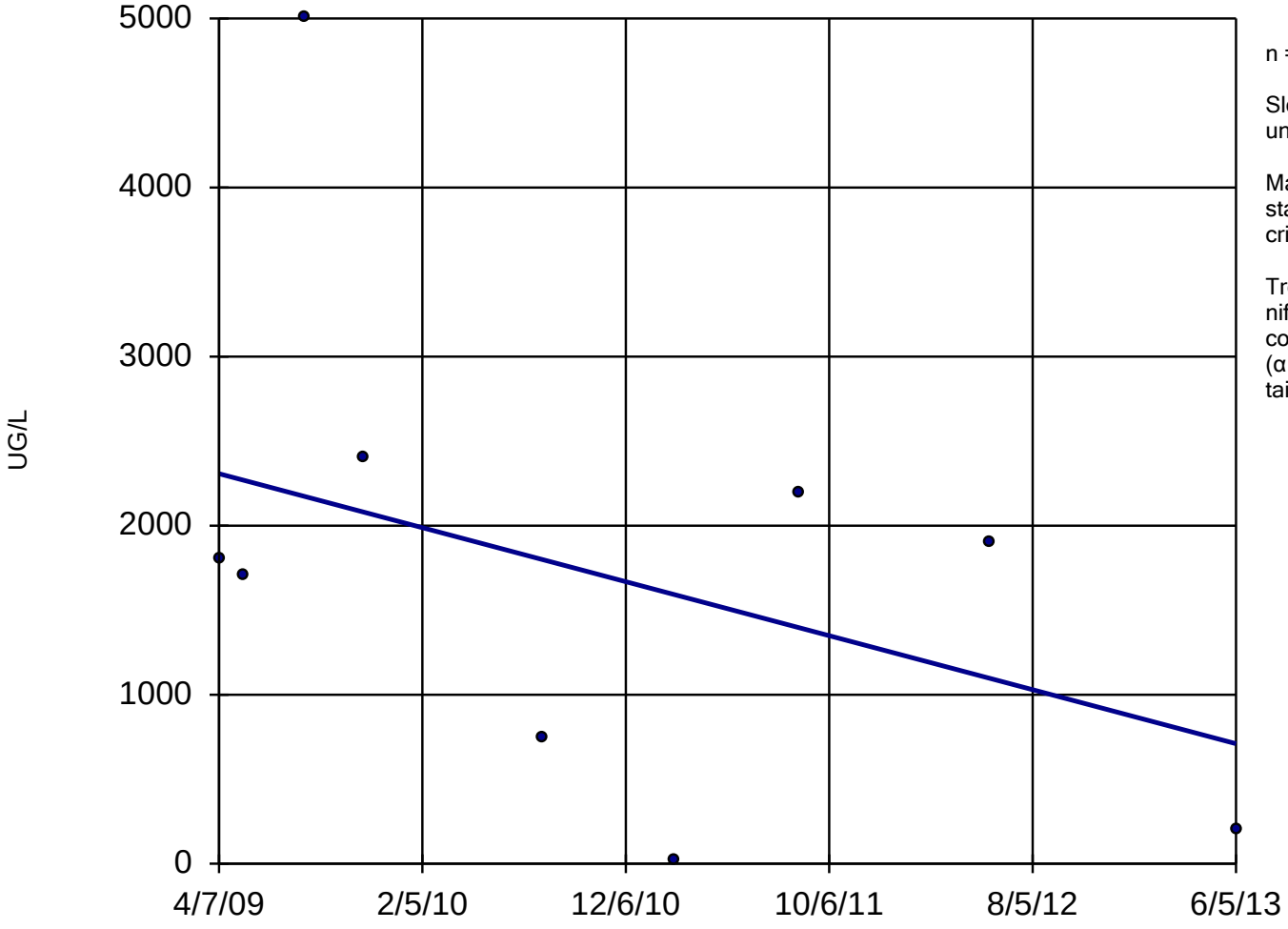
Background Data Summary: Mean=1970, Std. Dev.=1455, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8886, critical = 0.818. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-126D



n = 9

Slope = -383.5 units per year.

Mann-Kendall statistic = -10
critical = -23

Trend not significant at 98% confidence level (α = 0.01 per tail).

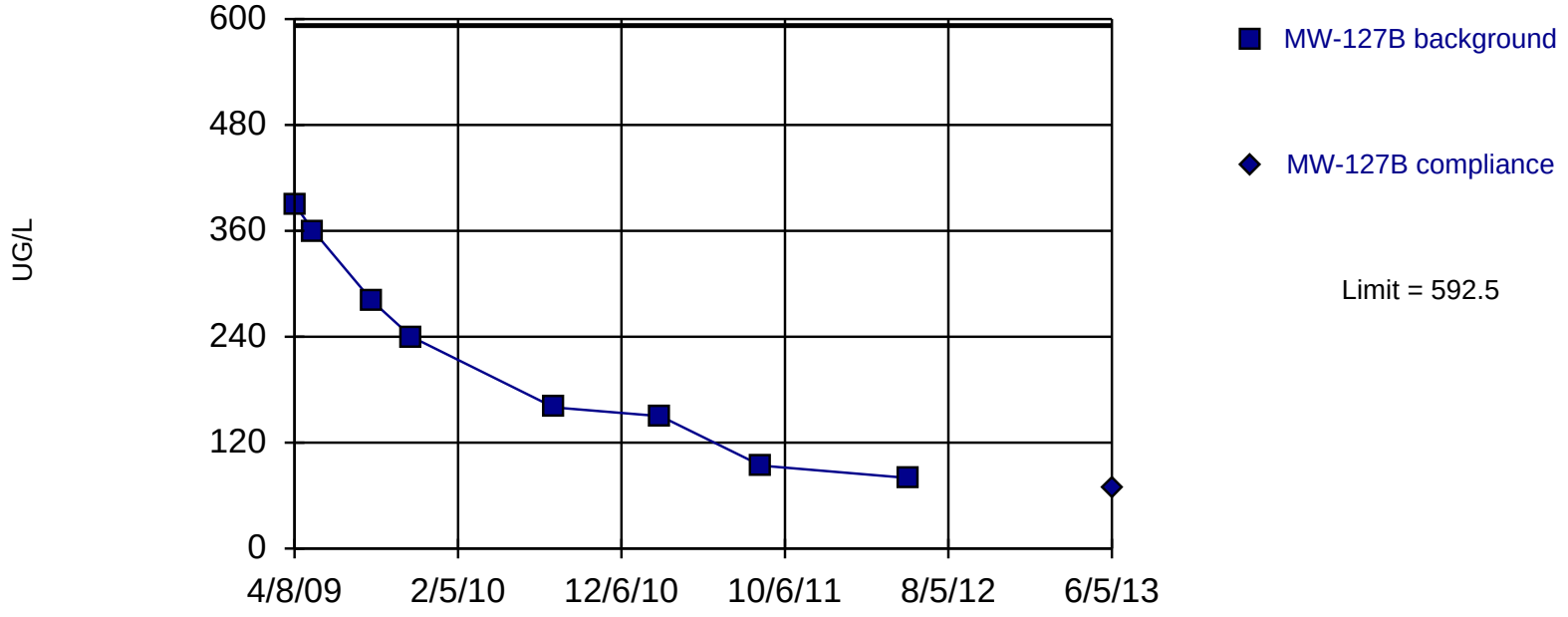
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



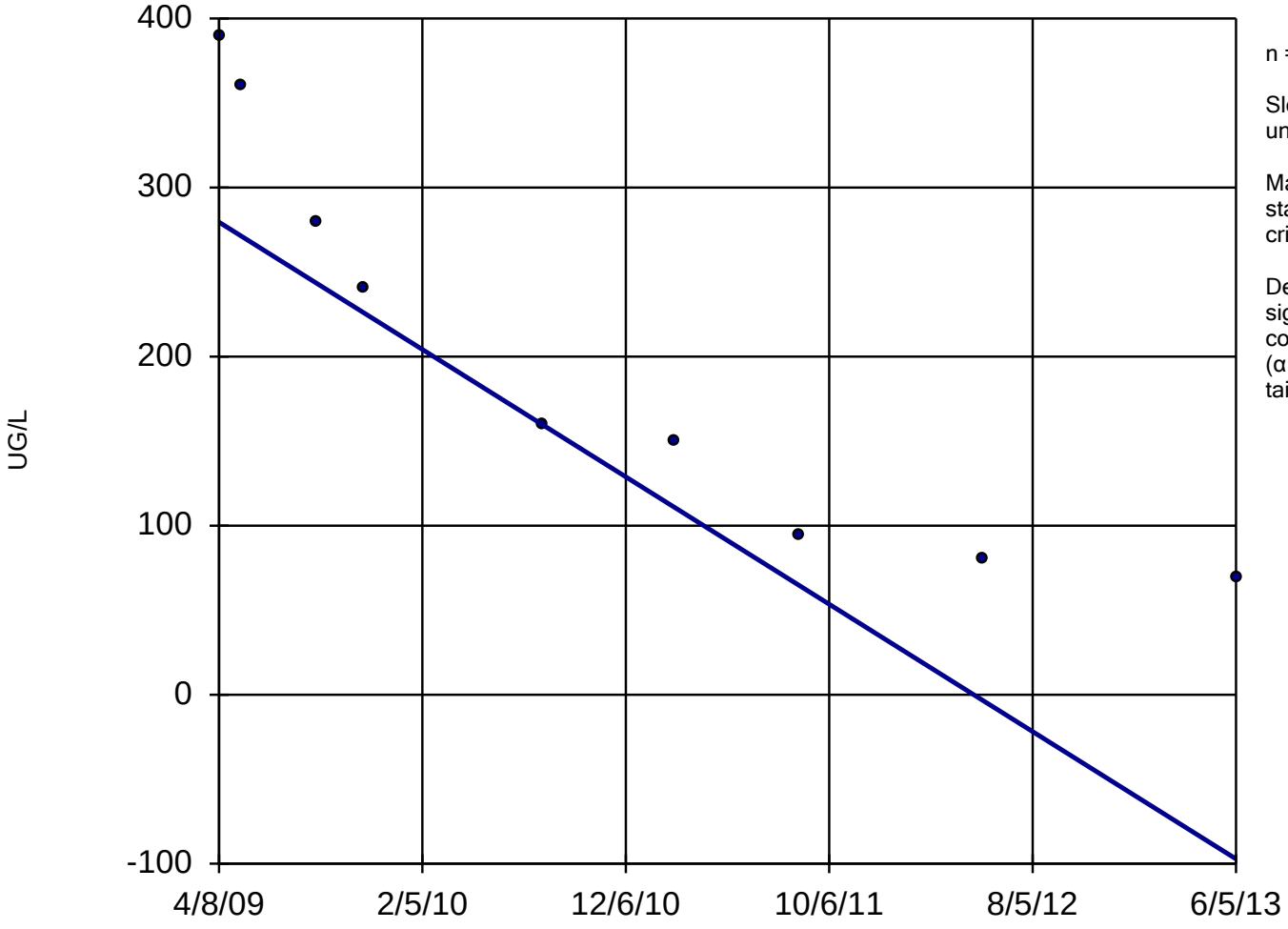
Background Data Summary: Mean=219.3, Std. Dev.=117.4, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9262, critical = 0.818. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-127B



n = 9

Slope = -90.51 units per year.

Mann-Kendall statistic = -36
critical = -23

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

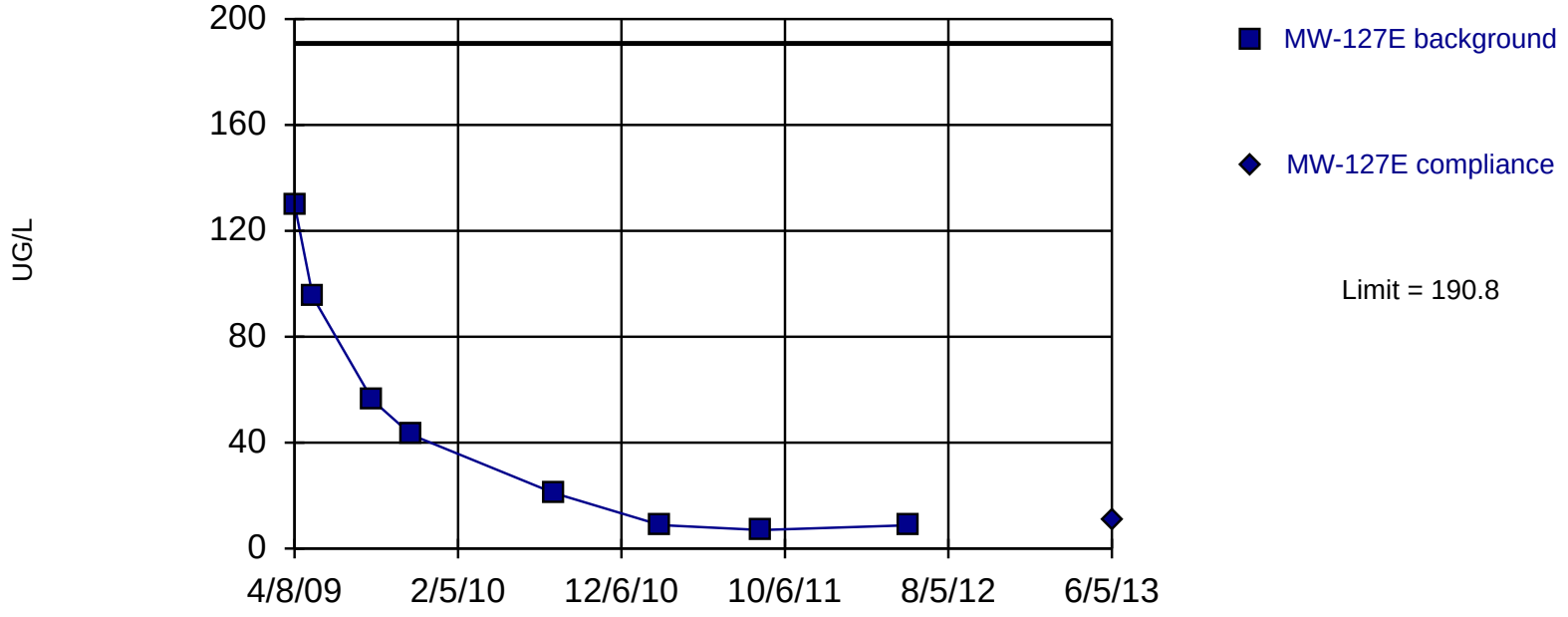
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



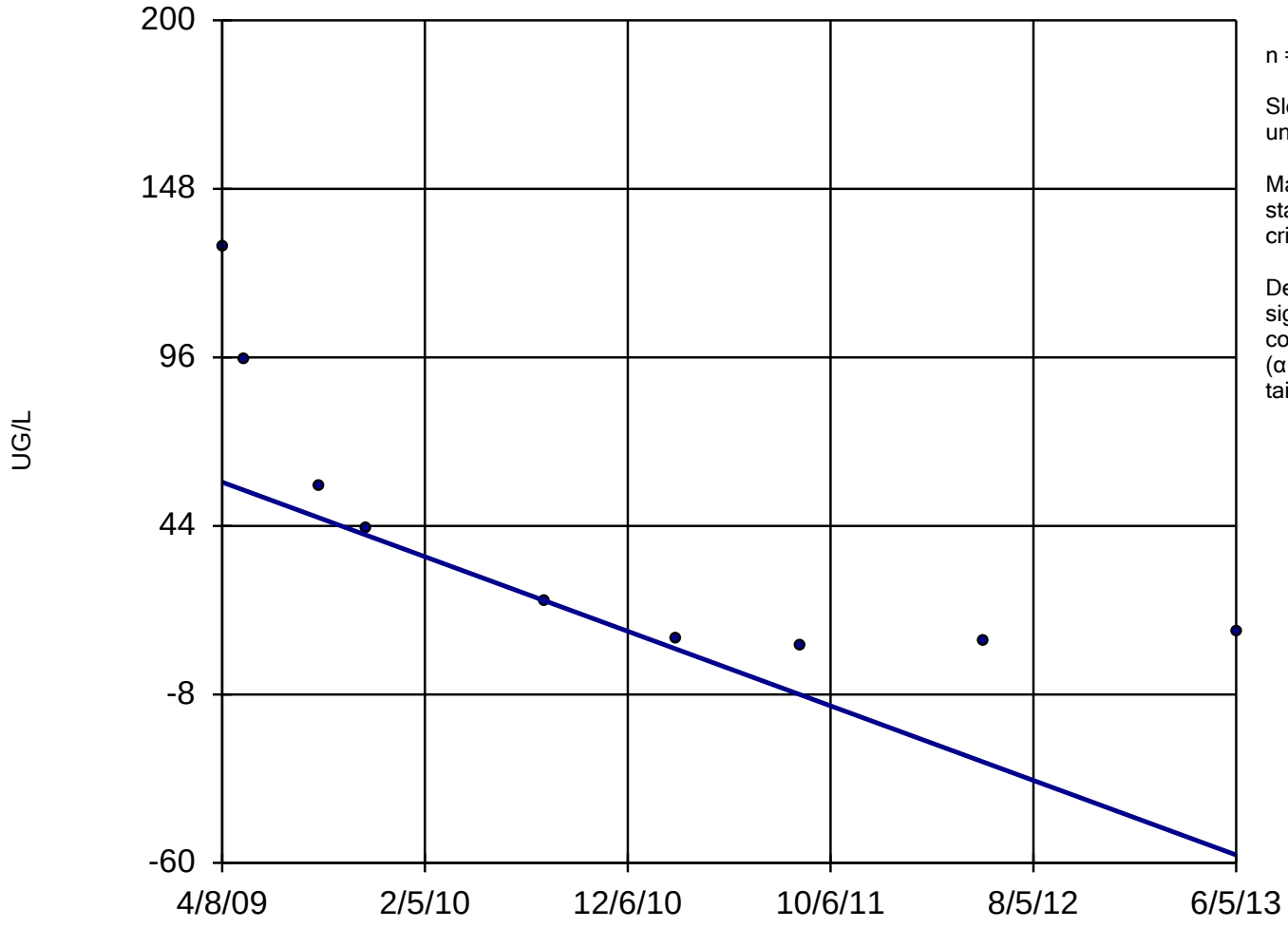
Background Data Summary: Mean=46.21, Std. Dev.=45.47, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8538, critical = 0.818. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-127E



n = 9

Slope = -27.64 units per year.

Mann-Kendall statistic = -28
critical = -23

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

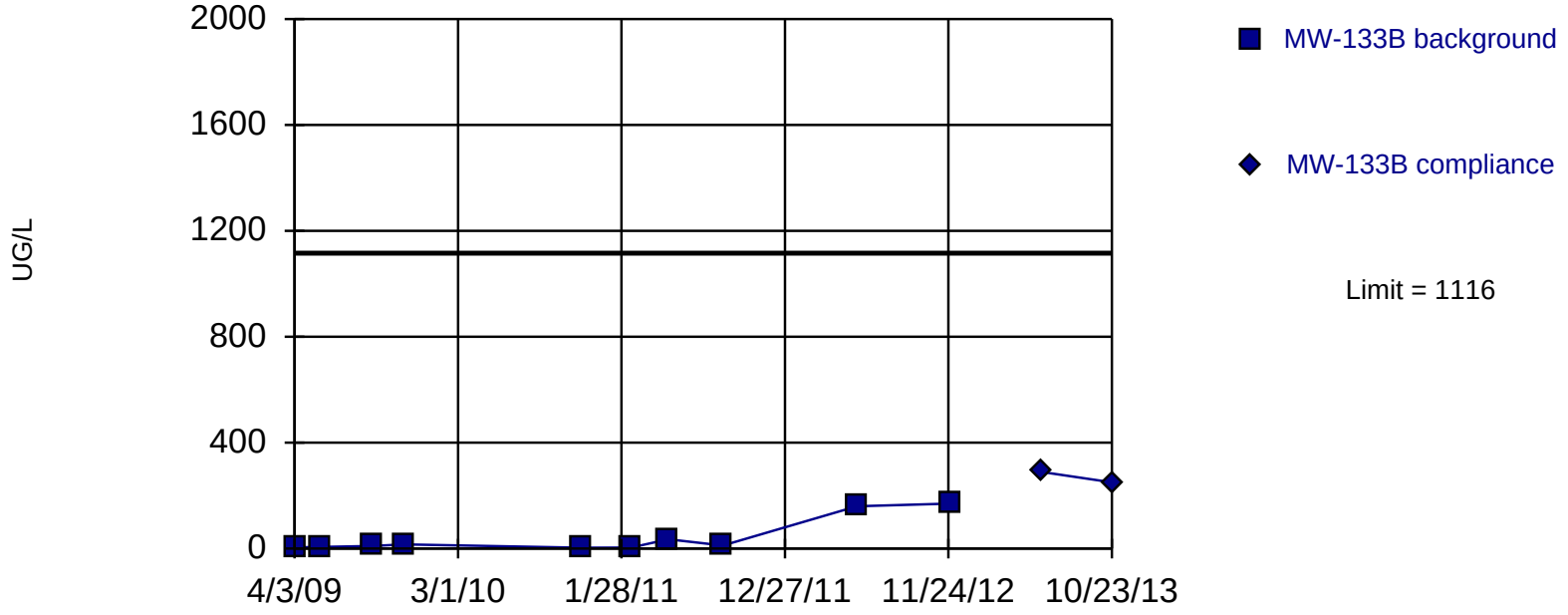
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



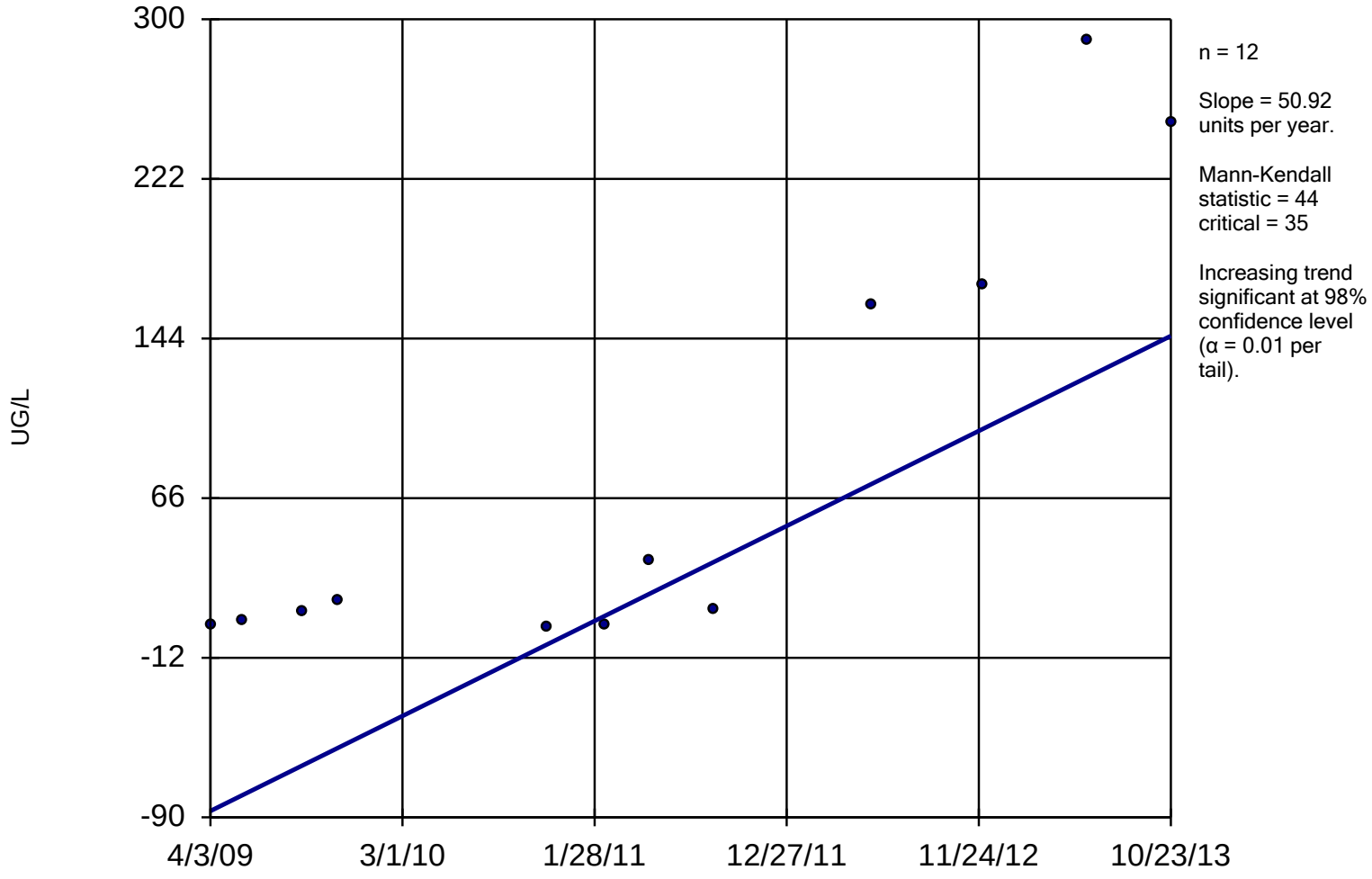
Background Data Summary (based on natural log transformation): Mean=2.713, Std. Dev.=1.455, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8828, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-133B



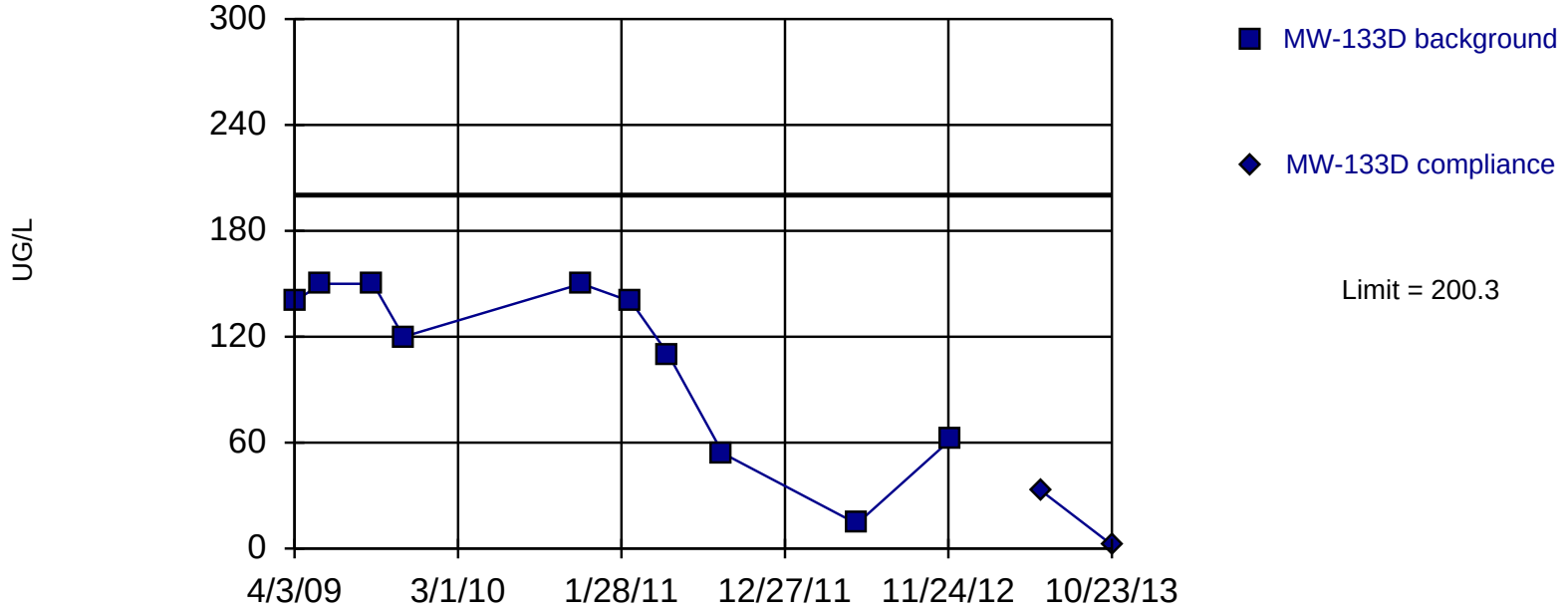
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



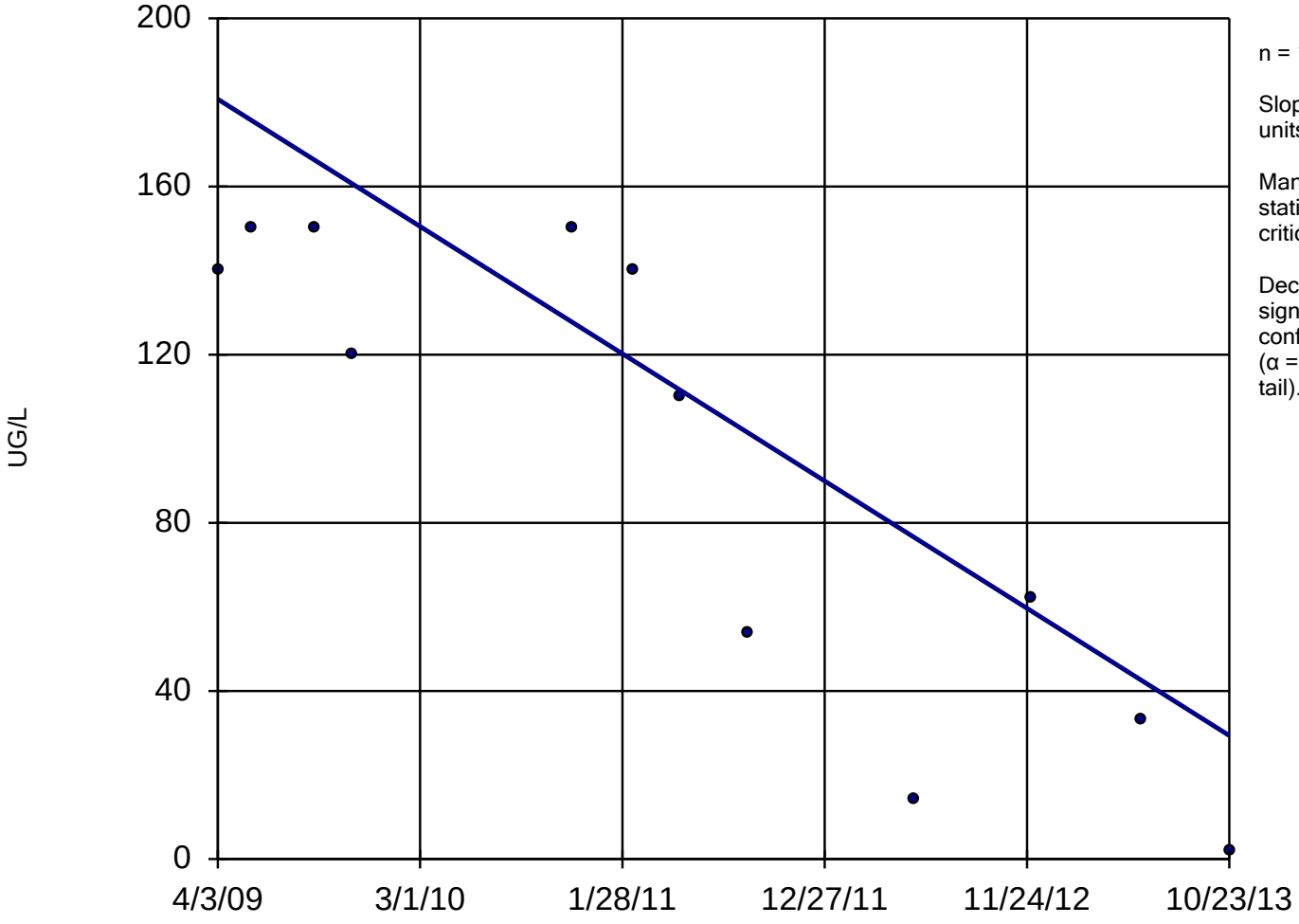
Background Data Summary (based on square transformation): Mean=14016, Std. Dev.=8818, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8483, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-133D



n = 12

Slope = -33.21 units per year.

Mann-Kendall statistic = -46
critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

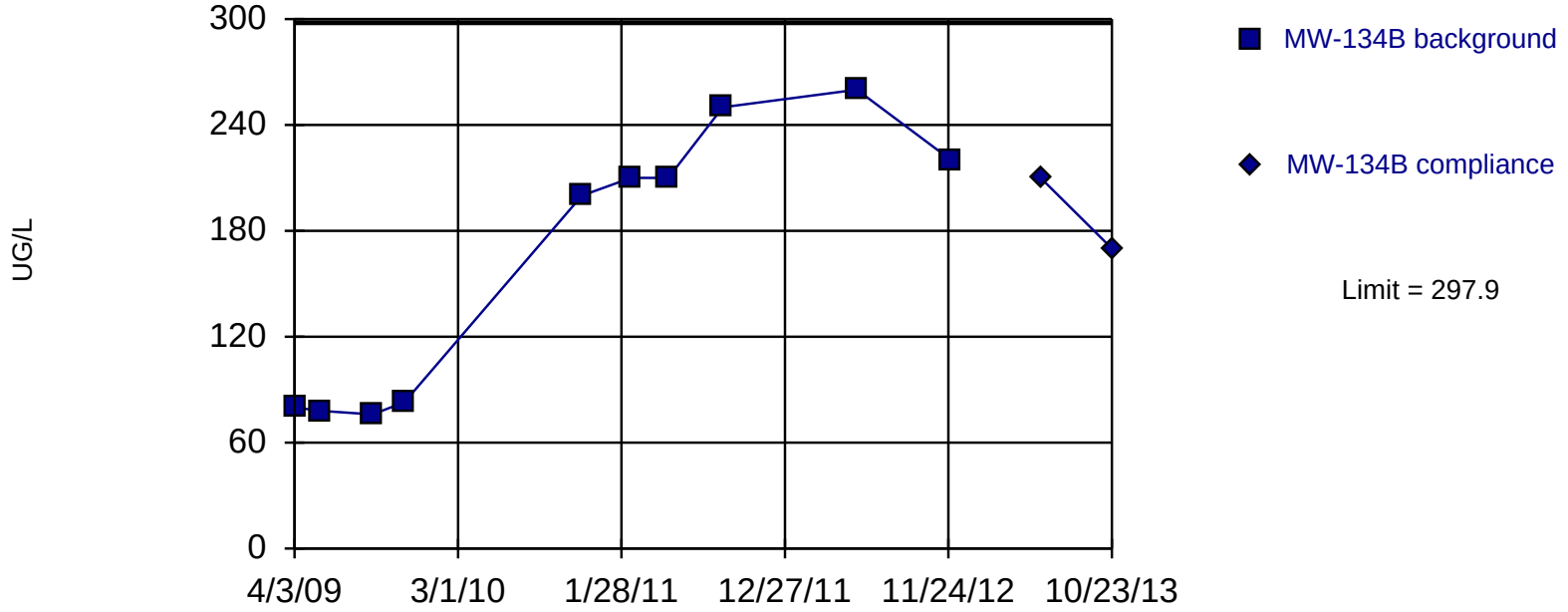
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



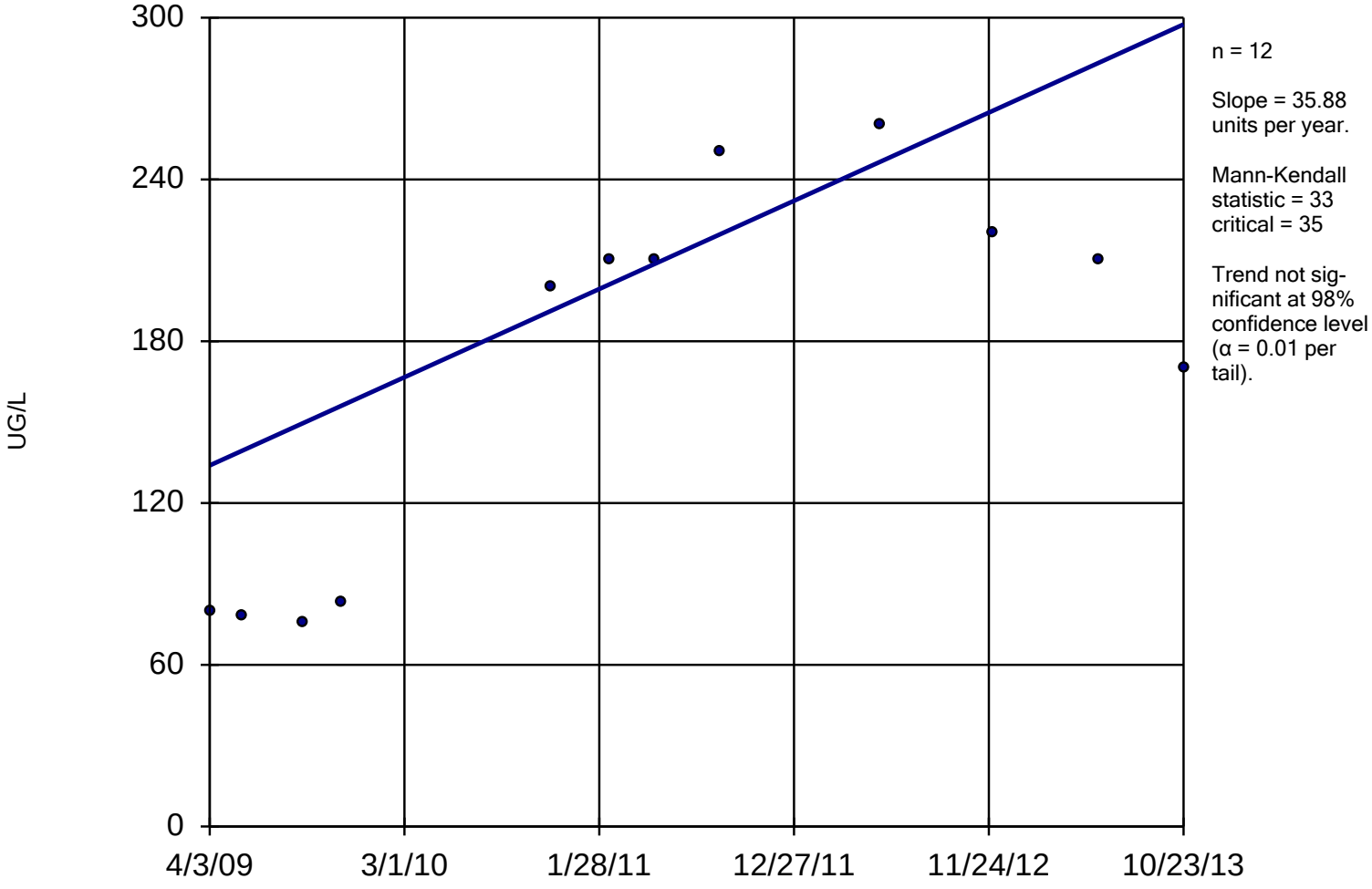
Background Data Summary (based on cube transformation): Mean=7236832, Std. Dev.=6491518, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8643, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:26 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-134B



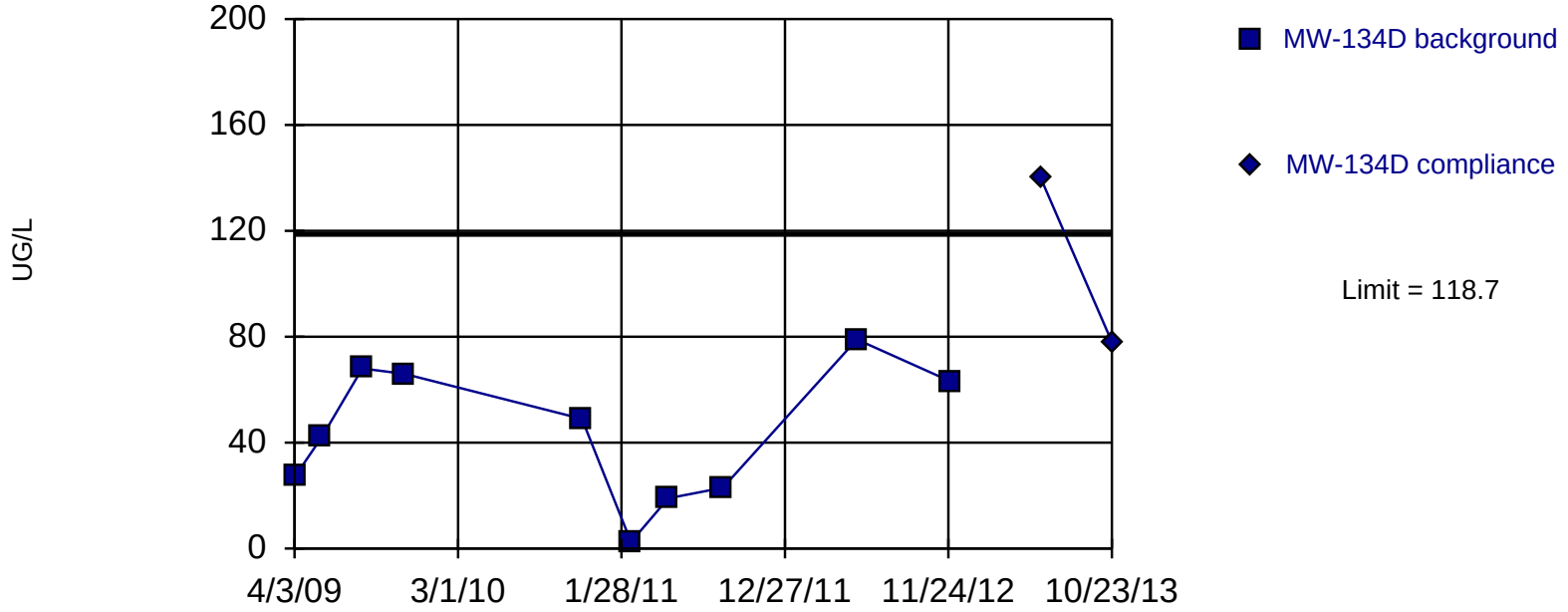
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



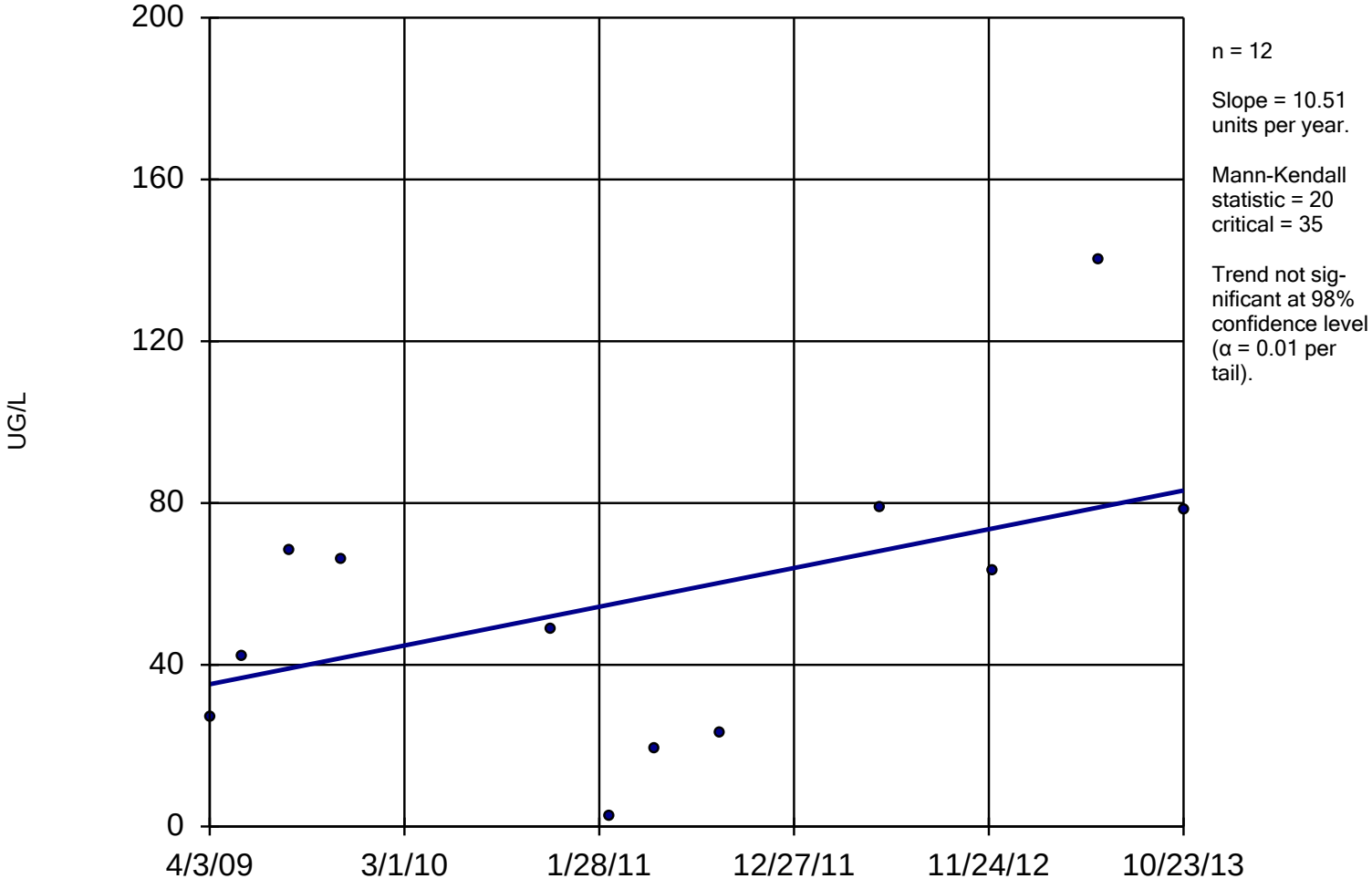
Background Data Summary: Mean=43.85, Std. Dev.=25.28, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.95, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-134D



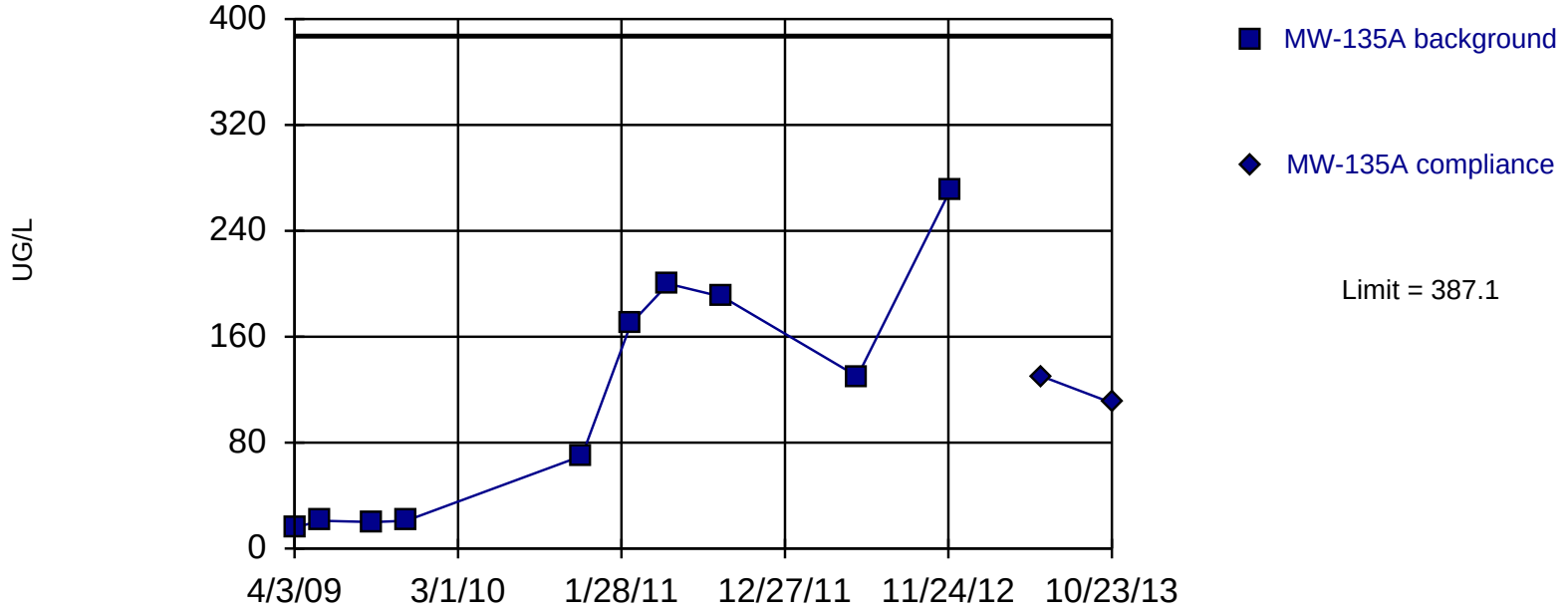
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



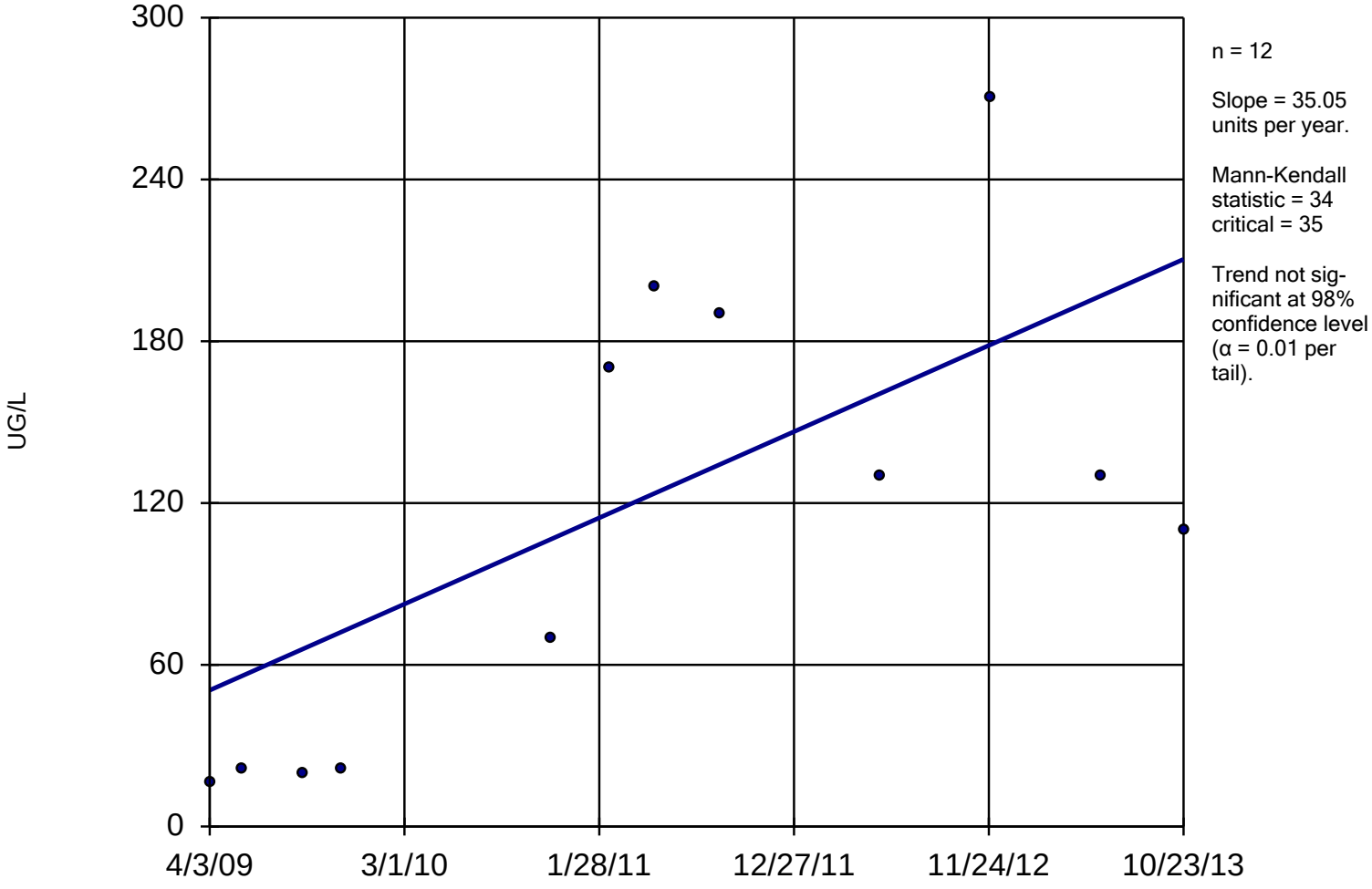
Background Data Summary: Mean=110.8, Std. Dev.=93.38, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8736, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-135A



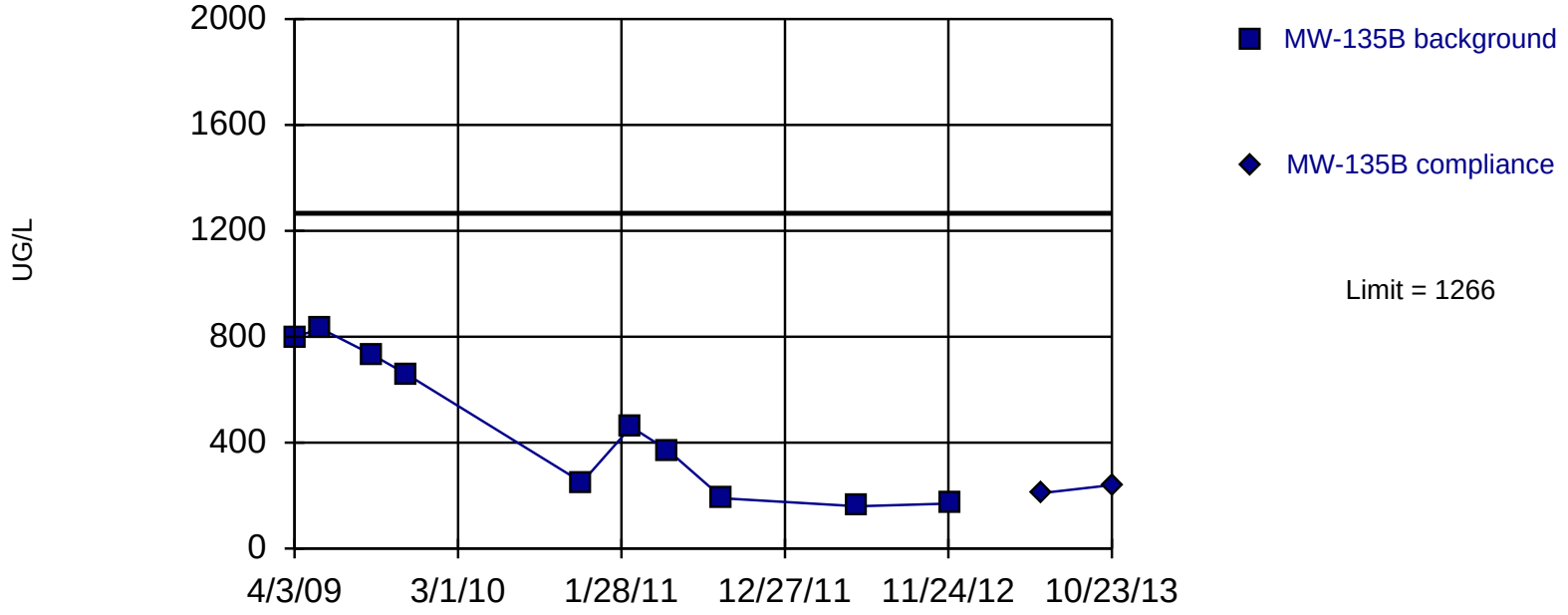
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



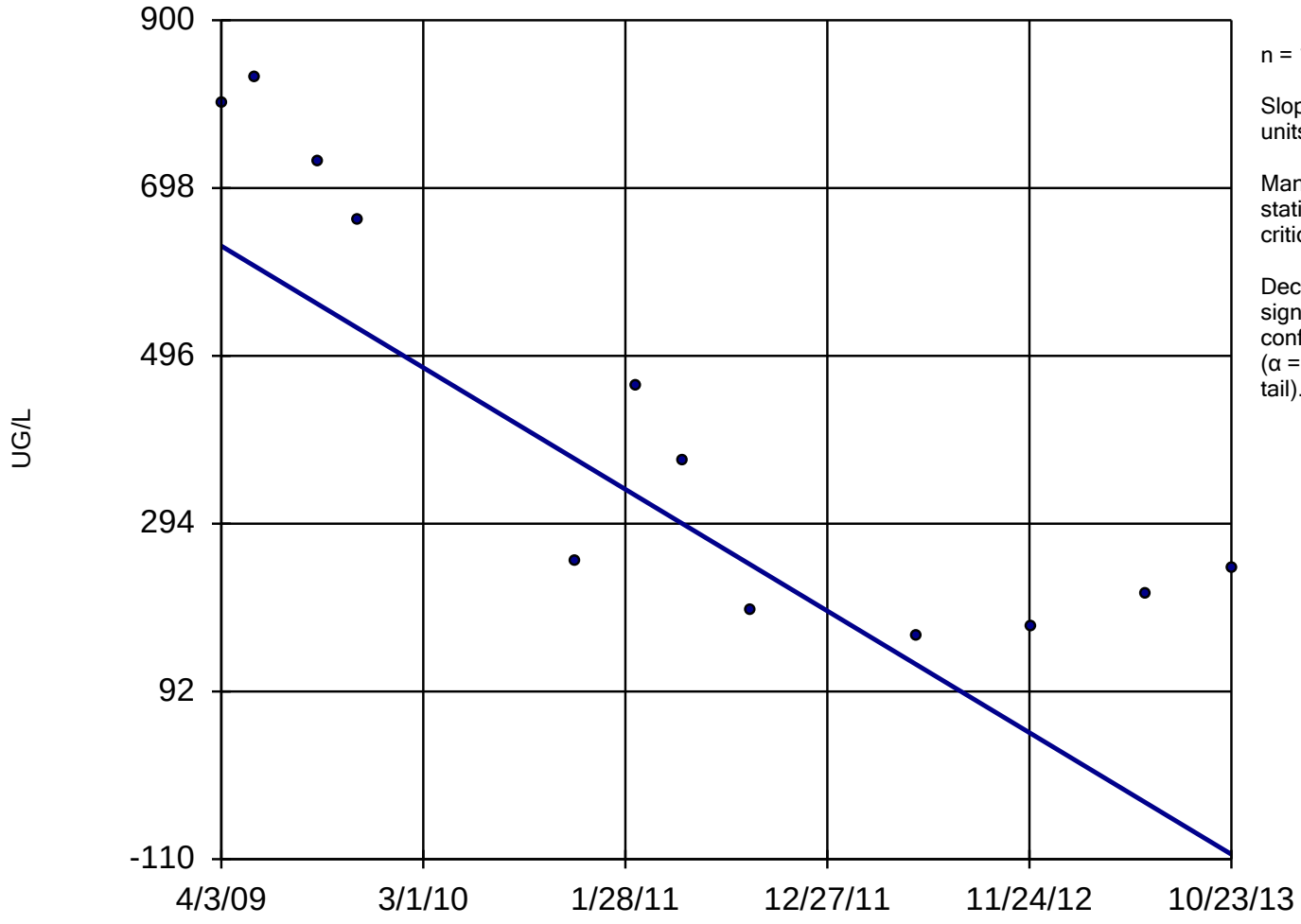
Background Data Summary: Mean=462, Std. Dev.=271.7, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.872, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-135B



n = 12

Slope = -160.6 units per year.

Mann-Kendall statistic = -44
critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

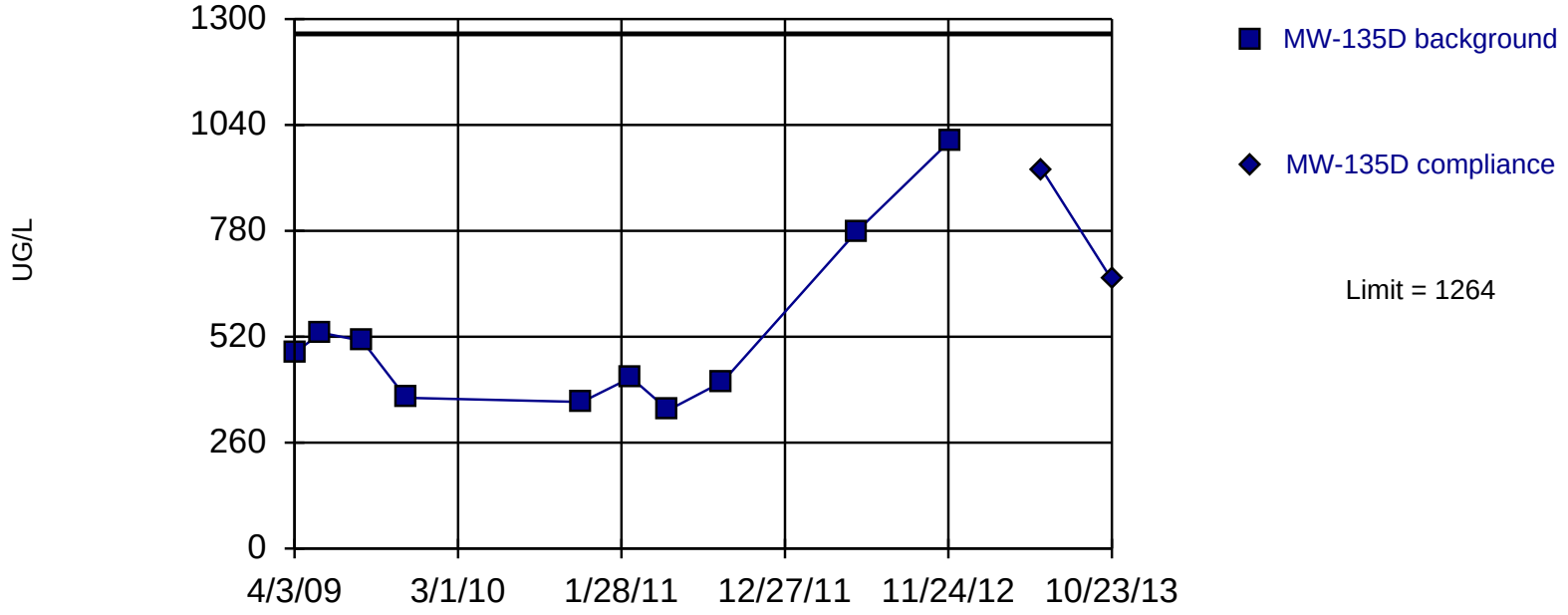
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



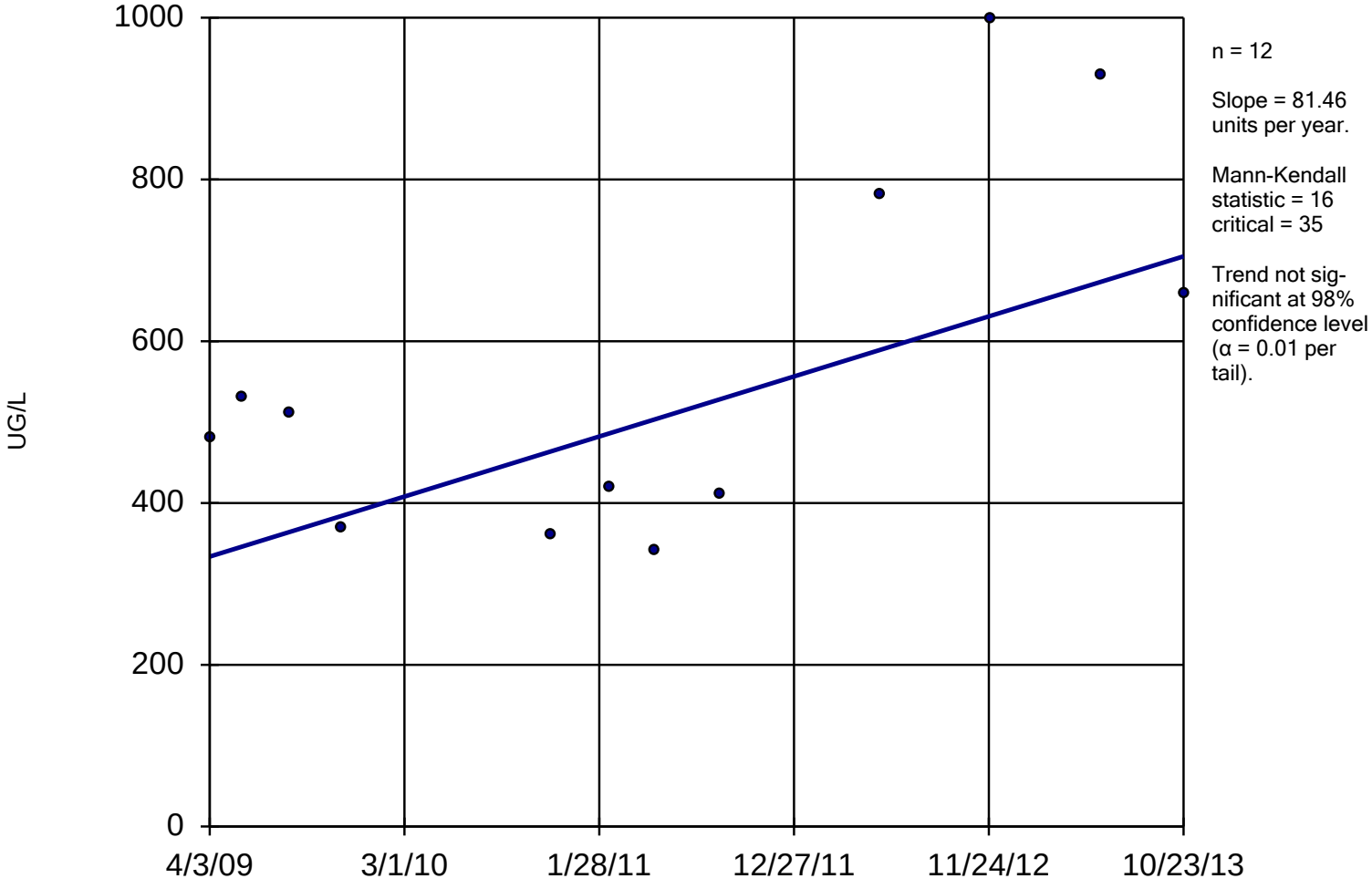
Background Data Summary (based on cube root transformation): Mean=7.931, Std. Dev.=0.9735, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8543, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-135D



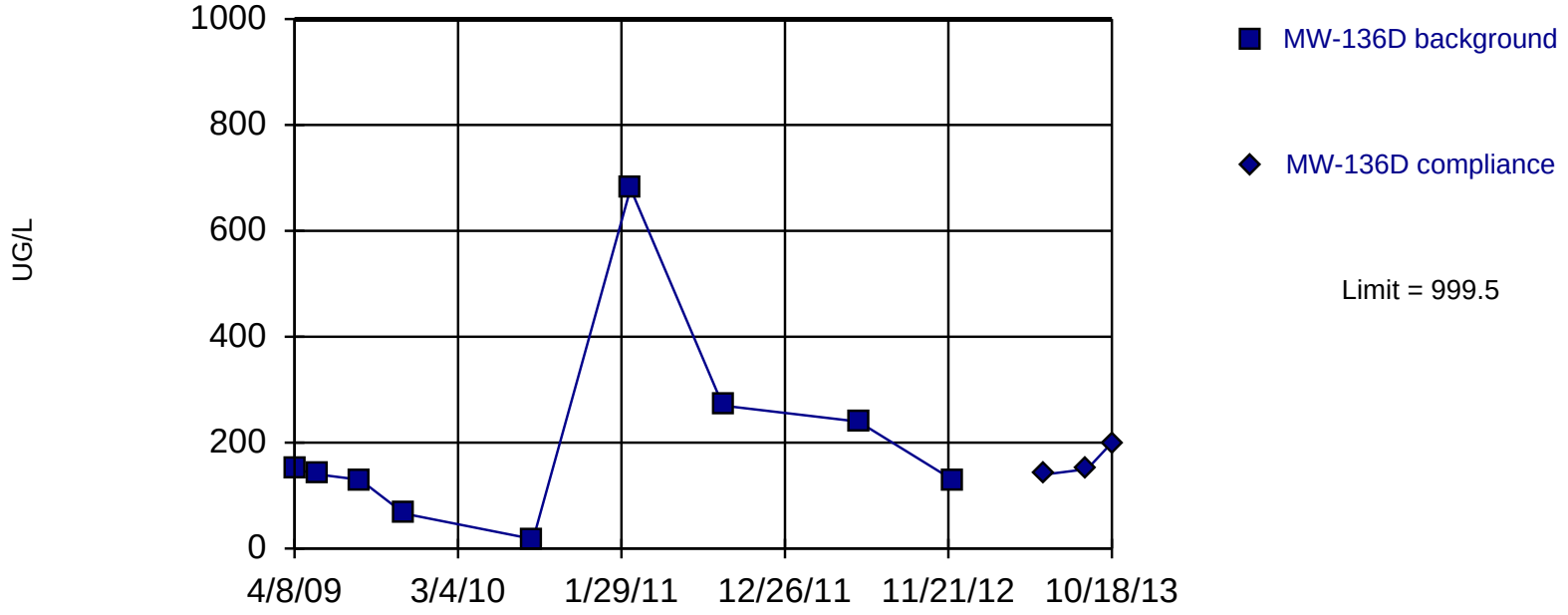
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



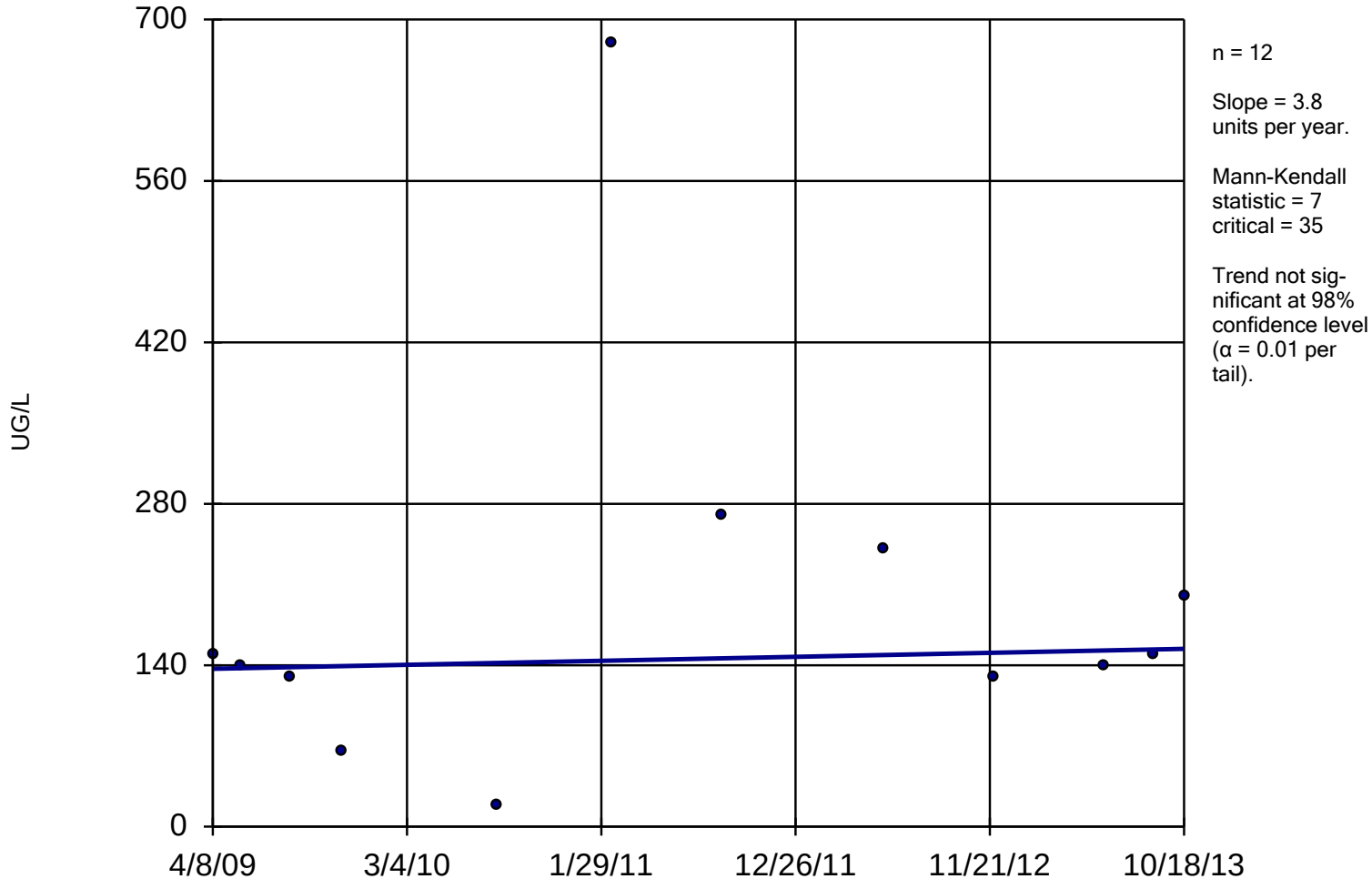
Background Data Summary (based on square root transformation): Mean=13.03, Std. Dev.=6.088, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9115, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-136D



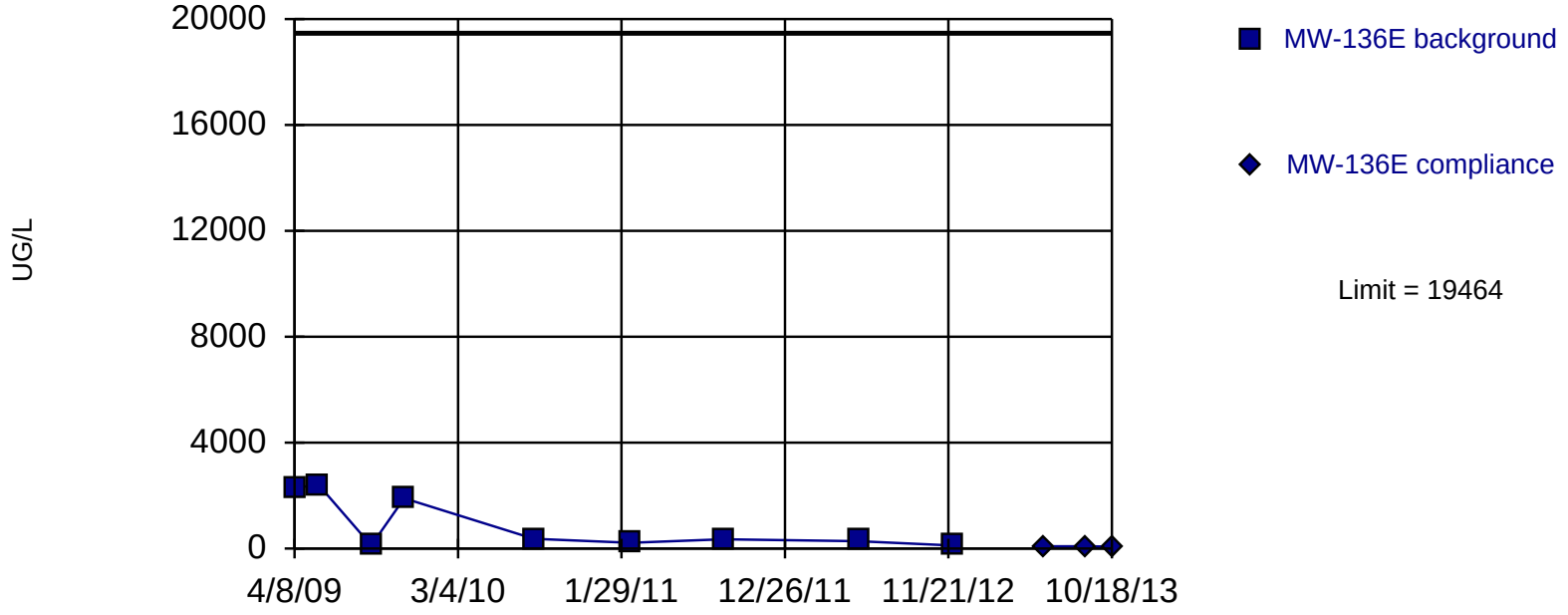
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



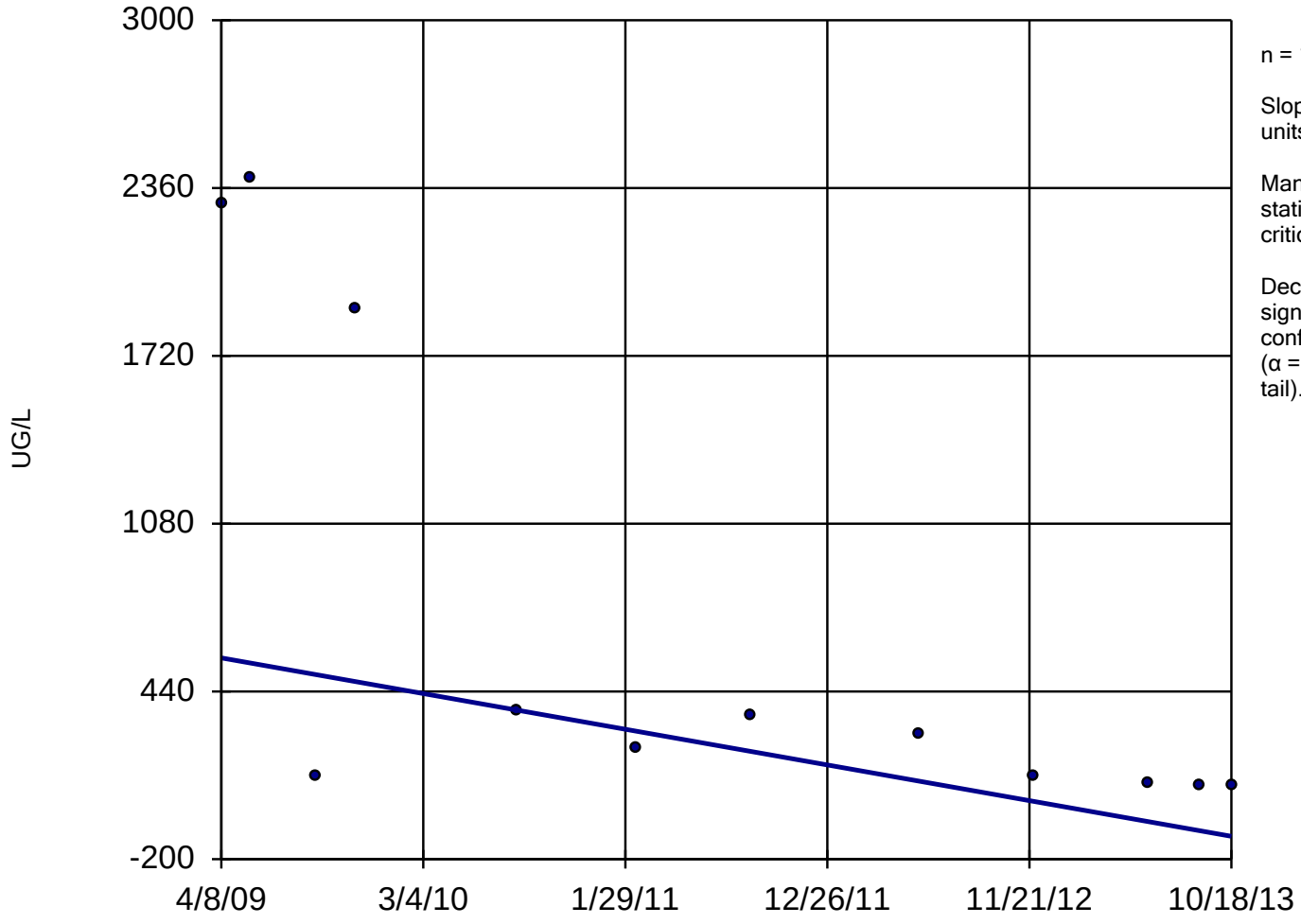
Background Data Summary (based on natural log transformation): Mean=6.161, Std. Dev.=1.217, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8505, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-136E



n = 12

Slope = -150.1 units per year.

Mann-Kendall statistic = -49
critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

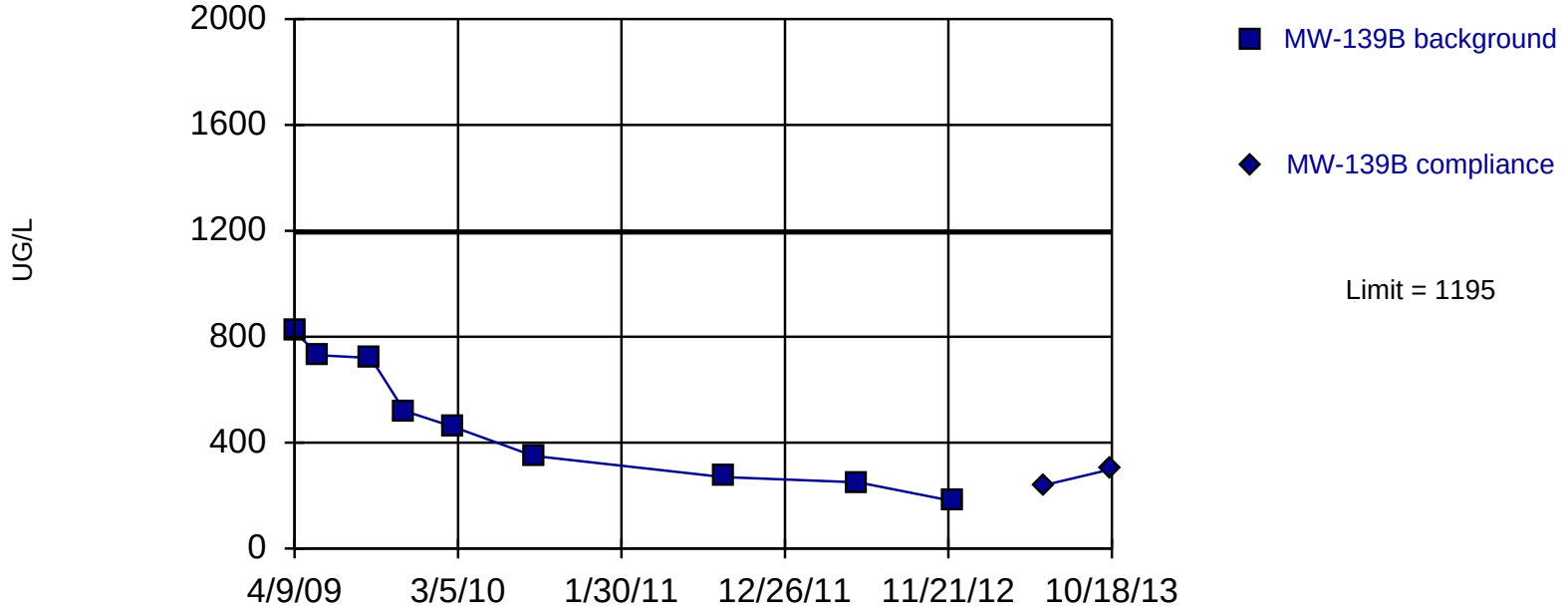
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



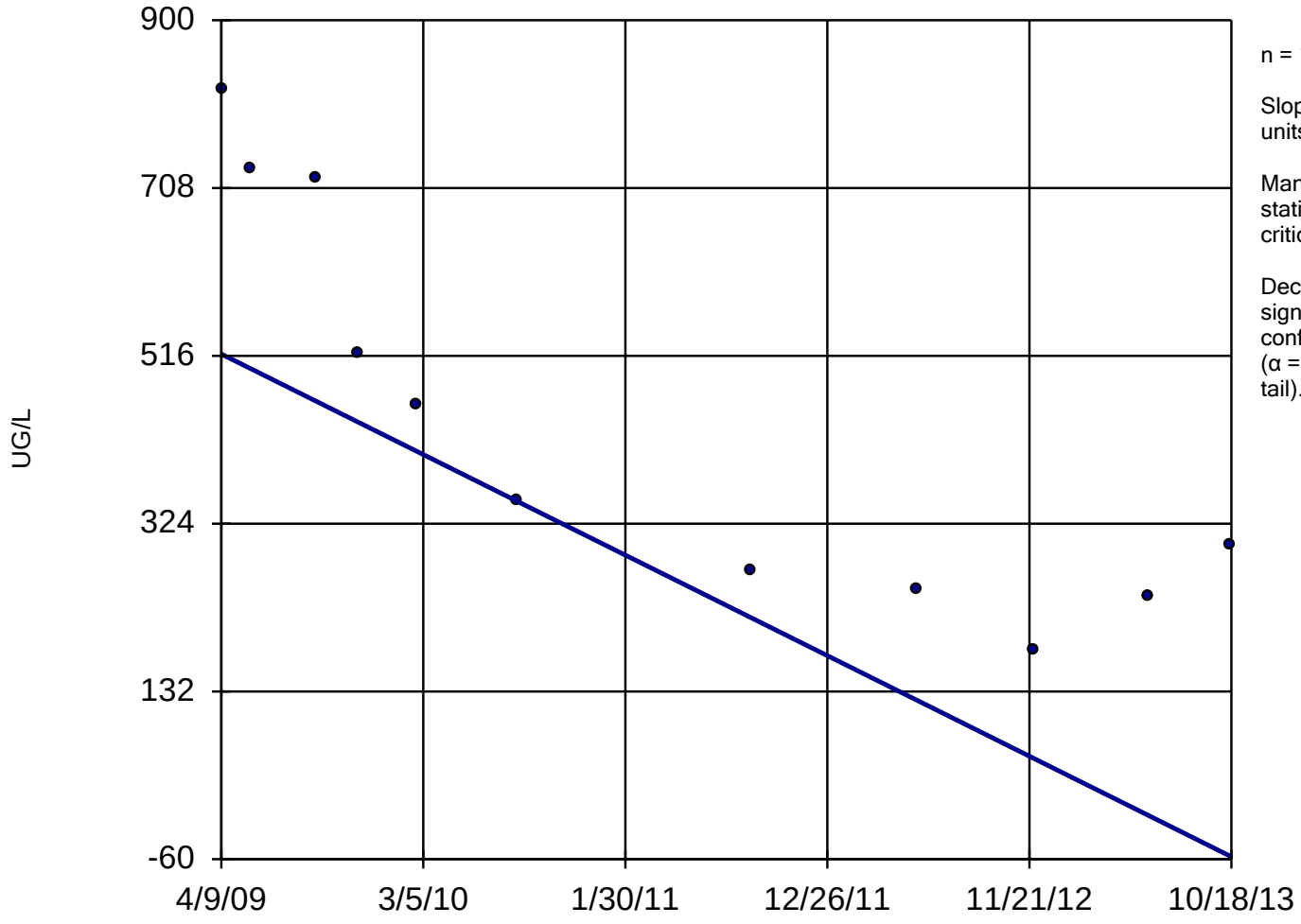
Background Data Summary: Mean=477.8, Std. Dev.=234.9, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9206, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-139B



n = 11

Slope = -127 units per year.

Mann-Kendall statistic = -45
critical = -31

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:37 PM

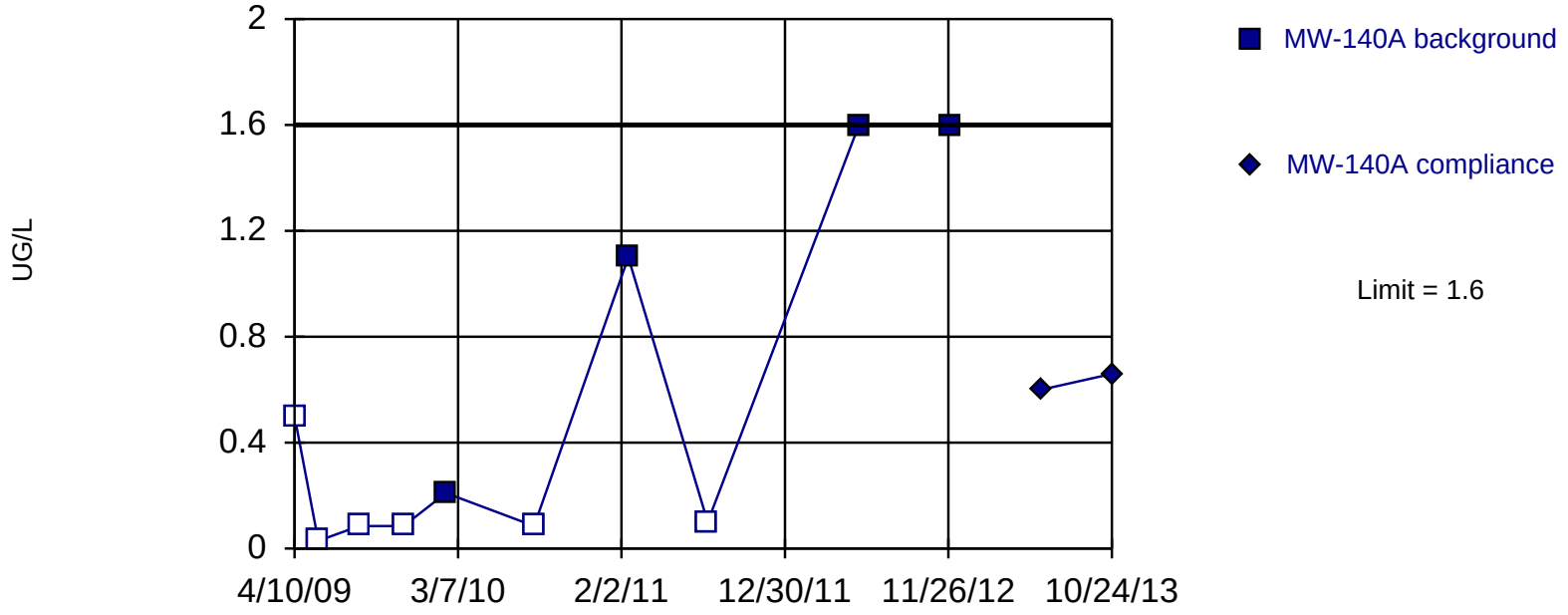
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 10 background values. 60% NDs. Report alpha = 0.09091. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

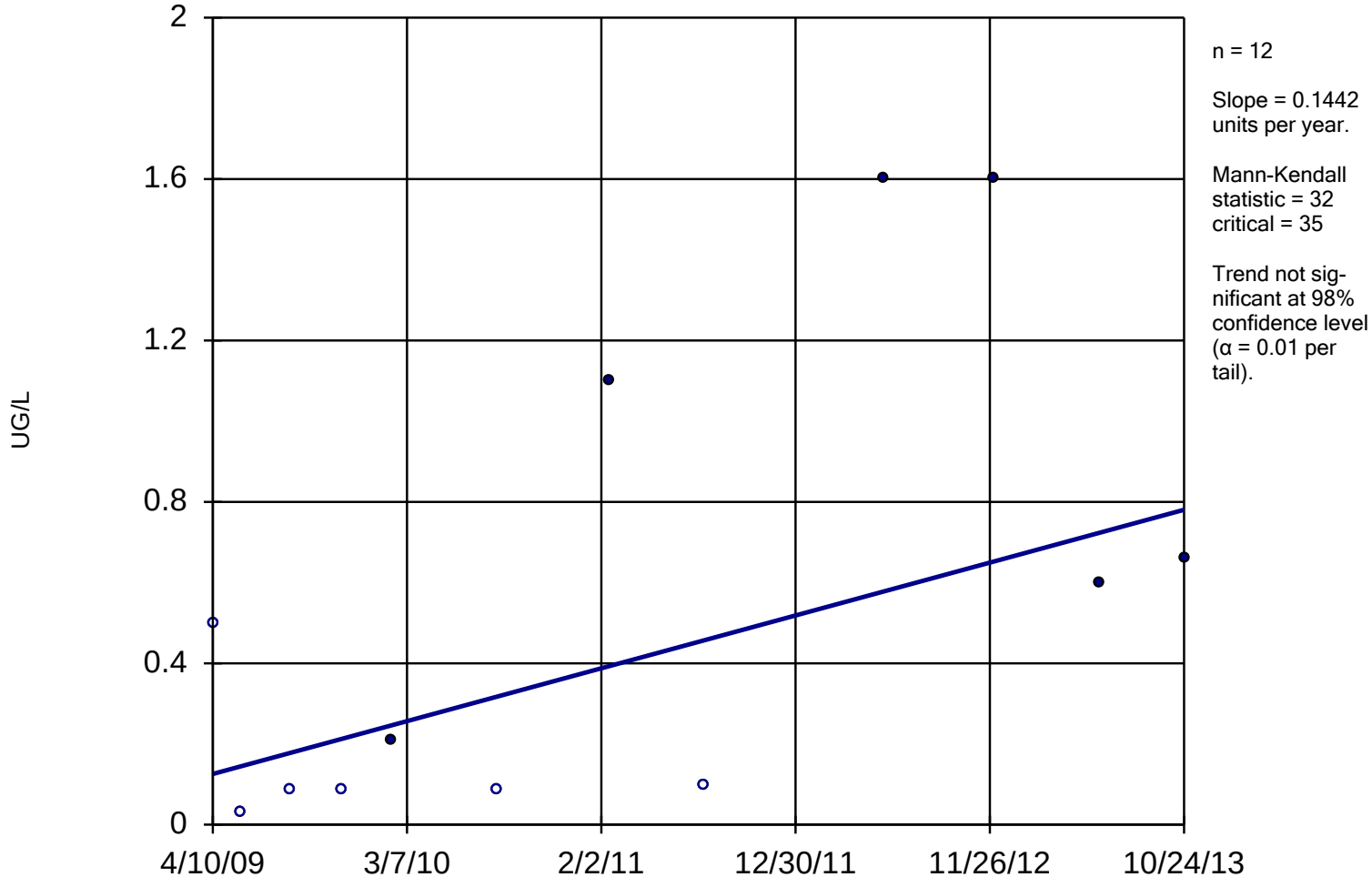
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-140A



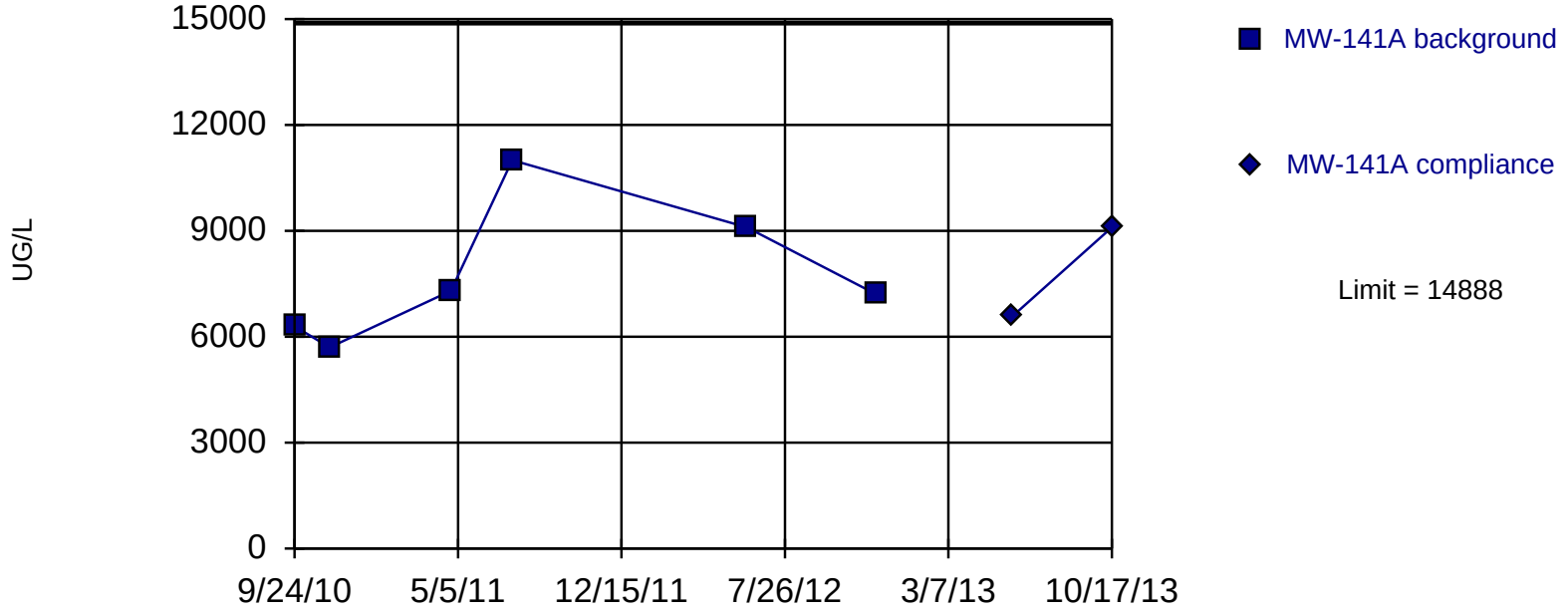
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



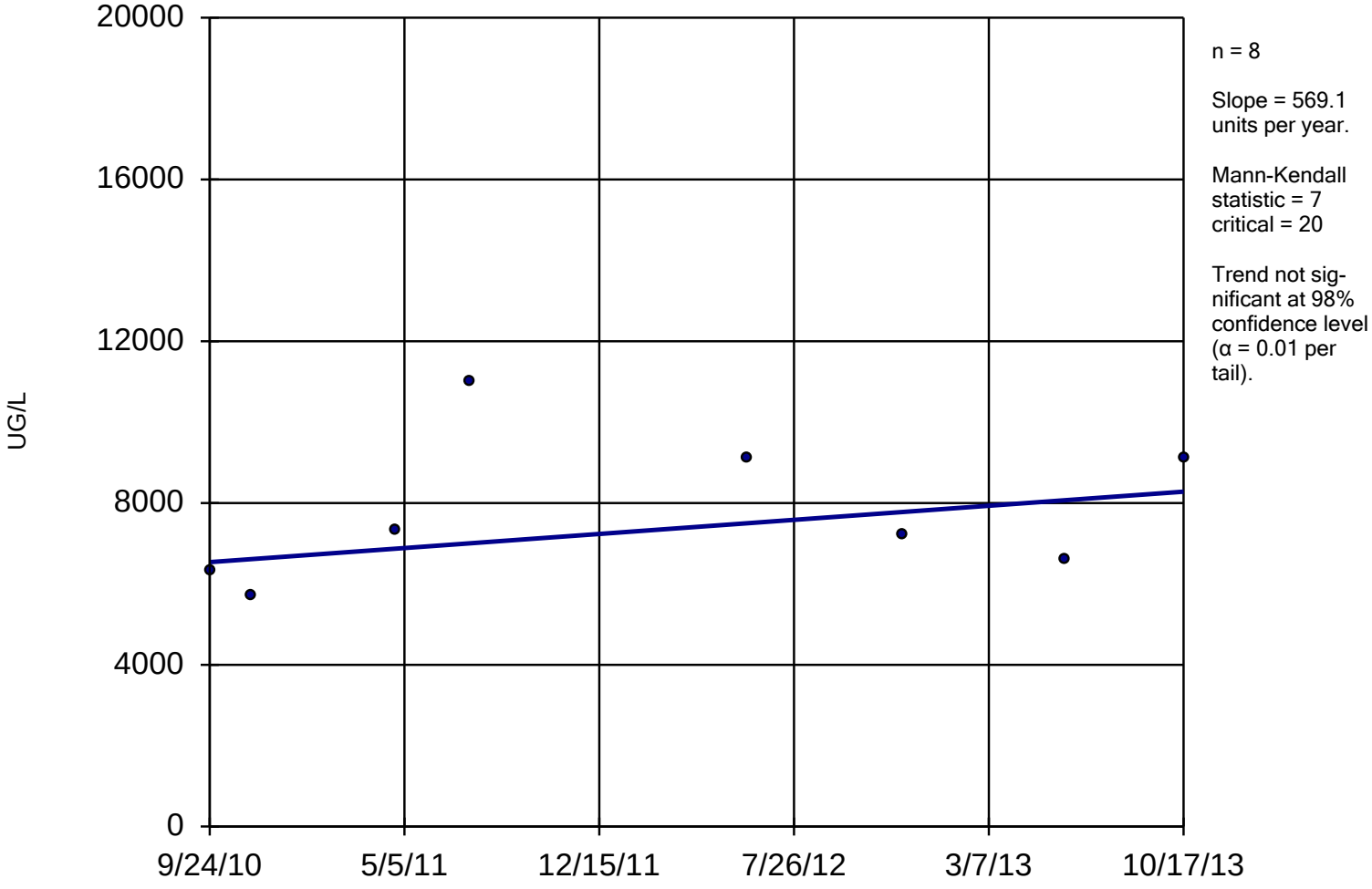
Background Data Summary: Mean=7767, Std. Dev.=1959, n=6. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9203, critical = 0.788. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-141A



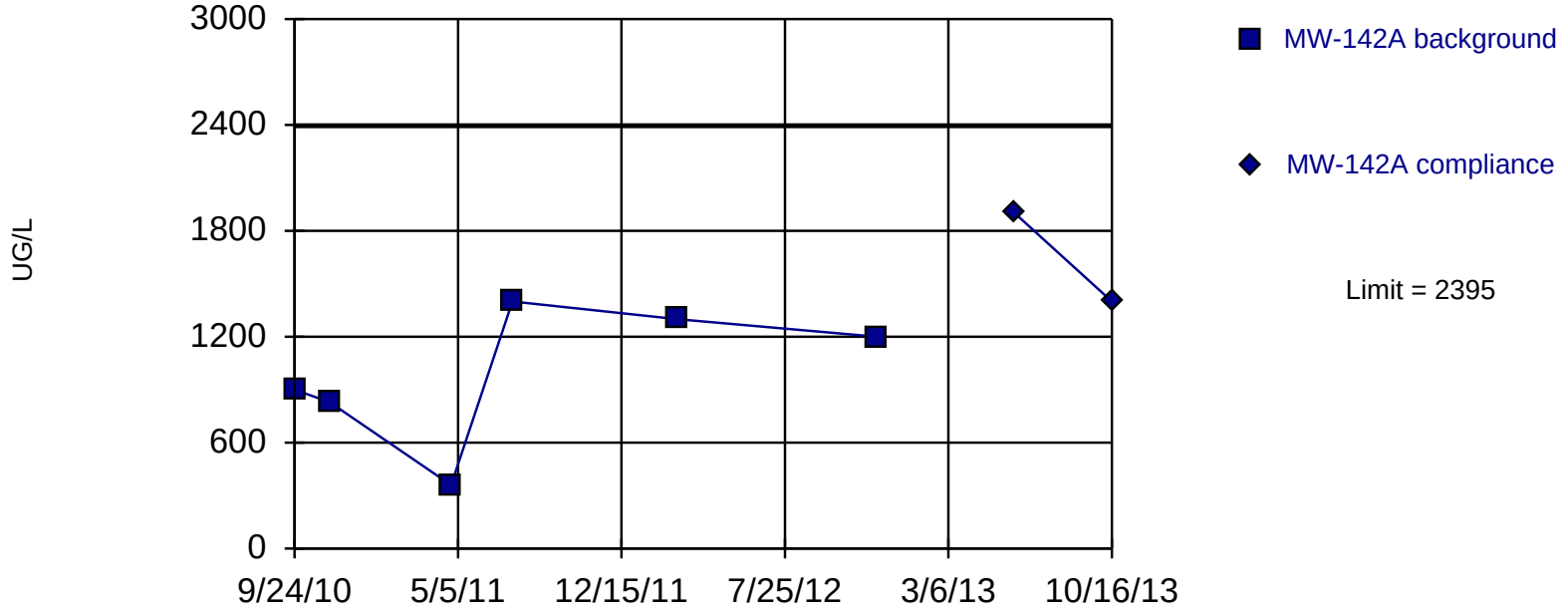
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



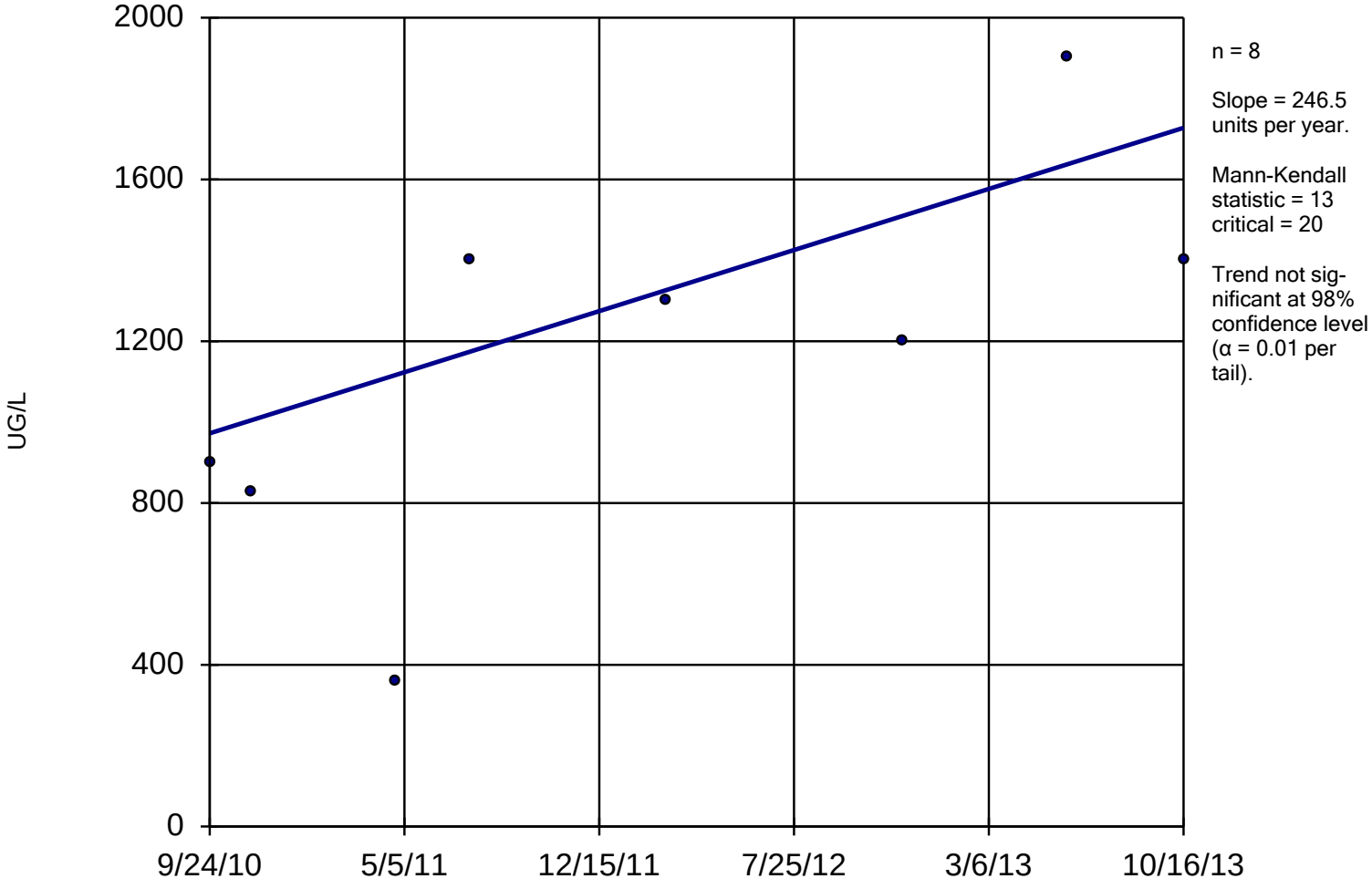
Background Data Summary: Mean=998.3, Std. Dev.=384.3, n=6. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.926, critical = 0.788. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-142A



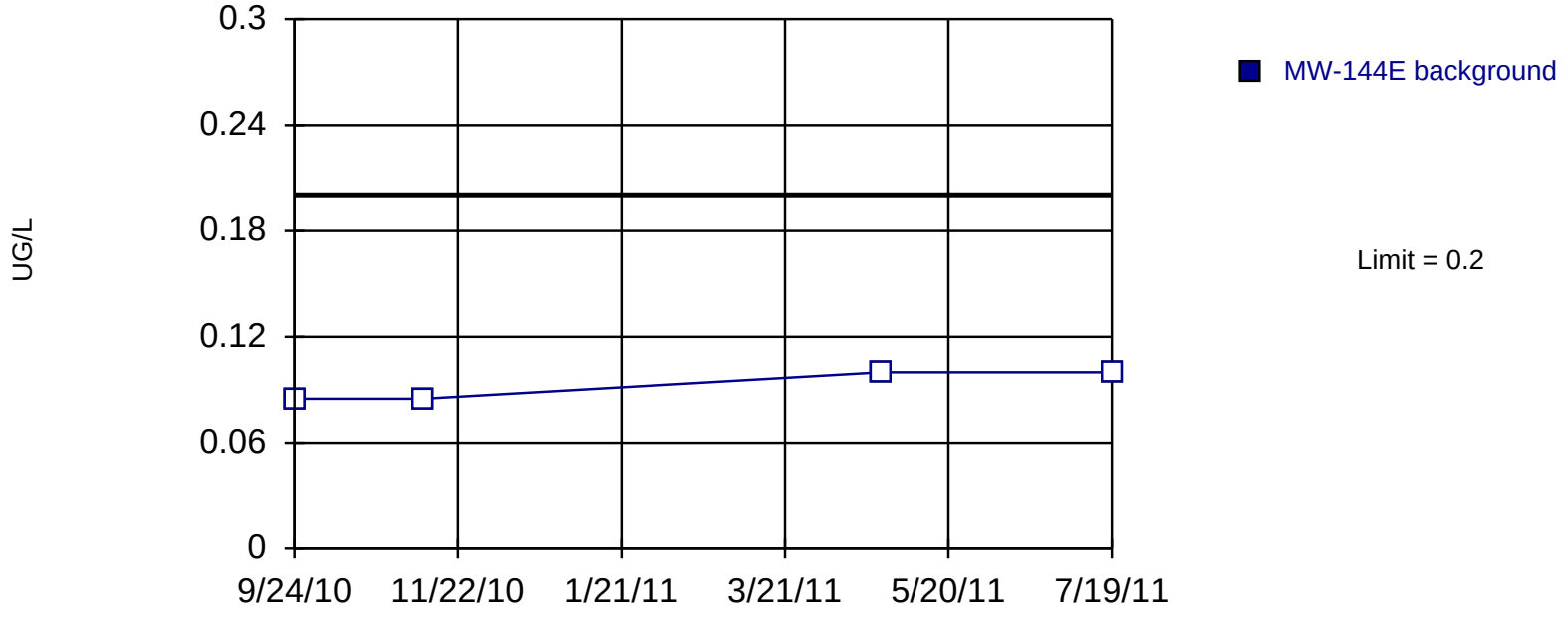
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-144E



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 4) were censored; limit is most recent reporting limit. Report alpha = 0.2. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

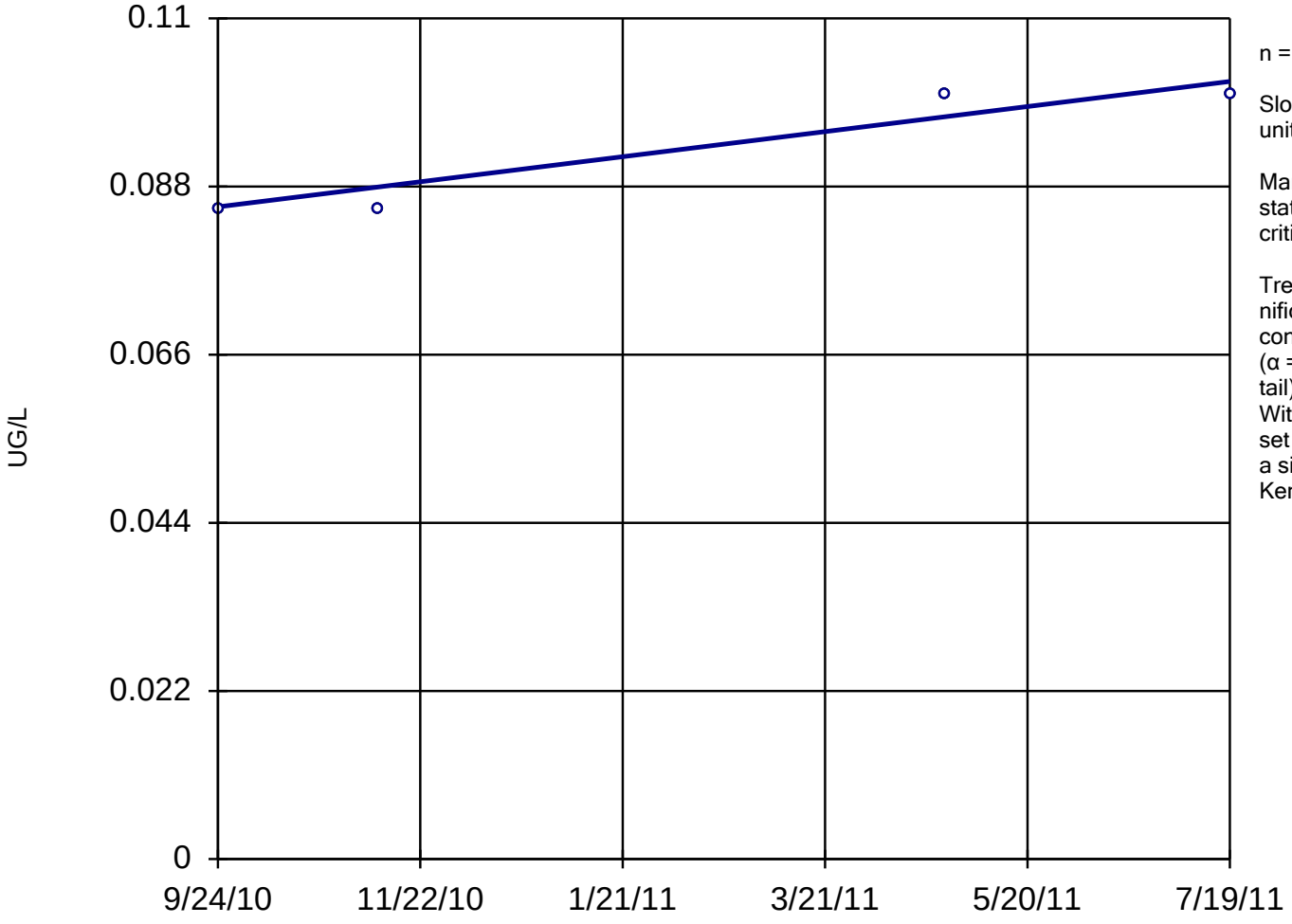
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-144E



n = 4

Slope = 0.02009 units per year.

Mann-Kendall statistic = 4
critical = 8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

Constituent: TCE Analysis Run 1/28/2014 2:37 PM

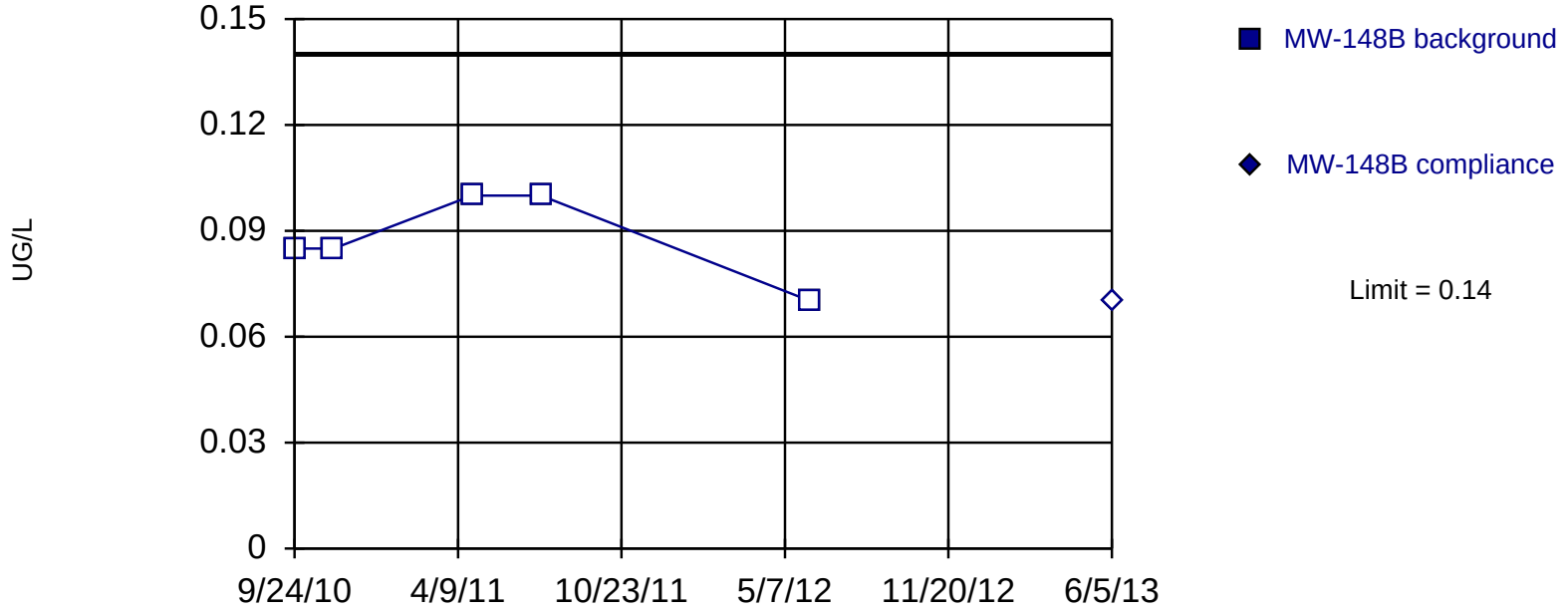
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 5) were censored; limit is most recent reporting limit. Report alpha = 0.1667. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

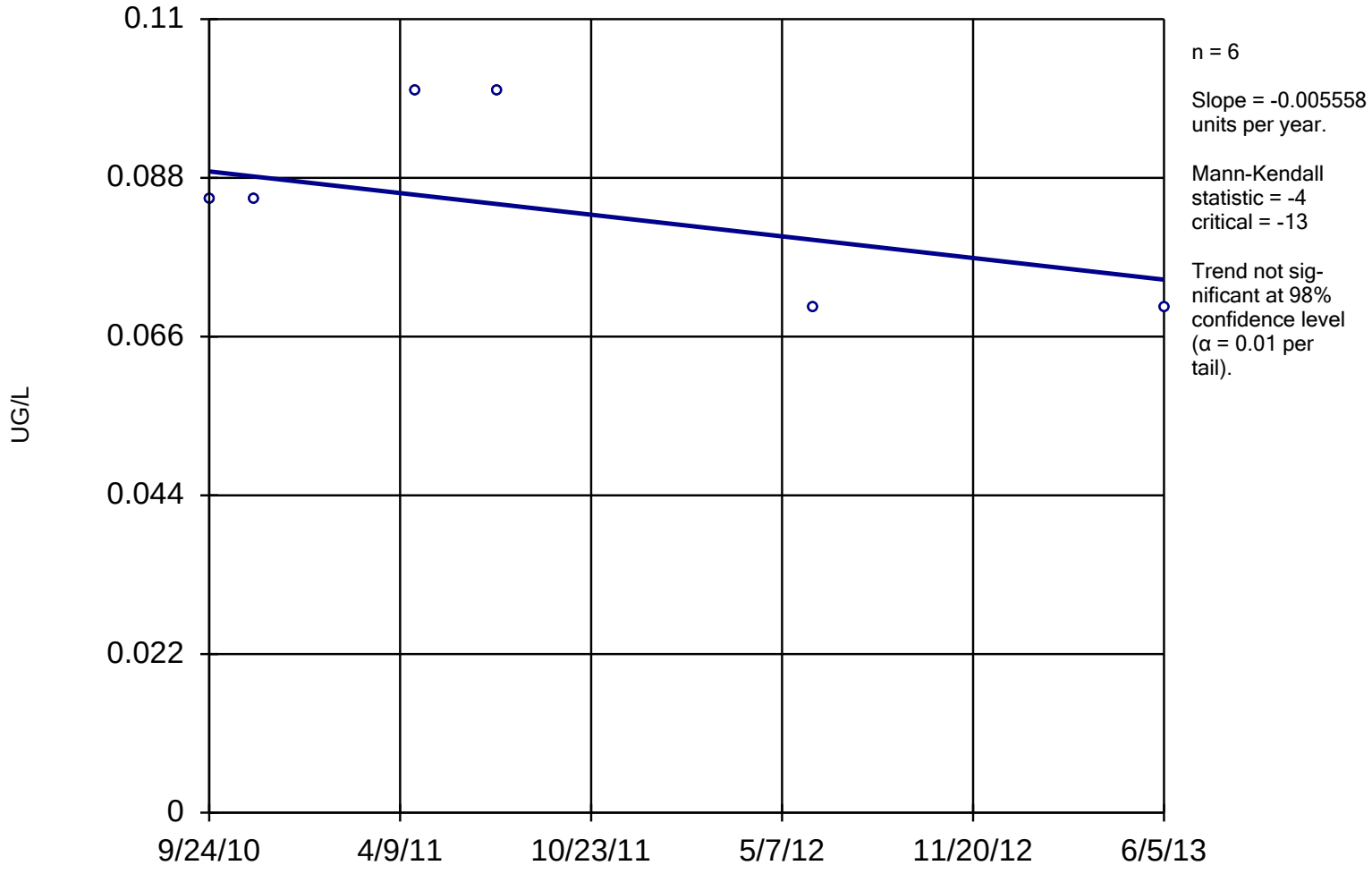
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-148B



Constituent: TCE Analysis Run 1/28/2014 2:37 PM

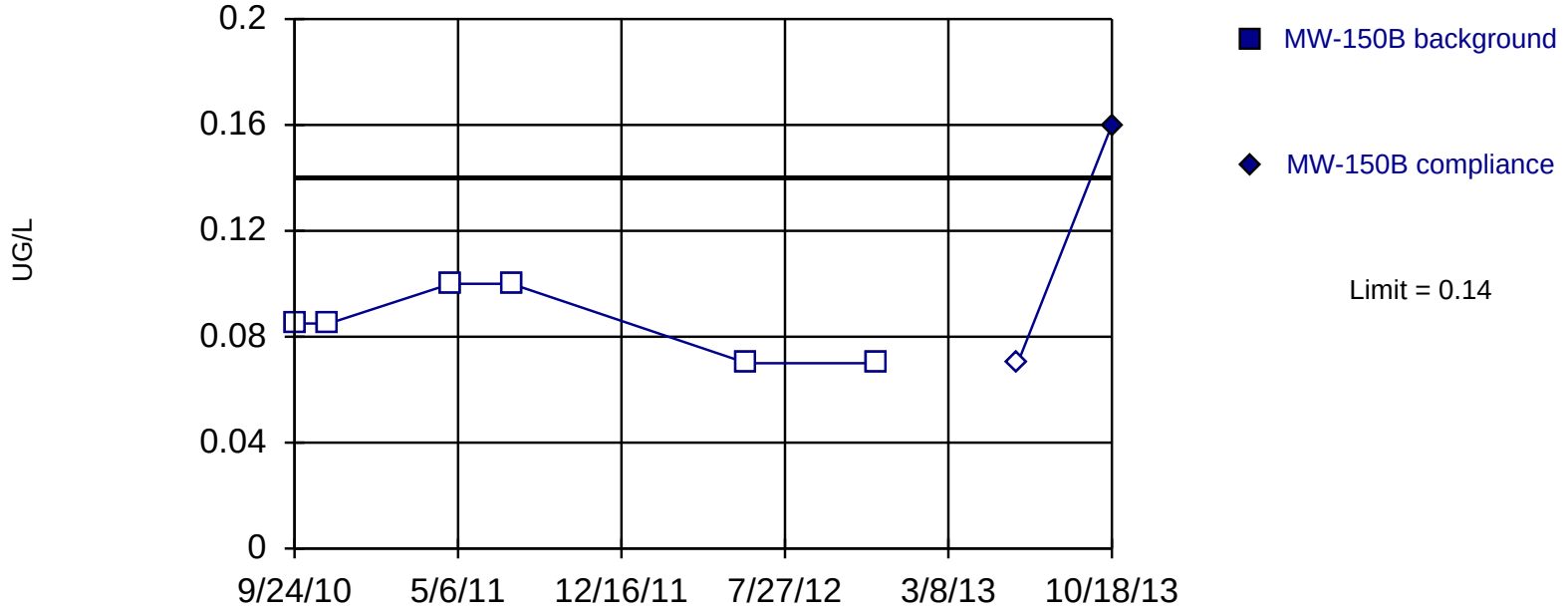
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 6) were censored; limit is most recent reporting limit. Report alpha = 0.1429. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

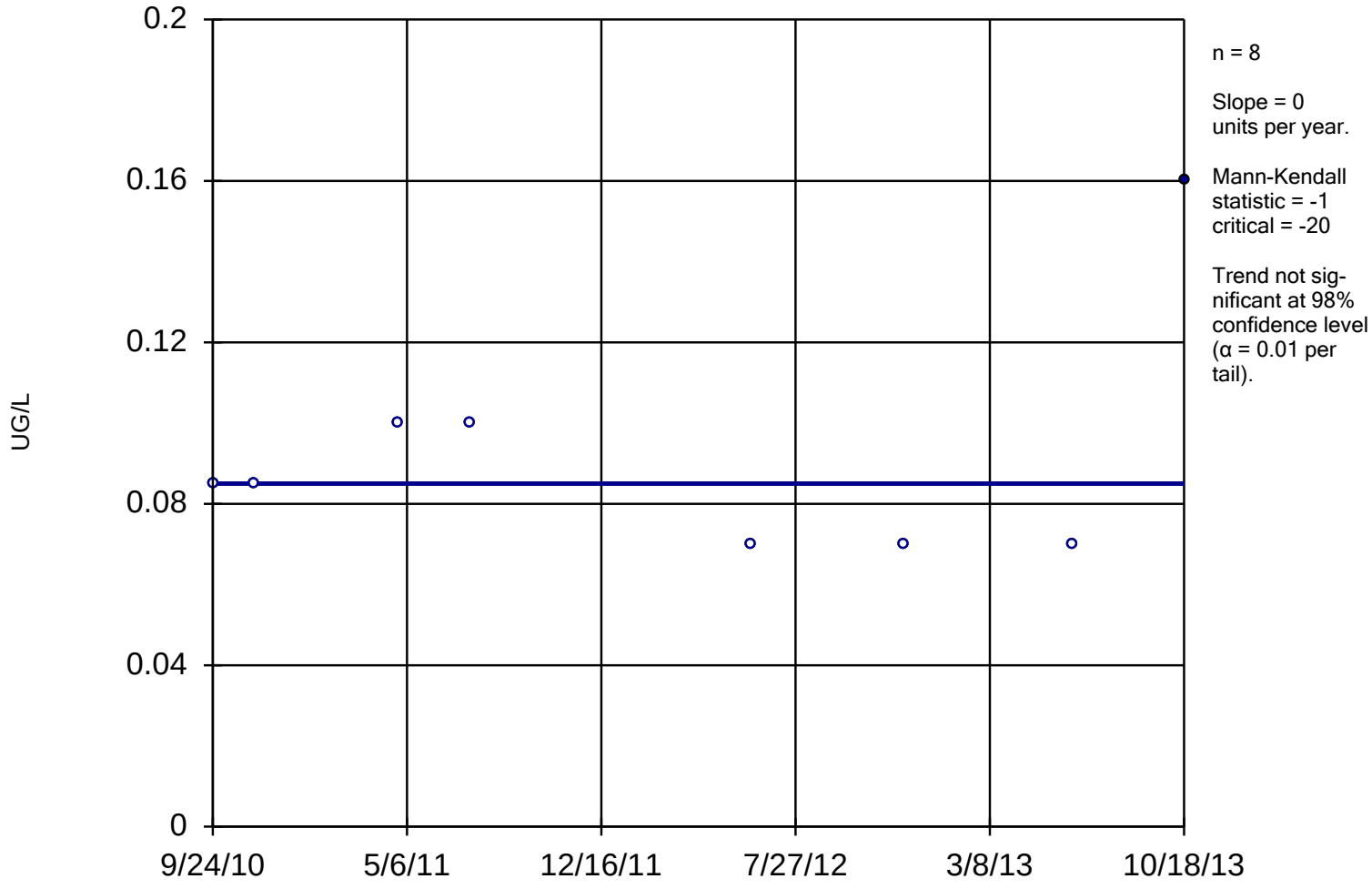
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-150B



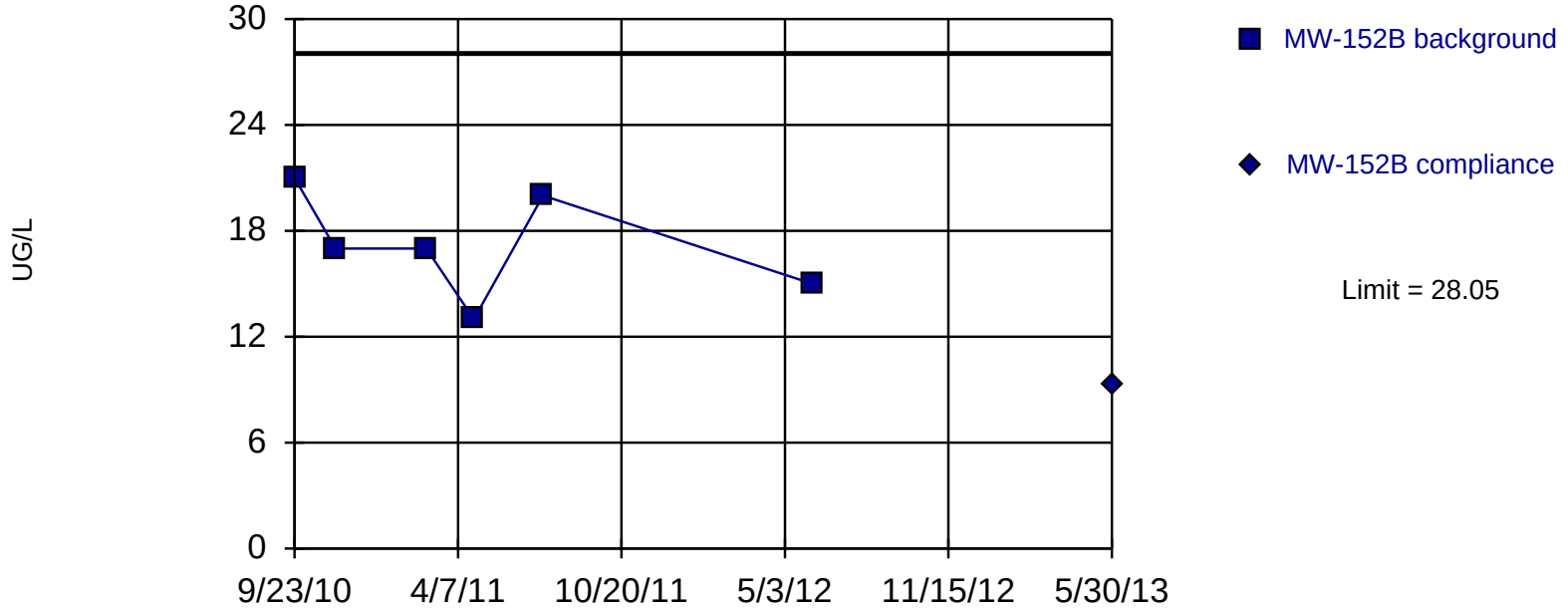
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



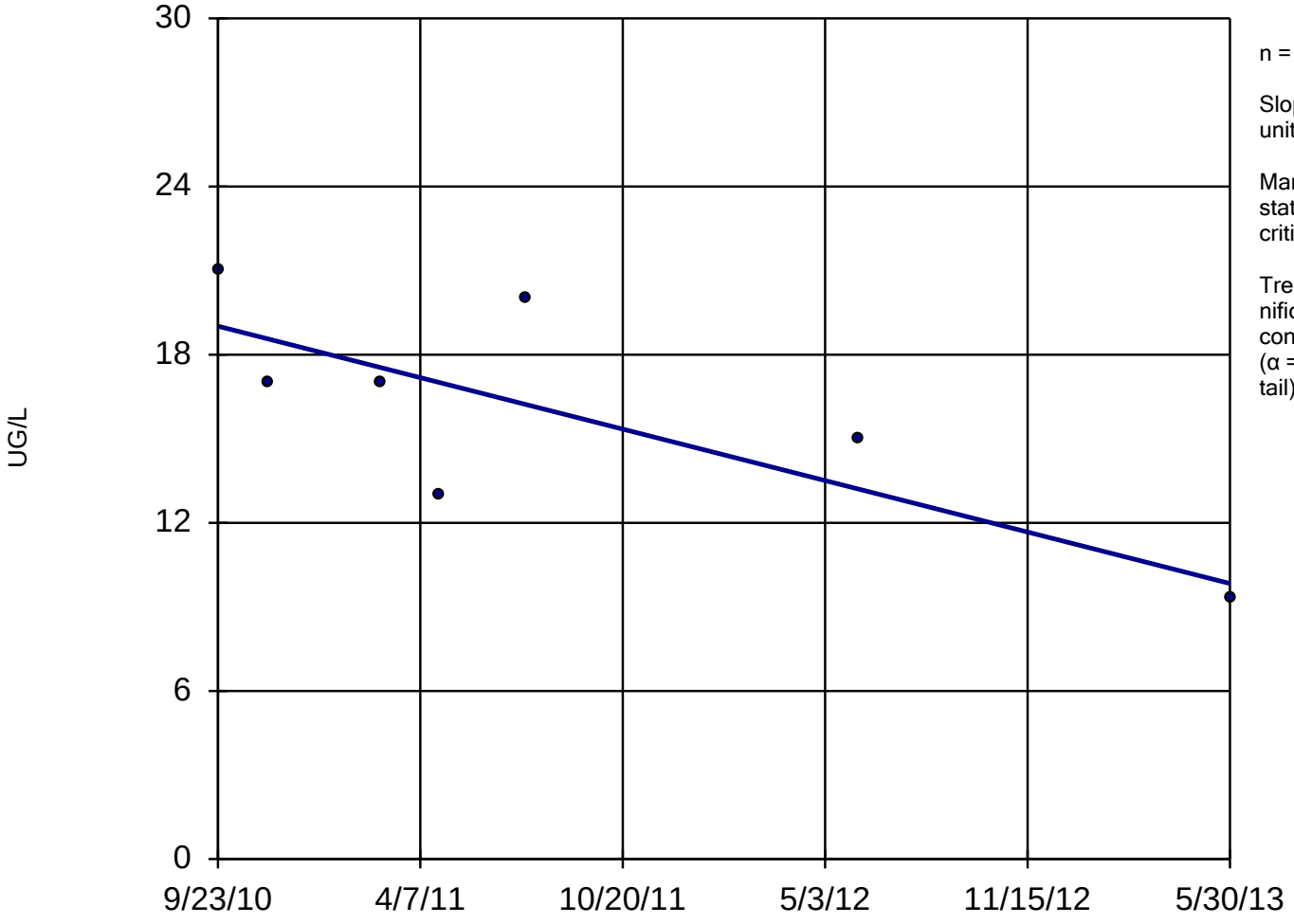
Background Data Summary: Mean=17.17, Std. Dev.=2.994, n=6. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9563, critical = 0.788. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-152B



n = 7

Slope = -3.419 units per year.

Mann-Kendall statistic = -12
critical = -17

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:37 PM

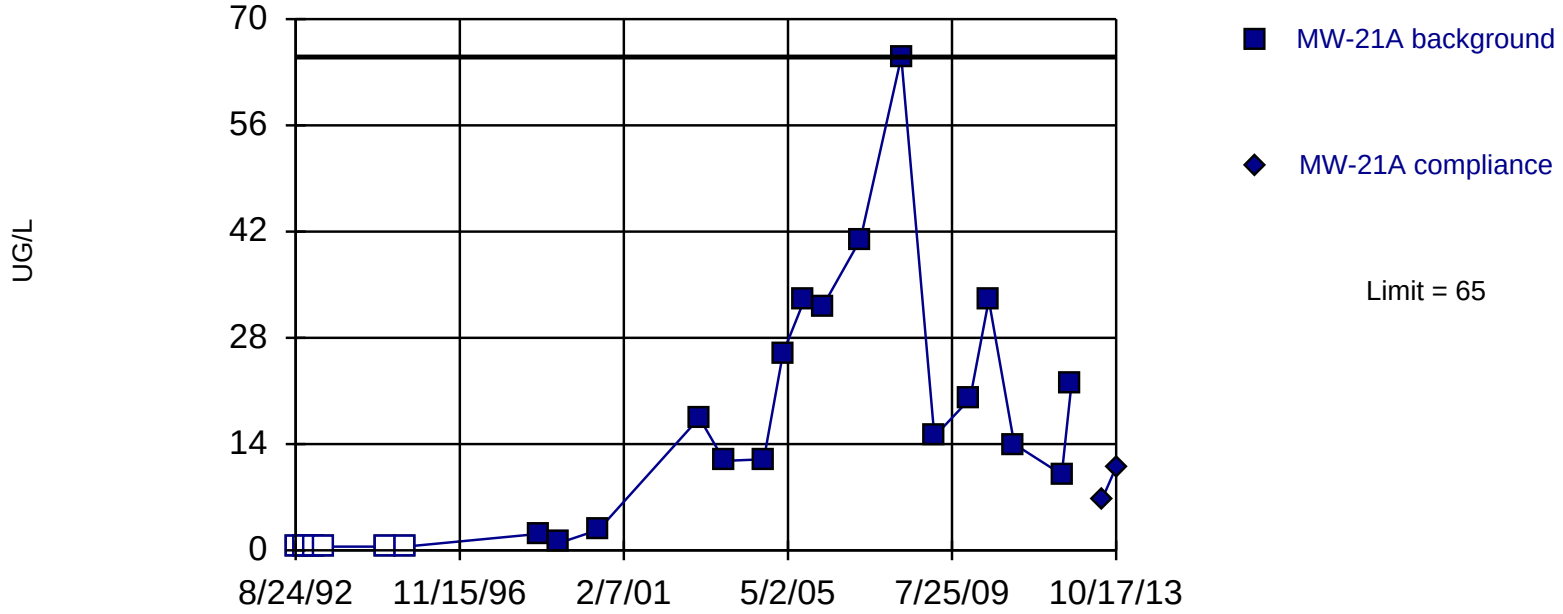
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

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 0.05 alpha level. Limit is highest of 23 background values. 26.09% NDs. Report alpha = 0.04167. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

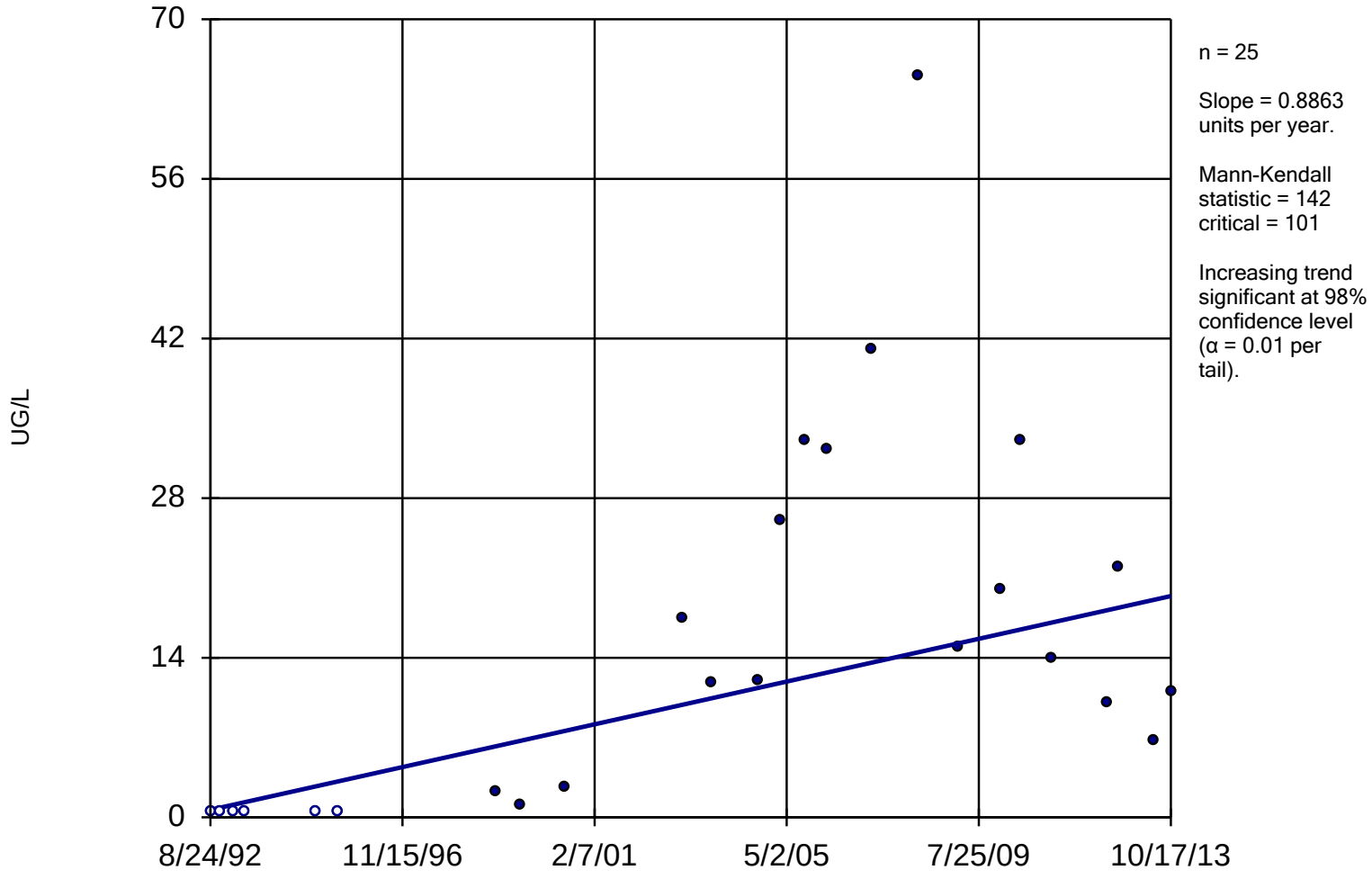
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-21A



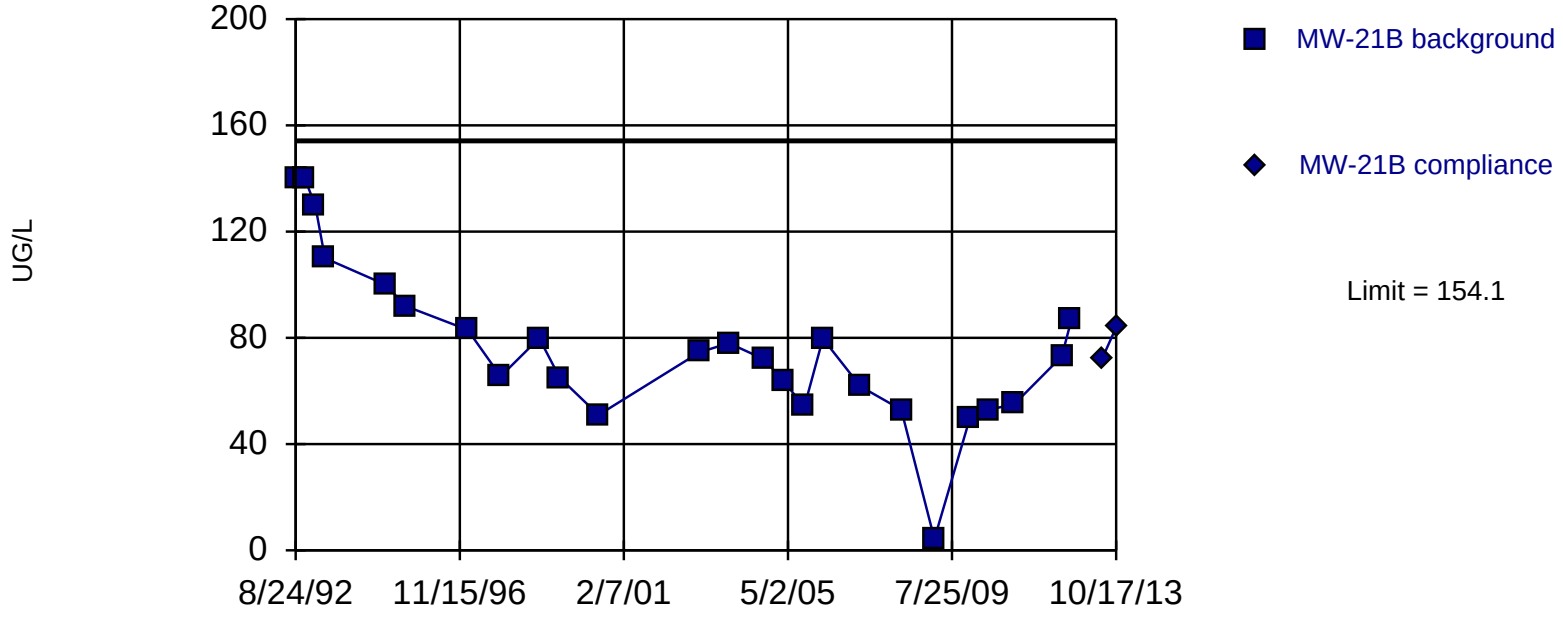
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



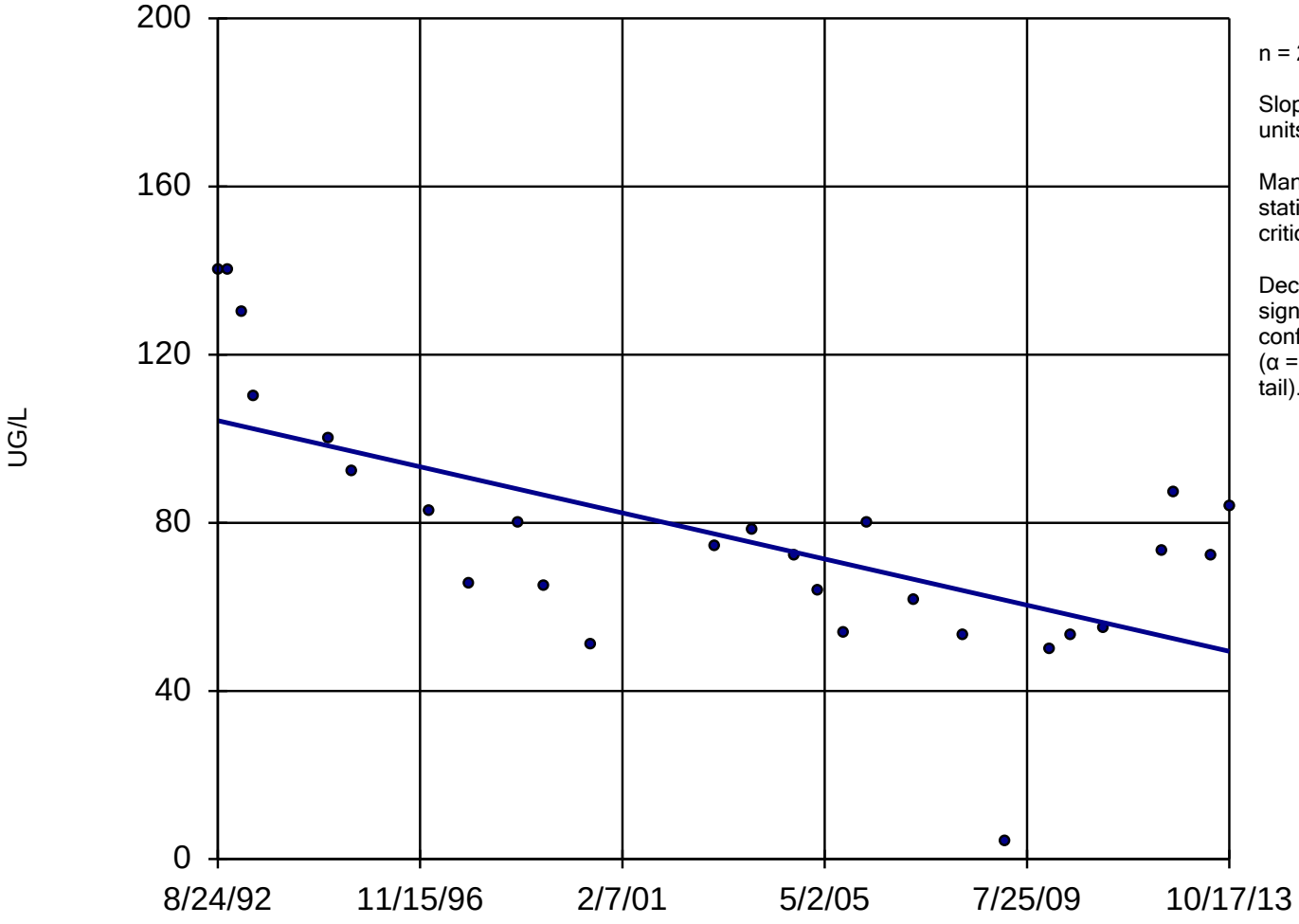
Background Data Summary: Mean=76.63, Std. Dev.=30.5, n=25. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.927, critical = 0.918. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-21B



n = 27

Slope = -2.592 units per year.

Mann-Kendall statistic = -160
critical = -112

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:37 PM

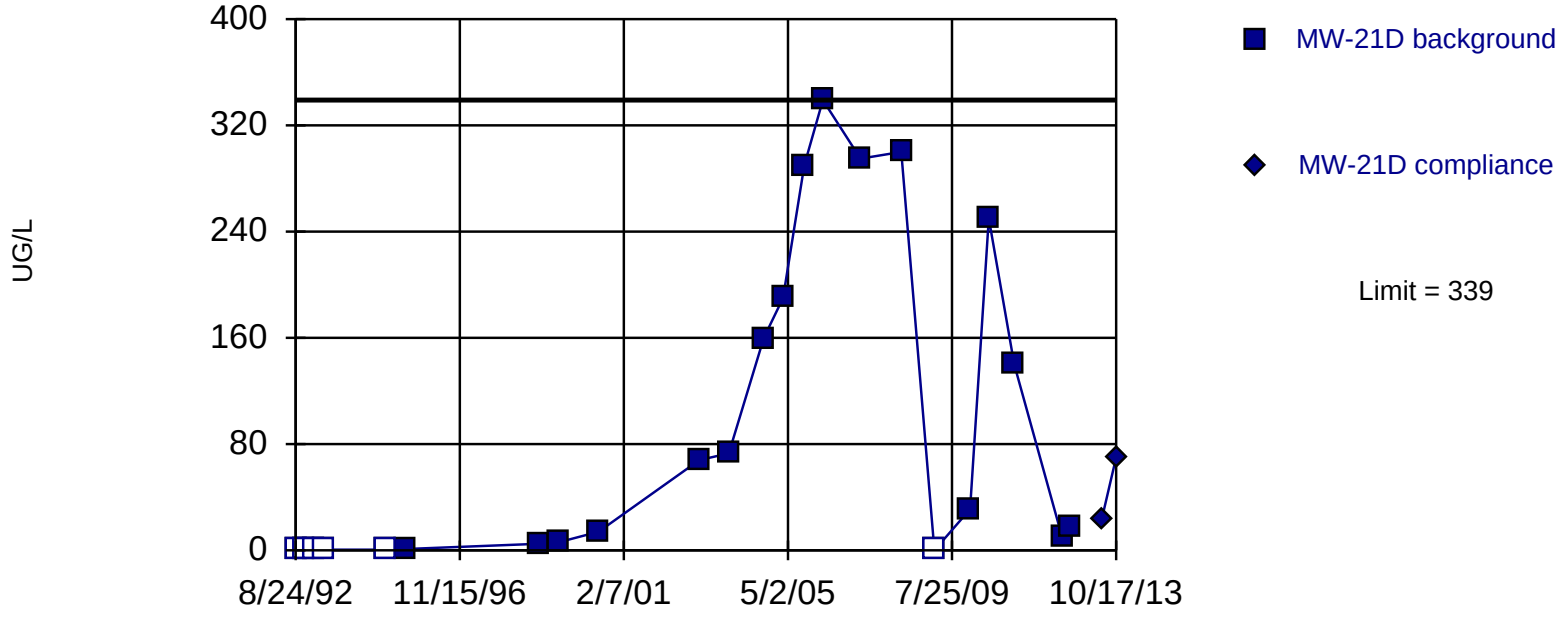
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

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 0.05 alpha level. Limit is highest of 23 background values. 26.09% NDs. Report alpha = 0.04167. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

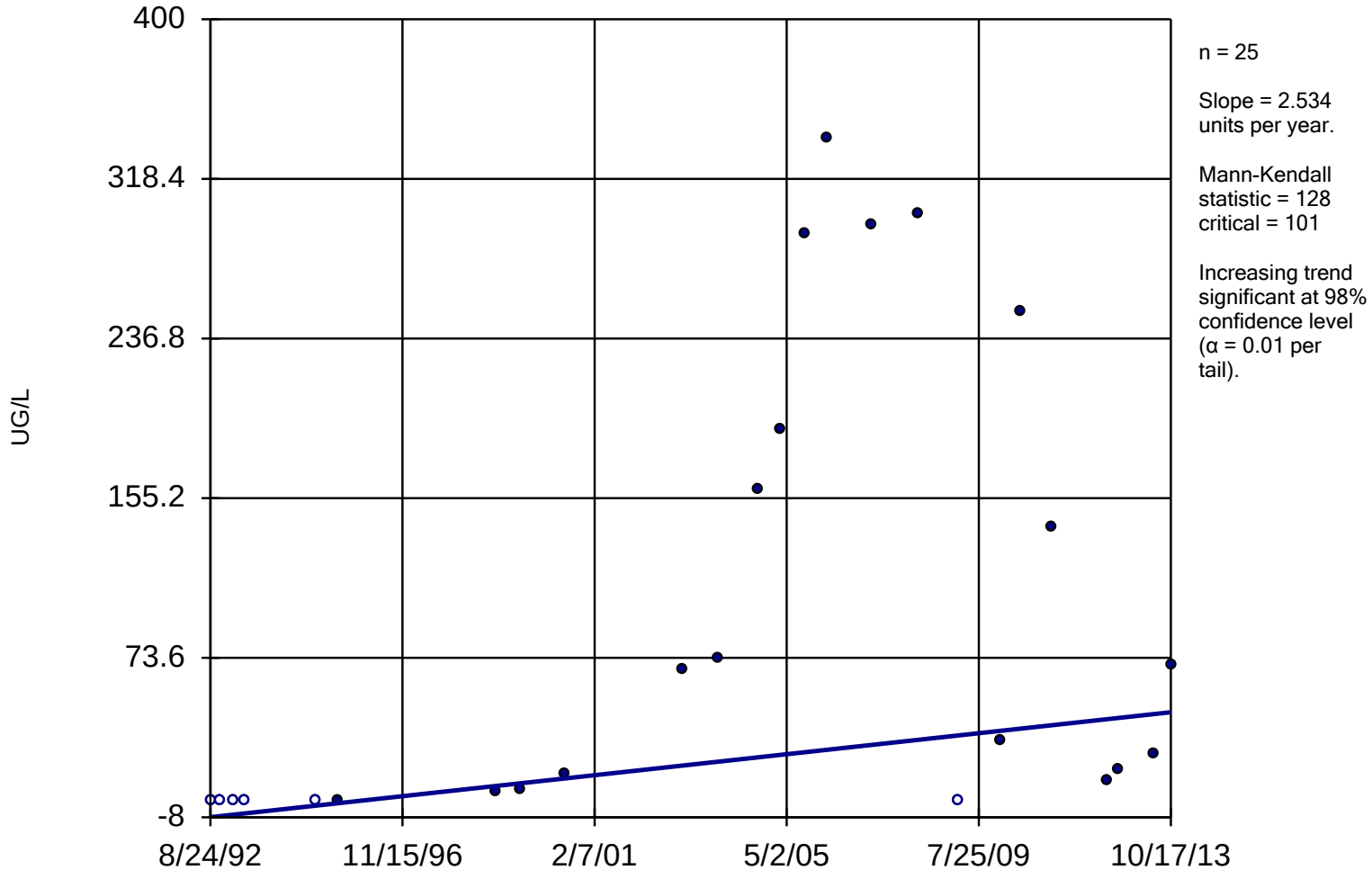
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-21D



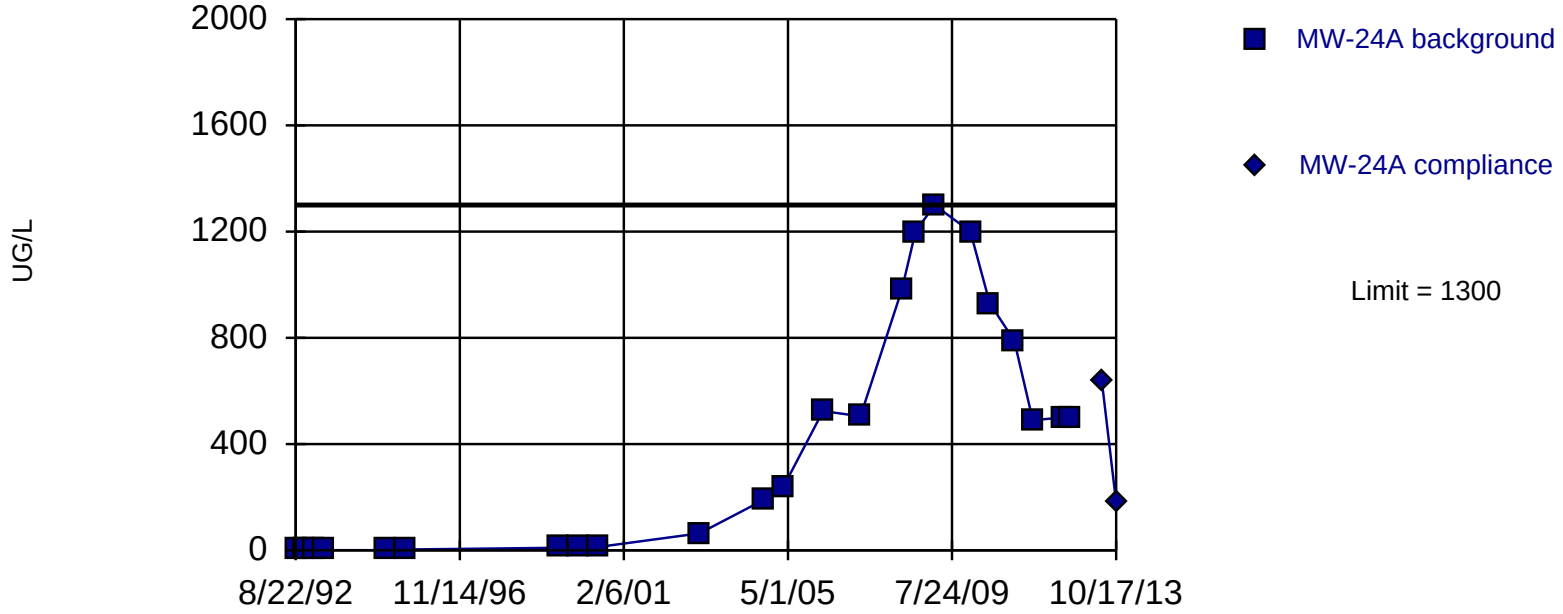
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Non-parametric



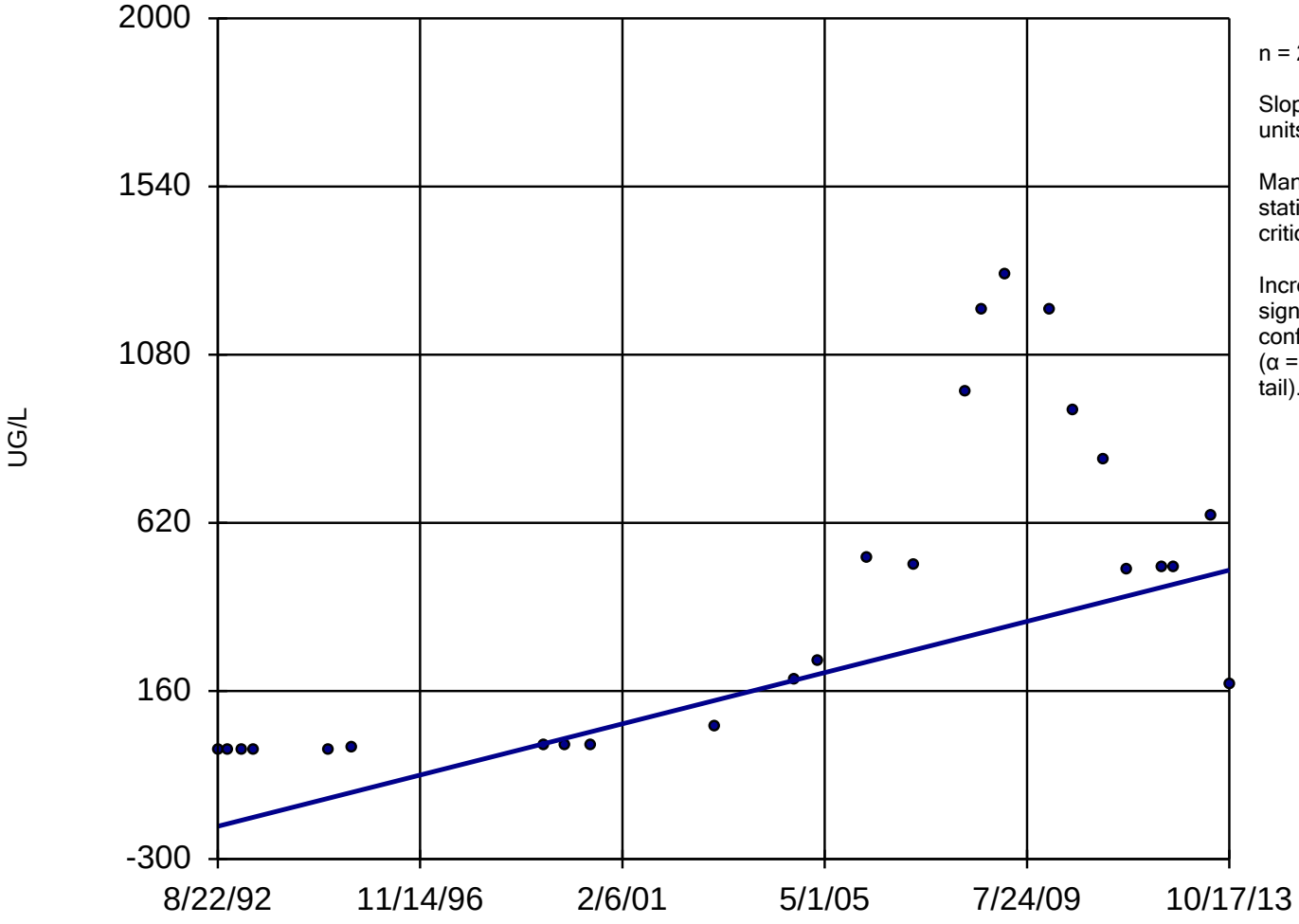
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 23 background values. Report alpha = 0.04167. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-24A



n = 25

Slope = 33.1 units per year.

Mann-Kendall statistic = 180
critical = 101

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:37 PM

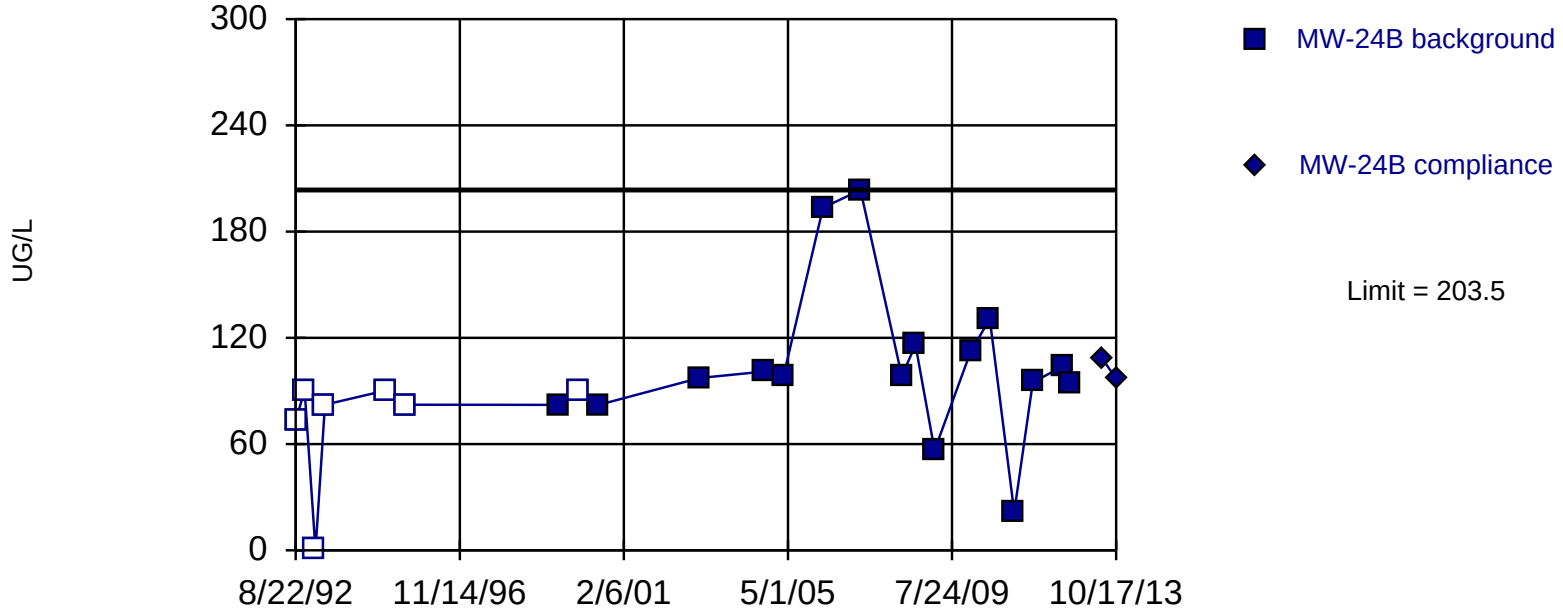
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

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 0.05 alpha level. Limit is highest of 23 background values. 30.43% NDs. Report alpha = 0.04167. Most recent point compared to limit. Data were deseasonalized.

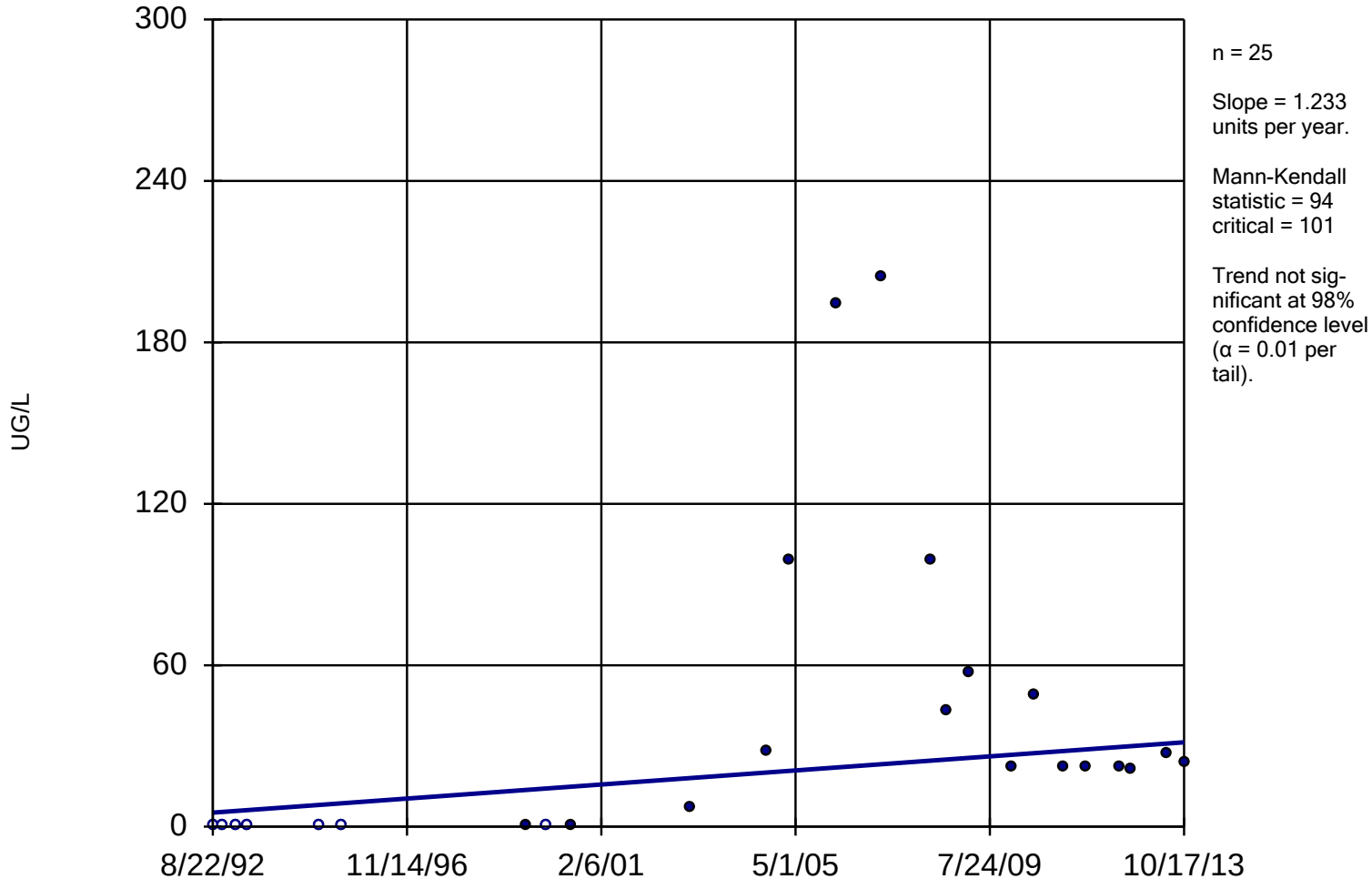
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-24B



Constituent: TCE Analysis Run 1/28/2014 2:37 PM

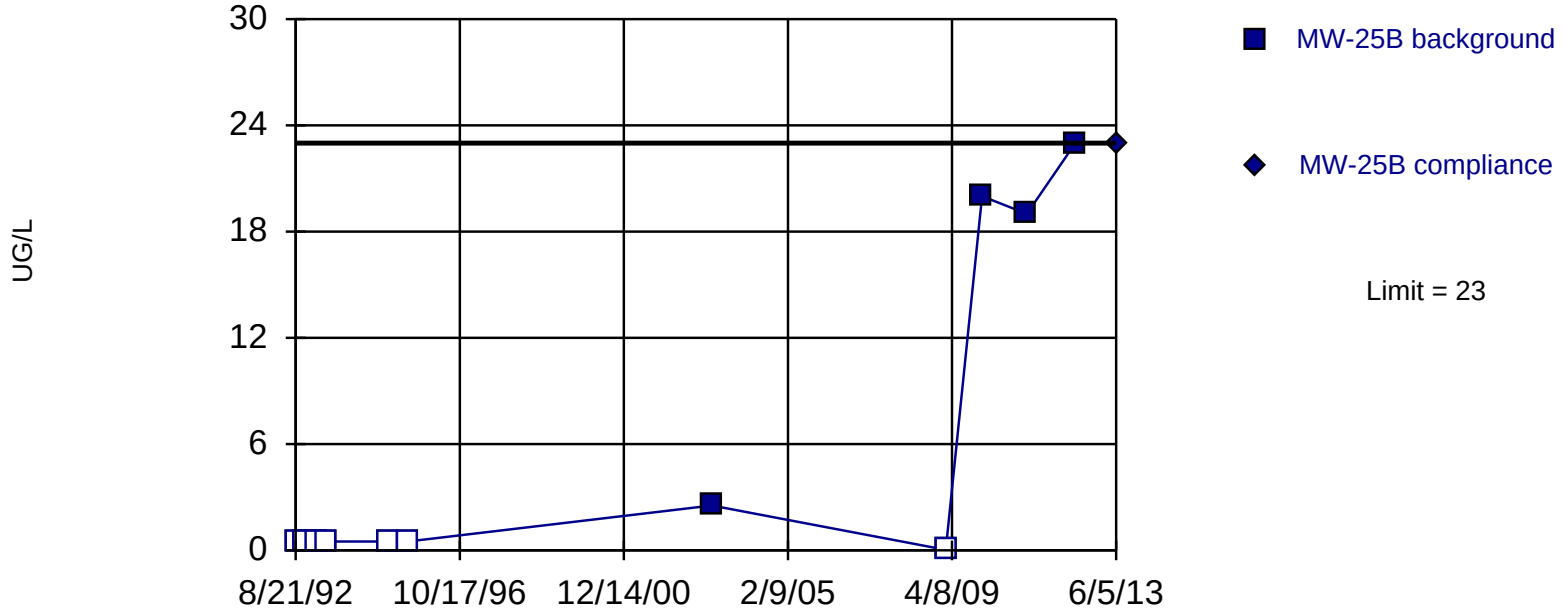
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 63.64% NDs. Report alpha = 0.08333. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

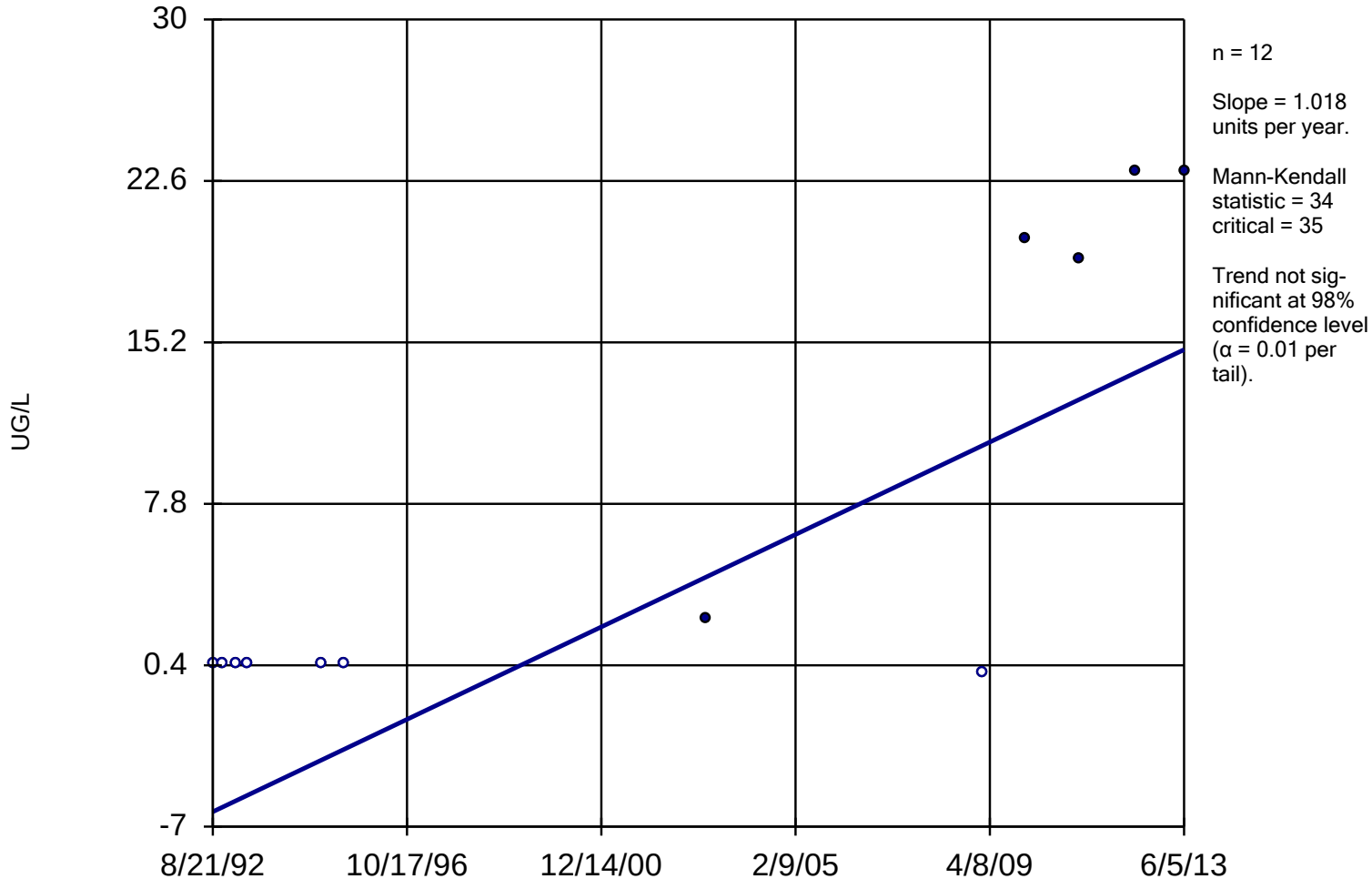
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-25B



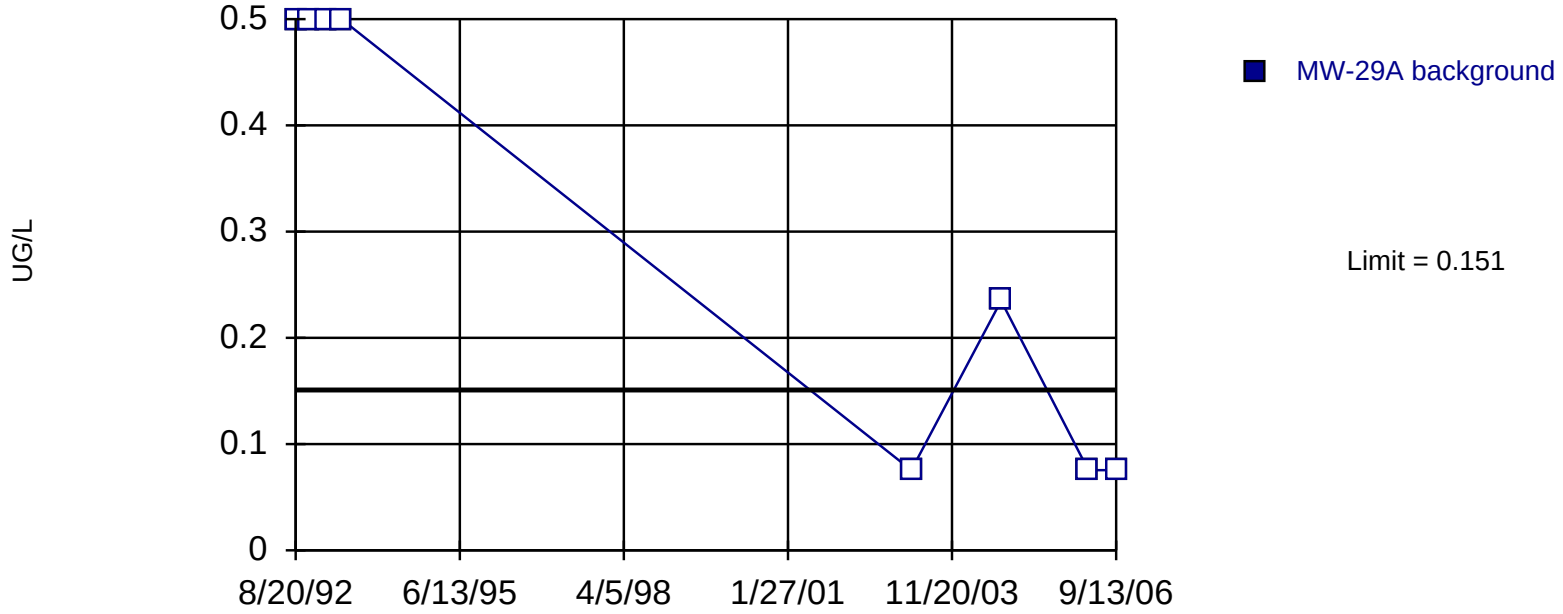
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-29A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

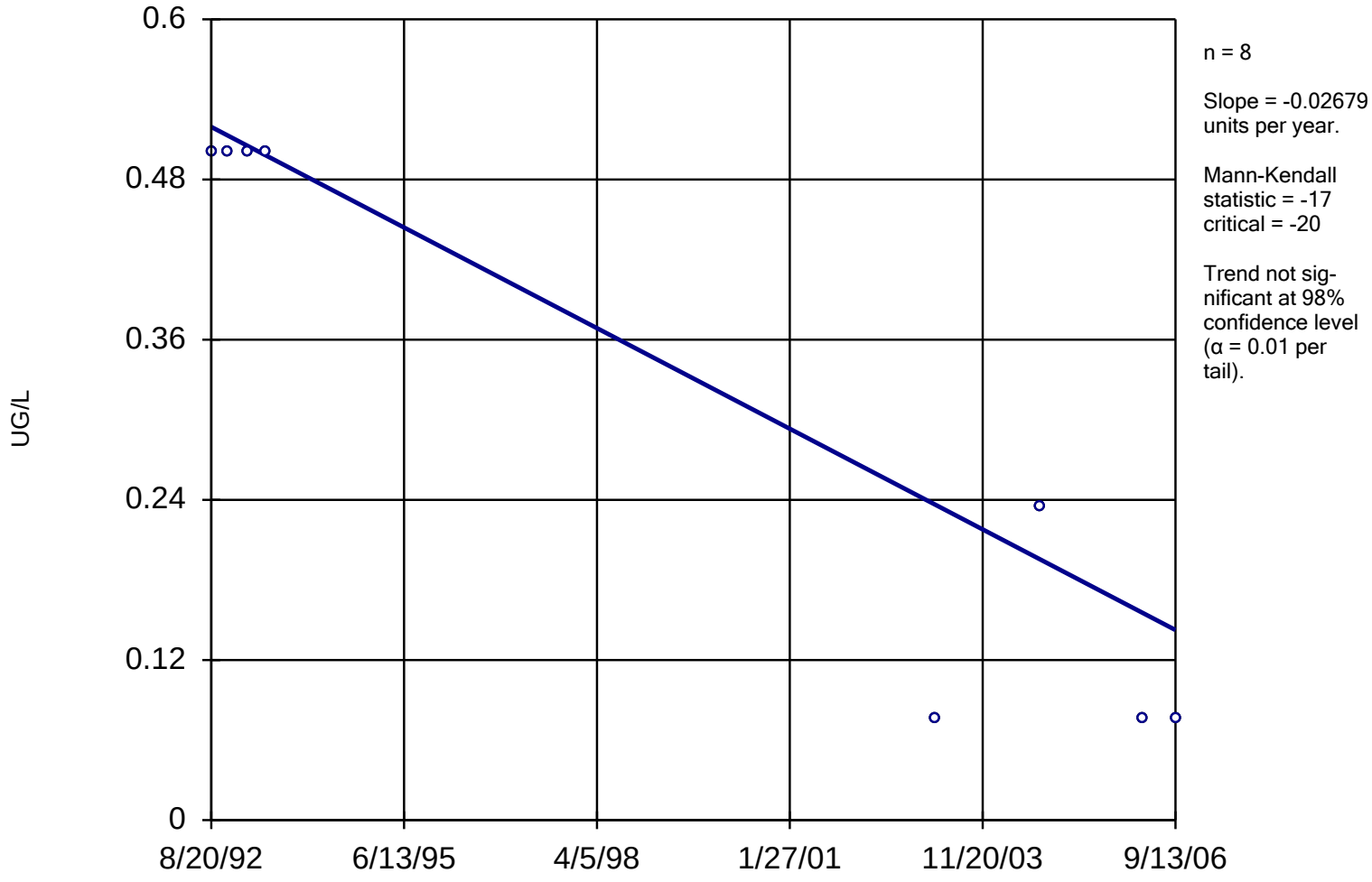
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-29A



Constituent: TCE Analysis Run 1/28/2014 2:37 PM

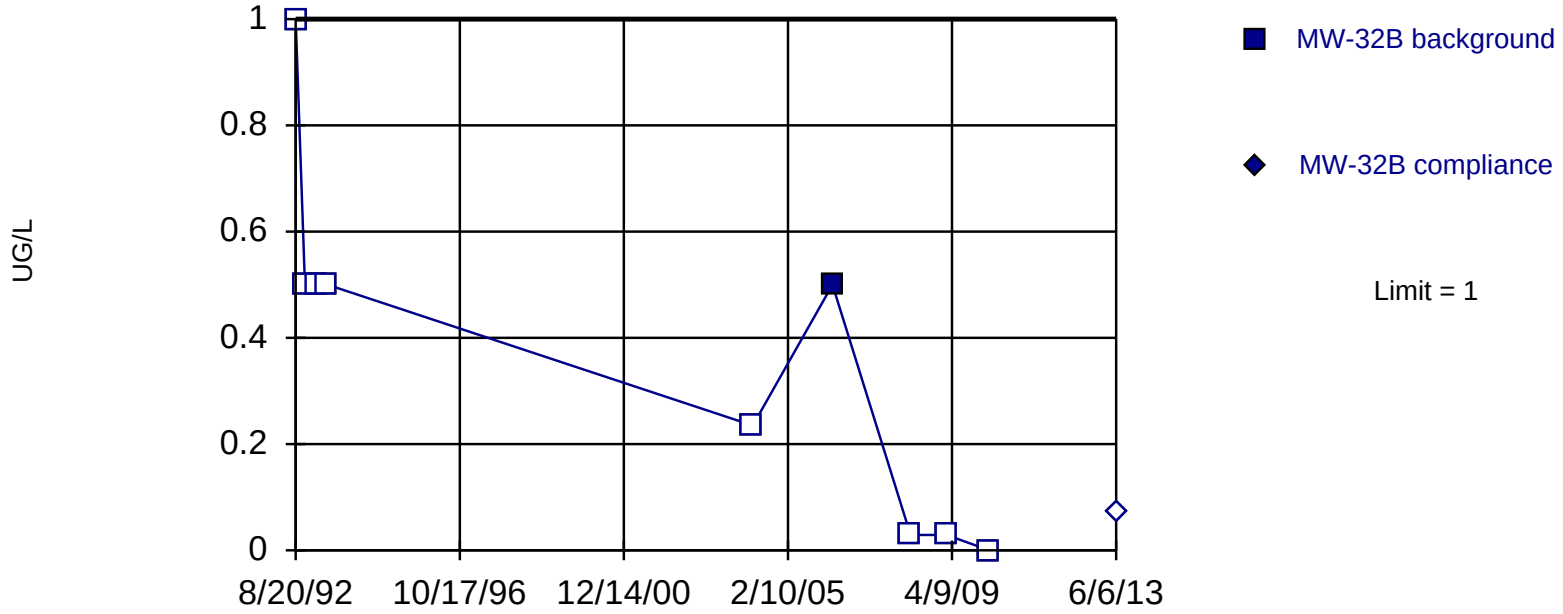
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 9 background values. 88.89% NDs. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

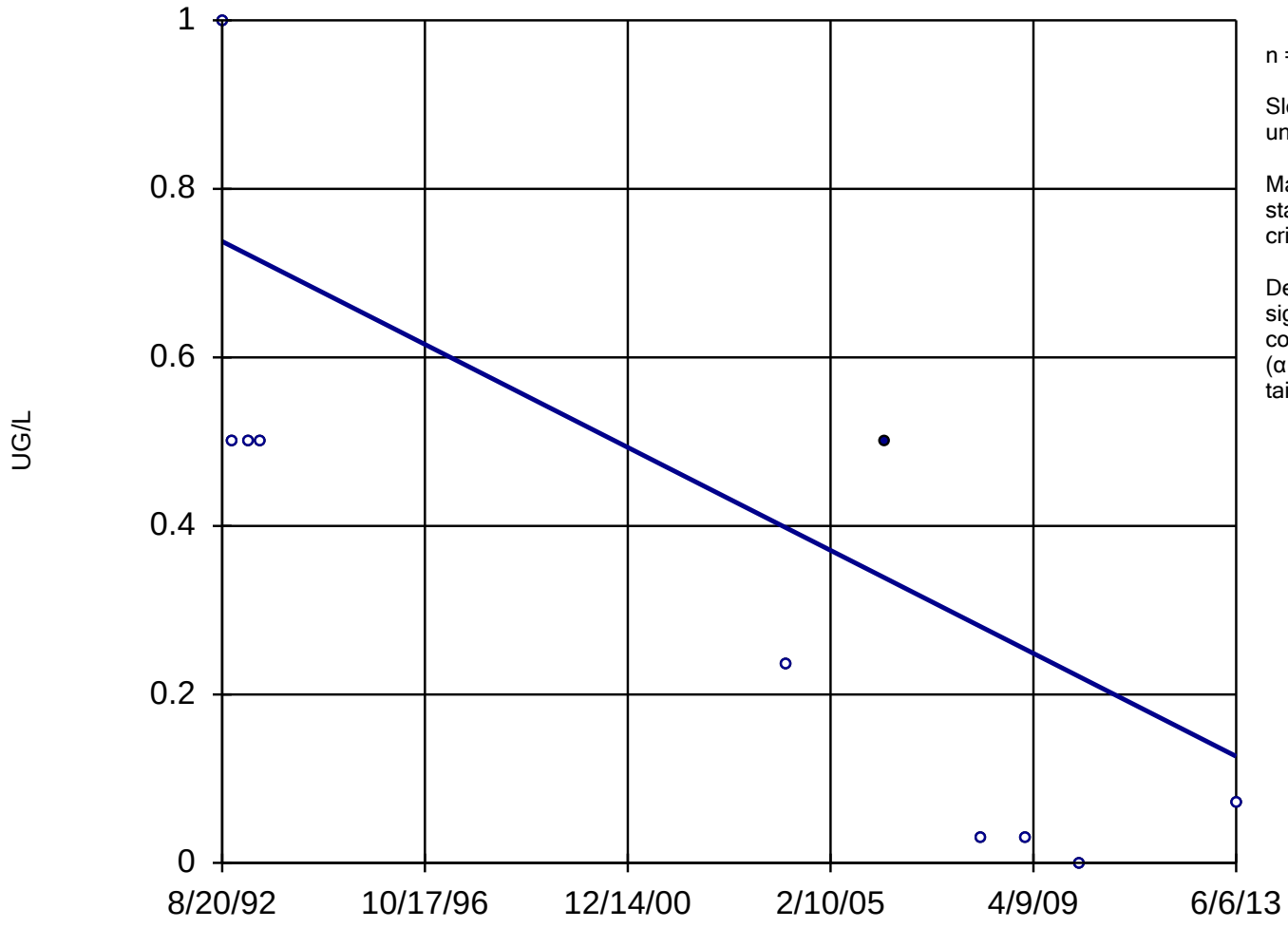
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-32B



n = 10

Slope = -0.02936 units per year.

Mann-Kendall statistic = -30
critical = -27

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:37 PM

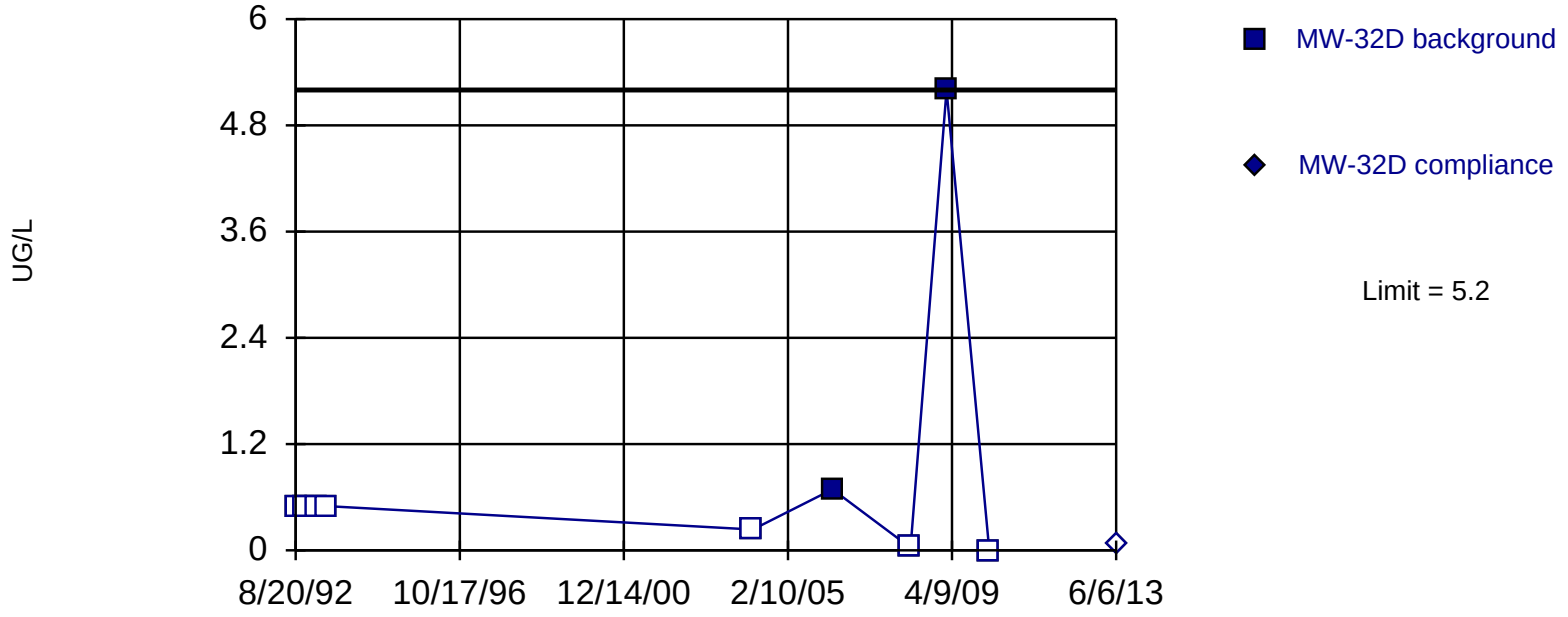
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 9 background values. 77.78% NDs. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

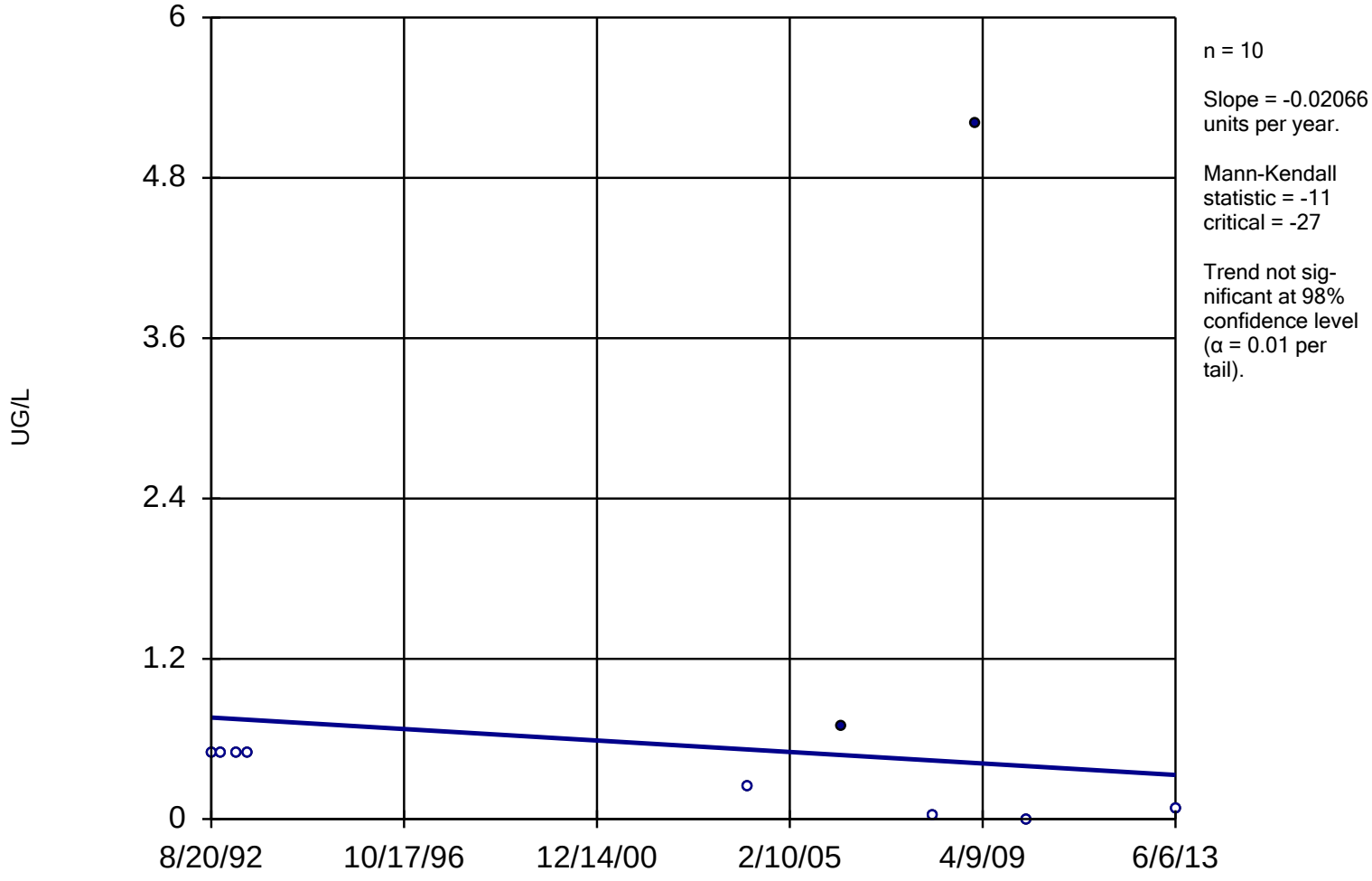
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-32D



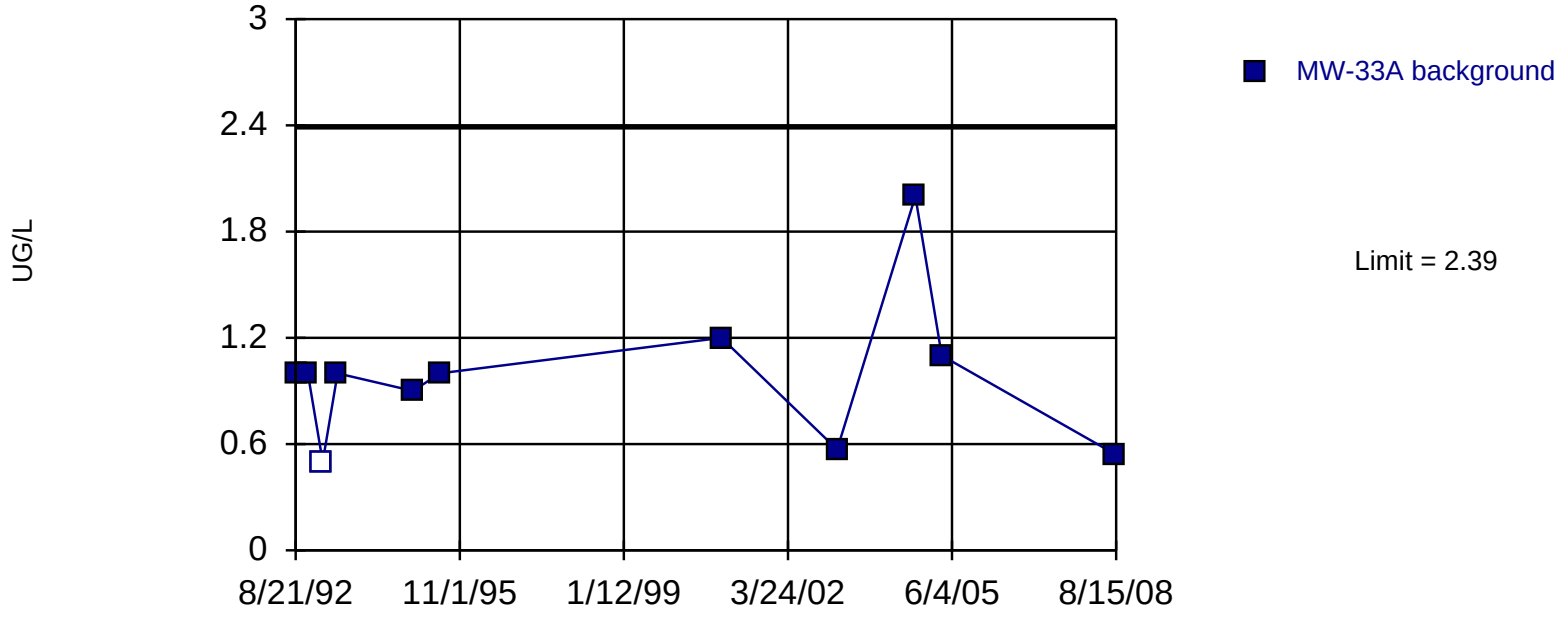
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, MW-33A



Background Data Summary (based on square root transformation): Mean=0.9731, Std. Dev.=0.1985, n=11, 9.091% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8818, critical = 0.85. Report alpha = 0.01. Assumes 1 future value.

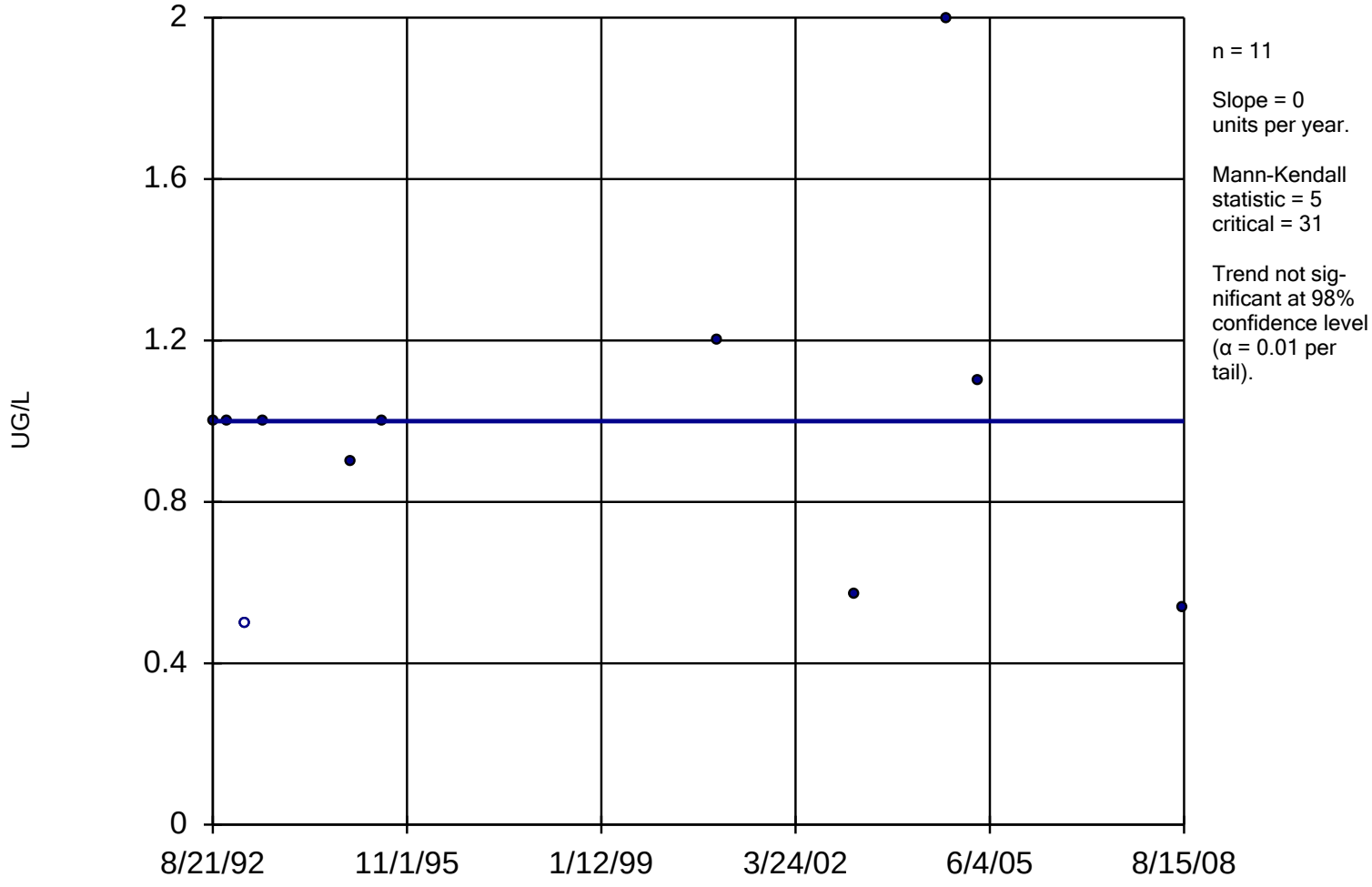
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-33A



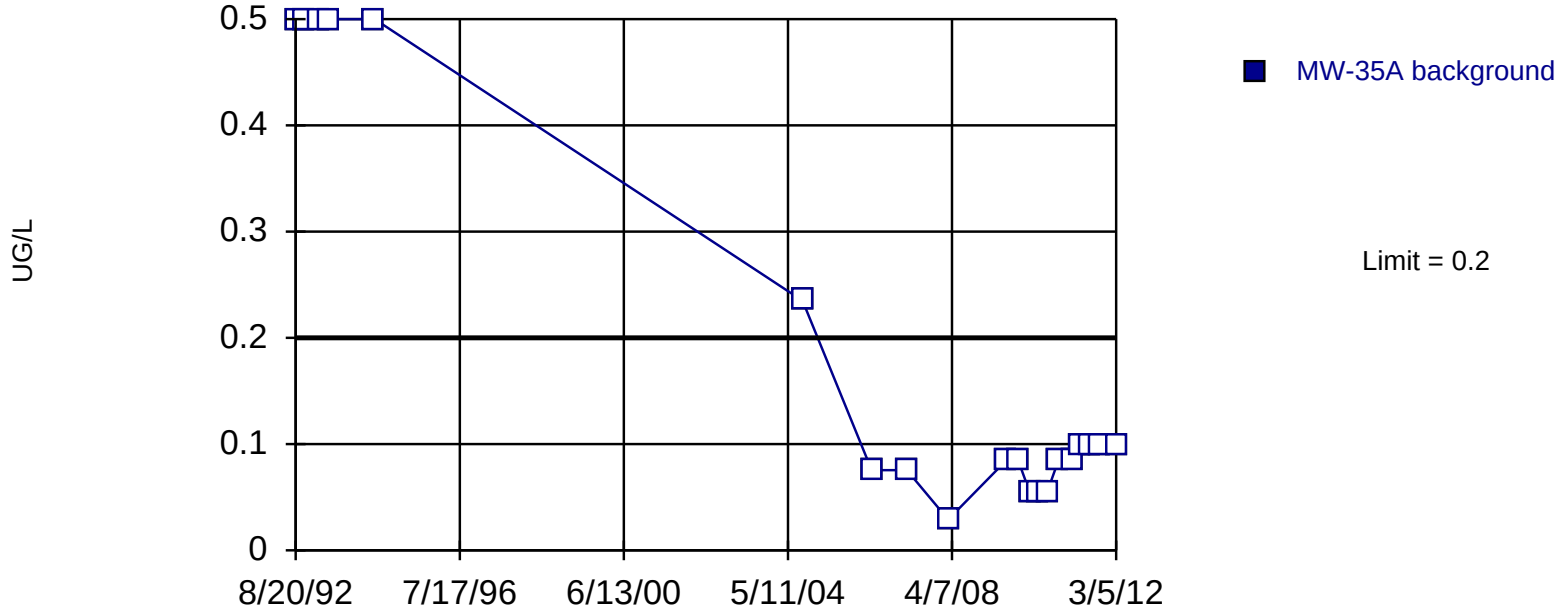
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-35A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 20) were censored; limit is most recent reporting limit. Report alpha = 0.04762. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

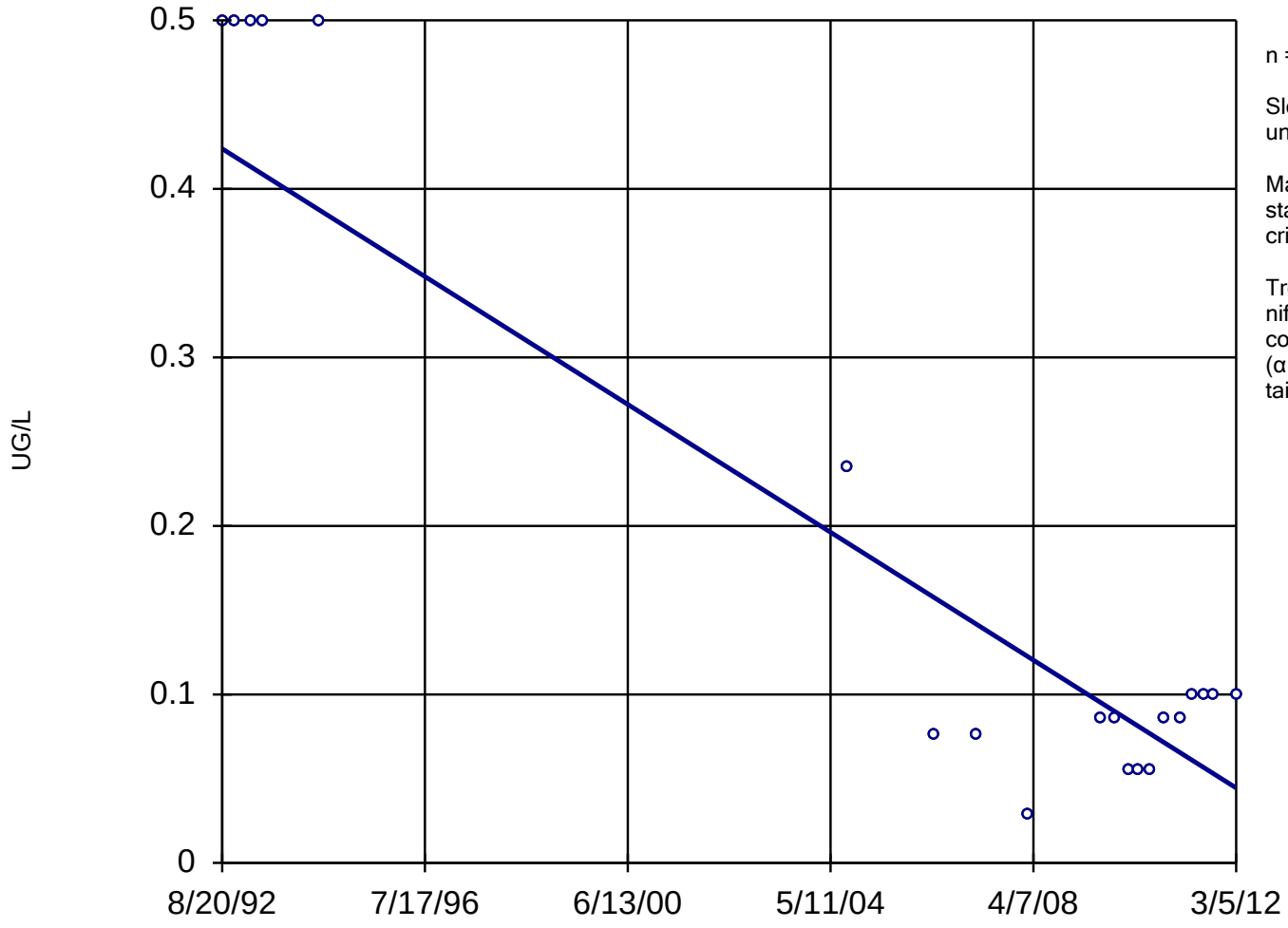
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-35A



n = 20

Slope = -0.0194 units per year.

Mann-Kendall statistic = -42
critical = -73

Trend not significant at 98% confidence level (α = 0.01 per tail).

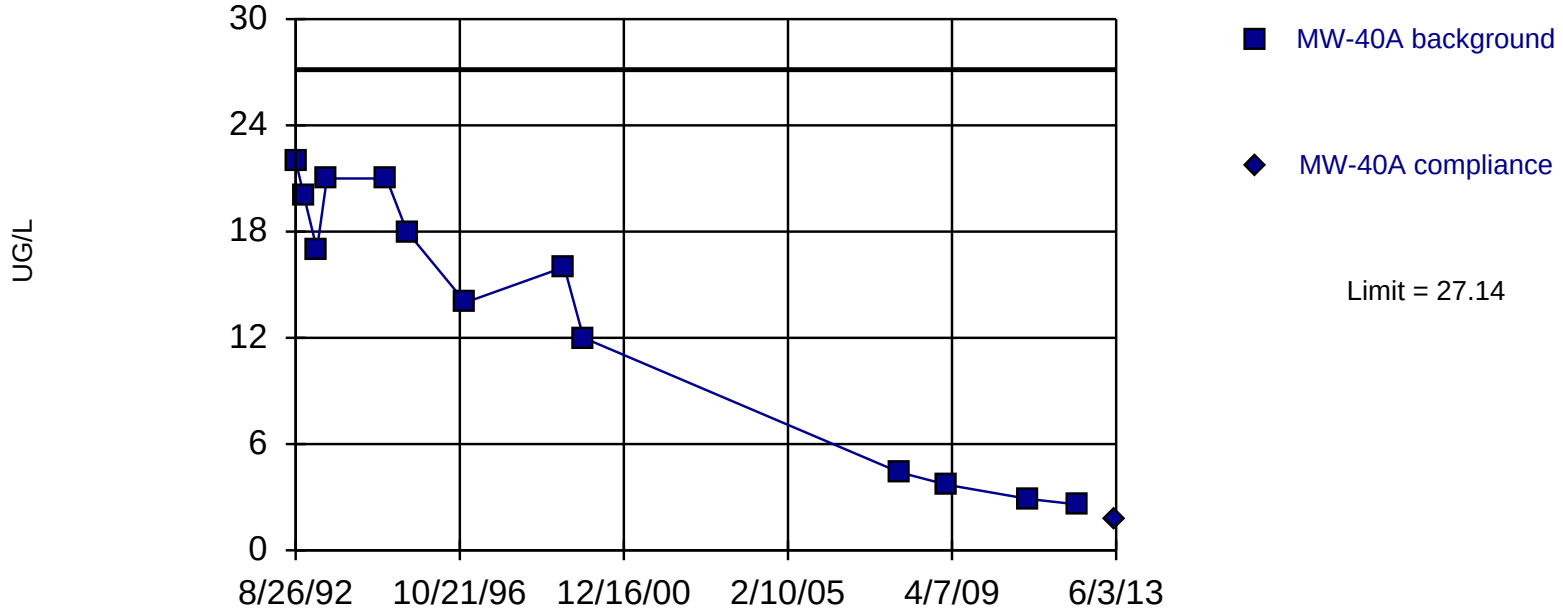
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



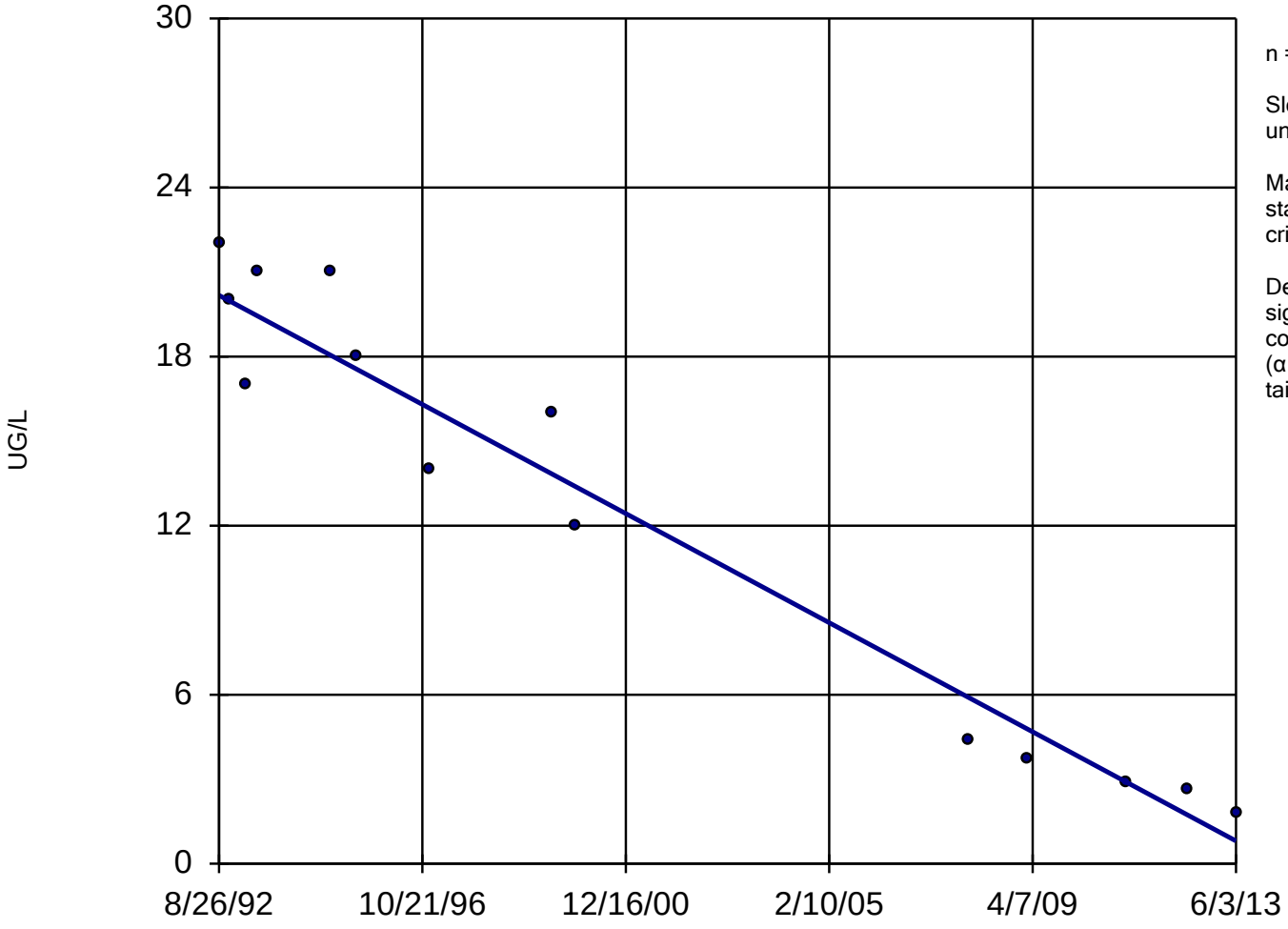
Background Data Summary (based on square transformation): Mean=232.6, Std. Dev.=181.2, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8907, critical = 0.866. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-40A



n = 14

Slope = -0.9317 units per year.

Mann-Kendall statistic = -78
critical = -44

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

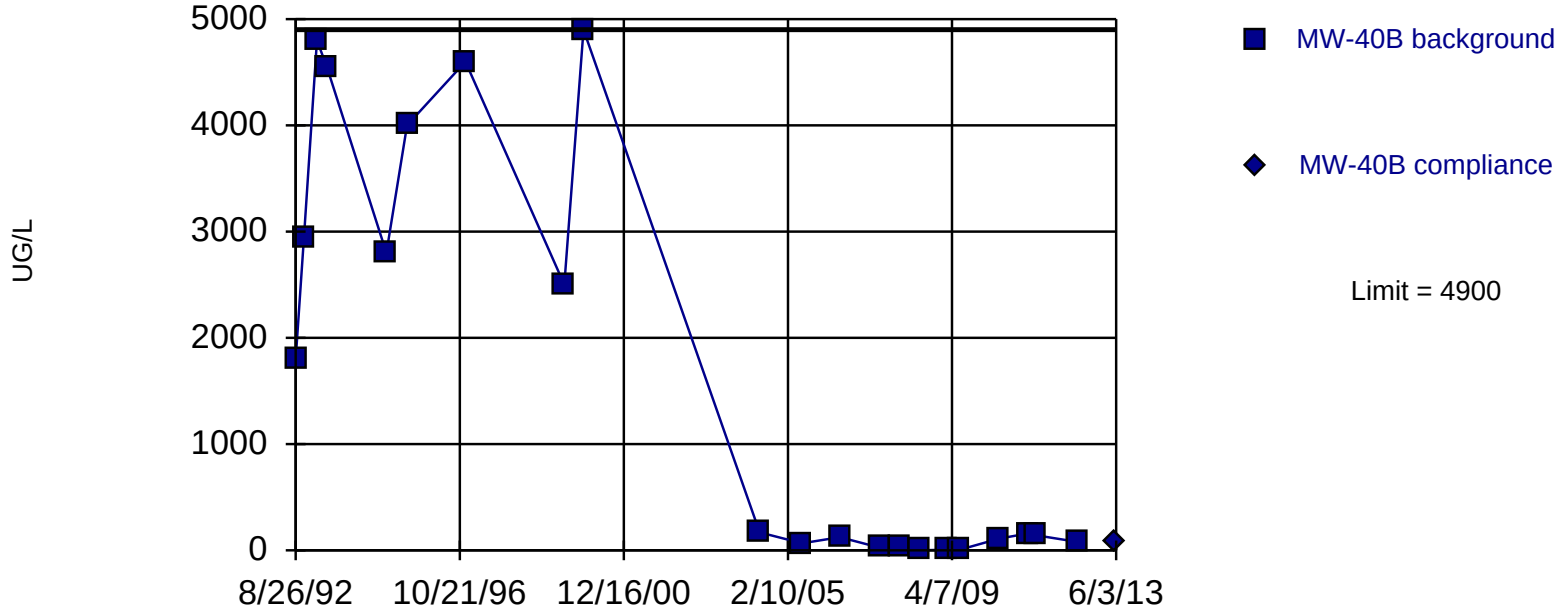
Constituent: TCE Analysis Run 1/28/2014 2:37 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Non-parametric



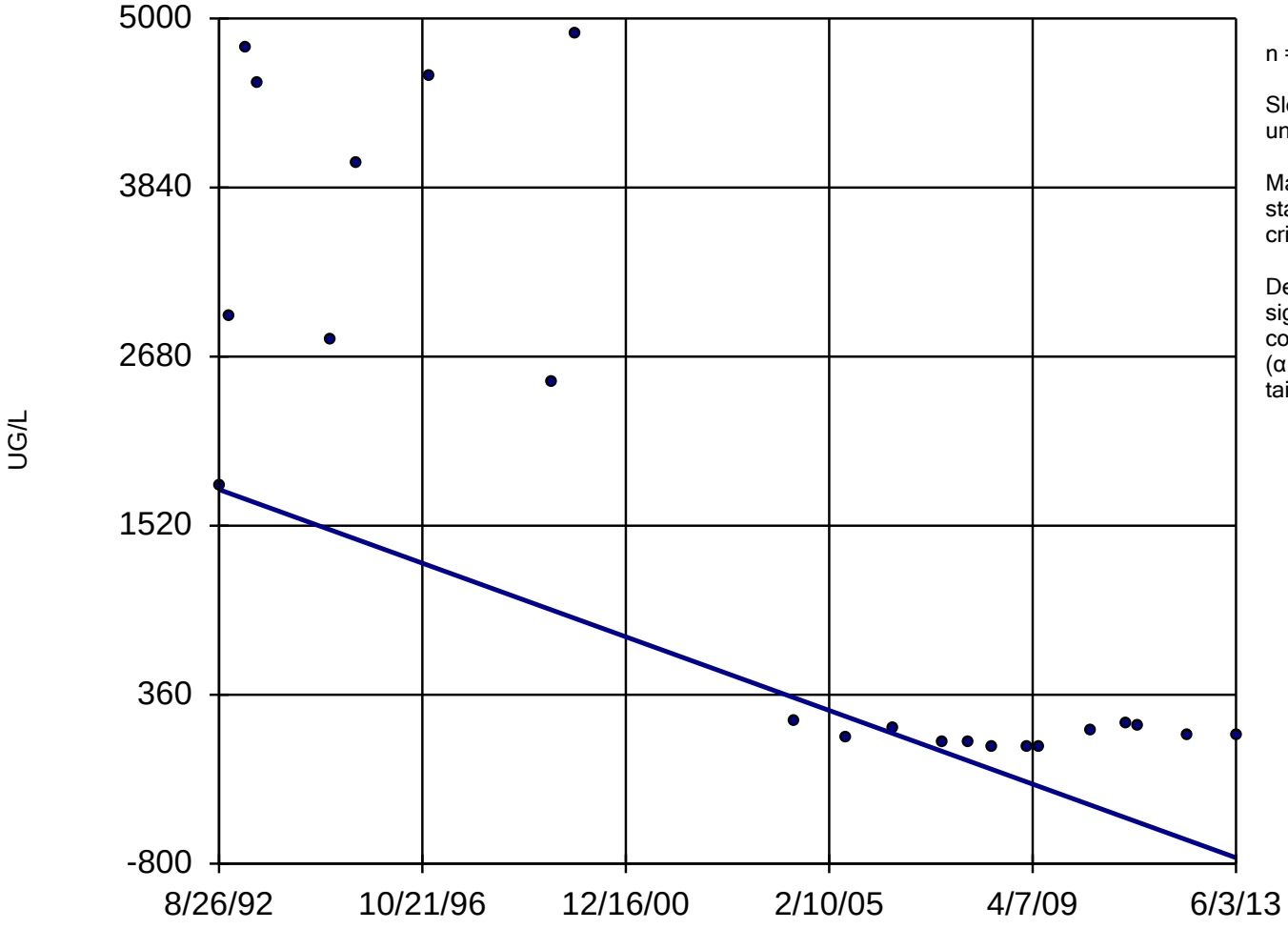
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 21 background values. Report alpha = 0.04545. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-40B



n = 22

Slope = -121.6 units per year.

Mann-Kendall statistic = -107
critical = -84

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:37 PM

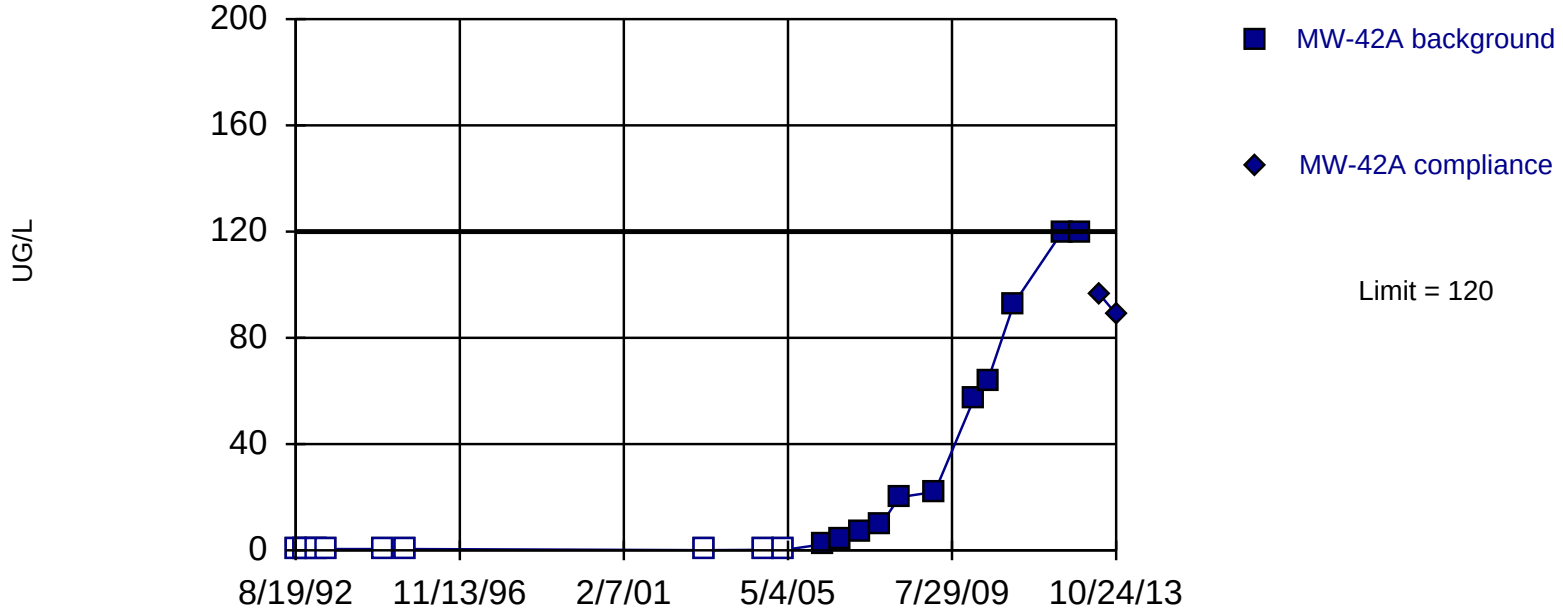
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the data required both a power transformation and Cohen's adjustment. Limit is highest of 20 background values. 45% NDs. Report alpha = 0.04762. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

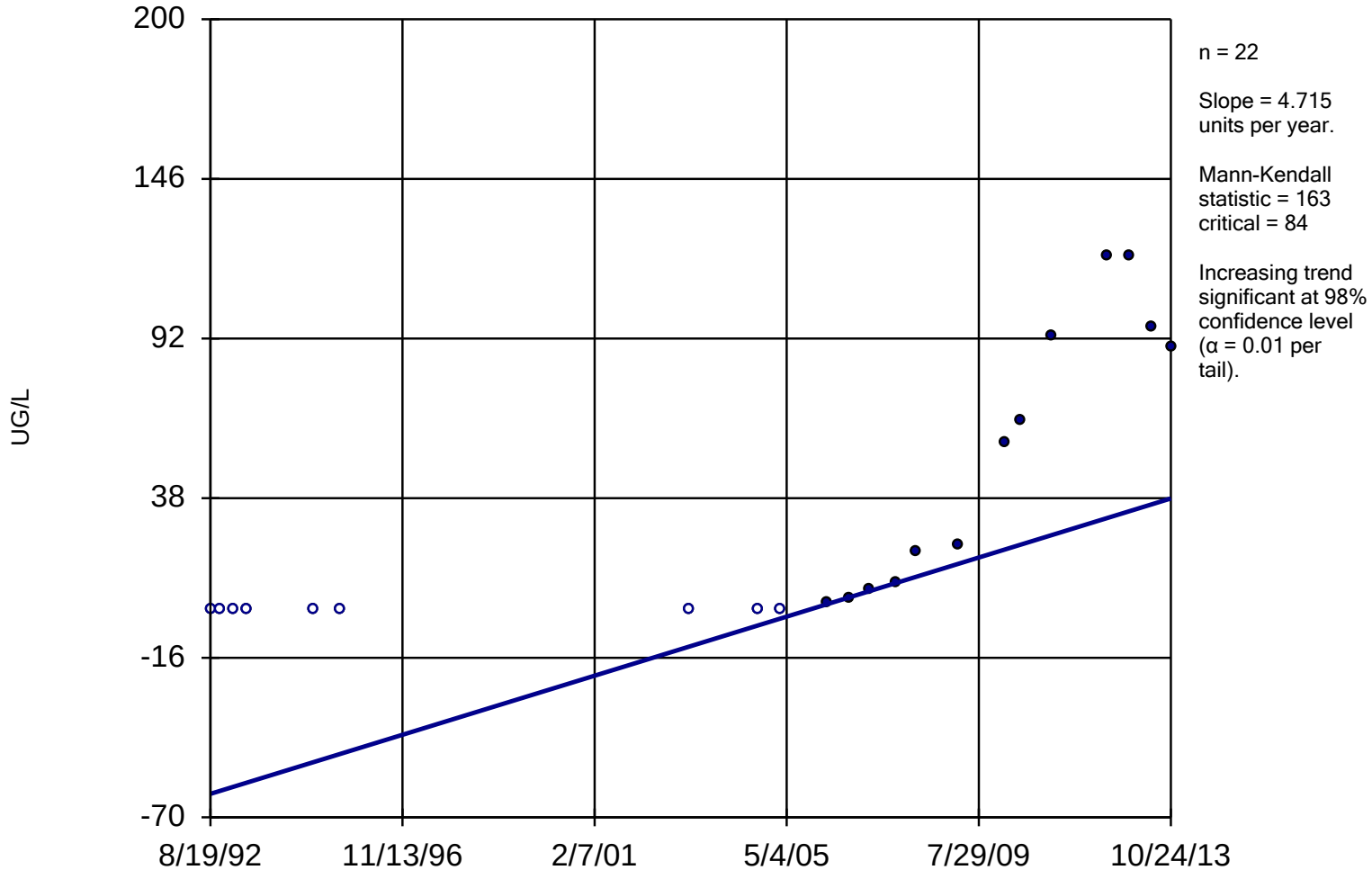
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-42A



Constituent: TCE Analysis Run 1/28/2014 2:37 PM

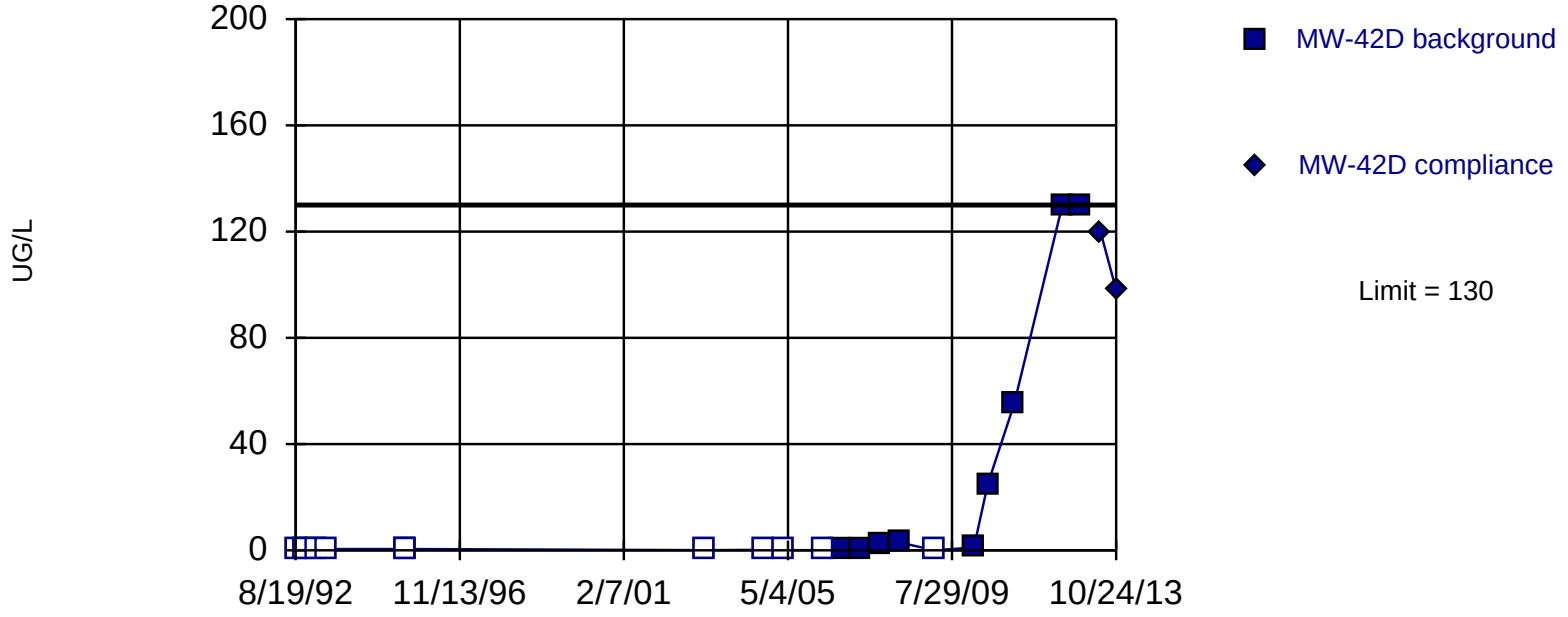
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 20 background values. 55% NDs. Report alpha = 0.04762. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

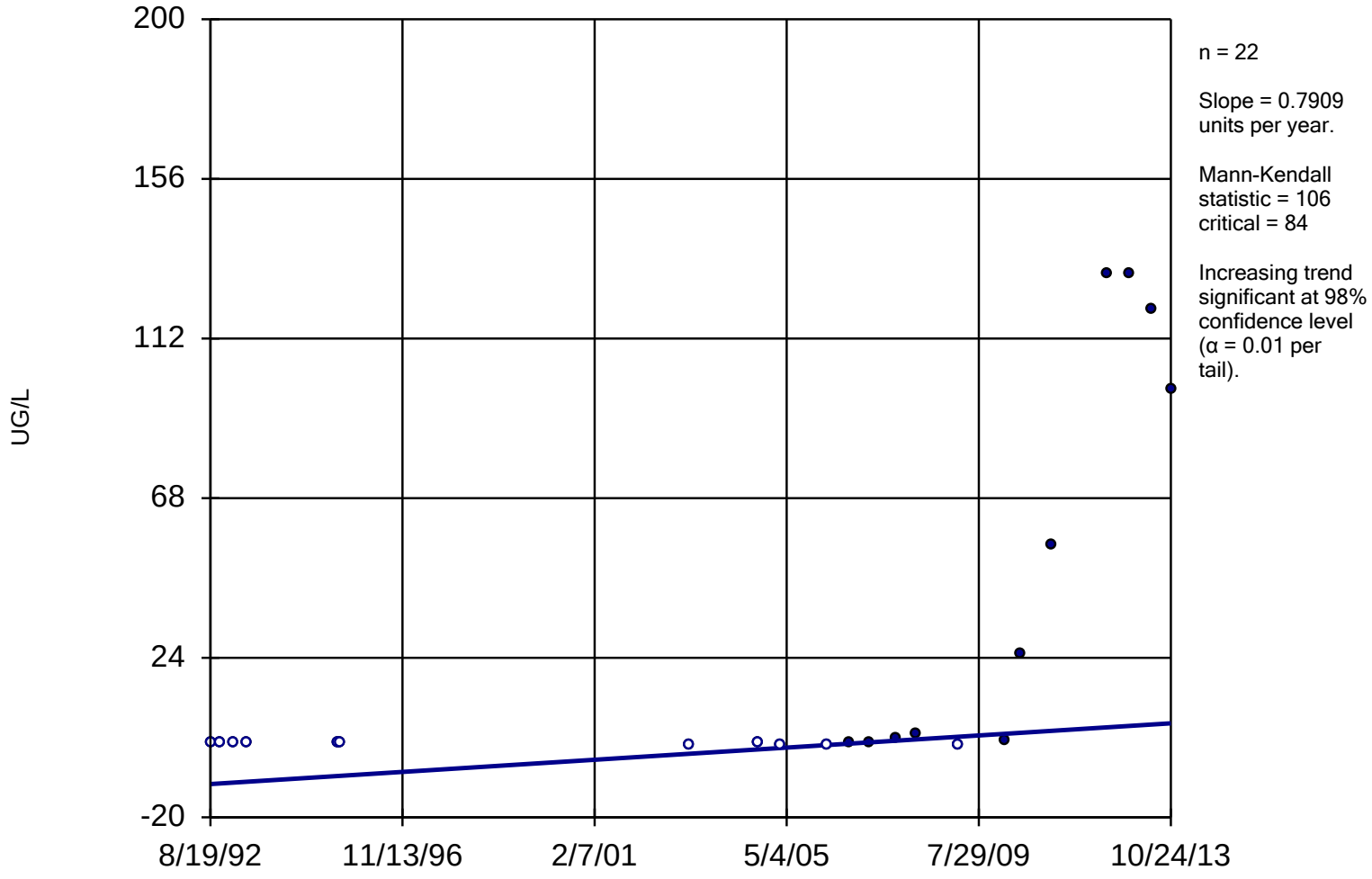
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-42D



Constituent: TCE Analysis Run 1/28/2014 2:38 PM

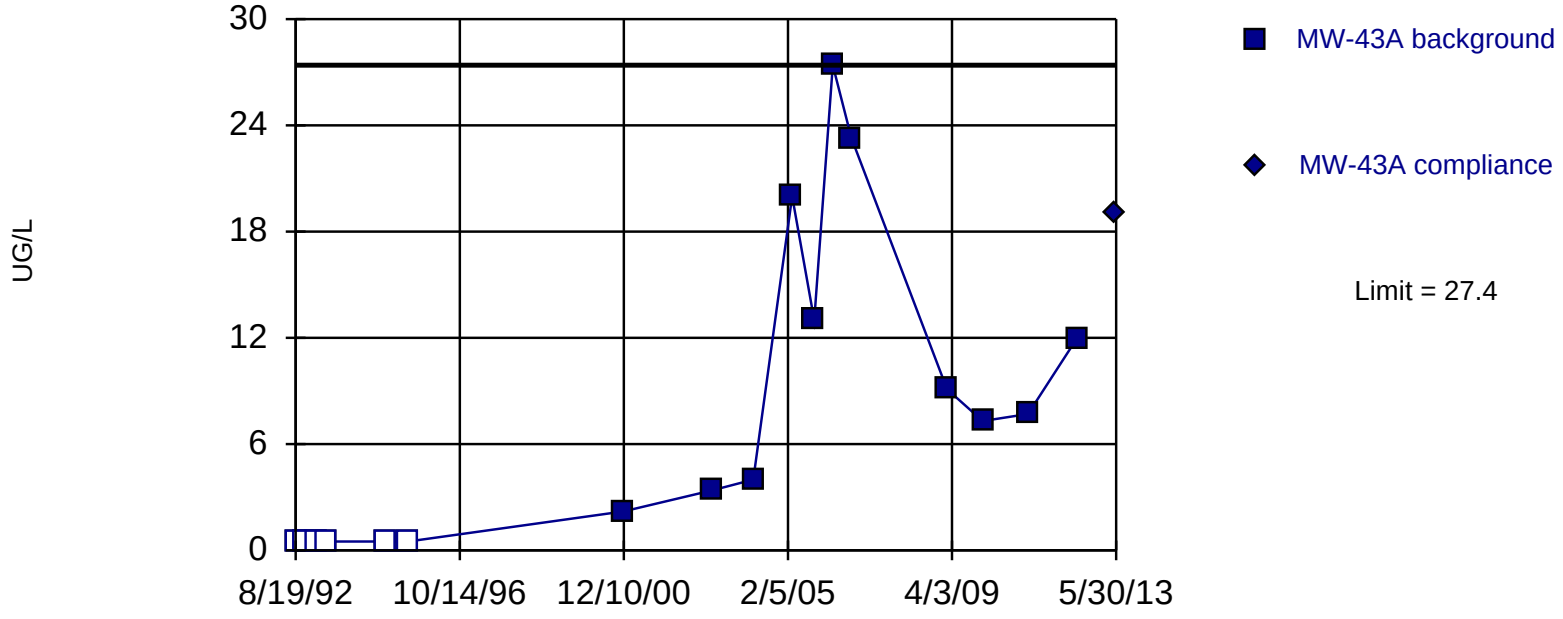
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

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 0.05 alpha level. Limit is highest of 17 background values. 35.29% NDs. Report alpha = 0.05556. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

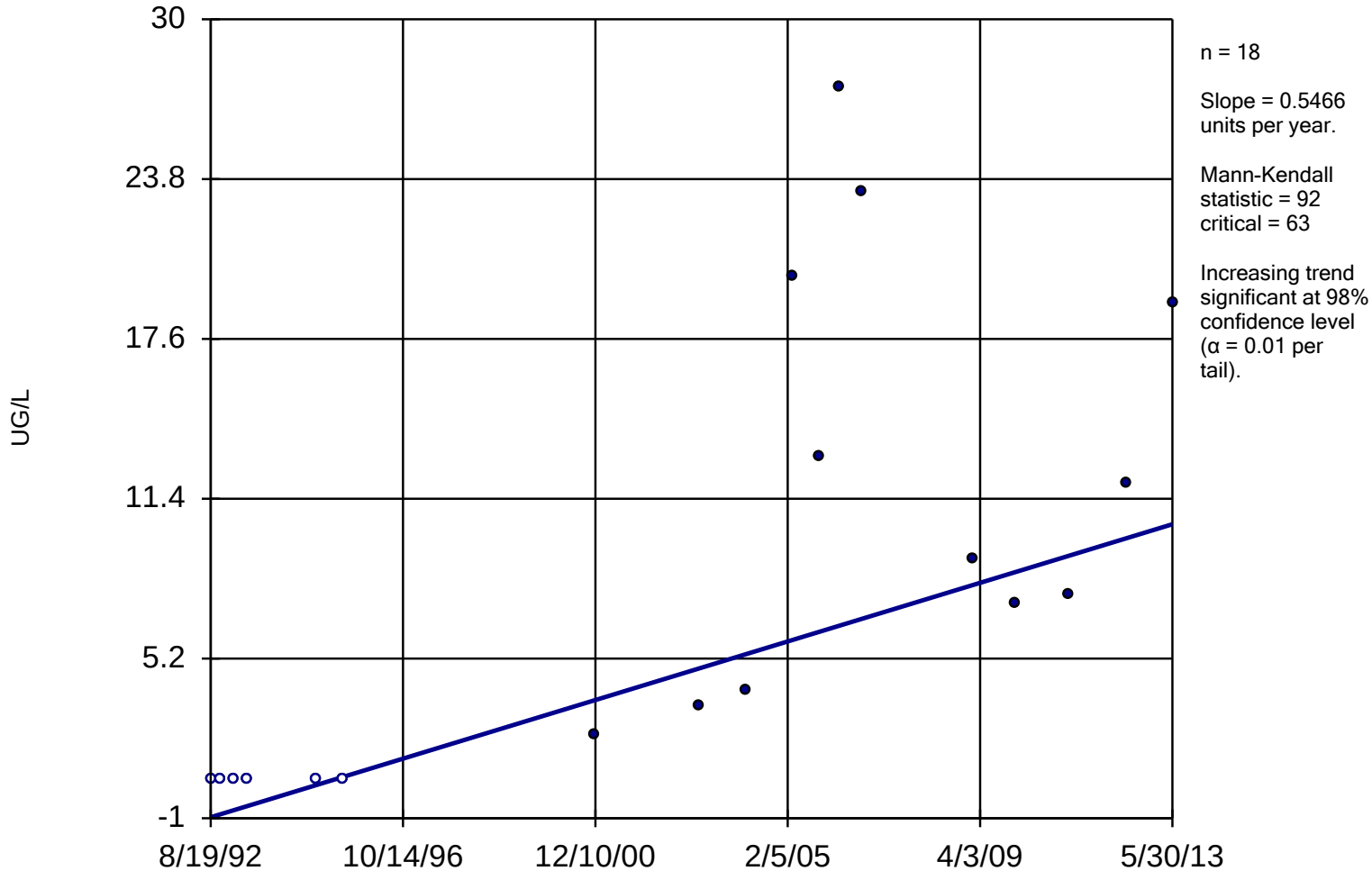
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-43A



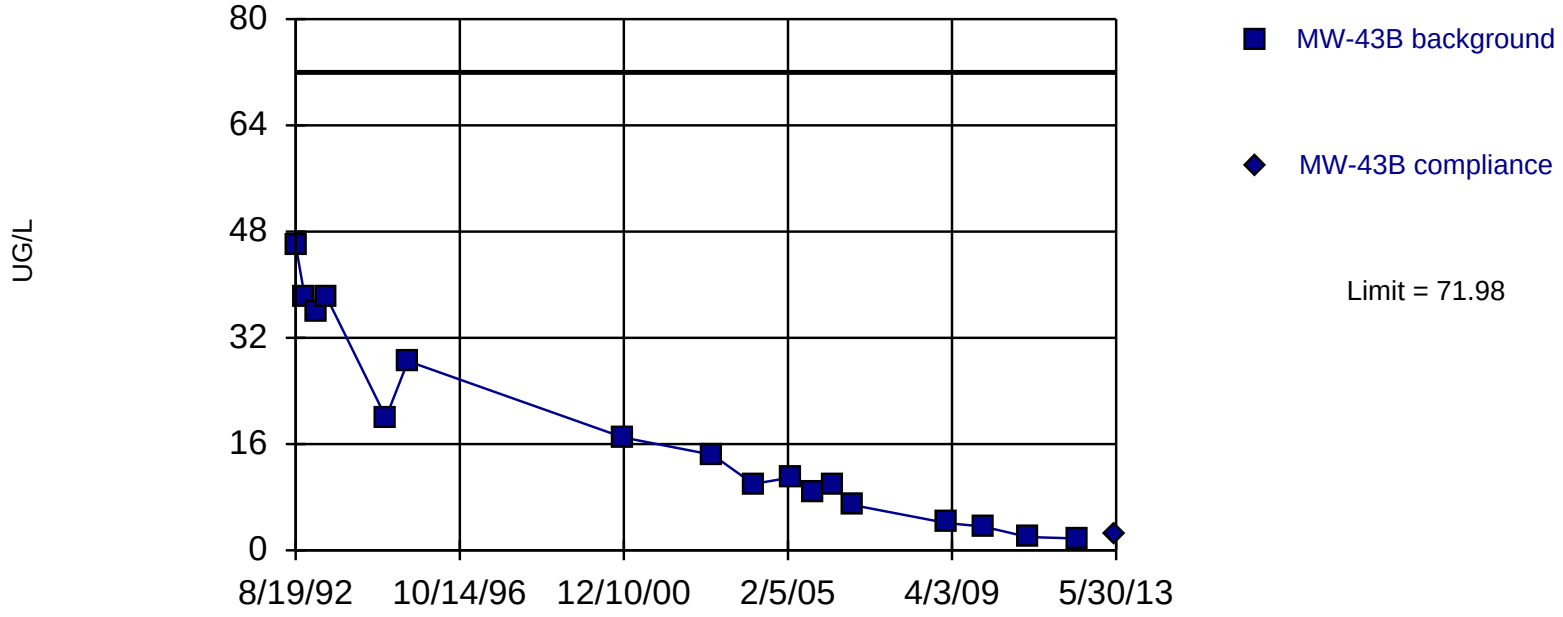
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



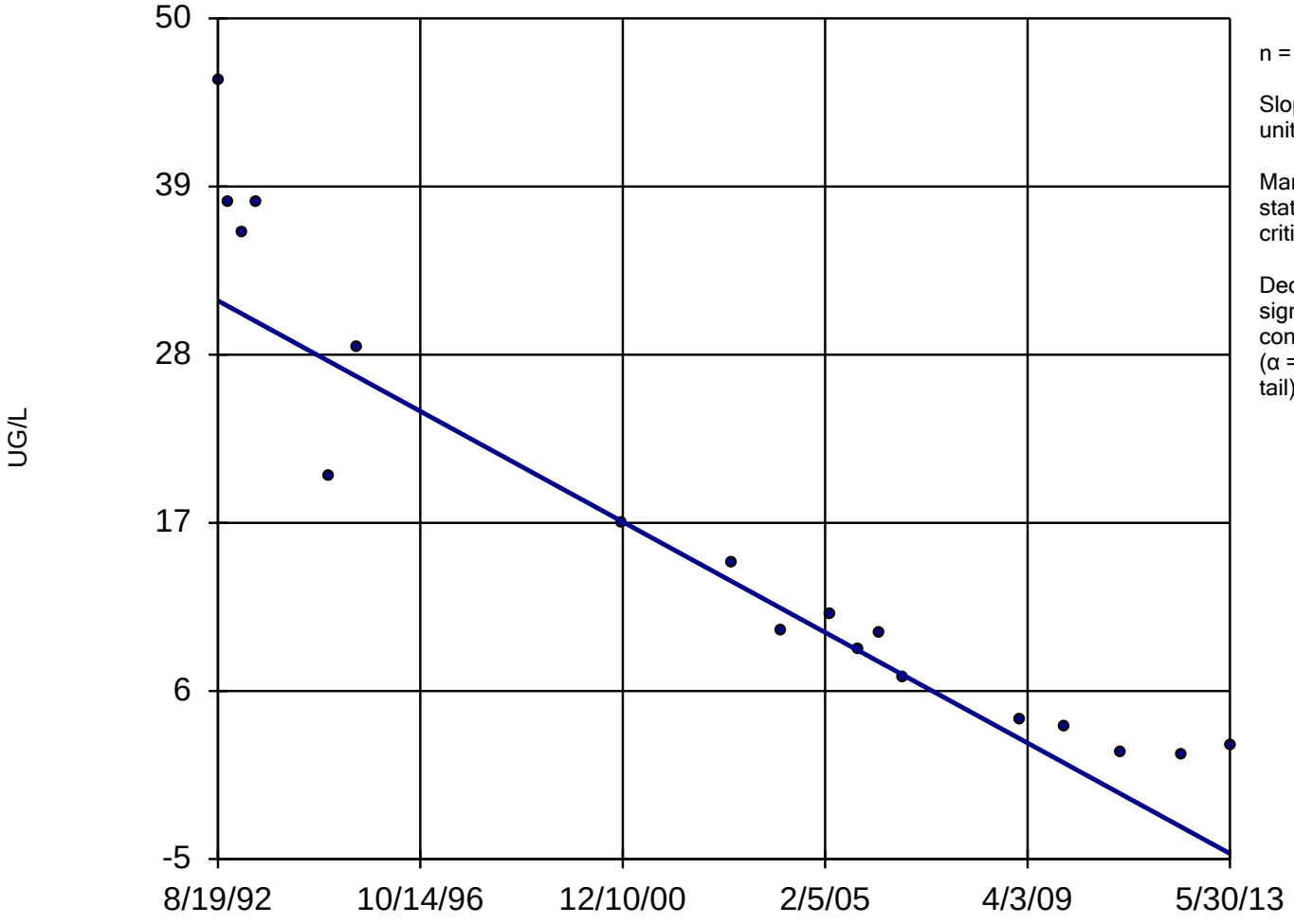
Background Data Summary (based on square root transformation): Mean=3.805, Std. Dev.=1.76, n=17. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9358, critical = 0.892. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-43B



n = 18

Slope = -1.74 units per year.

Mann-Kendall statistic = -140
critical = -63

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/28/2014 2:38 PM

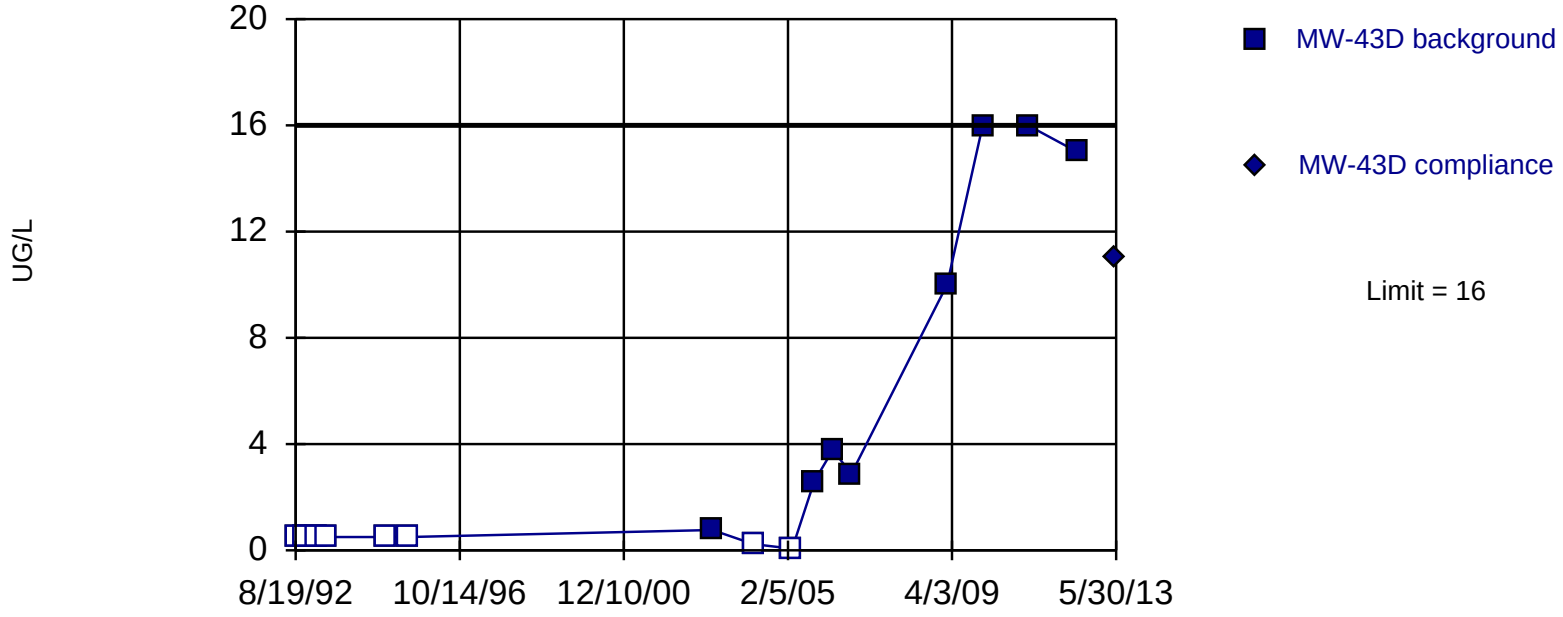
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the data required both a power transformation and Cohen's adjustment. Limit is highest of 16 background values. 50% NDs. Report alpha = 0.05882. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

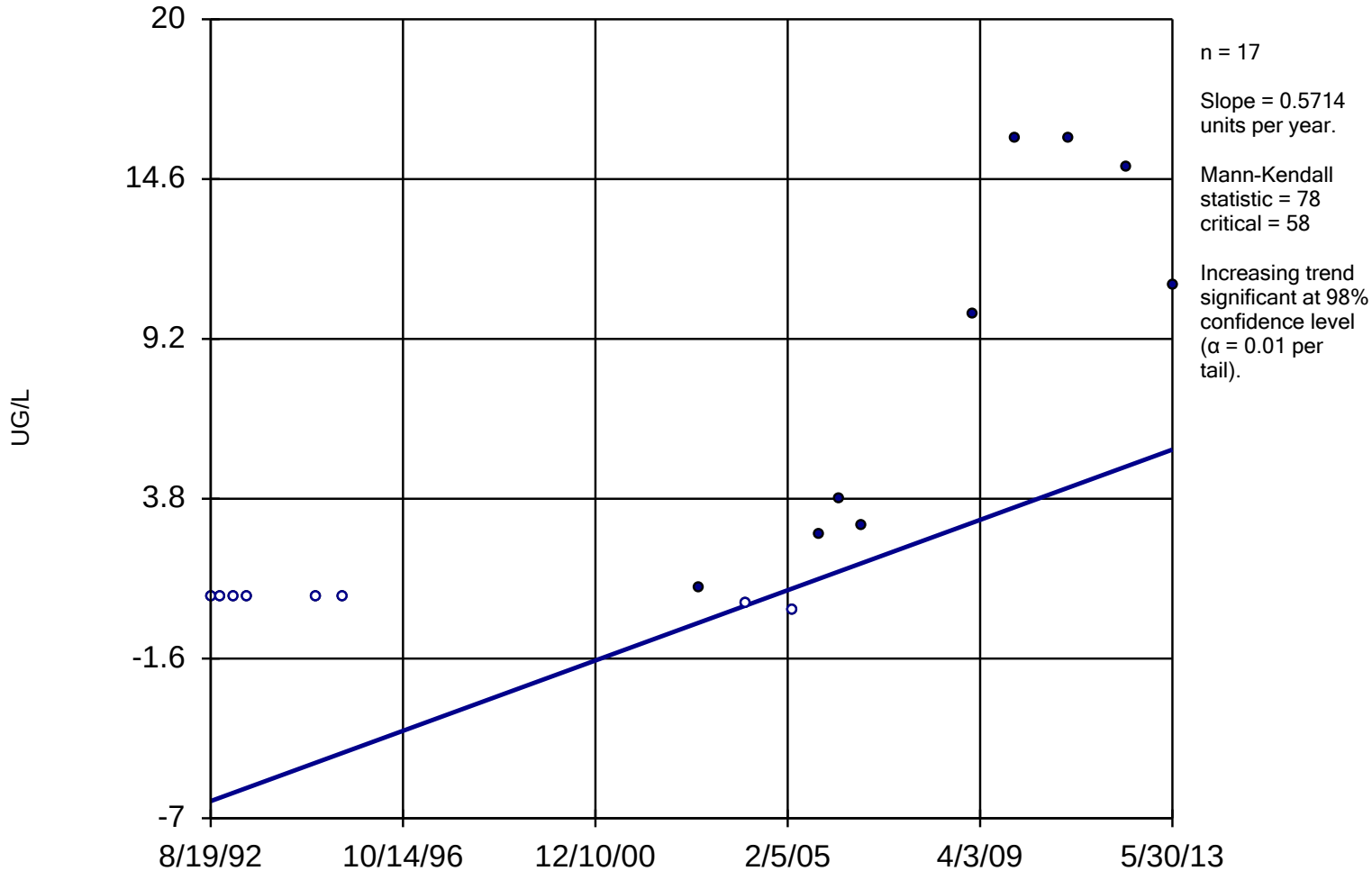
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-43D



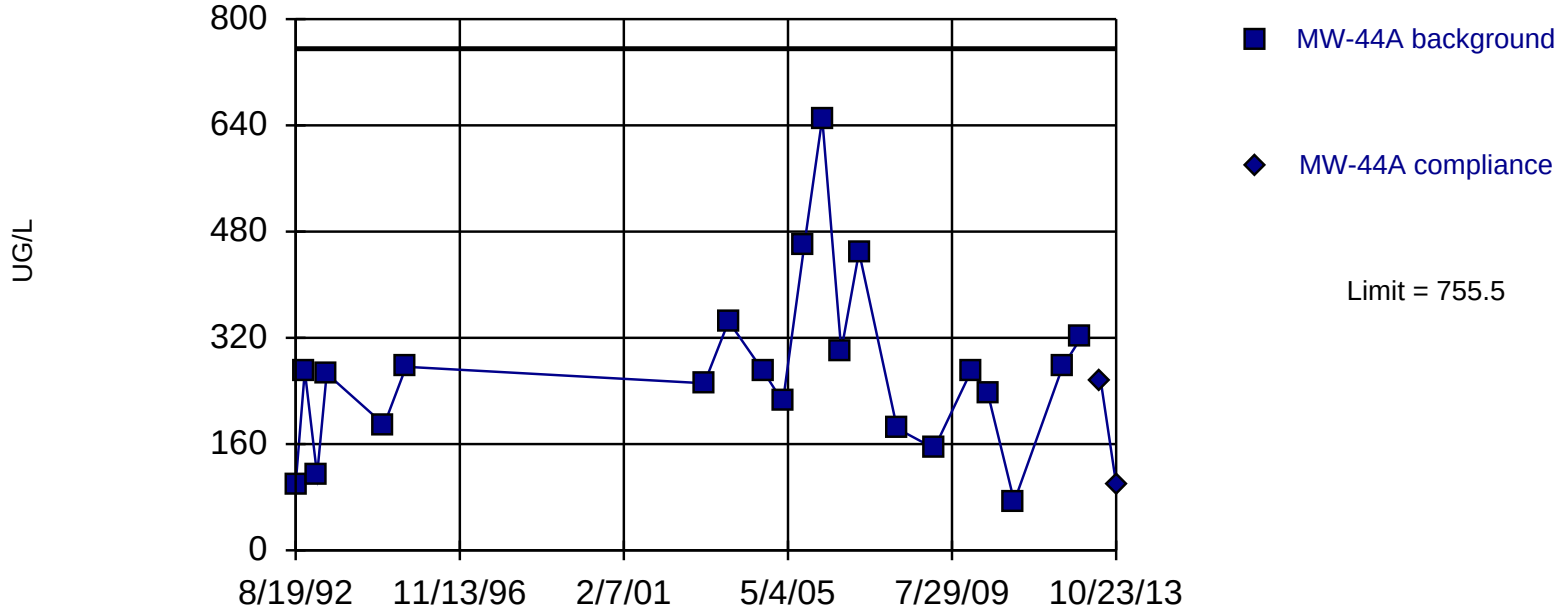
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



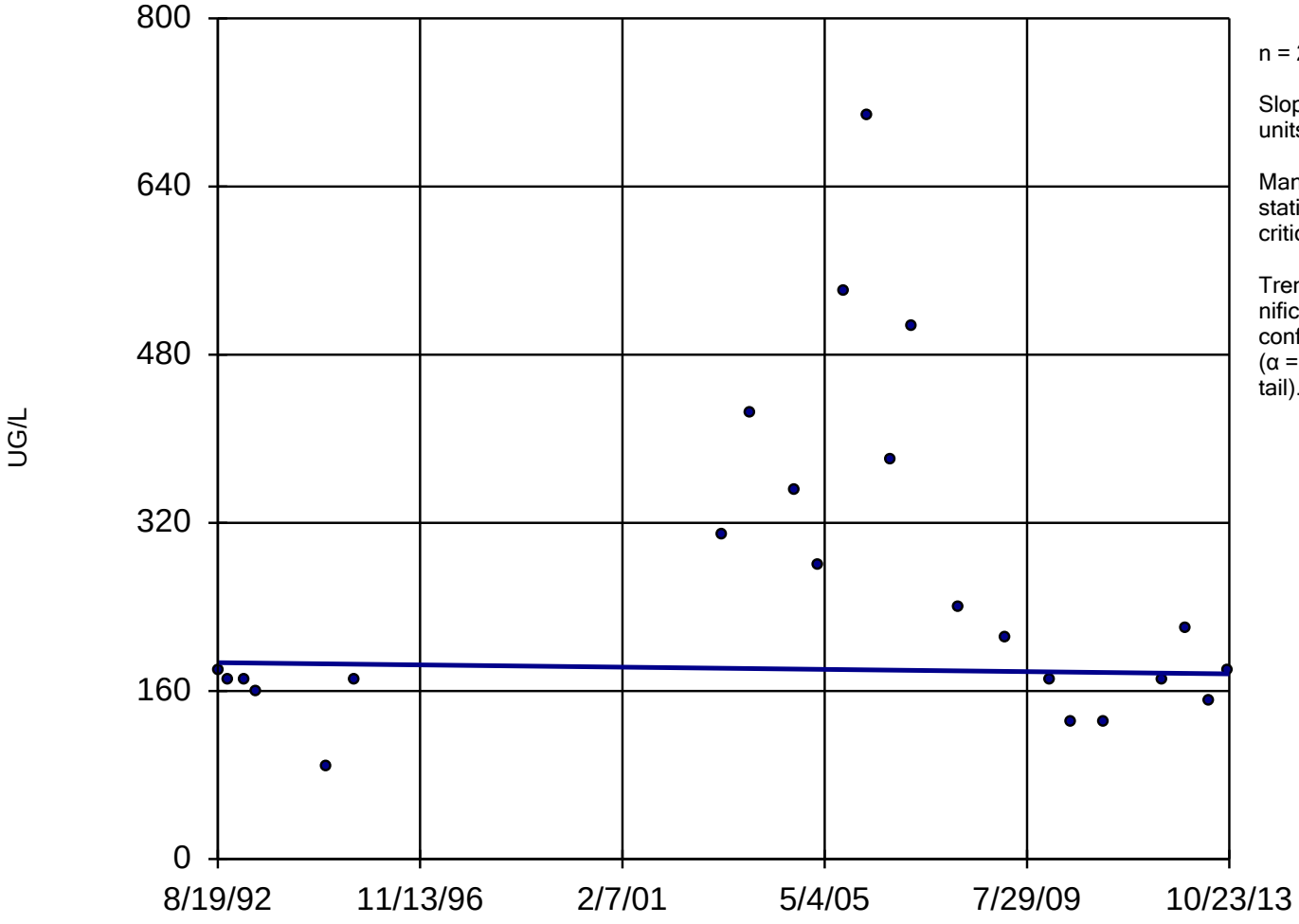
Background Data Summary (based on square root transformation): Mean=15.89, Std. Dev.=4.48, n=21. Seasonality was detected with 95% confidence and data were deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.957, critical = 0.908. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-44A



n = 23

Slope = -0.5048 units per year.

Mann-Kendall statistic = -15
critical = -89

Trend not significant at 98% confidence level (α = 0.01 per tail).

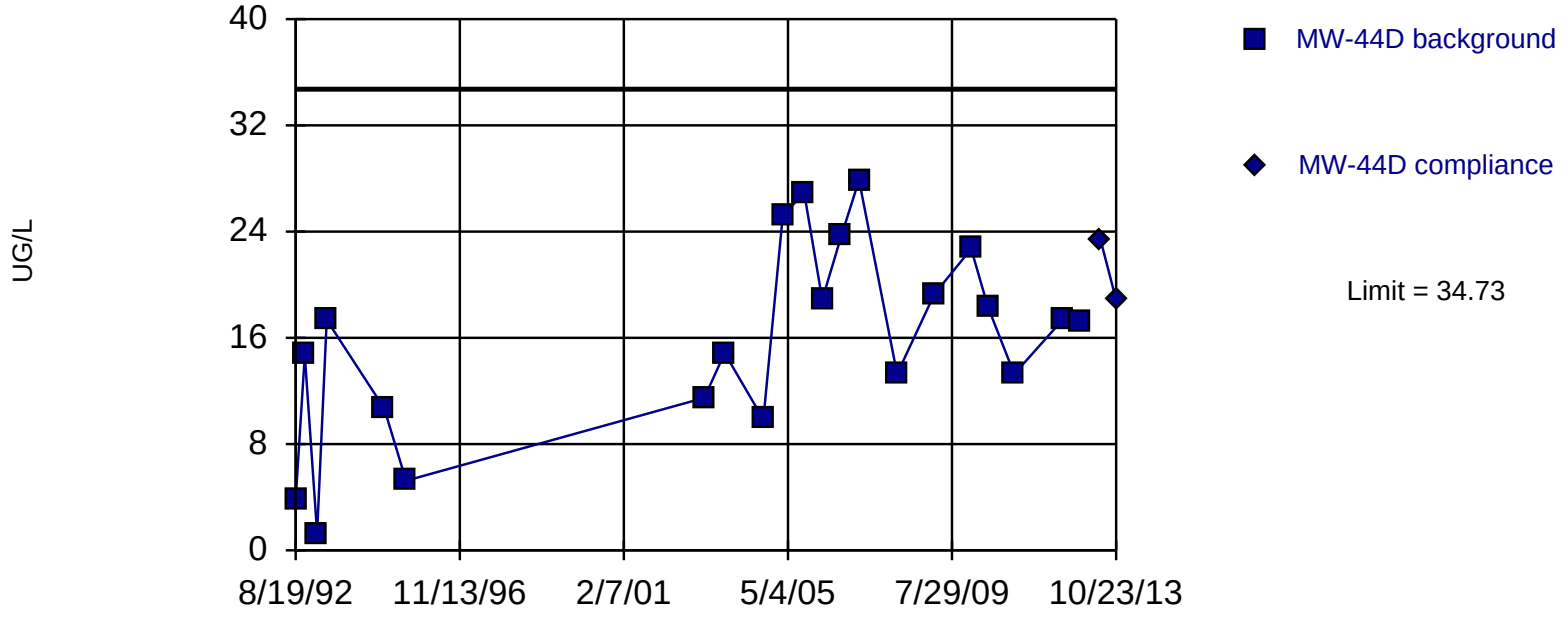
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



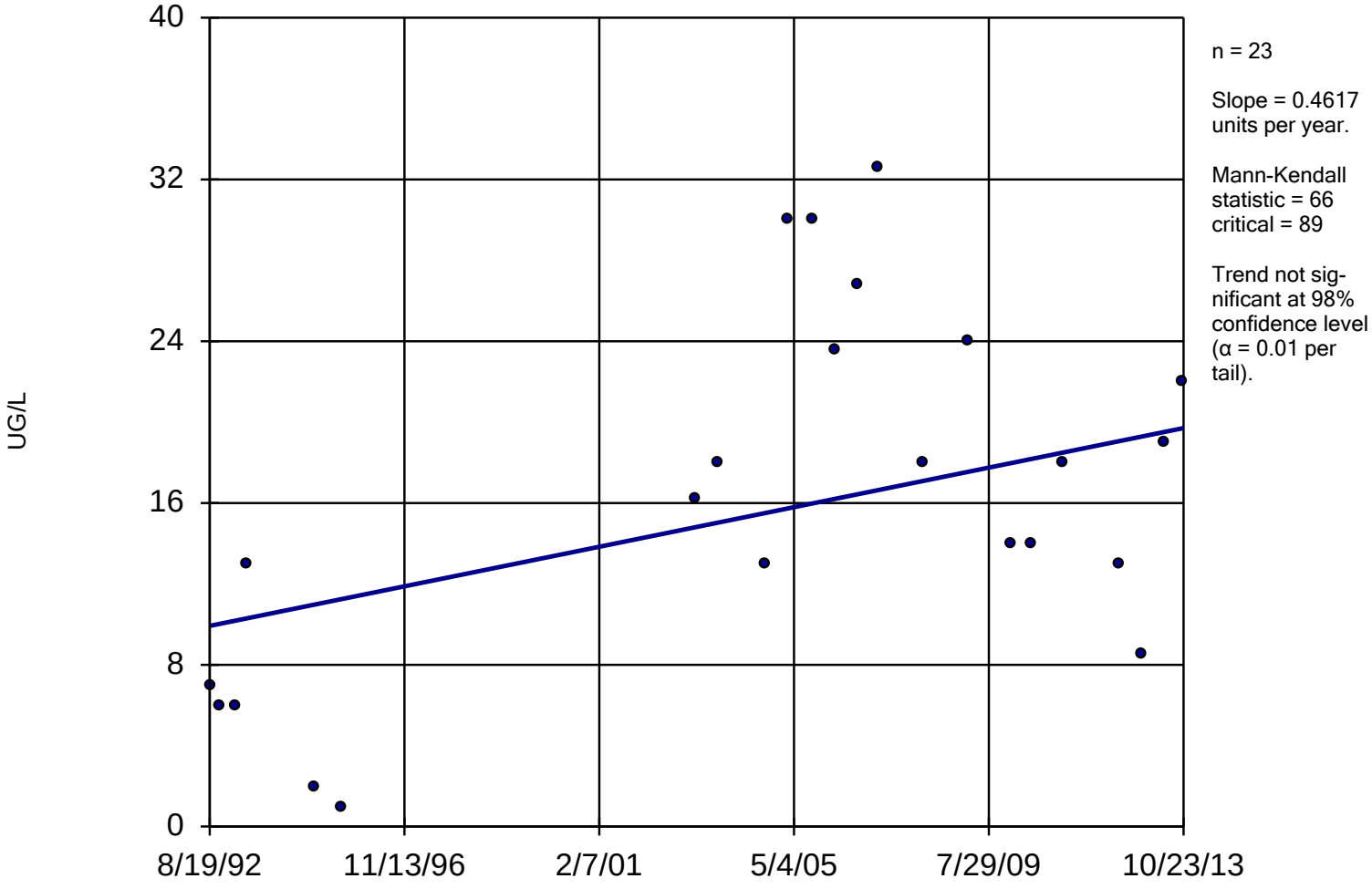
Background Data Summary: Mean=15.88, Std. Dev.=7.286, n=21. Seasonality was detected with 95% confidence and data were deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9743, critical = 0.908. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-44D



Constituent: TCE Analysis Run 1/28/2014 2:38 PM

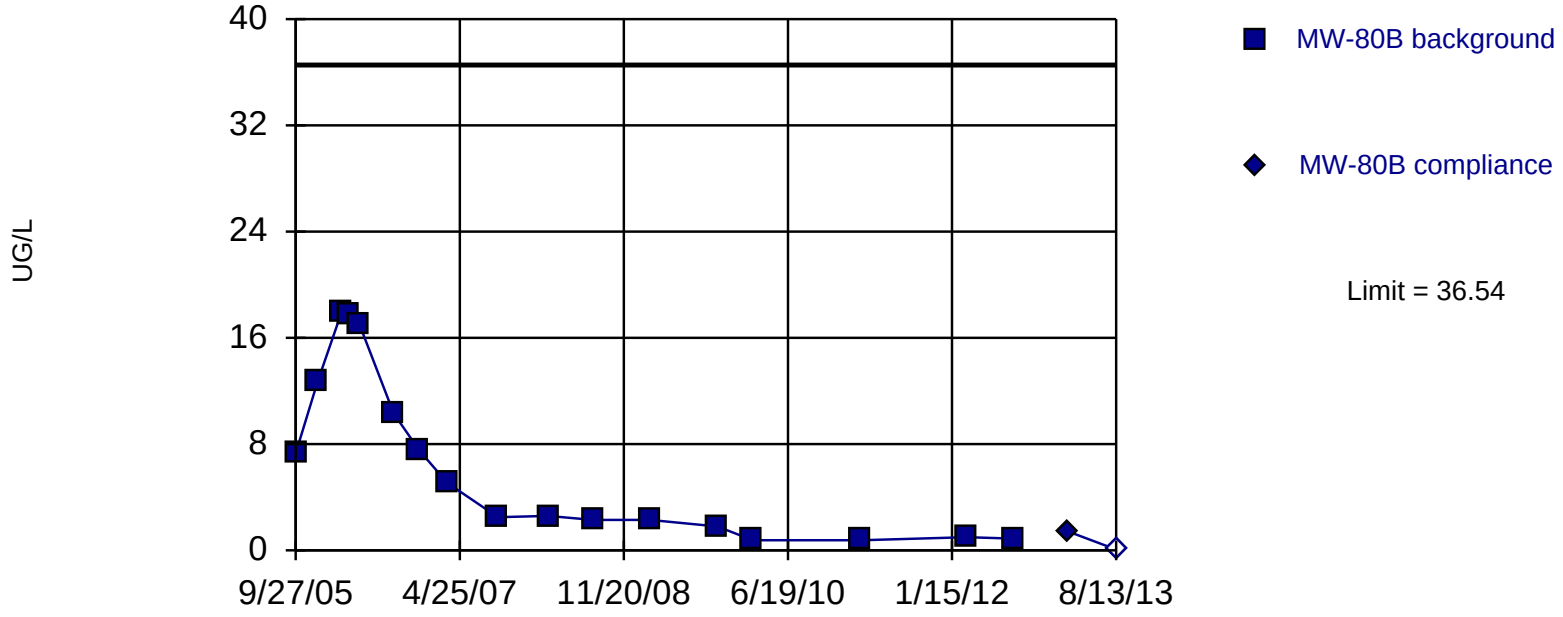
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=1.665, Std. Dev.=0.6219, n=17. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8939, critical = 0.892. Report alpha = 0.01. Most recent point compared to limit.

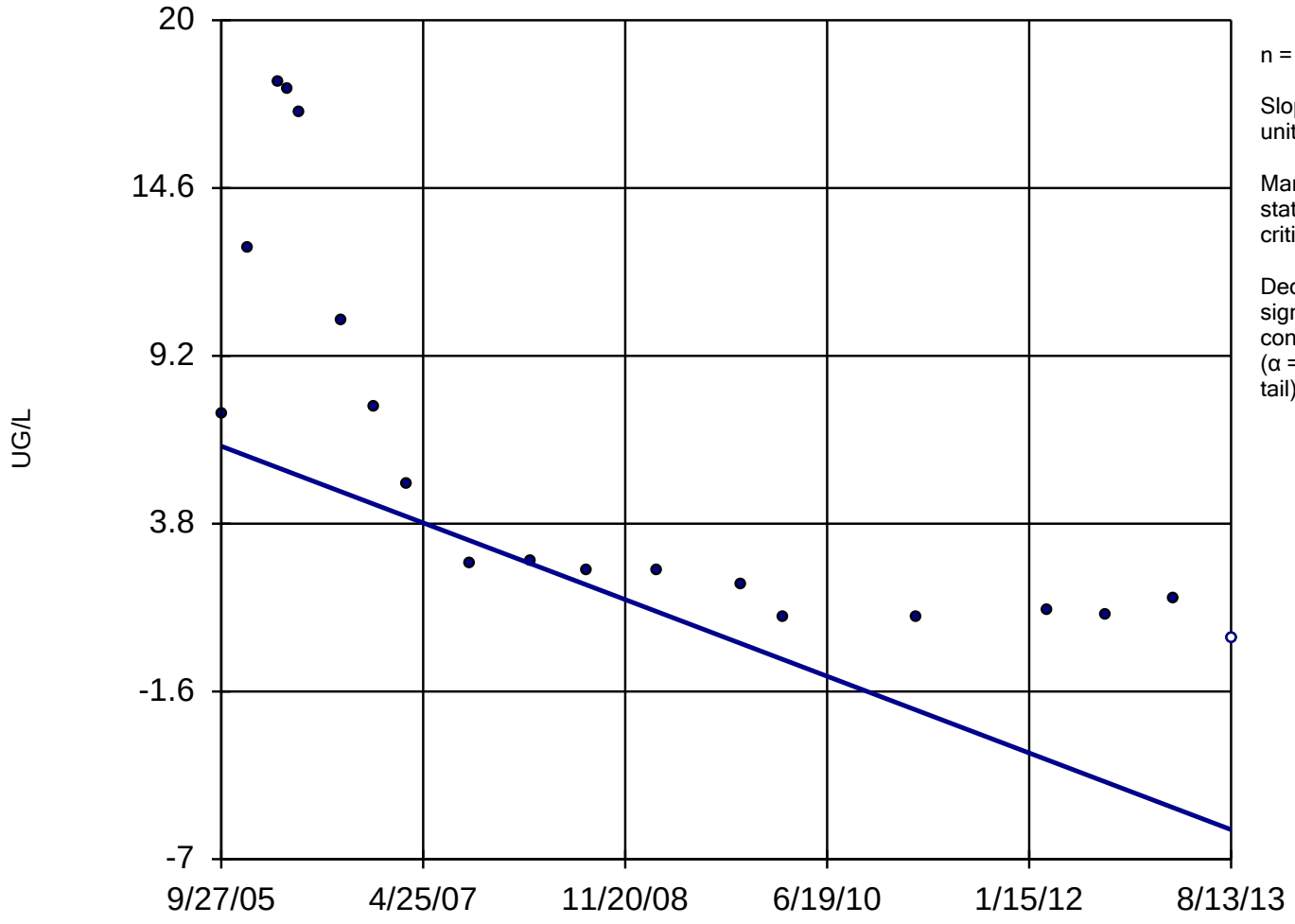
Constituent: TCE Analysis Run 1/28/2014 2:27 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-80B



n = 19

Slope = -1.566 units per year.

Mann-Kendall statistic = -133
critical = -68

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

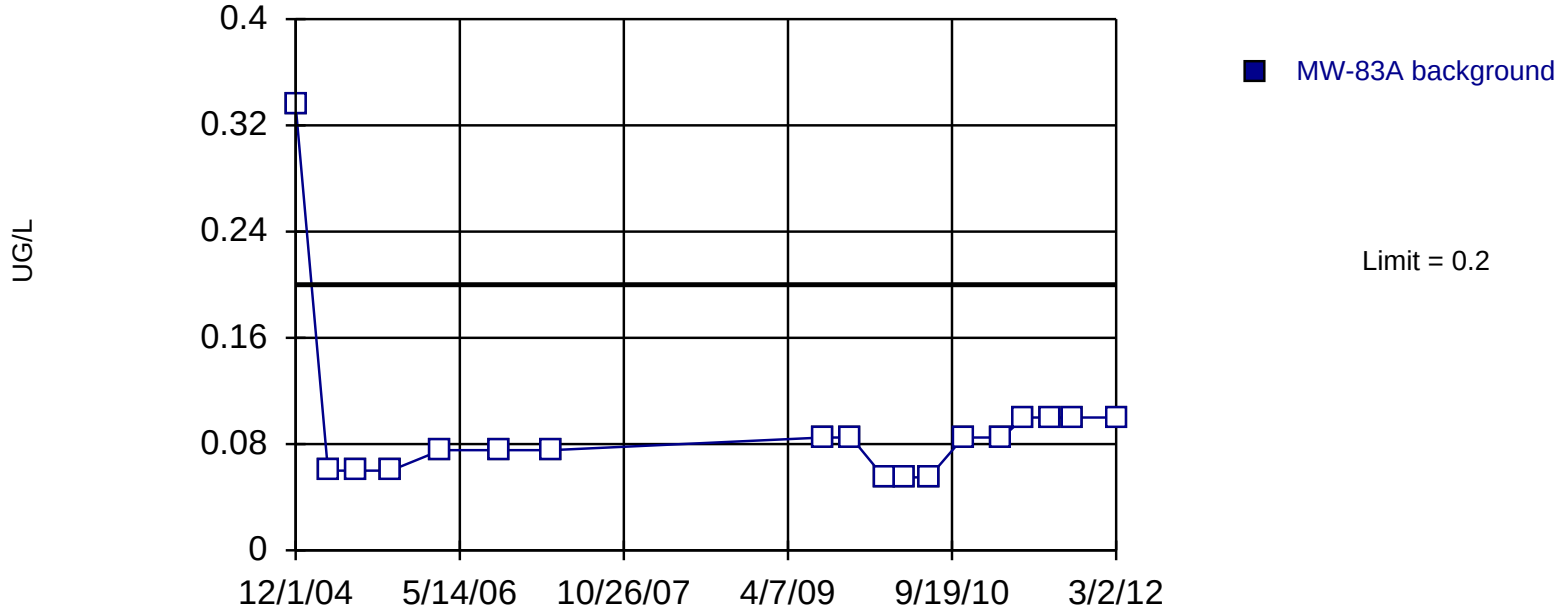
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-83A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 18) were censored; limit is most recent reporting limit. Report alpha = 0.05263. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

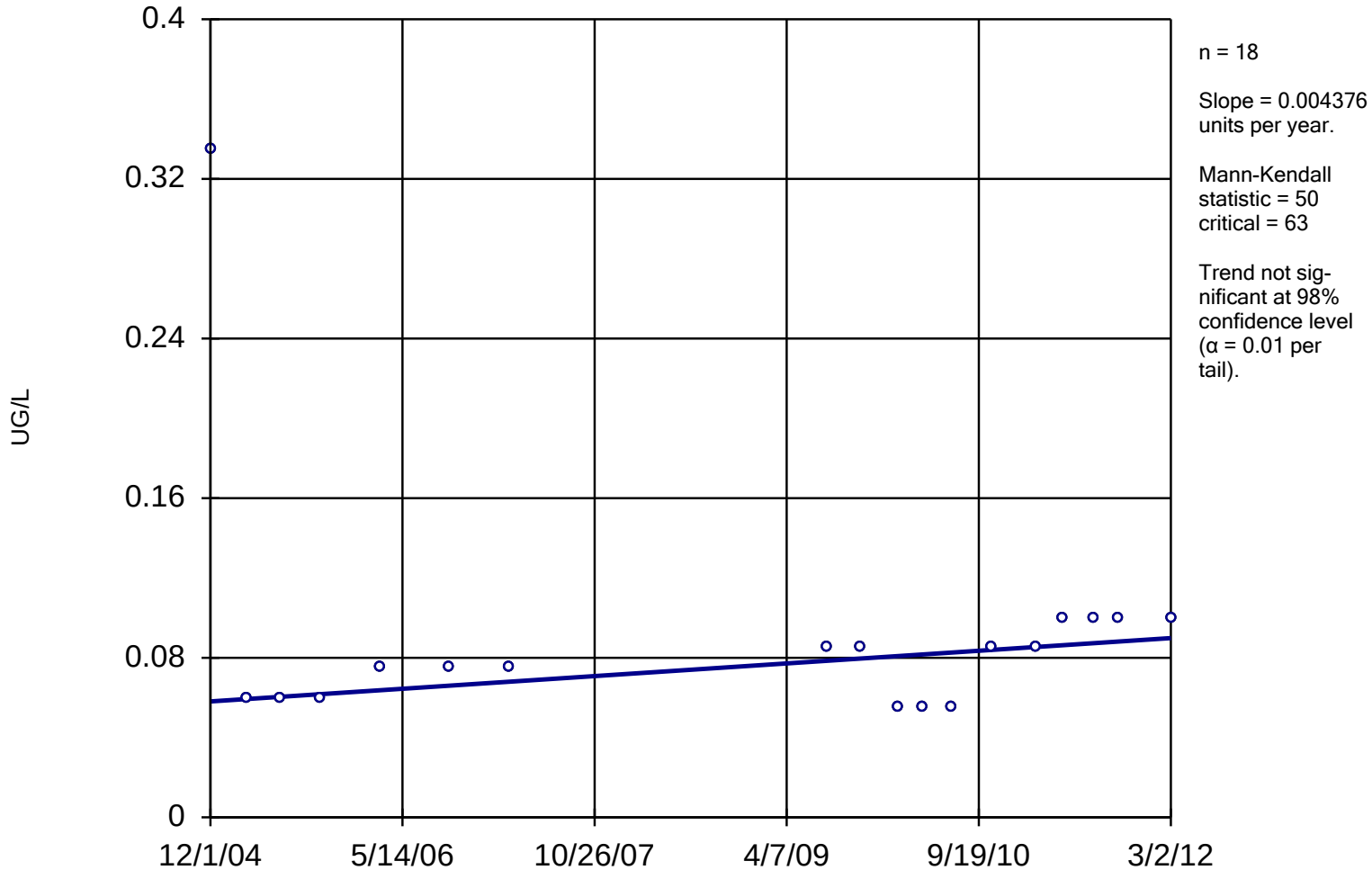
Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-83A



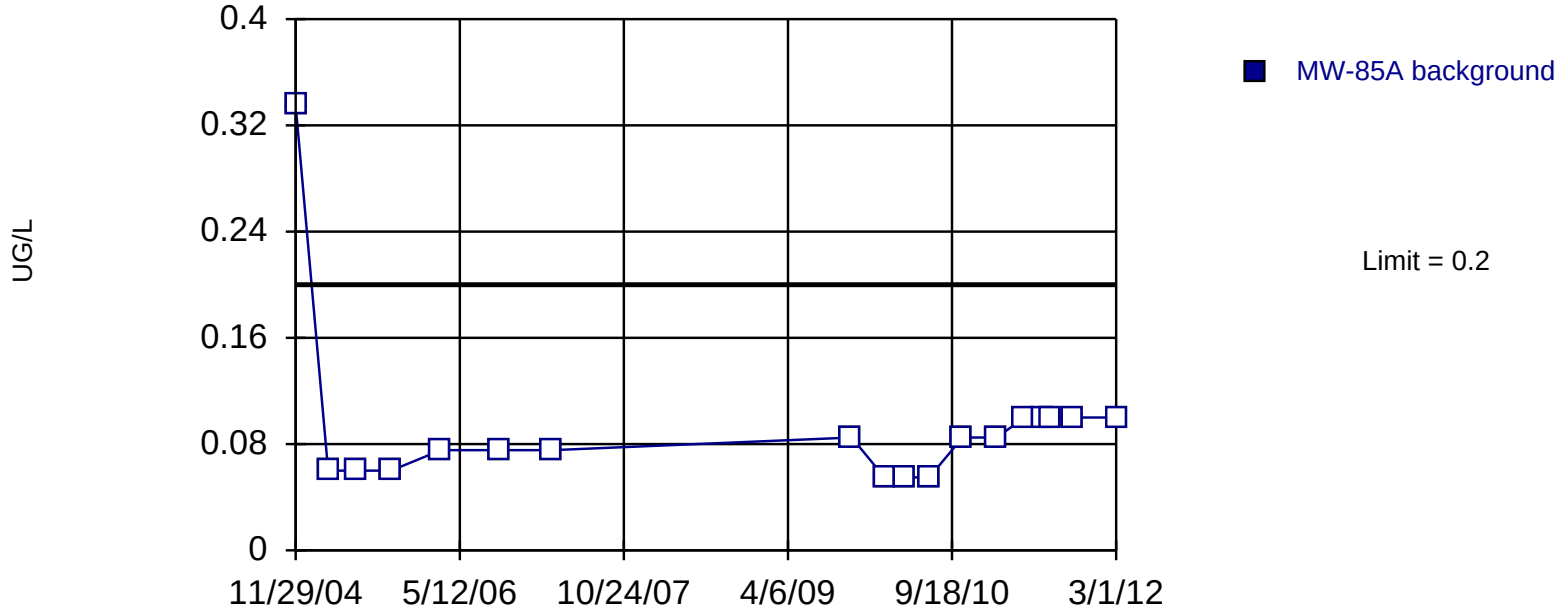
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-85A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 18) were censored; limit is most recent reporting limit. Report alpha = 0.05263. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

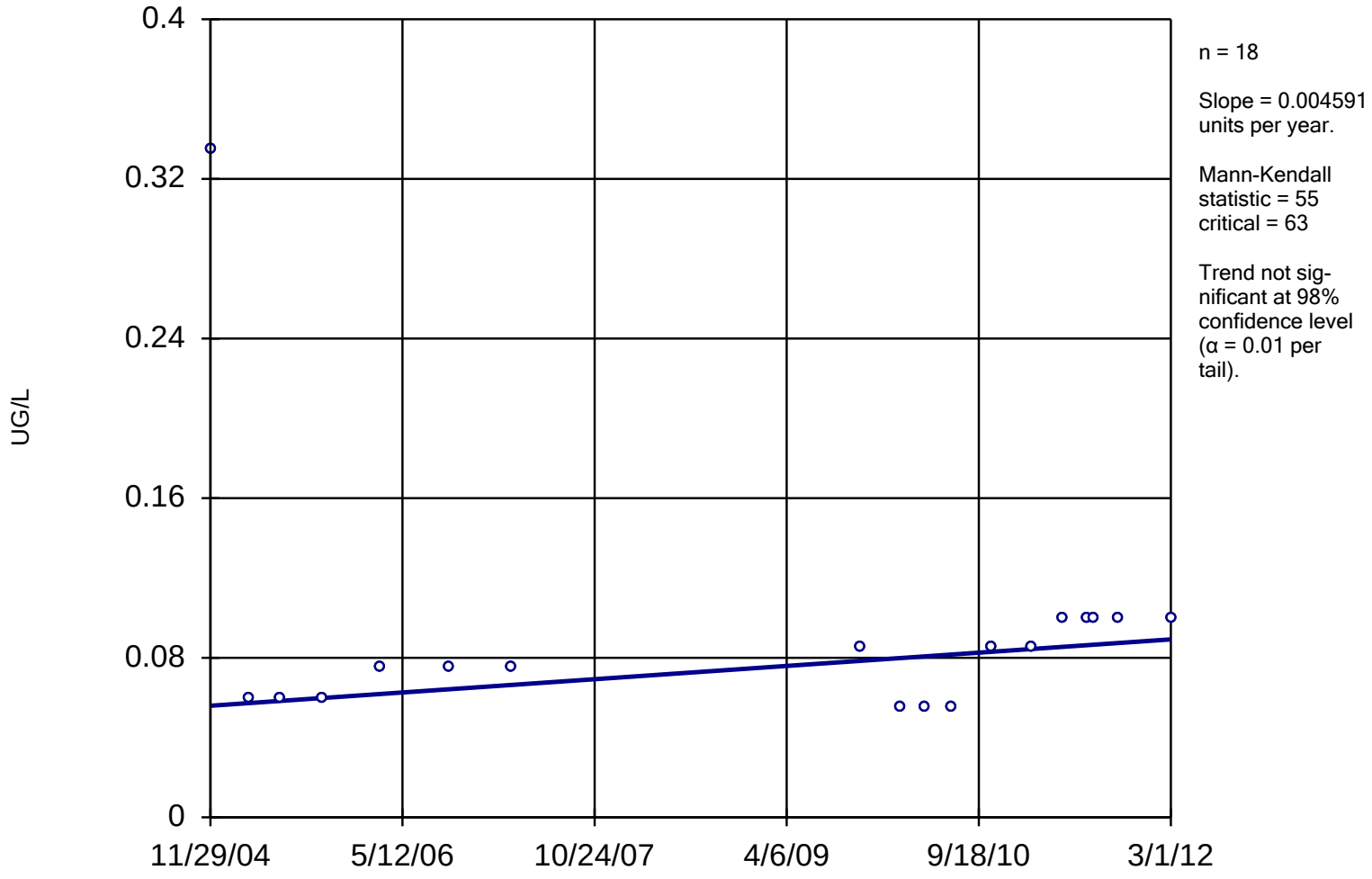
Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-85A



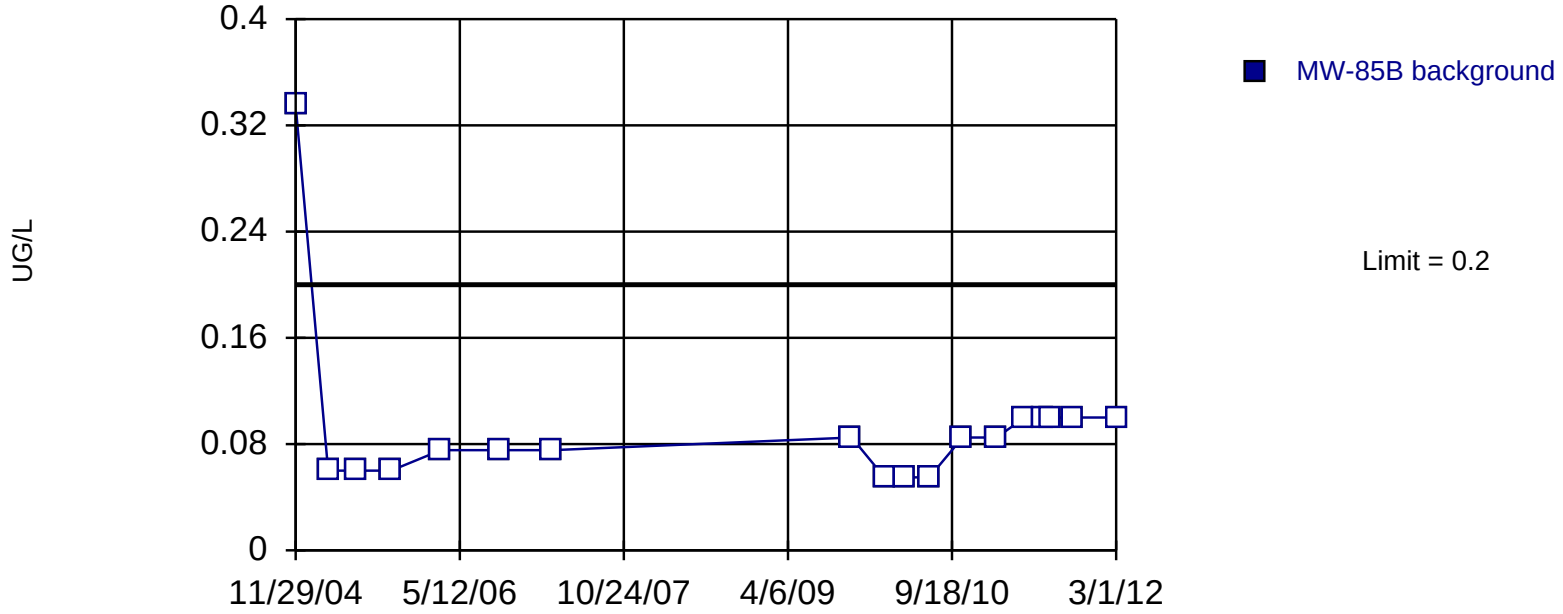
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-85B



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 18) were censored; limit is most recent reporting limit. Report alpha = 0.05263. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

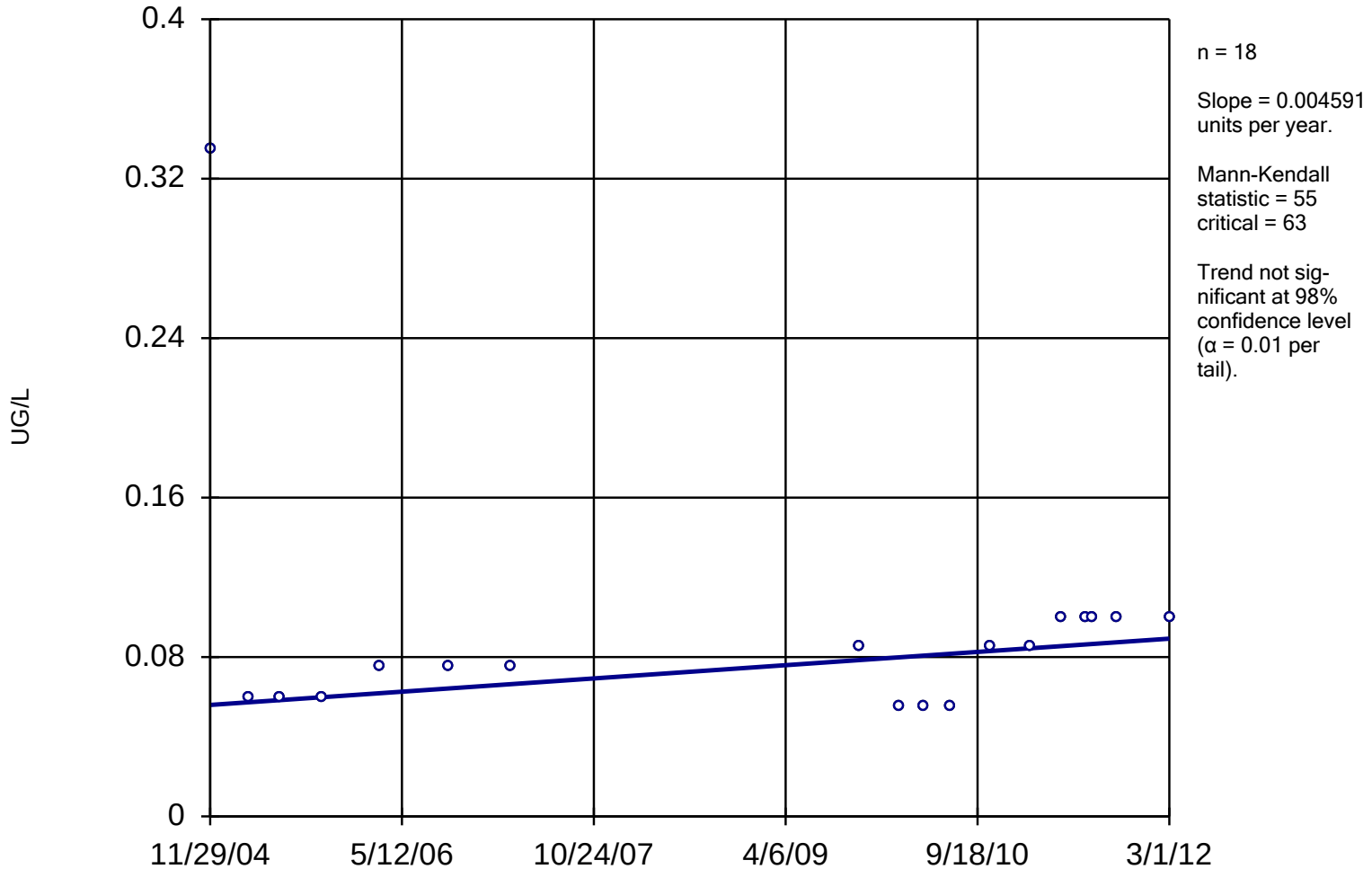
Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-85B



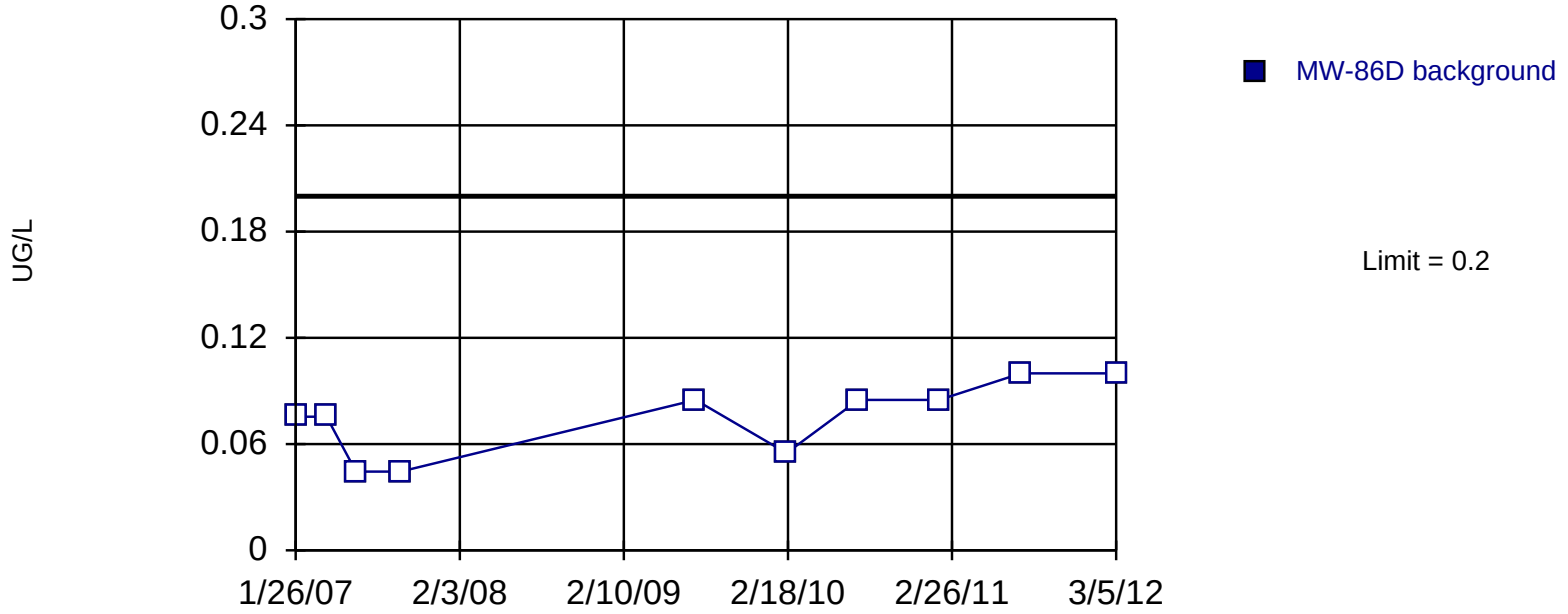
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-86D



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Report alpha = 0.09091. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

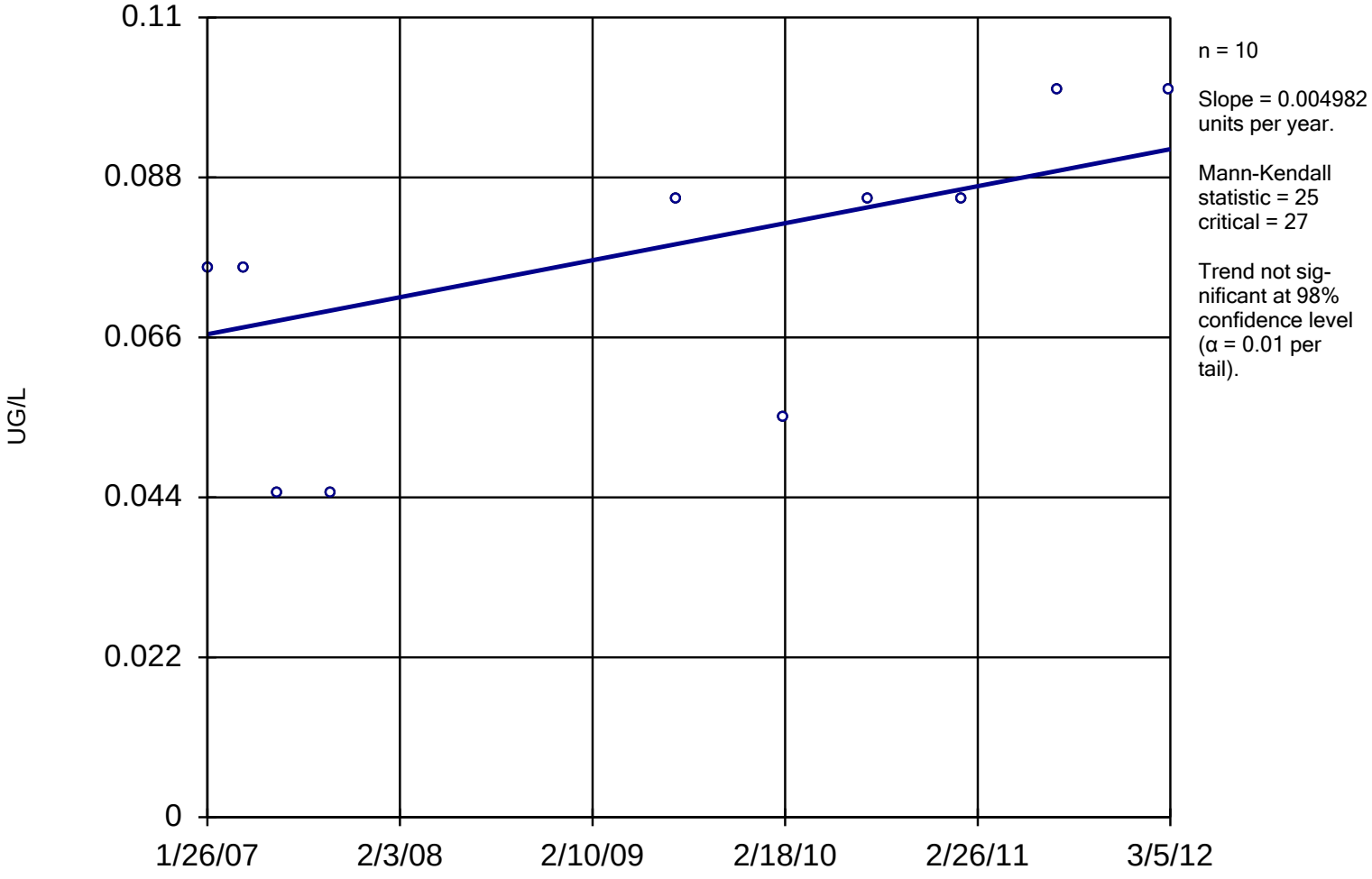
Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-86D



Constituent: TCE Analysis Run 1/28/2014 2:38 PM

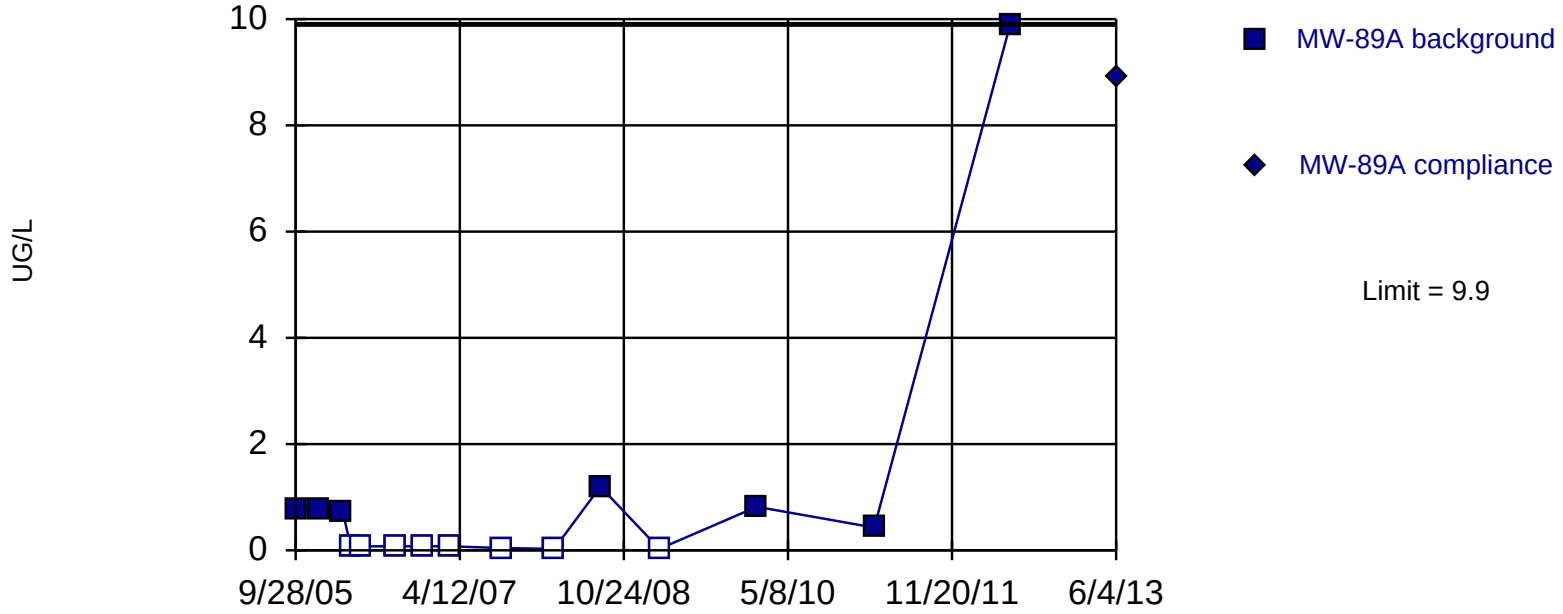
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 15 background values. 53.33% NDs. Report alpha = 0.0625. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

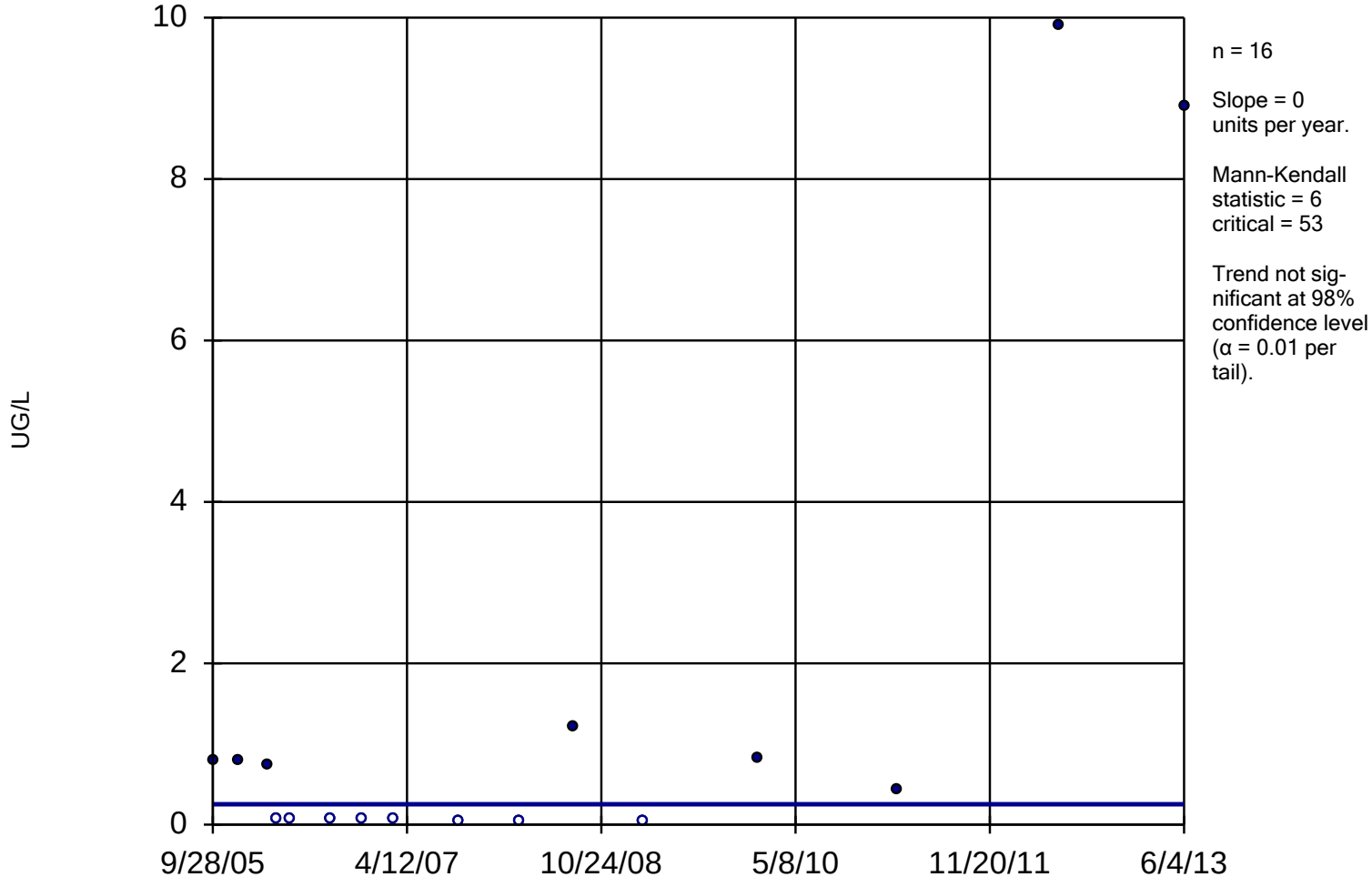
Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-89A



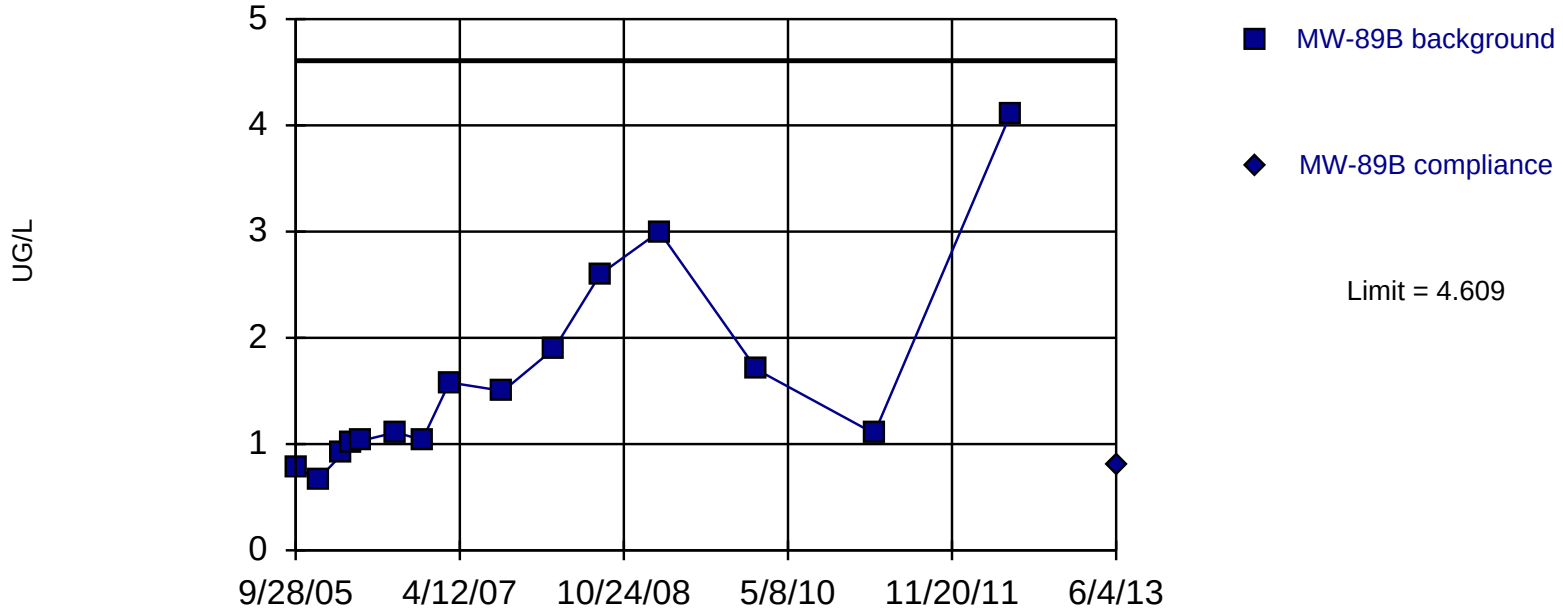
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



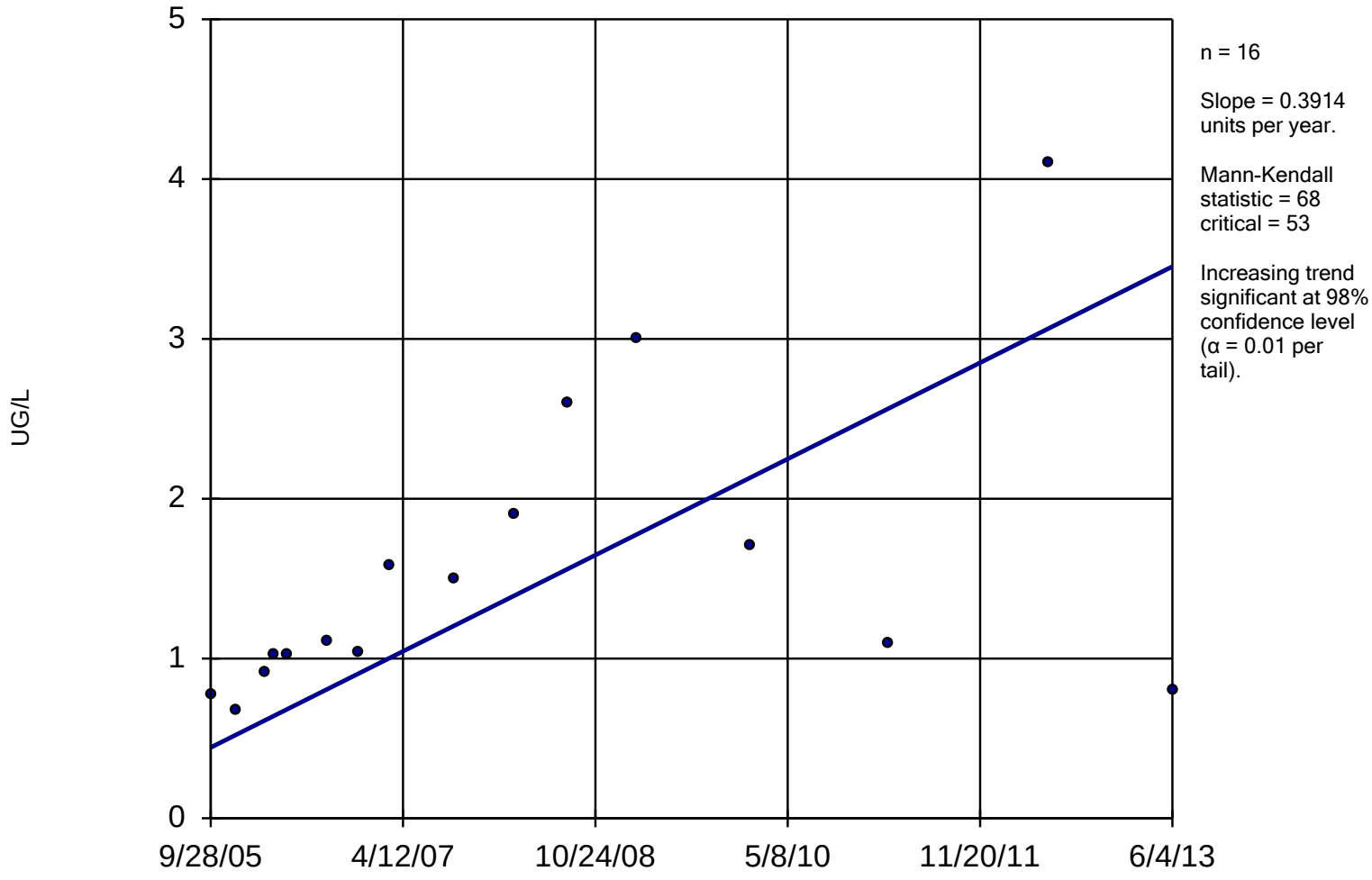
Background Data Summary (based on square root transformation): Mean=1.222, Std. Dev.=0.3412, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8906, critical = 0.881. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-89B



Constituent: TCE Analysis Run 1/28/2014 2:38 PM

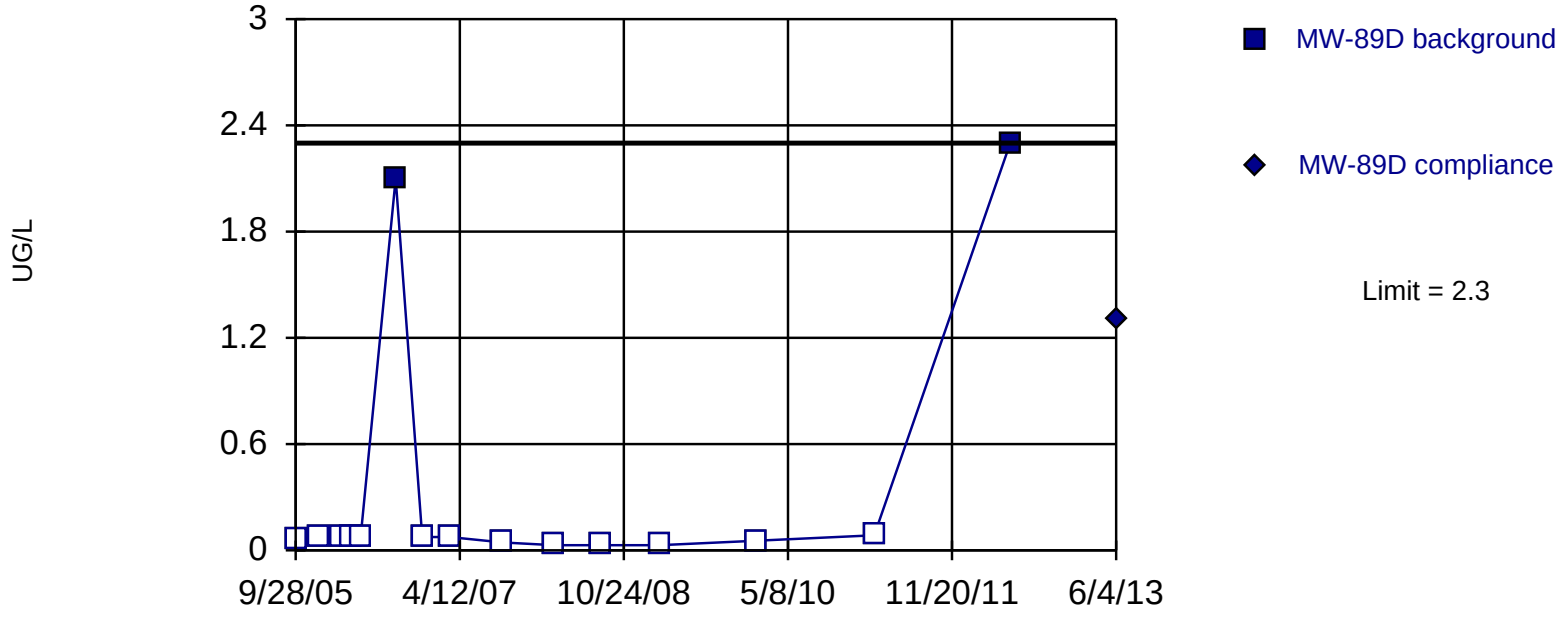
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 15 background values. 86.67% NDs. Report alpha = 0.0625. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

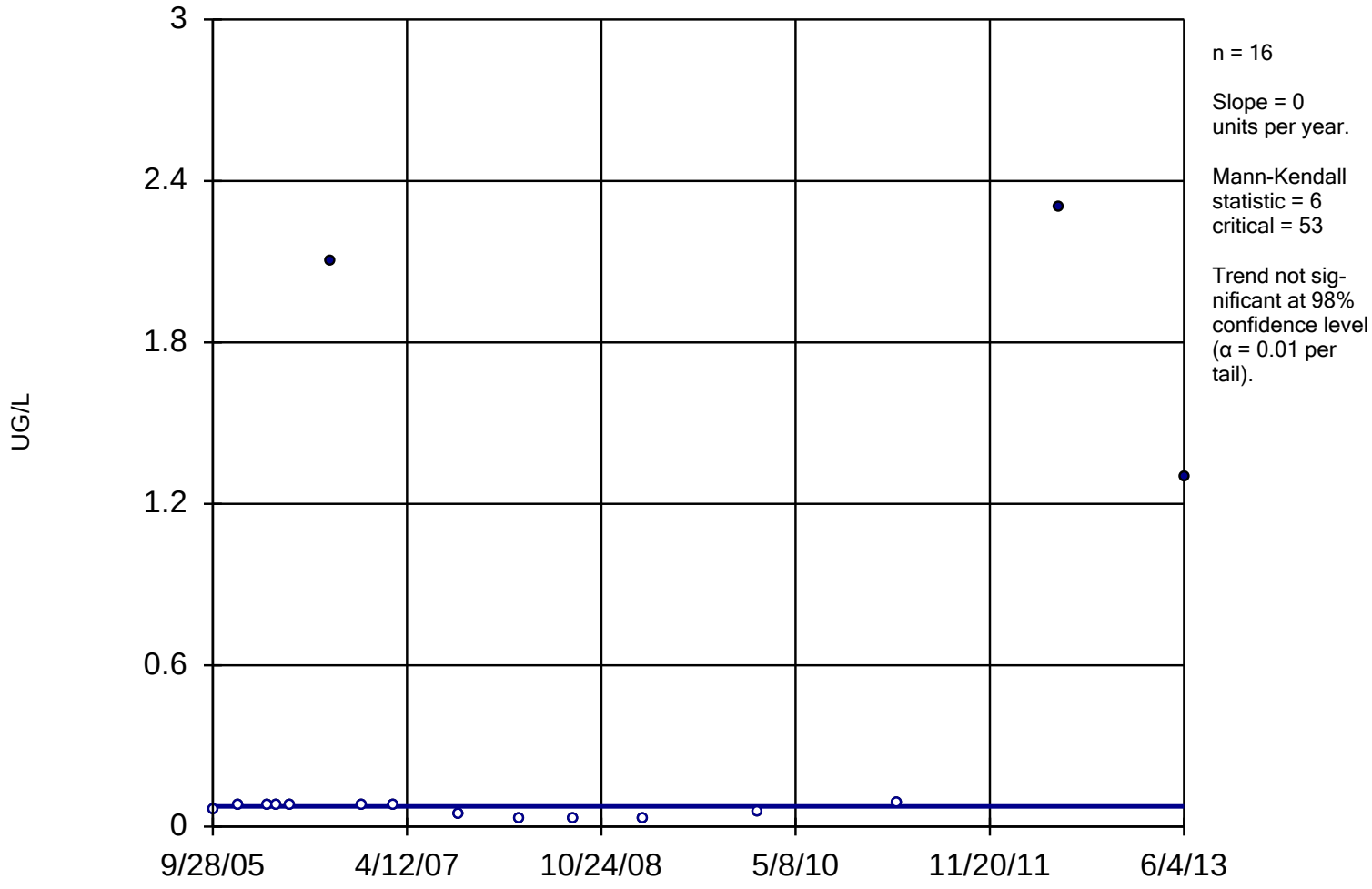
Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-89D



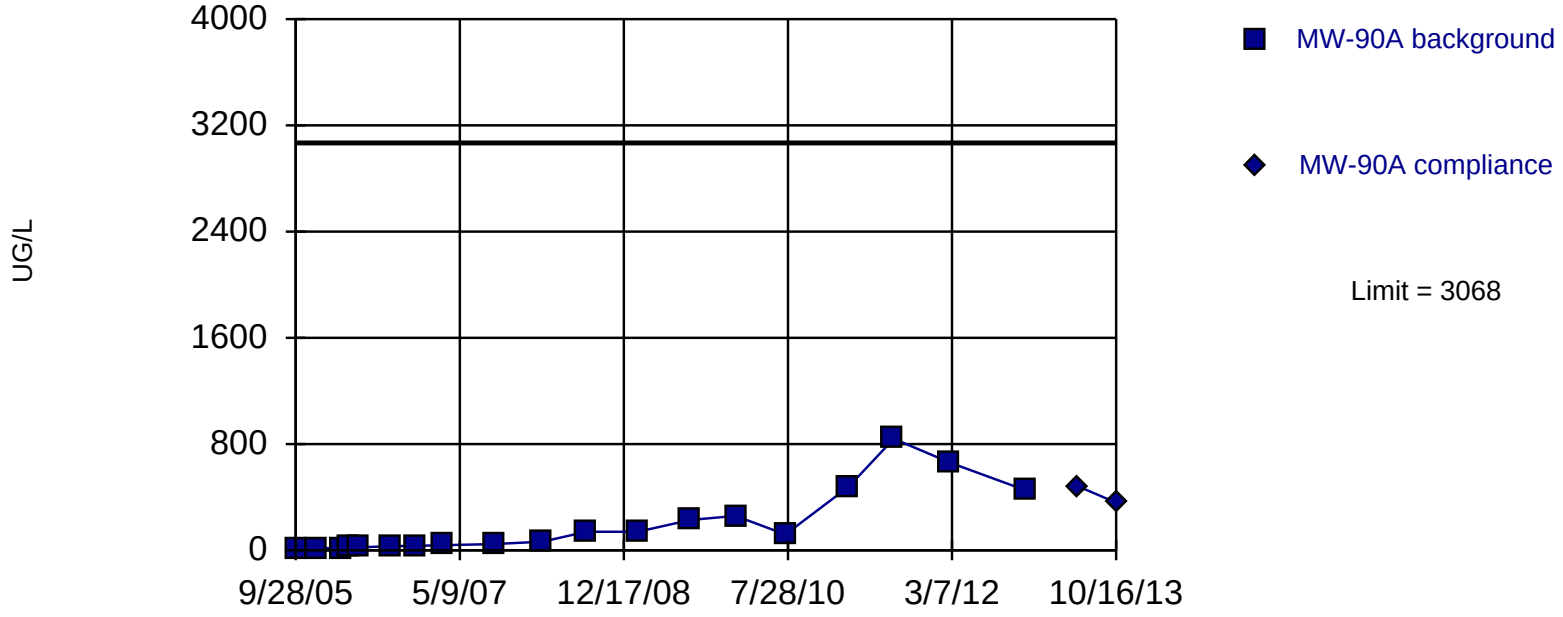
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



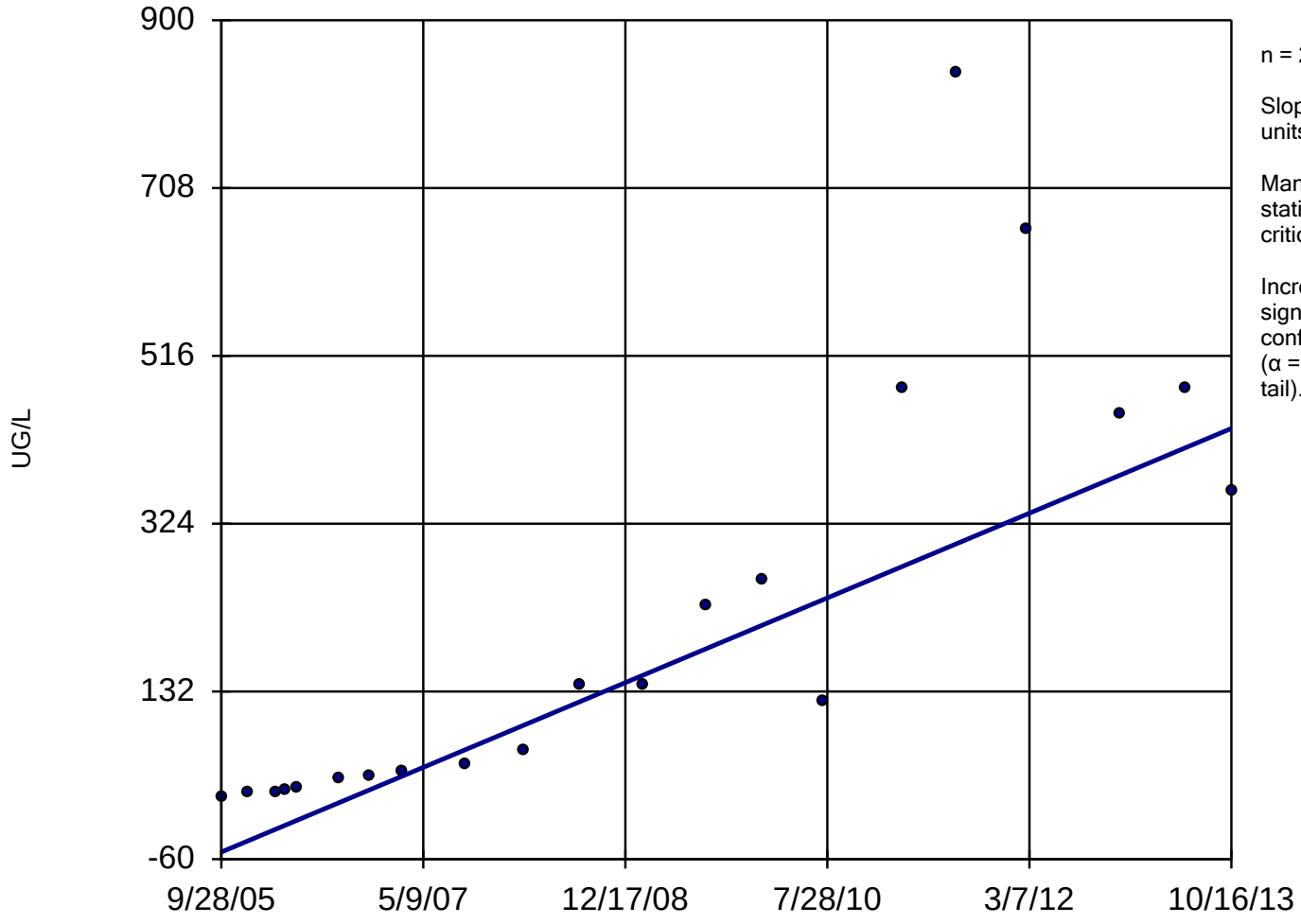
Background Data Summary (based on natural log transformation): Mean=4.42, Std. Dev.=1.378, n=19. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9336, critical = 0.901. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-90A



n = 21

Slope = 60.17 units per year.

Mann-Kendall statistic = 178
critical = 78

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

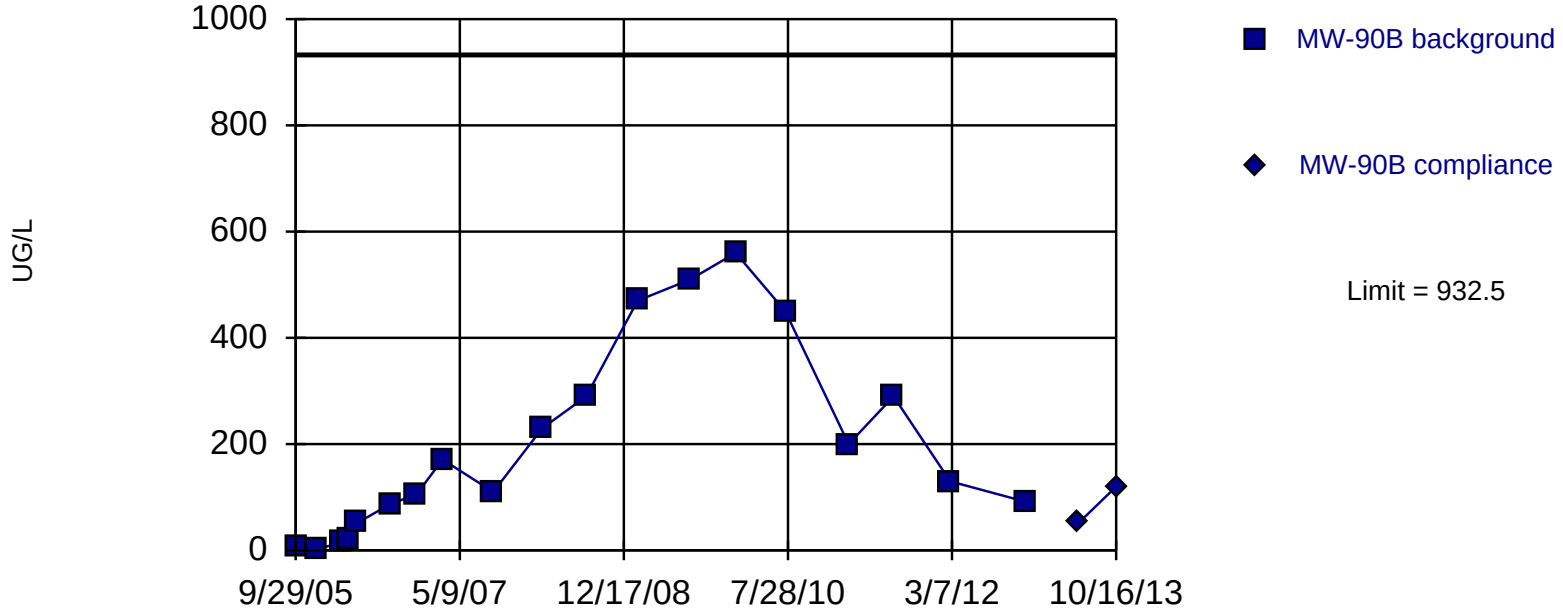
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



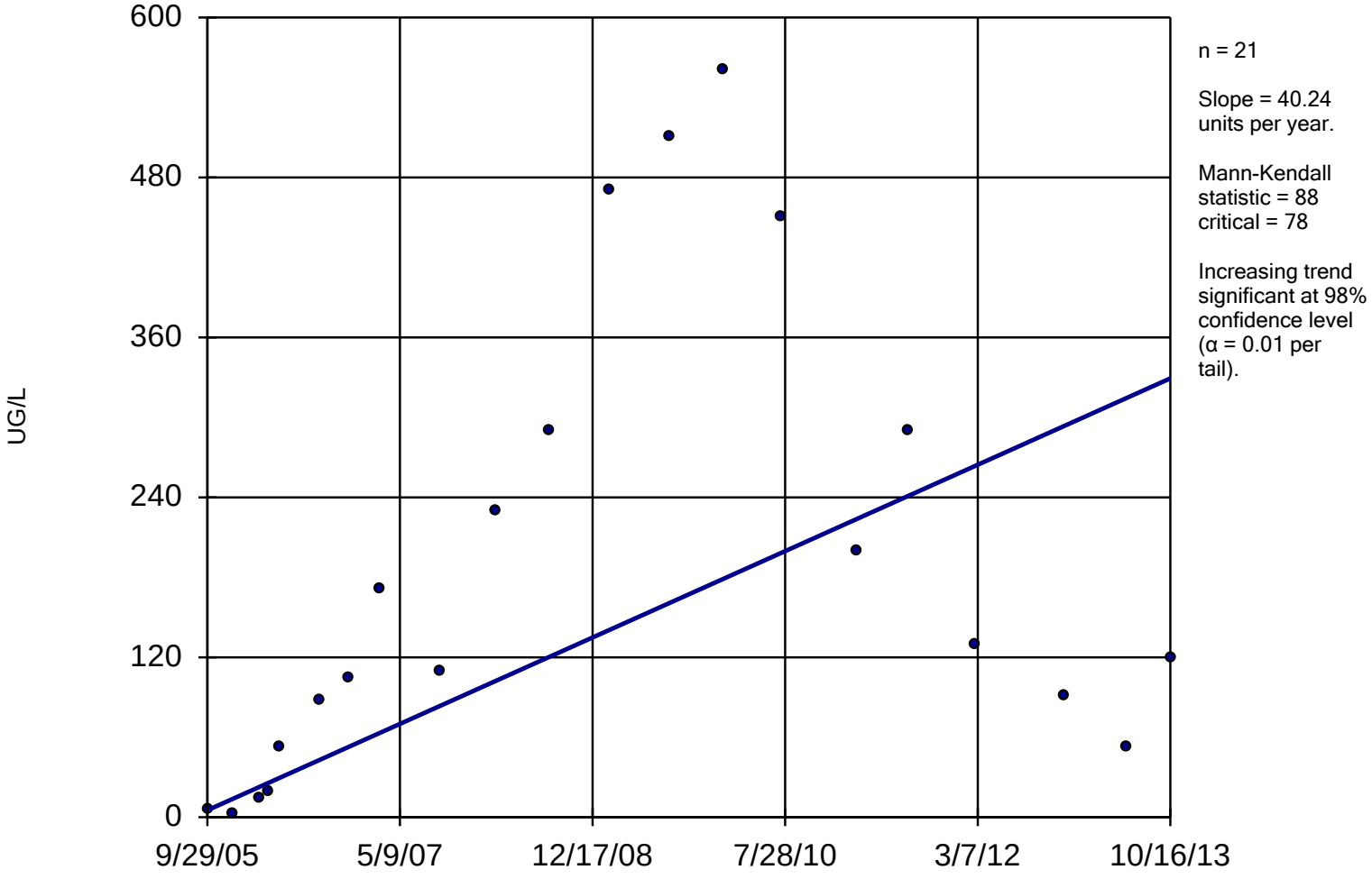
Background Data Summary (based on square root transformation): Mean=12.41, Std. Dev.=6.923, n=19. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9568, critical = 0.901. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-90B



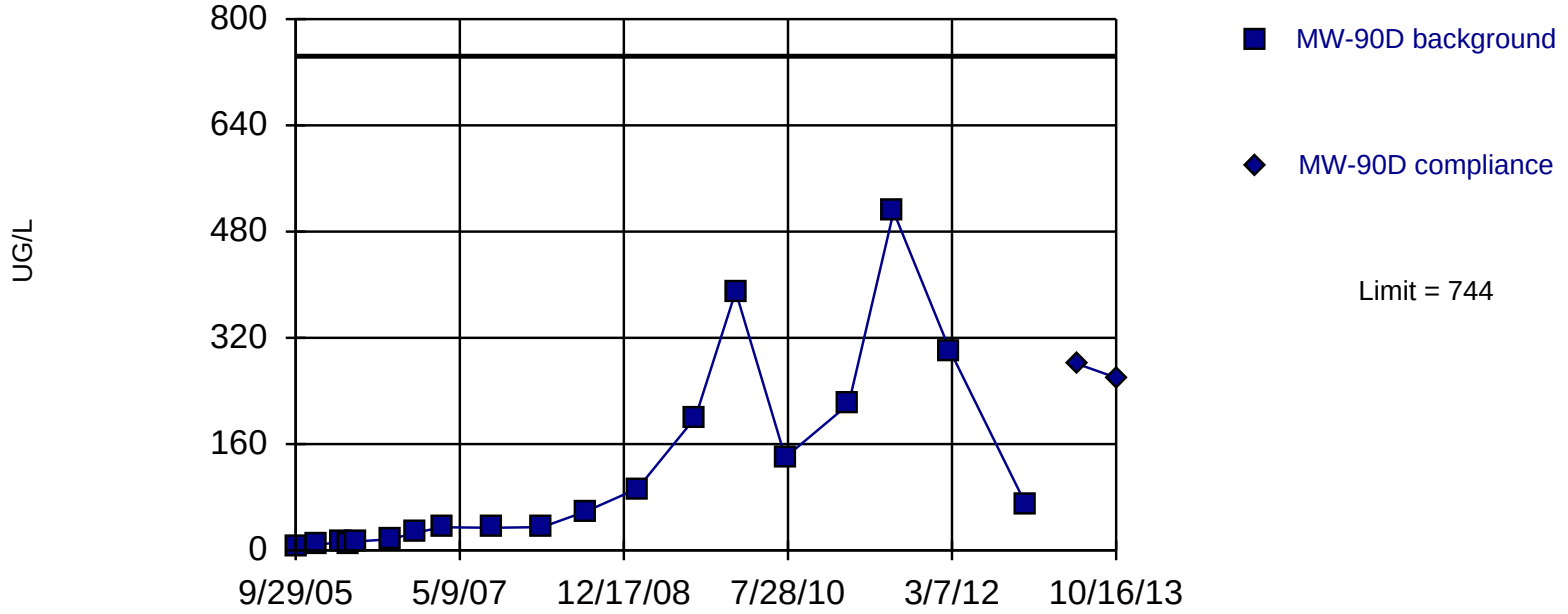
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



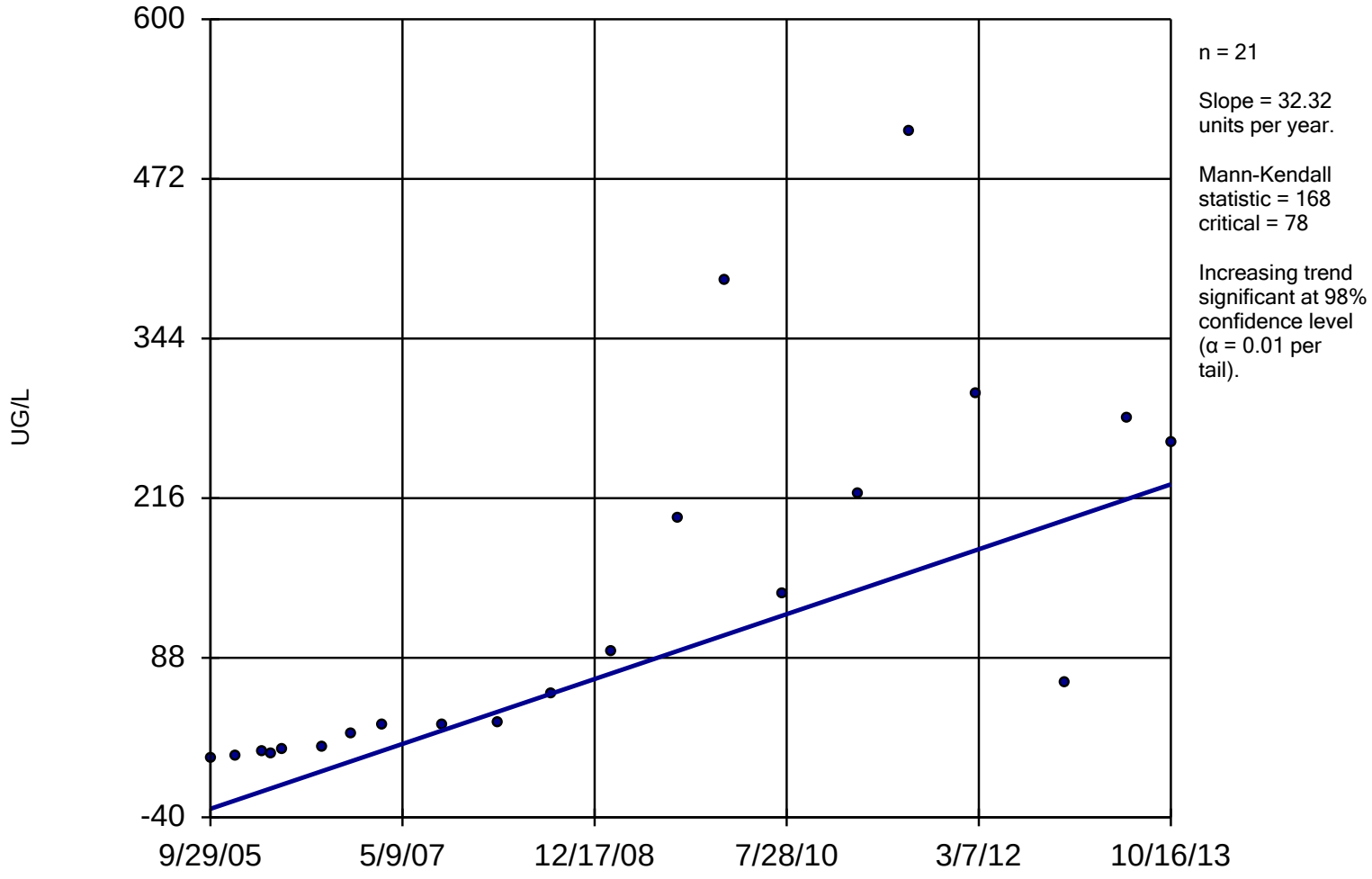
Background Data Summary (based on cube root transformation): Mean=4.092, Std. Dev.=1.898, n=19. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9034, critical = 0.901. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-90D



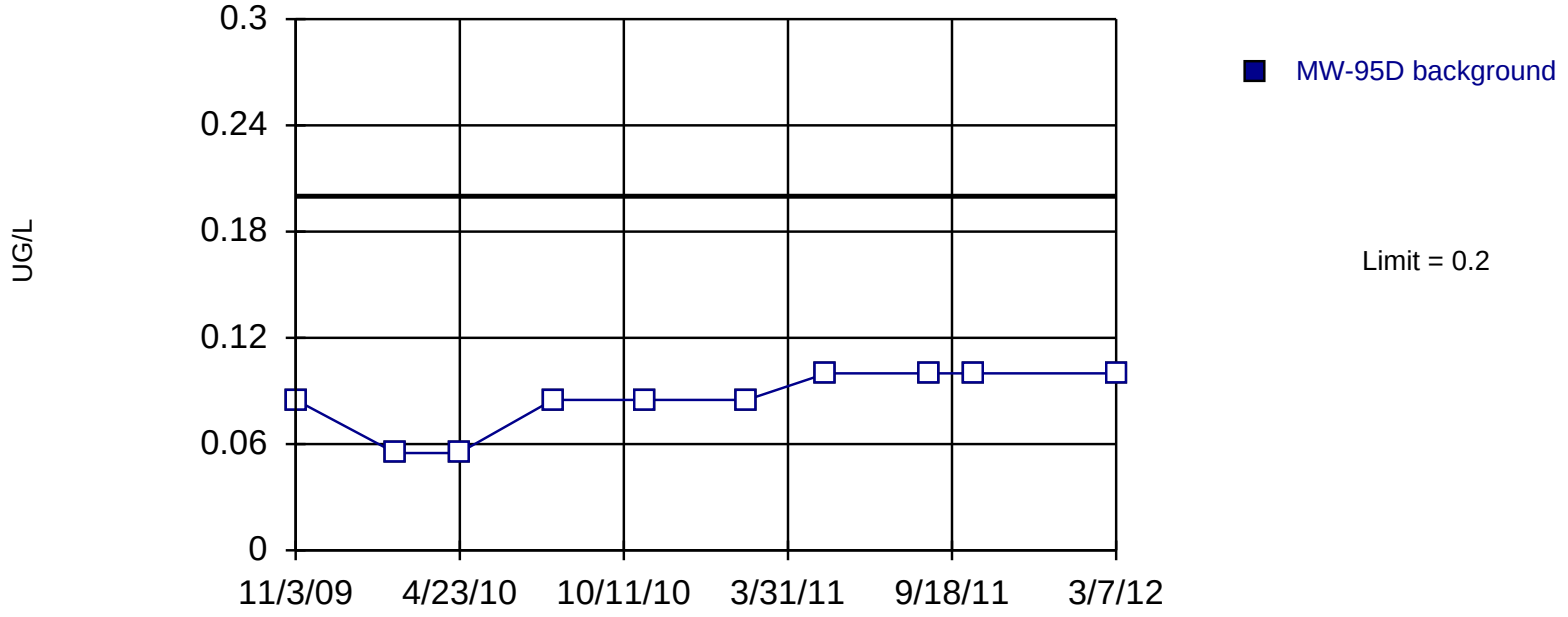
Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-95D



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Report alpha = 0.09091. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

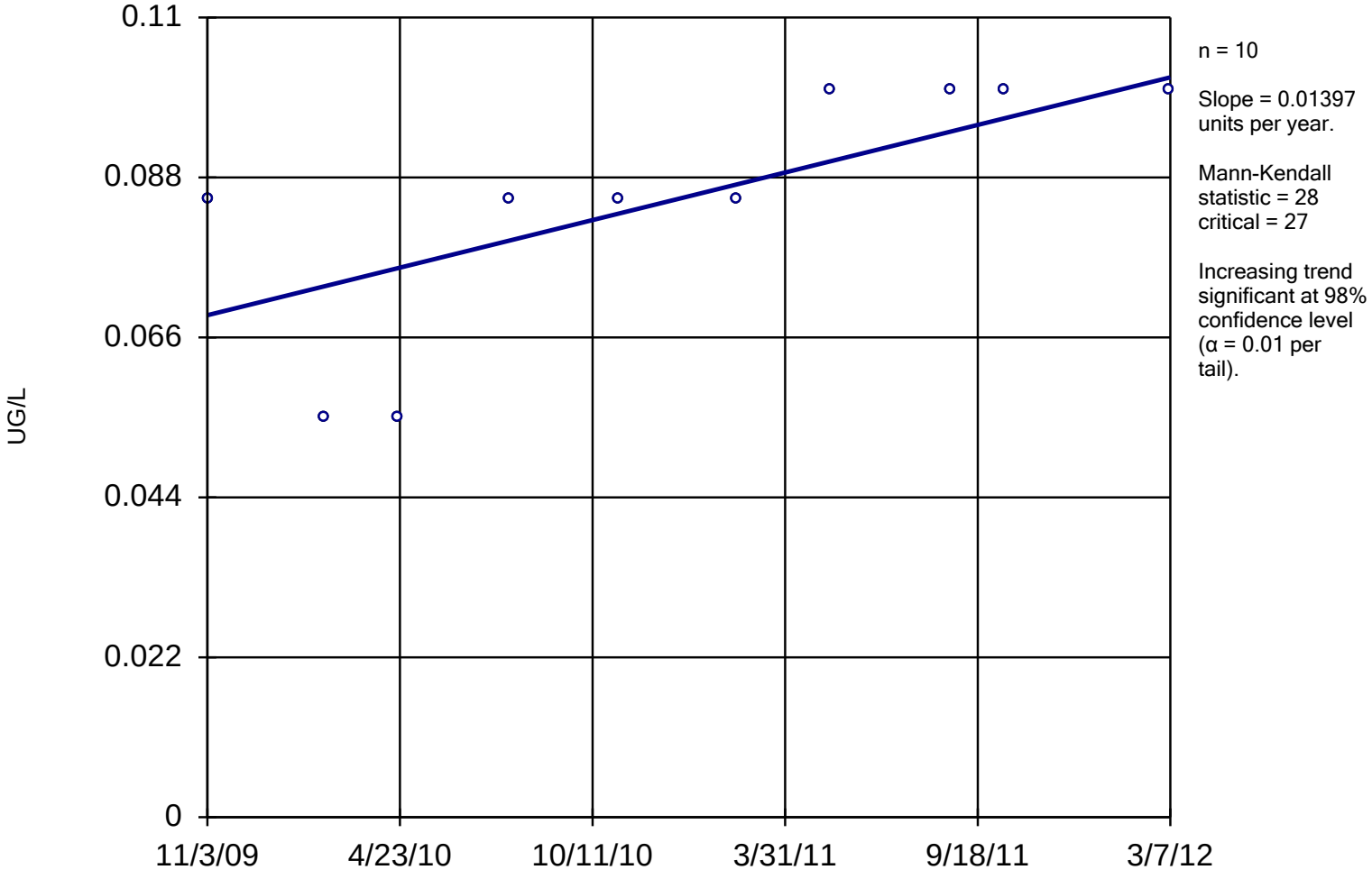
Constituent: TCE Analysis Run 1/28/2014 2:28 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-95D



Constituent: TCE Analysis Run 1/28/2014 2:38 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Monitoring Well RDX Charts

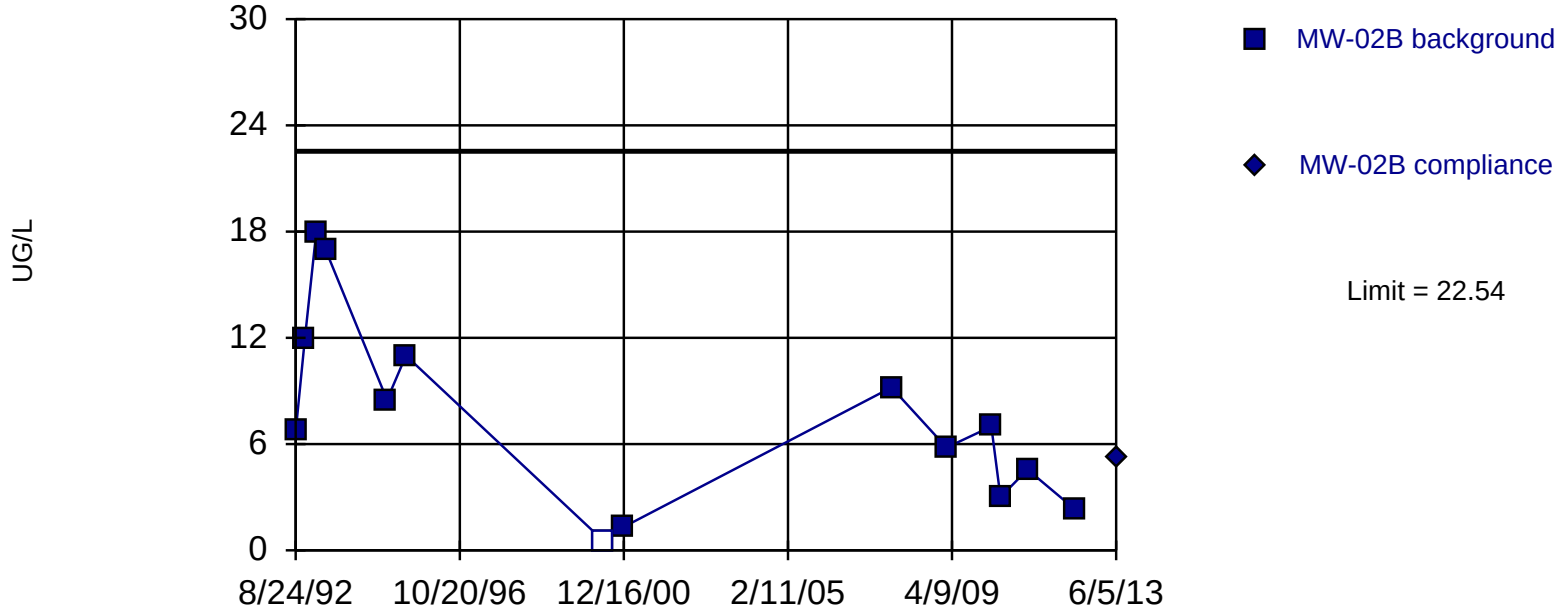
This page was intentionally left blank.

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.634, Std. Dev.=5.433, n=14, 7.143% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9411, critical = 0.874. Report alpha = 0.01. Most recent point compared to limit.

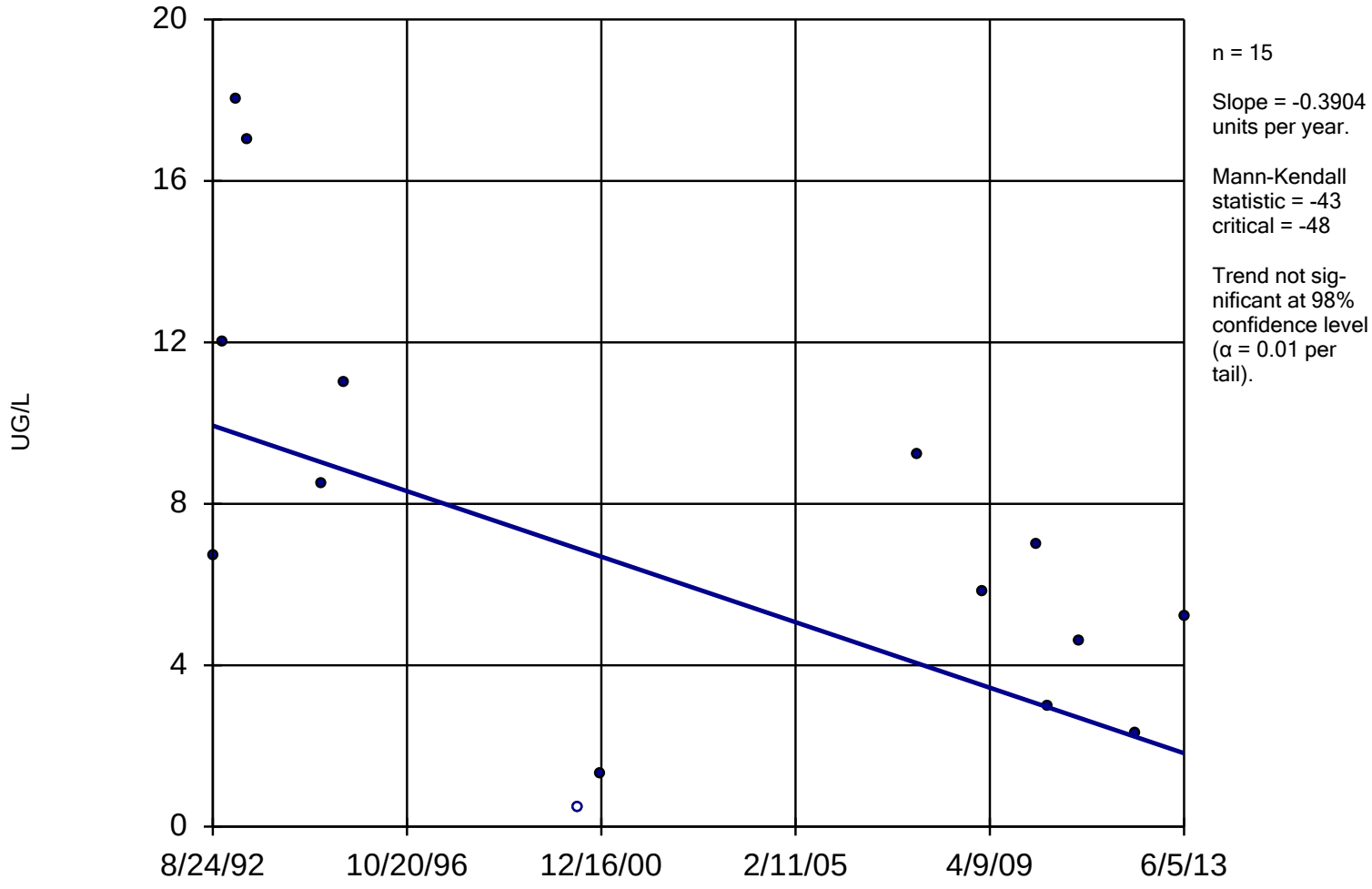
Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-02B



Constituent: RDX Analysis Run 1/28/2014 2:13 PM

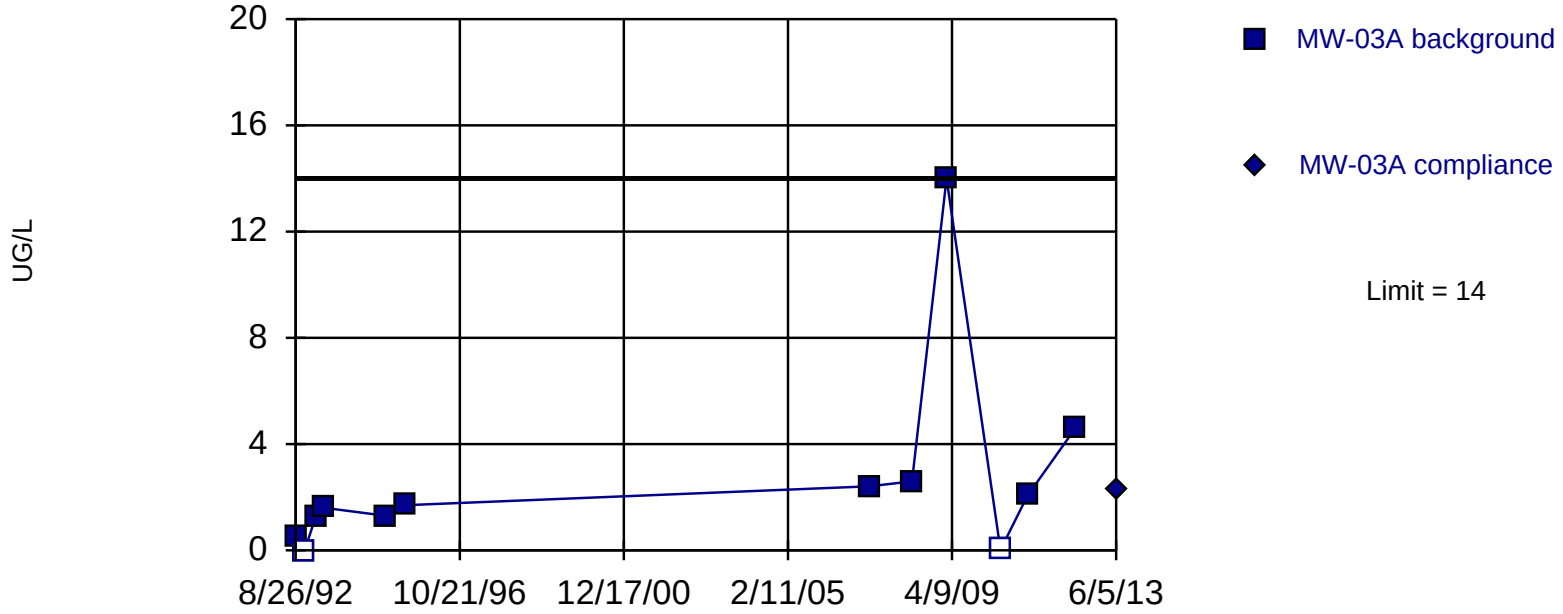
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the data required both a power transformation and Cohen's adjustment. Limit is highest of 12 background values. 16.67% NDs. Report alpha = 0.07692. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

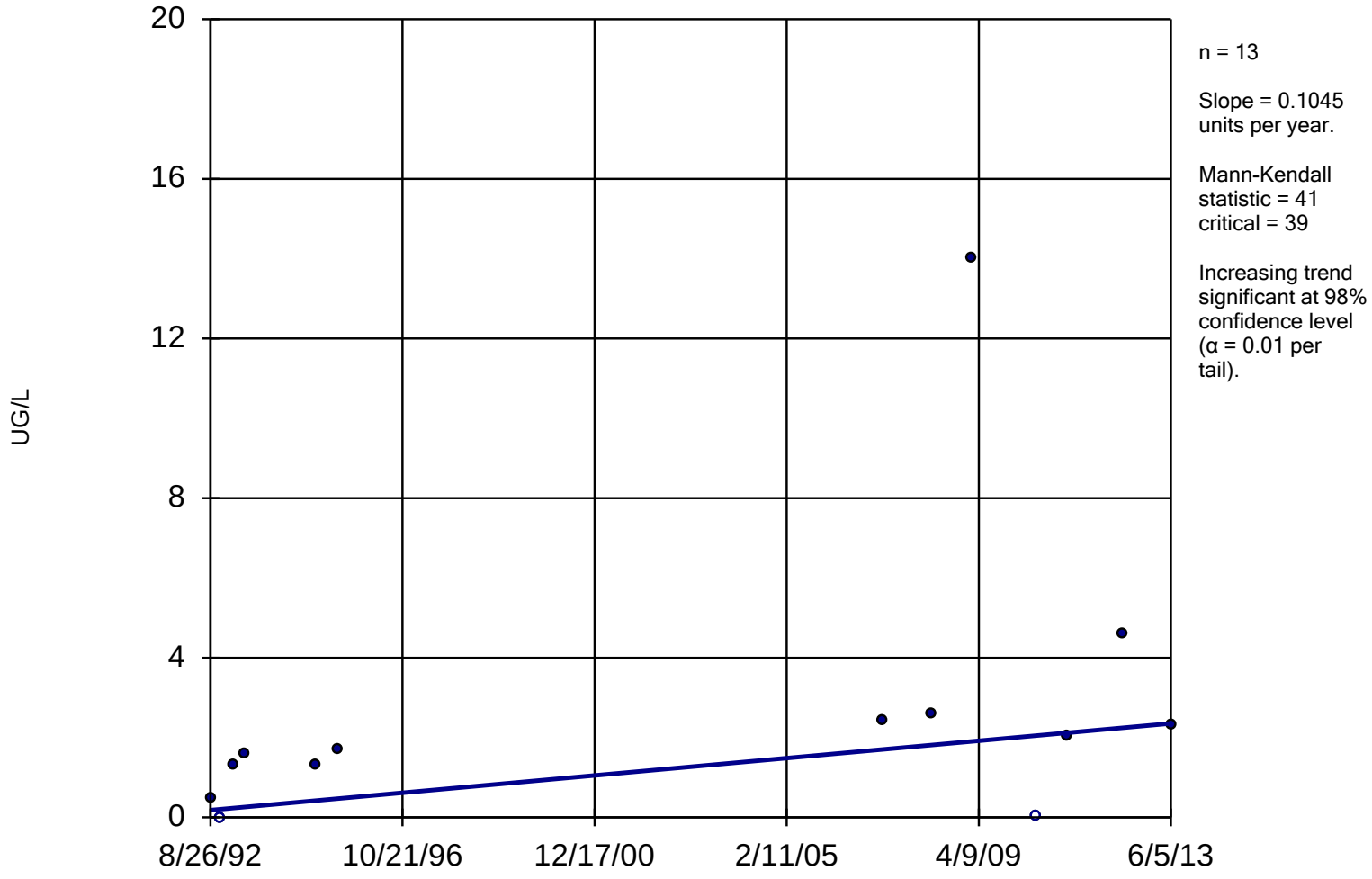
Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-03A



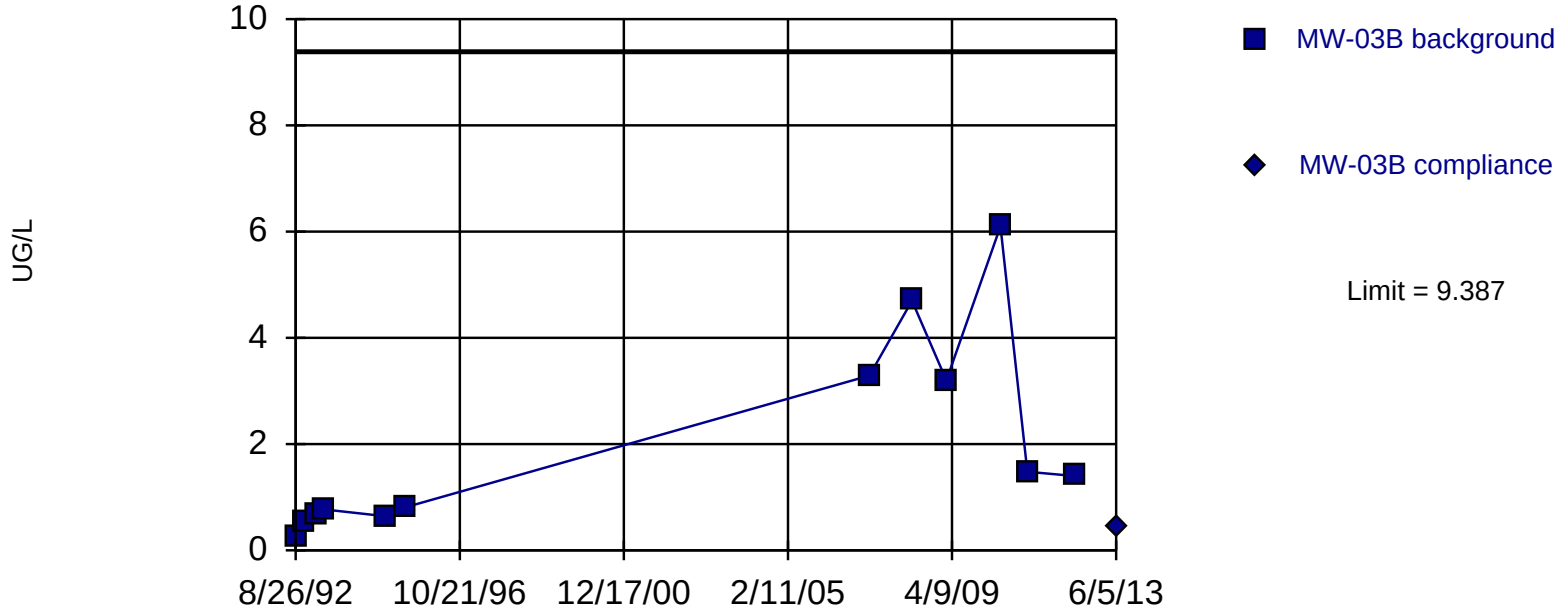
Constituent: RDX Analysis Run 1/28/2014 2:13 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



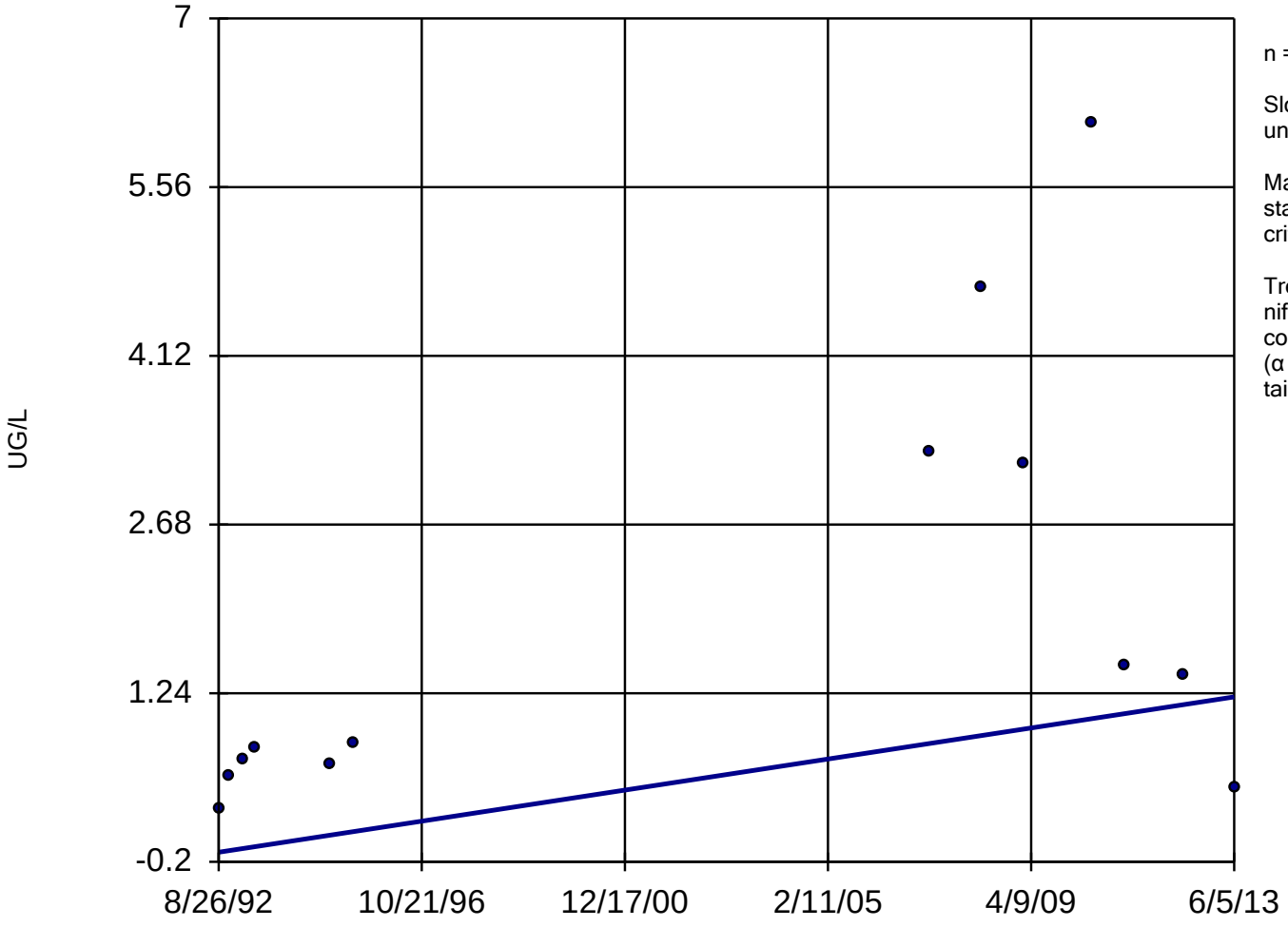
Background Data Summary (based on square root transformation): Mean=1.273, Std. Dev.=0.6331, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8925, critical = 0.859. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-03B



n = 13

Slope = 0.06379 units per year.

Mann-Kendall statistic = 30
critical = 39

Trend not significant at 98% confidence level (α = 0.01 per tail).

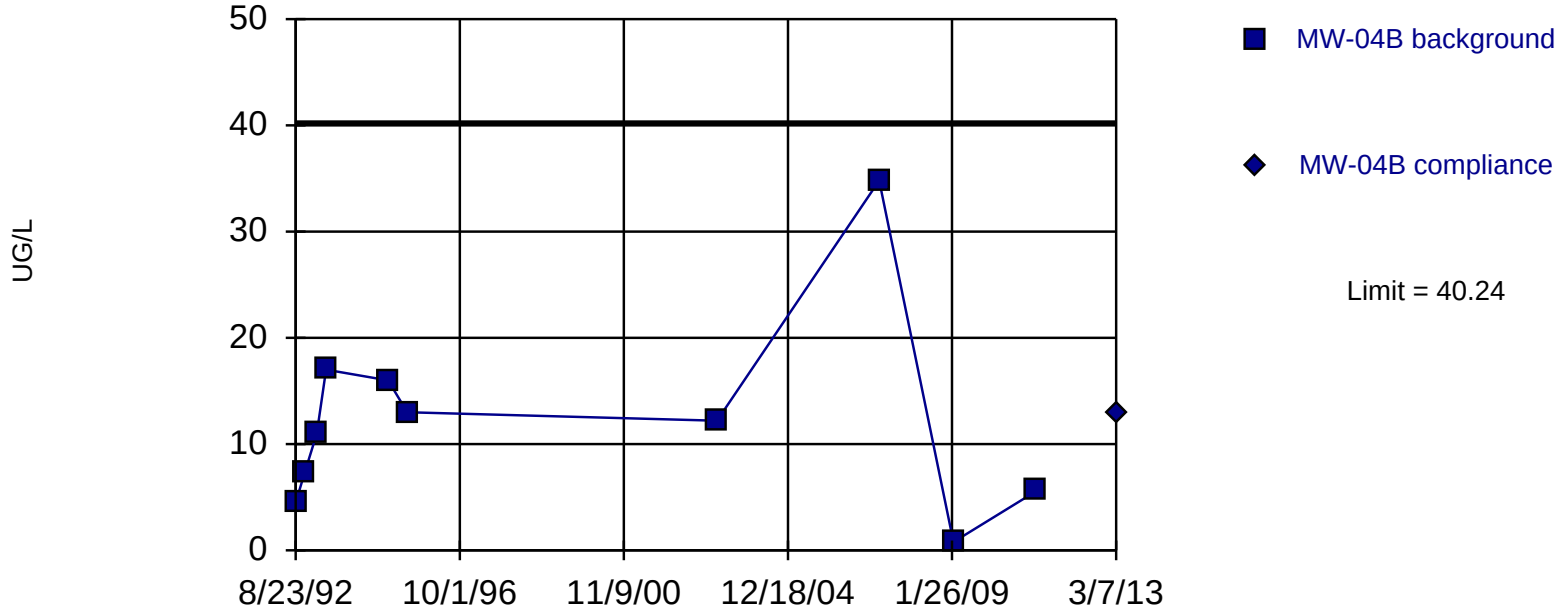
Constituent: RDX Analysis Run 1/28/2014 2:13 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



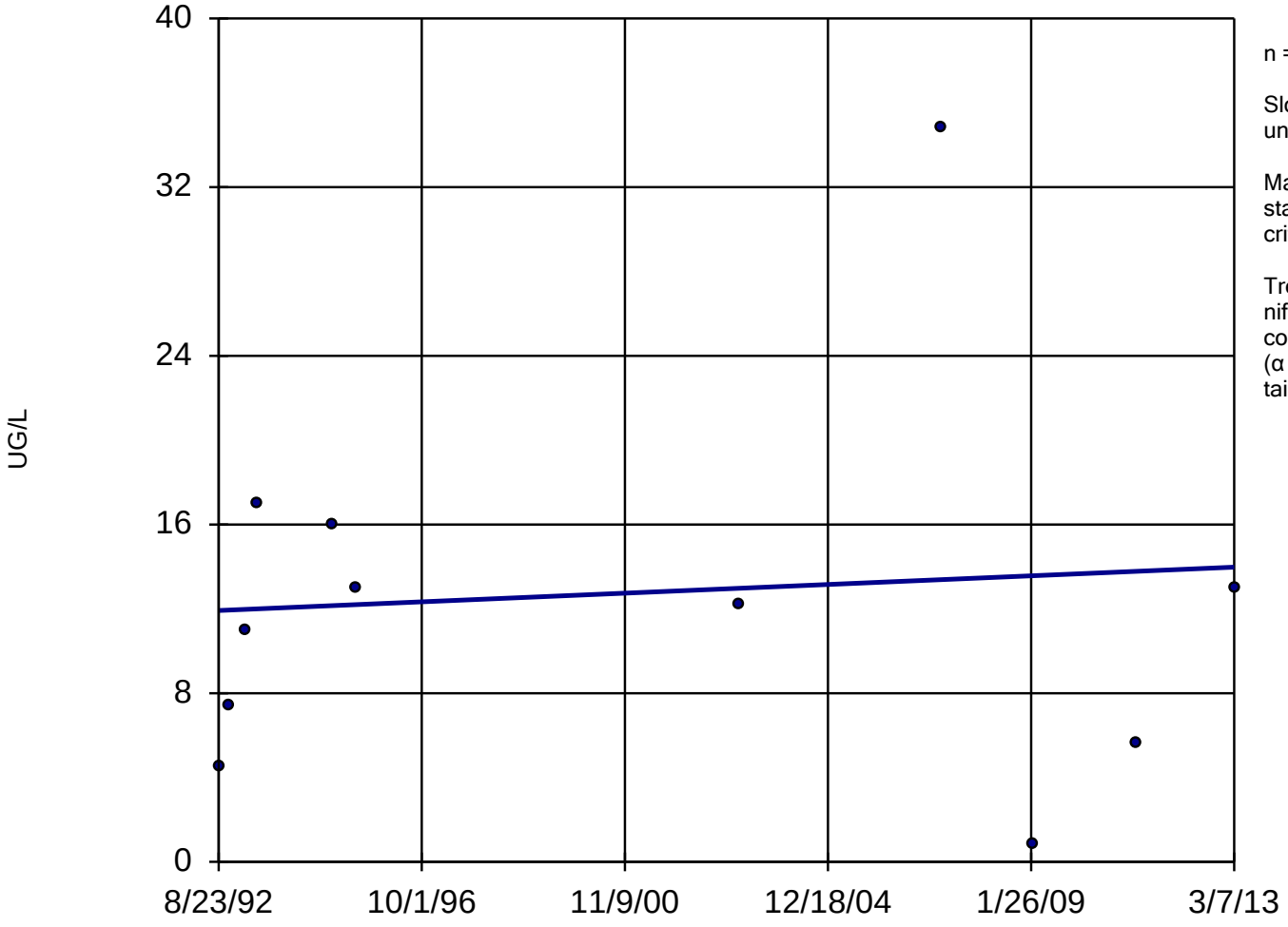
Background Data Summary: Mean=12.23, Std. Dev.=9.466, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8769, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-04B



n = 11

Slope = 0.09989 units per year.

Mann-Kendall statistic = 6
critical = 31

Trend not significant at 98% confidence level (α = 0.01 per tail).

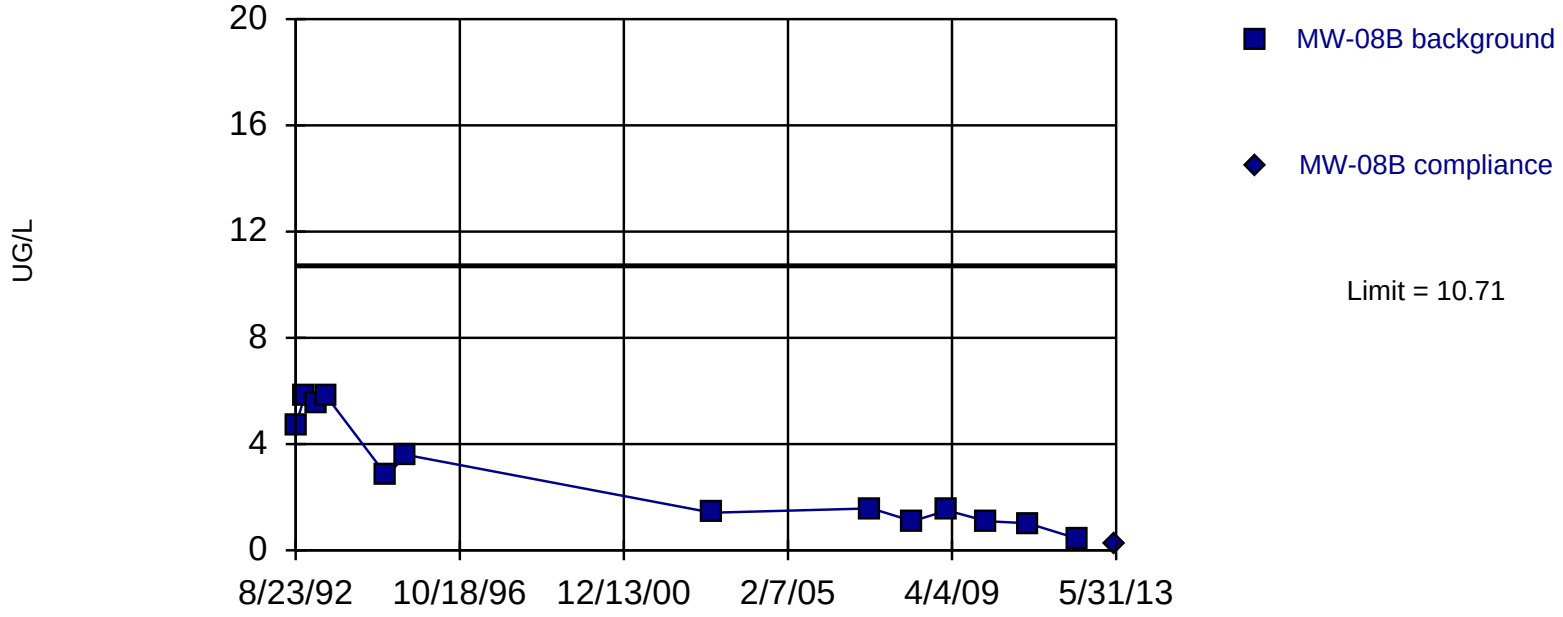
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



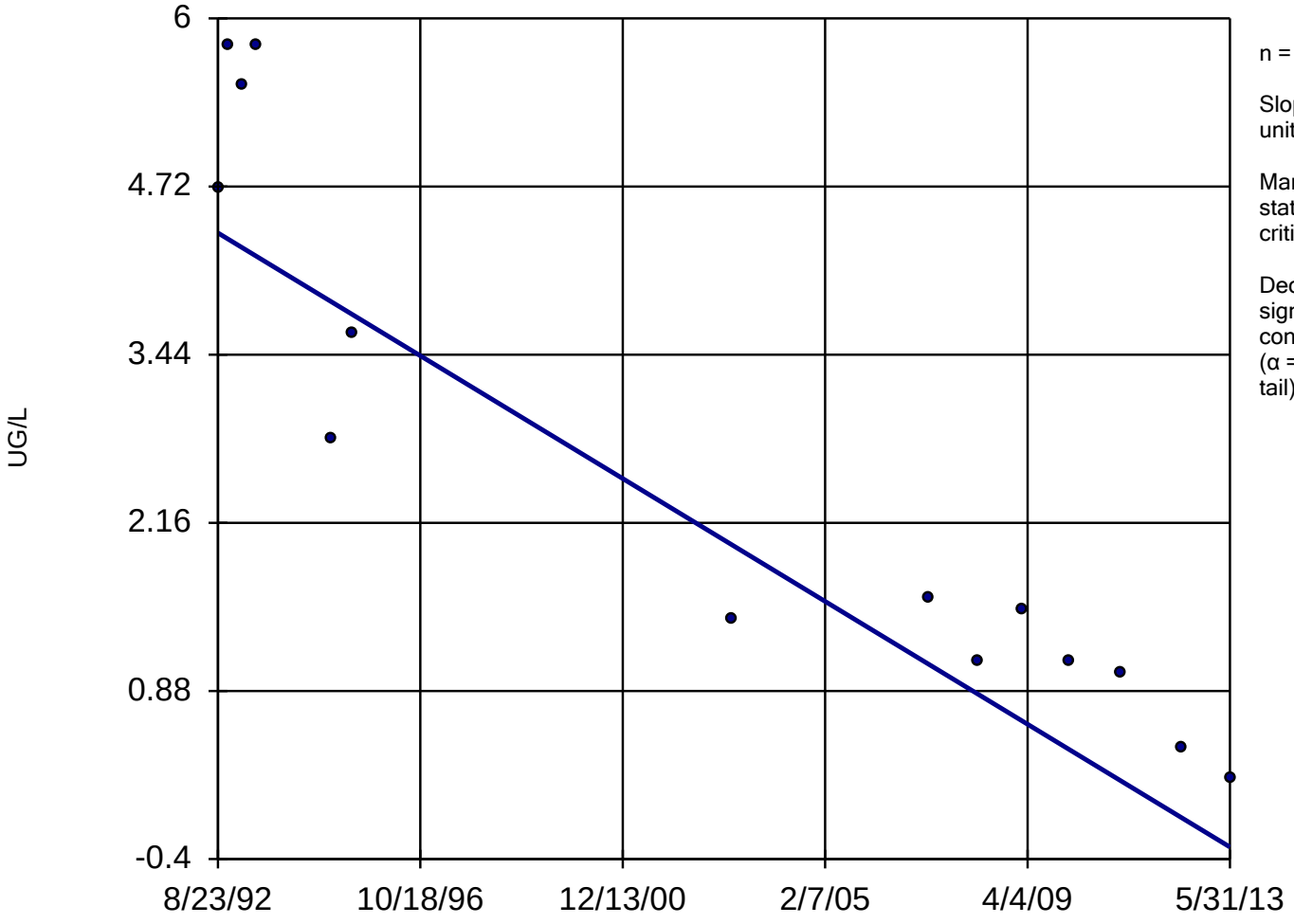
Background Data Summary (based on square root transformation): Mean=1.565, Std. Dev.=0.6138, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8897, critical = 0.866. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-08B



n = 14

Slope = -0.2249 units per year.

Mann-Kendall statistic = -73
critical = -44

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

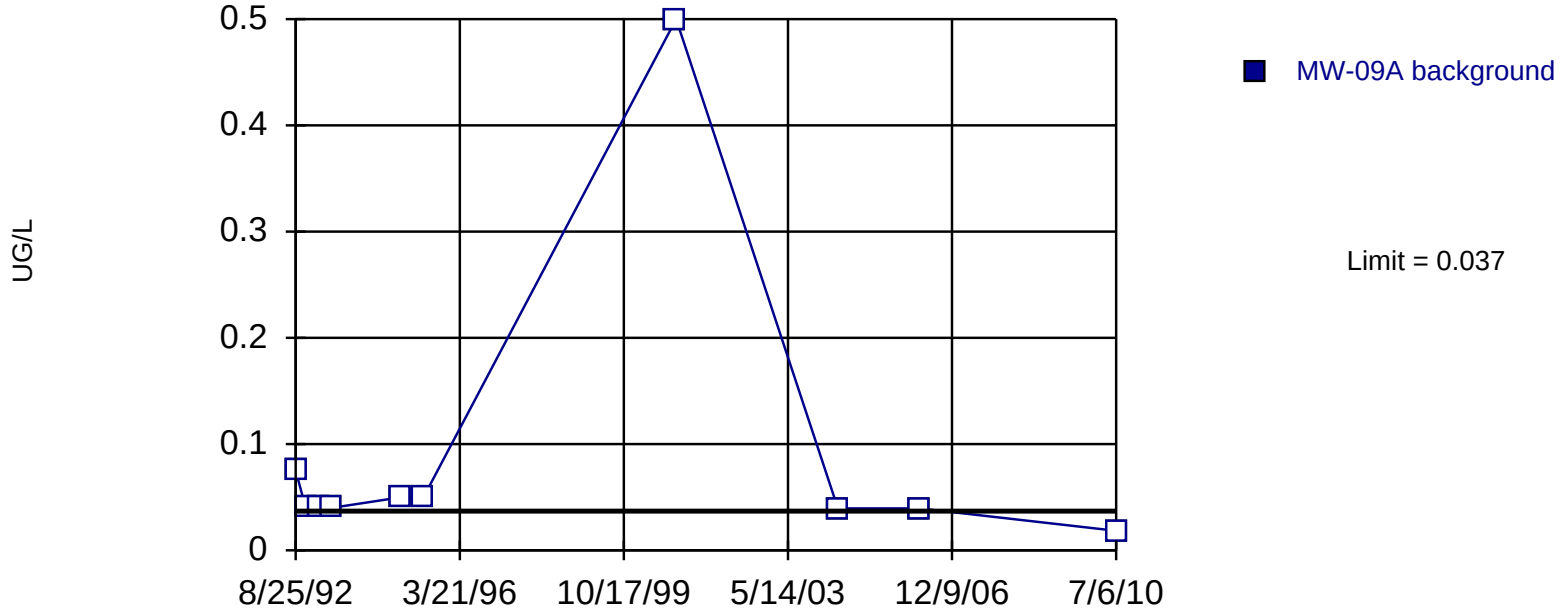
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-09A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Report alpha = 0.09091. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

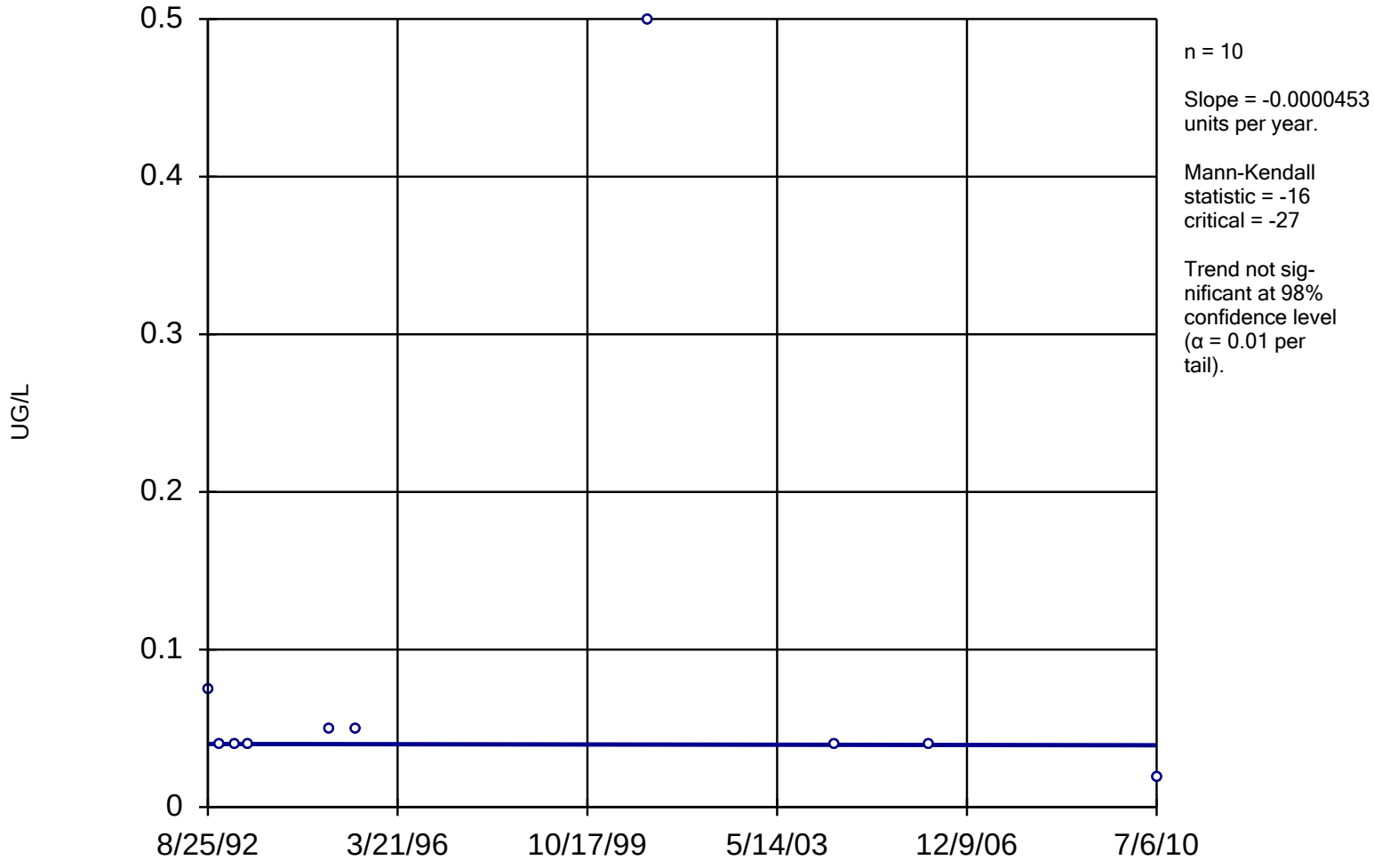
Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-09A



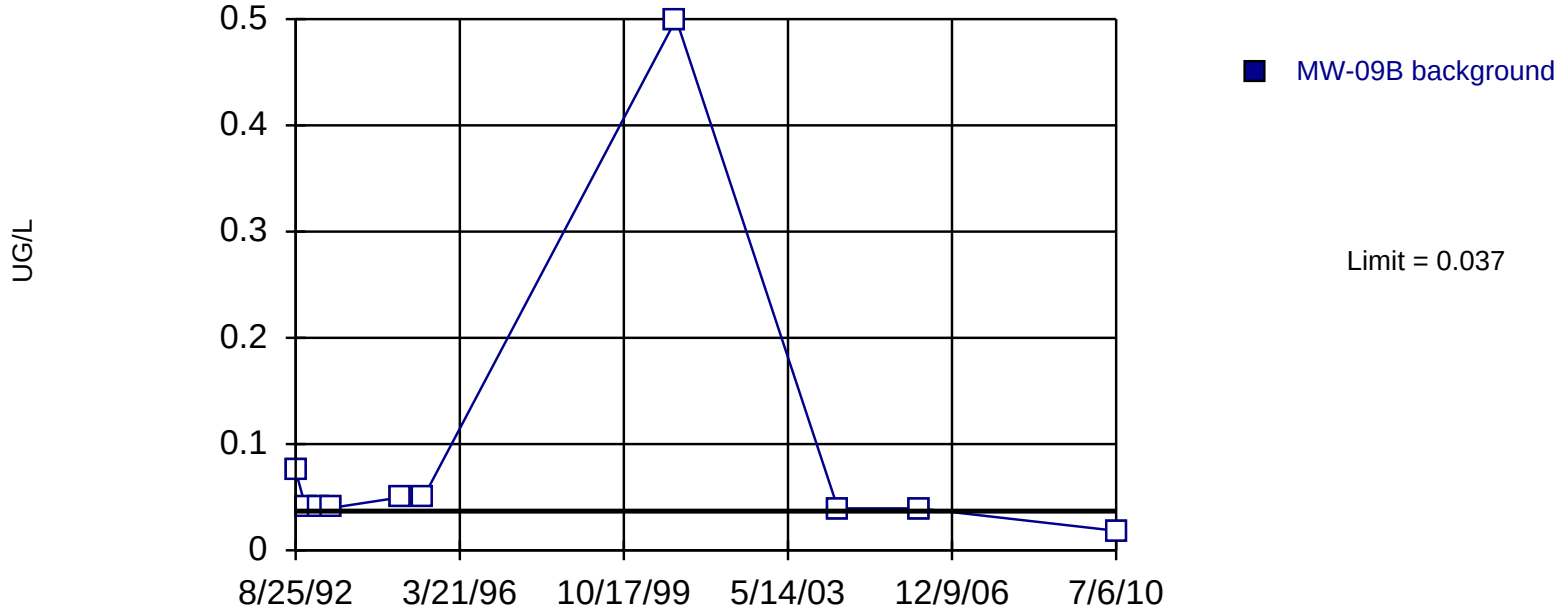
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-09B



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Report alpha = 0.09091. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

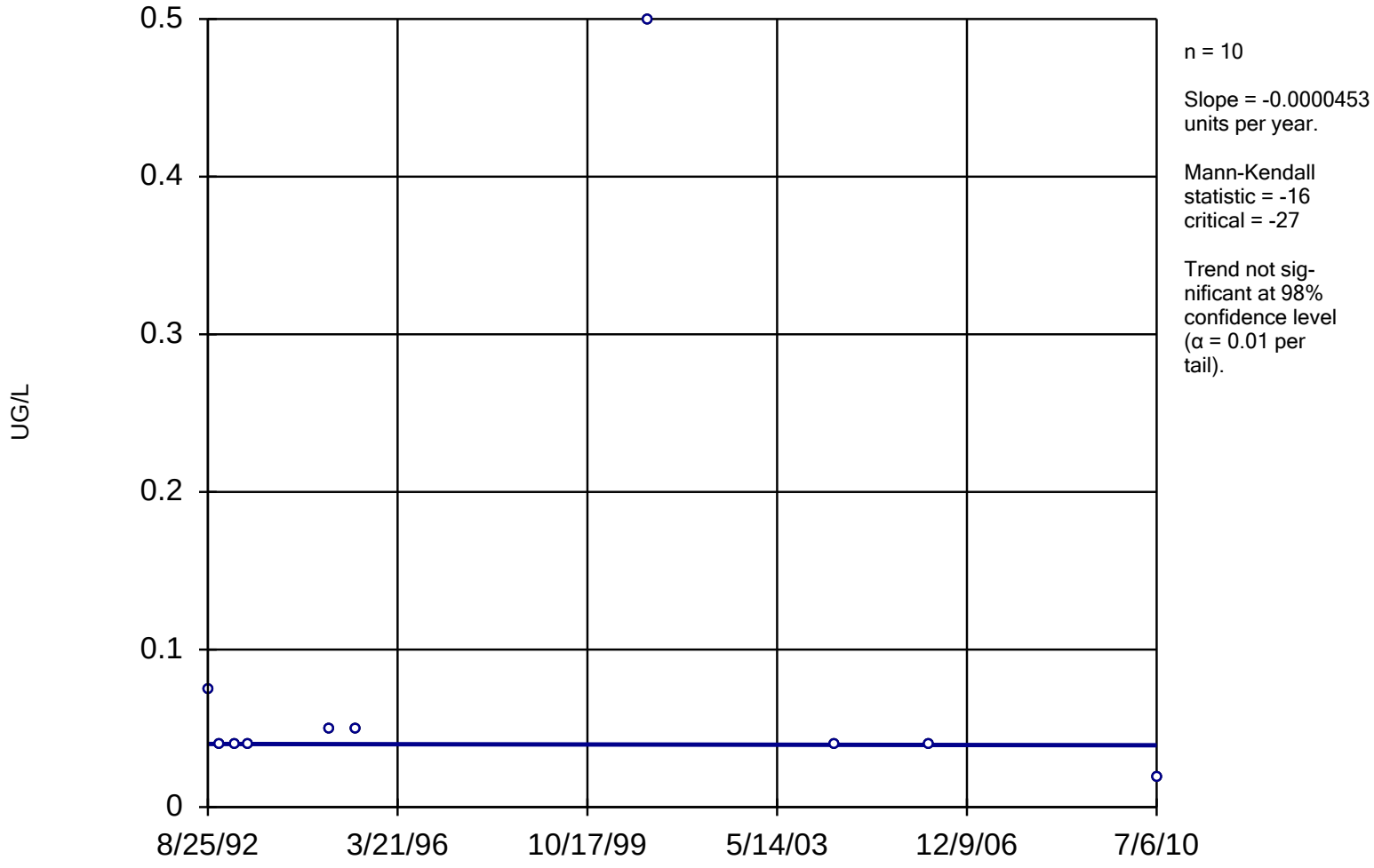
Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-09B



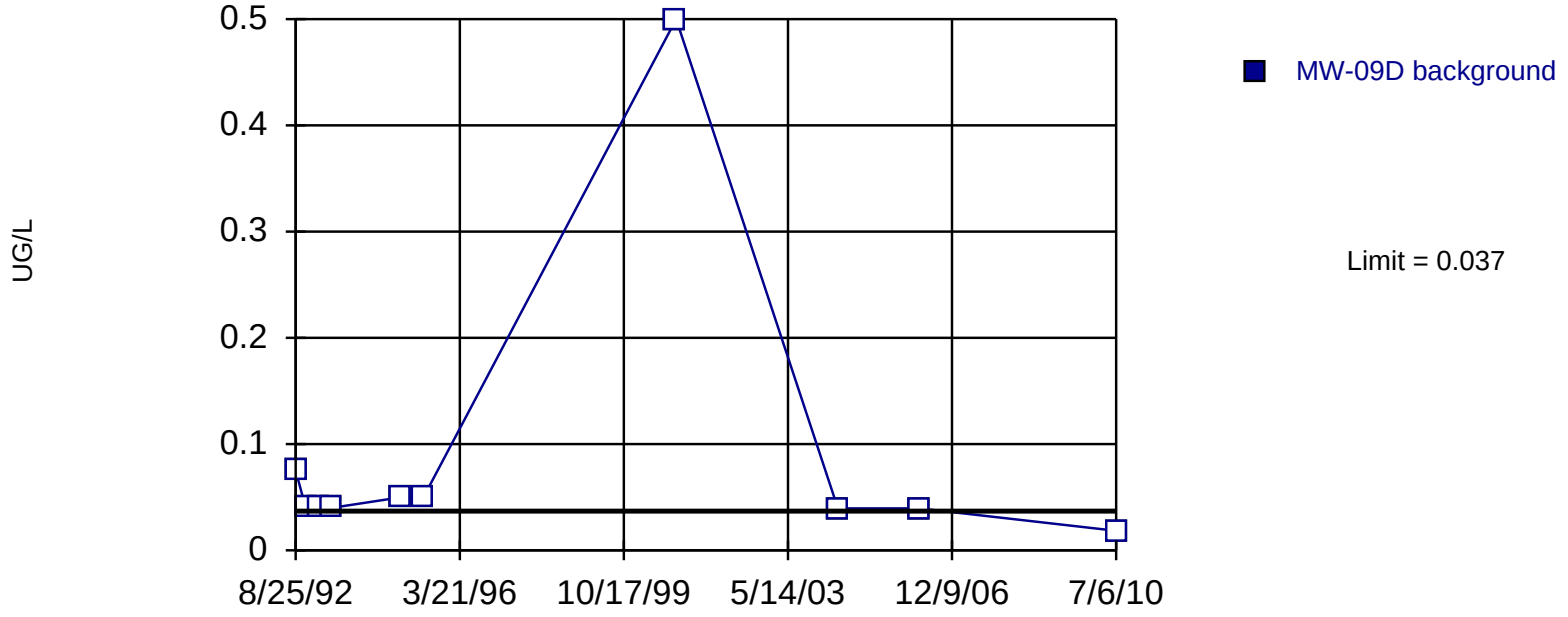
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-09D



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Report alpha = 0.09091. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

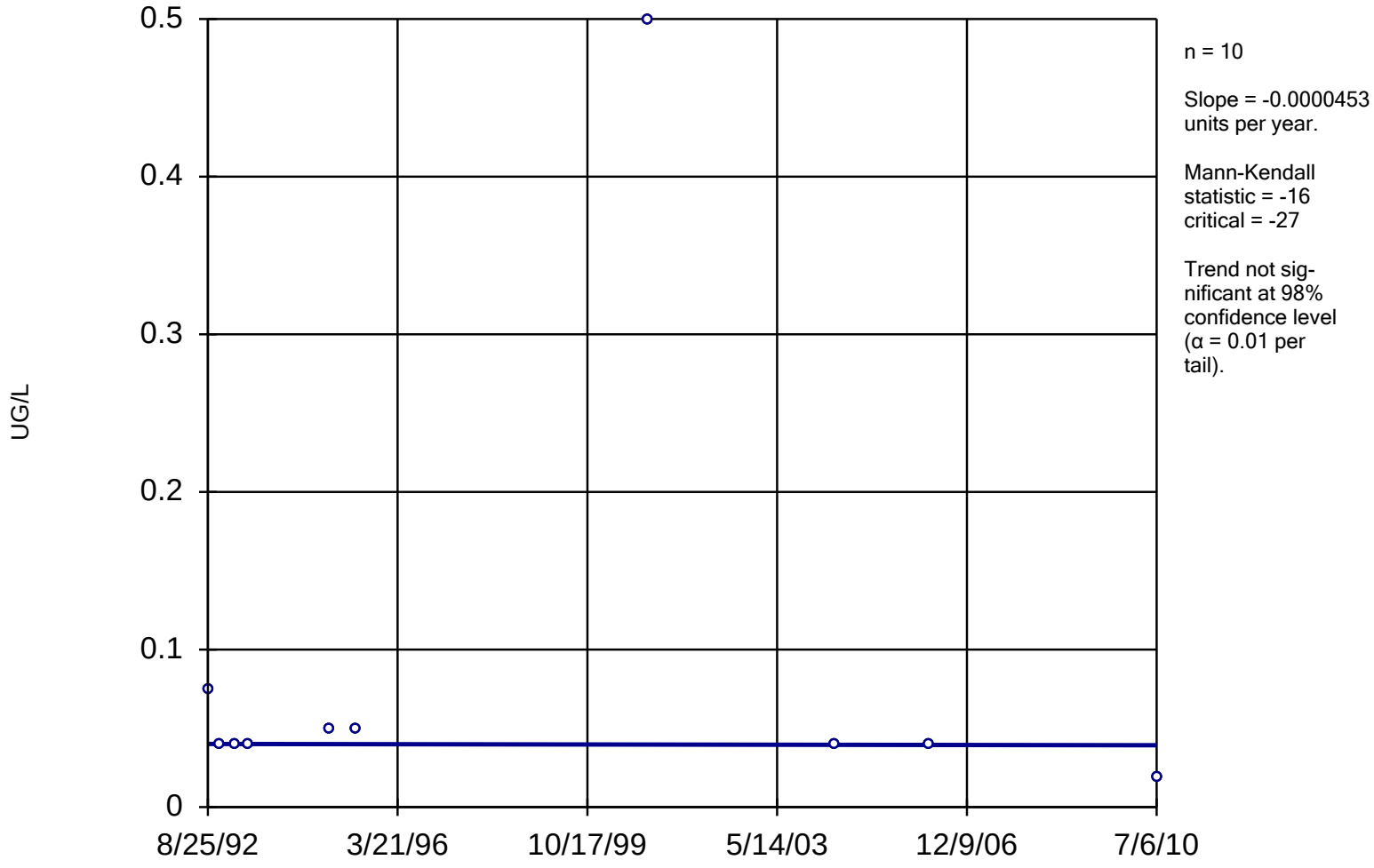
Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-09D



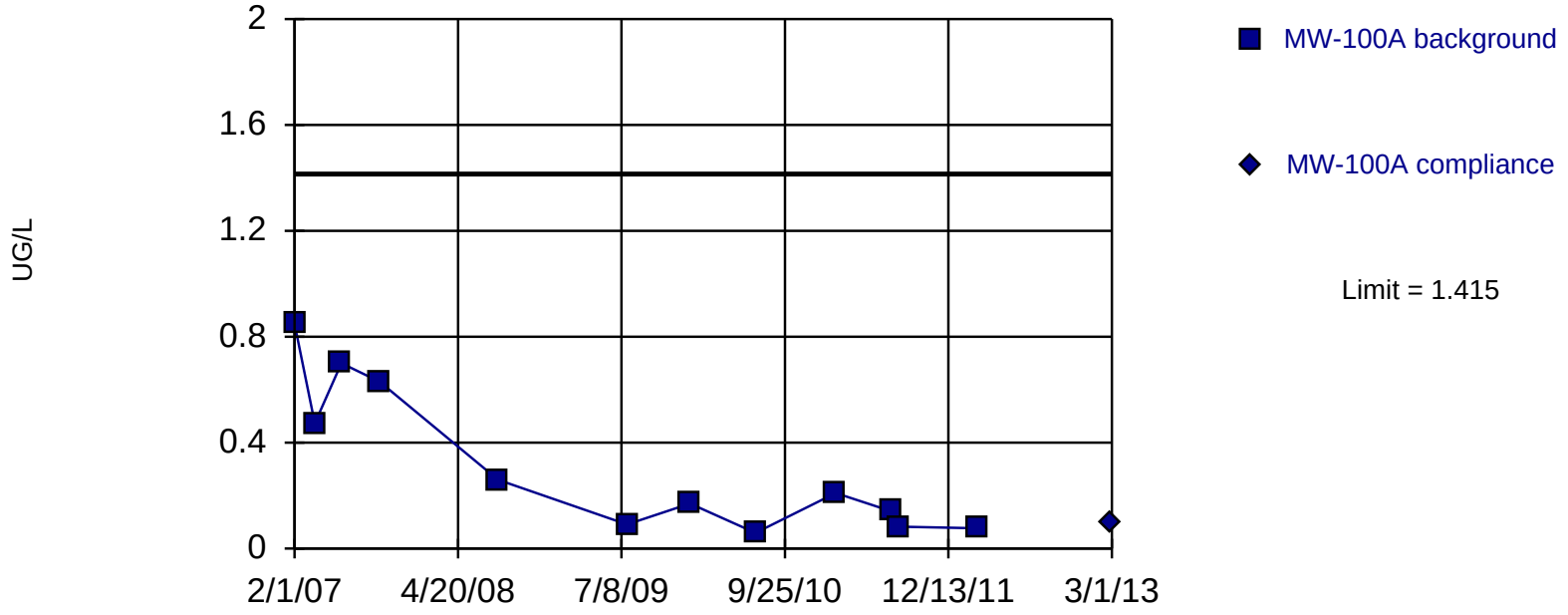
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



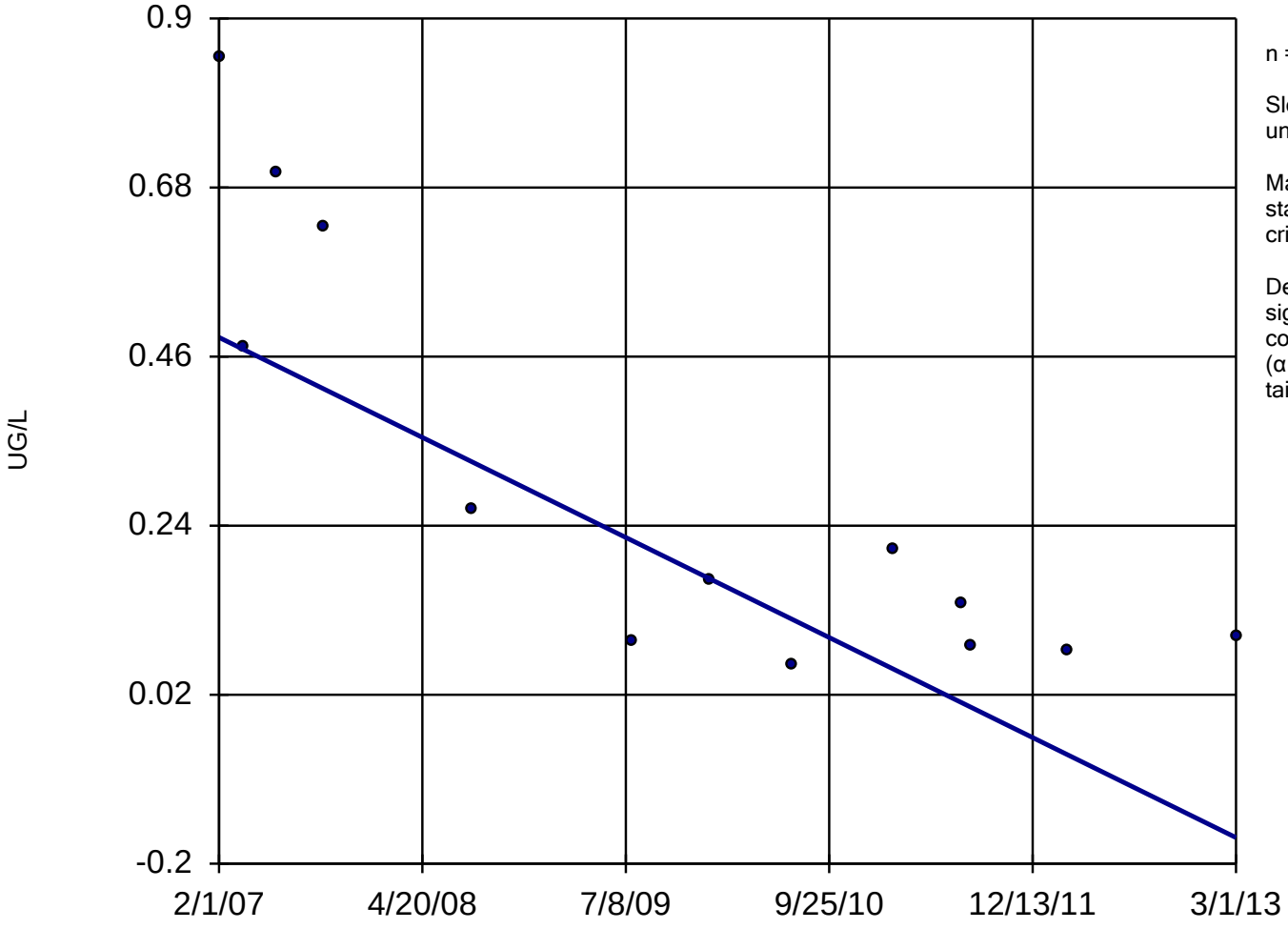
Background Data Summary (based on square root transformation): Mean=0.5087, Std. Dev.=0.2406, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8863, critical = 0.859. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-100A



n = 13

Slope = -0.107 units per year.

Mann-Kendall statistic = -50
critical = -39

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

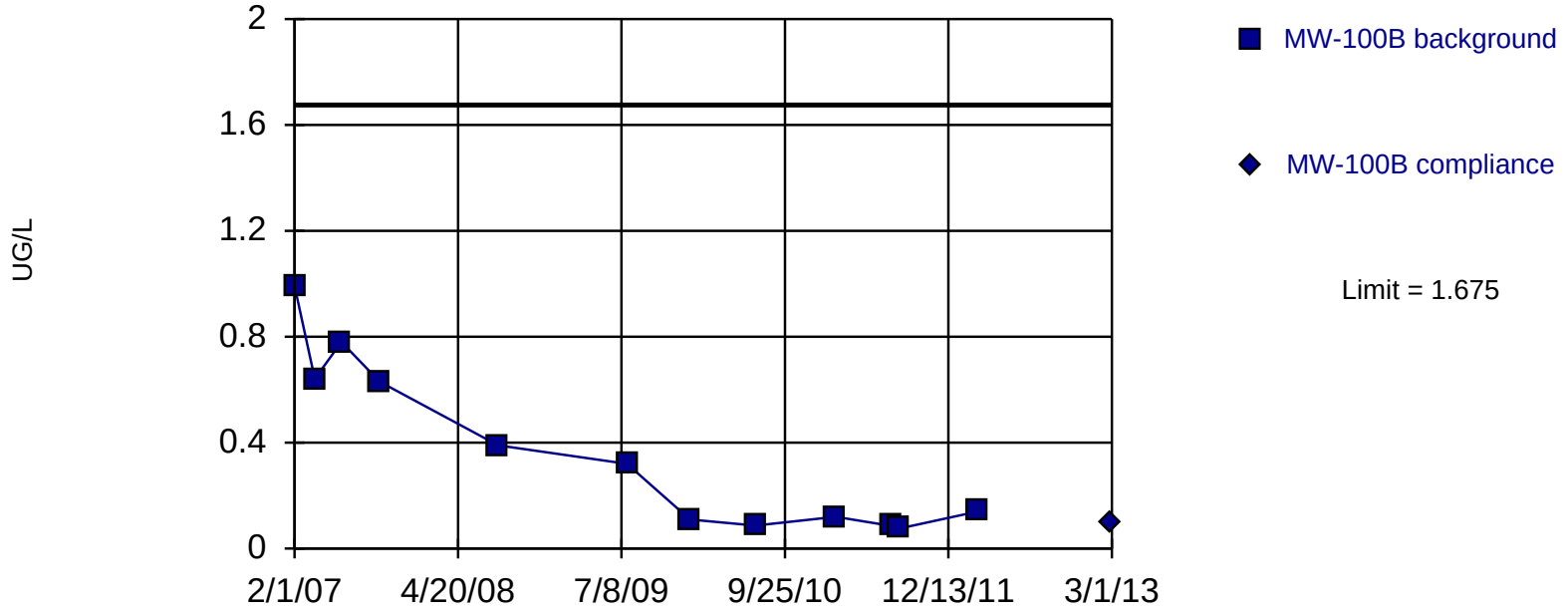
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



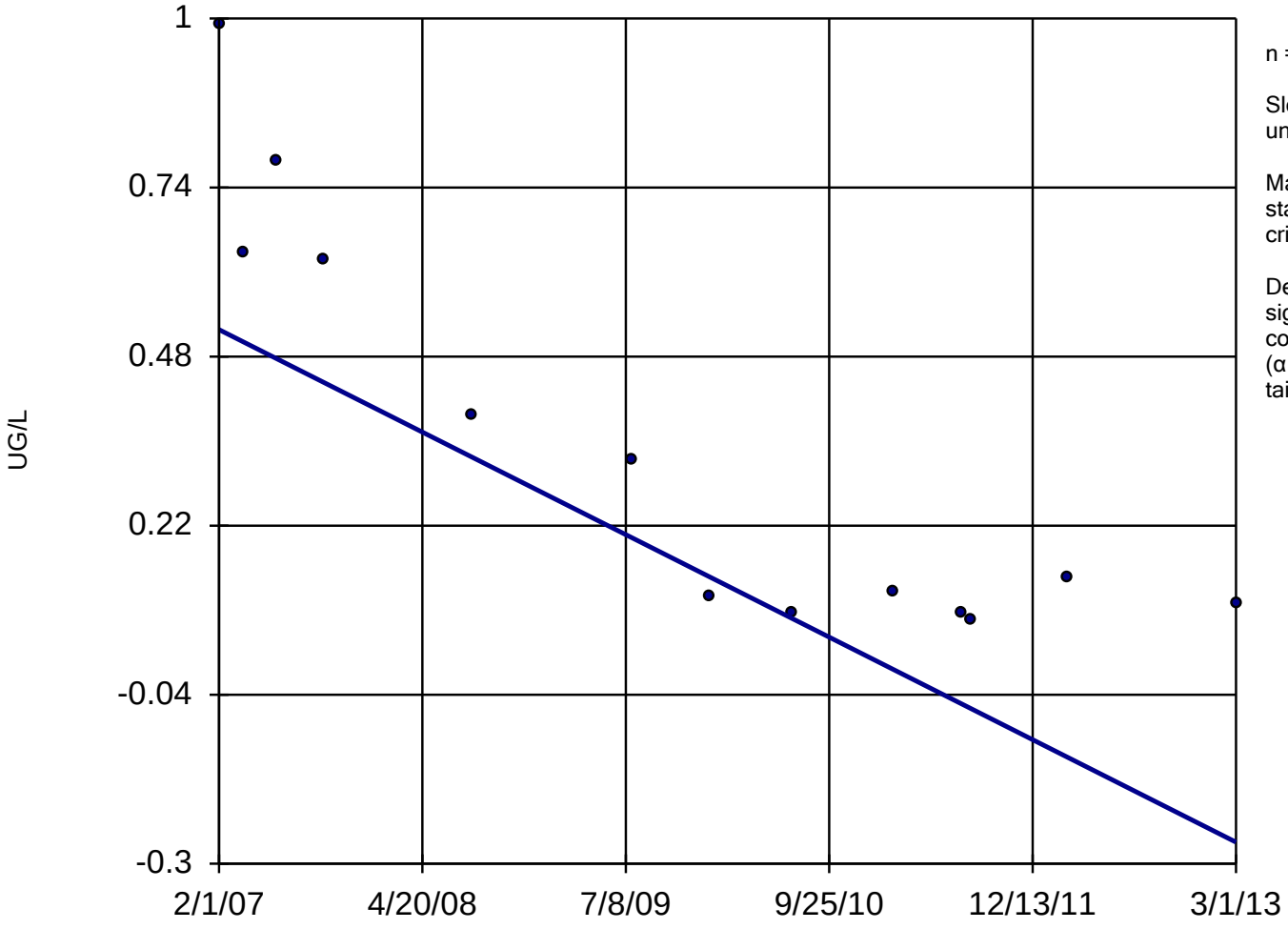
Background Data Summary (based on square root transformation): Mean=0.5482, Std. Dev.=0.2637, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8672, critical = 0.859. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:20 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-100B



n = 13

Slope = -0.1296 units per year.

Mann-Kendall statistic = -56
critical = -39

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

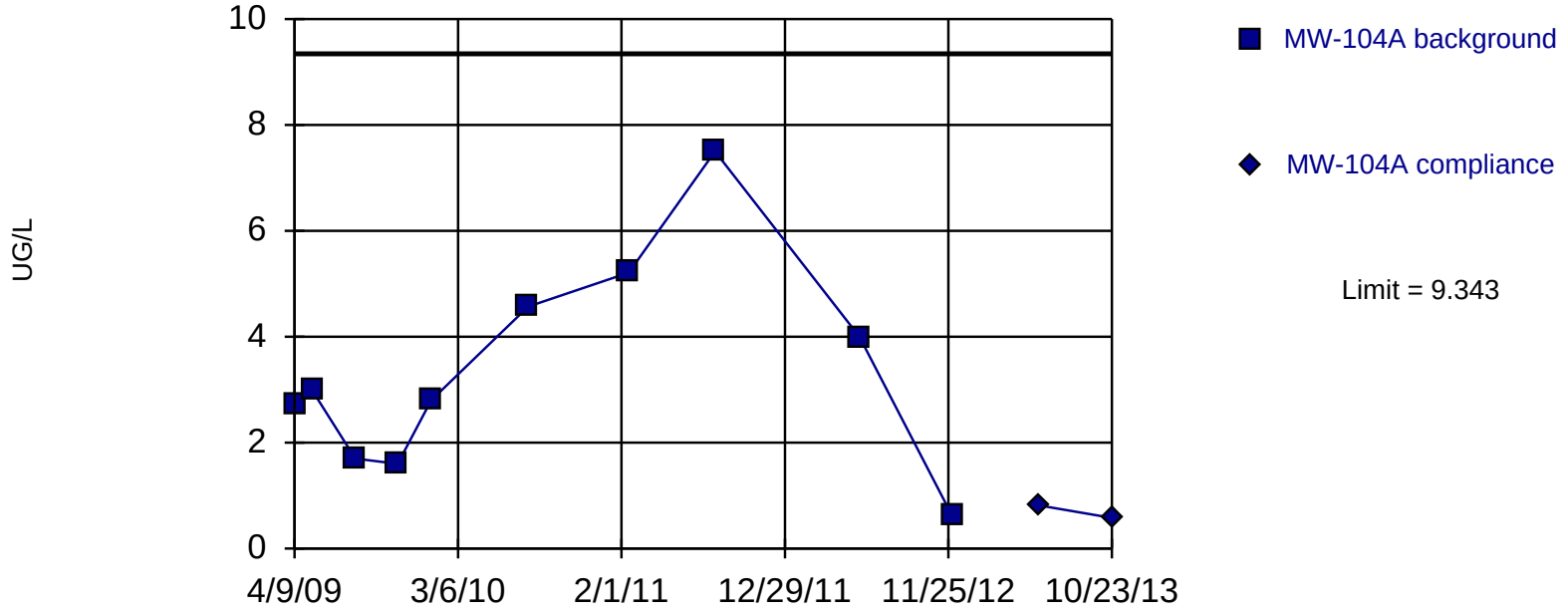
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



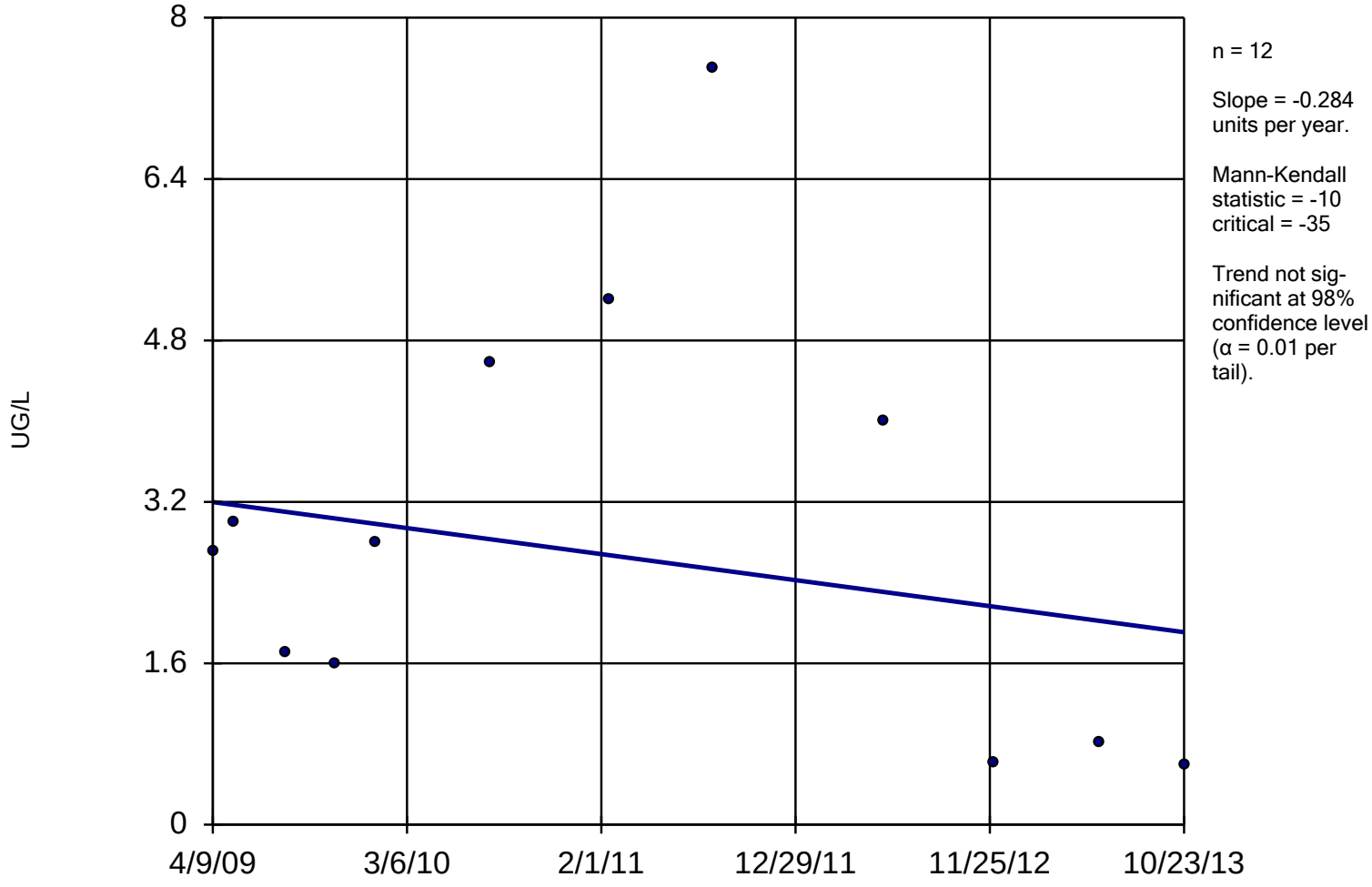
Background Data Summary: Mean=3.37, Std. Dev.=2.019, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.955, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-104A



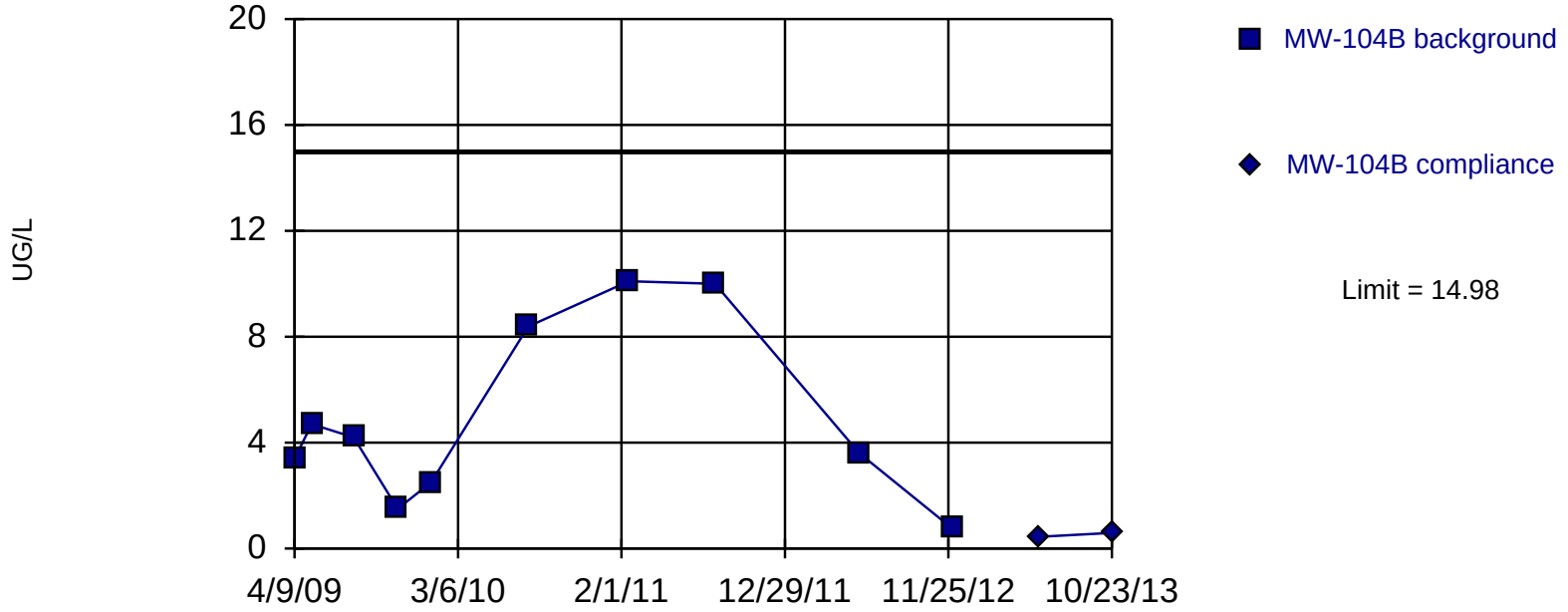
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



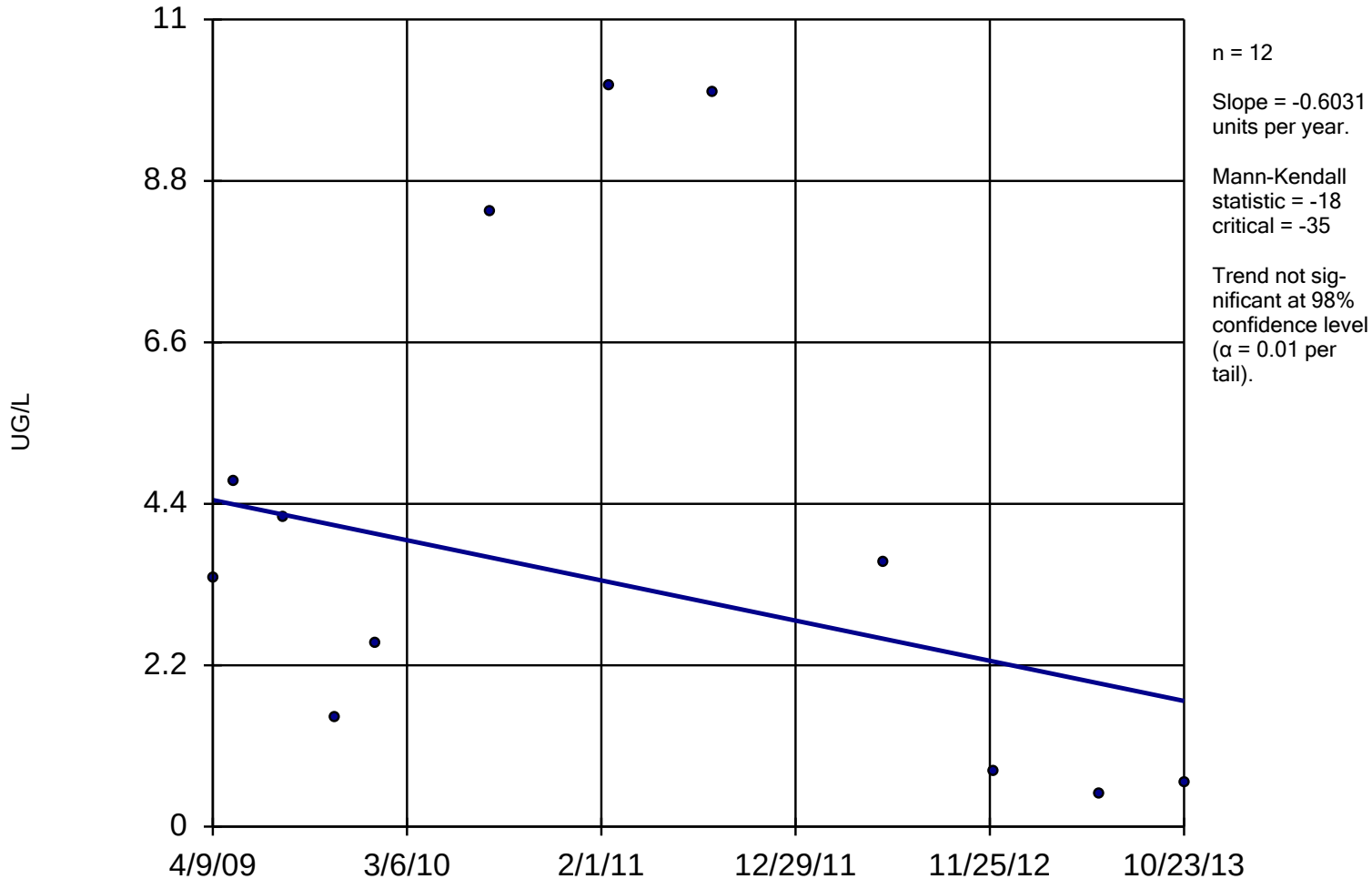
Background Data Summary: Mean=4.915, Std. Dev.=3.402, n=10. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8851, critical = 0.842. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-104B



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

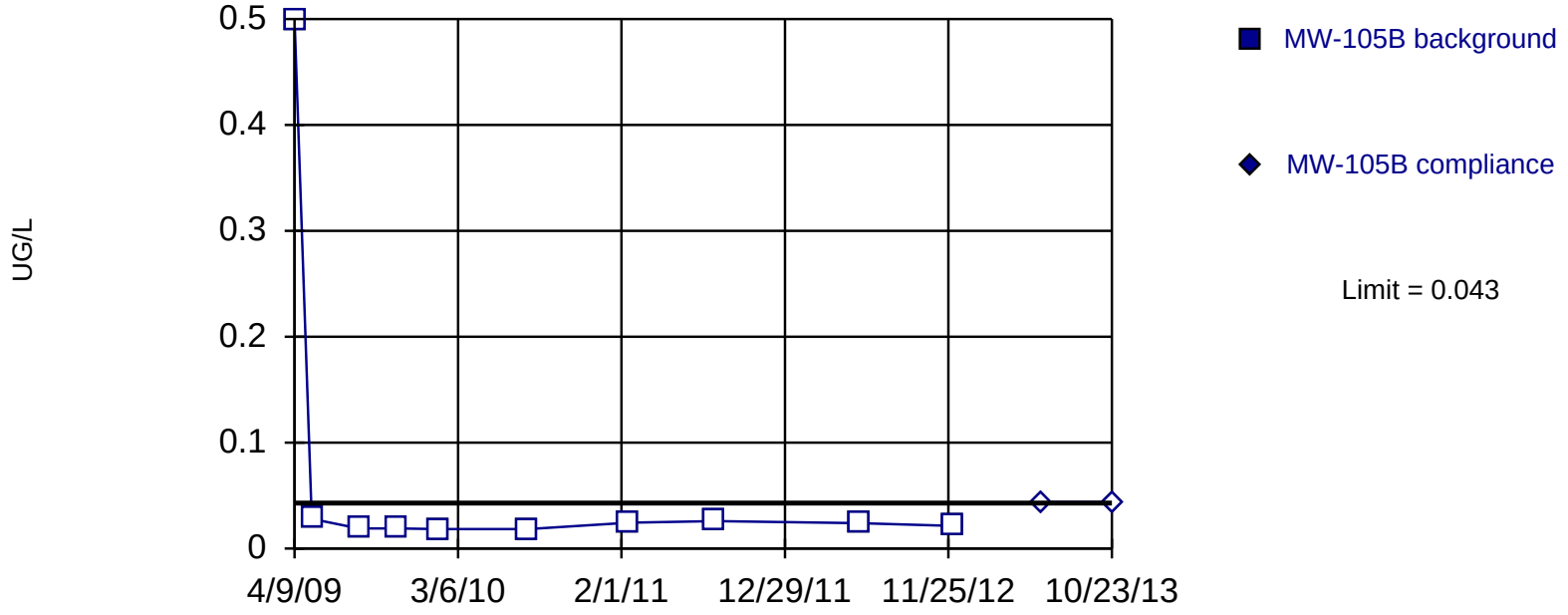
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 10) were censored; limit is most recent reporting limit. Report alpha = 0.09091. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

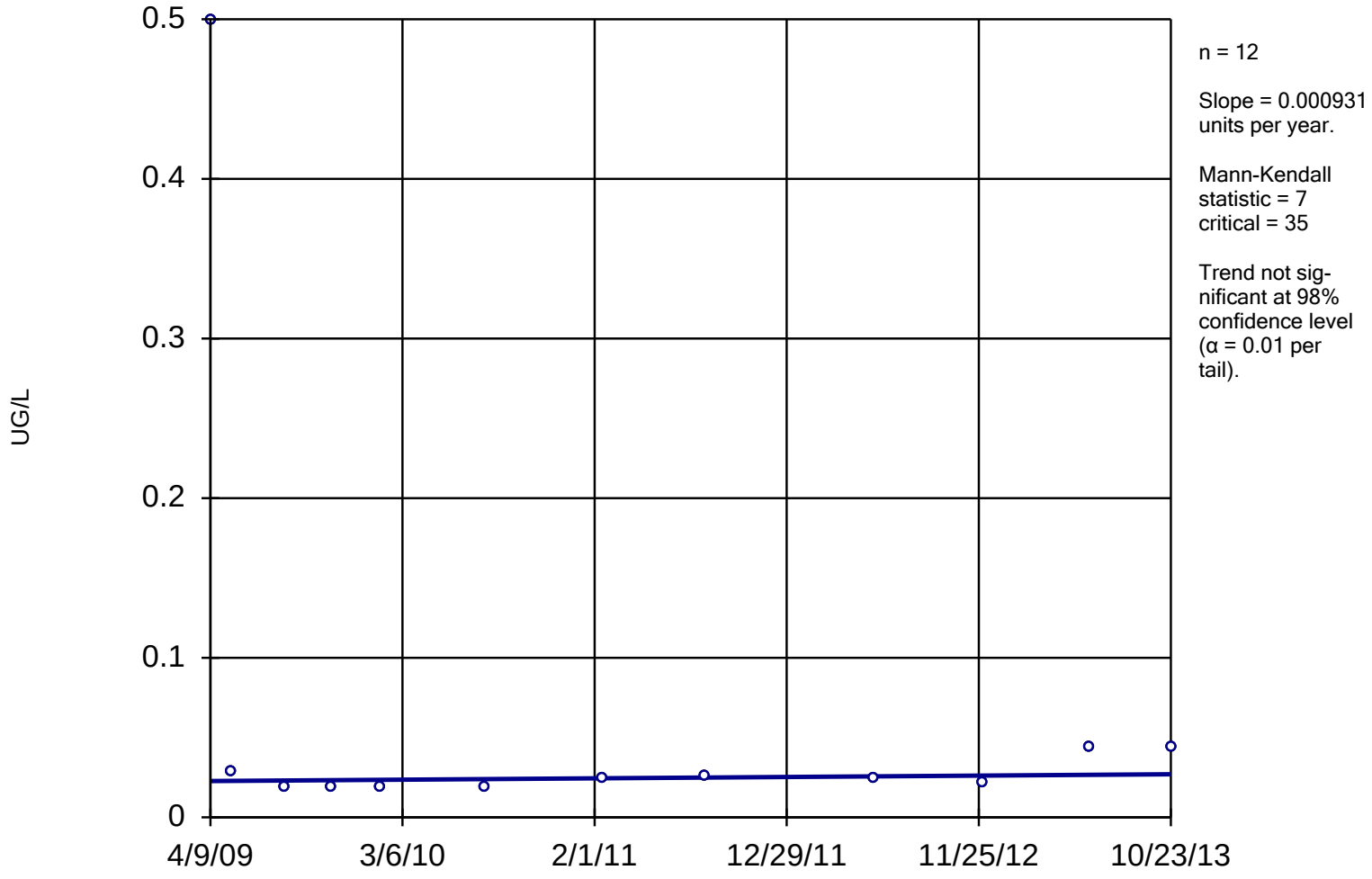
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-105B



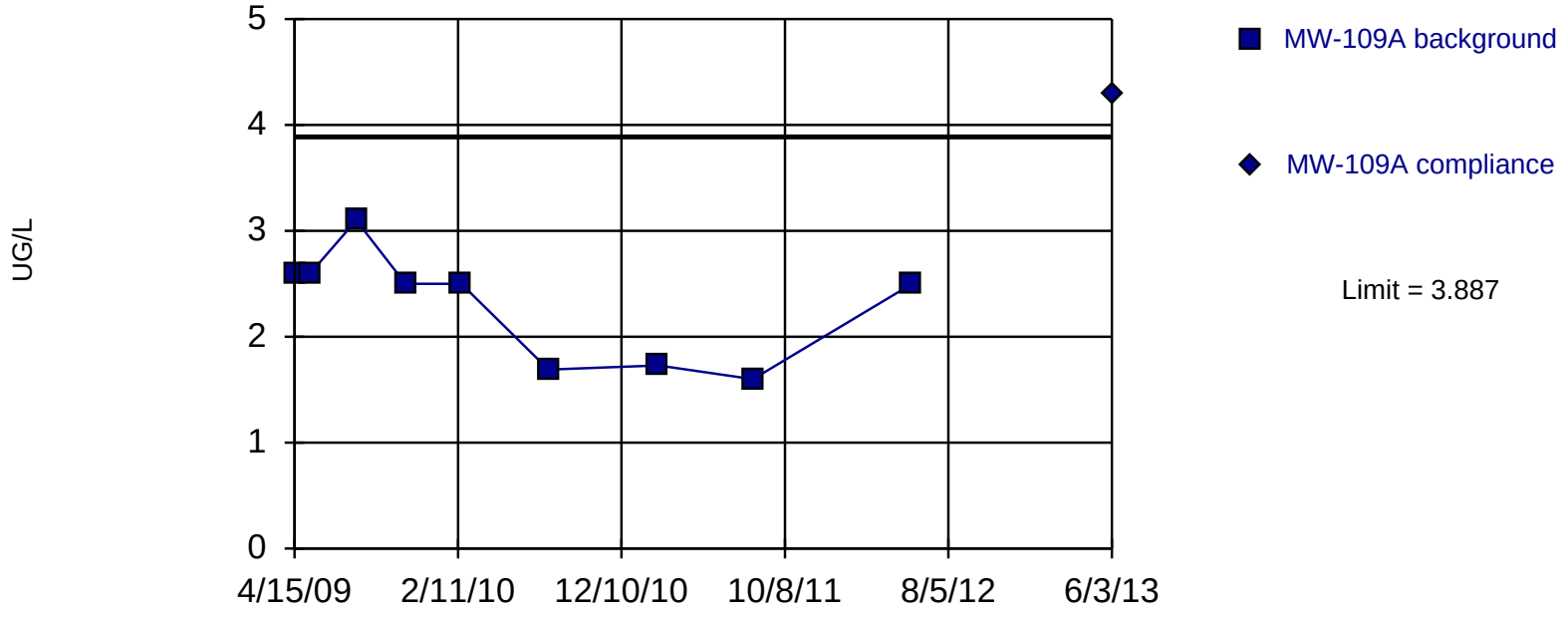
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Exceeds Limit

Prediction Limit

Intrawell Parametric



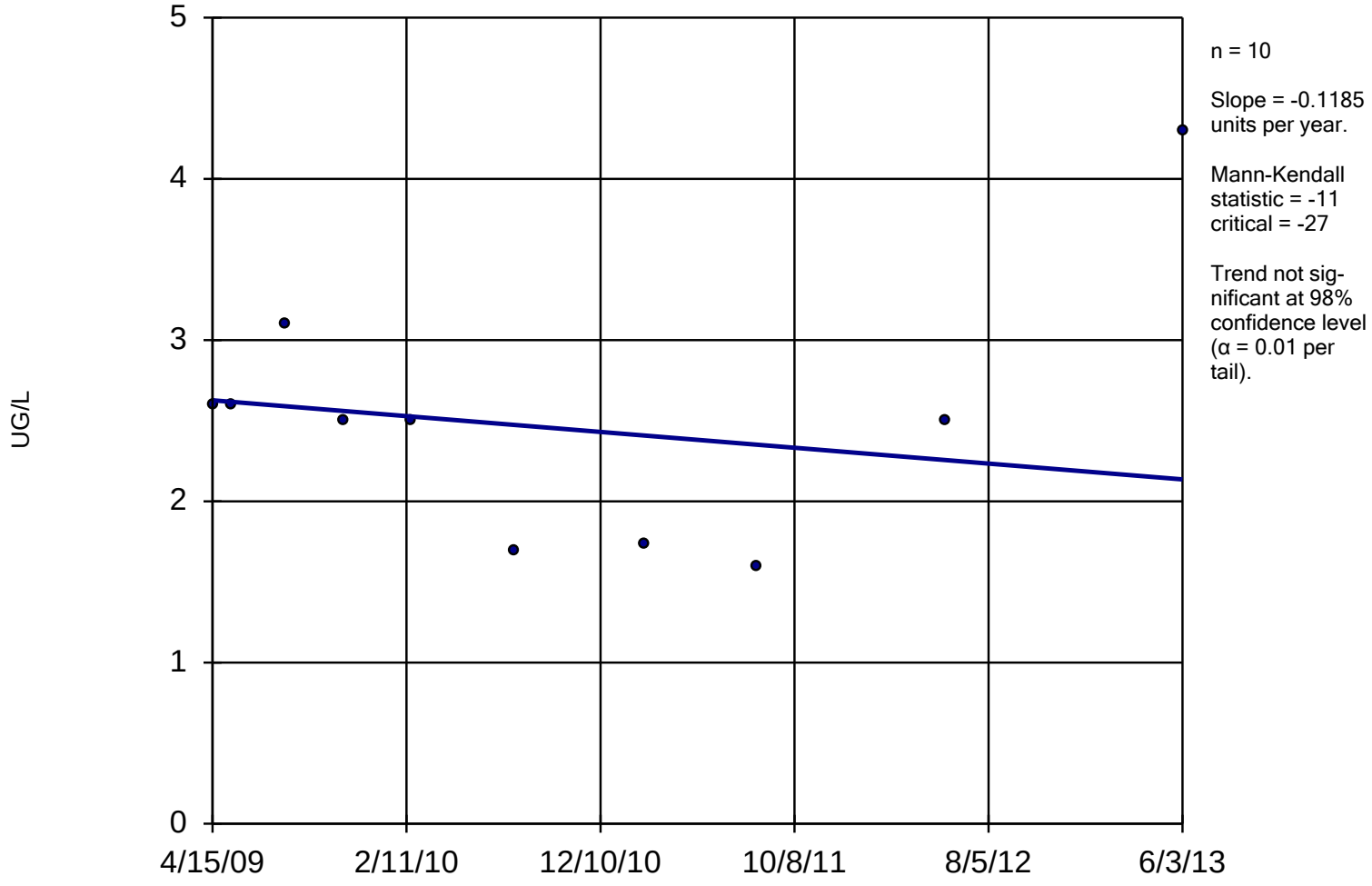
Background Data Summary: Mean=2.313, Std. Dev.=0.5154, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8579, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-109A



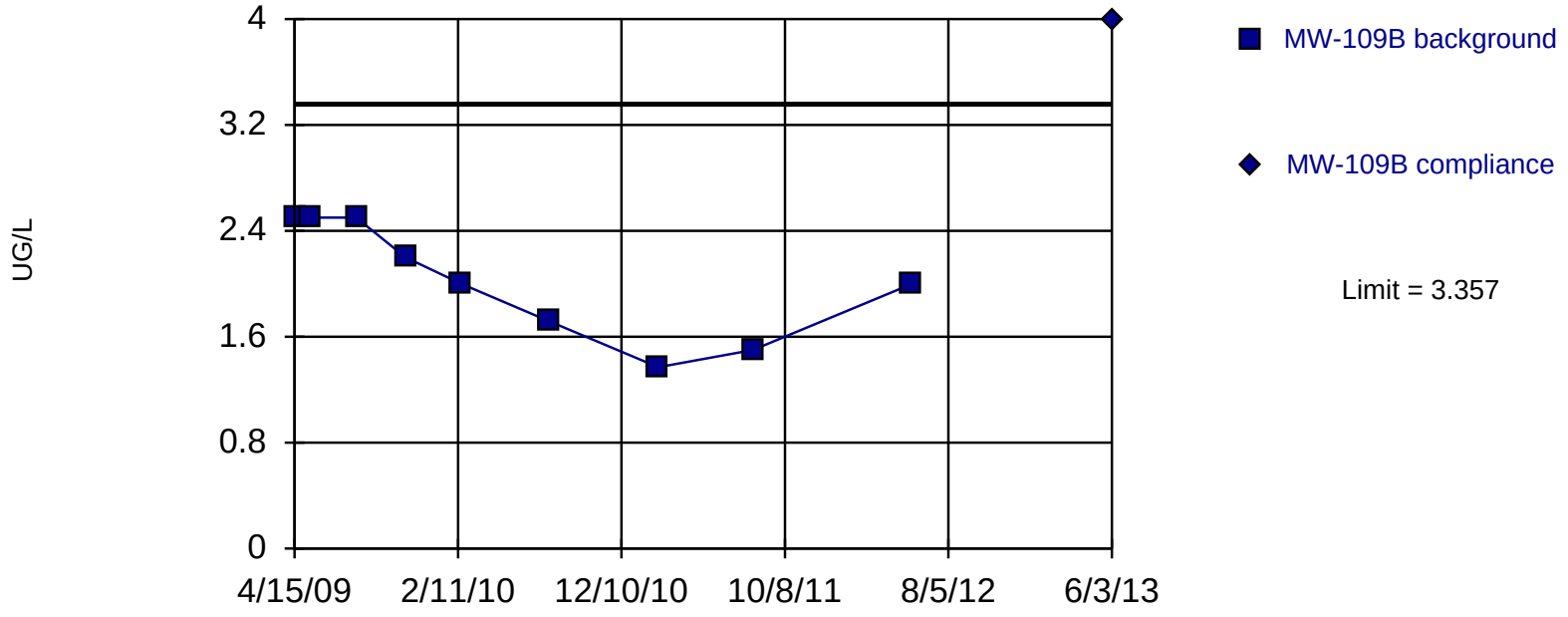
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Exceeds Limit

Prediction Limit

Intrawell Parametric



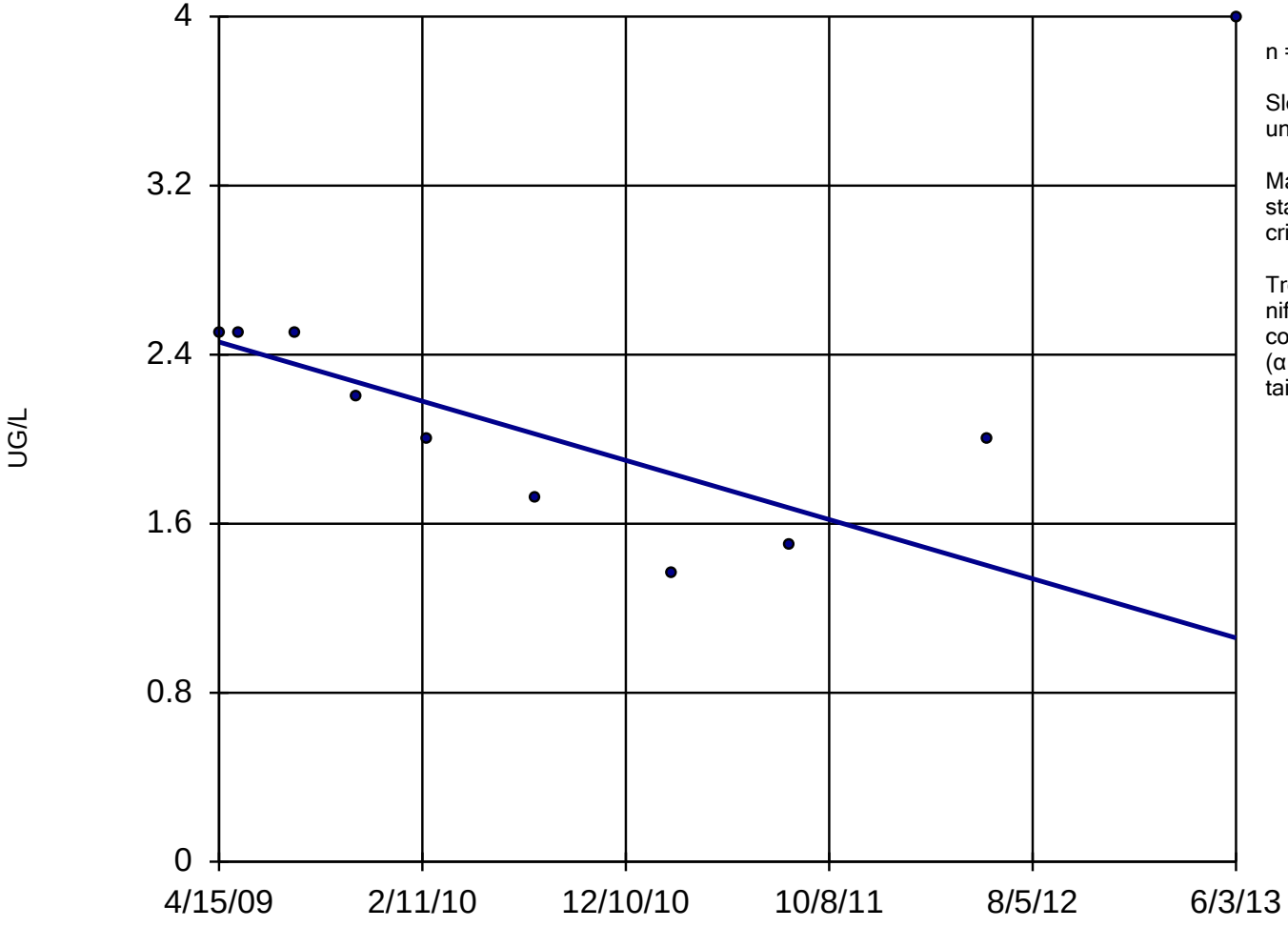
Background Data Summary: Mean=2.032, Std. Dev.=0.4339, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8979, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-109B



n = 10

Slope = -0.3386 units per year.

Mann-Kendall statistic = -15
critical = -27

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:14 PM

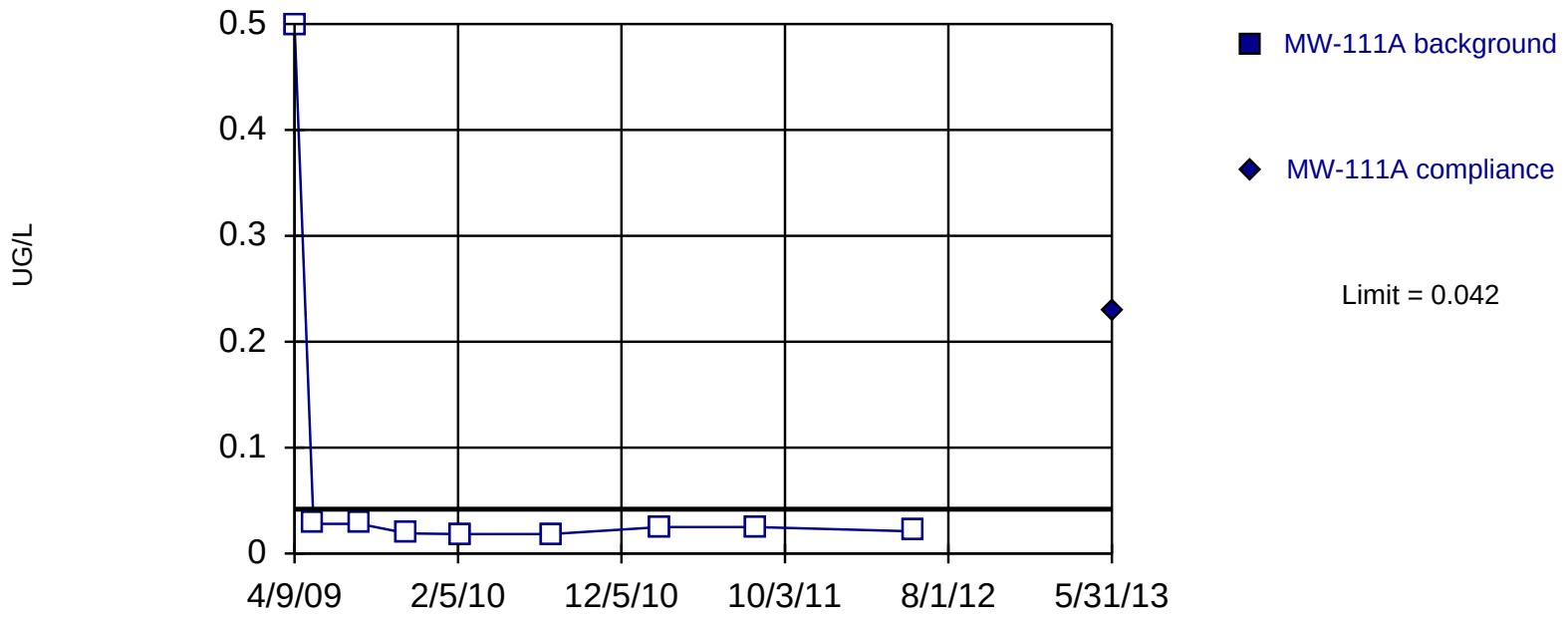
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 9) were censored; limit is most recent reporting limit. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

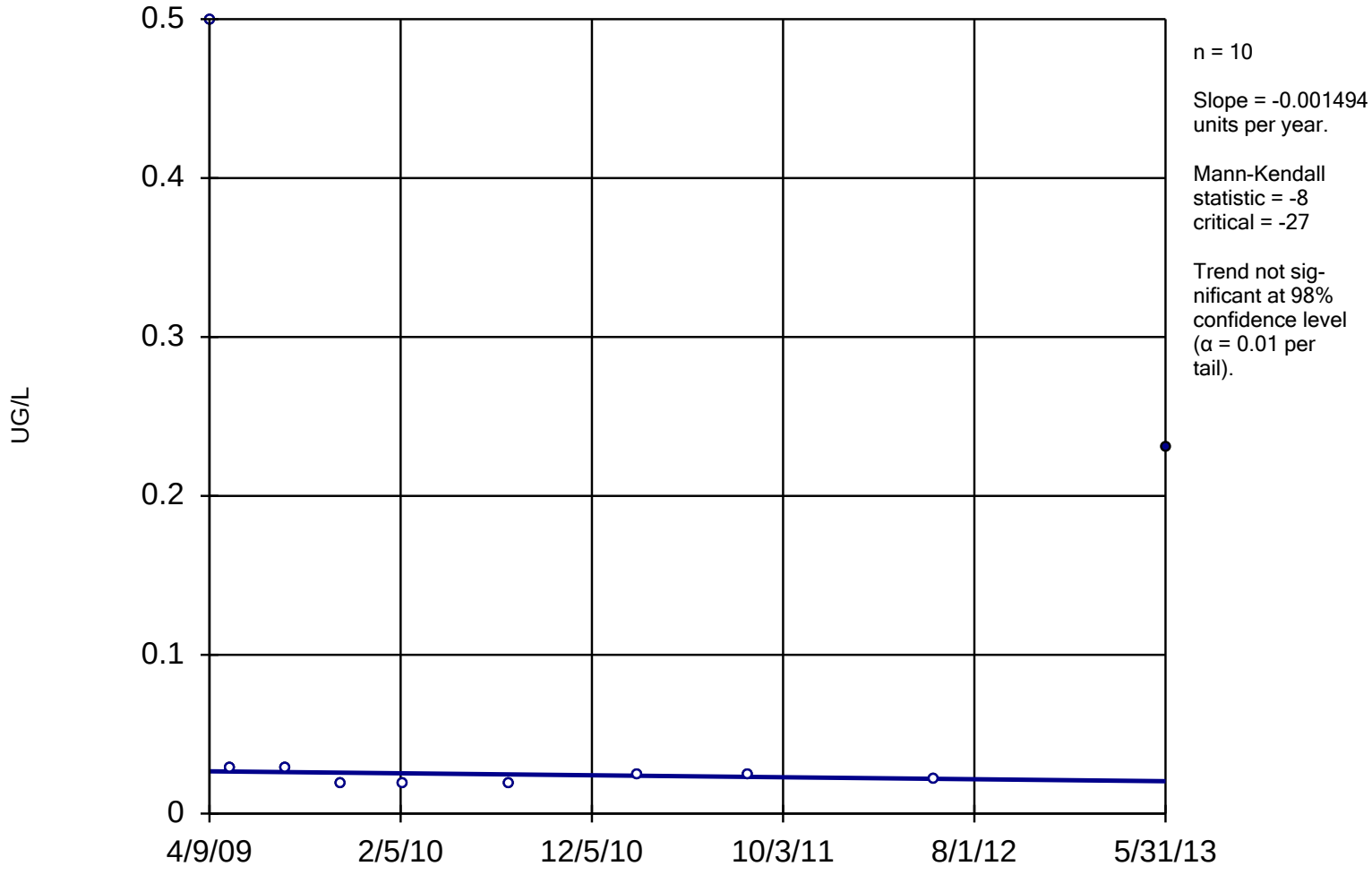
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-111A



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

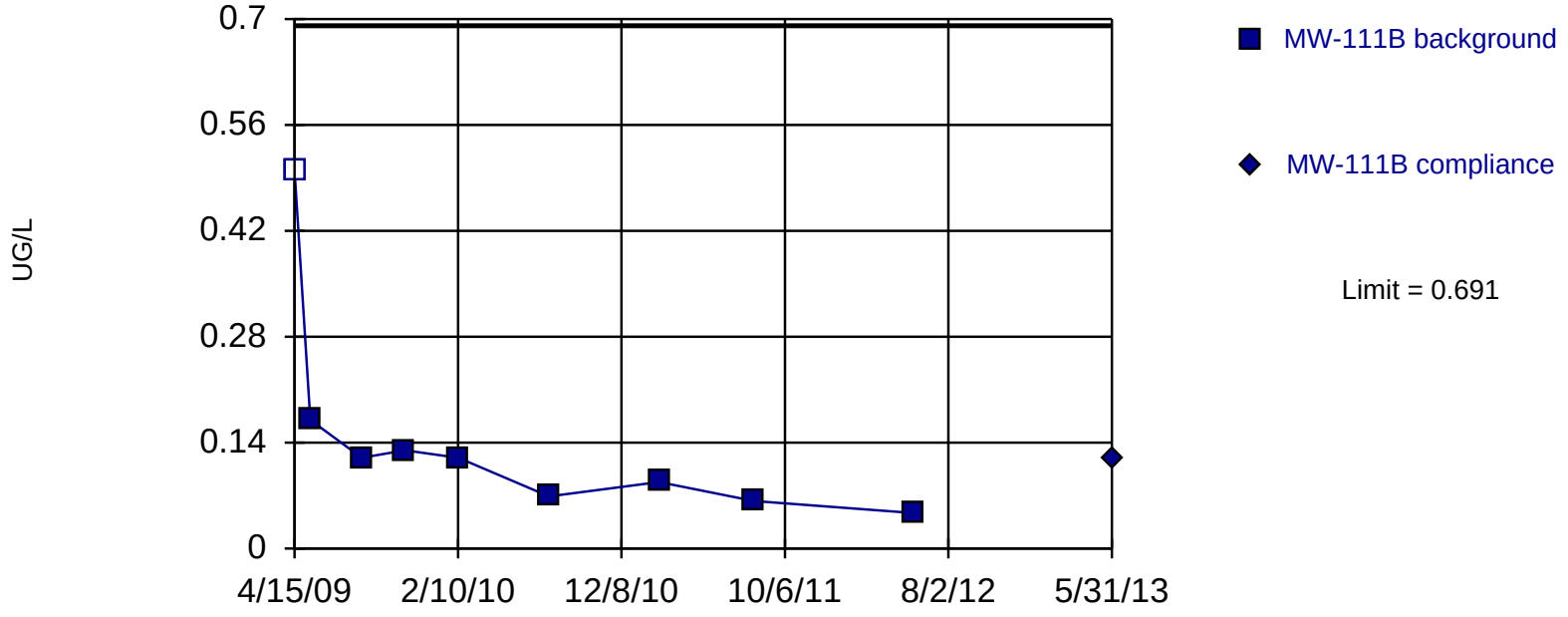
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=0.4949, Std. Dev.=0.1275, n=9, 11.11% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8334, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

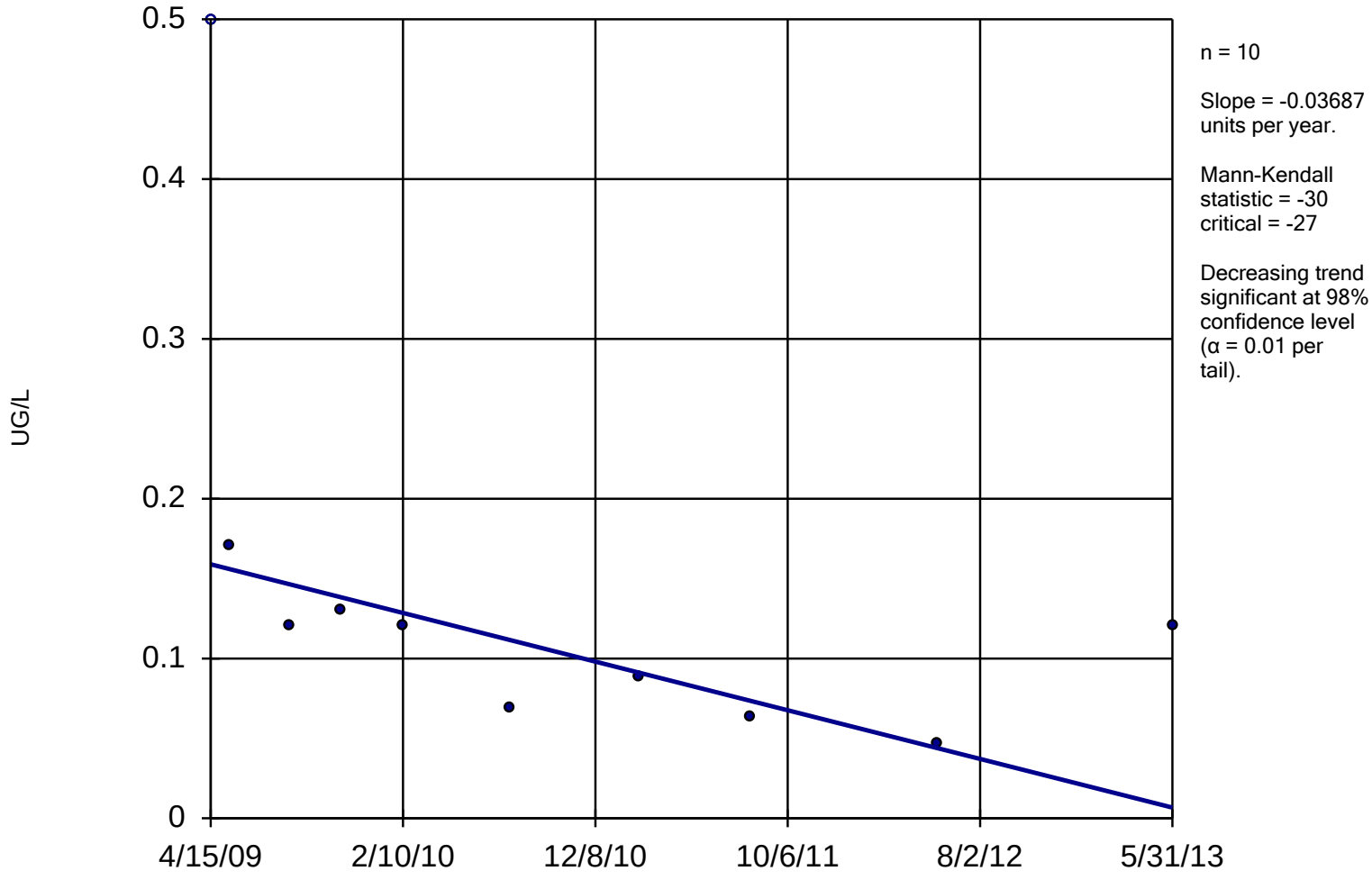
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-111B



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

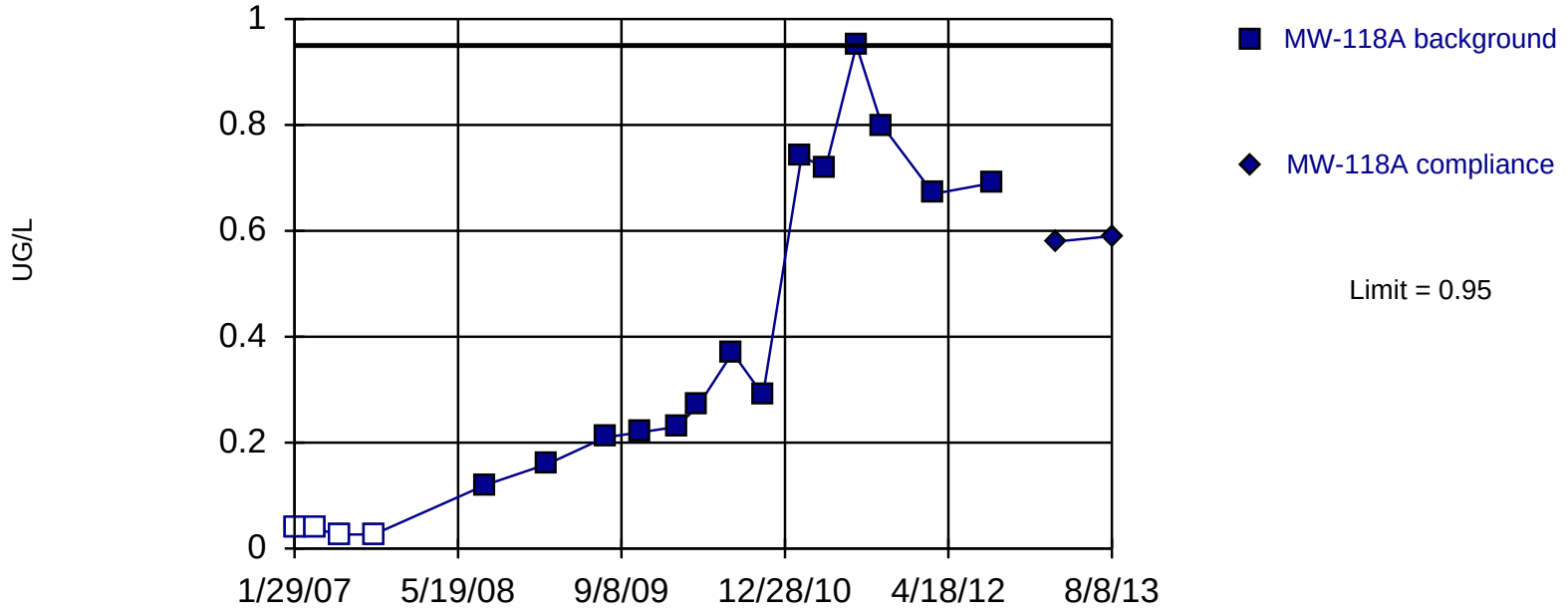
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the data required both a power transformation and Cohen's adjustment. Limit is highest of 18 background values. 22.22% NDs. Report alpha = 0.05263. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

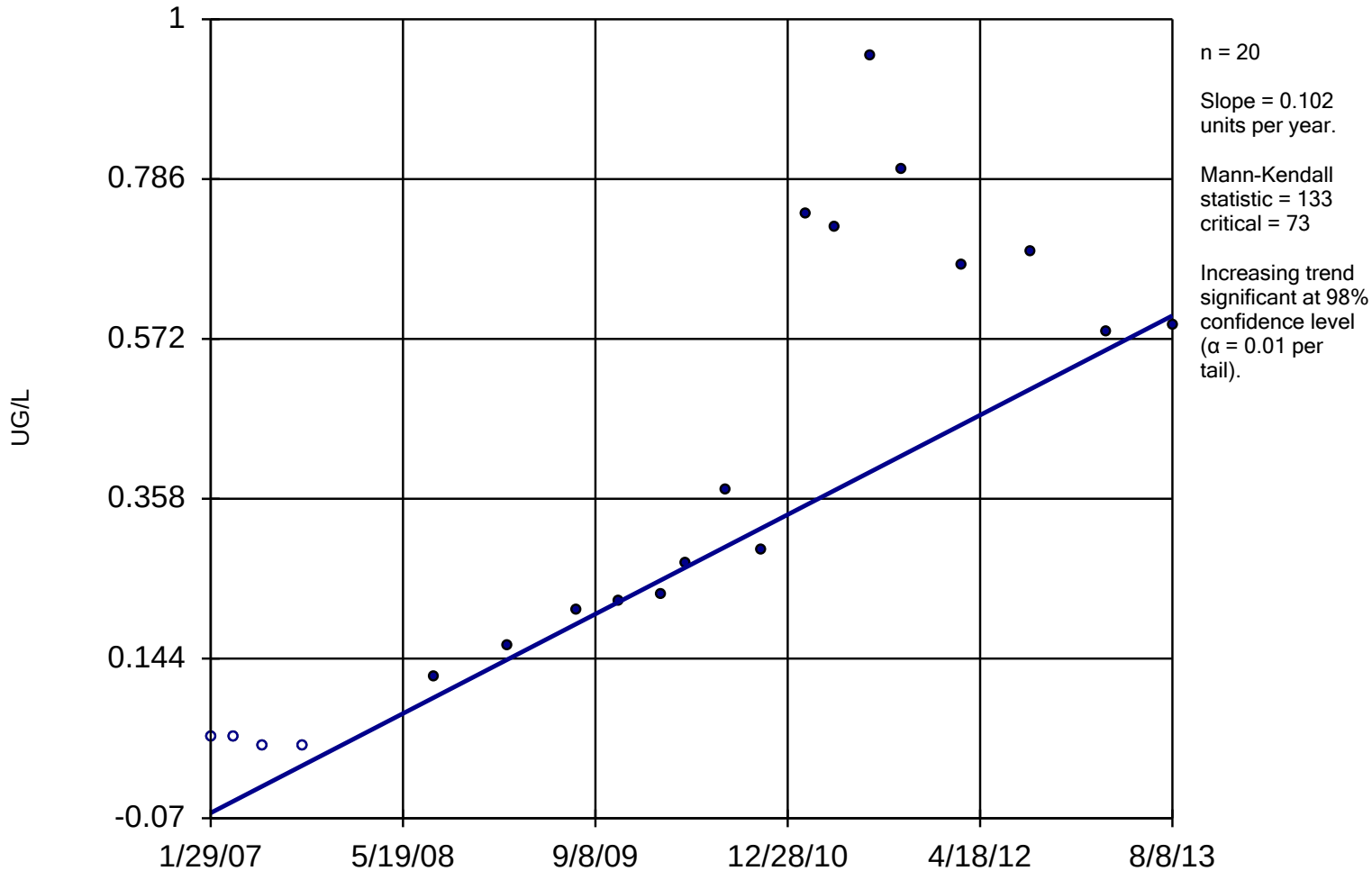
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-118A



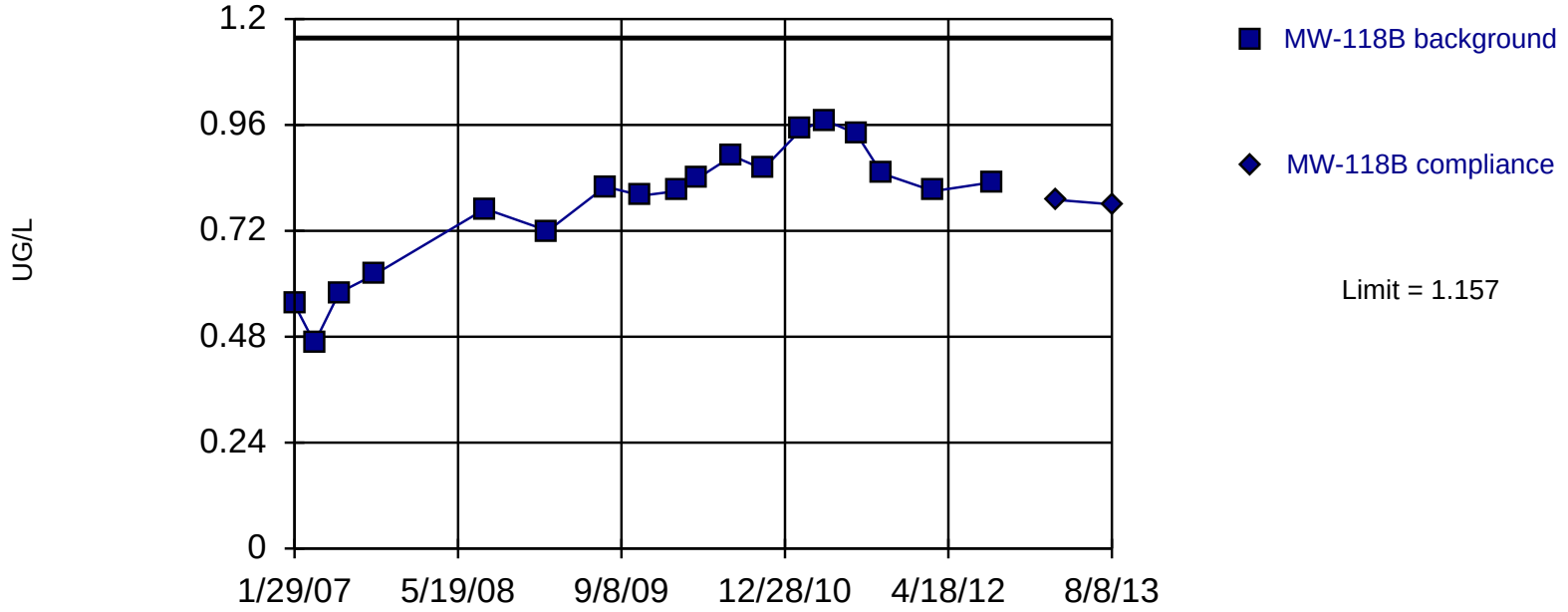
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



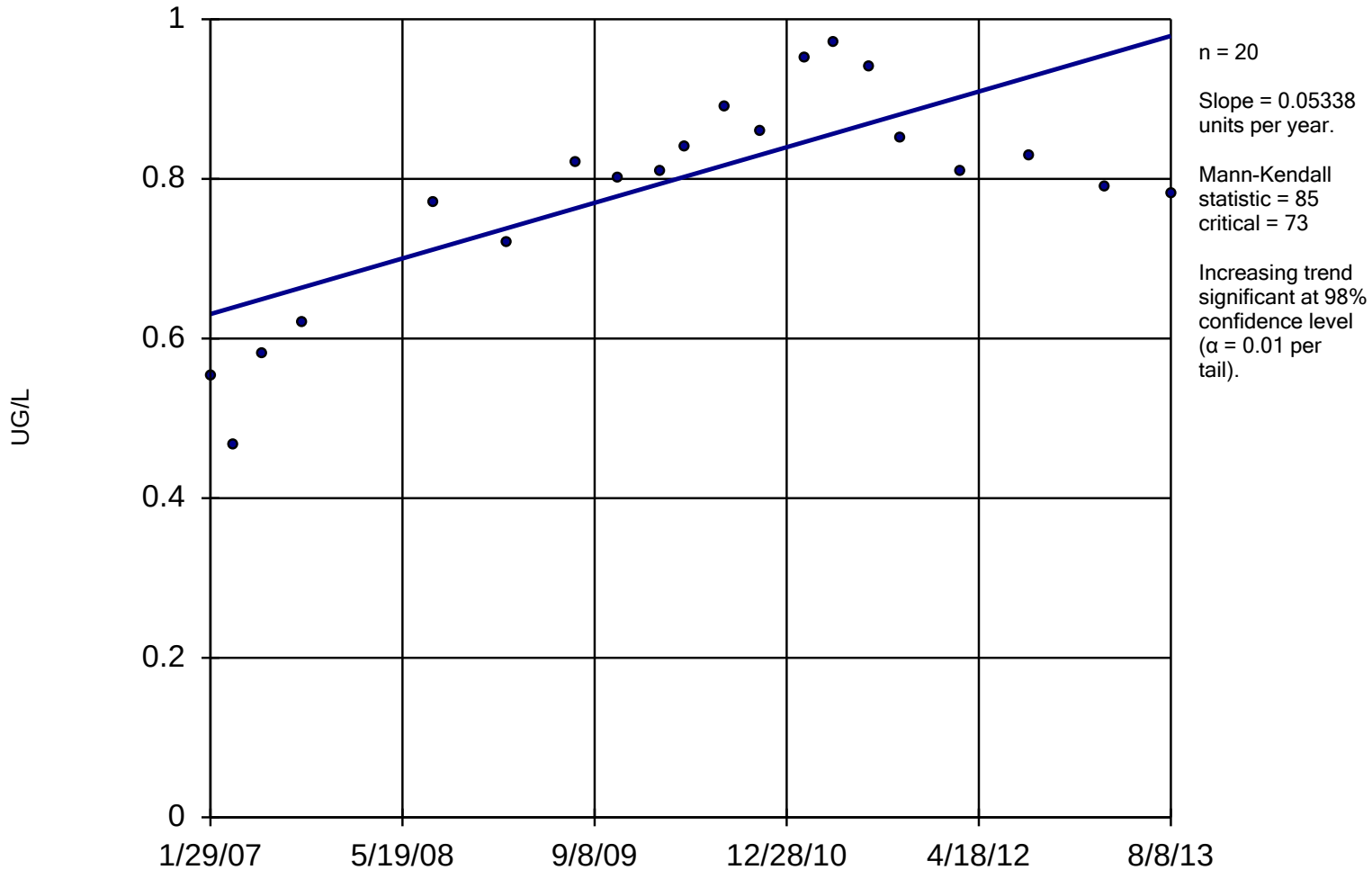
Background Data Summary: Mean=0.7822, Std. Dev.=0.1421, n=18. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9082, critical = 0.897. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-118B



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

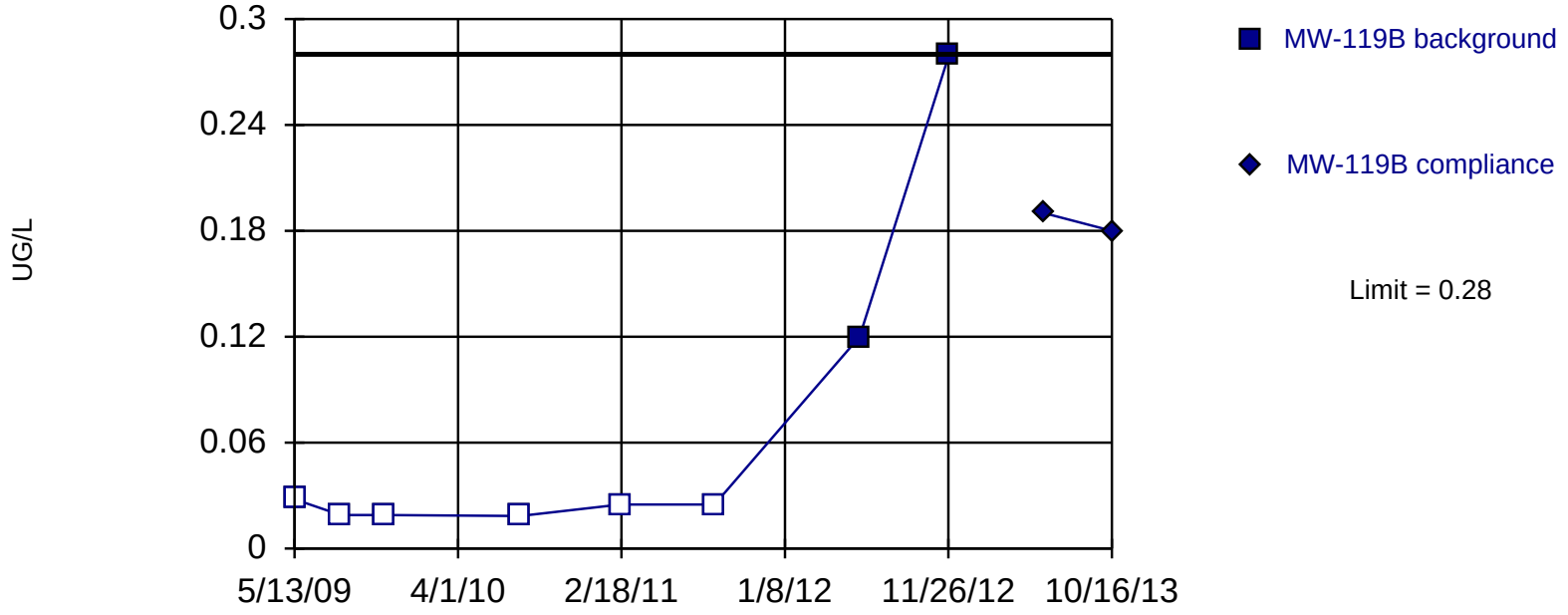
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Report alpha = 0.1111. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

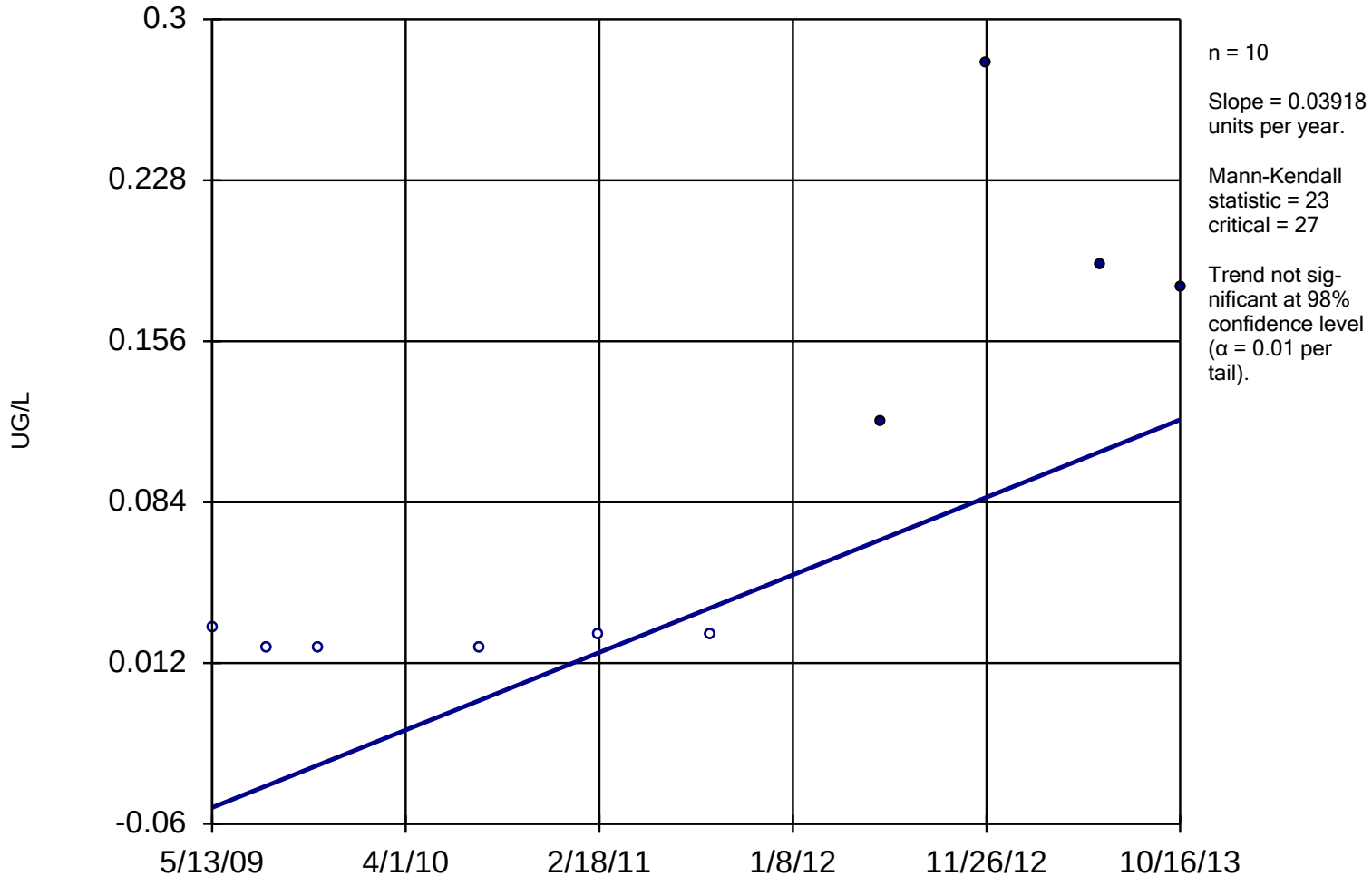
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-119B



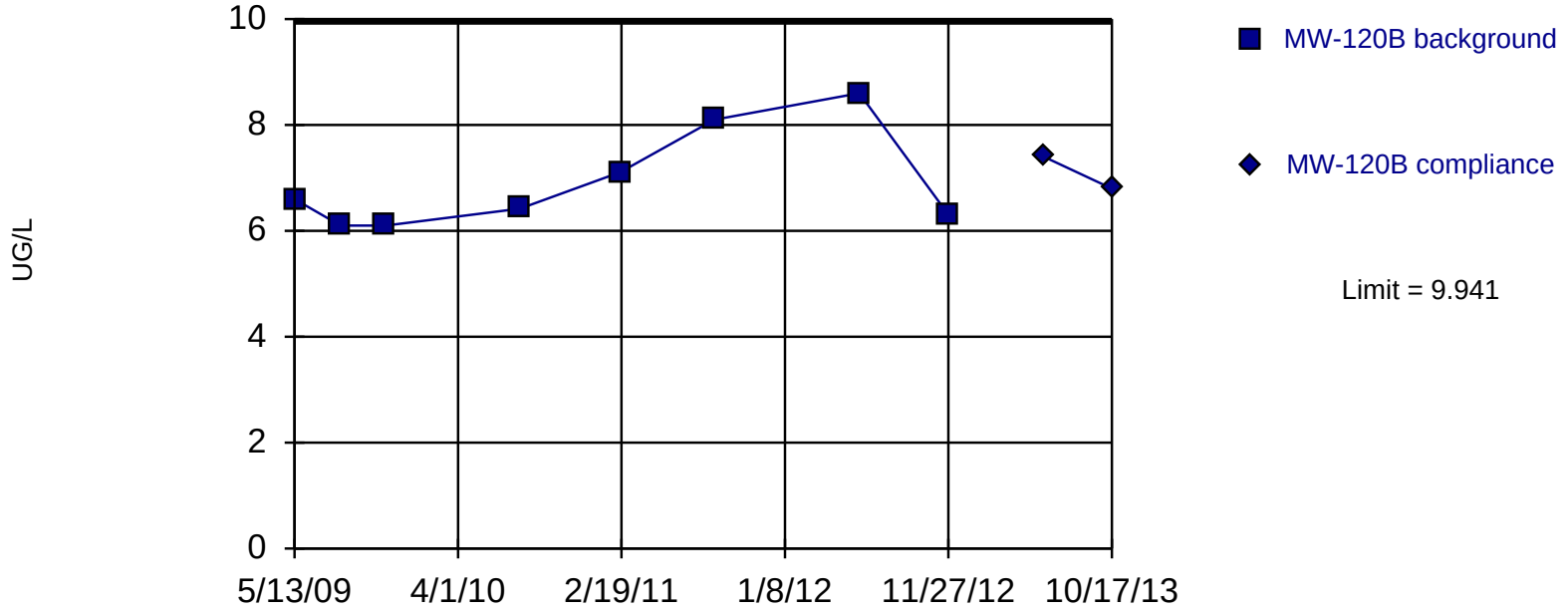
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



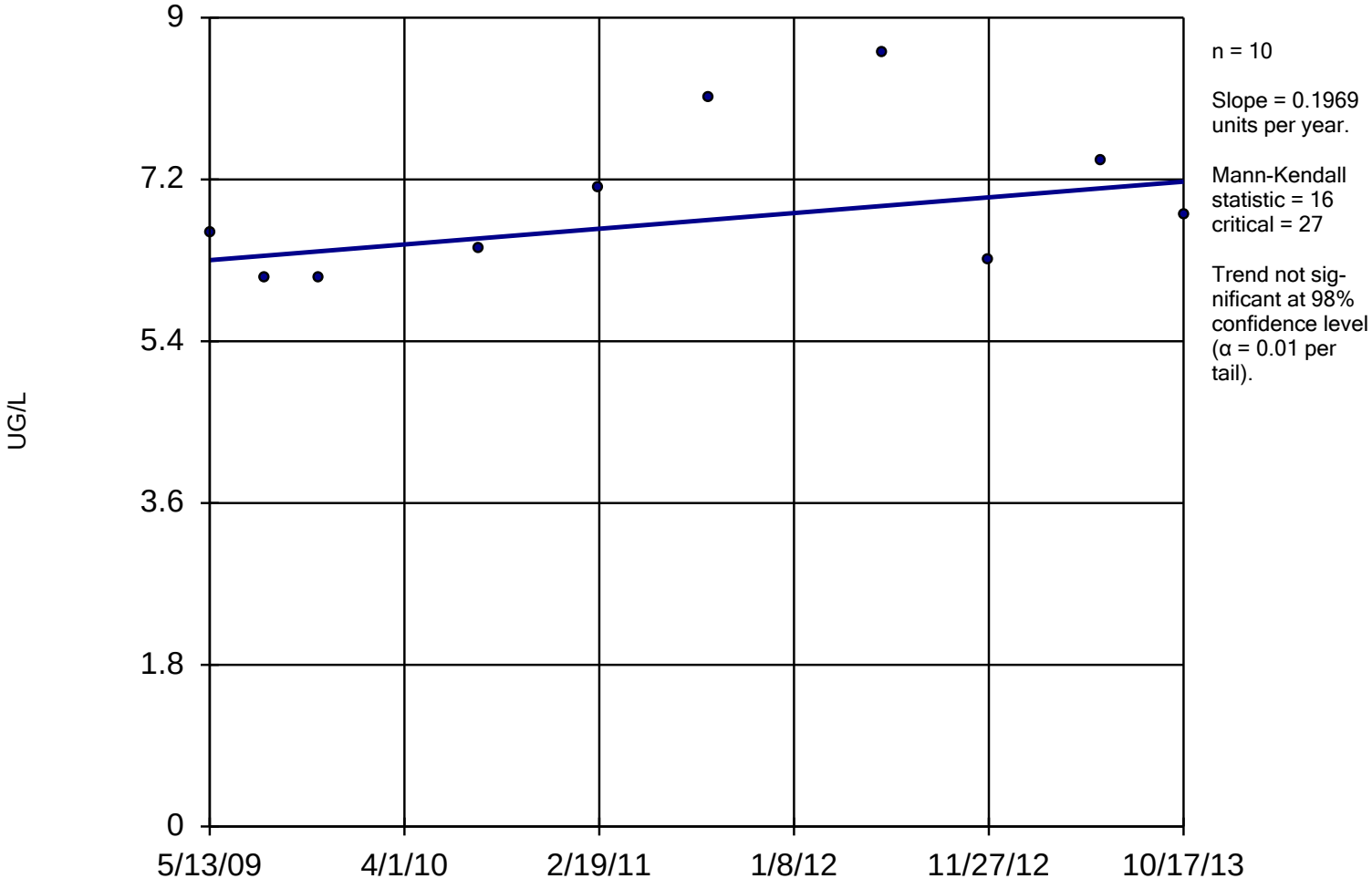
Background Data Summary: Mean=6.916, Std. Dev.=0.9511, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8333, critical = 0.818. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-120B



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

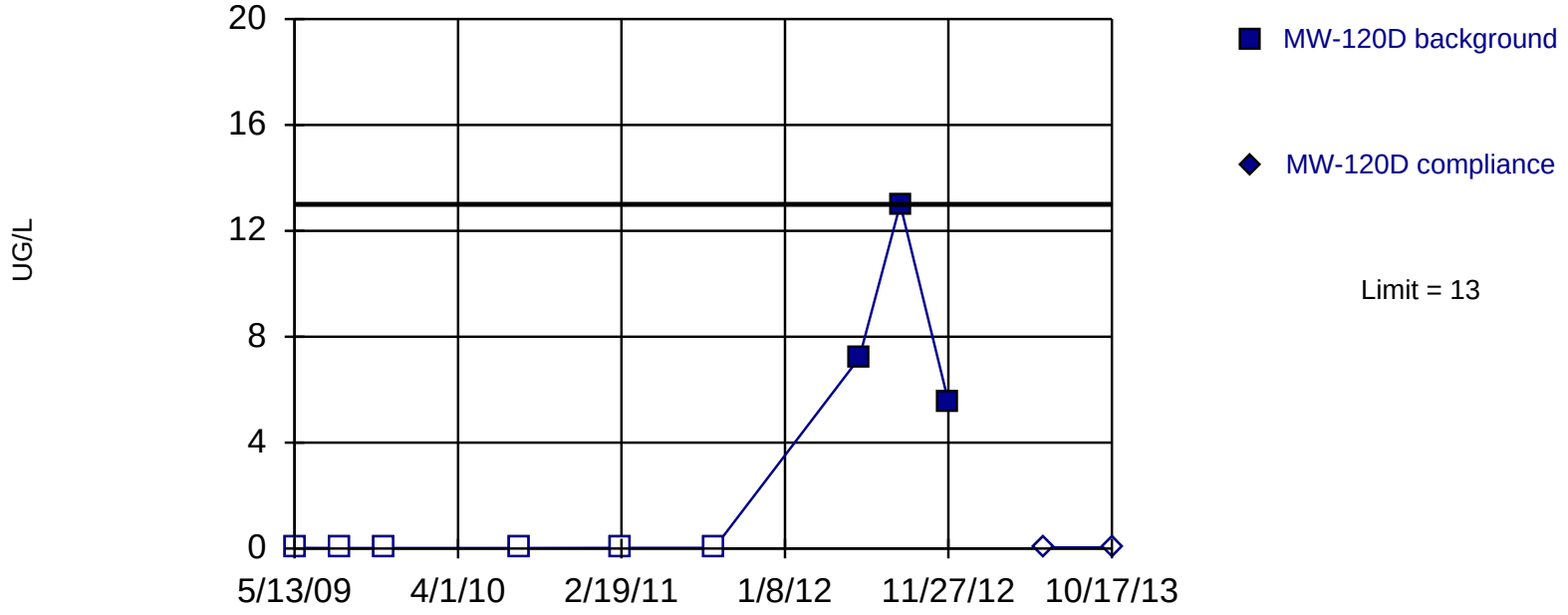
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 9 background values. 66.67% NDs. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

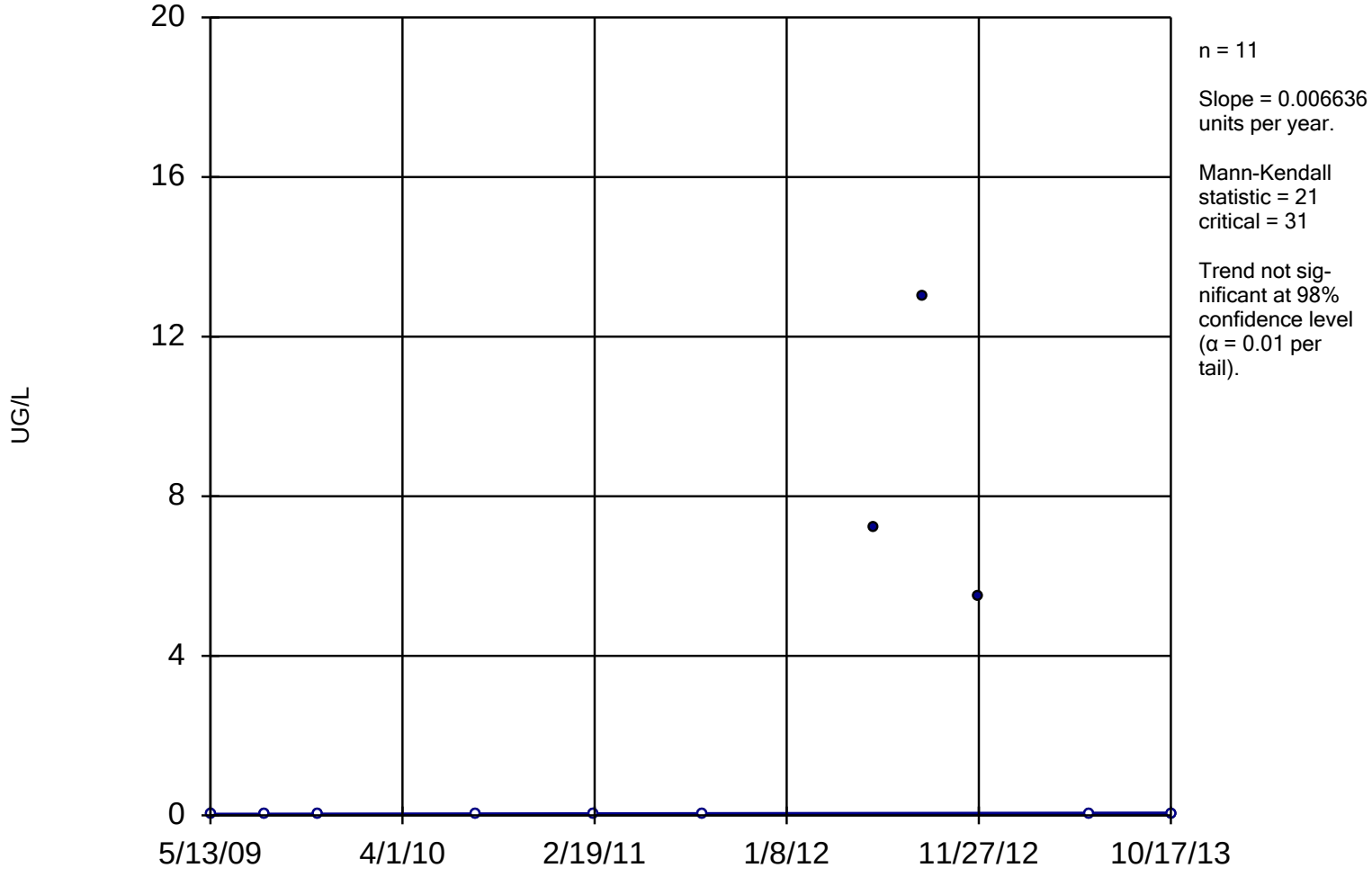
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-120D



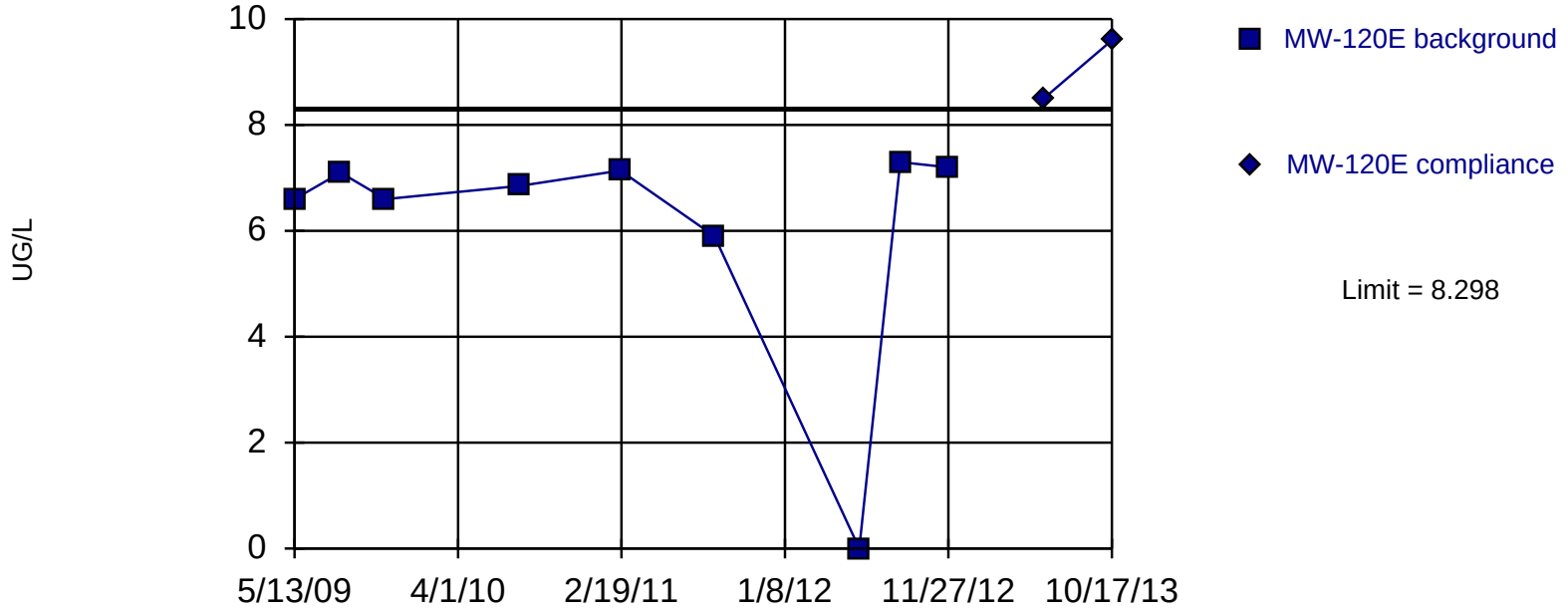
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Exceeds Limit

Prediction Limit

Intrawell Parametric



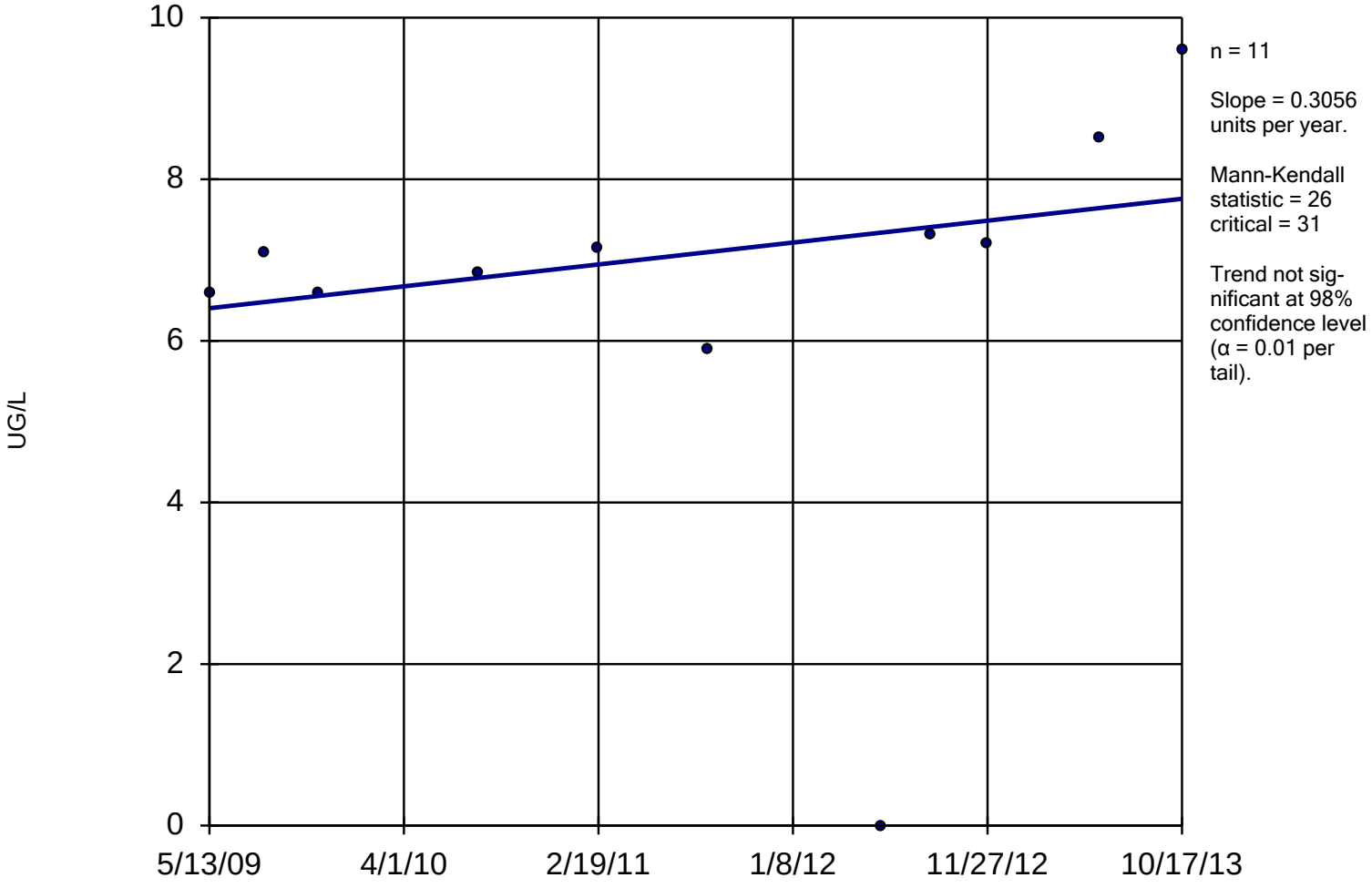
Background Data Summary (based on x^4 transformation): Mean=1986, Std. Dev.=902.1, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8485, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-120E



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

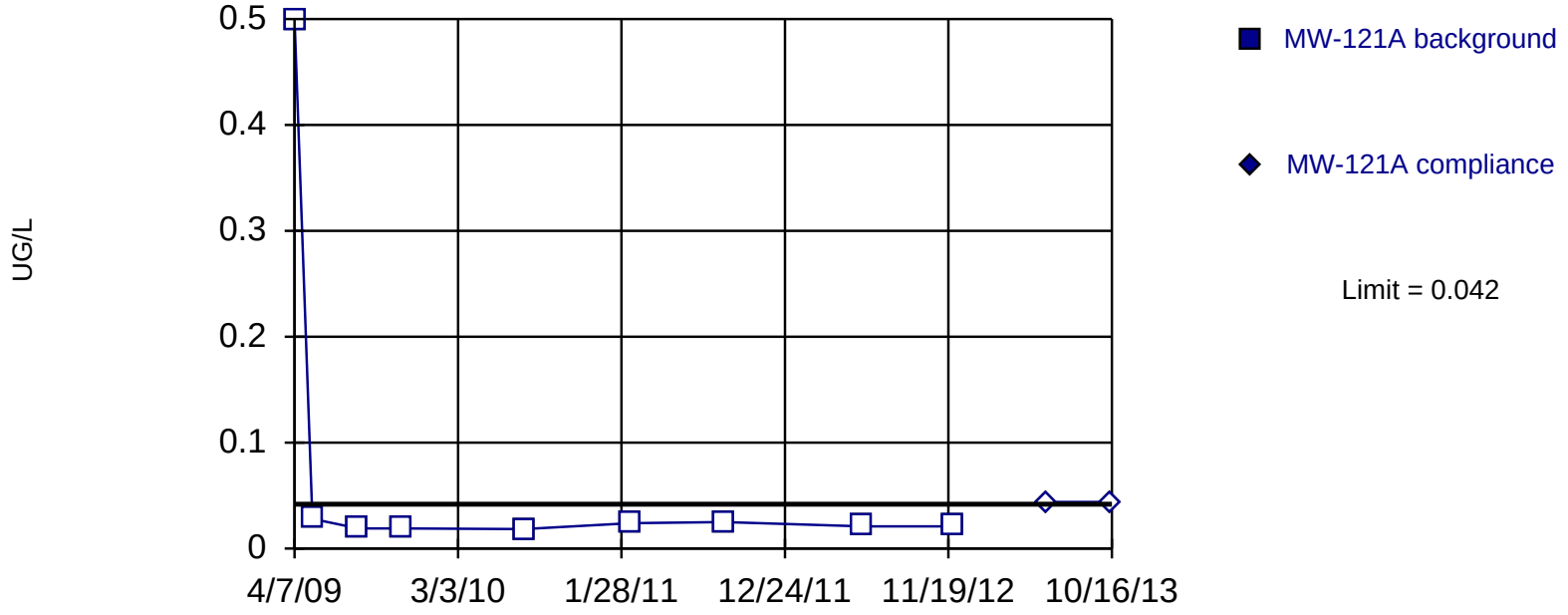
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 9) were censored; limit is most recent reporting limit. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

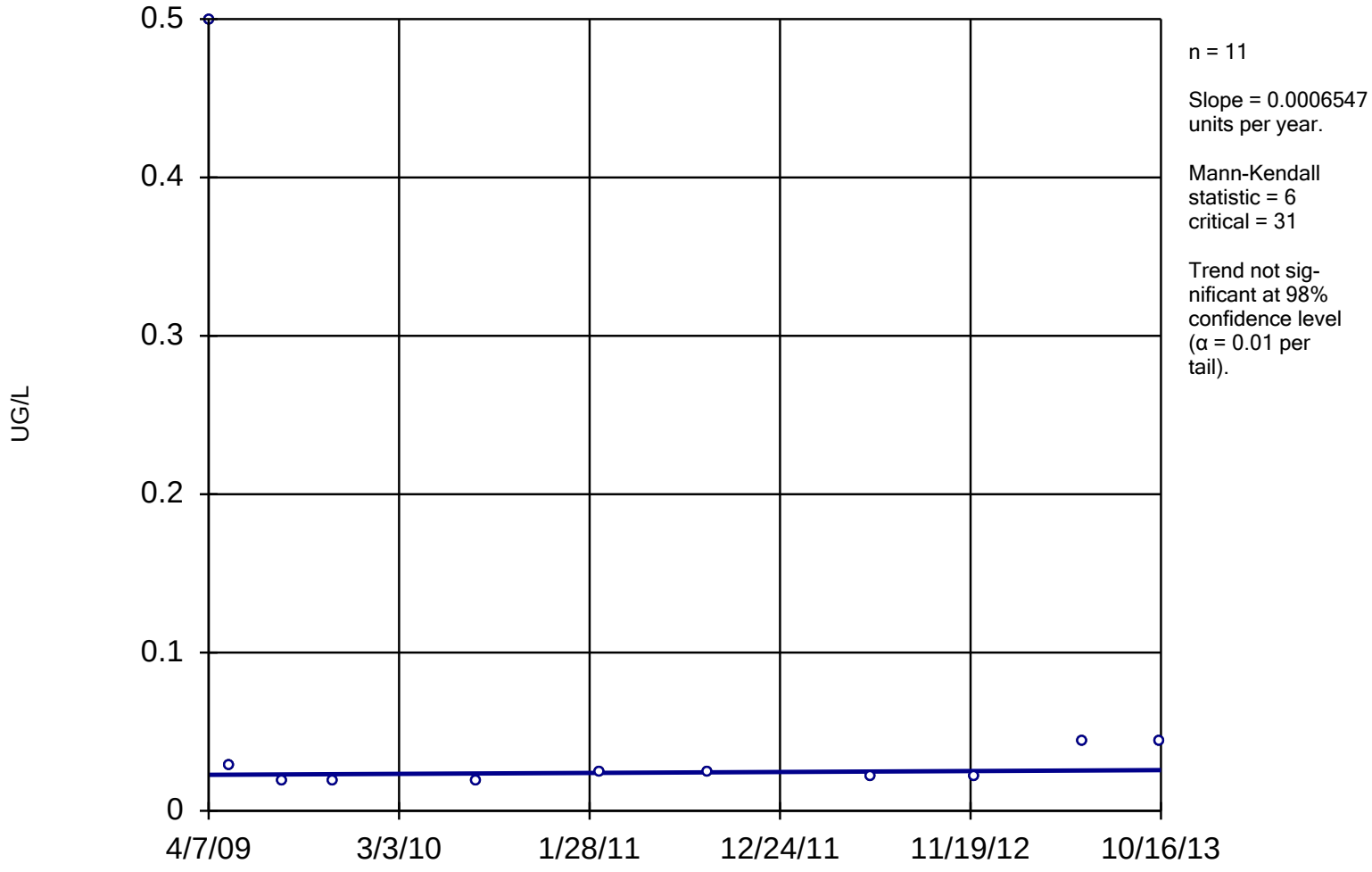
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-121A



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

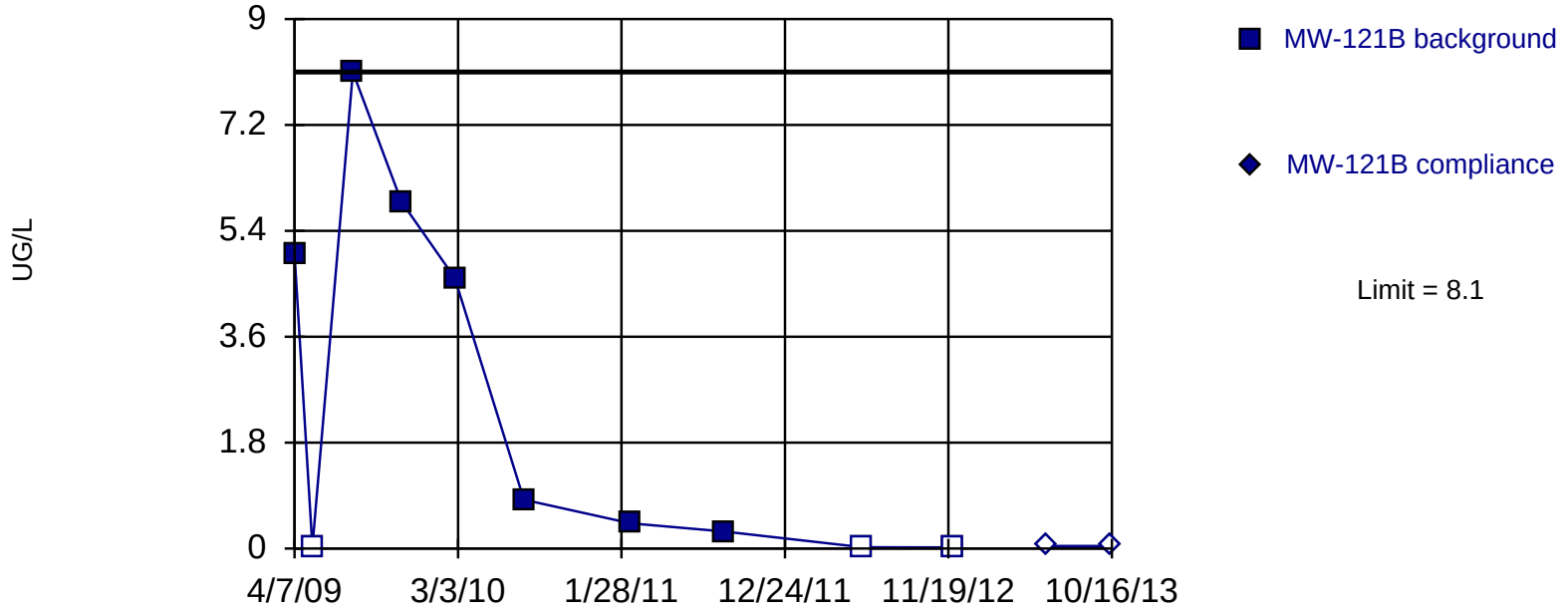
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the data required both a power transformation and Cohen's adjustment. Limit is highest of 10 background values. 30% NDs. Report alpha = 0.09091. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

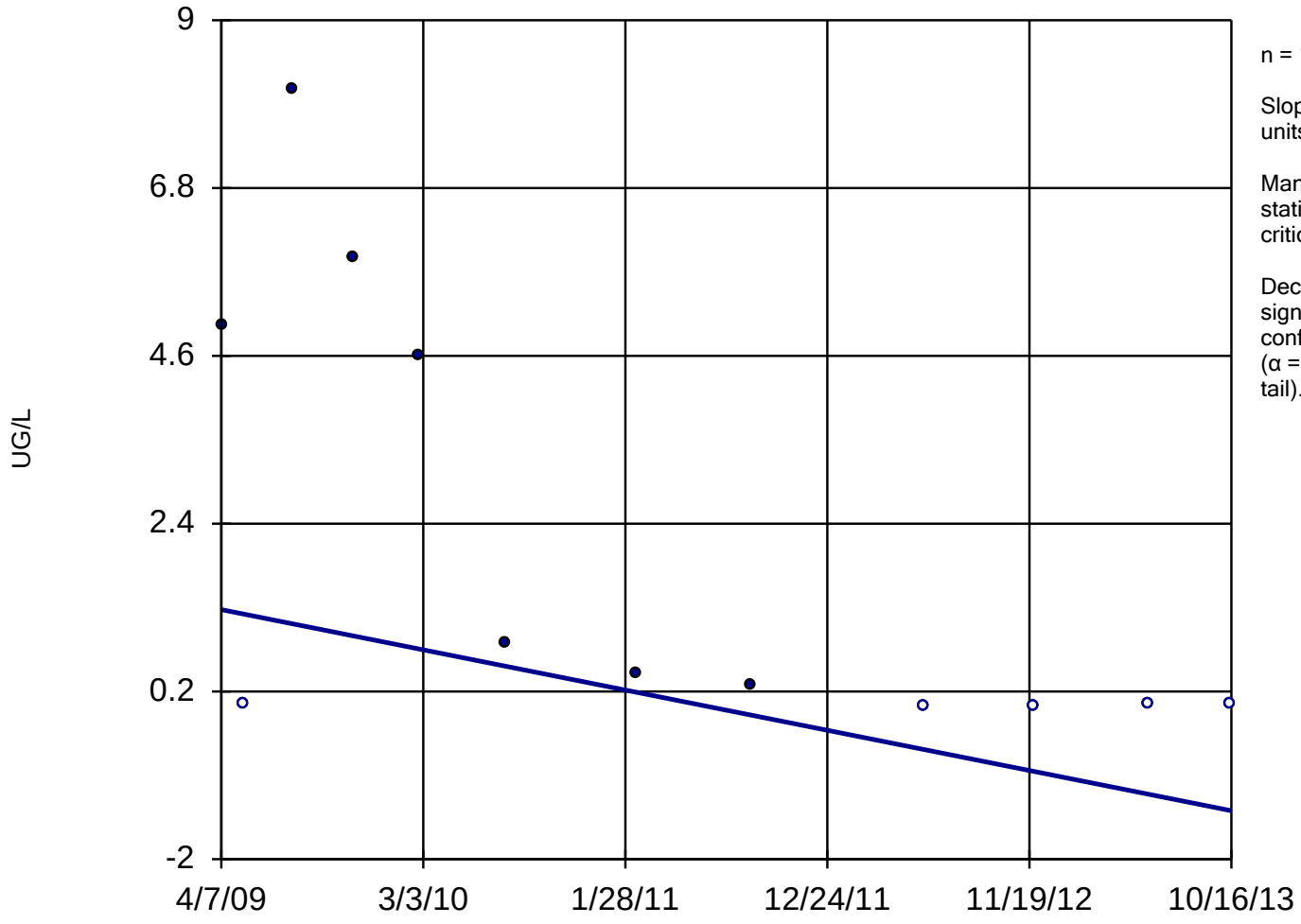
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-121B



n = 12

Slope = -0.5819 units per year.

Mann-Kendall statistic = -38
critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:14 PM

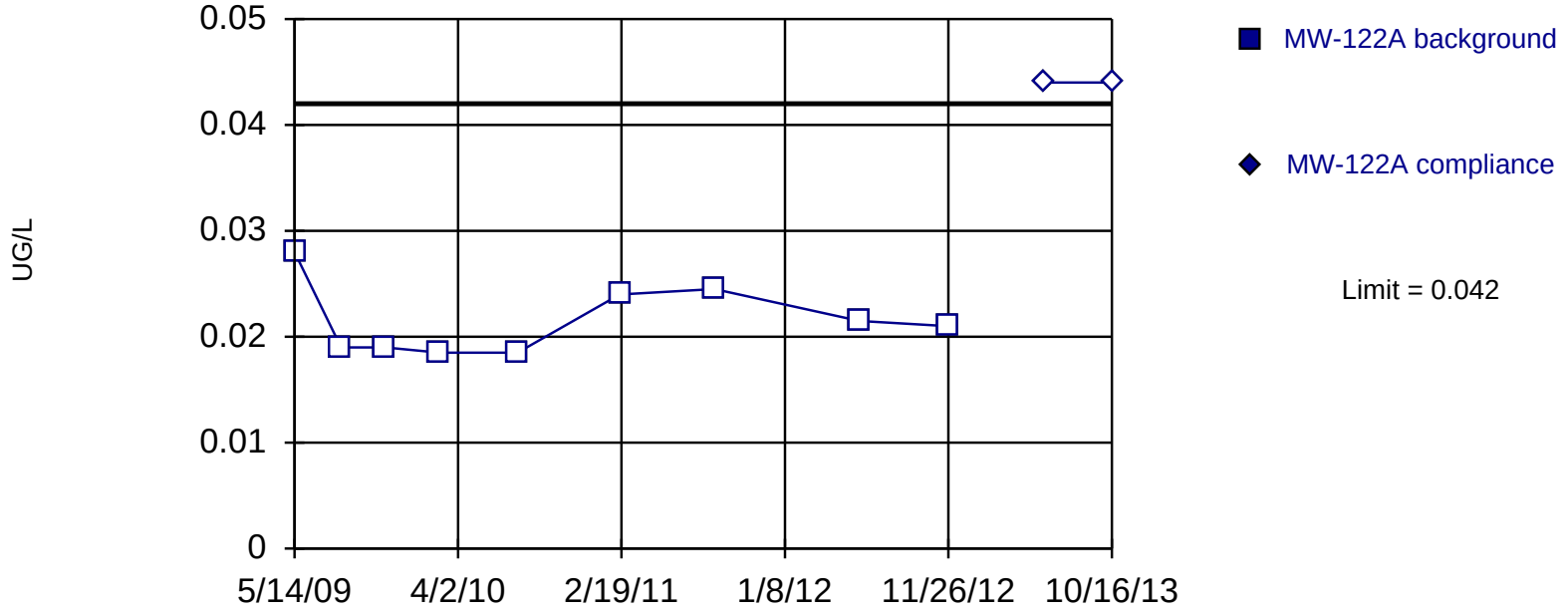
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 9) were censored; limit is most recent reporting limit. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

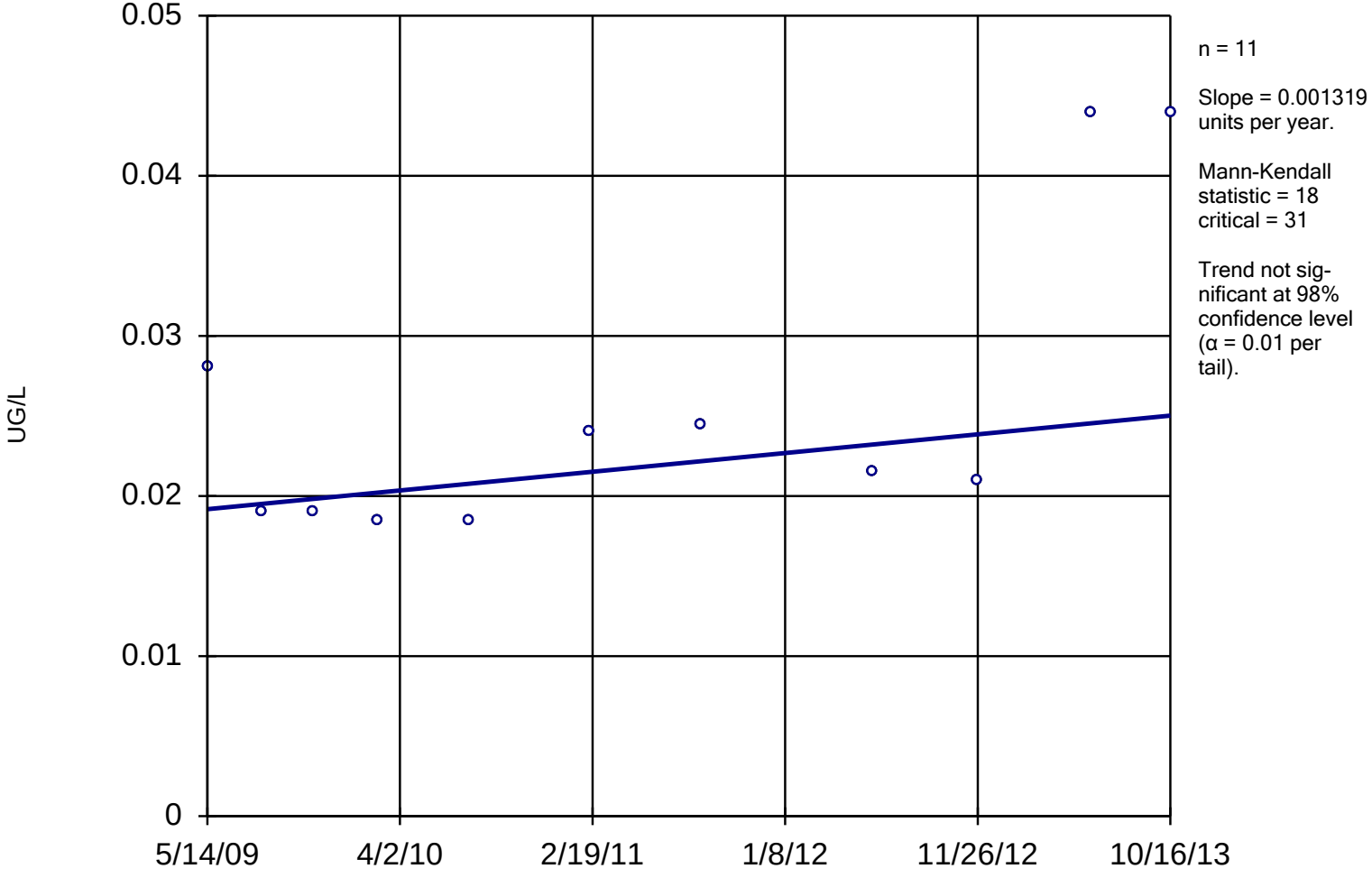
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-122A



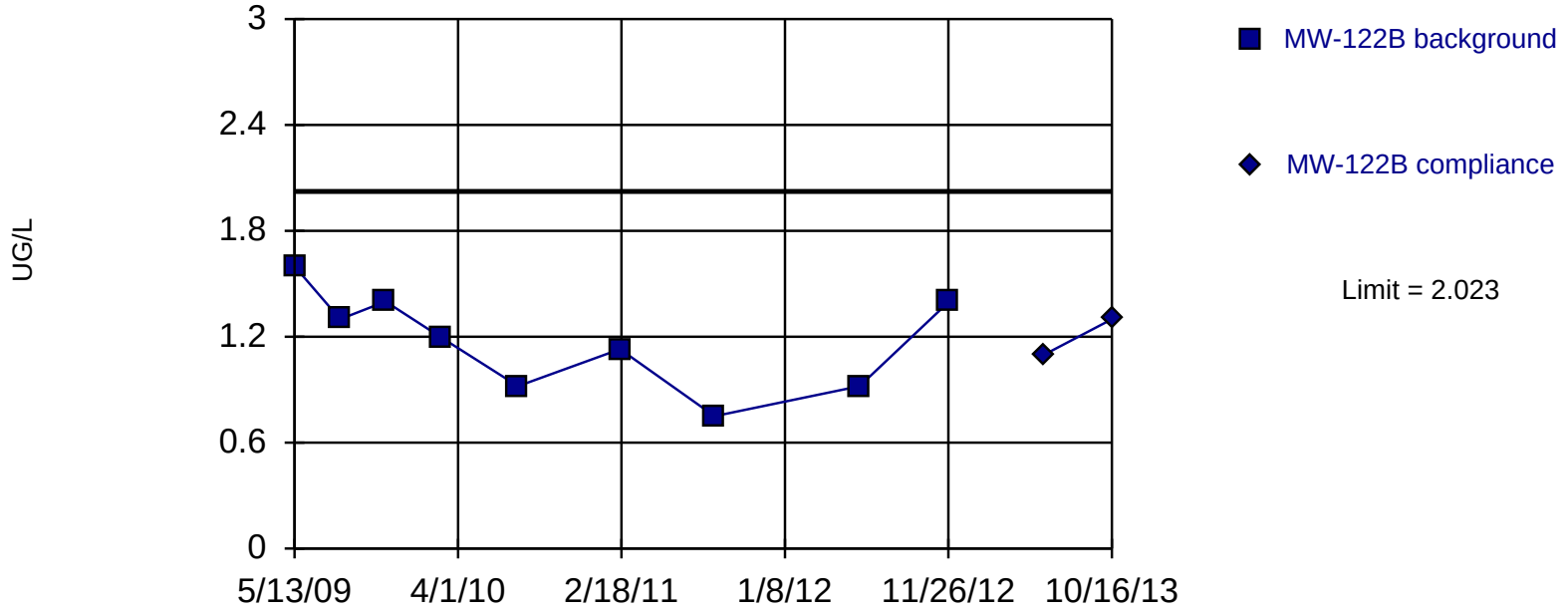
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



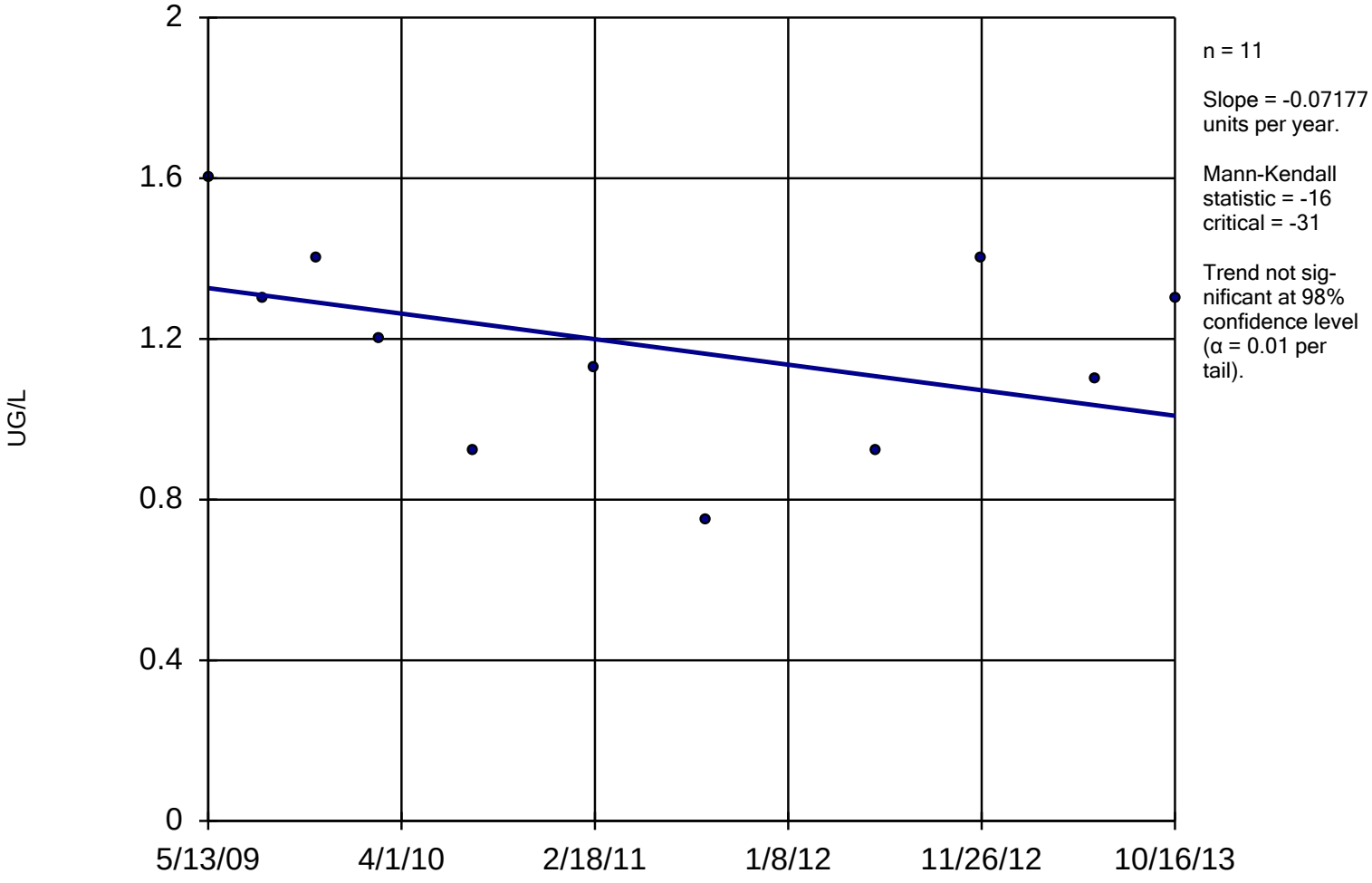
Background Data Summary: Mean=1.18, Std. Dev.=0.2763, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9638, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-122B



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

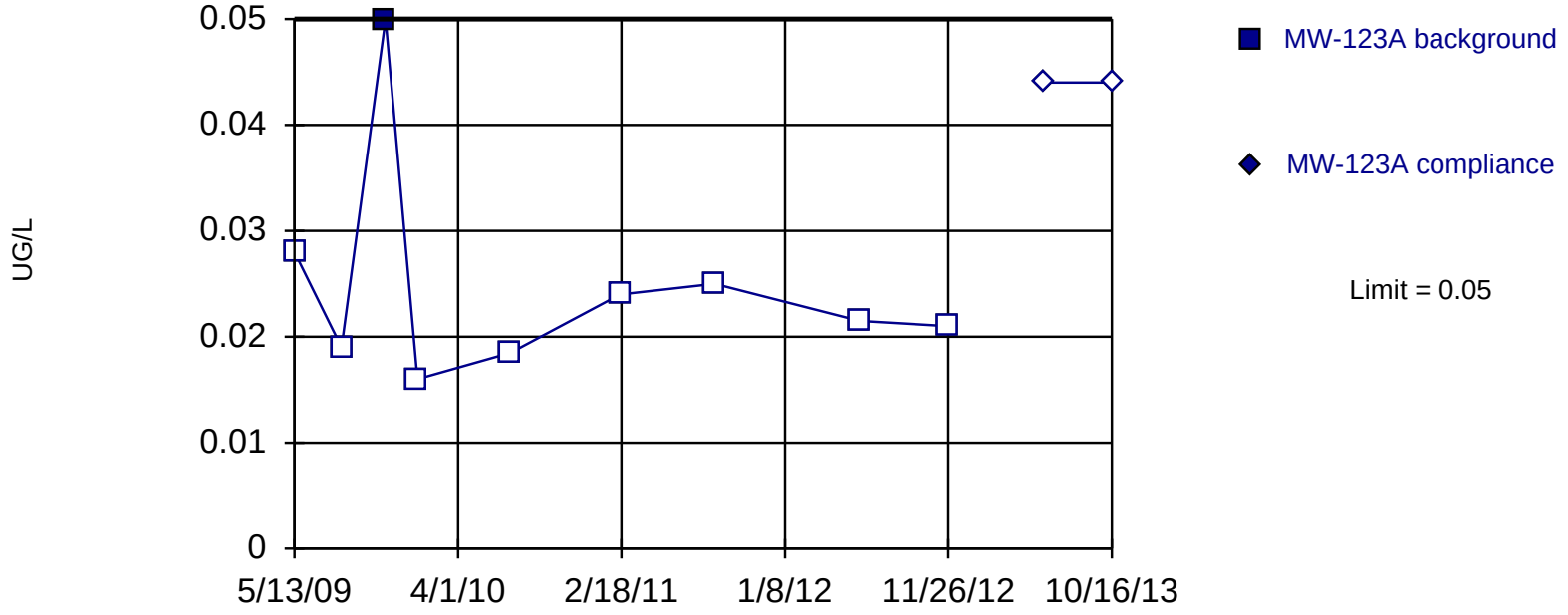
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 9 background values. 88.89% NDs. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

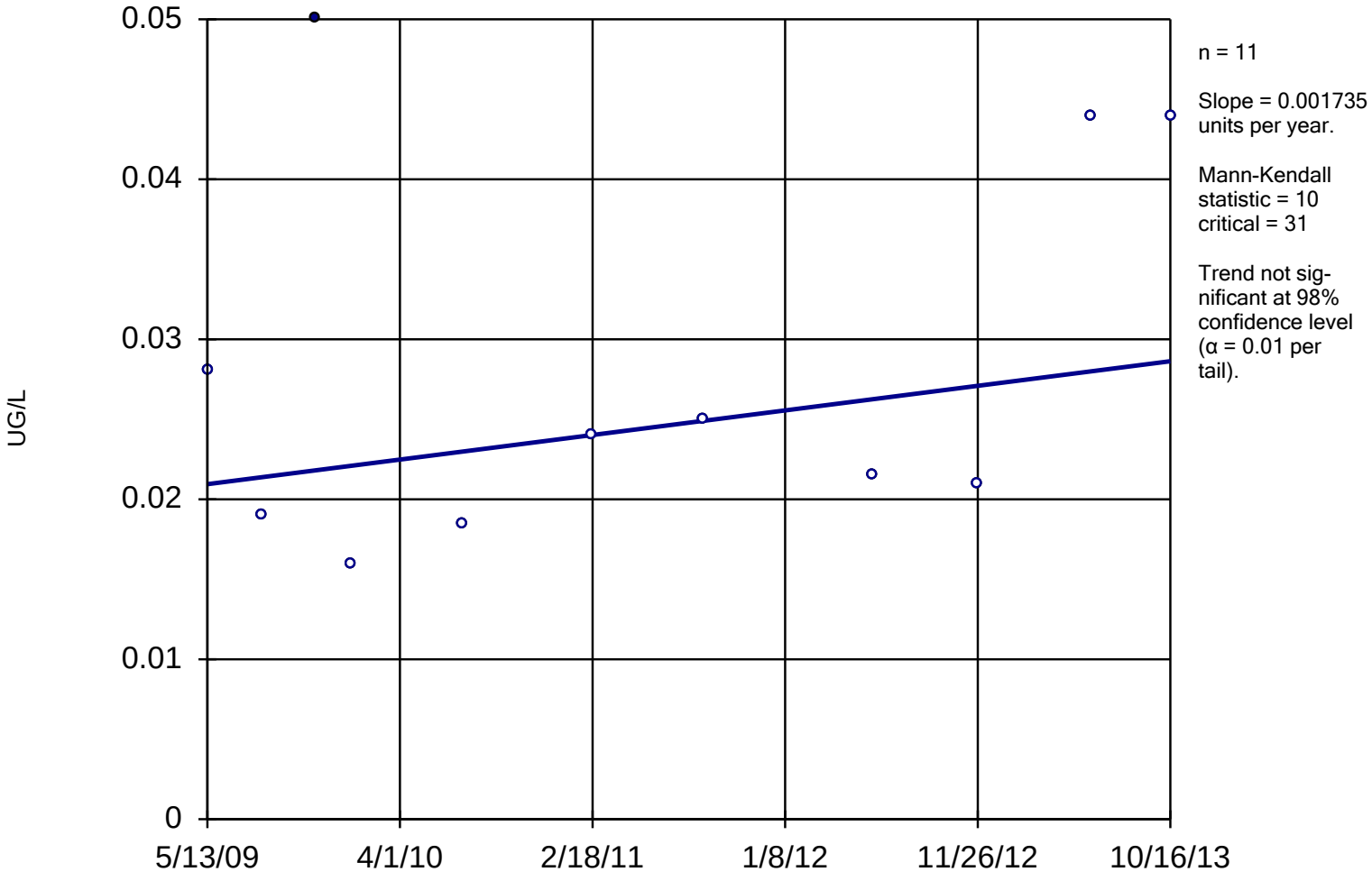
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-123A



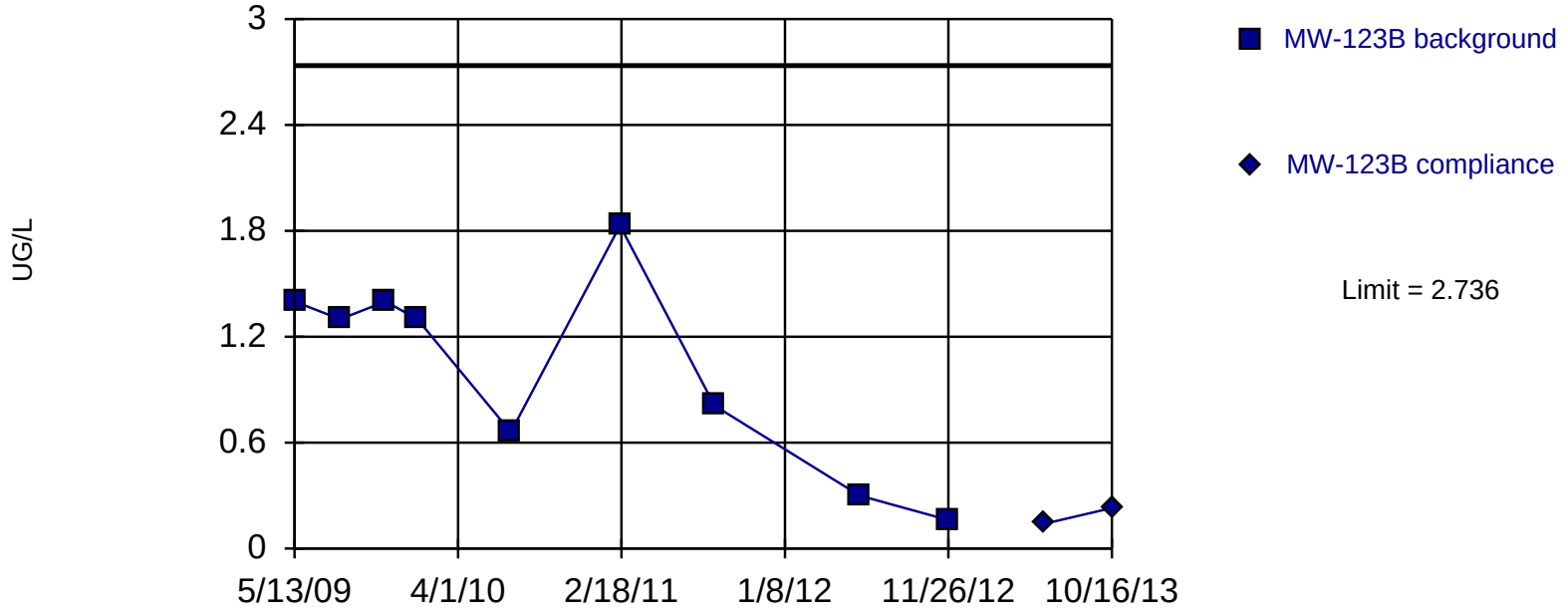
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



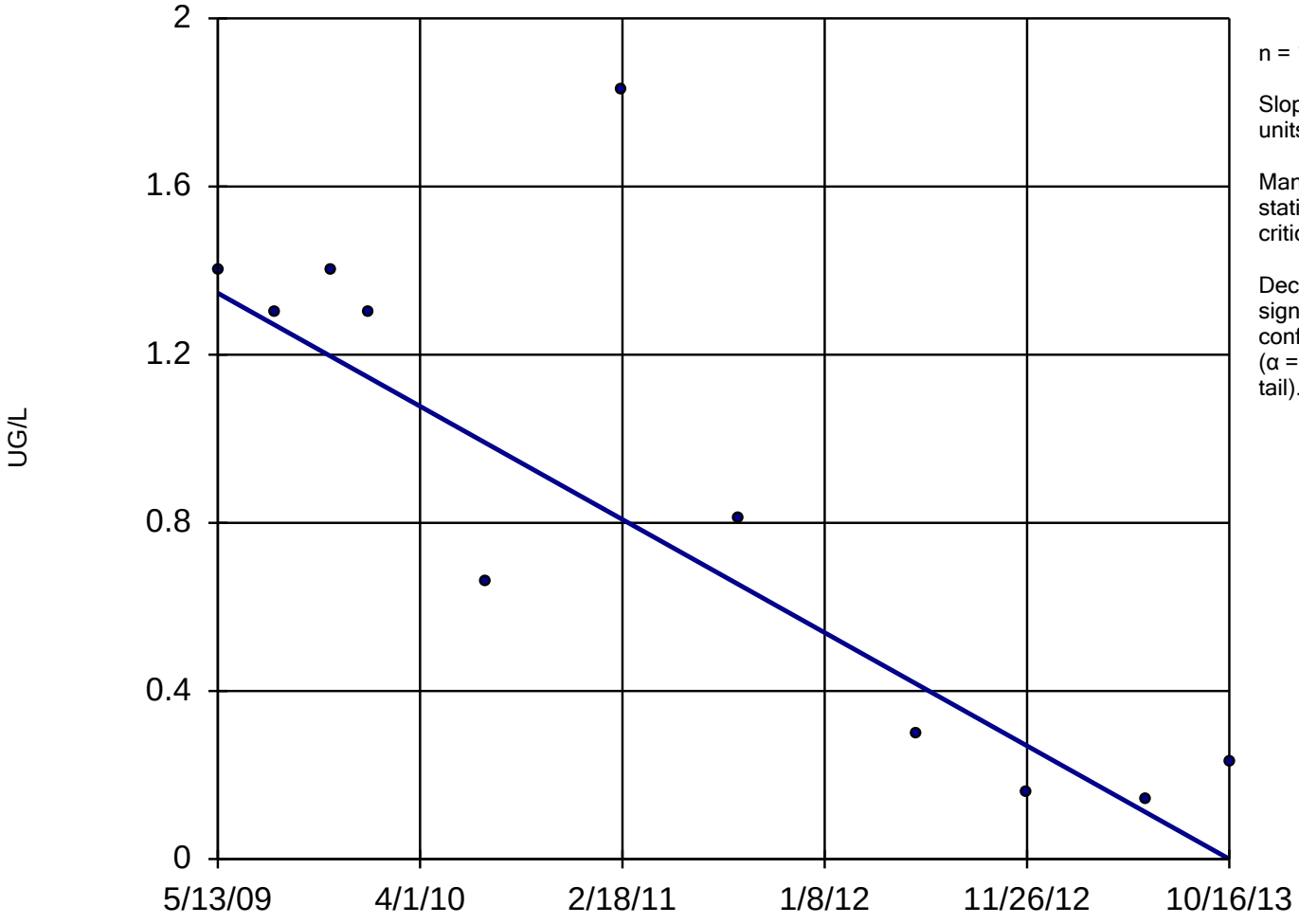
Background Data Summary: Mean=1.018, Std. Dev.=0.5627, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9274, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-123B



n = 11

Slope = -0.3039 units per year.

Mann-Kendall statistic = -35
critical = -31

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

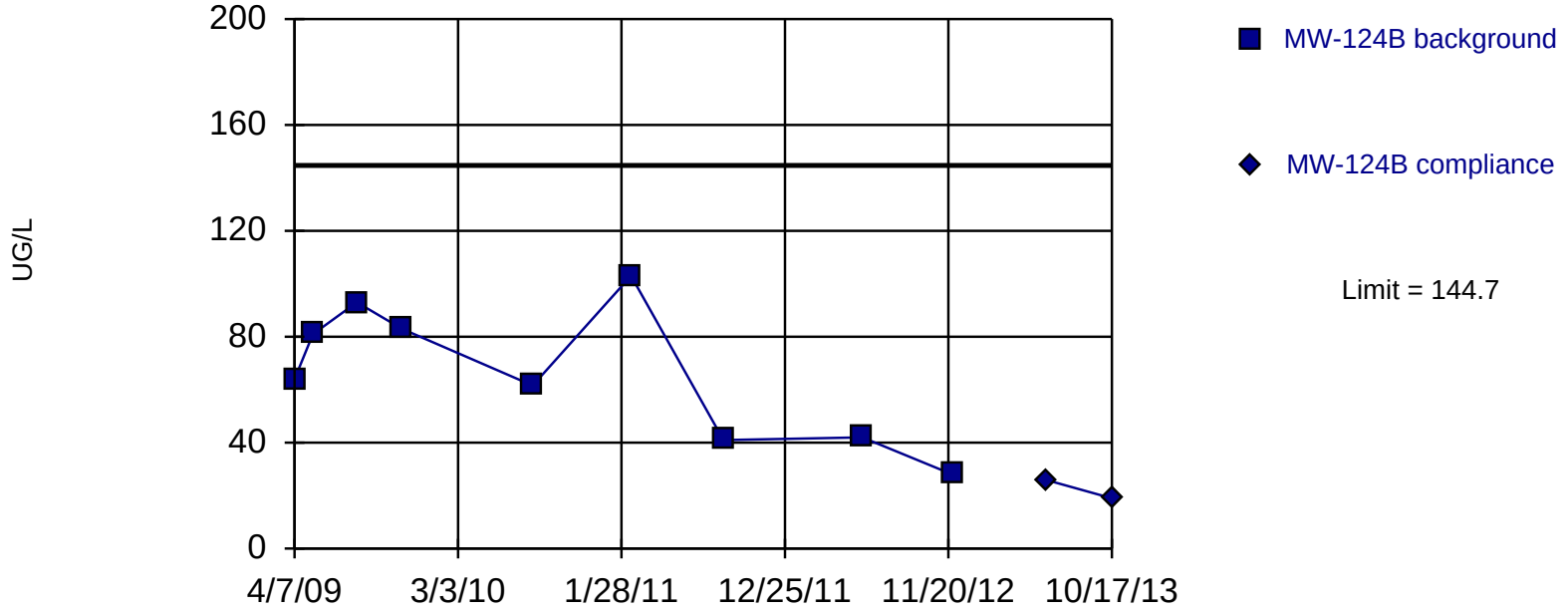
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



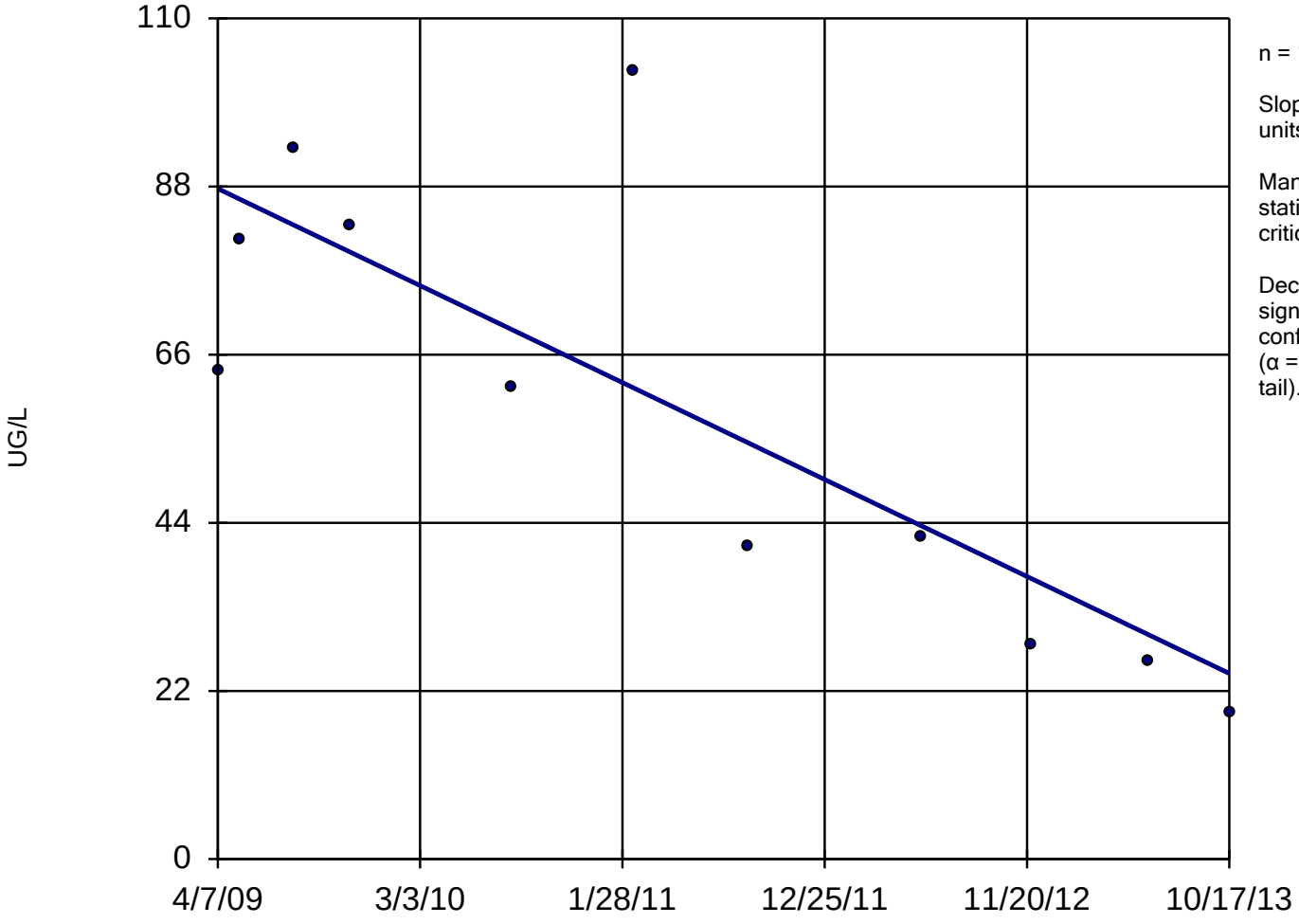
Background Data Summary: Mean=66.29, Std. Dev.=25.69, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9539, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-124B



n = 11

Slope = -14
units per year.

Mann-Kendall
statistic = -33
critical = -31

Decreasing trend
significant at 98%
confidence level
(α = 0.01 per
tail).

Constituent: RDX Analysis Run 1/28/2014 2:14 PM

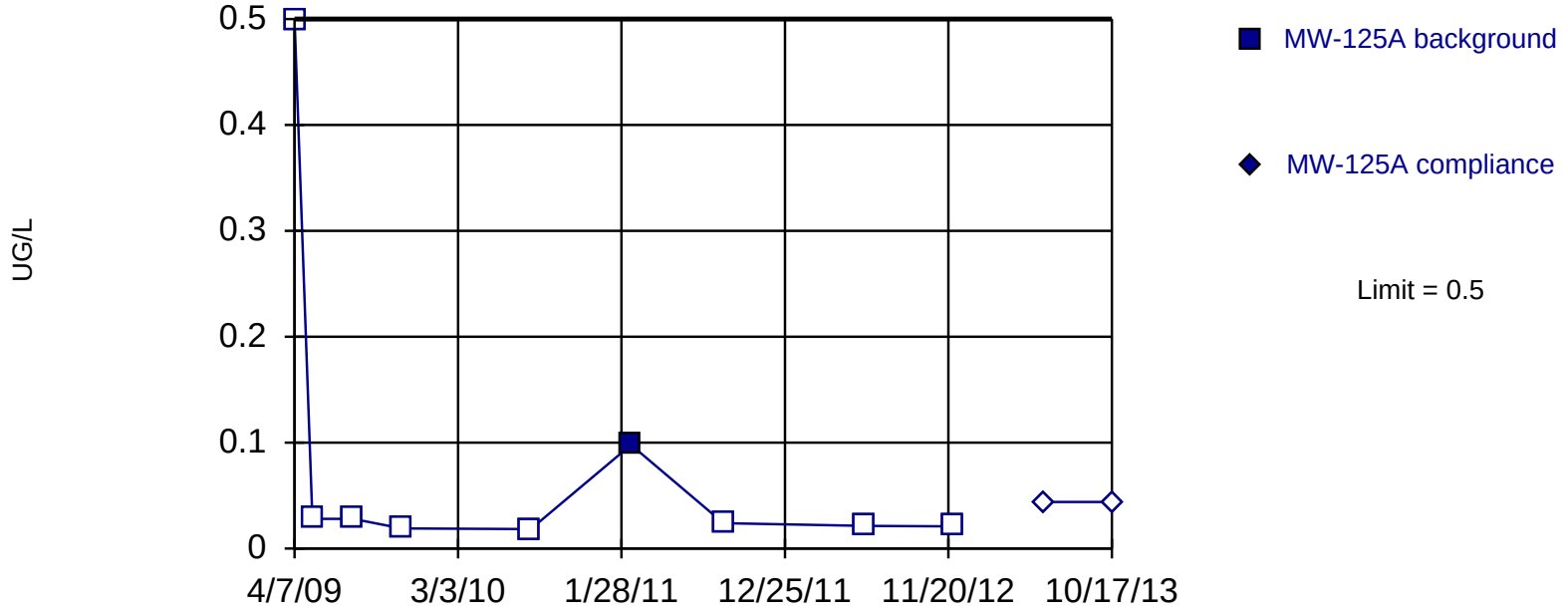
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 9 background values. 88.89% NDs. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

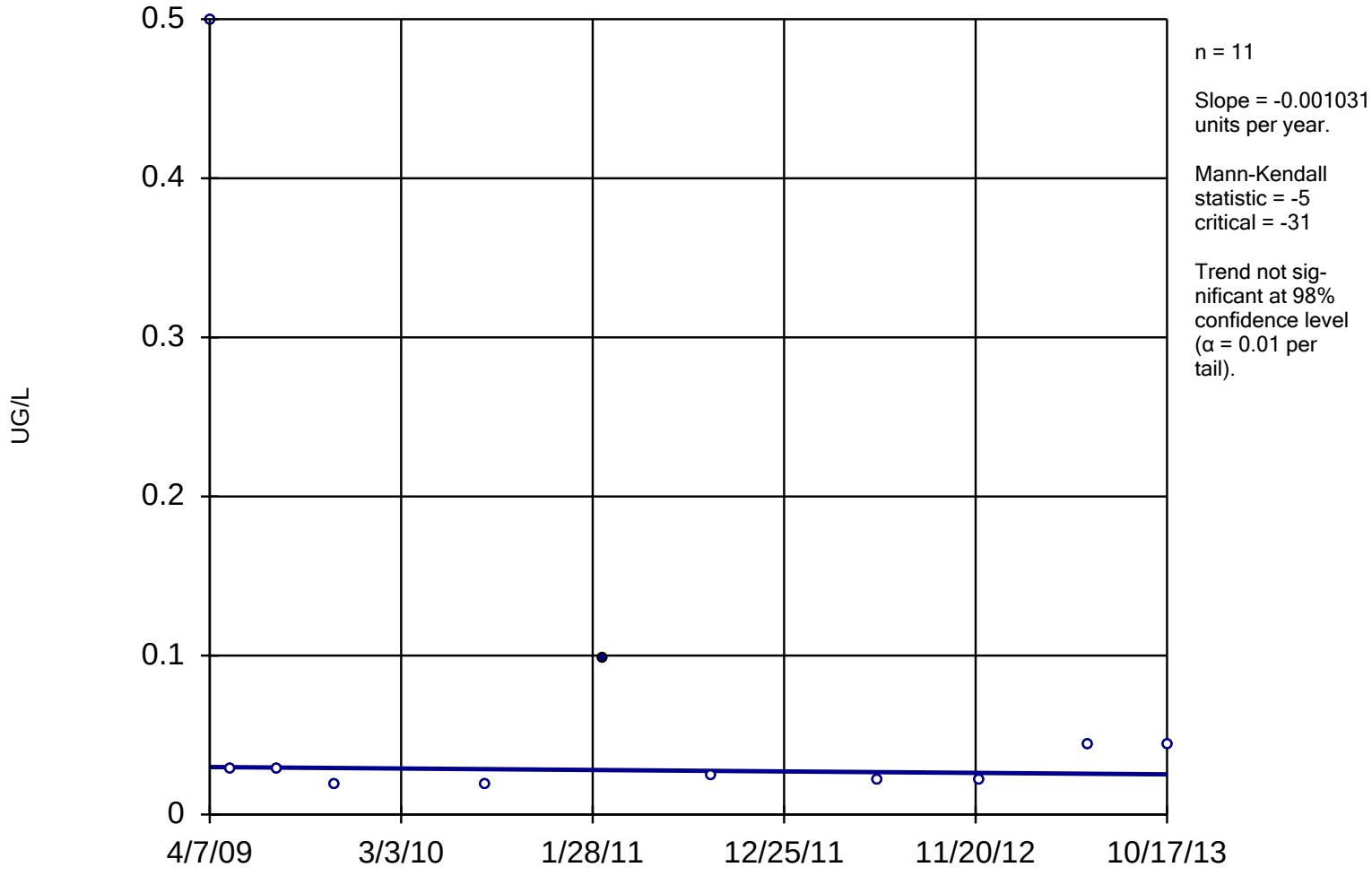
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-125A



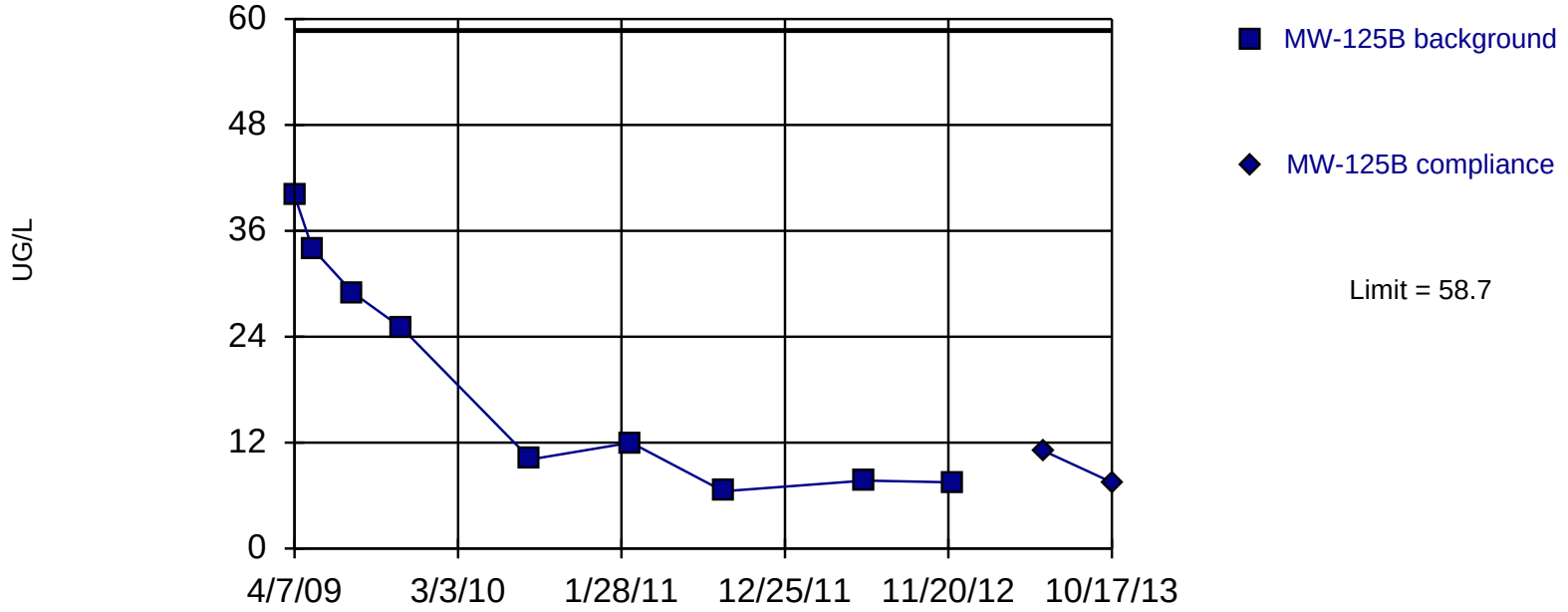
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



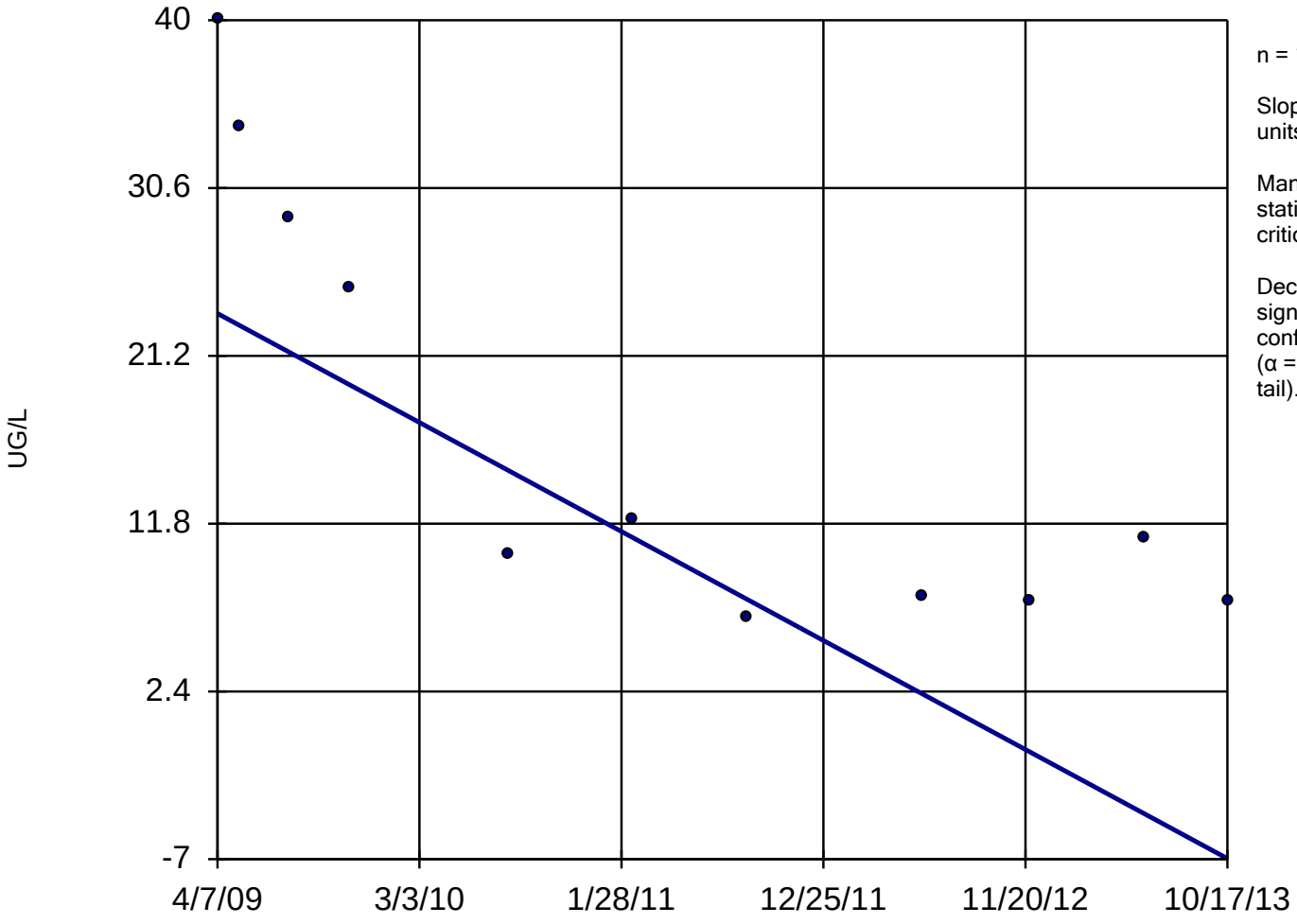
Background Data Summary: Mean=19.09, Std. Dev.=12.97, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8557, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-125B



n = 11

Slope = -6.739 units per year.

Mann-Kendall statistic = -38
critical = -31

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:14 PM

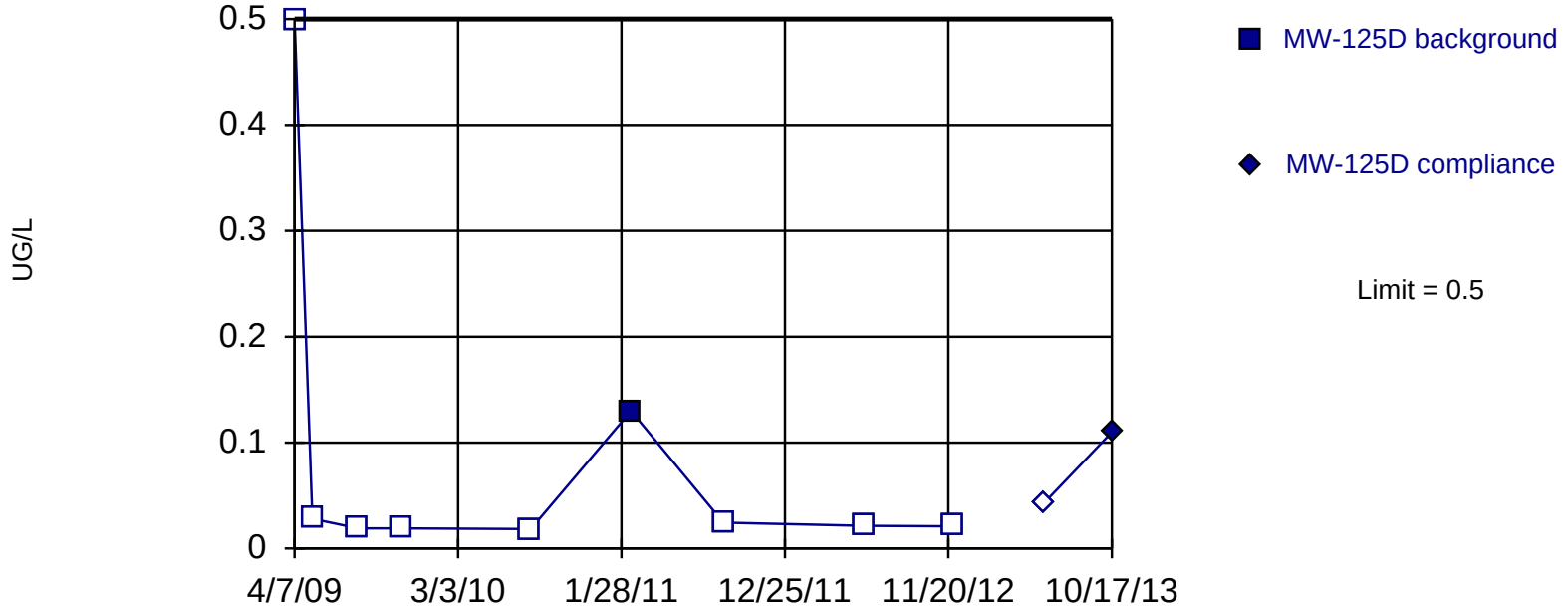
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 9 background values. 88.89% NDs. Report alpha = 0.1. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

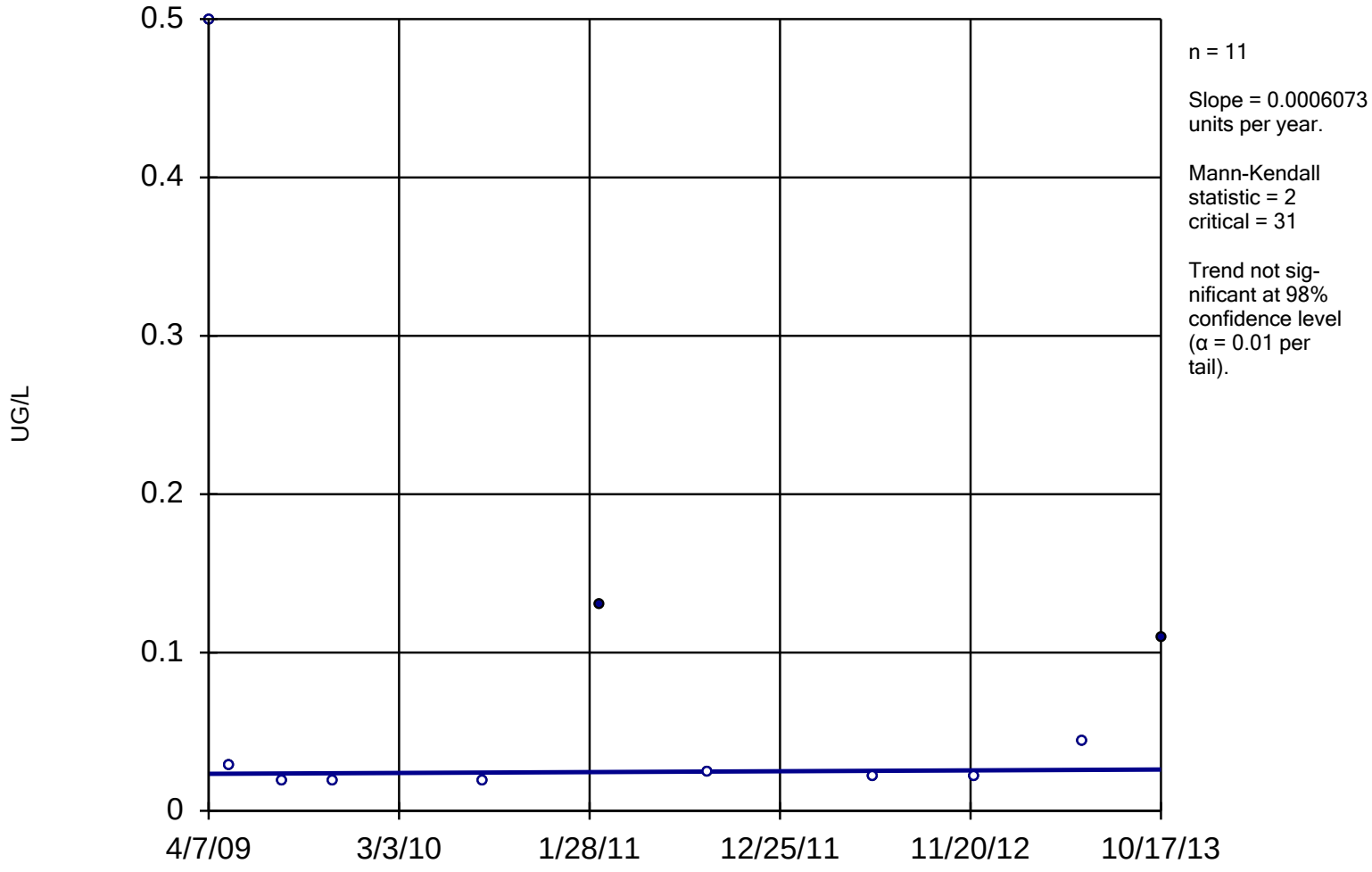
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-125D



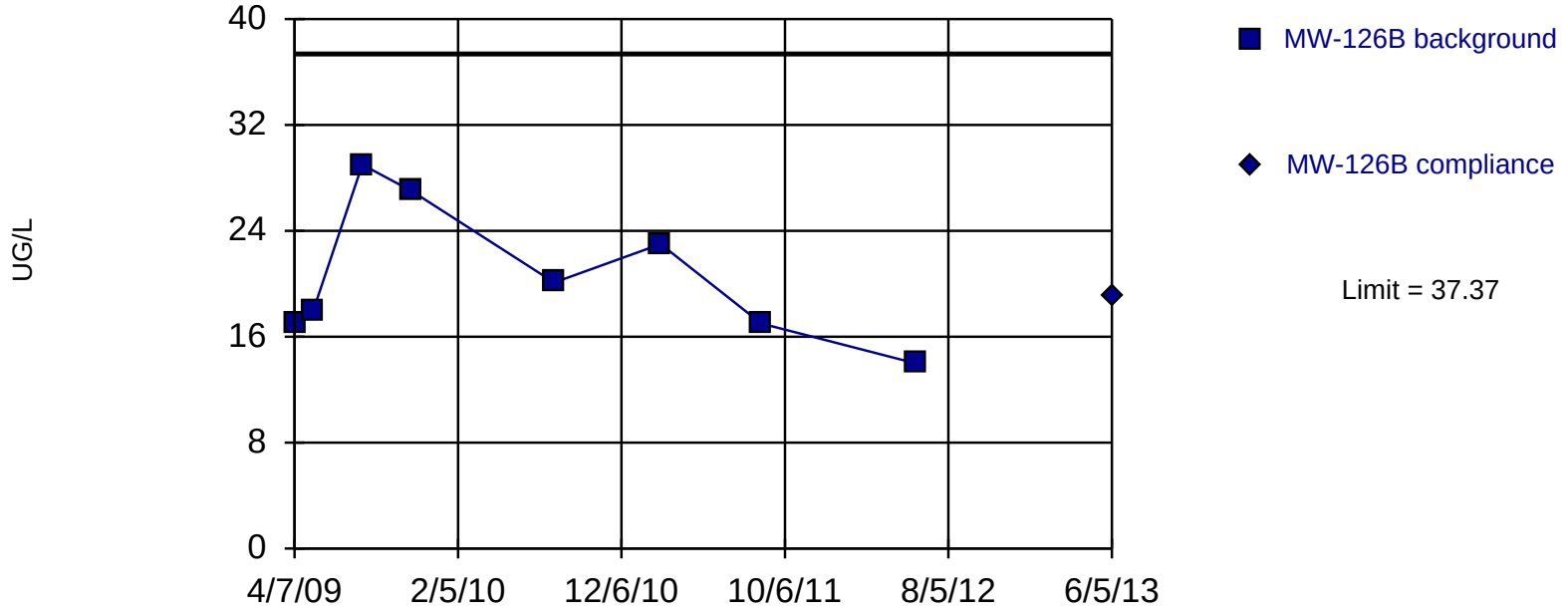
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



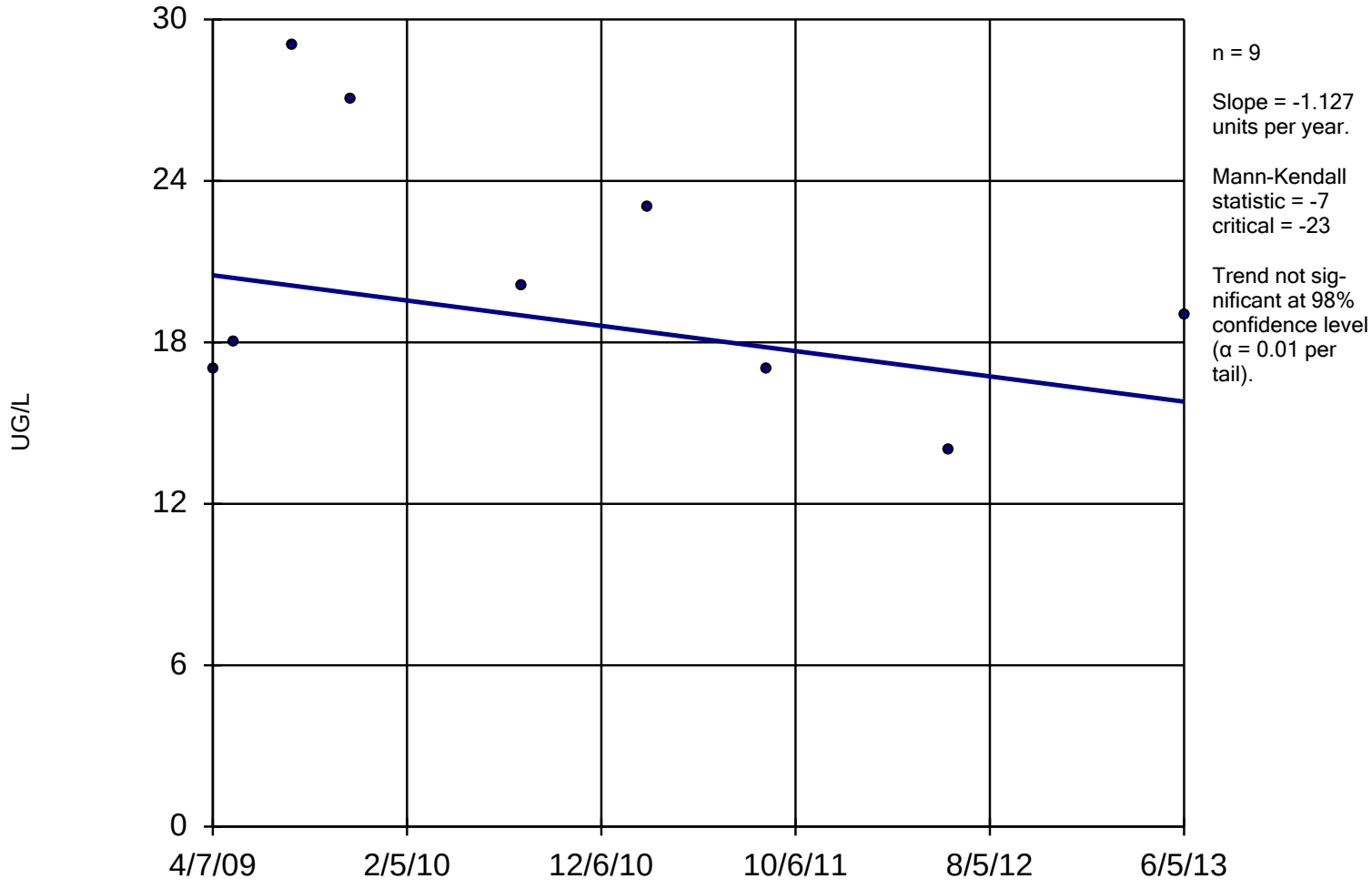
Background Data Summary: Mean=20.64, Std. Dev.=5.261, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9275, critical = 0.818. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-126B



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

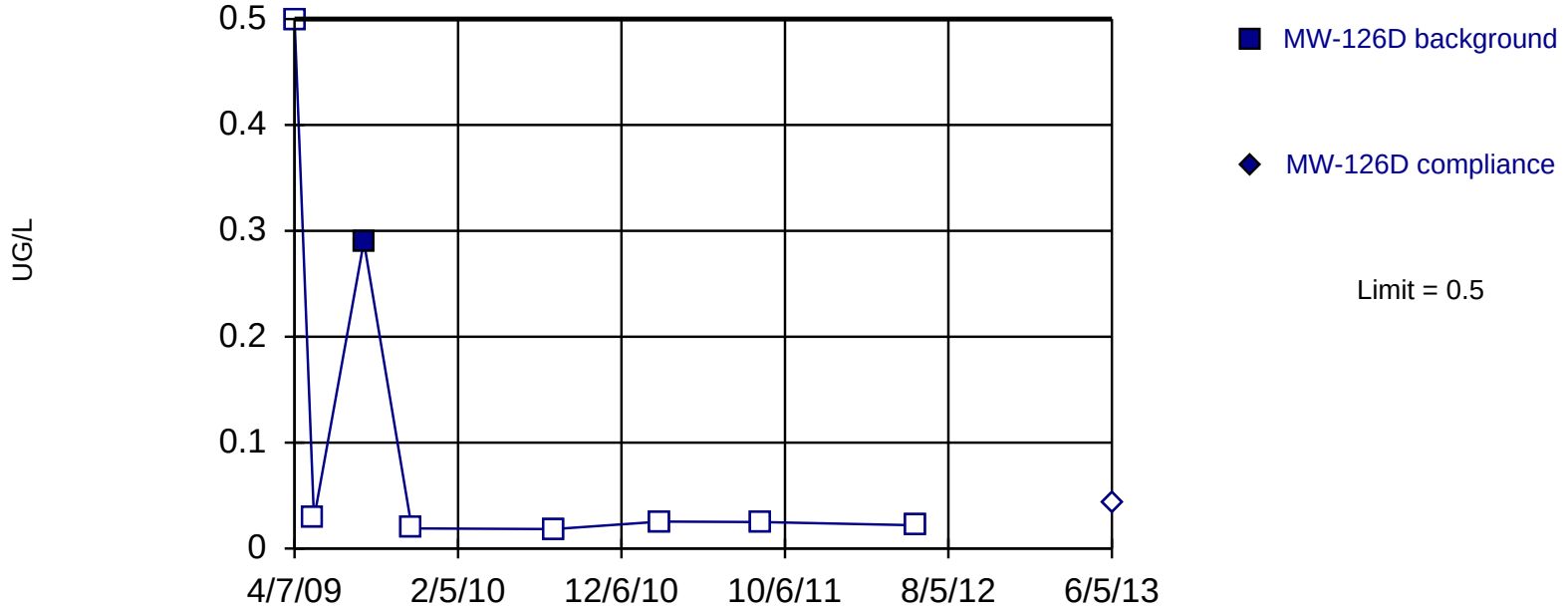
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

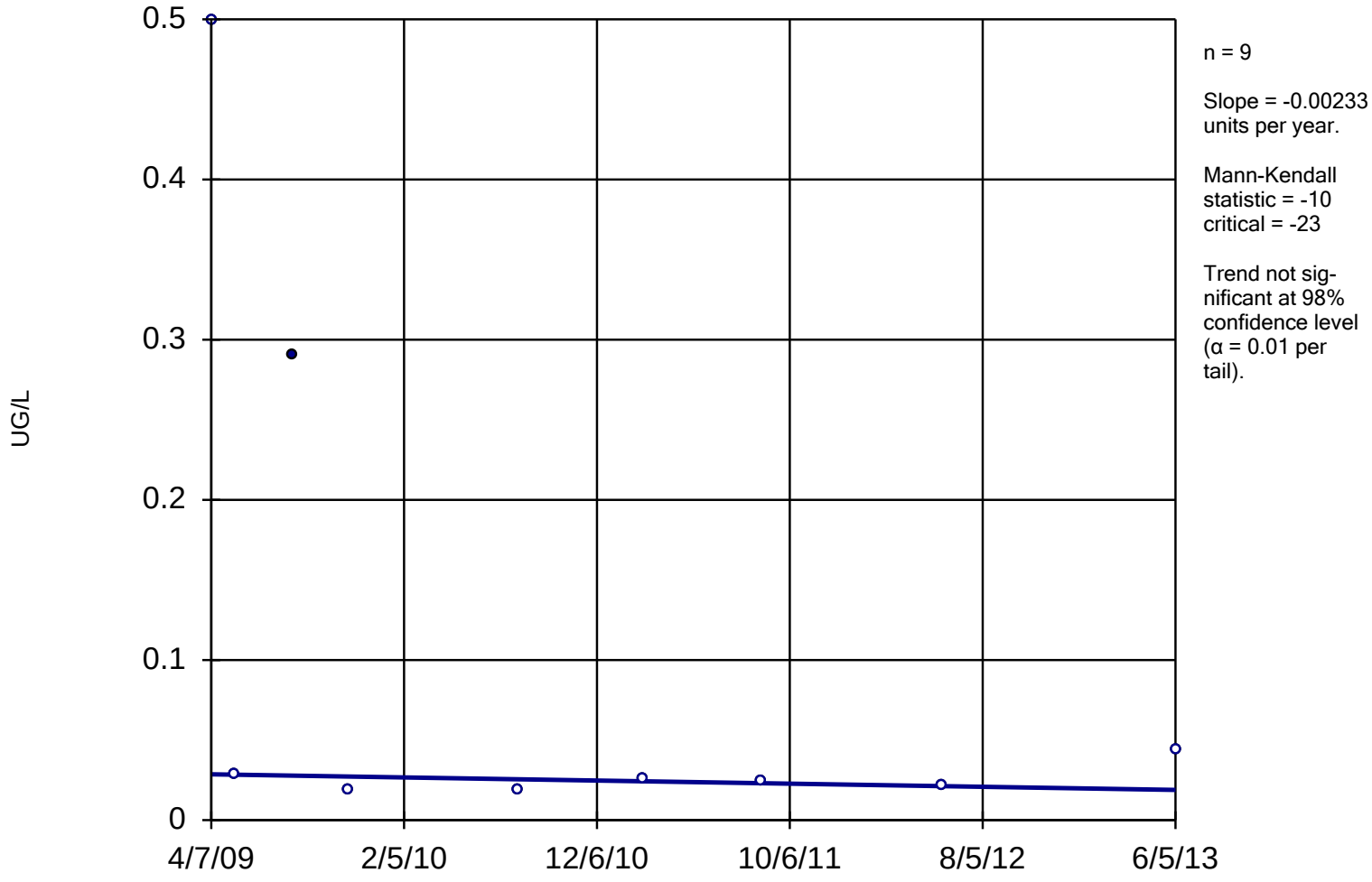
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-126D



Constituent: RDX Analysis Run 1/28/2014 2:14 PM

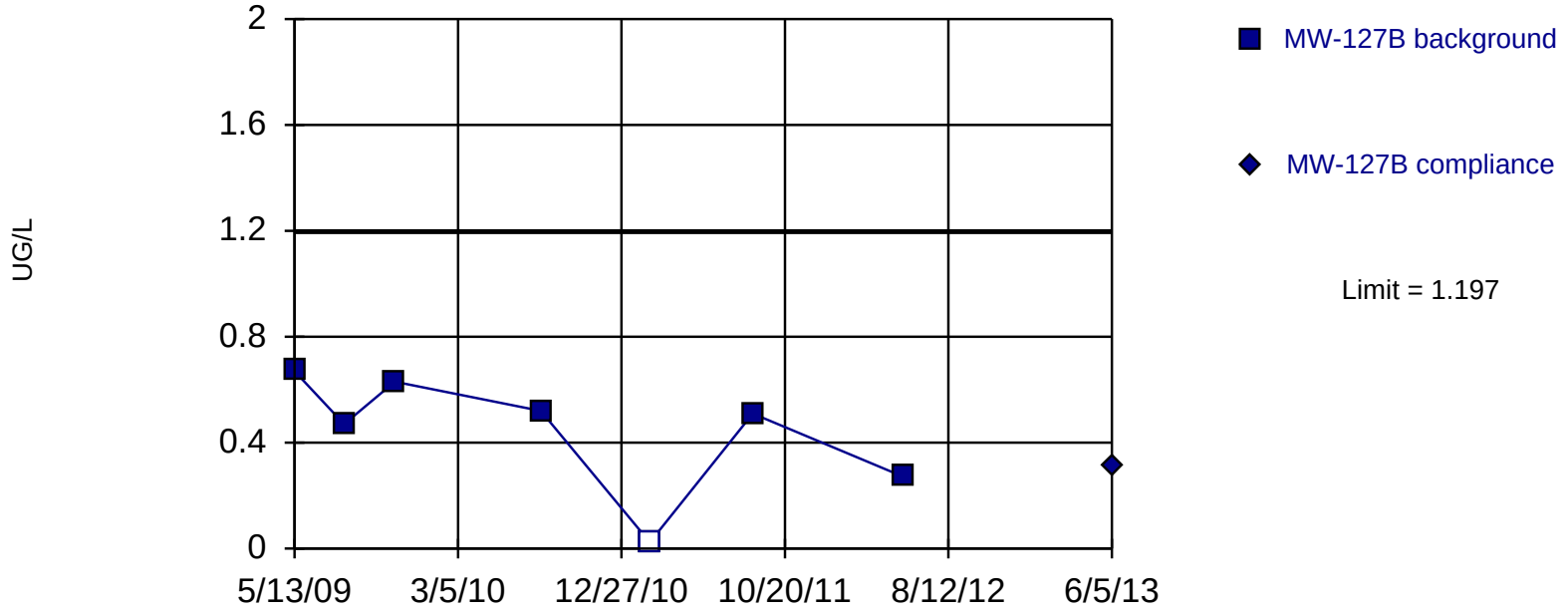
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.442, Std. Dev.=0.2248, n=7, 14.29% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8878, critical = 0.803. Report alpha = 0.01. Most recent point compared to limit.

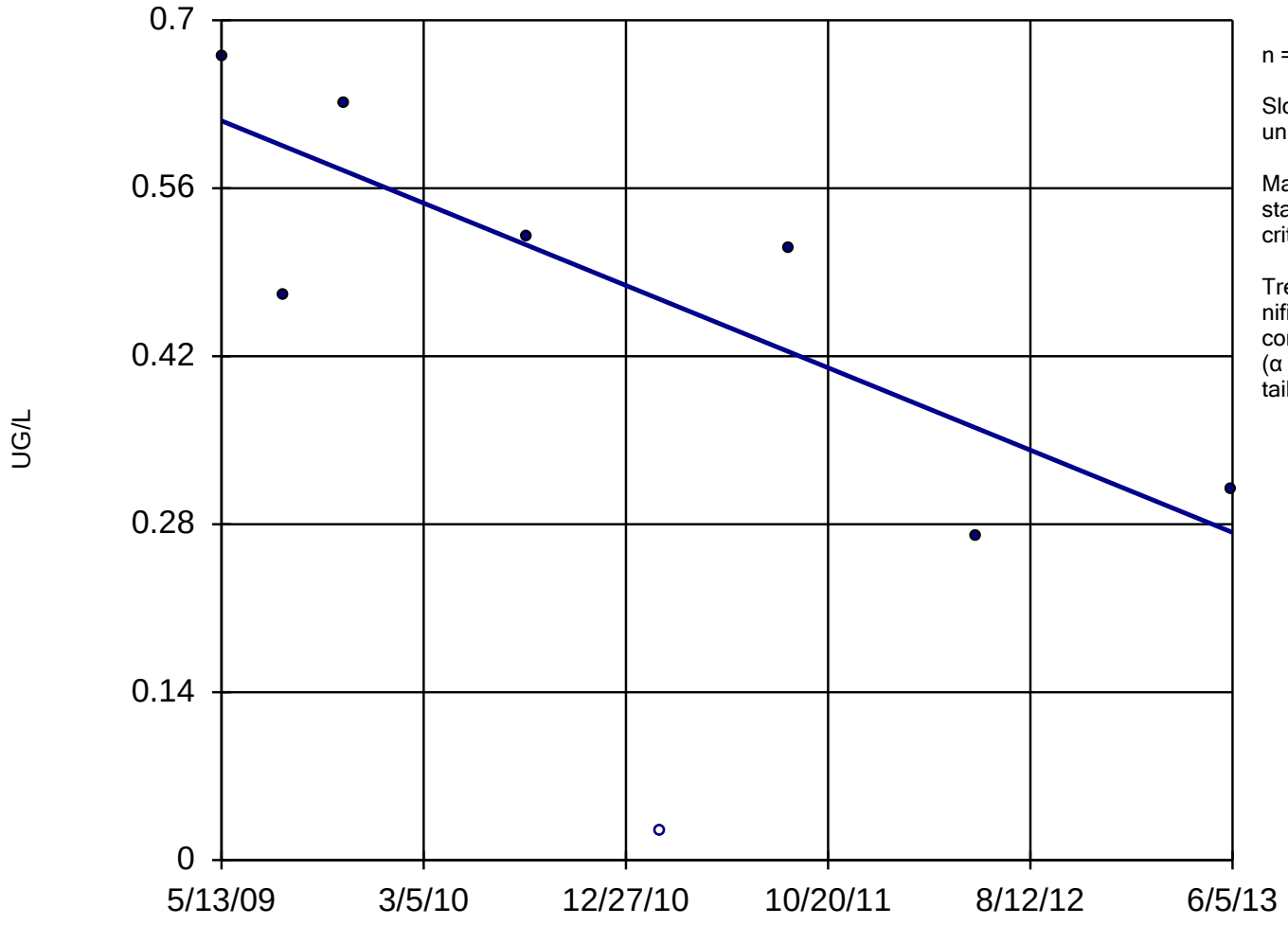
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-127B



n = 8

Slope = -0.08438 units per year.

Mann-Kendall statistic = -14
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

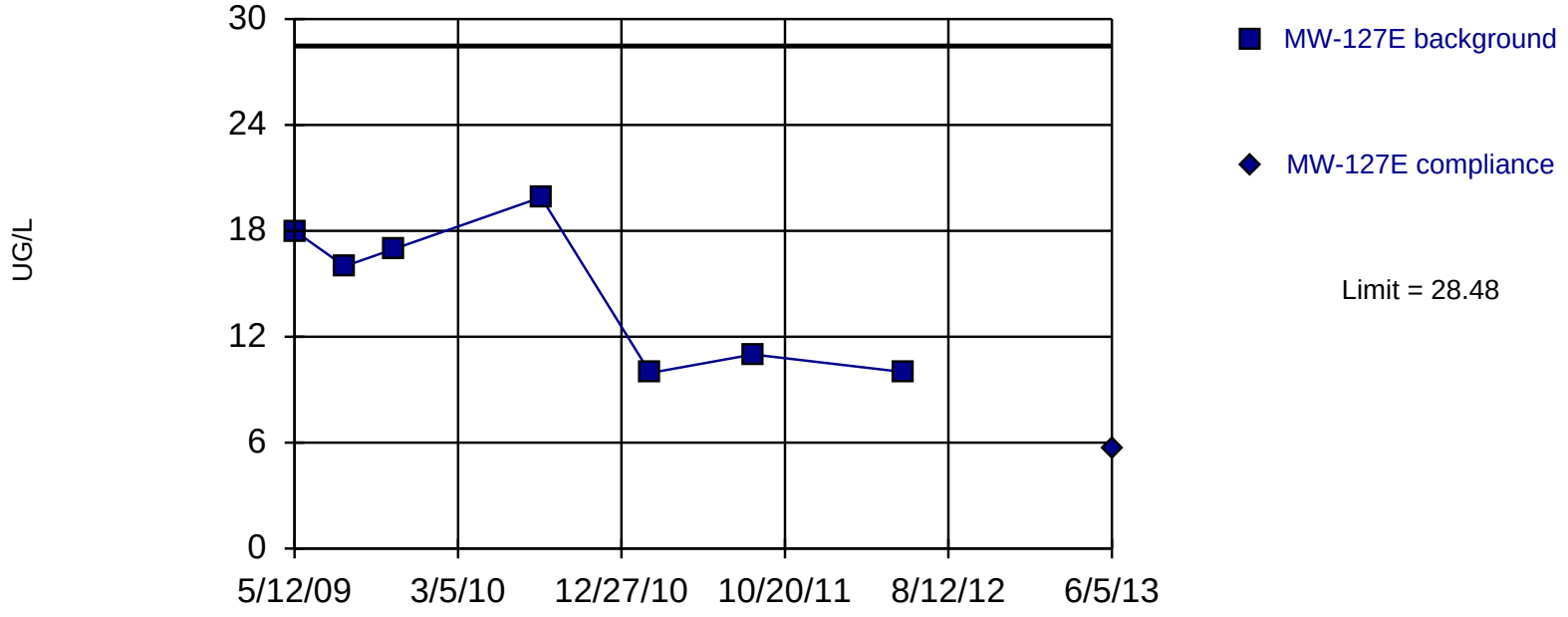
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



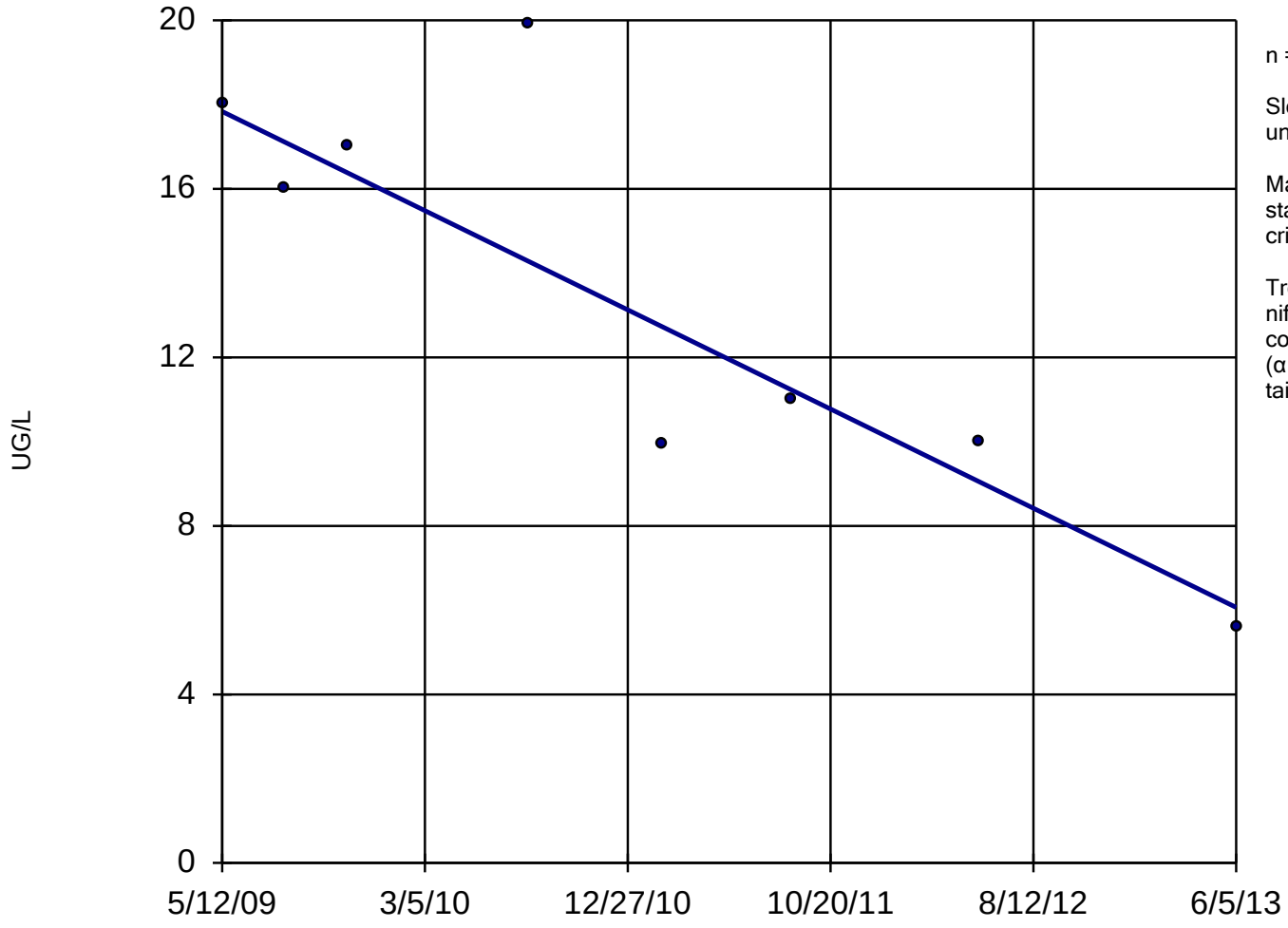
Background Data Summary: Mean=14.55, Std. Dev.=4.145, n=7. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8694, critical = 0.803. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-127E



n = 8

Slope = -2.893 units per year.

Mann-Kendall statistic = -16
critical = -20

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:14 PM

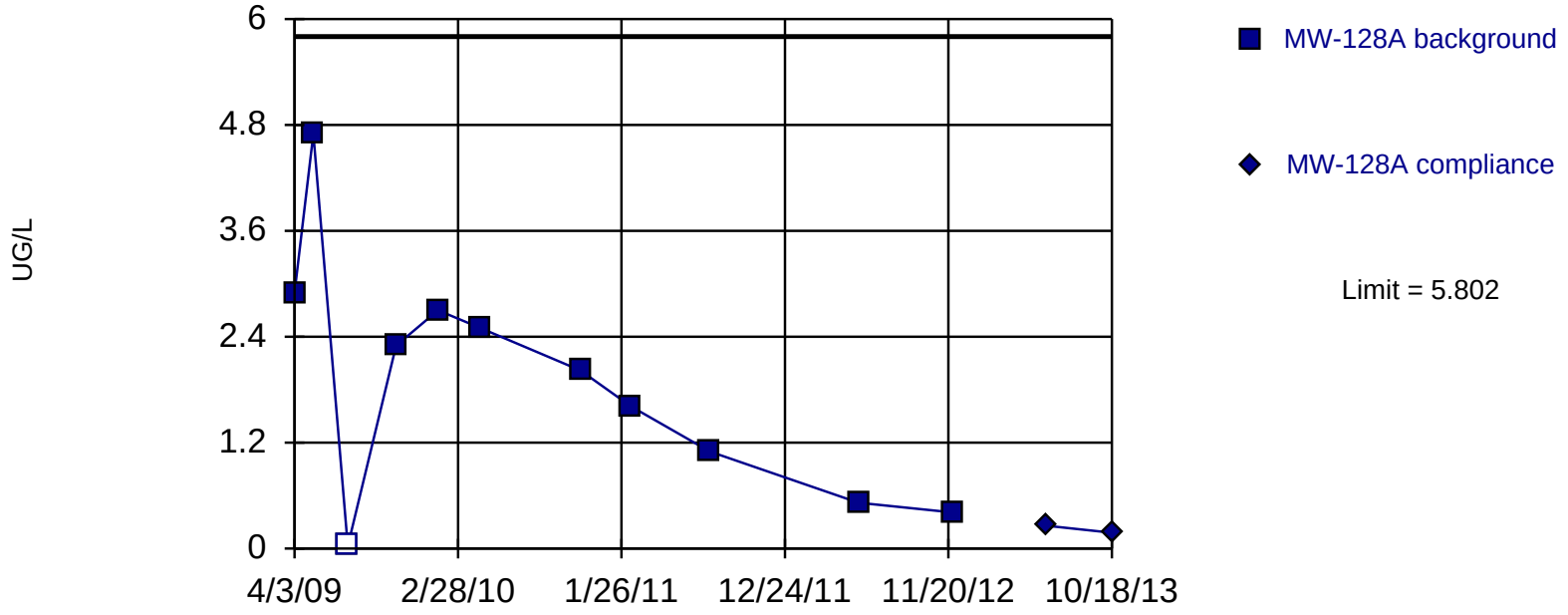
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=1.89, Std. Dev.=1.355, n=11, 9.091% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9527, critical = 0.85. Report alpha = 0.01. Most recent point compared to limit.

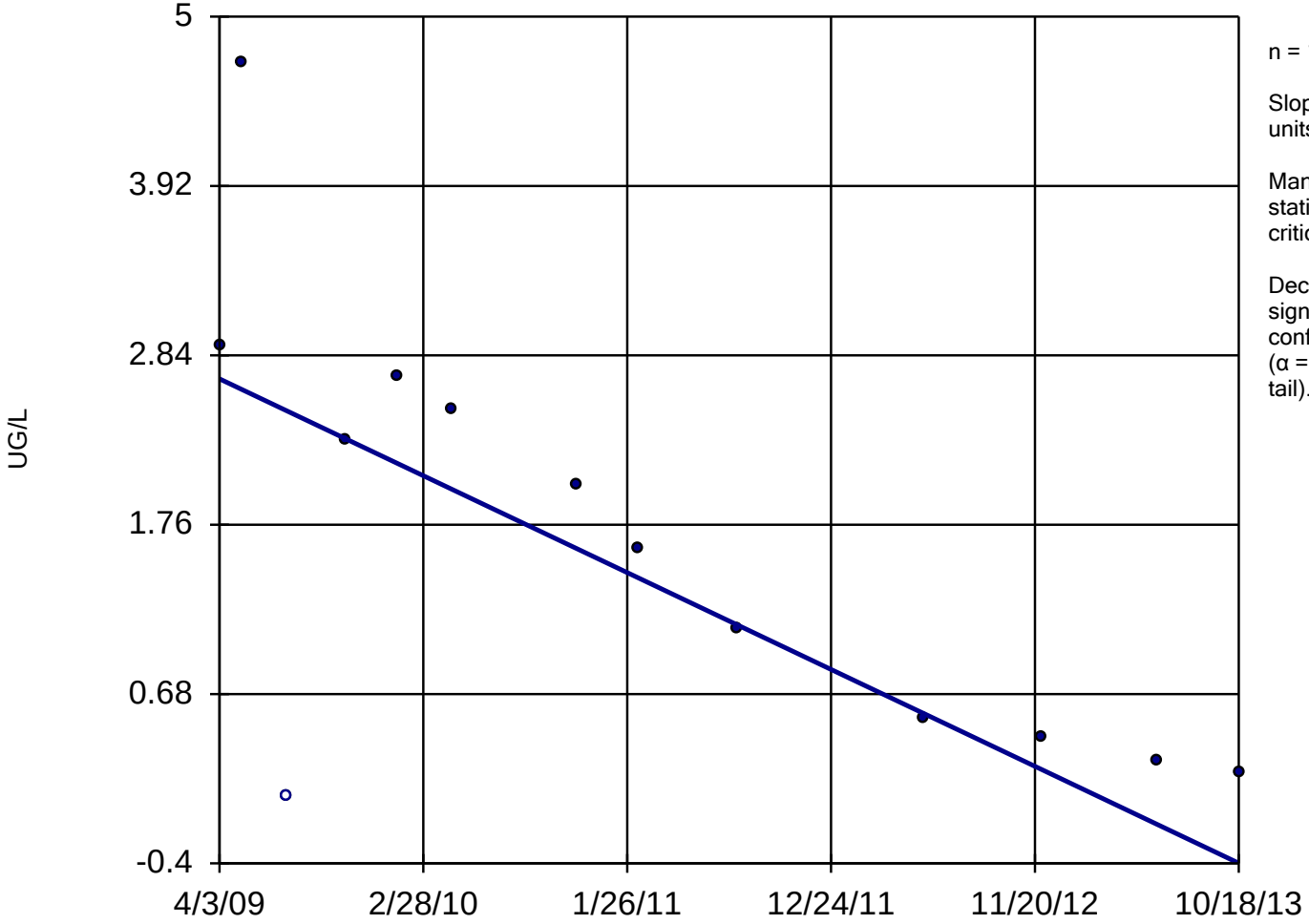
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-128A



n = 13

Slope = -0.6794 units per year.

Mann-Kendall statistic = -52
critical = -39

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

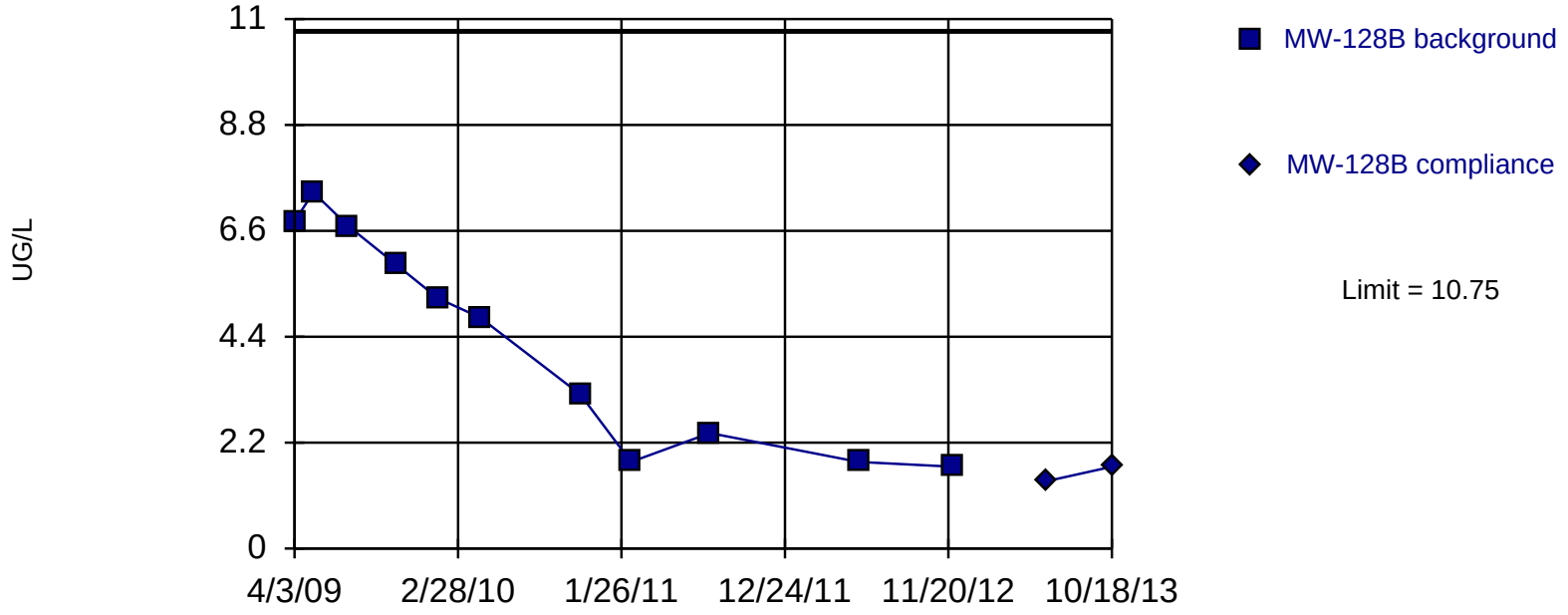
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



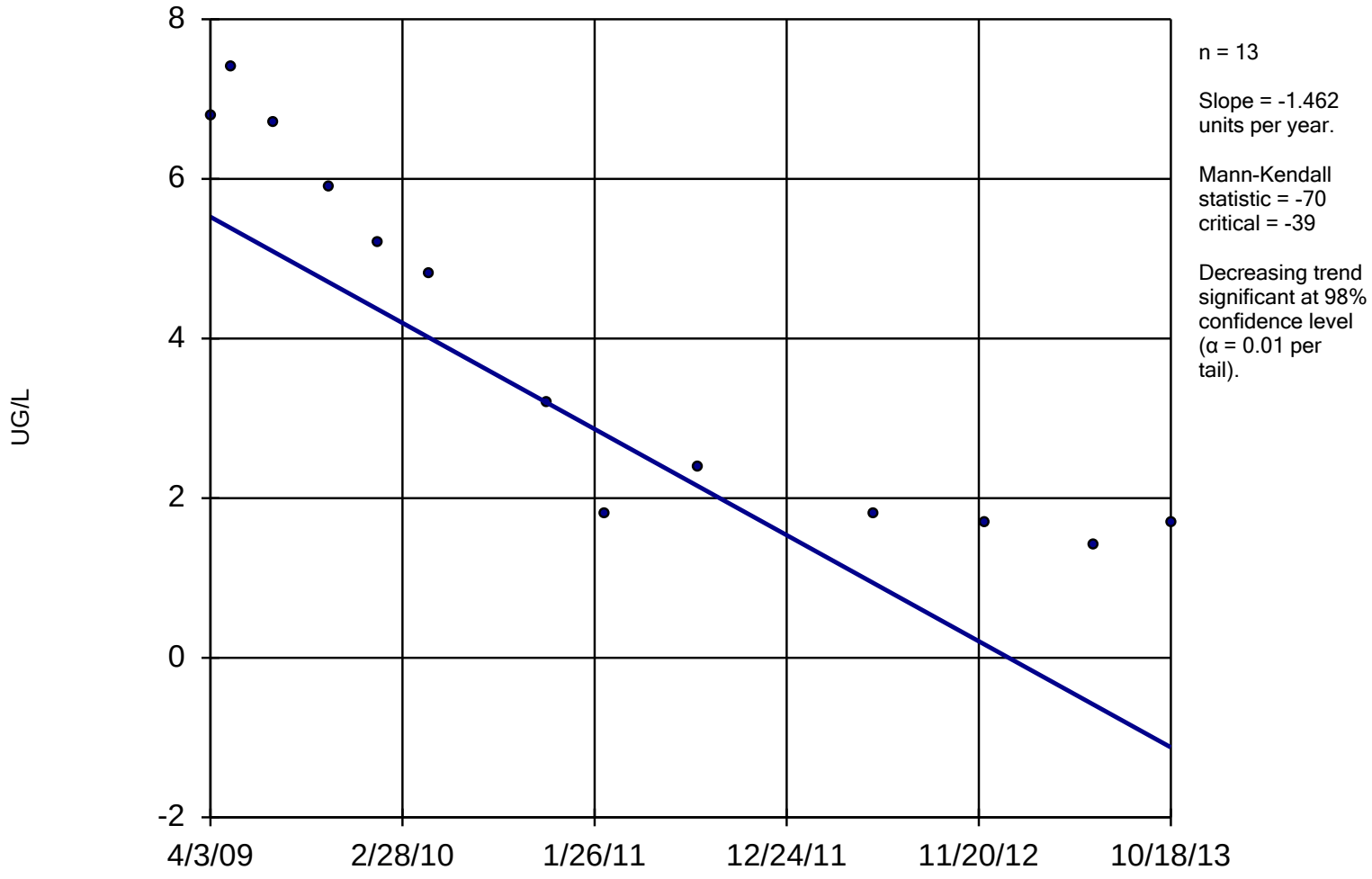
Background Data Summary: Mean=4.336, Std. Dev.=2.22, n=11. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8826, critical = 0.85. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-128B



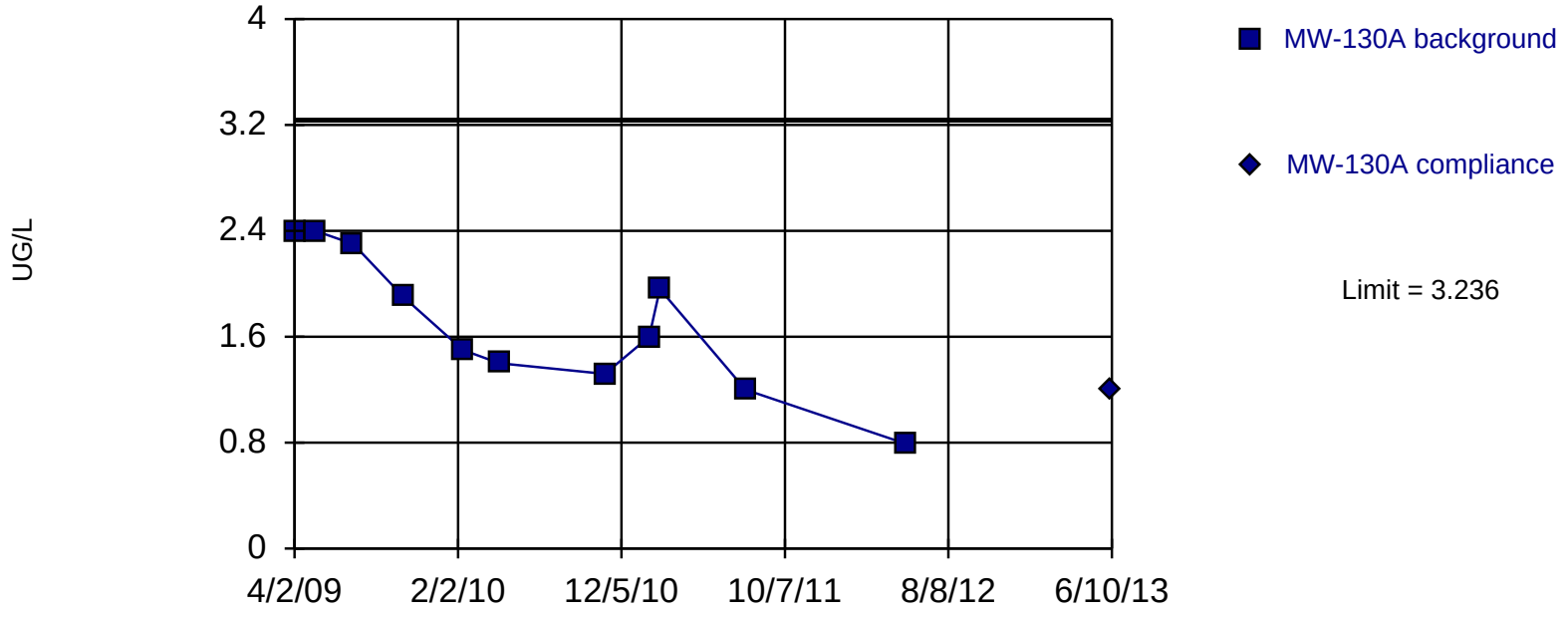
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



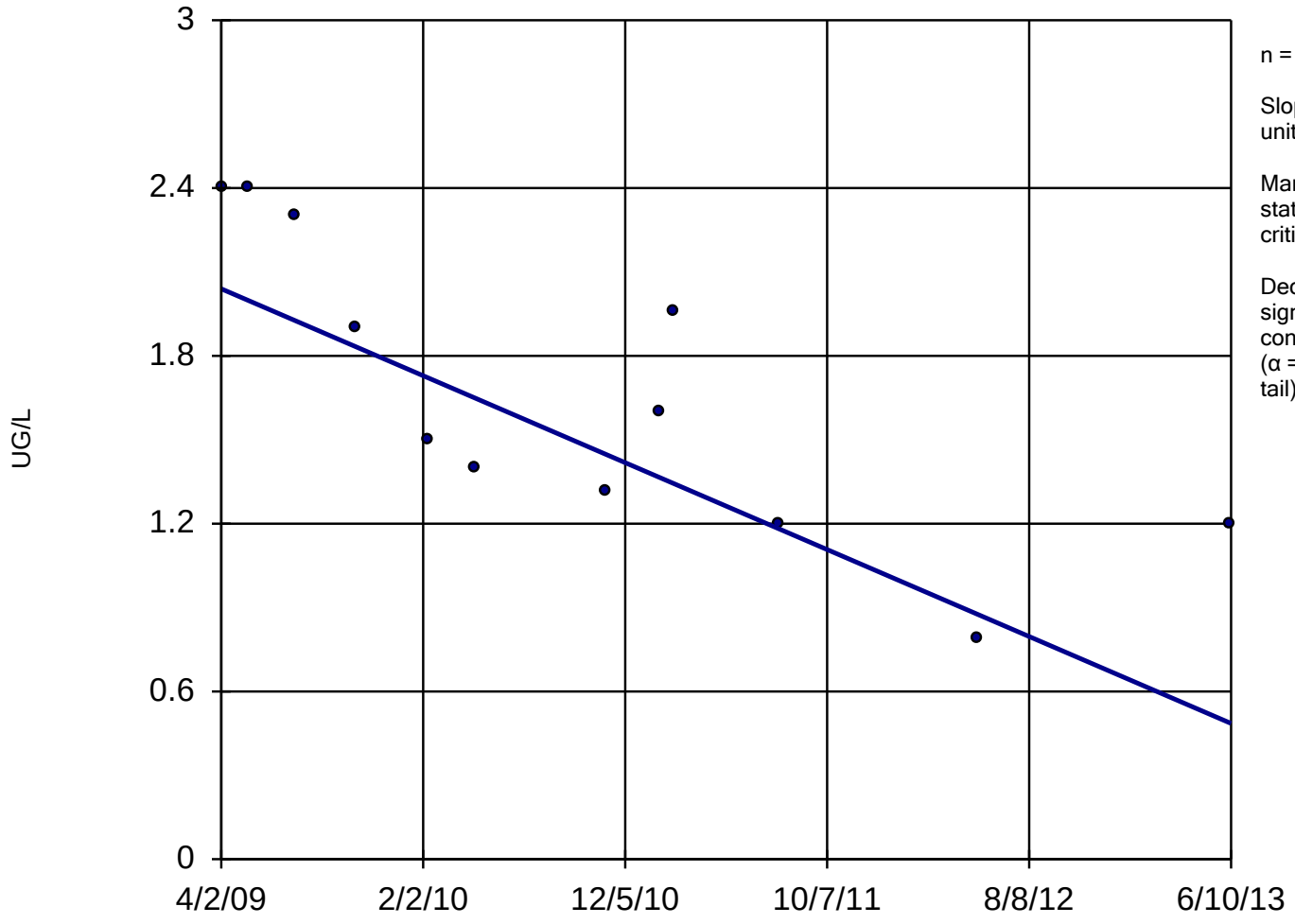
Background Data Summary: Mean=1.706, Std. Dev.=0.5301, n=11. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9443, critical = 0.85. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-130A



n = 12

Slope = -0.3708 units per year.

Mann-Kendall statistic = -46
critical = -35

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

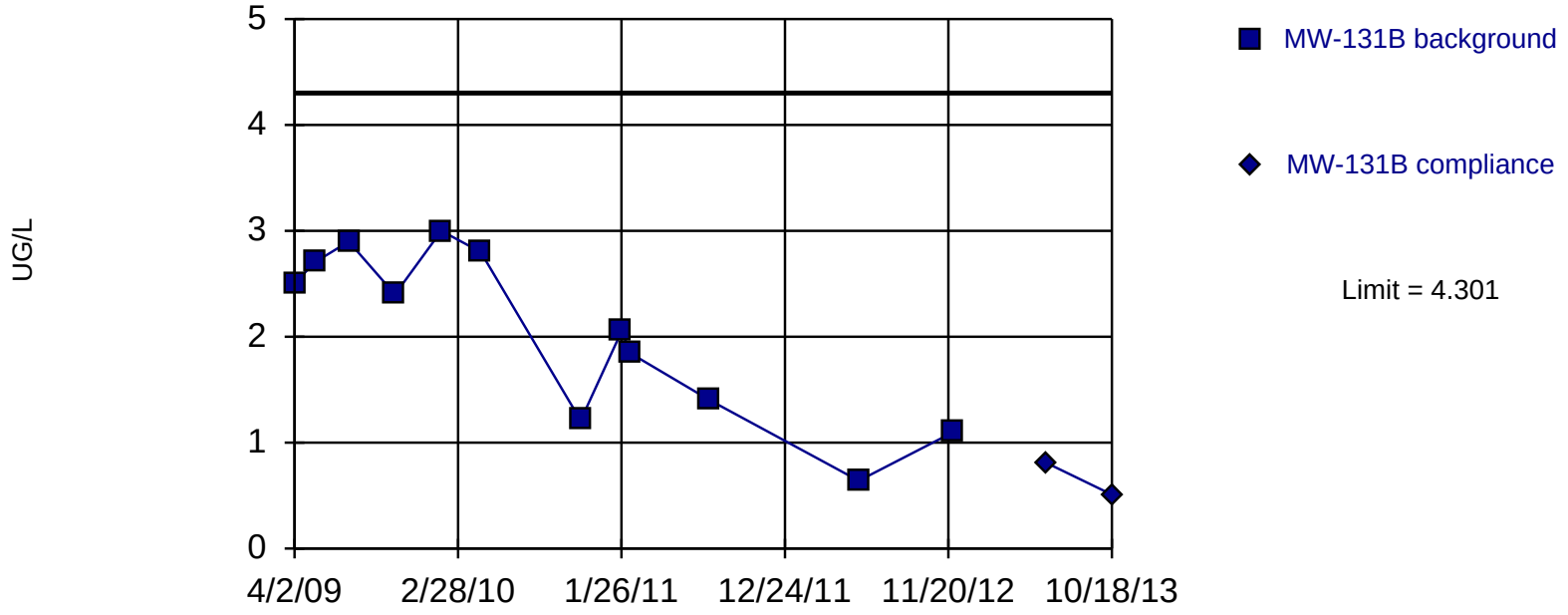
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



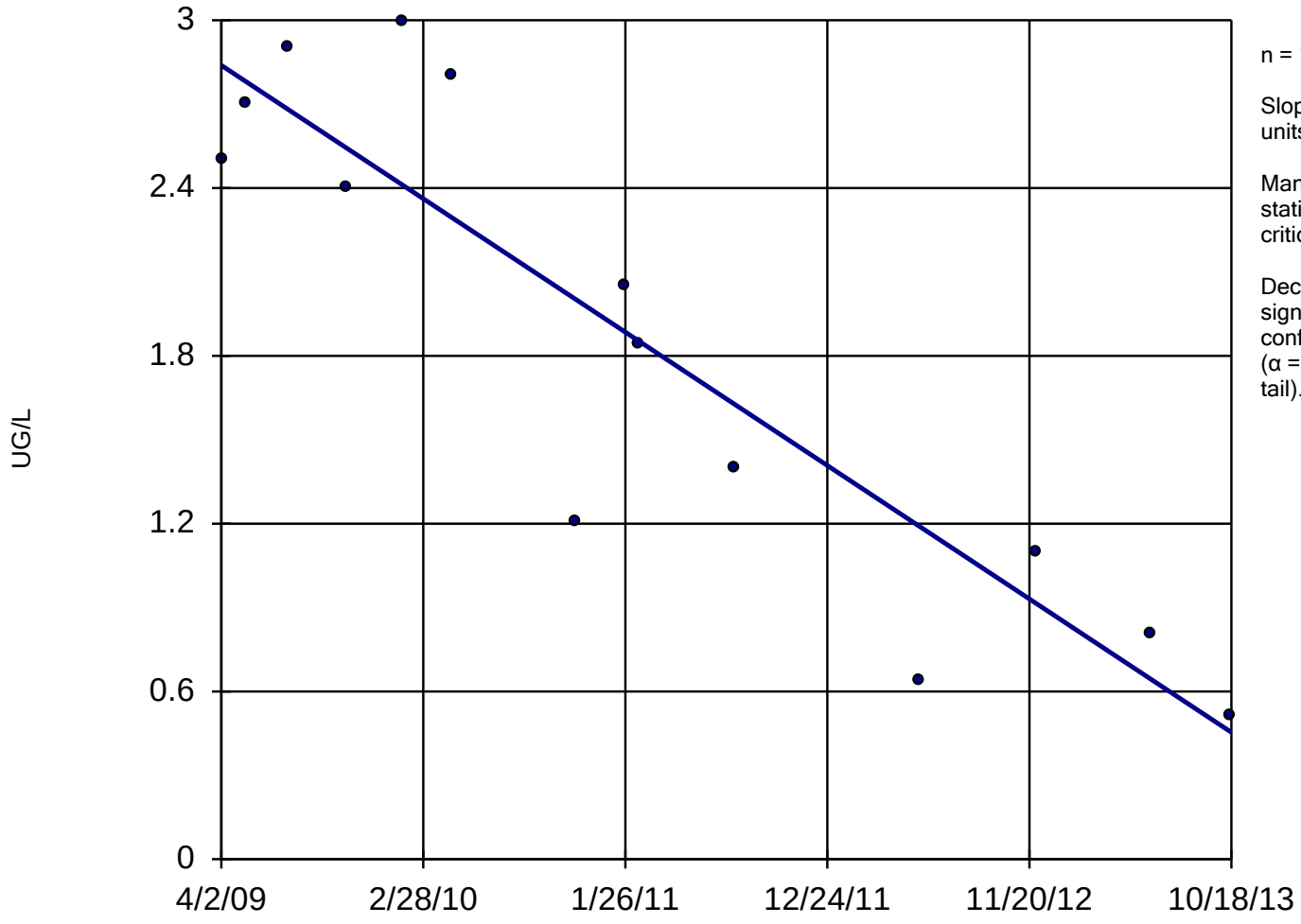
Background Data Summary: Mean=2.045, Std. Dev.=0.7976, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.923, critical = 0.859. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-131B



n = 14

Slope = -0.5244 units per year.

Mann-Kendall statistic = -61
critical = -44

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:14 PM

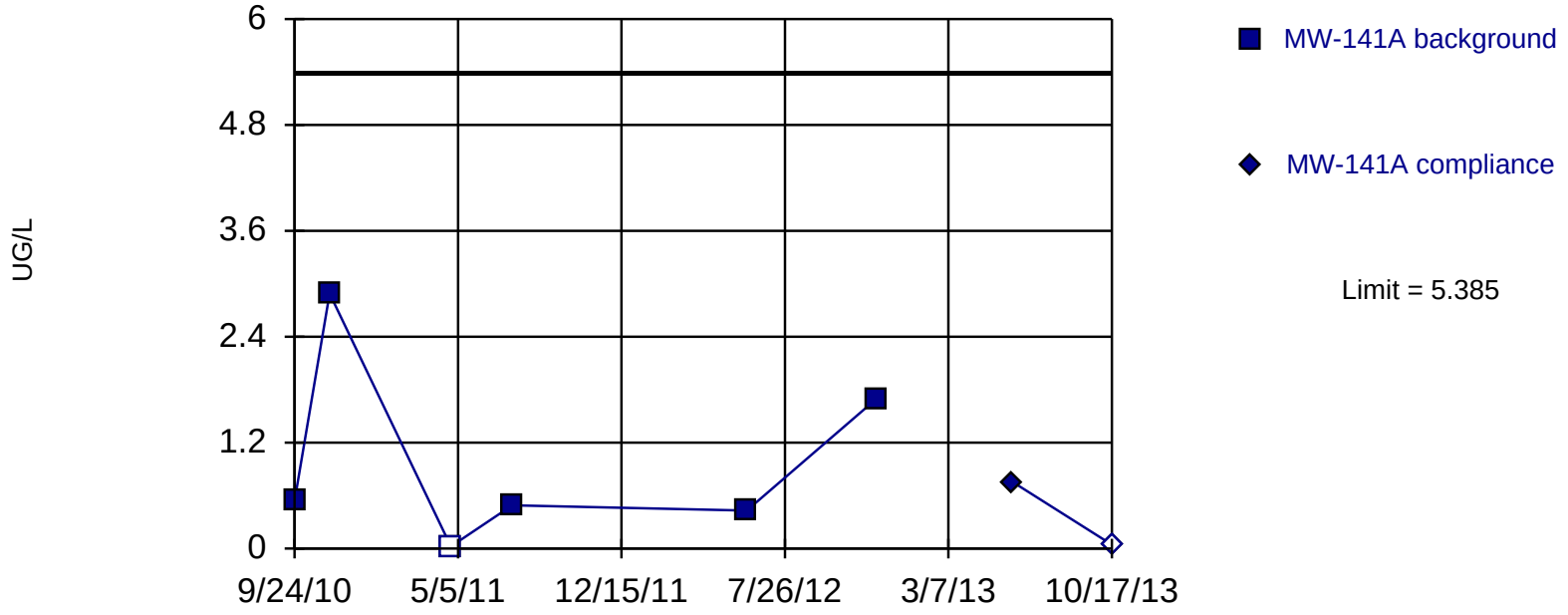
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (after Cohen`s Adjustment): Mean=0.8932, Std. Dev.=1.236, n=6, 16.67% NDs.
Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8359, critical = 0.788. Report alpha = 0.01. Most recent point compared to limit.

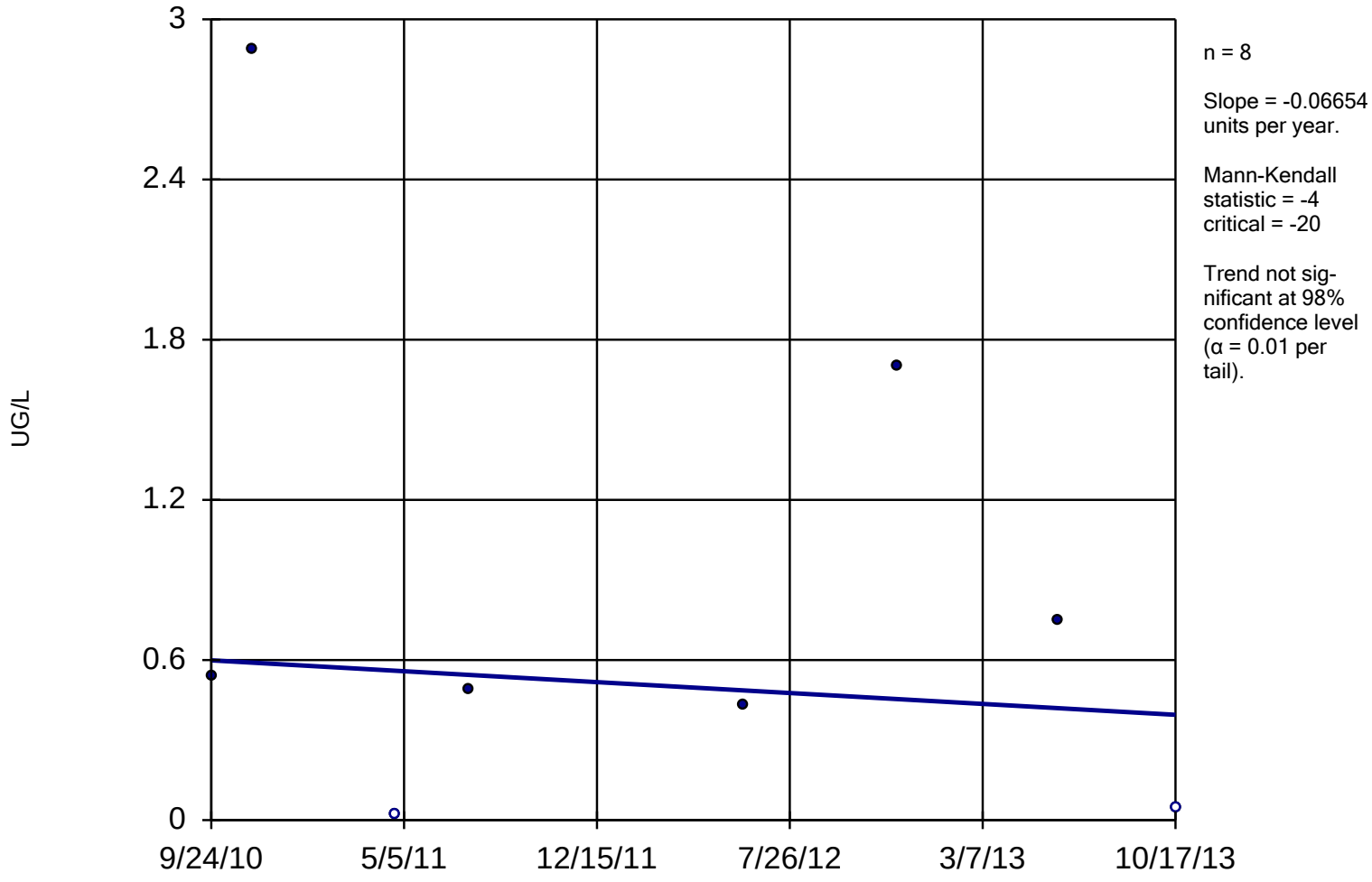
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-141A



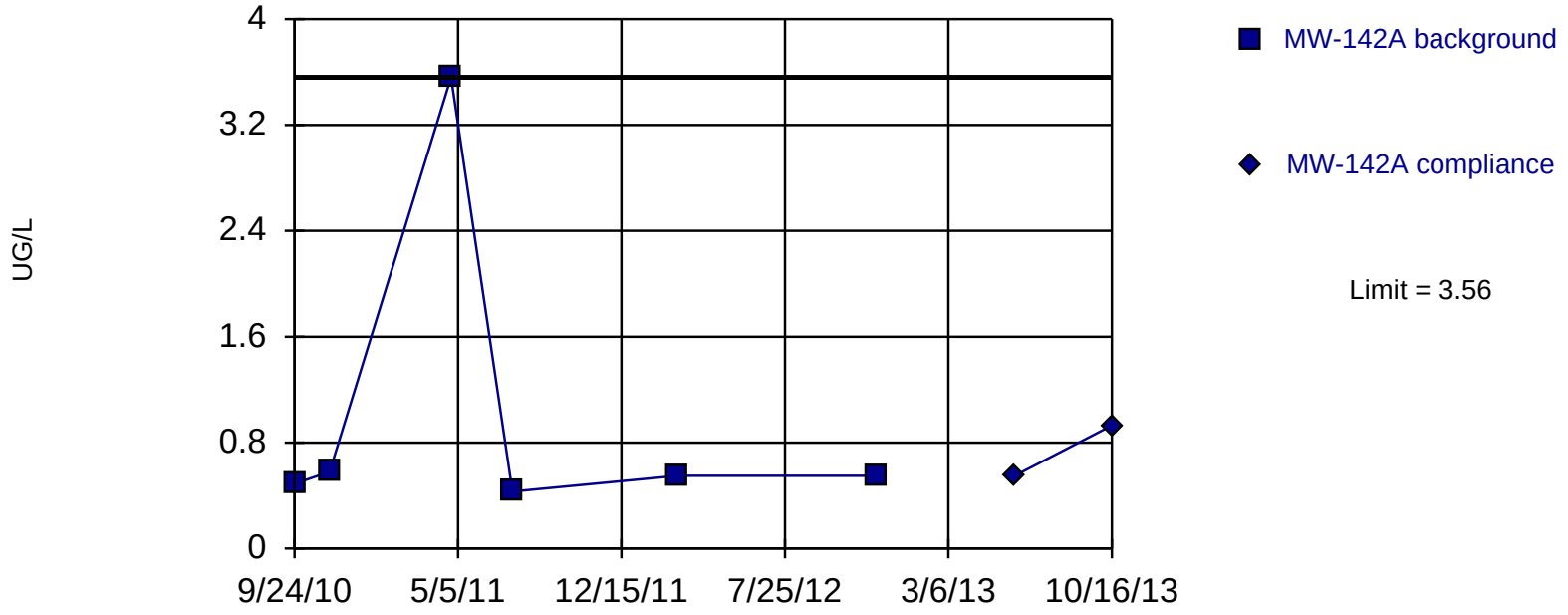
Constituent: RDX Analysis Run 1/28/2014 2:14 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Non-parametric



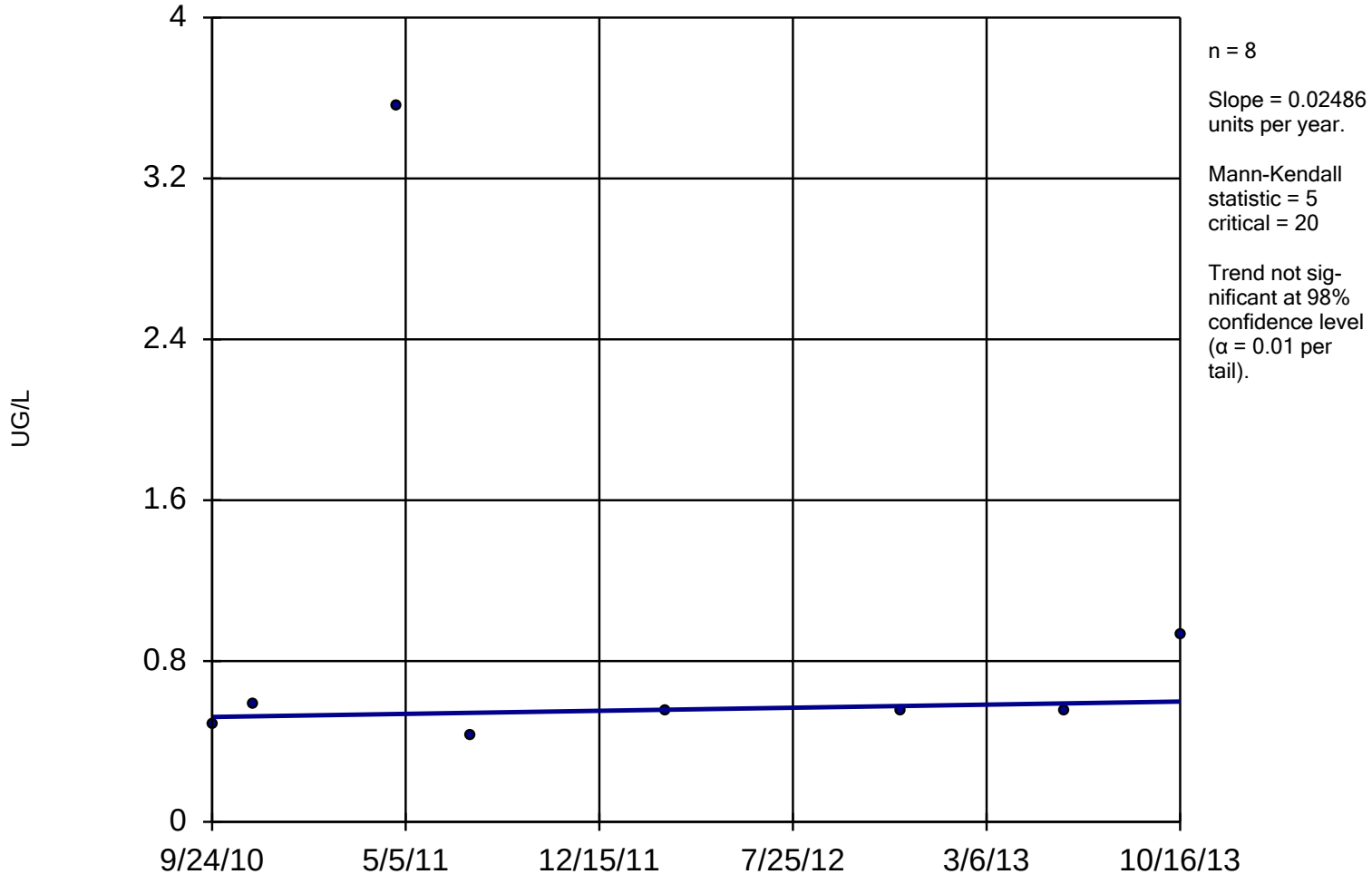
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 6 background values. Report alpha = 0.1429. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-142A



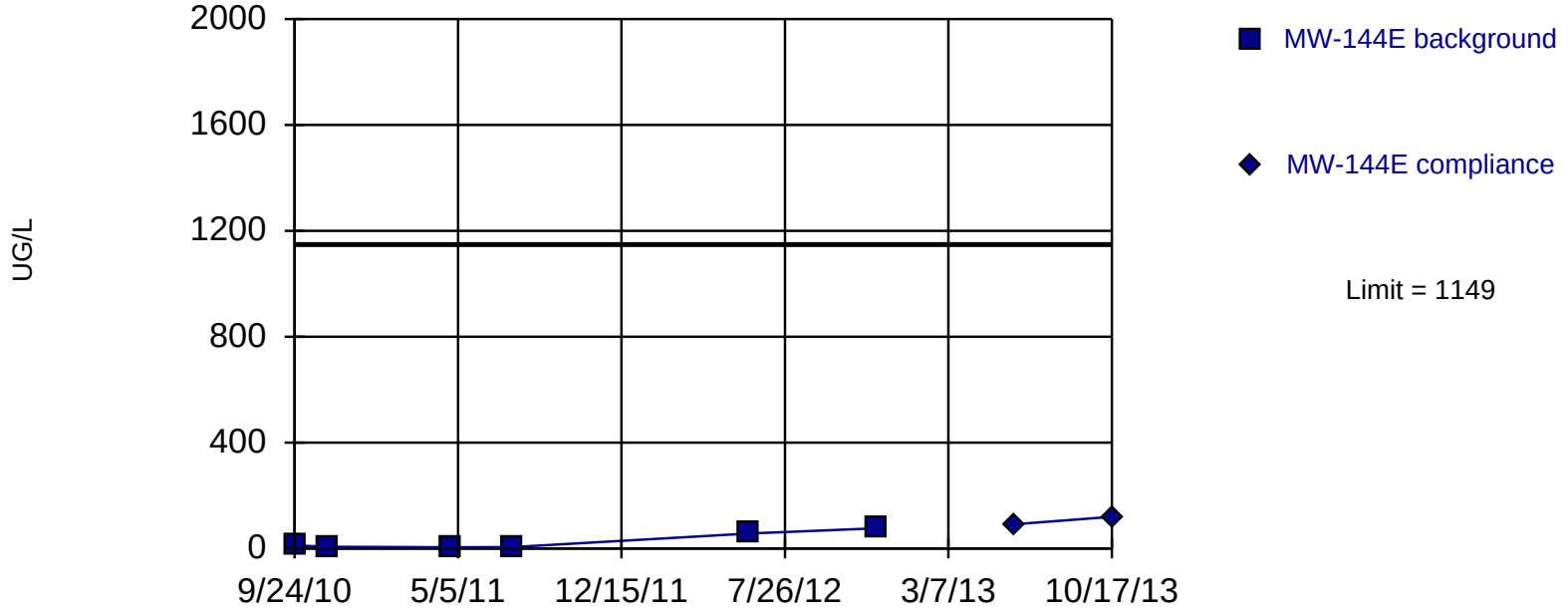
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



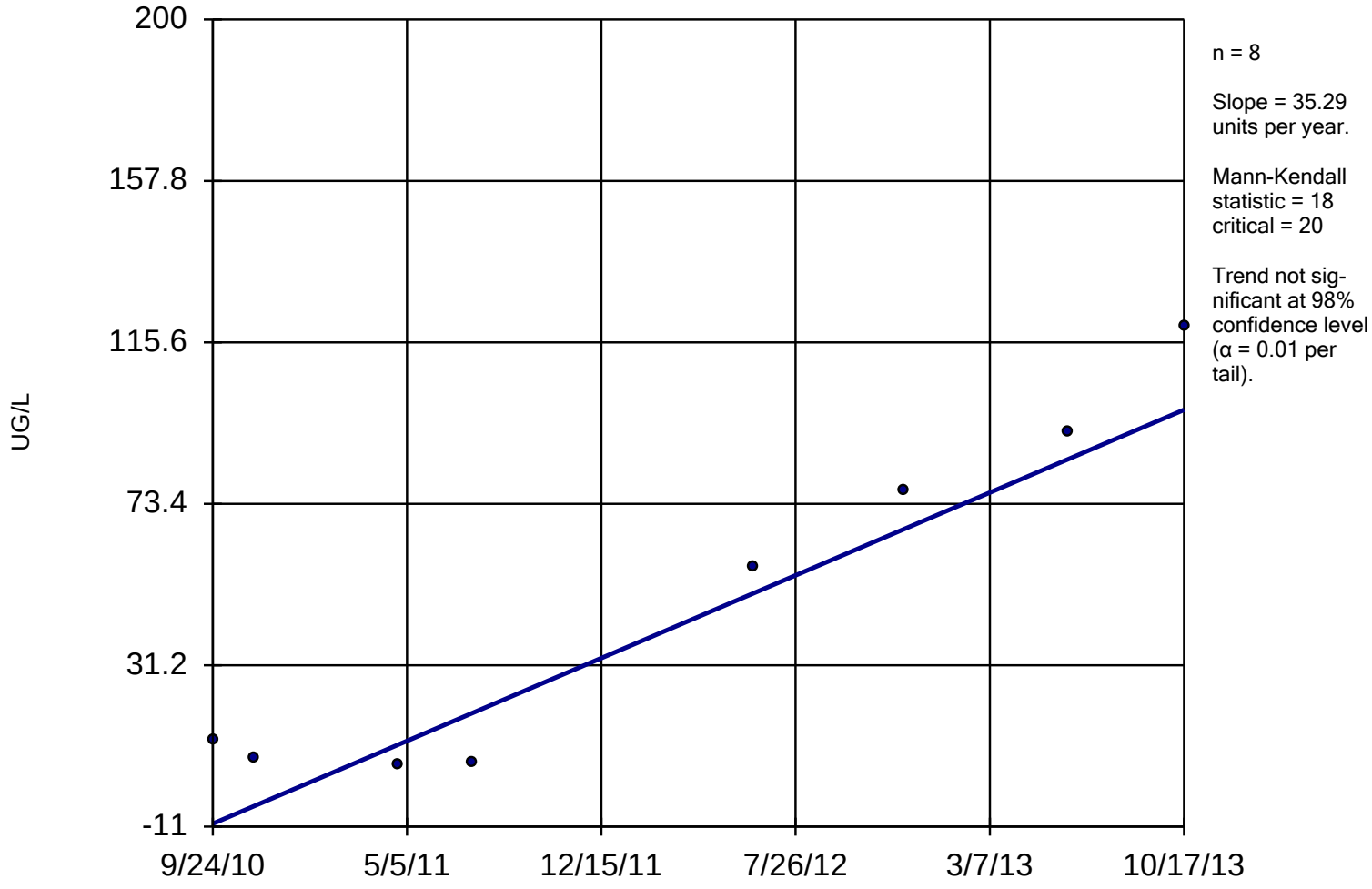
Background Data Summary (based on natural log transformation): Mean=2.691, Std. Dev.=1.198, n=6. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8114, critical = 0.788. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-144E



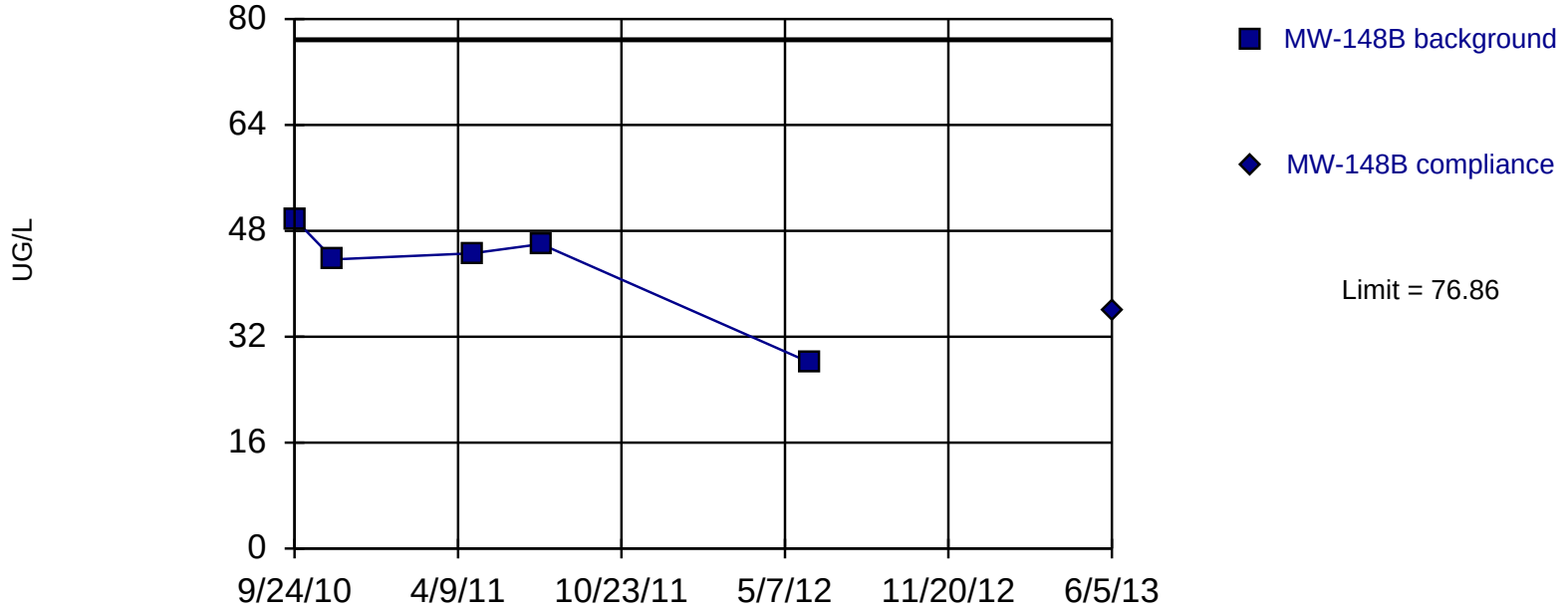
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



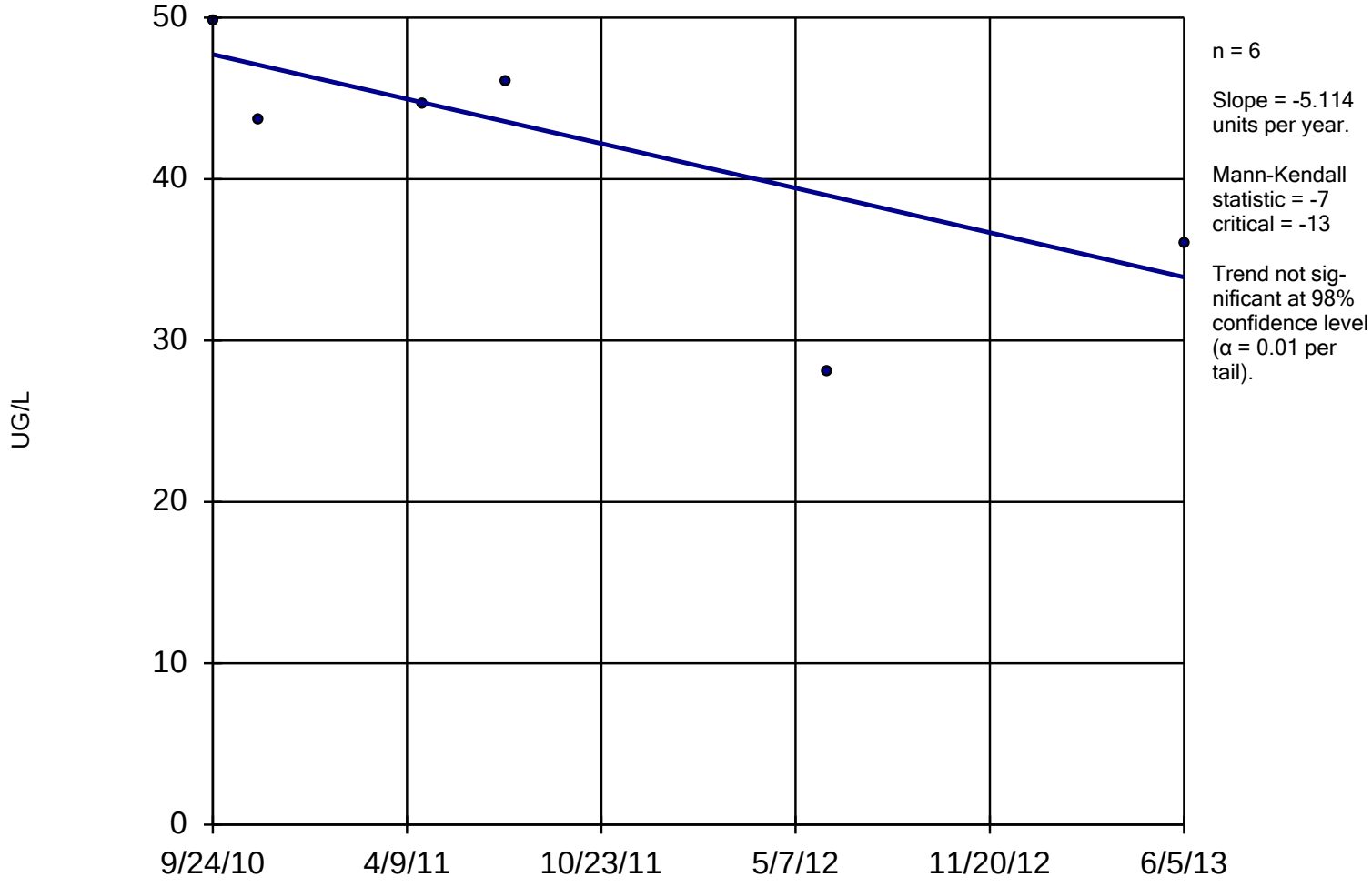
Background Data Summary: Mean=42.42, Std. Dev.=8.391, n=5. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8036, critical = 0.762. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-148B



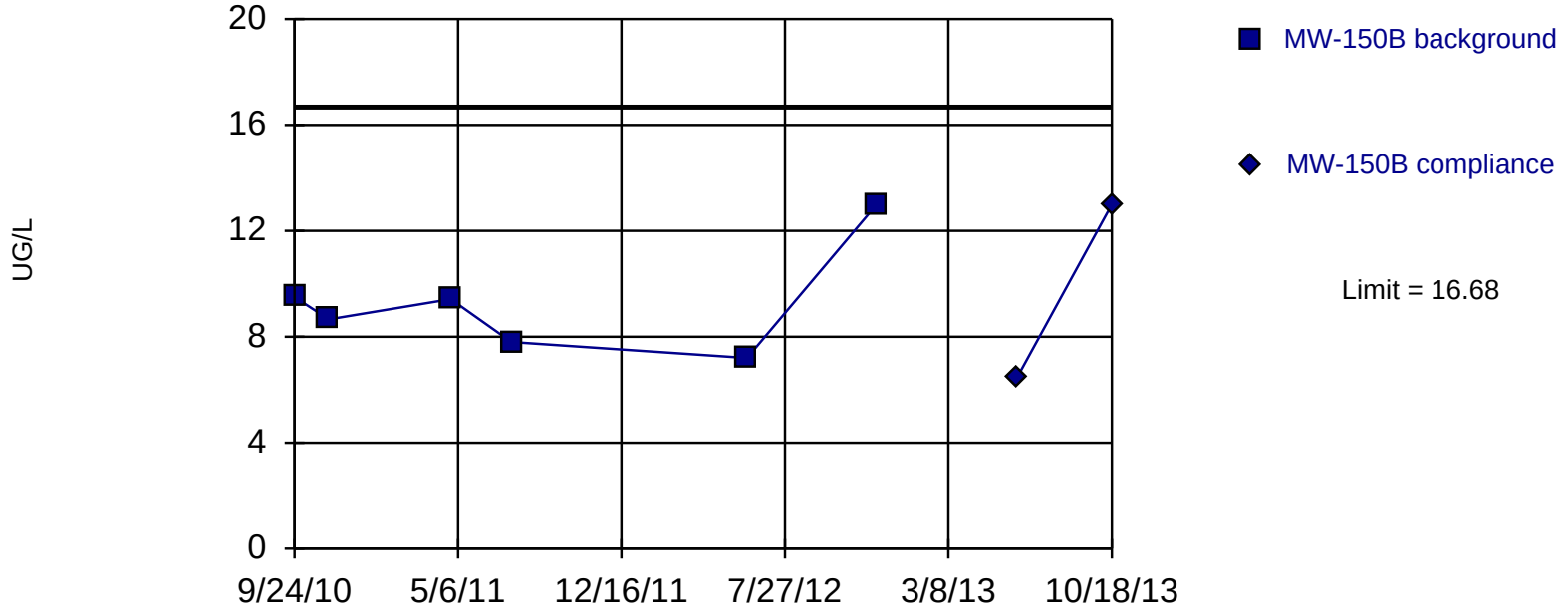
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



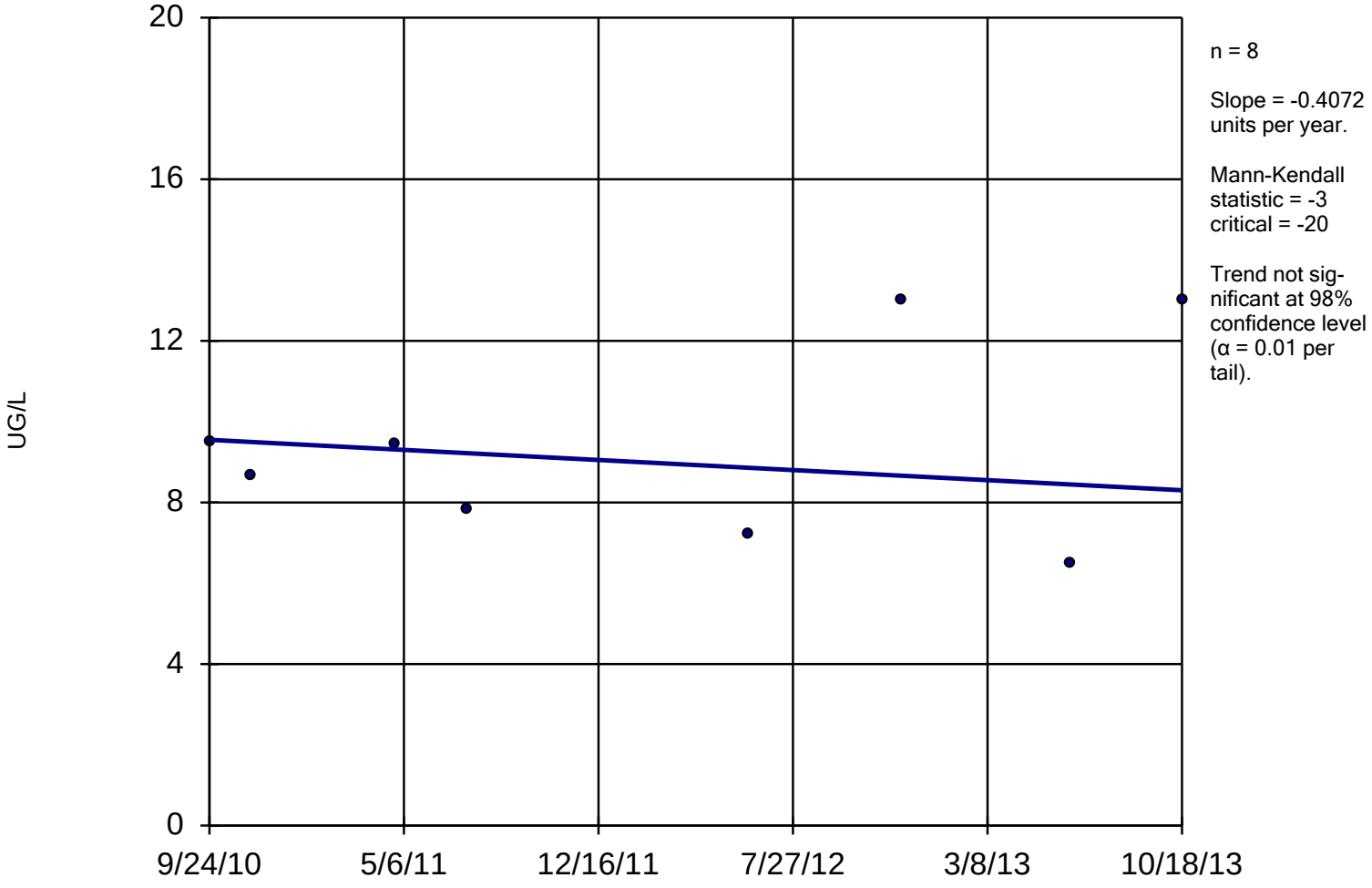
Background Data Summary: Mean=9.263, Std. Dev.=2.04, n=6. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8778, critical = 0.788. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-150B



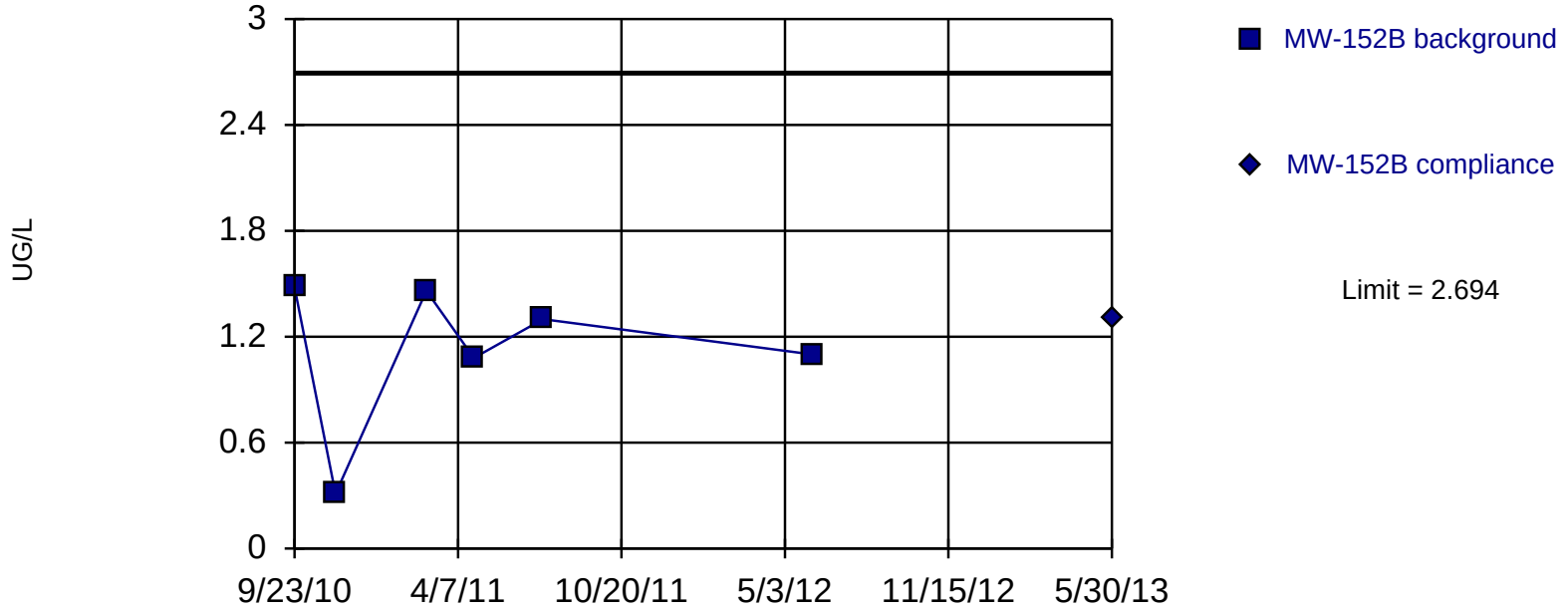
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



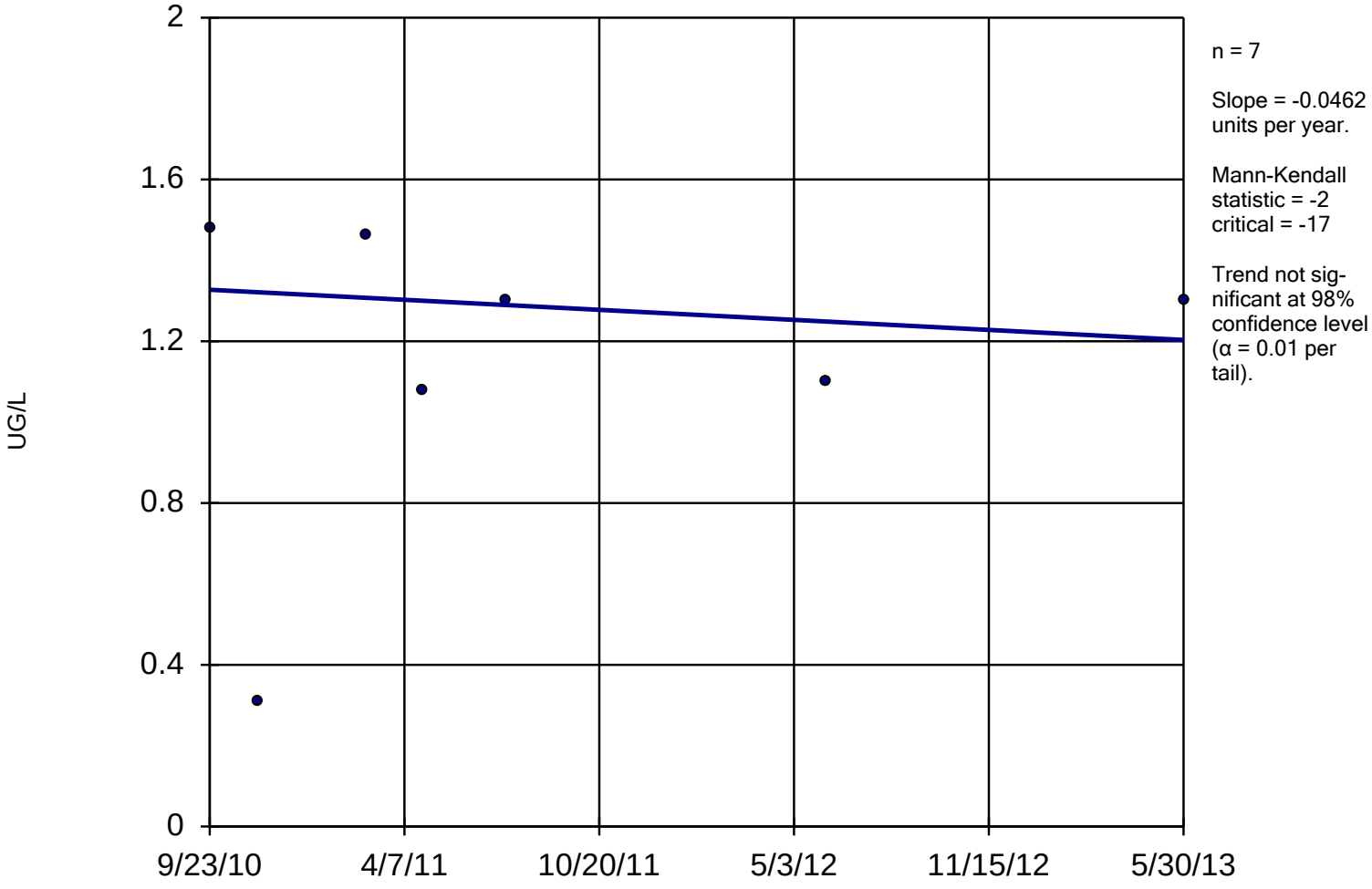
Background Data Summary: Mean=1.122, Std. Dev.=0.4326, n=6. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8212, critical = 0.788. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-152B



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

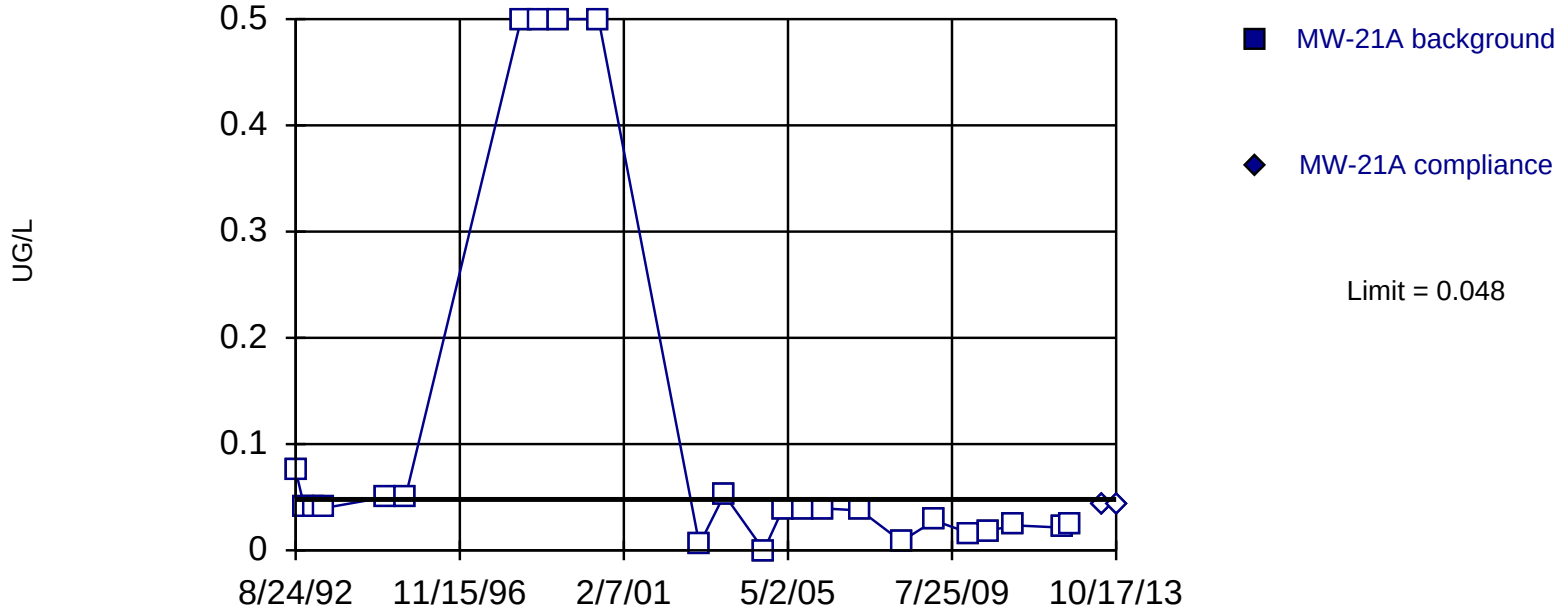
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 24) were censored; limit is most recent reporting limit. Report alpha = 0.04. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

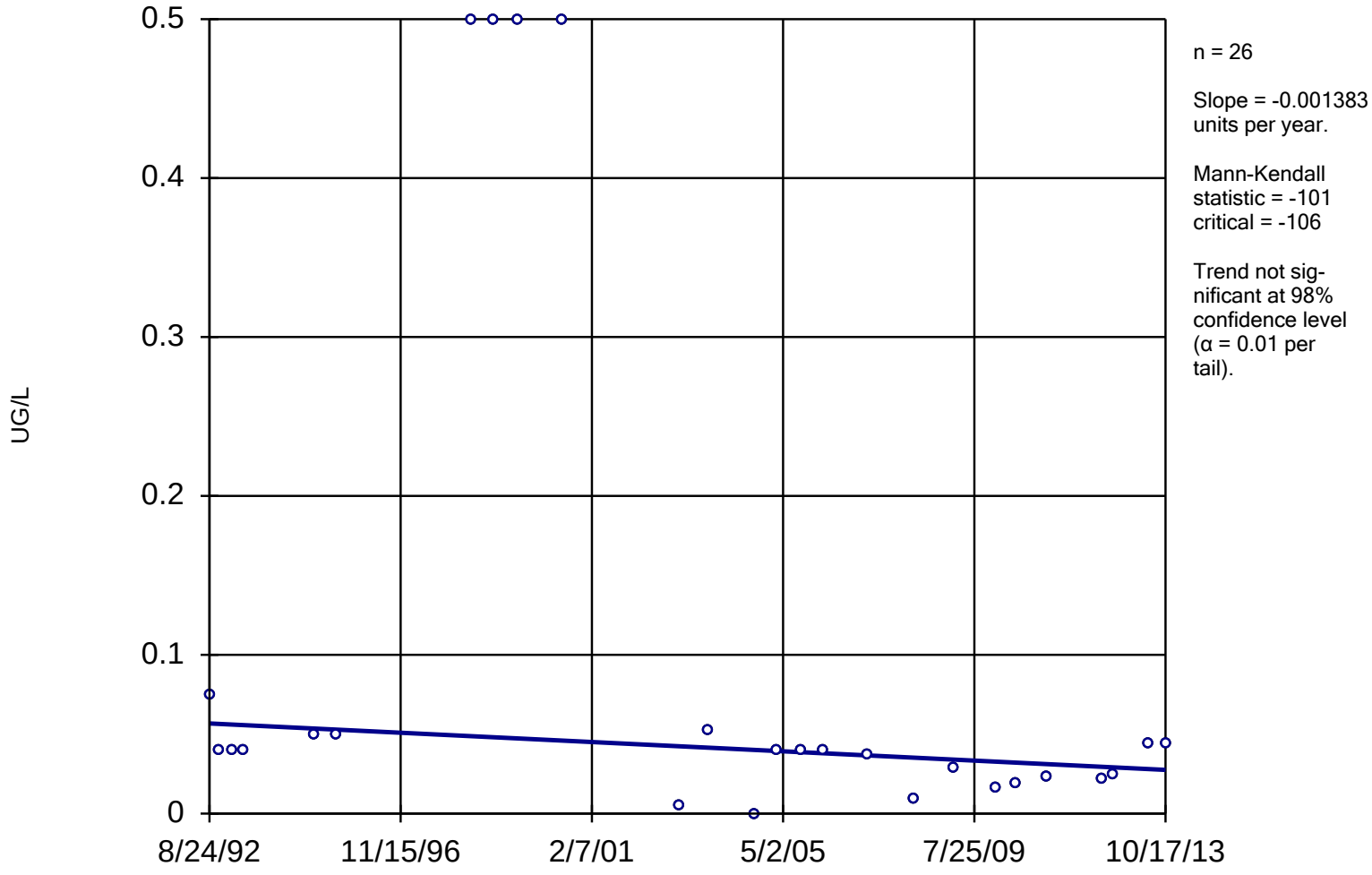
Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-21A



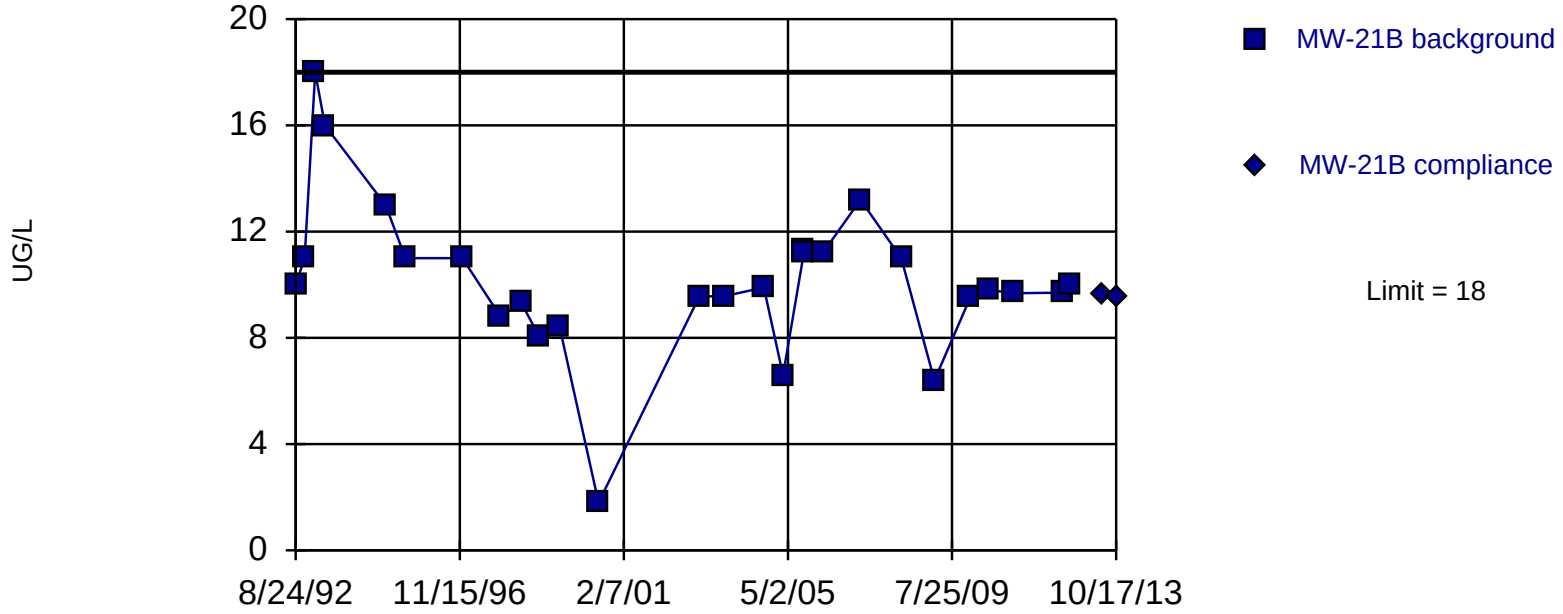
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Non-parametric



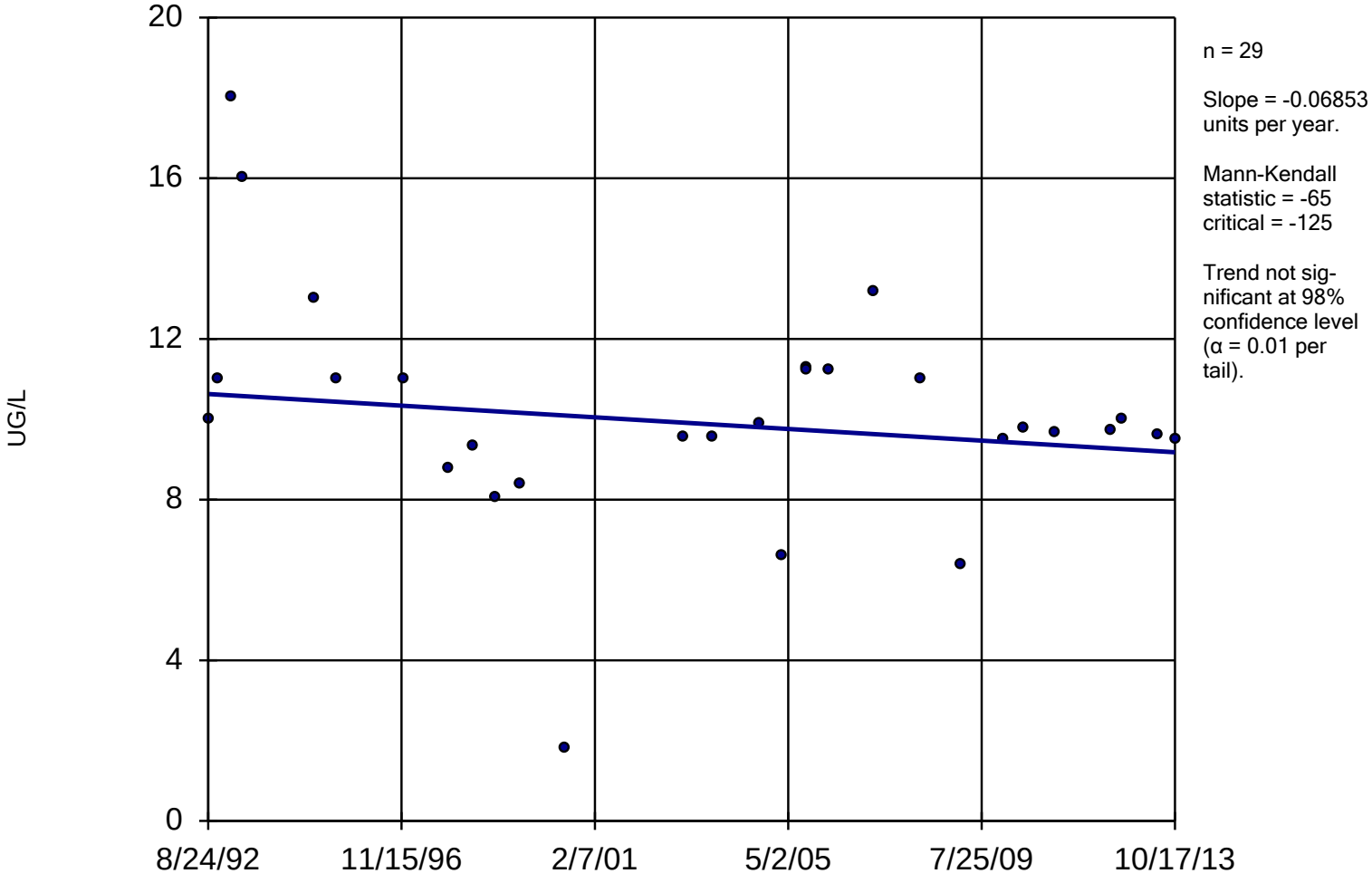
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 27 background values. Report alpha = 0.03571. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

Constituent: RDX Analysis Run 1/28/2014 2:21 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-21B



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

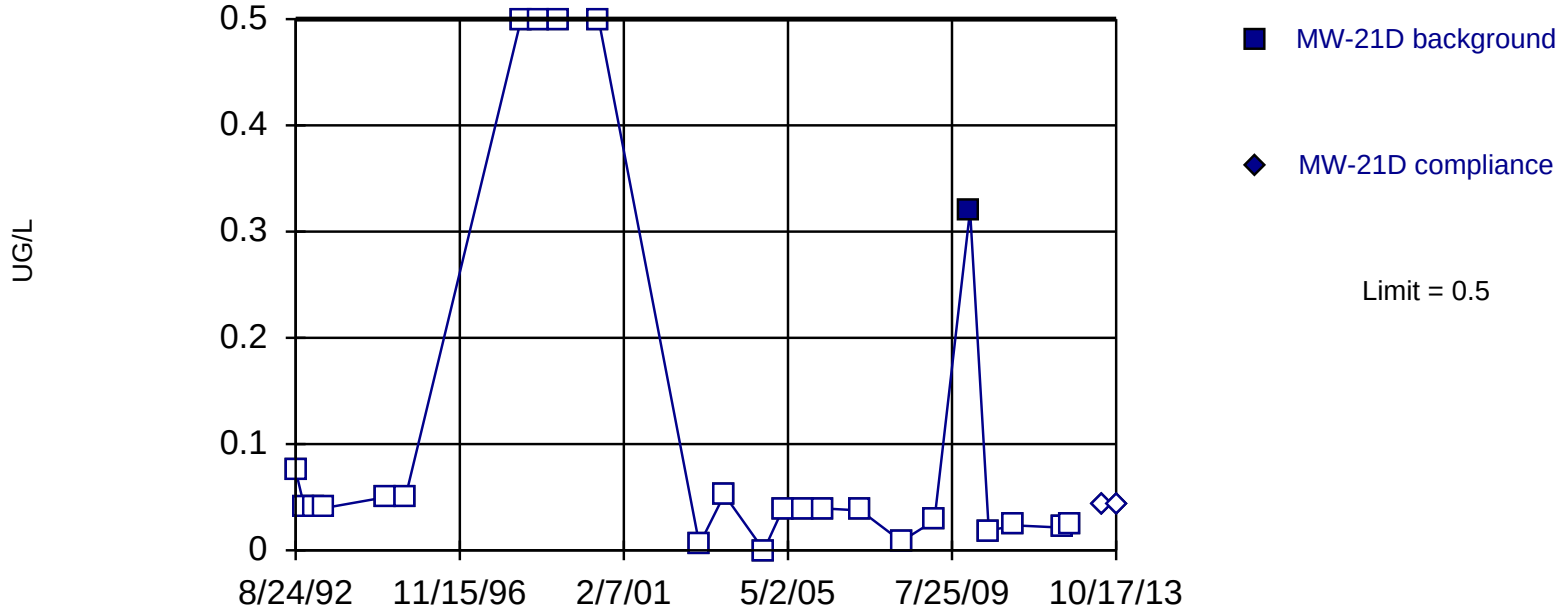
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 24 background values. 95.83% NDs. Report alpha = 0.04. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

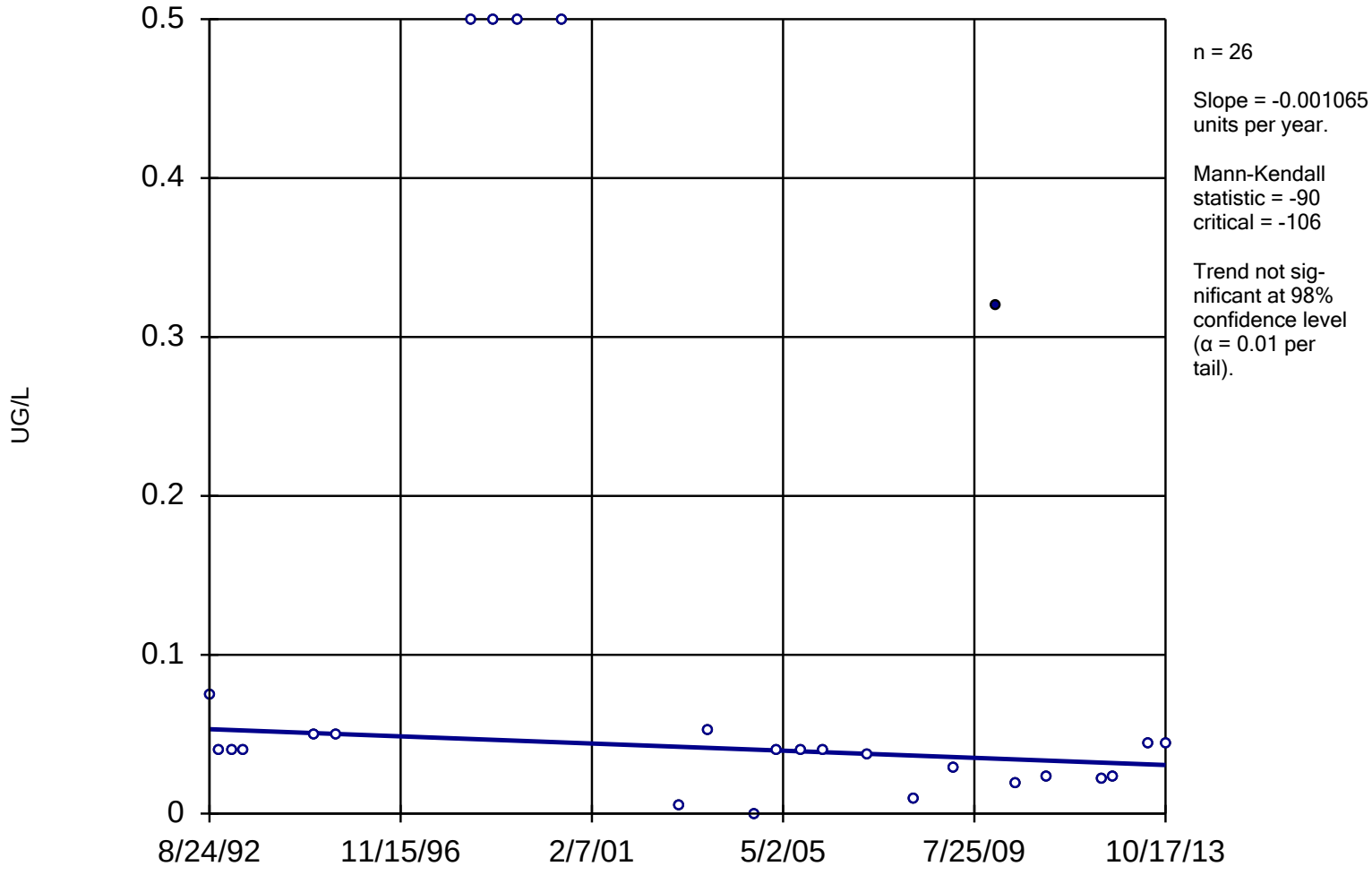
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-21D



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

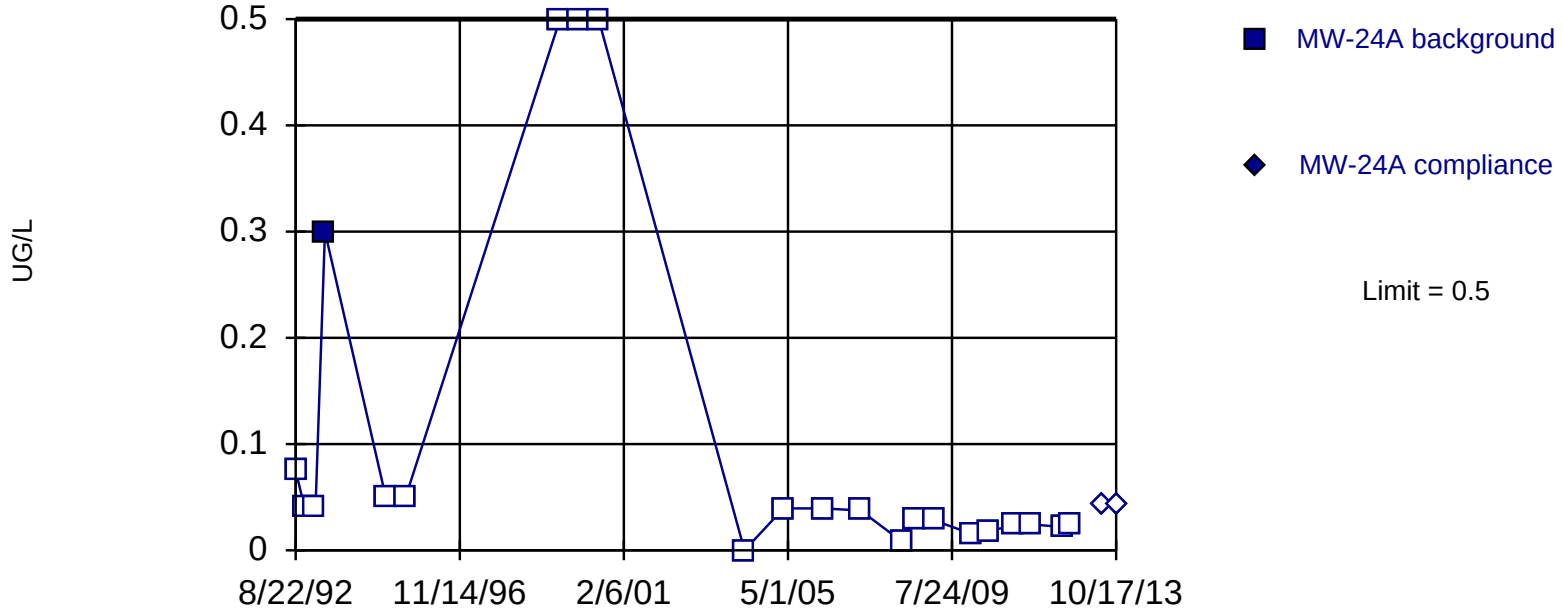
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 22 background values. 95.45% NDs. Report alpha = 0.04348. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

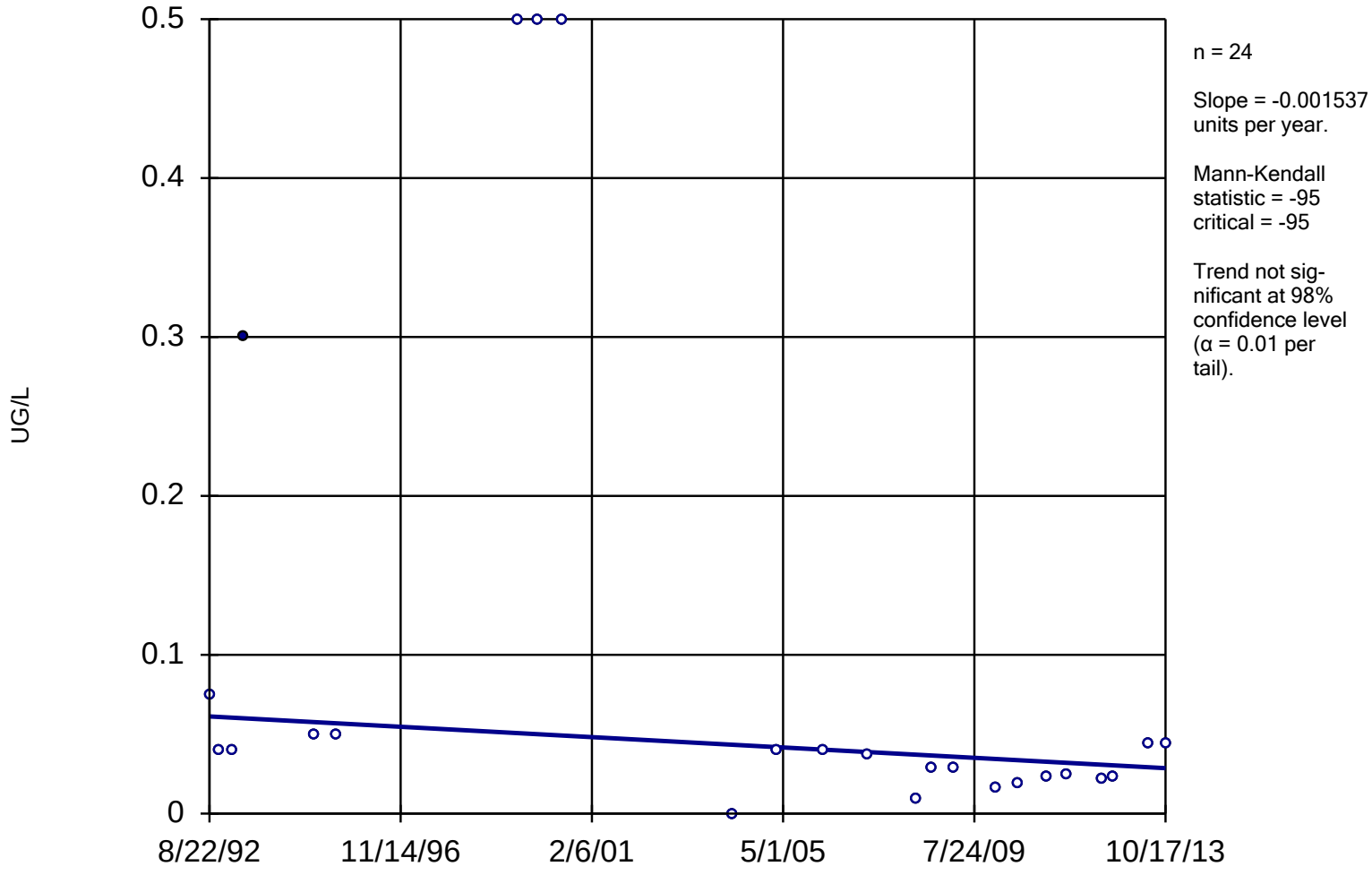
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-24A



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

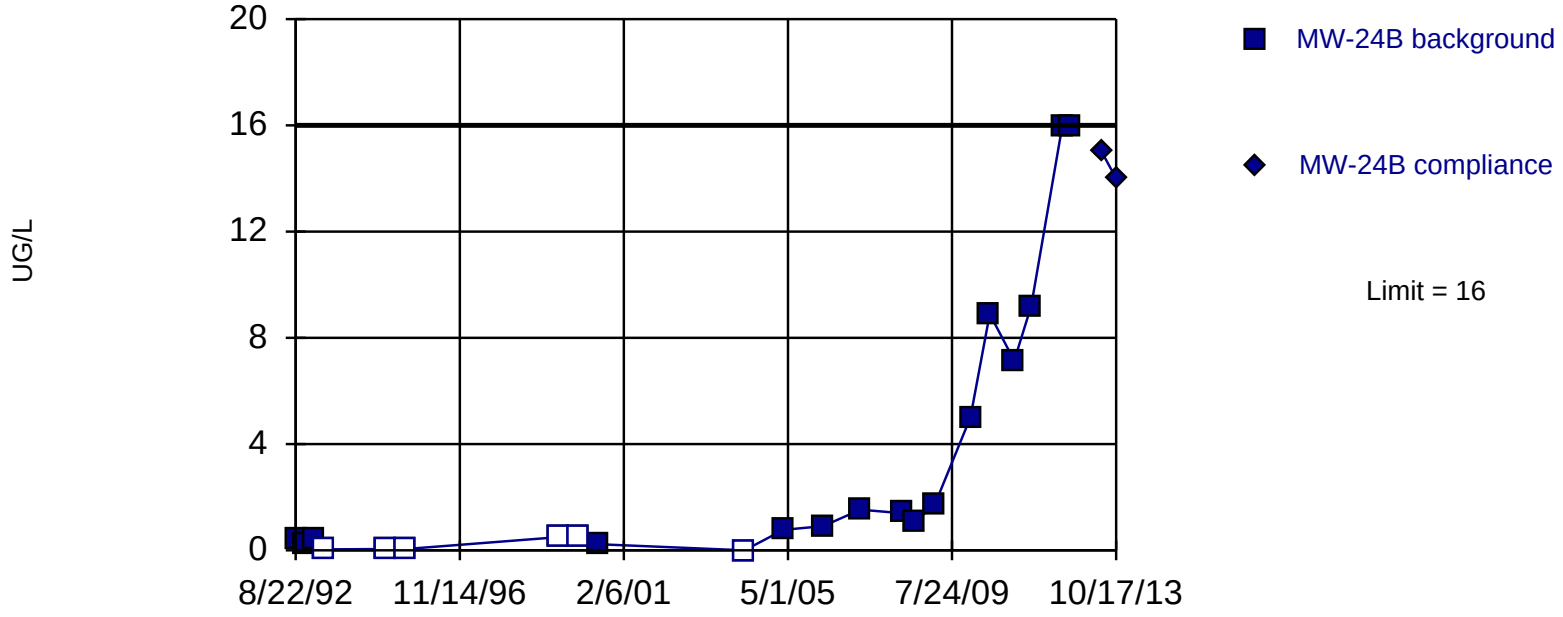
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the data required both a power transformation and Cohen's adjustment. Limit is highest of 22 background values. 27.27% NDs. Report alpha = 0.04348. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

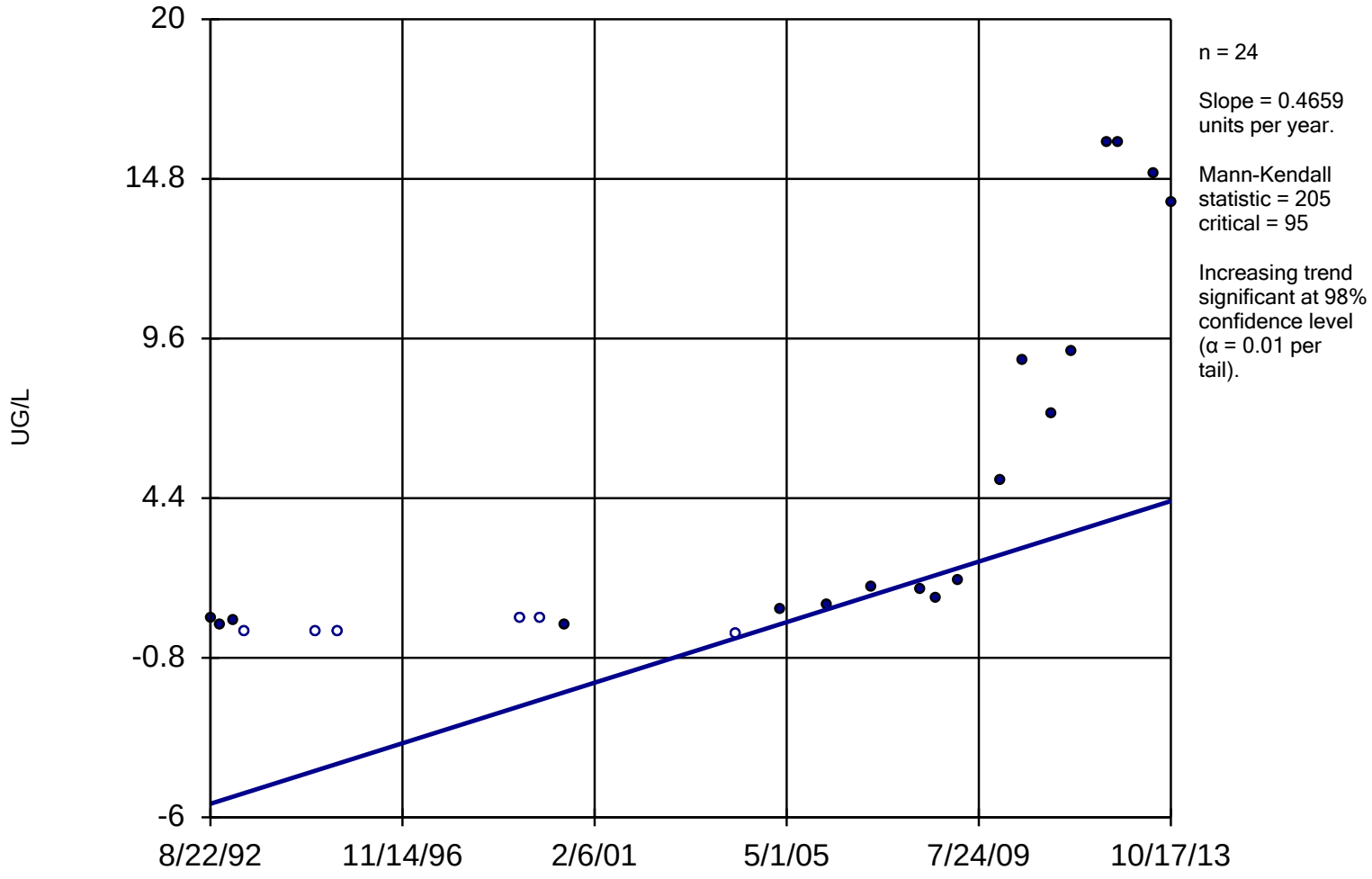
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-24B



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

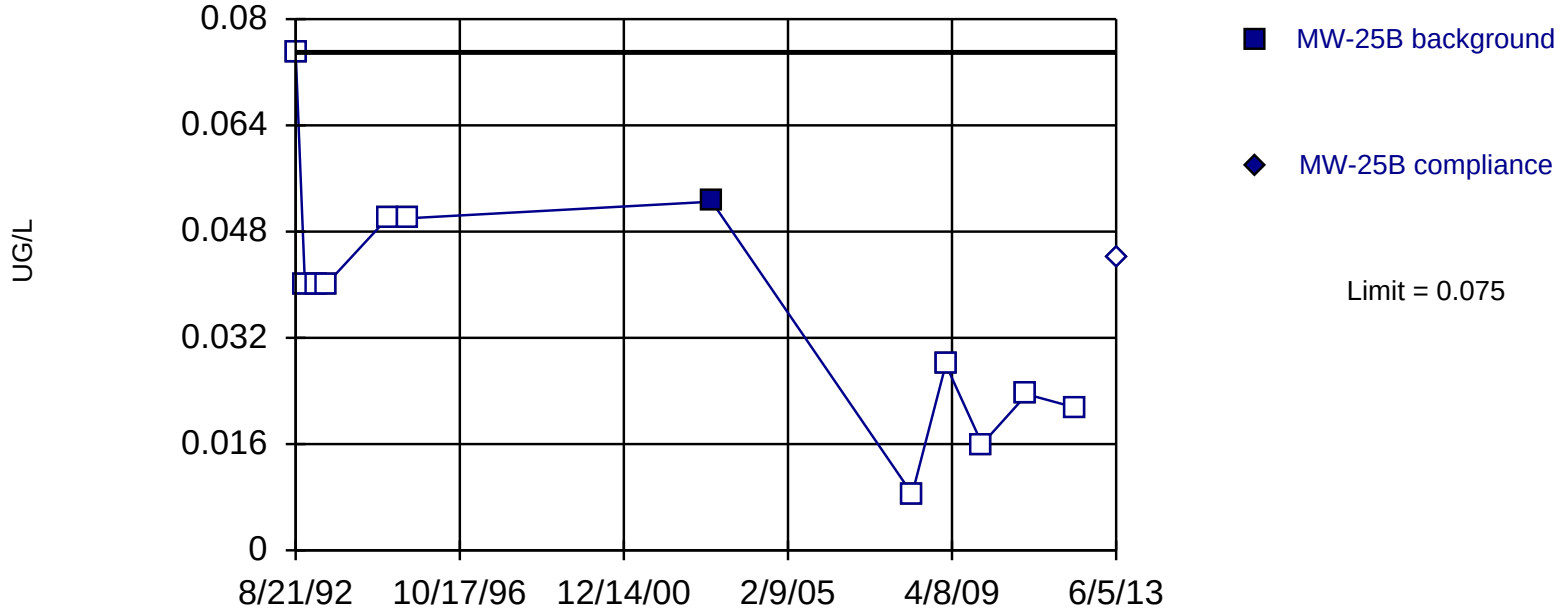
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 91.67% NDs. Report alpha = 0.07692. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

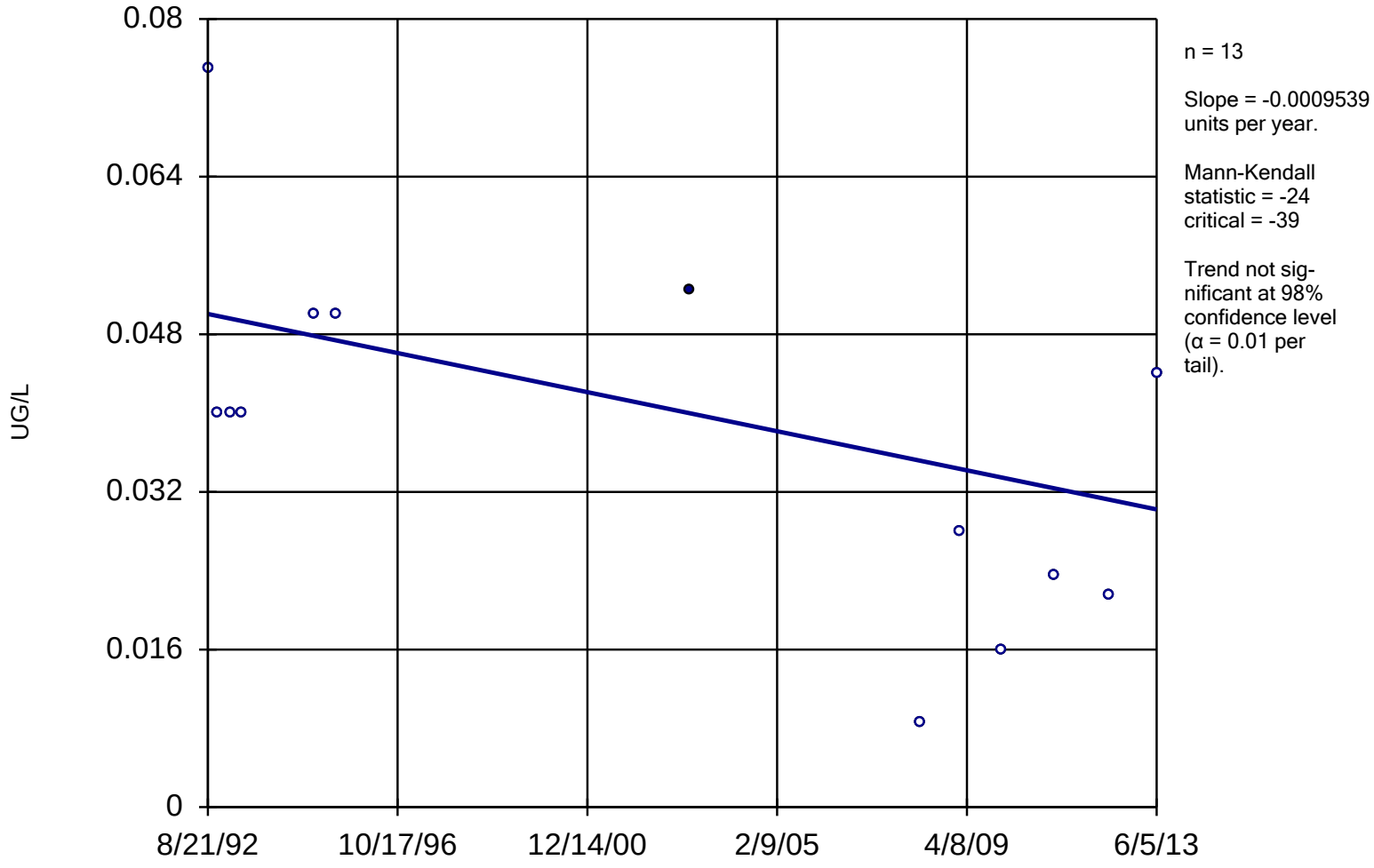
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-25B



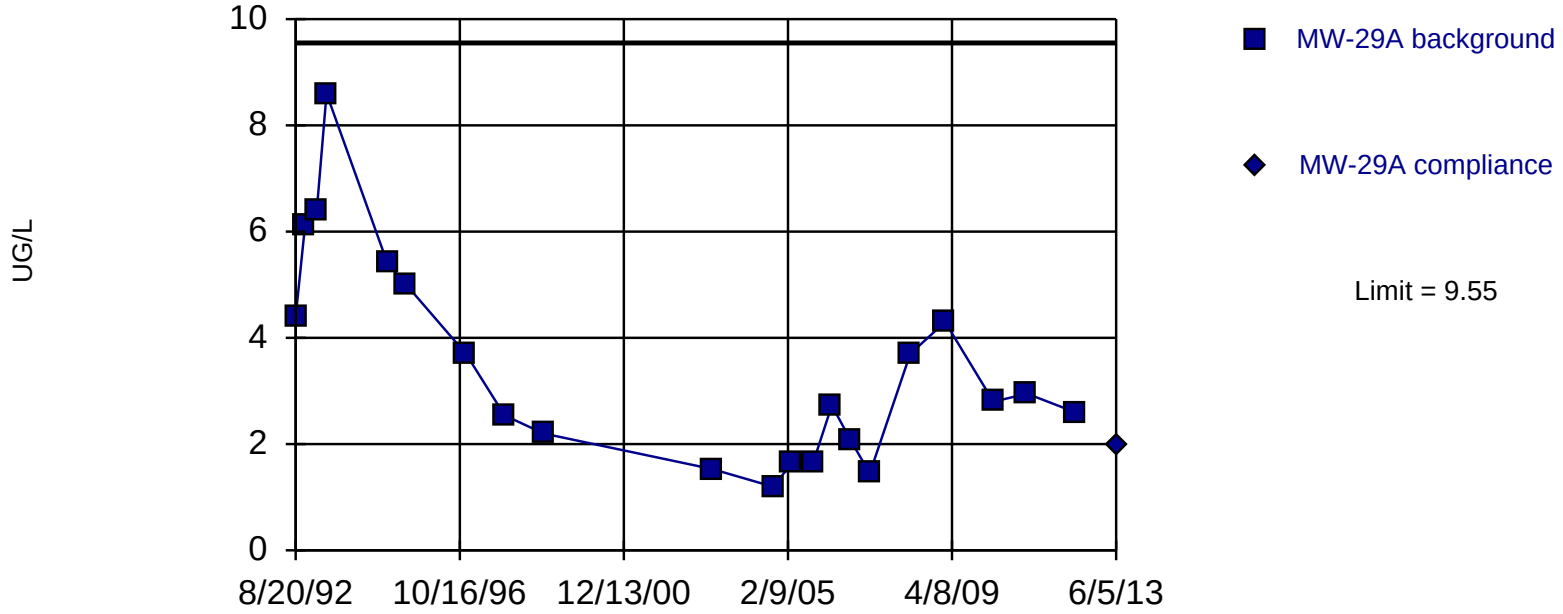
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



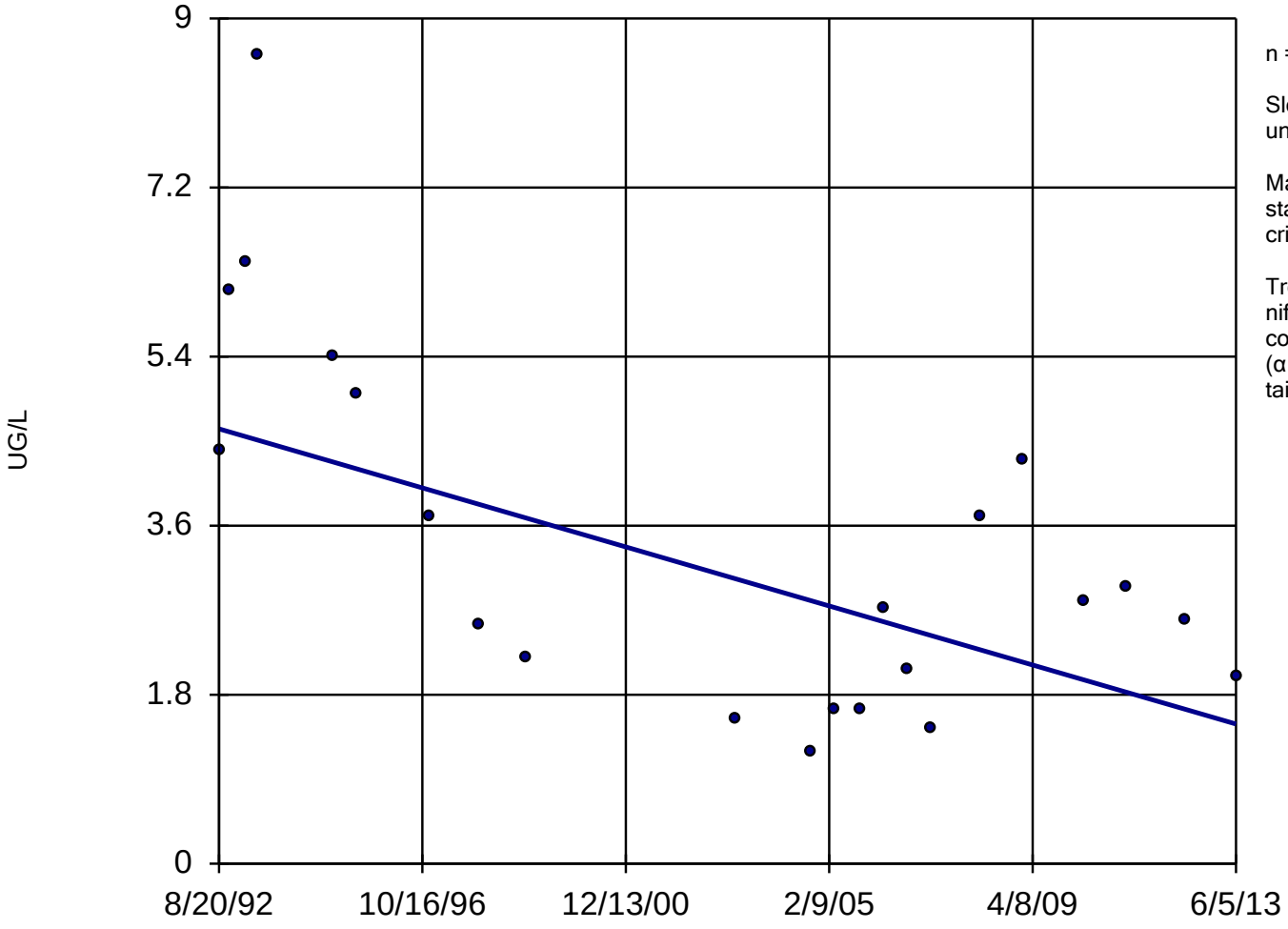
Background Data Summary (based on square root transformation): Mean=1.799, Std. Dev.=0.499, n=21. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9549, critical = 0.908. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-29A



n = 22

Slope = -0.1511 units per year.

Mann-Kendall statistic = -78
critical = -84

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:15 PM

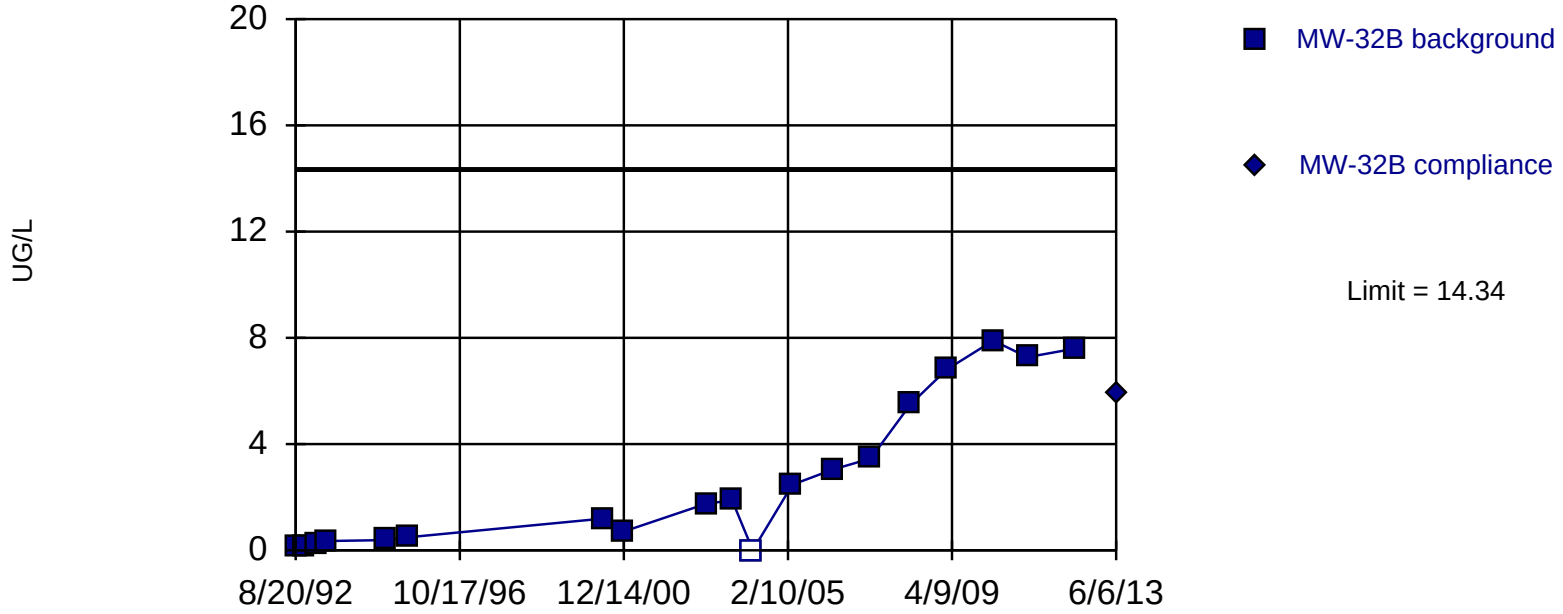
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=1.379, Std. Dev.=0.9192, n=19, 5.263% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9204, critical = 0.901. Report alpha = 0.01. Most recent point compared to limit.

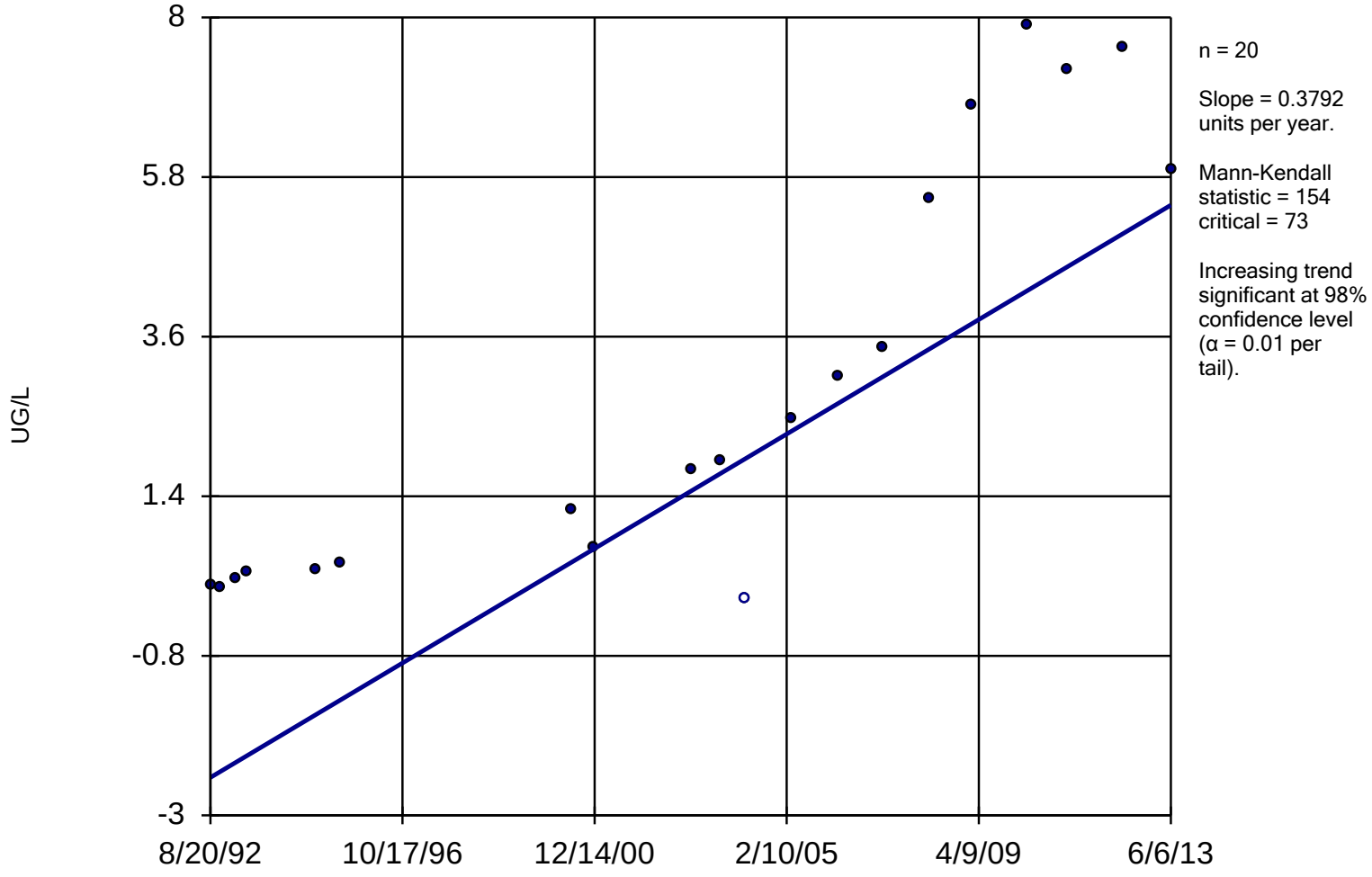
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-32B



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

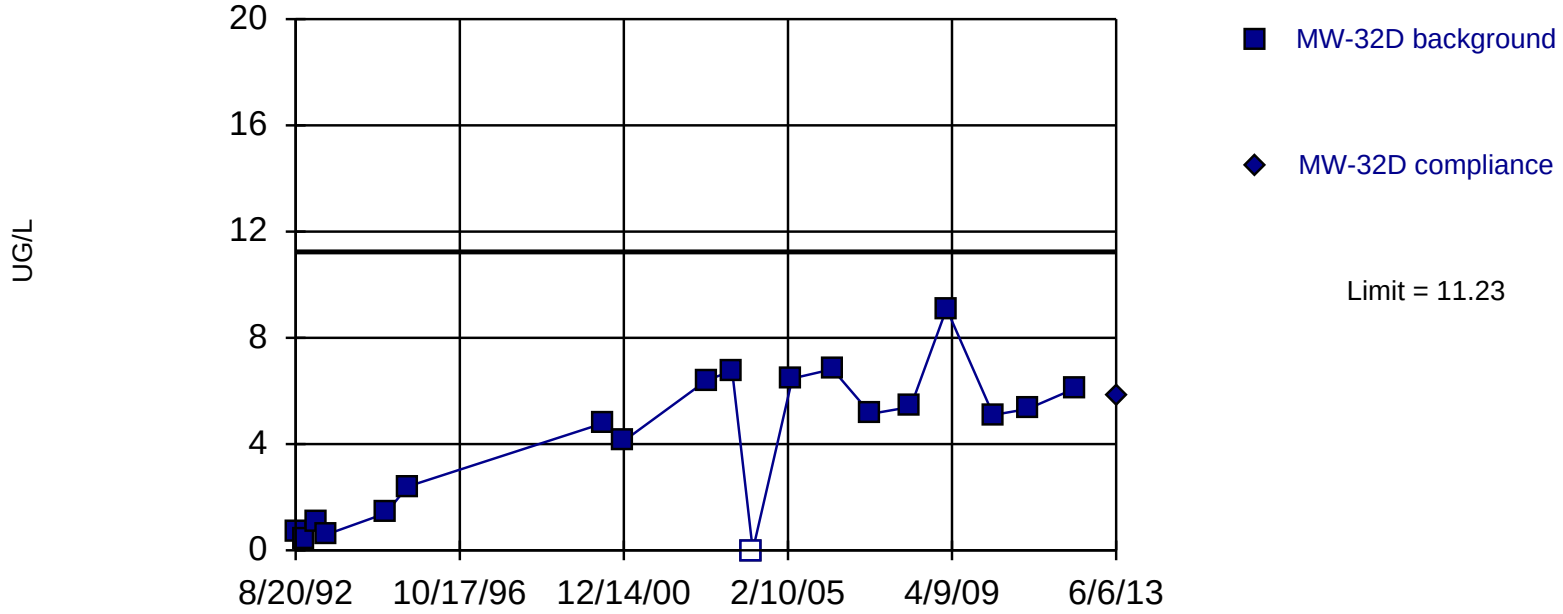
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=4.116, Std. Dev.=2.718, n=19, 5.263% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9135, critical = 0.901. Report alpha = 0.01. Most recent point compared to limit.

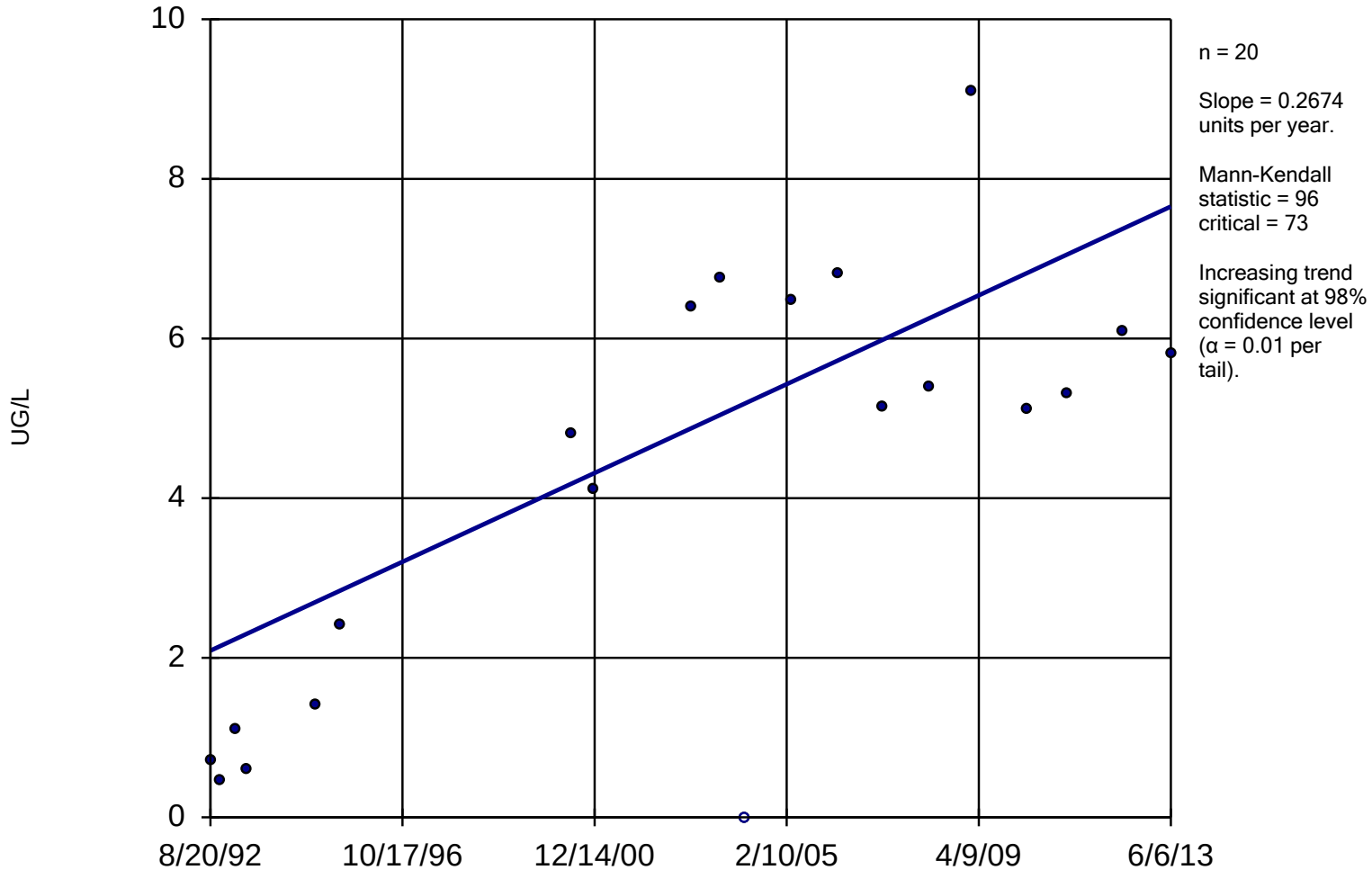
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-32D



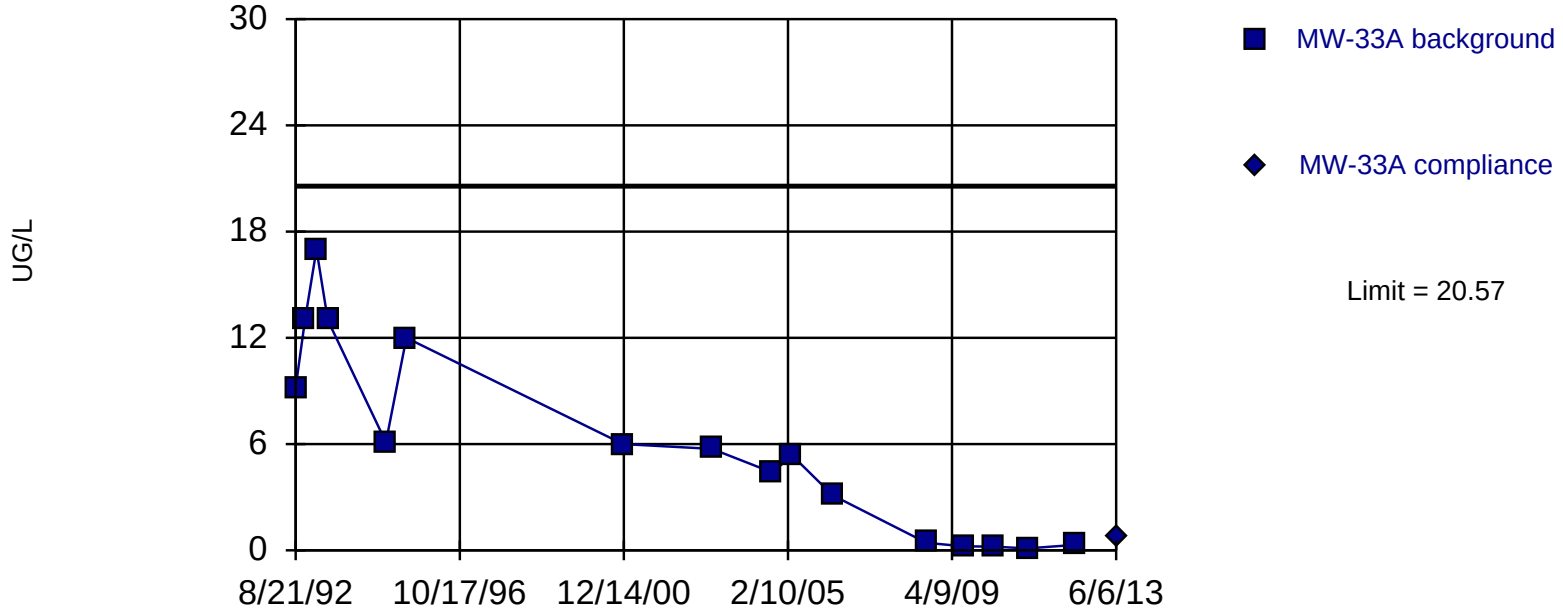
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



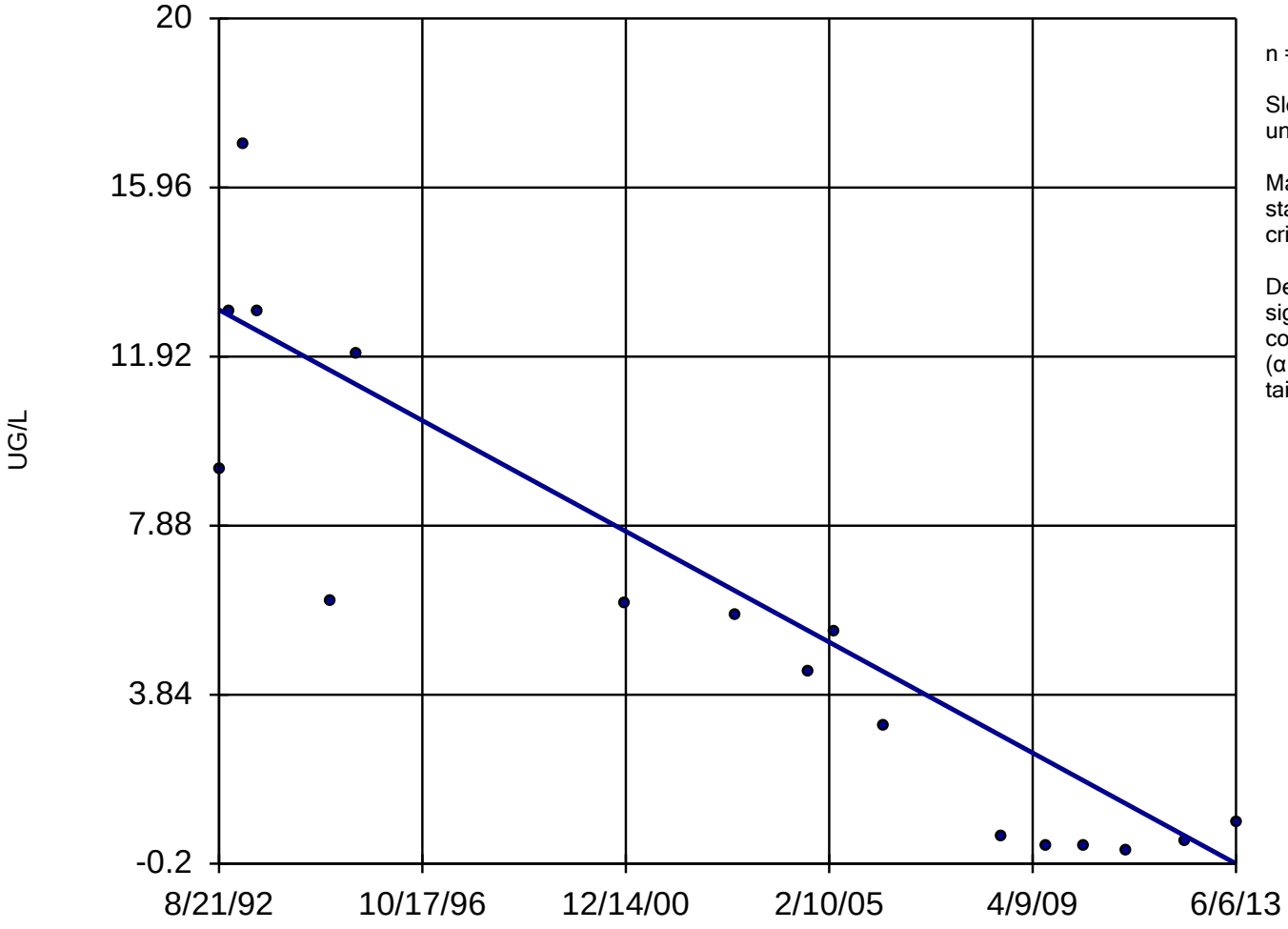
Background Data Summary: Mean=6.011, Std. Dev.=5.426, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8973, critical = 0.887. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-33A



n = 17

Slope = -0.6361 units per year.

Mann-Kendall statistic = -105
critical = -58

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:15 PM

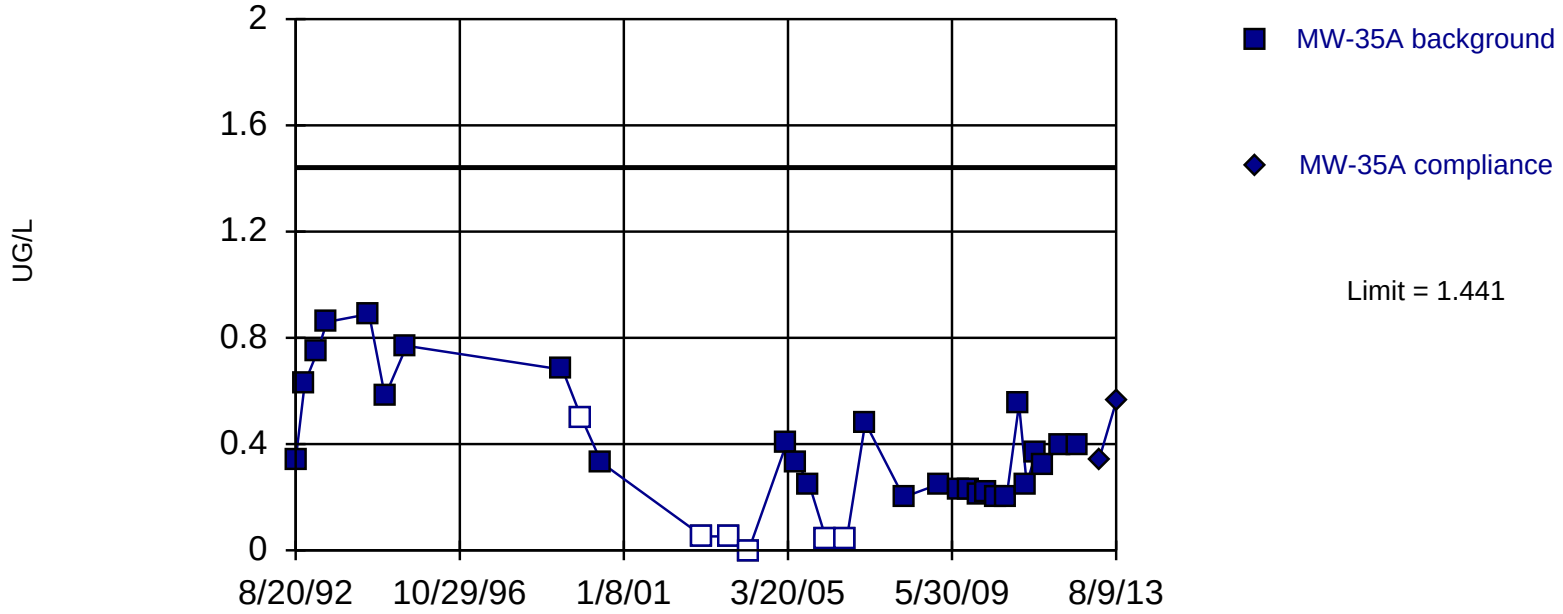
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (after Cohen`s Adjustment): Mean=0.5565, Std. Dev.=0.3559, n=33, 18.18% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9367, critical = 0.931. Report alpha = 0.01. Most recent point compared to limit.

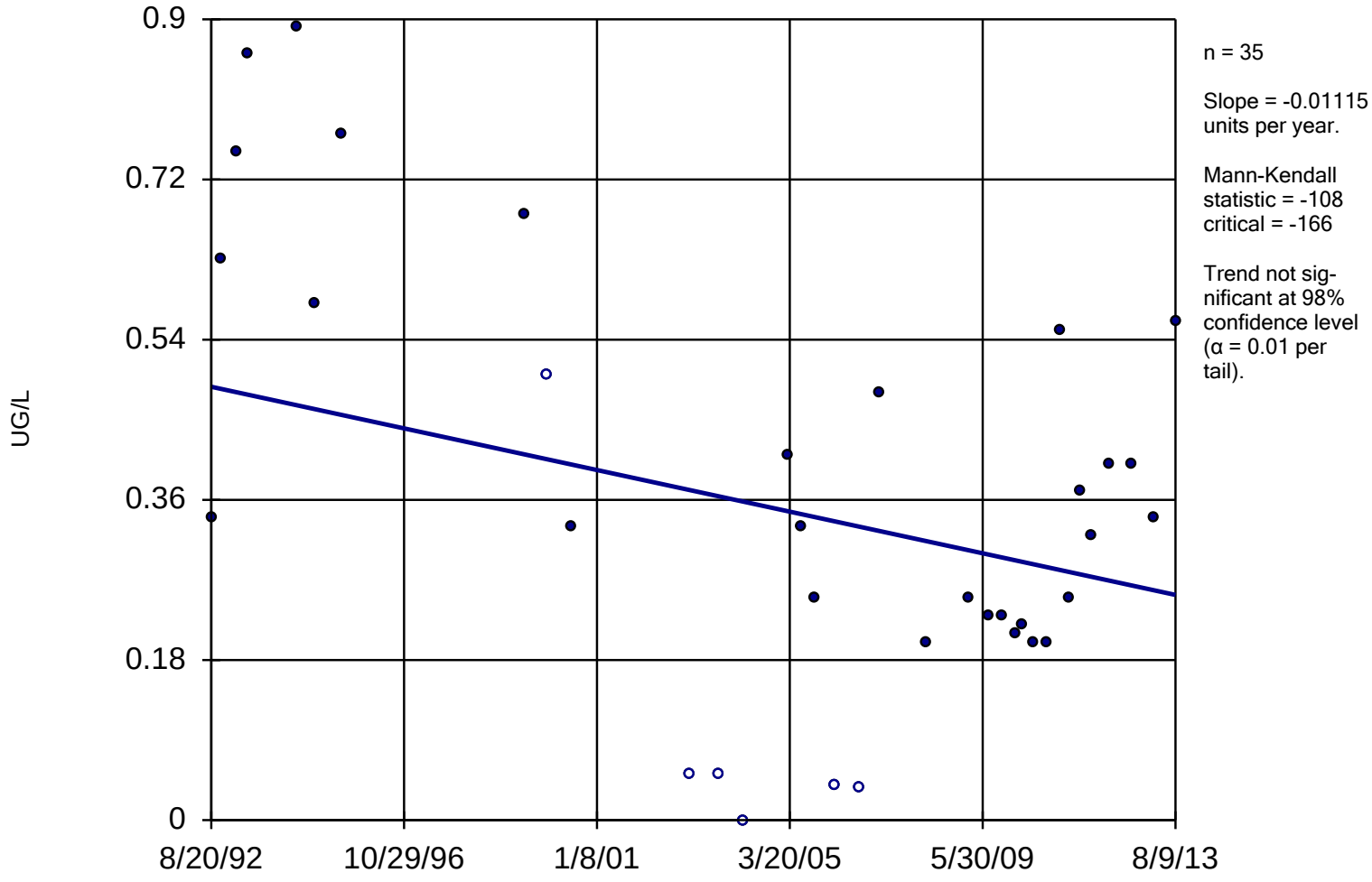
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-35A



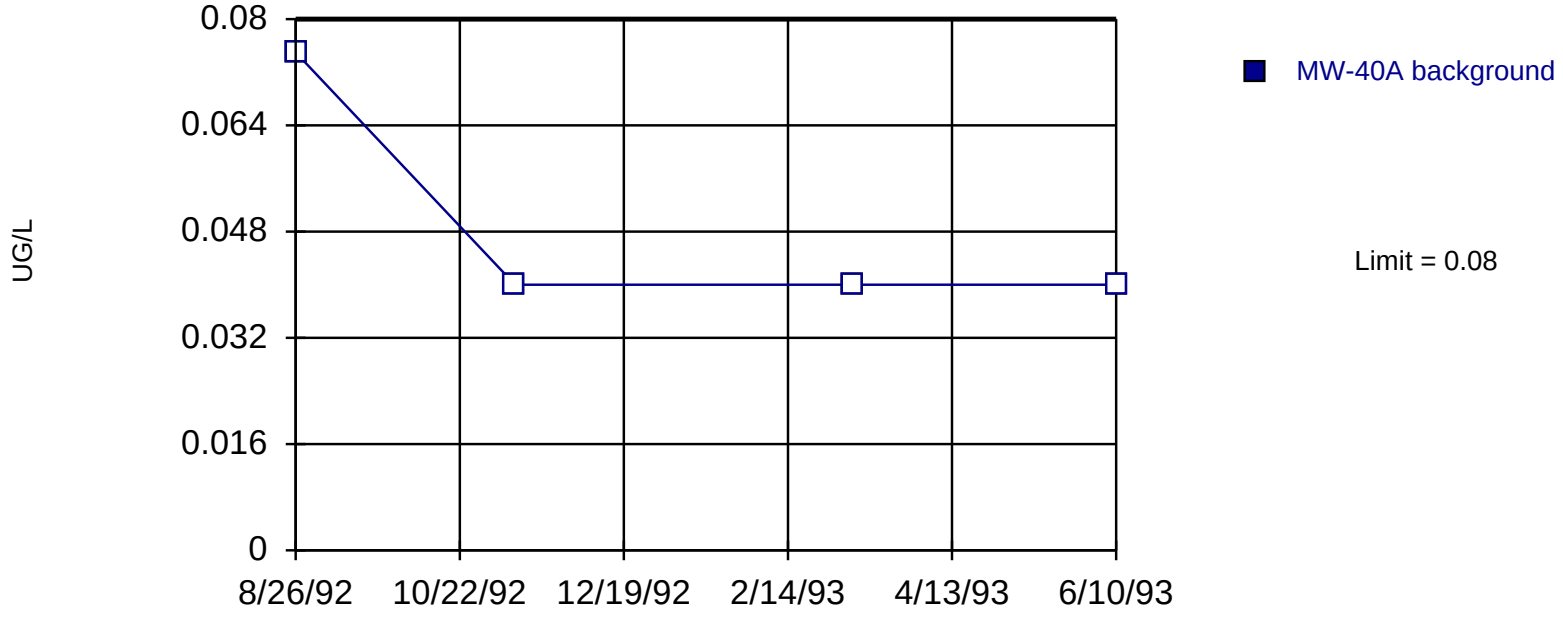
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-40A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 4) were censored; limit is most recent reporting limit. Report alpha = 0.2. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

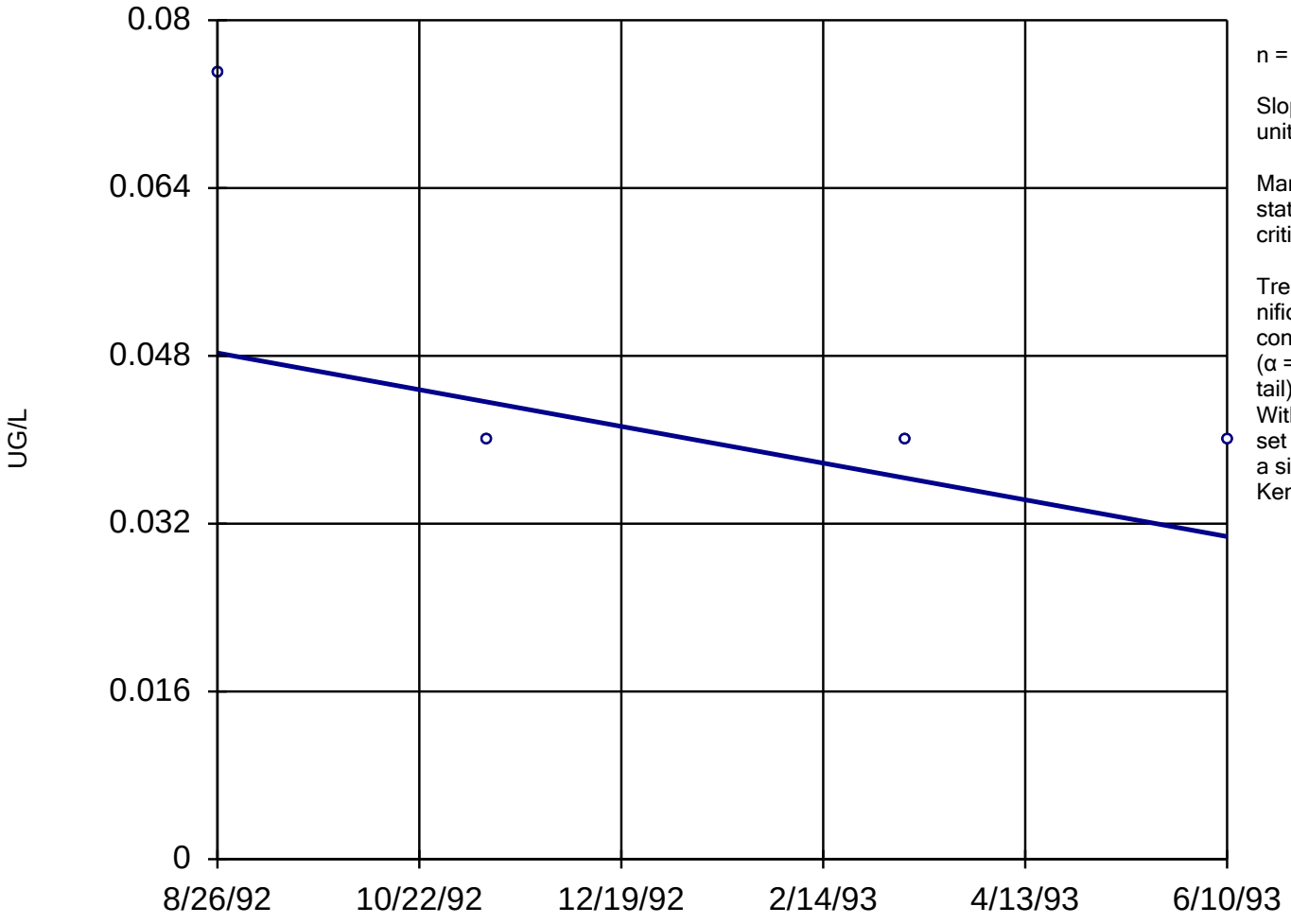
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-40A



n = 4

Slope = -0.02218 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

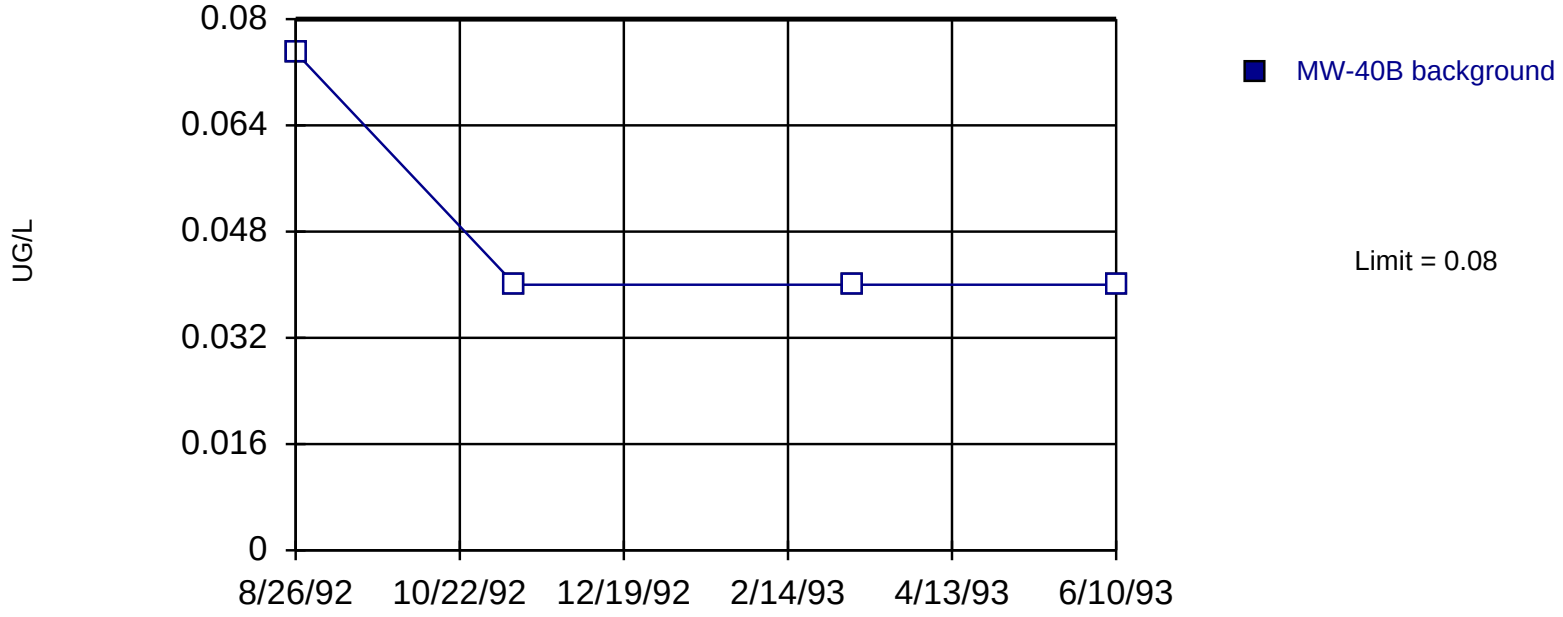
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-40B



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 4) were censored; limit is most recent reporting limit. Report alpha = 0.2. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

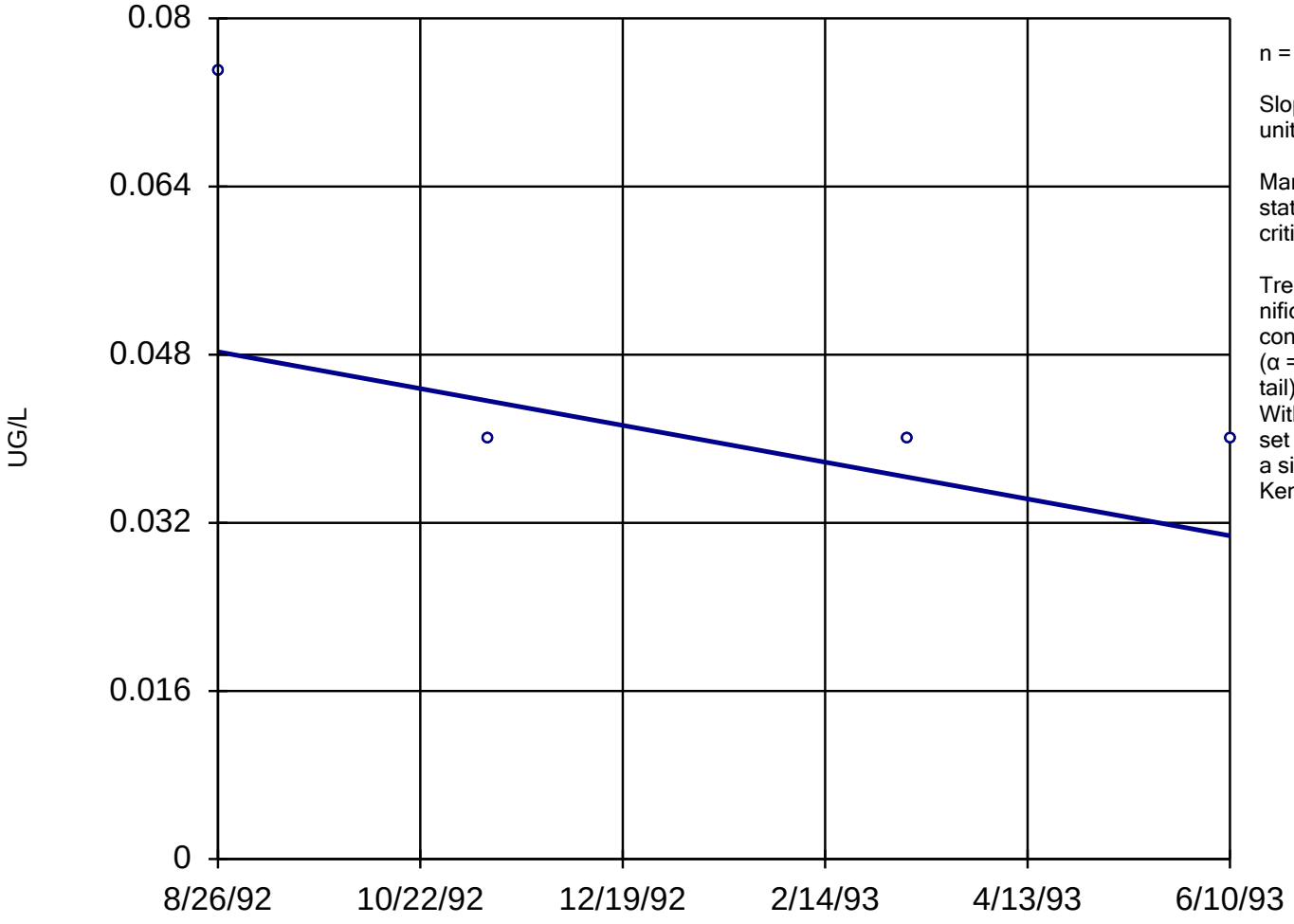
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-40B



n = 4

Slope = -0.02218 units per year.

Mann-Kendall statistic = -3
critical = -8

Trend not significant at 98% confidence level (α = 0.01 per tail).
With n = 4, no data set will result in a significant Mann-Kendall statistic.

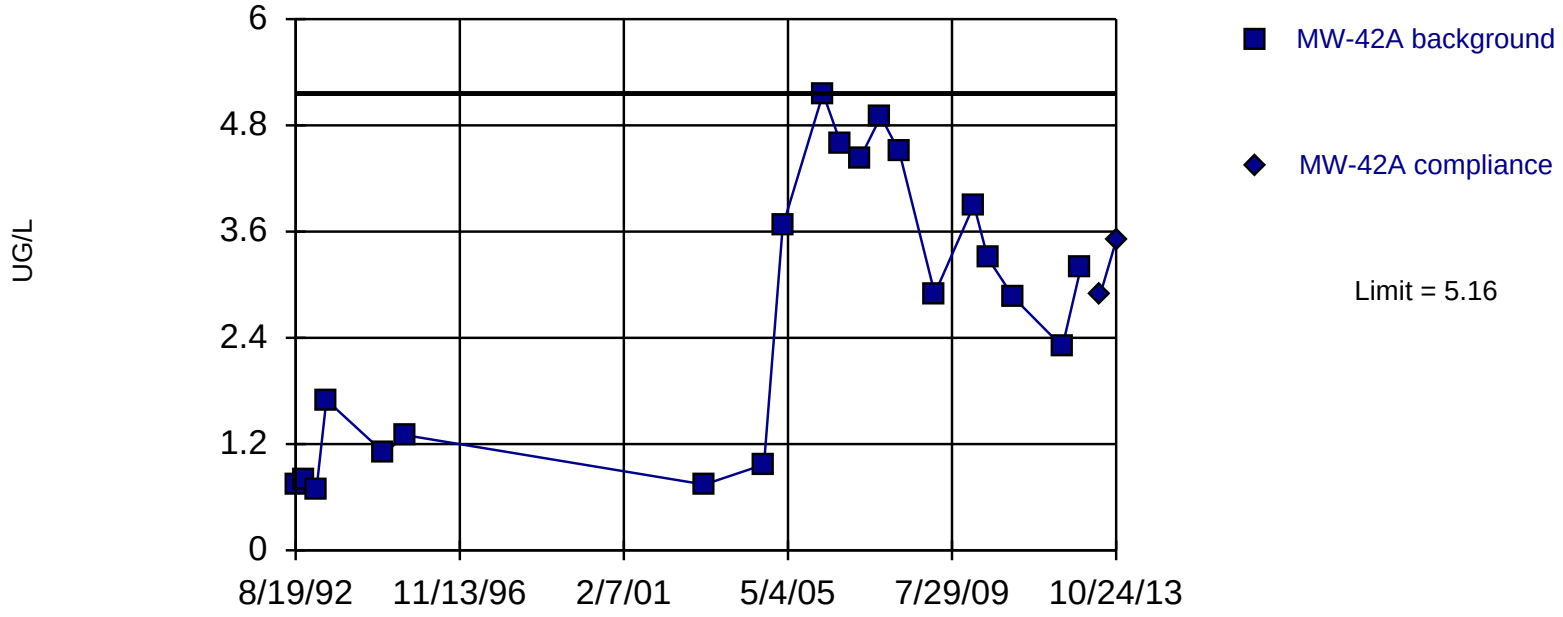
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Non-parametric



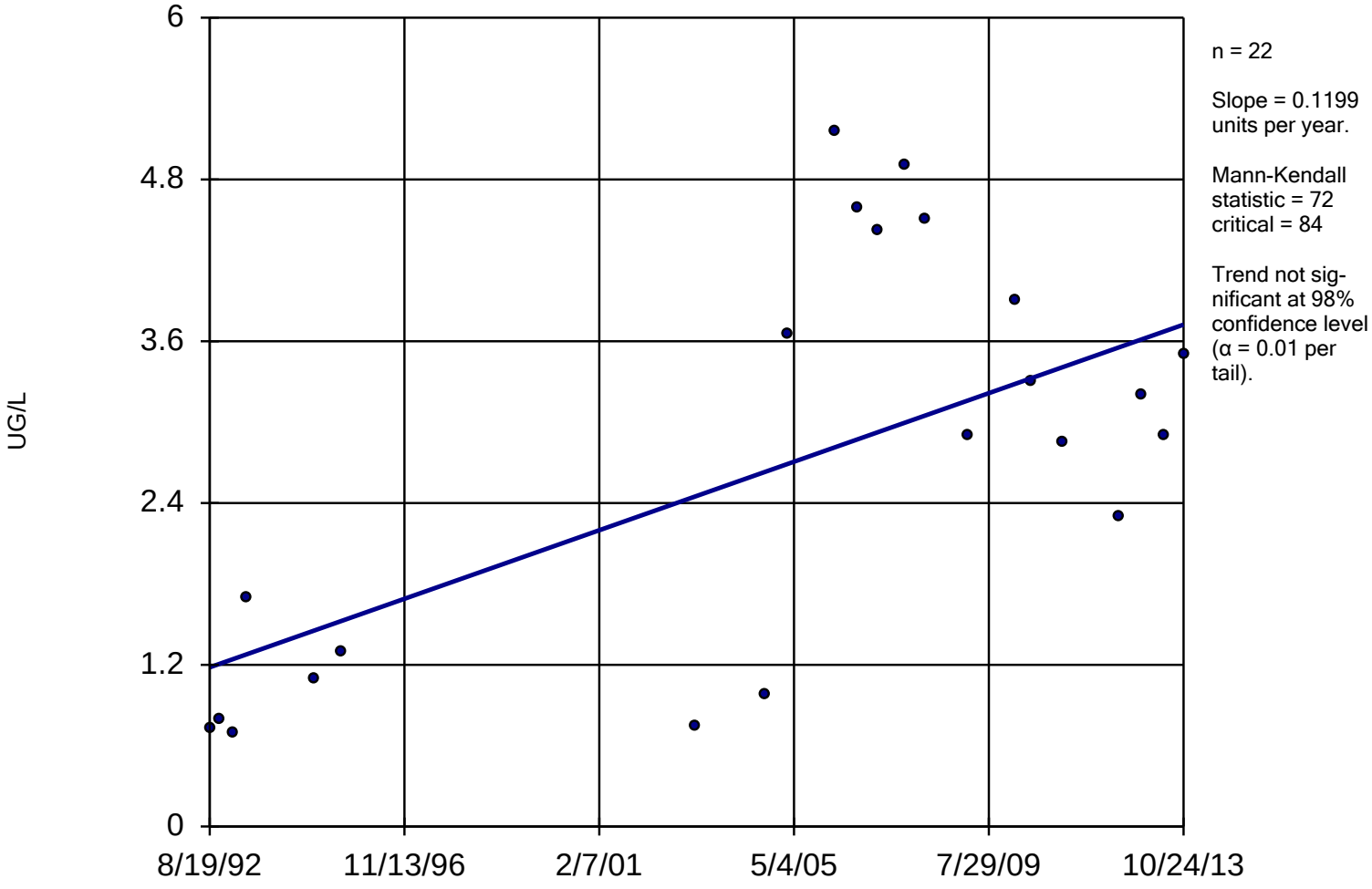
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 20 background values. Report alpha = 0.04762. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-42A



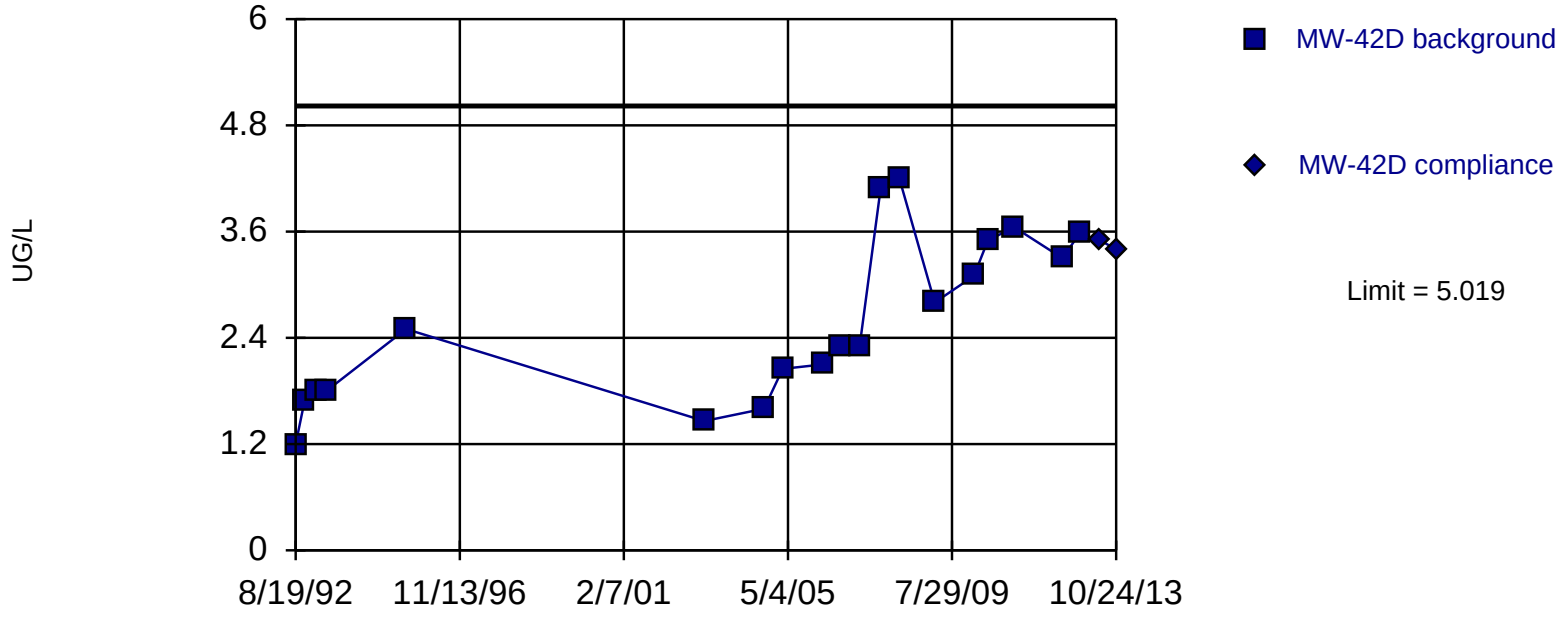
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



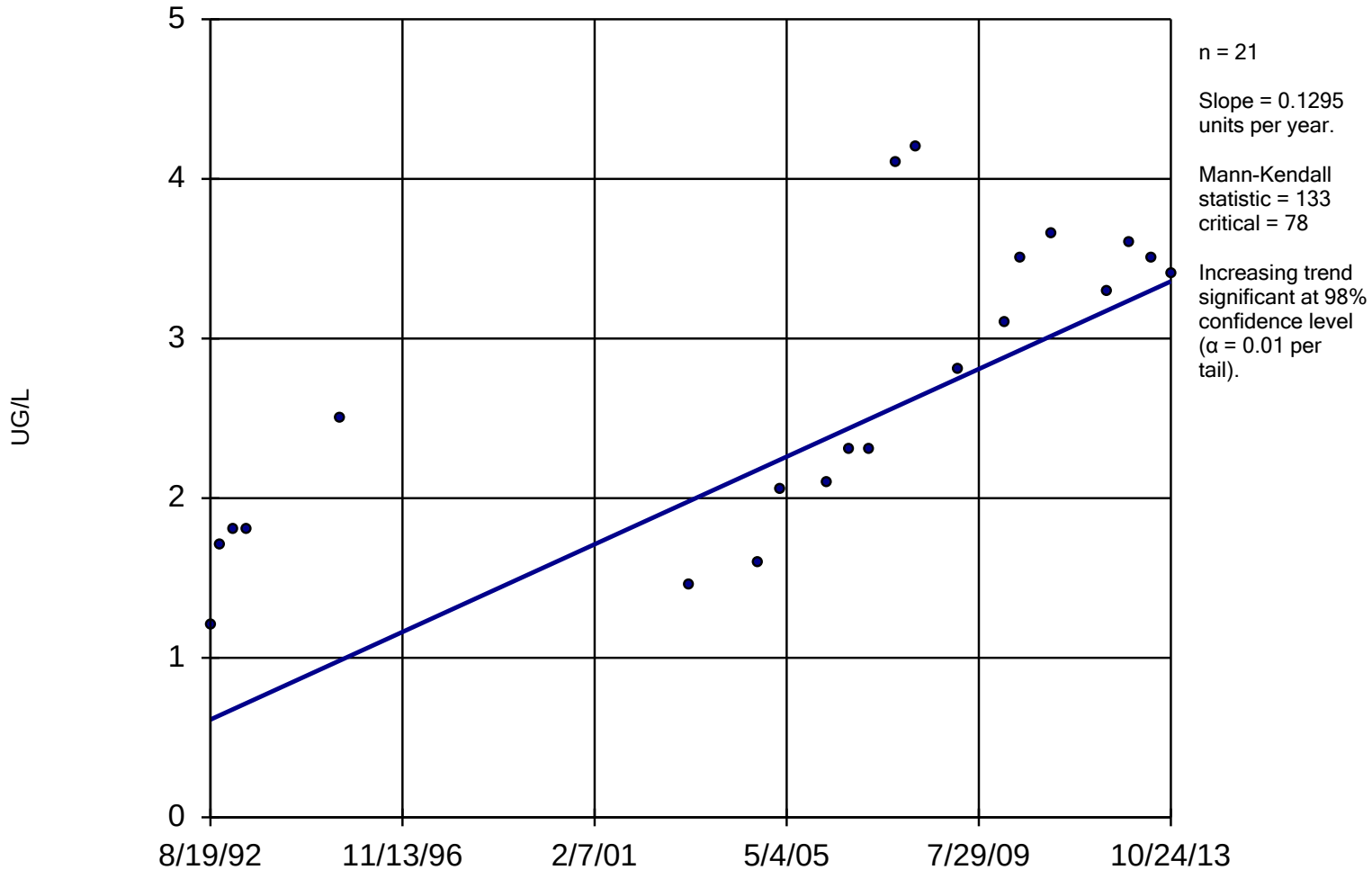
Background Data Summary: Mean=2.583, Std. Dev.=0.9303, n=19. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9407, critical = 0.901. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-42D



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

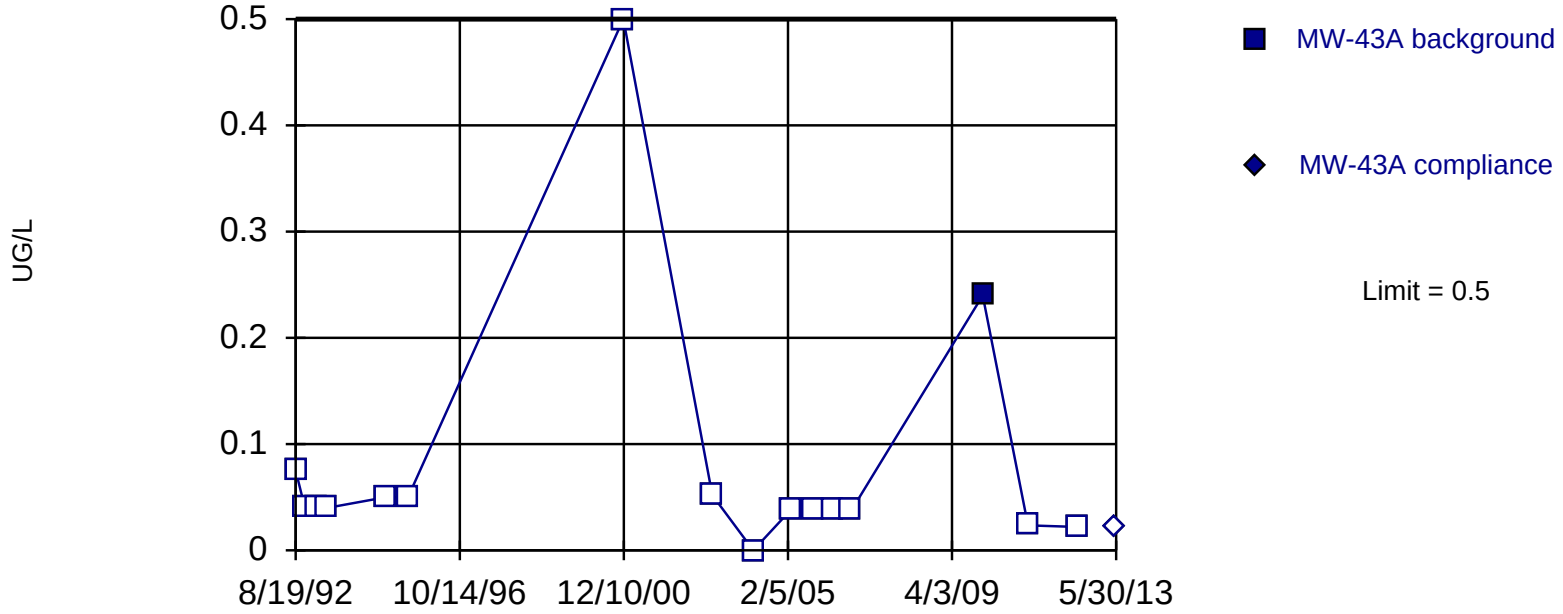
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Report alpha = 0.05882. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

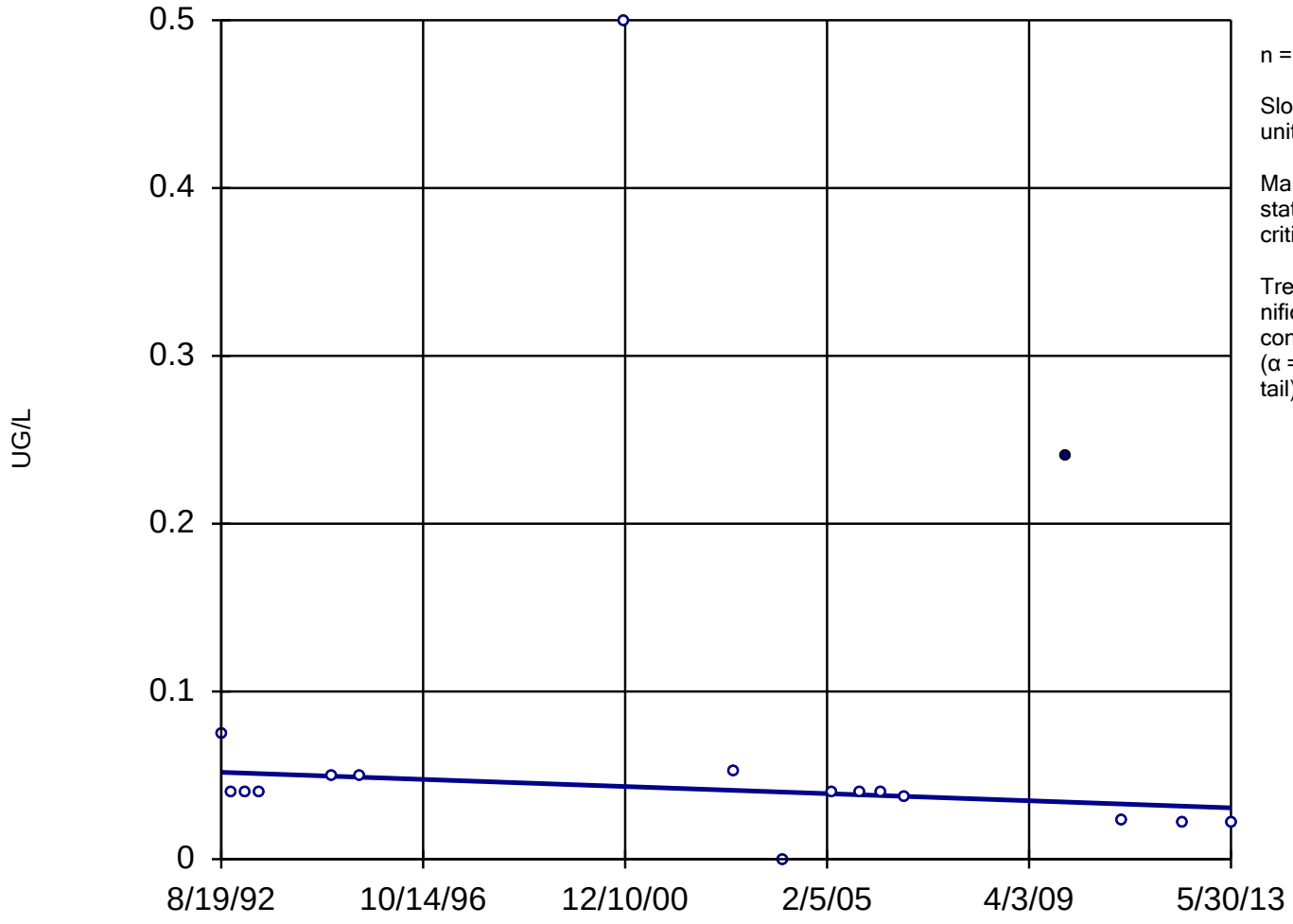
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-43A



n = 17

Slope = -0.001018 units per year.

Mann-Kendall statistic = -57
critical = -58

Trend not significant at 98% confidence level (α = 0.01 per tail).

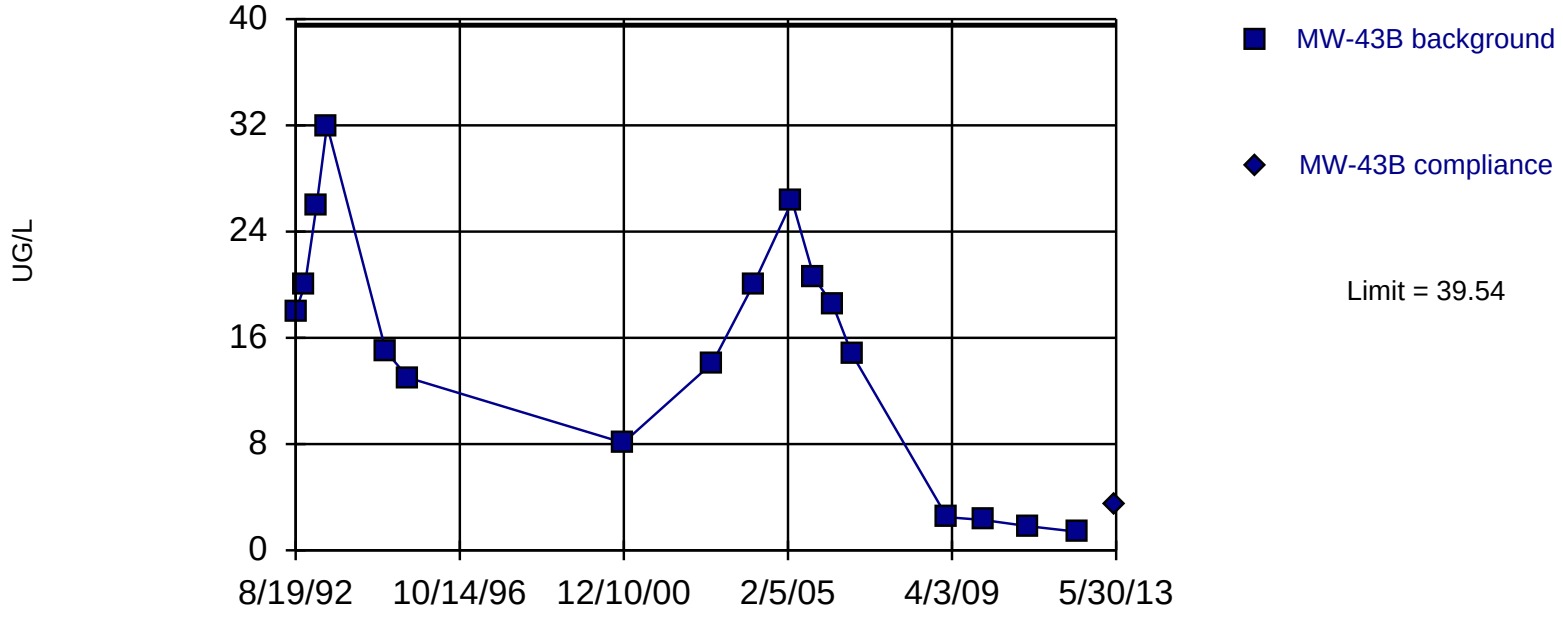
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



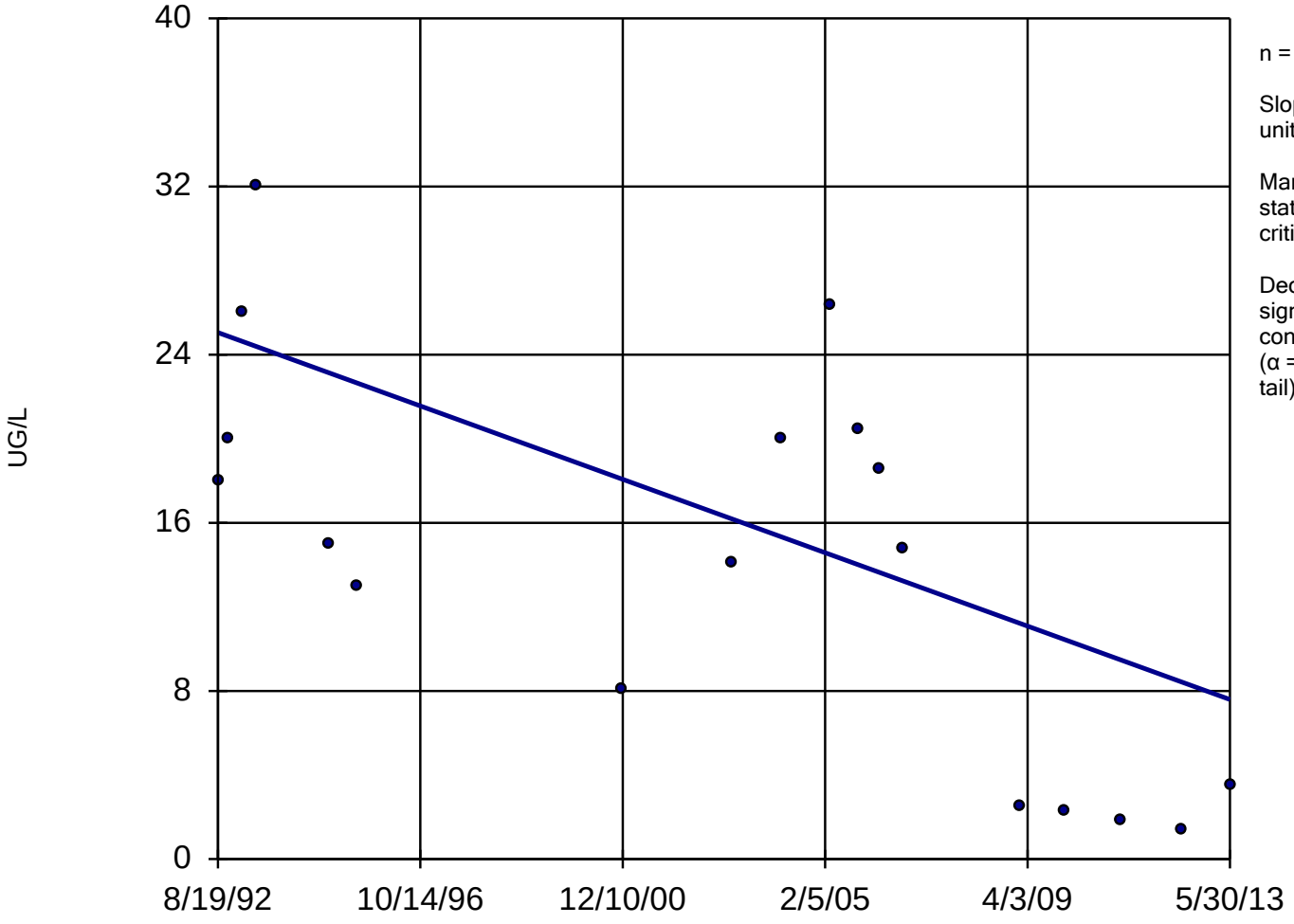
Background Data Summary: Mean=14.96, Std. Dev.=9.246, n=17. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9389, critical = 0.892. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-43B



n = 18

Slope = -0.8396 units per year.

Mann-Kendall statistic = -72
critical = -63

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:15 PM

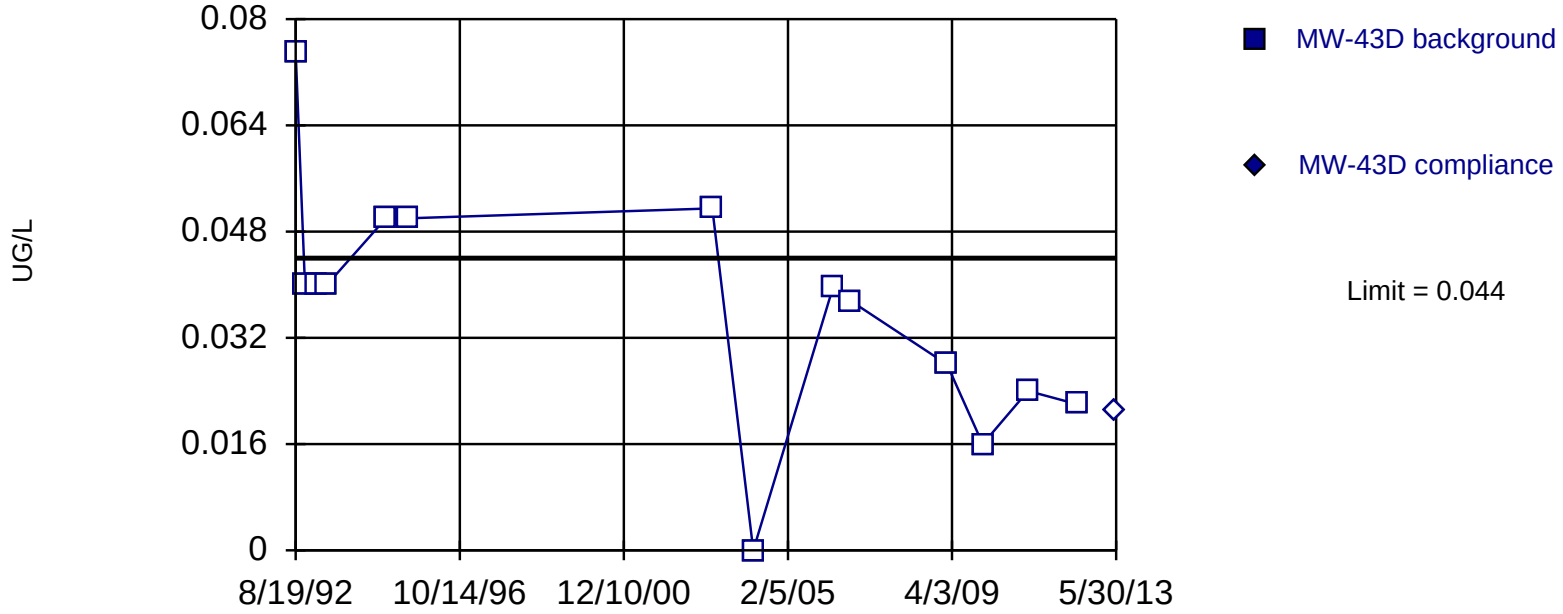
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 14) were censored; limit is most recent reporting limit. Report alpha = 0.06667. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

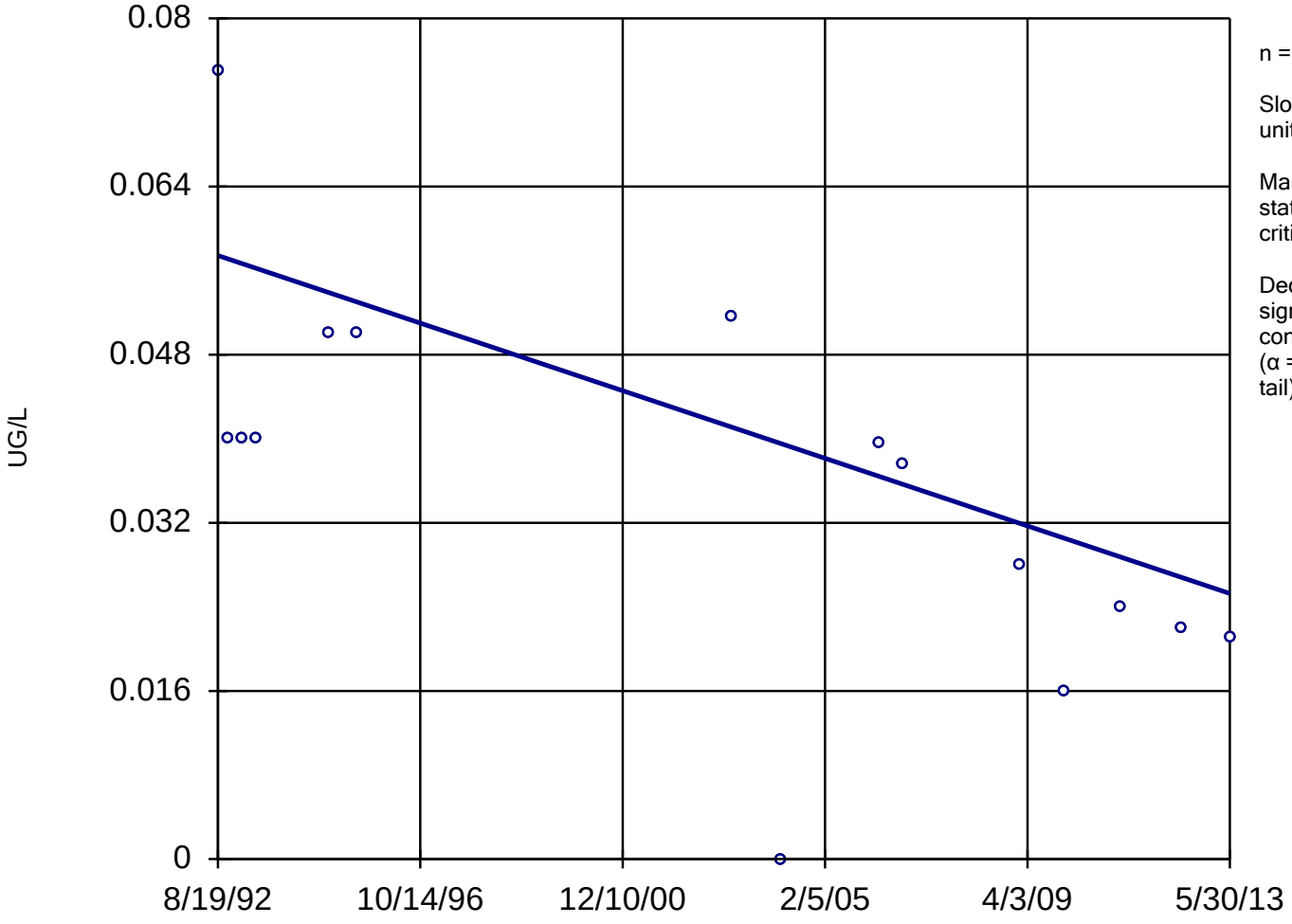
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-43D



n = 15

Slope = -0.001547 units per year.

Mann-Kendall statistic = -59
critical = -48

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:15 PM

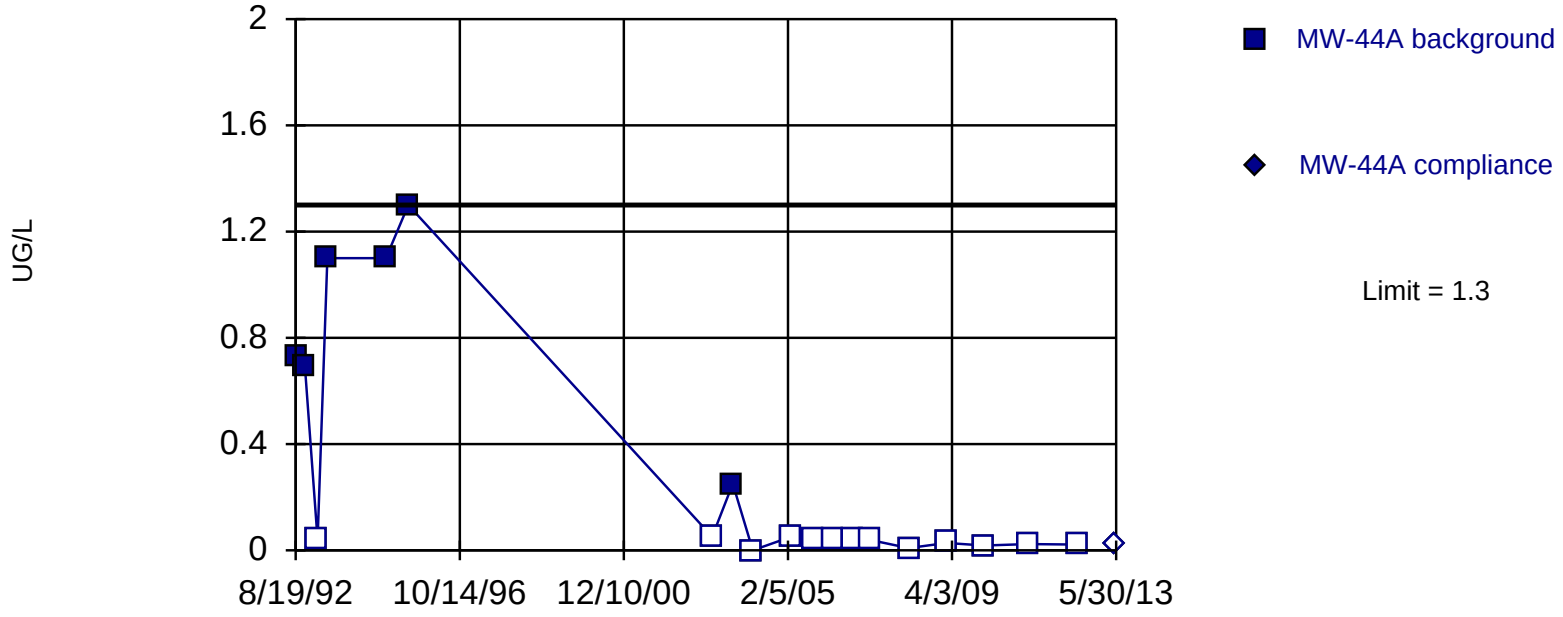
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 19 background values. 68.42% NDs. Report alpha = 0.05. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

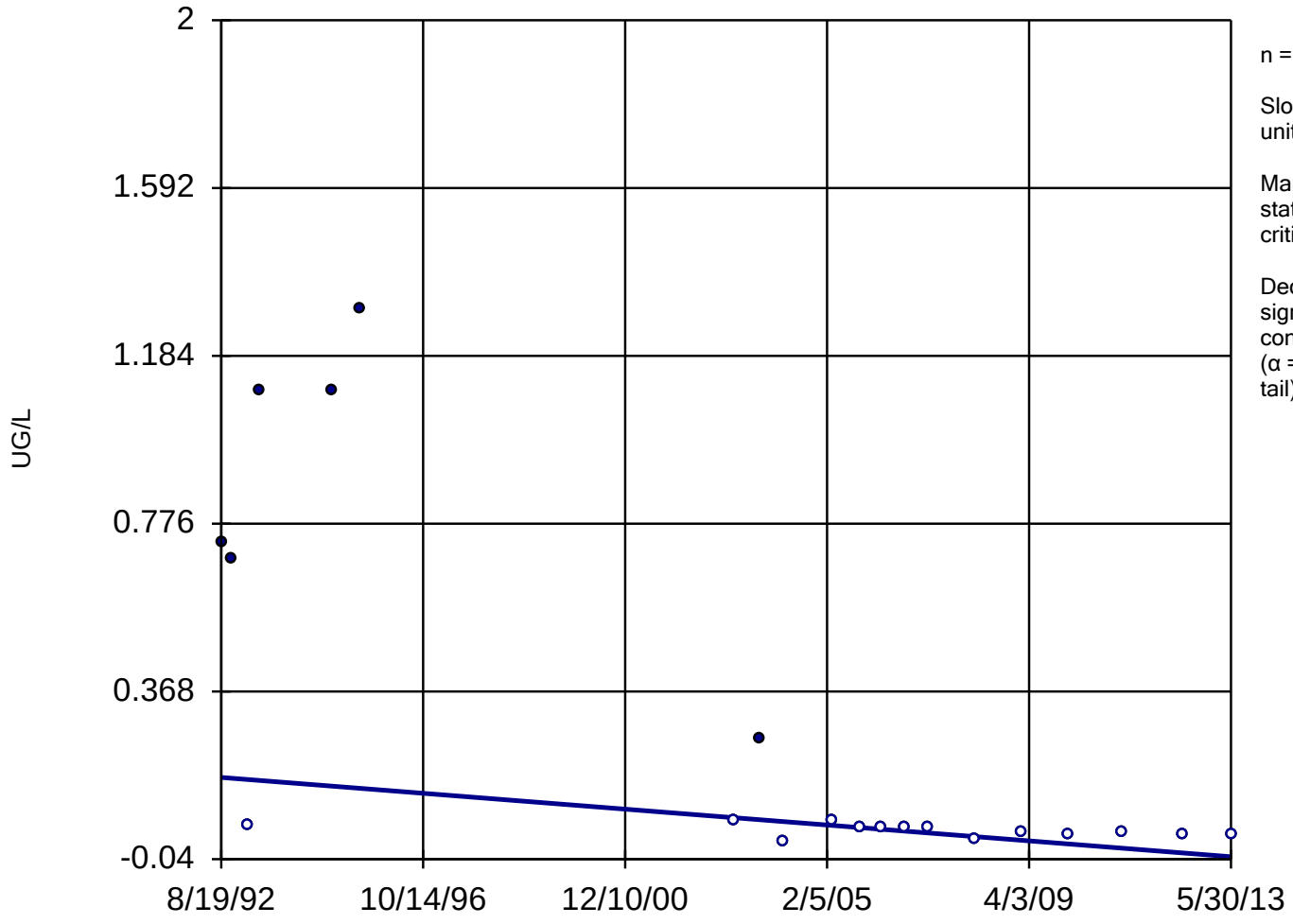
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-44A



n = 20

Slope = -0.009284 units per year.

Mann-Kendall statistic = -114
critical = -73

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 2:15 PM

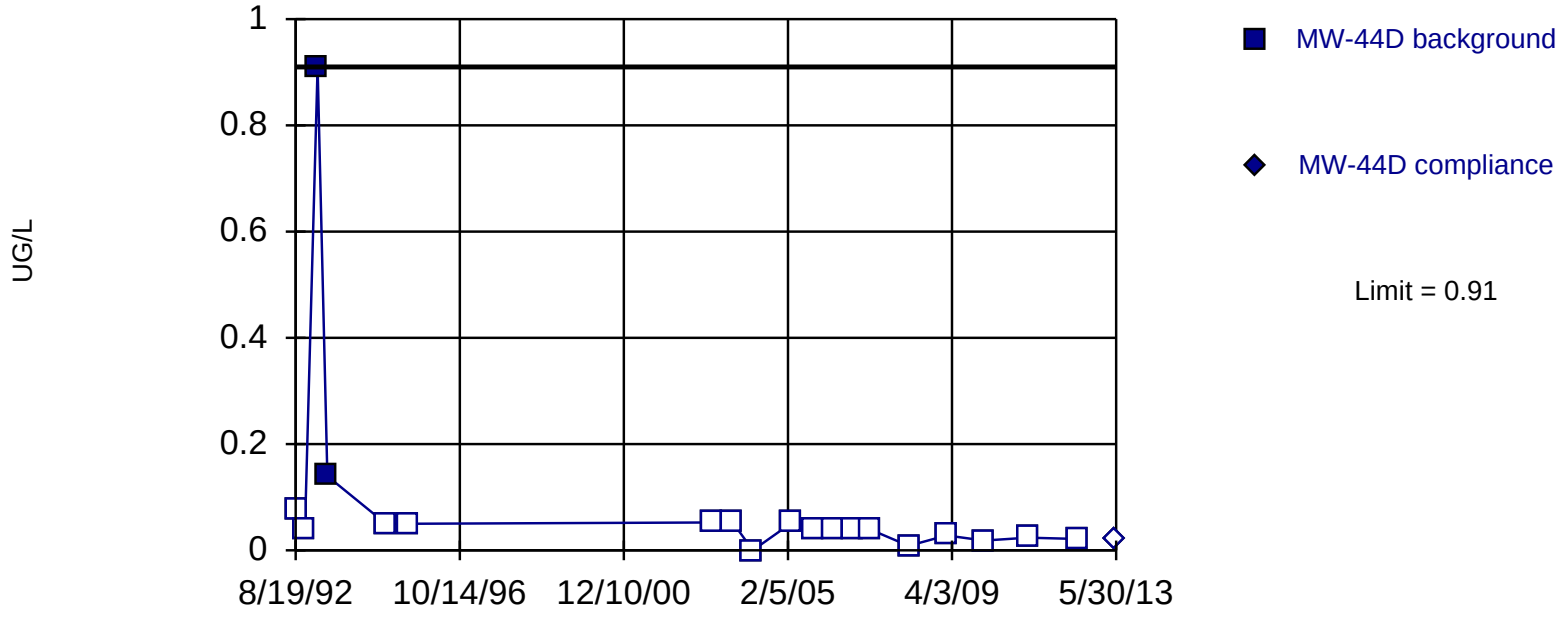
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 19 background values. 89.47% NDs. Report alpha = 0.05. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

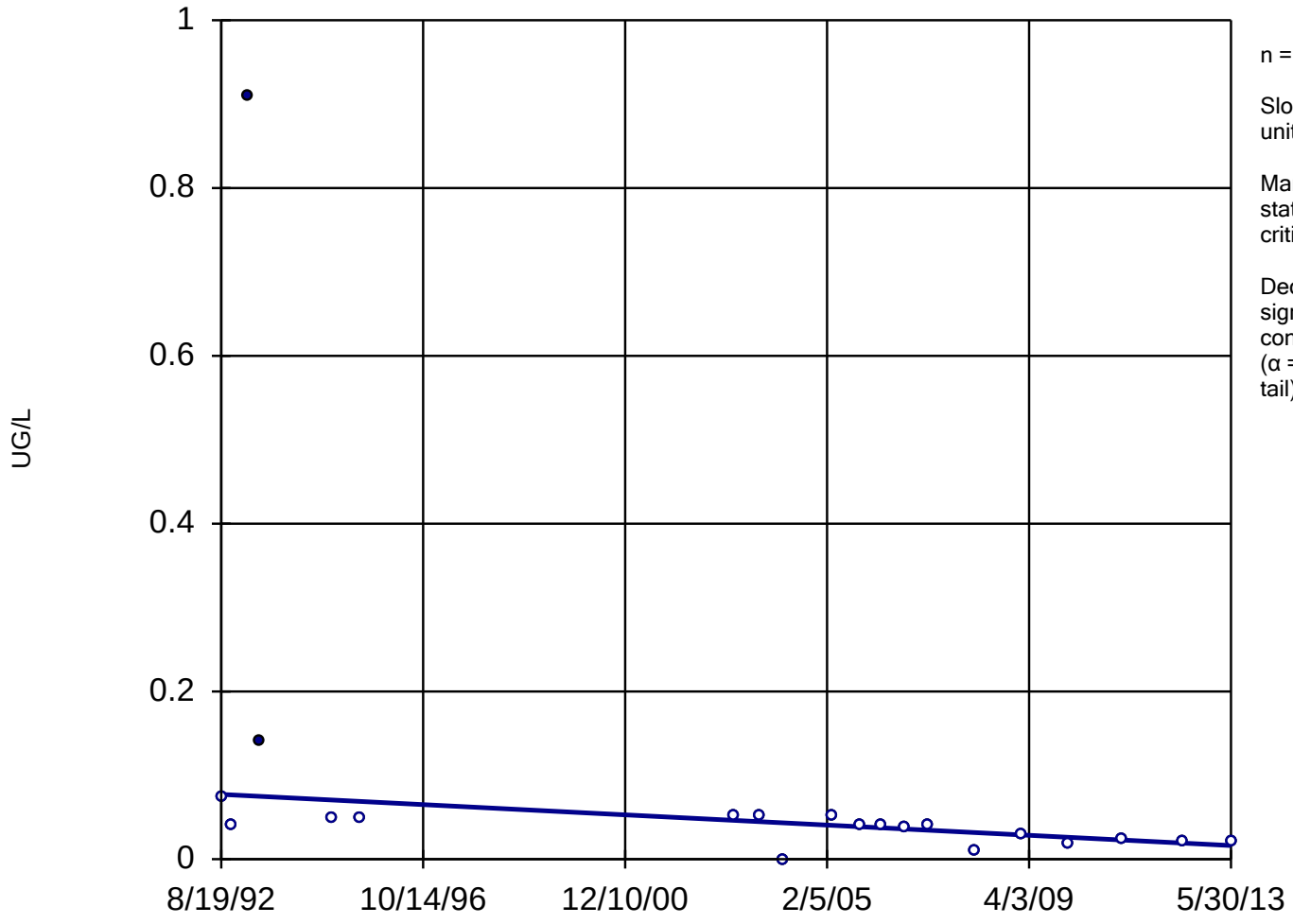
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-44D



n = 20

Slope = -0.002932 units per year.

Mann-Kendall statistic = -113
critical = -73

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

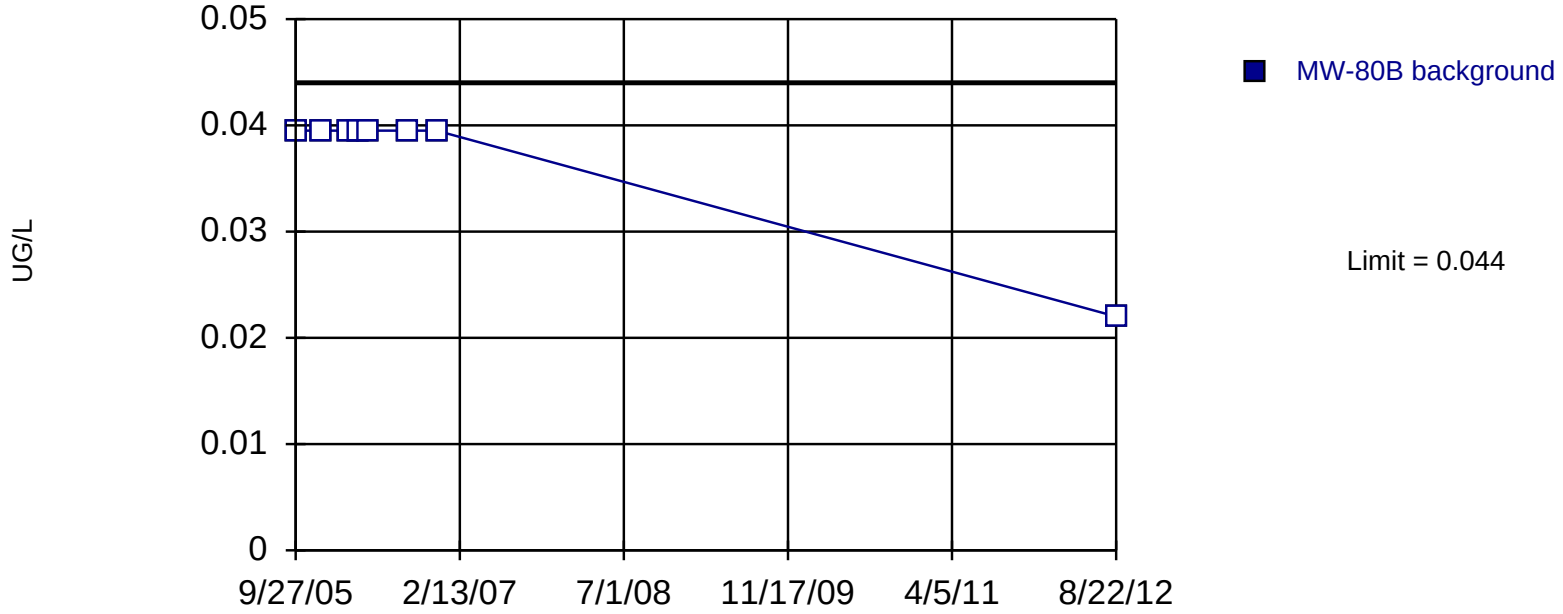
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-80B



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

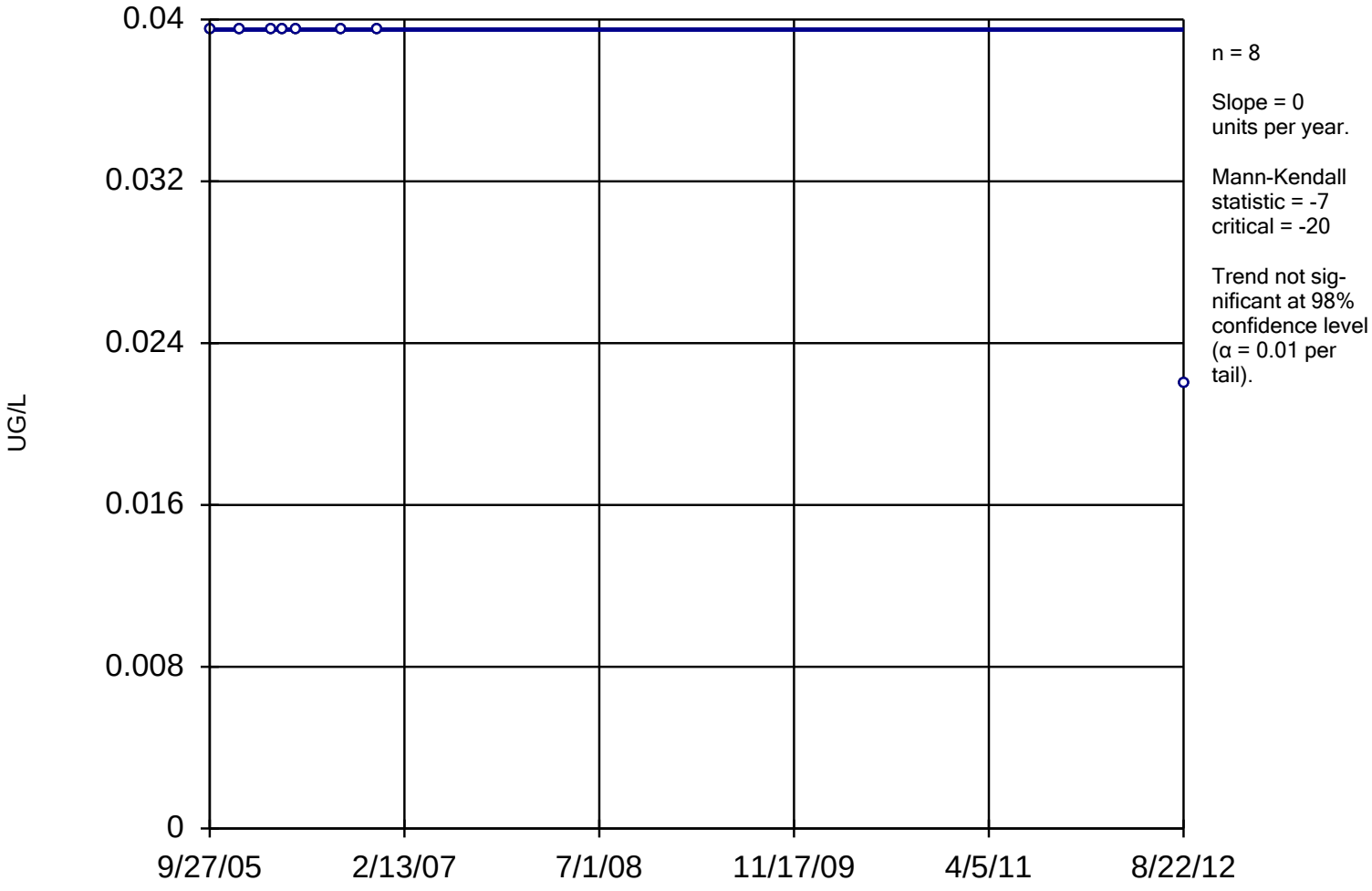
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-80B



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

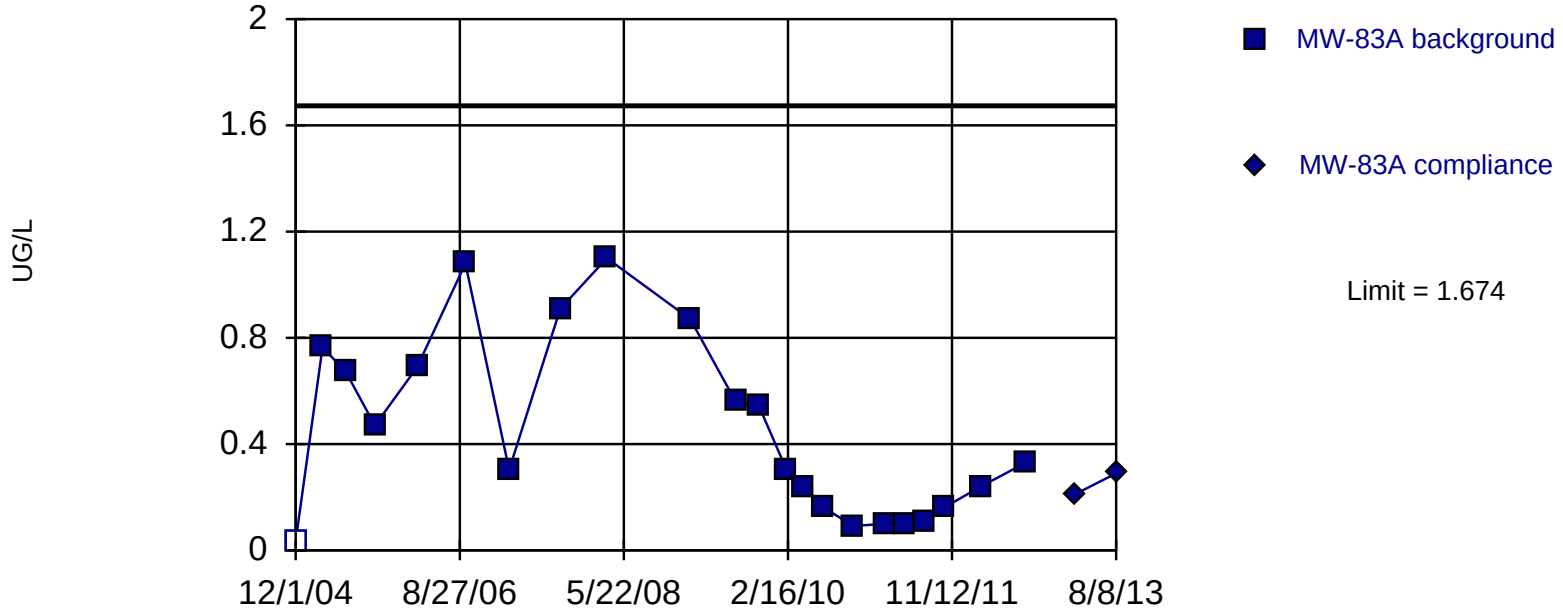
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square root transformation): Mean=0.6168, Std. Dev.=0.263, n=22, 4.545% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9485, critical = 0.911. Report alpha = 0.01. Most recent point compared to limit.

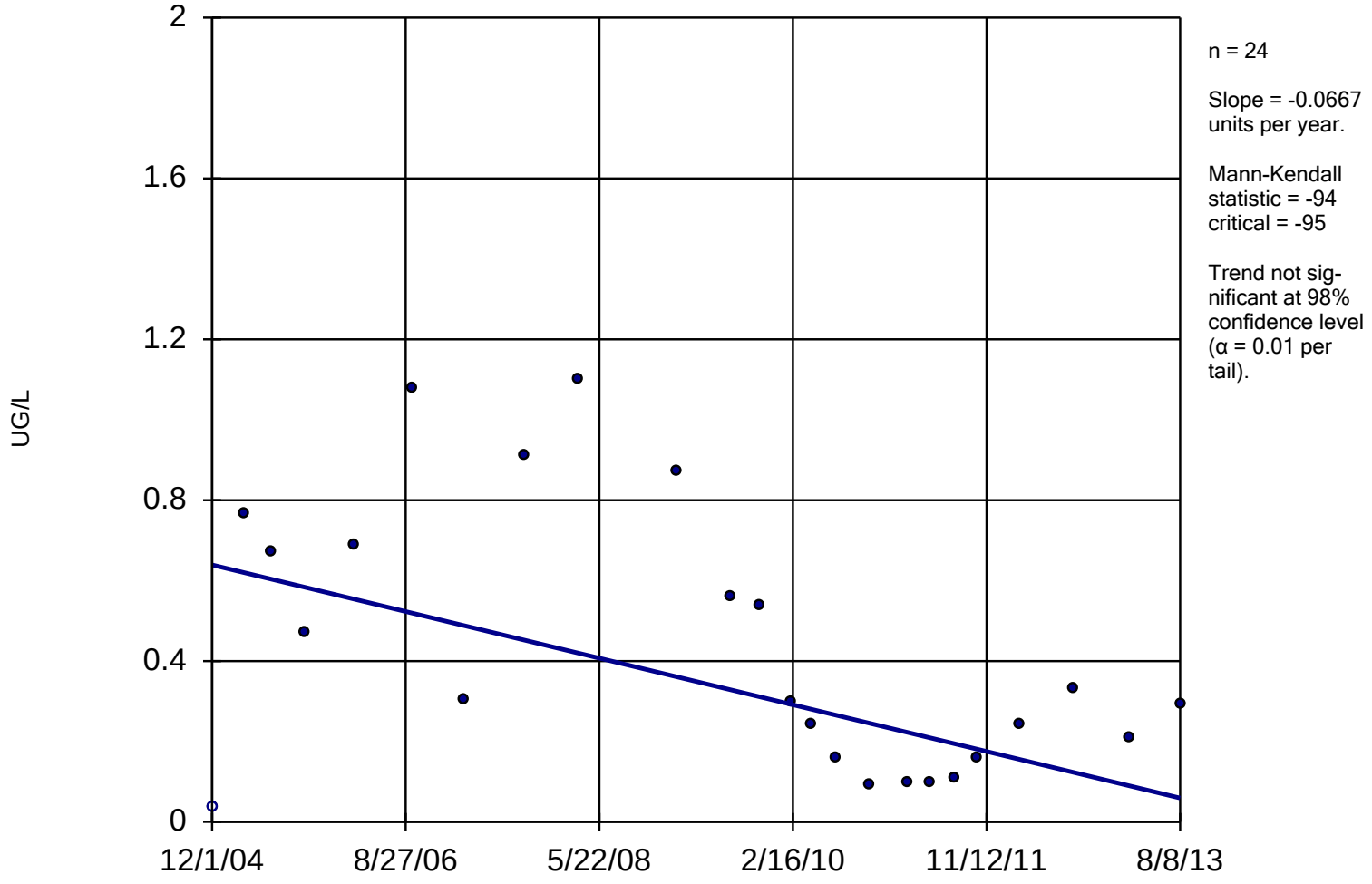
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-83A



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

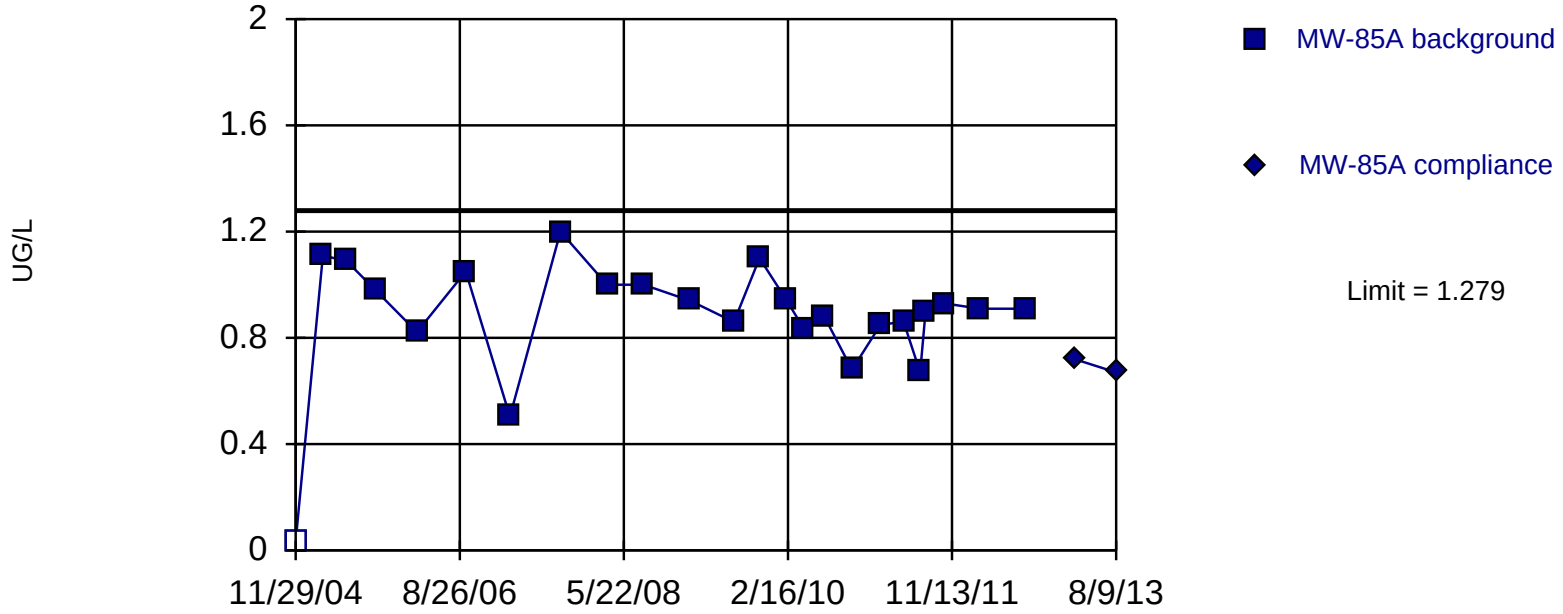
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square transformation): Mean=0.8224, Std. Dev.=0.3186, n=24, 4.167% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9621, critical = 0.916. Report alpha = 0.01. Most recent point compared to limit.

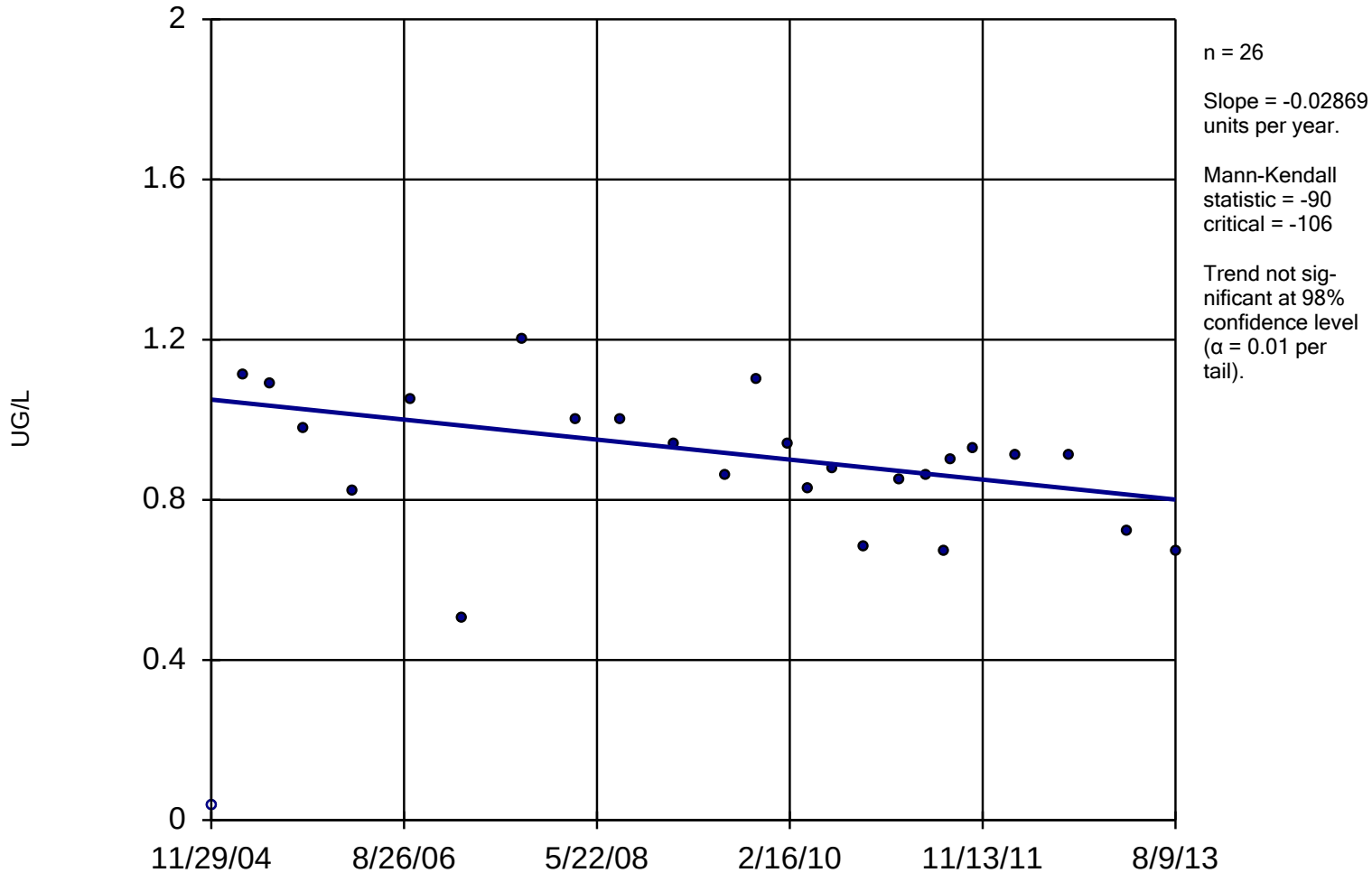
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-85A



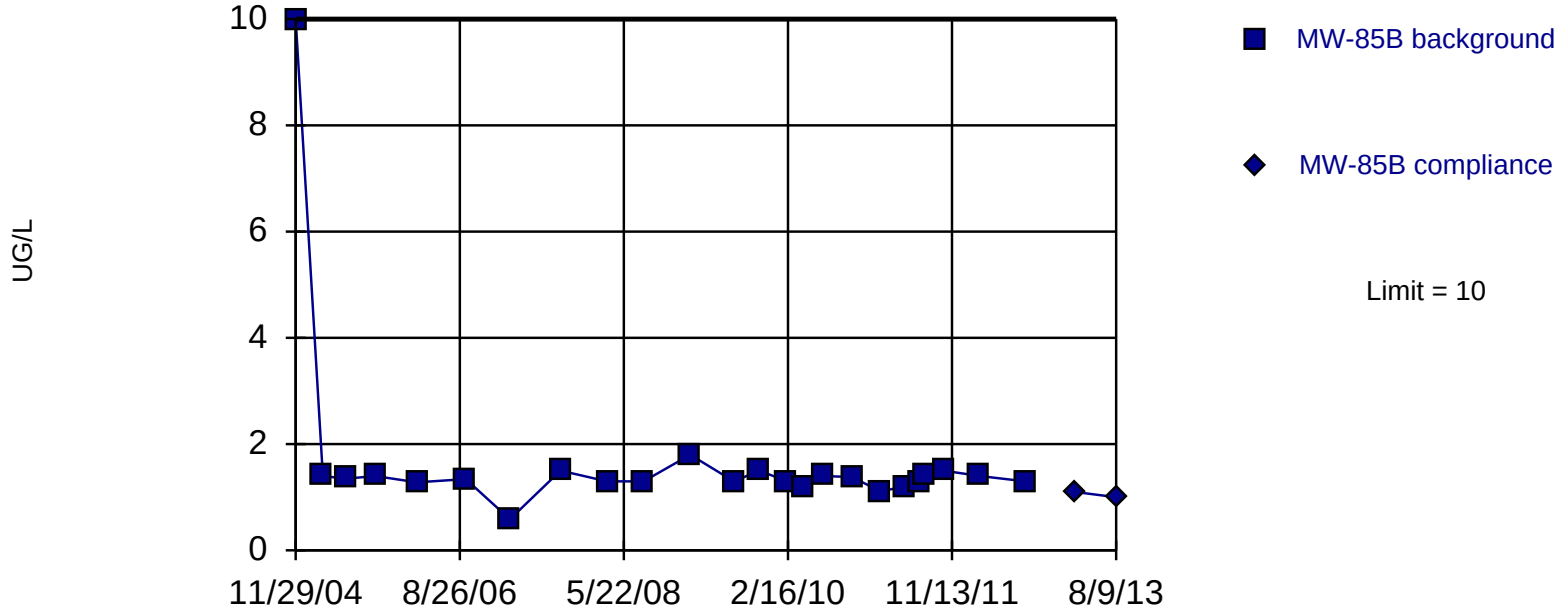
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Non-parametric



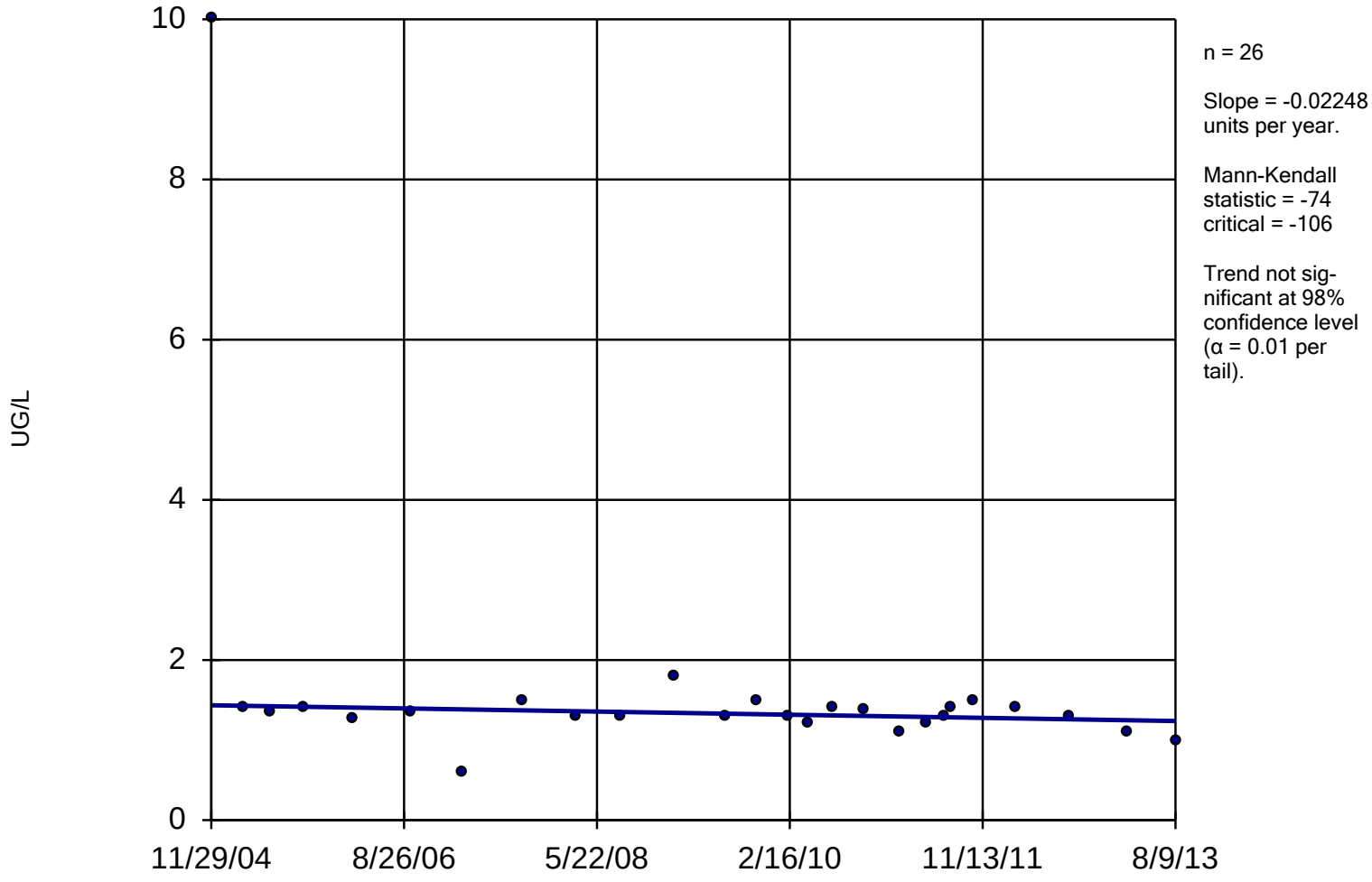
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 24 background values. Report alpha = 0.04. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-85B



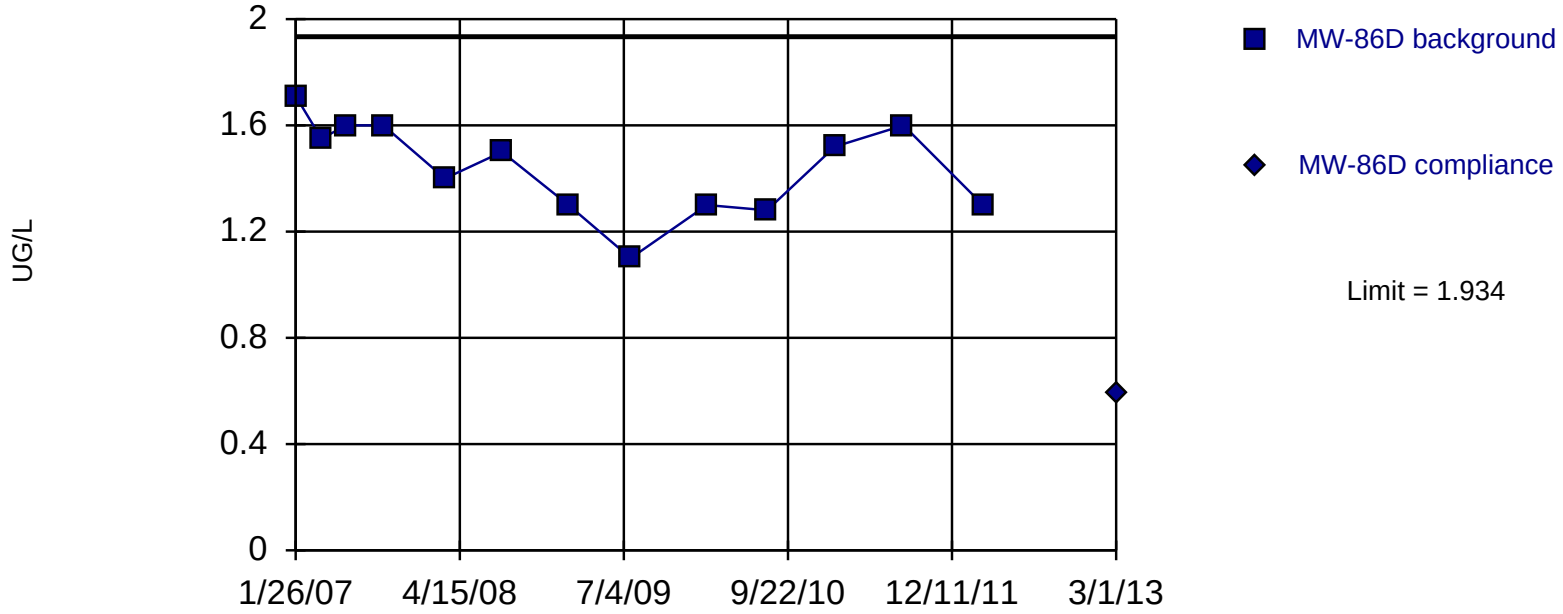
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



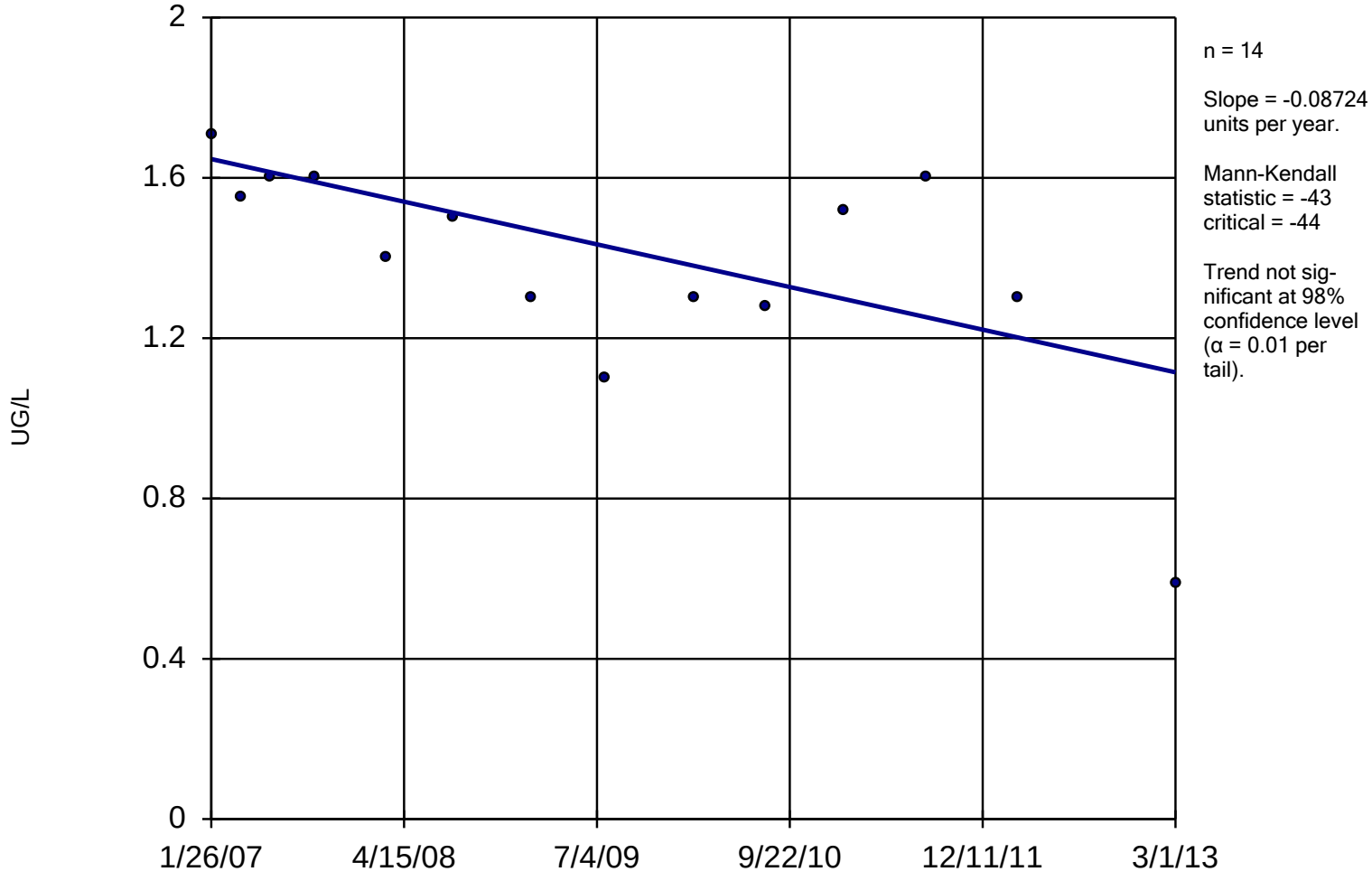
Background Data Summary: Mean=1.443, Std. Dev.=0.1764, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9351, critical = 0.866. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-86D



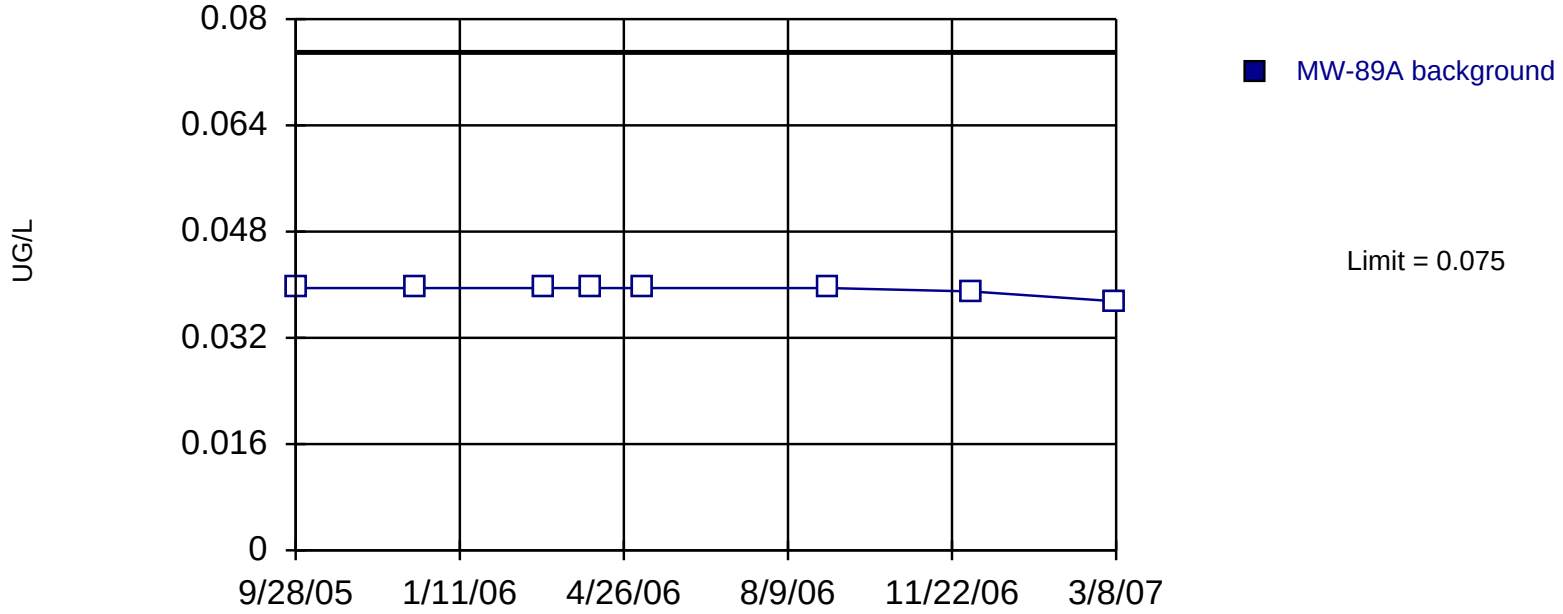
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-89A



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

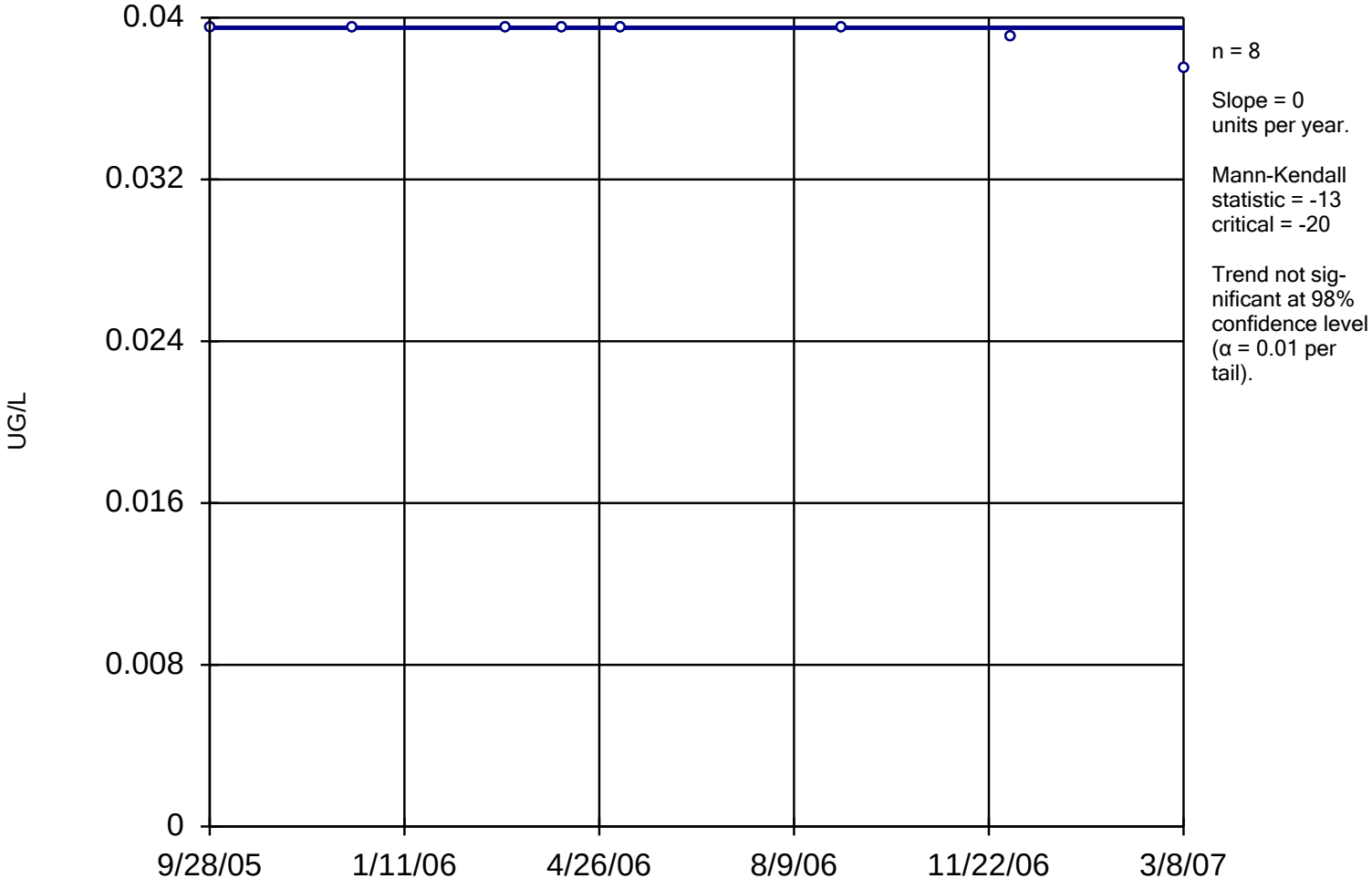
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-89A



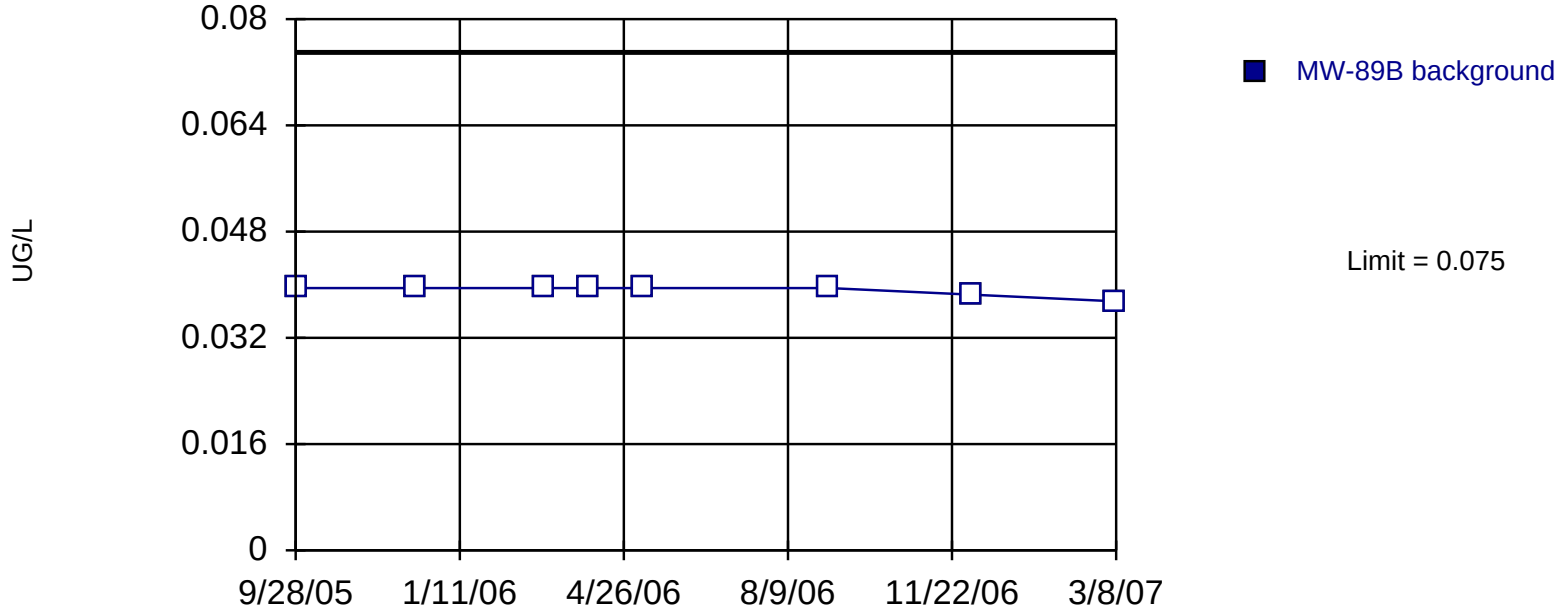
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-89B



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Report alpha = 0.1111. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

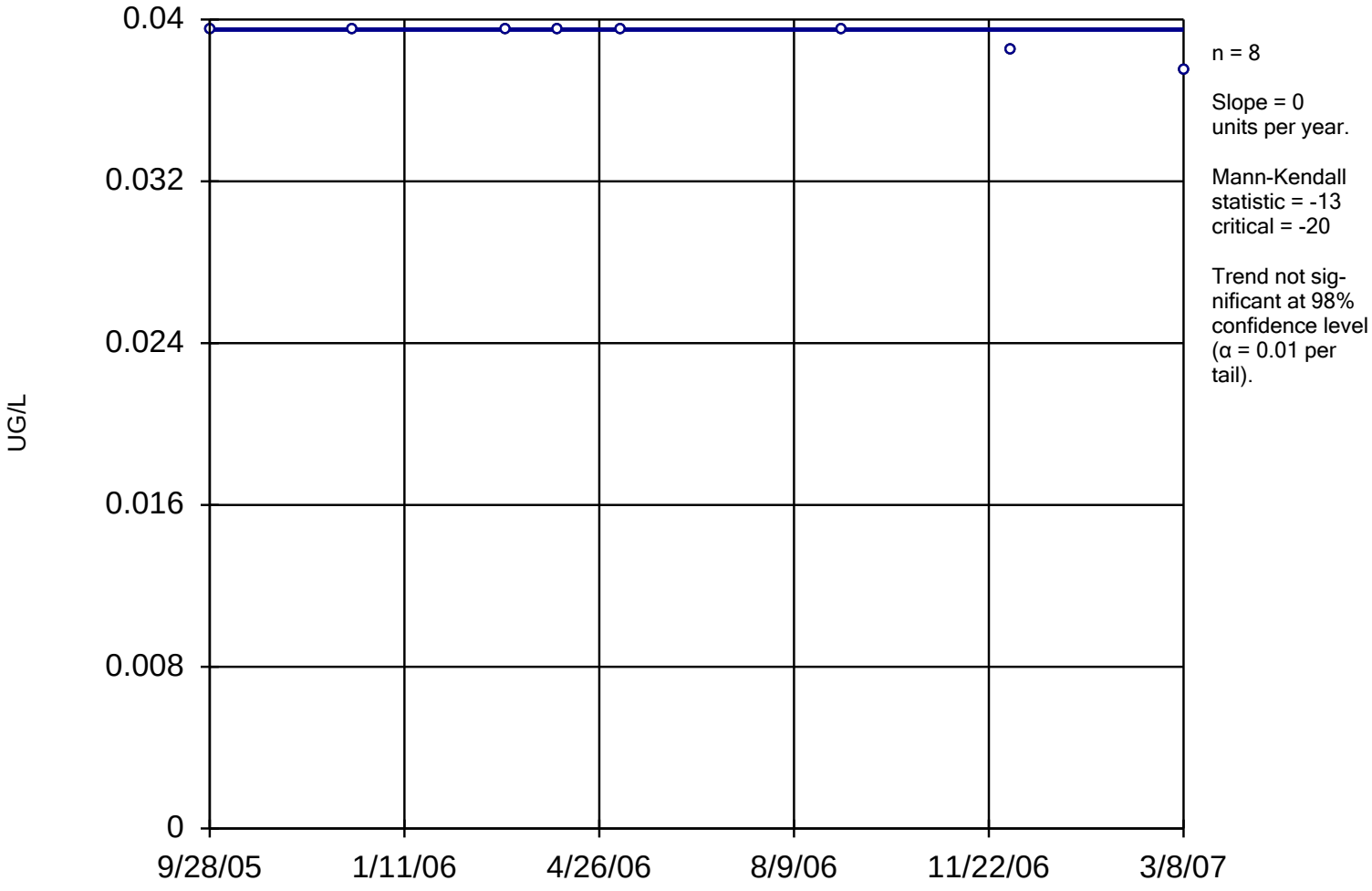
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-89B



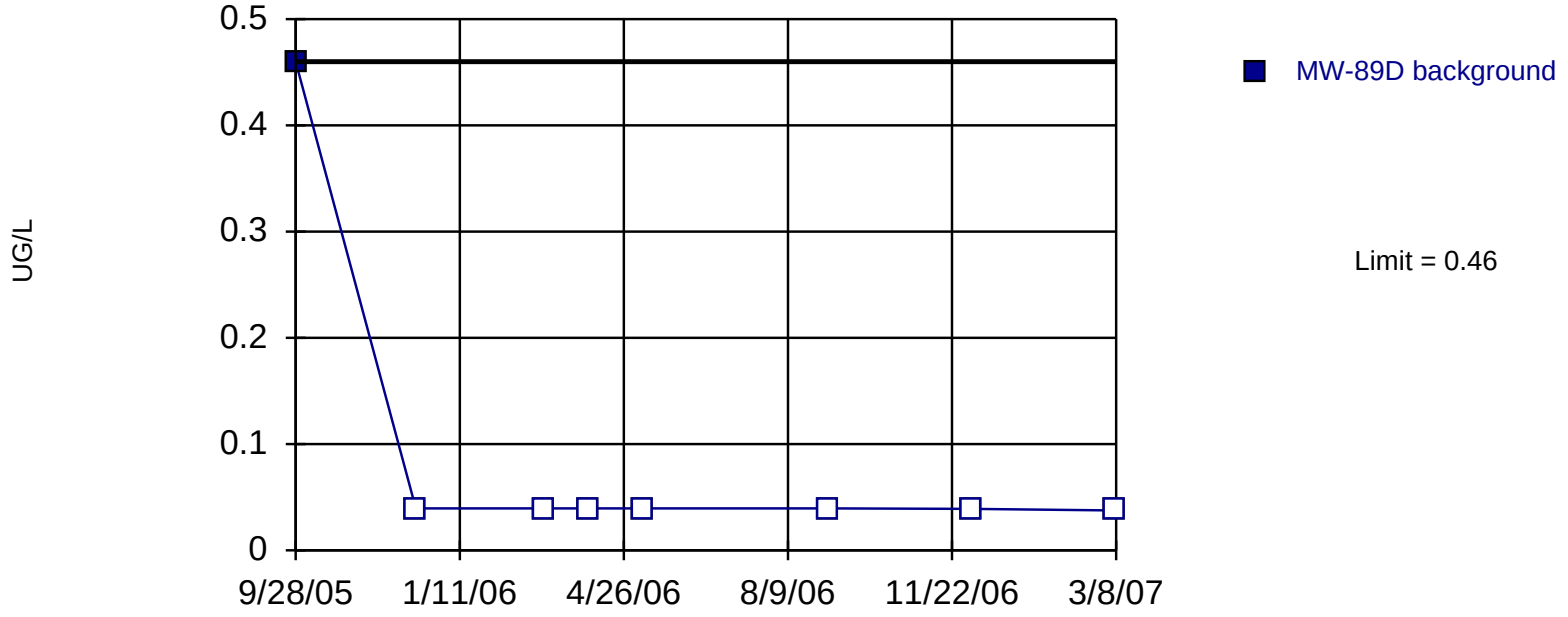
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, MW-89D



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Report alpha = 0.1111. Assumes 1 future value. Insufficient data to test for seasonality: data were not deseasonalized.

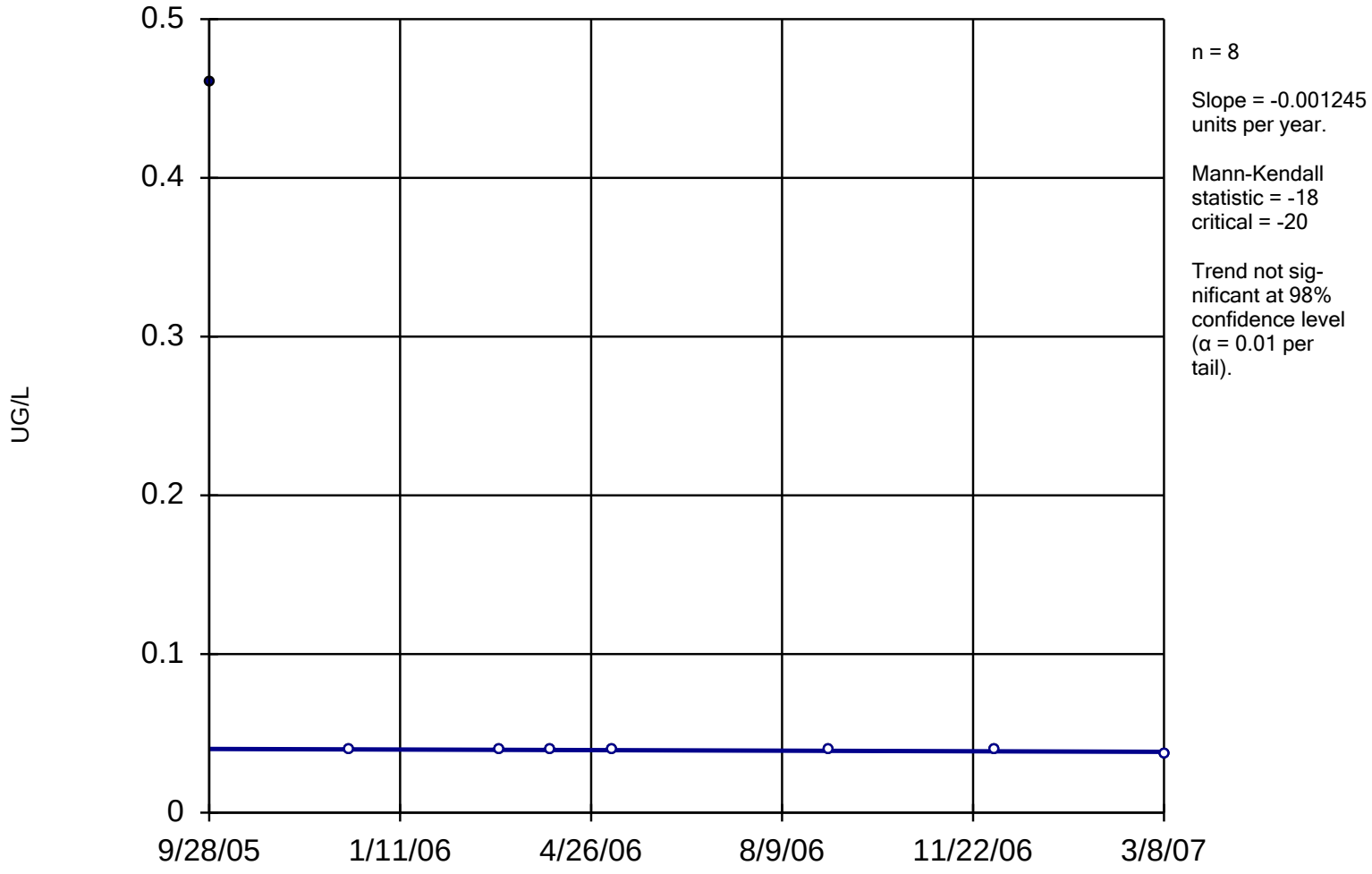
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-89D



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

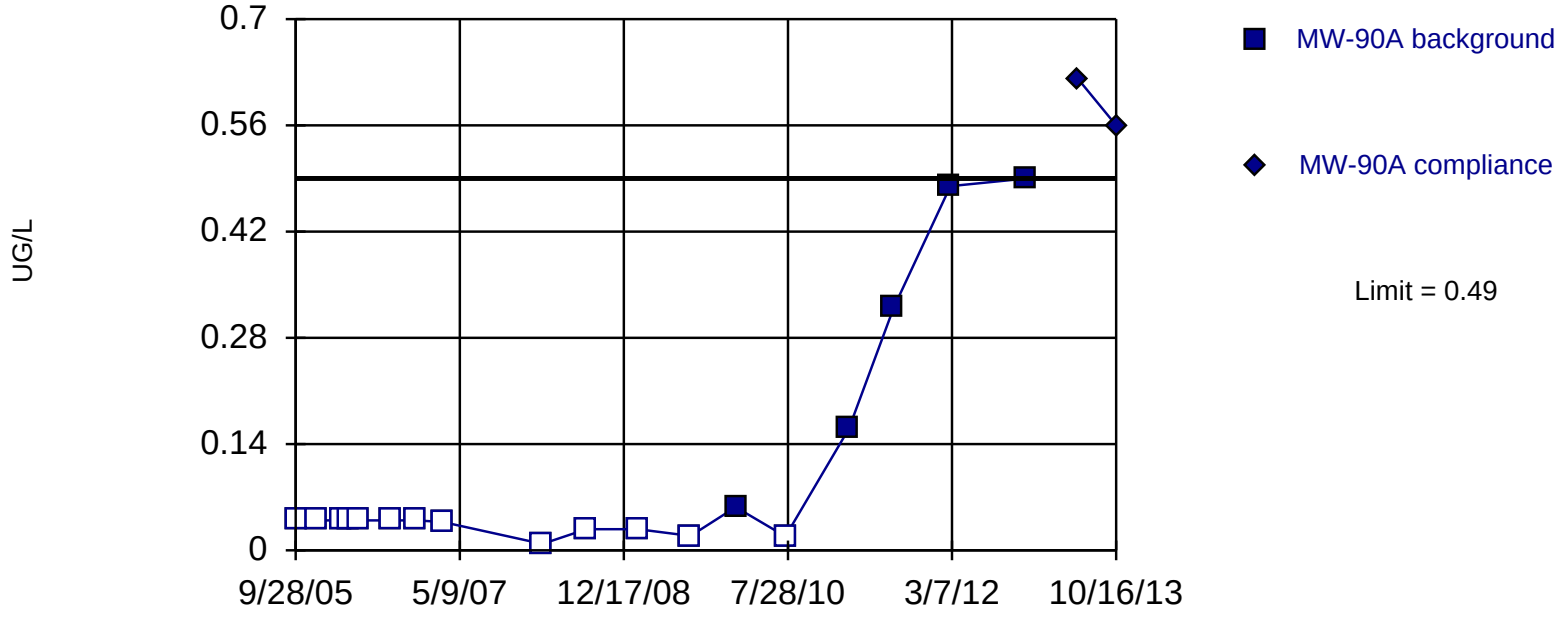
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 72.22% NDs. Report alpha = 0.05263. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

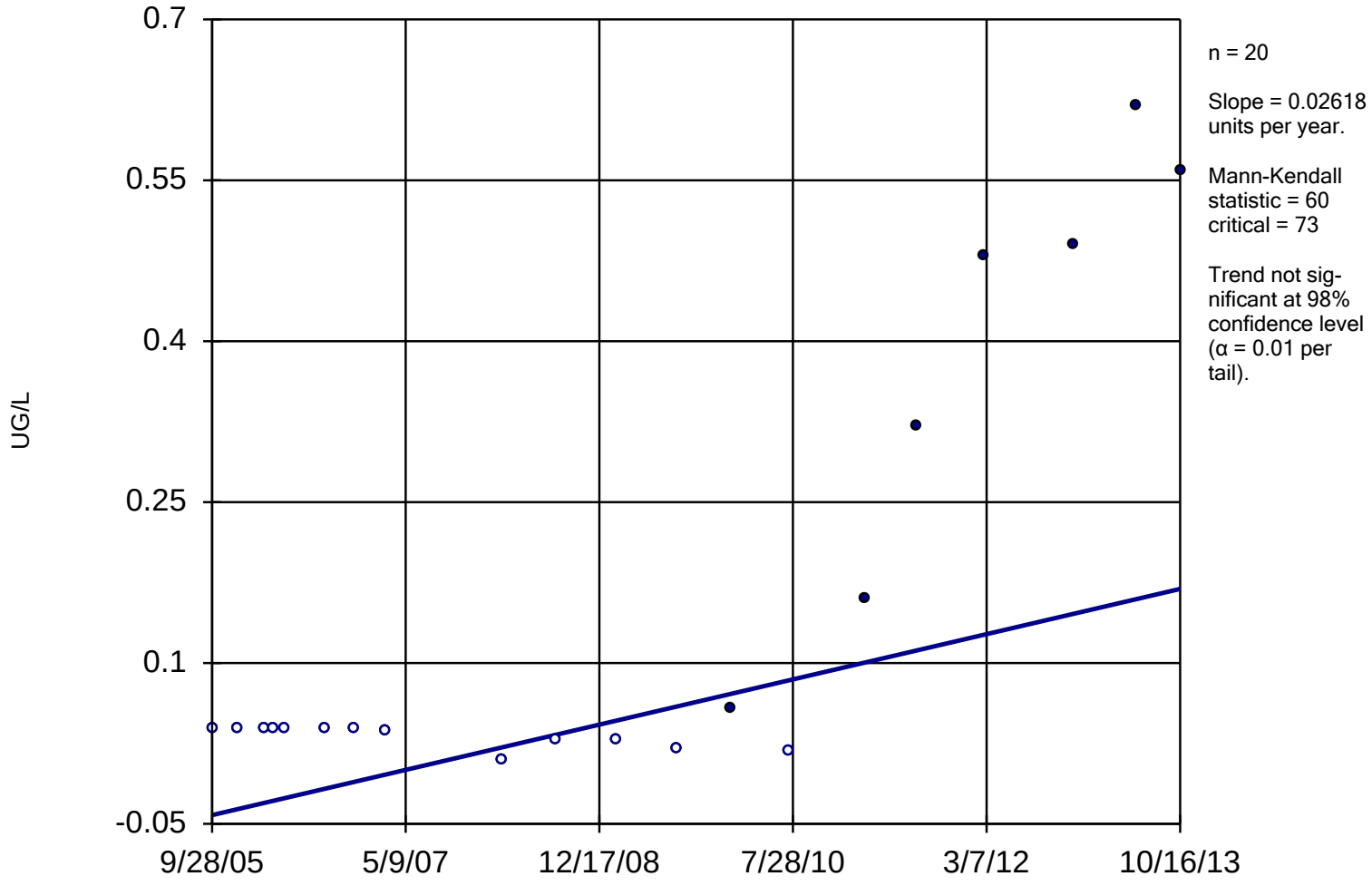
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-90A



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

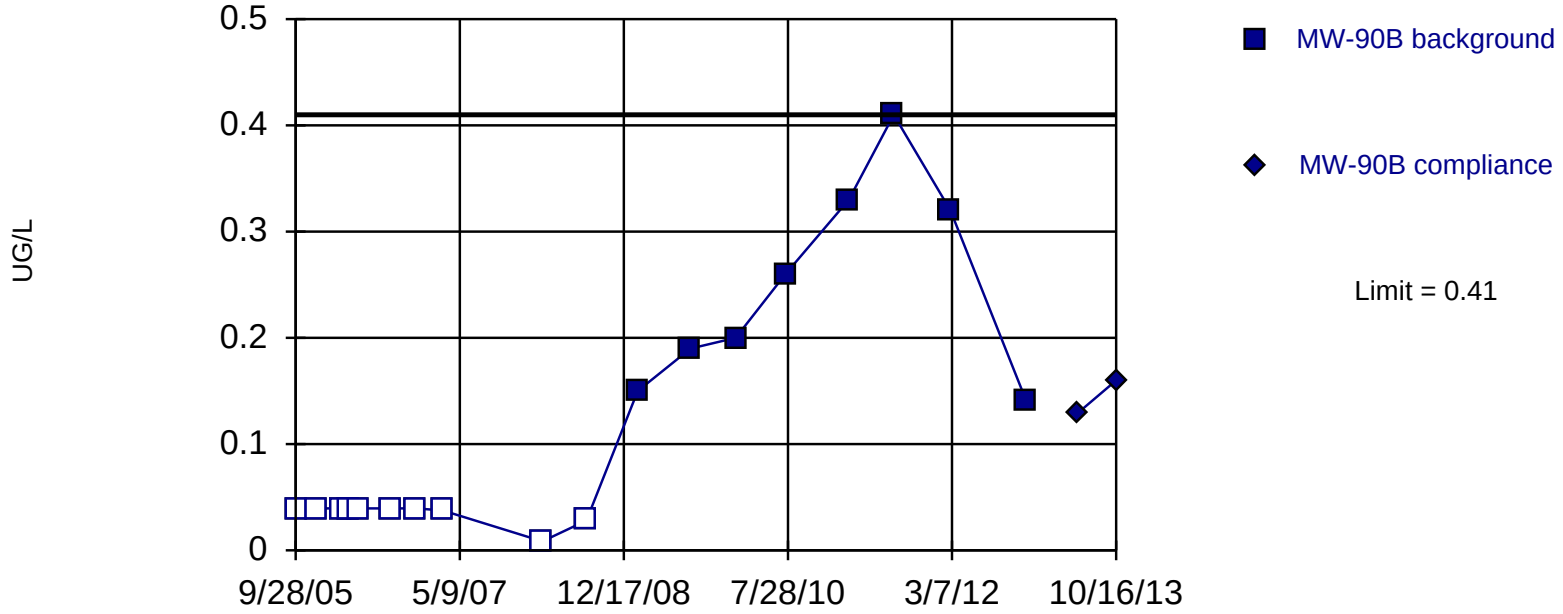
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 55.56% NDs. Report alpha = 0.05263. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

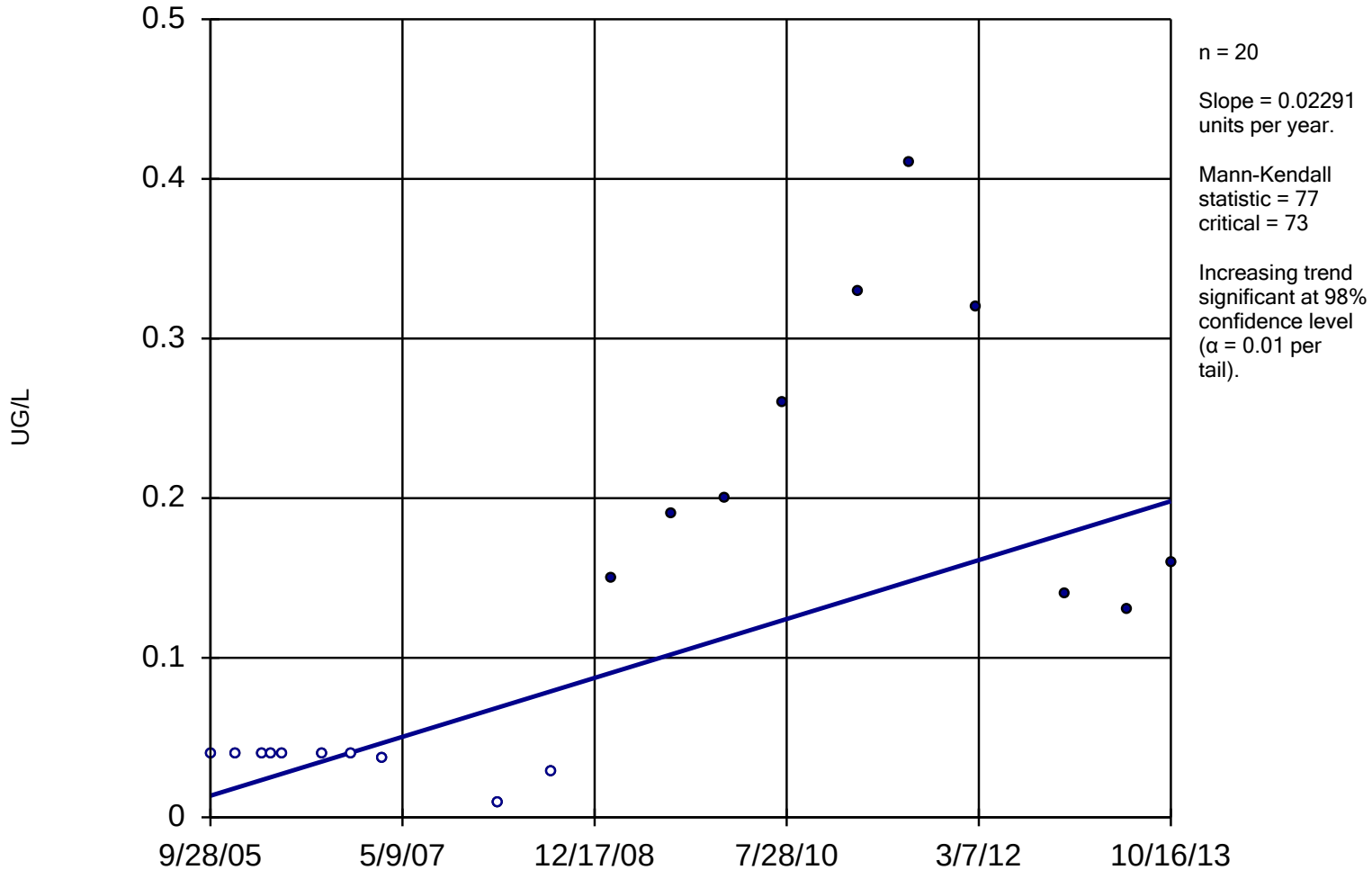
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-90B



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

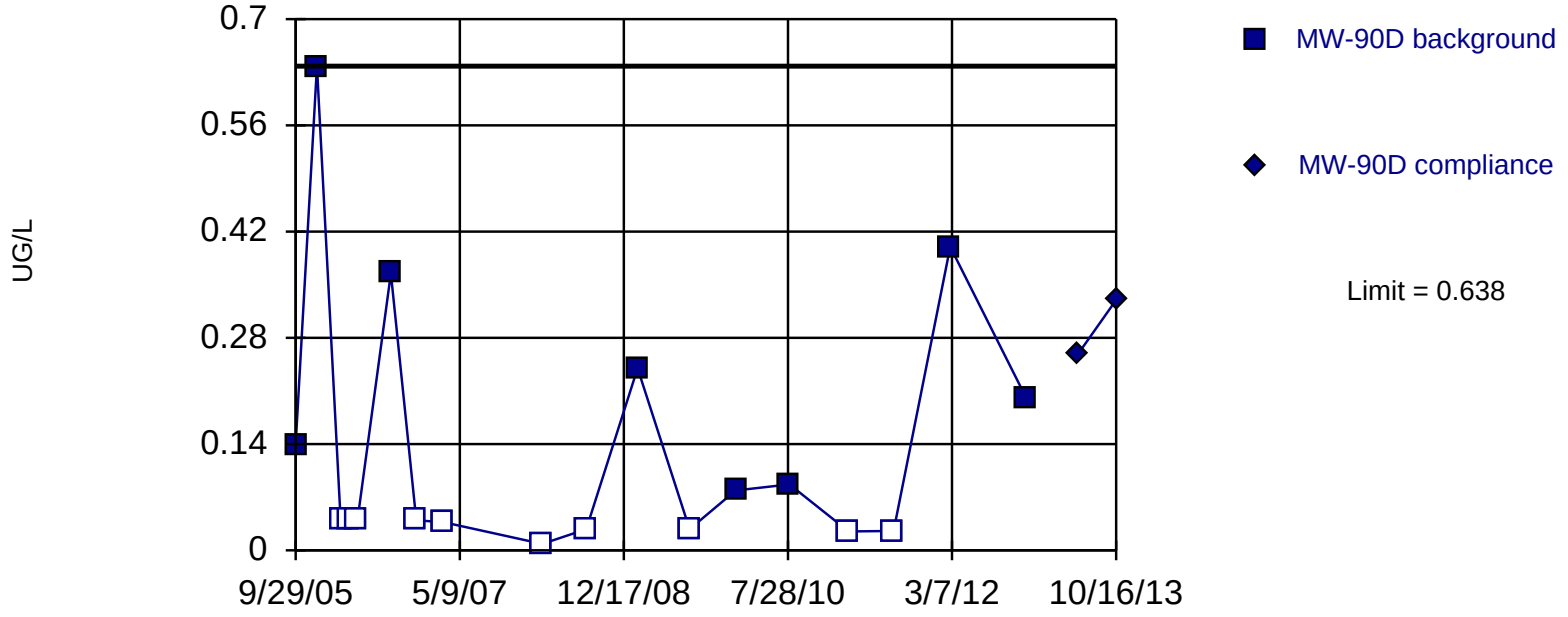
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 55.56% NDs. Report alpha = 0.05263. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

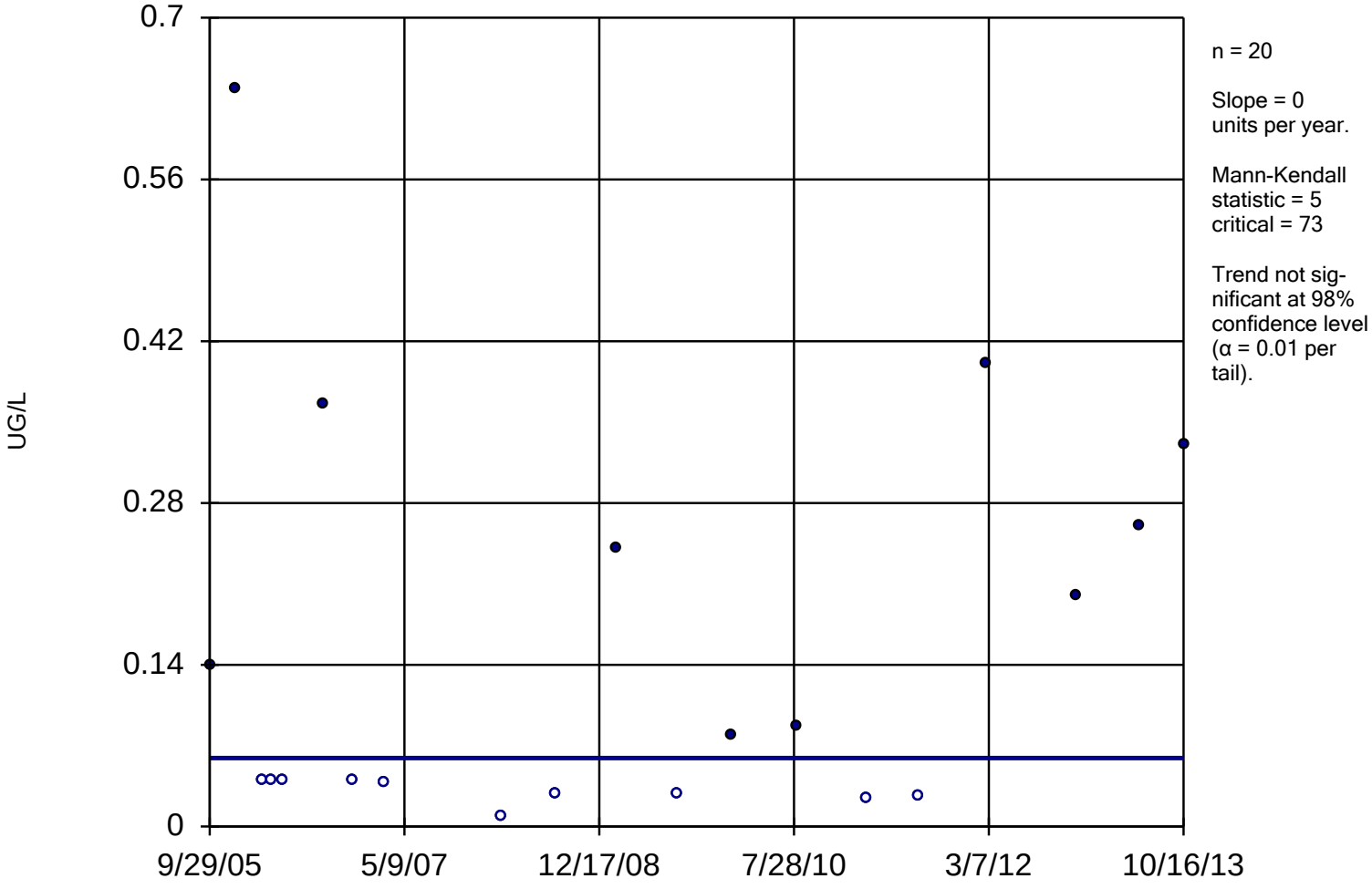
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-90D



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

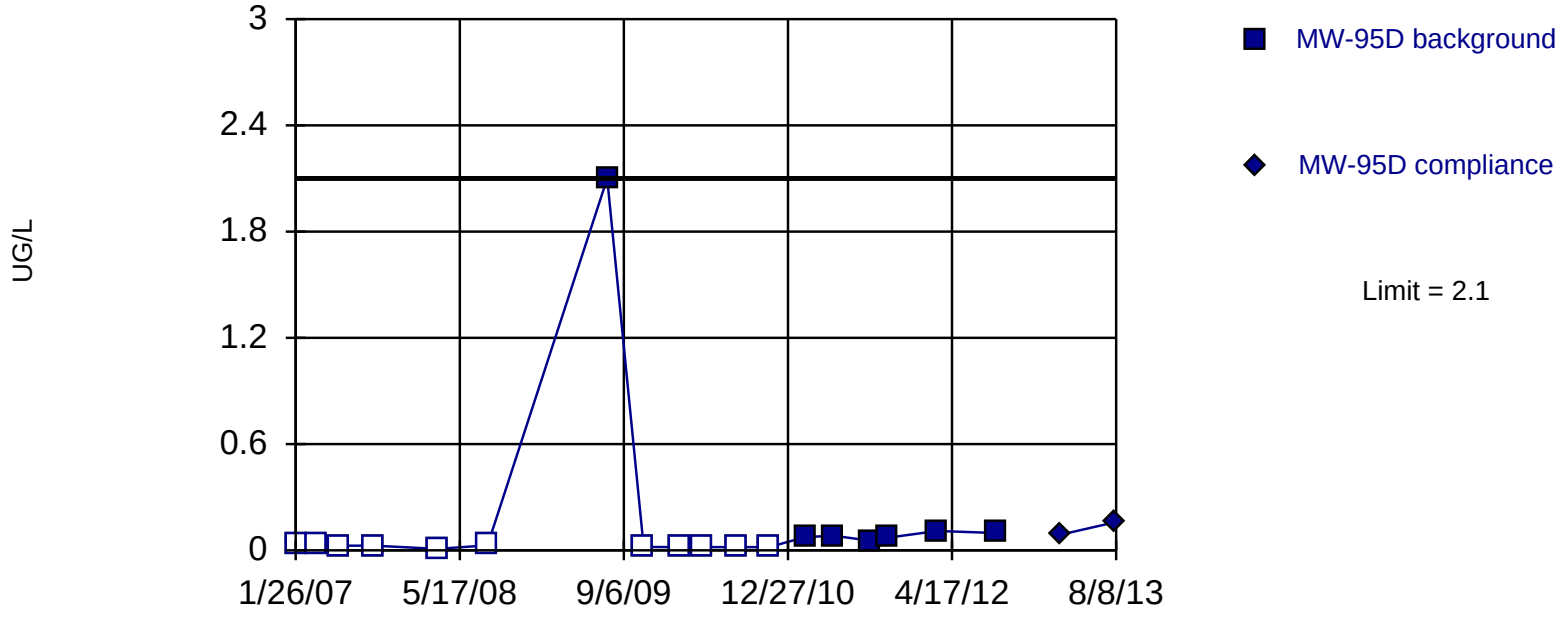
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 18 background values. 61.11% NDs. Report alpha = 0.05263. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

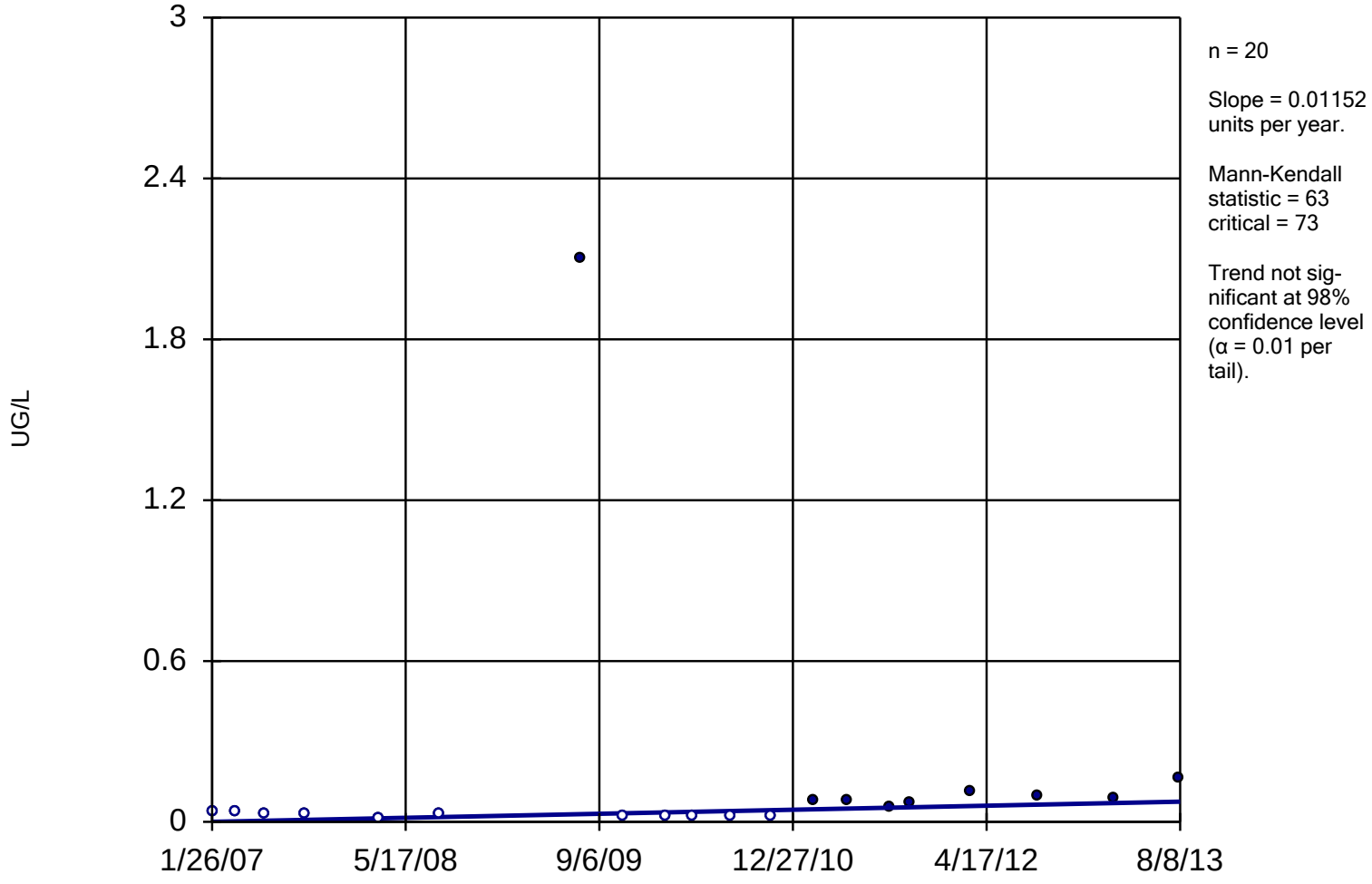
Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

MW-95D



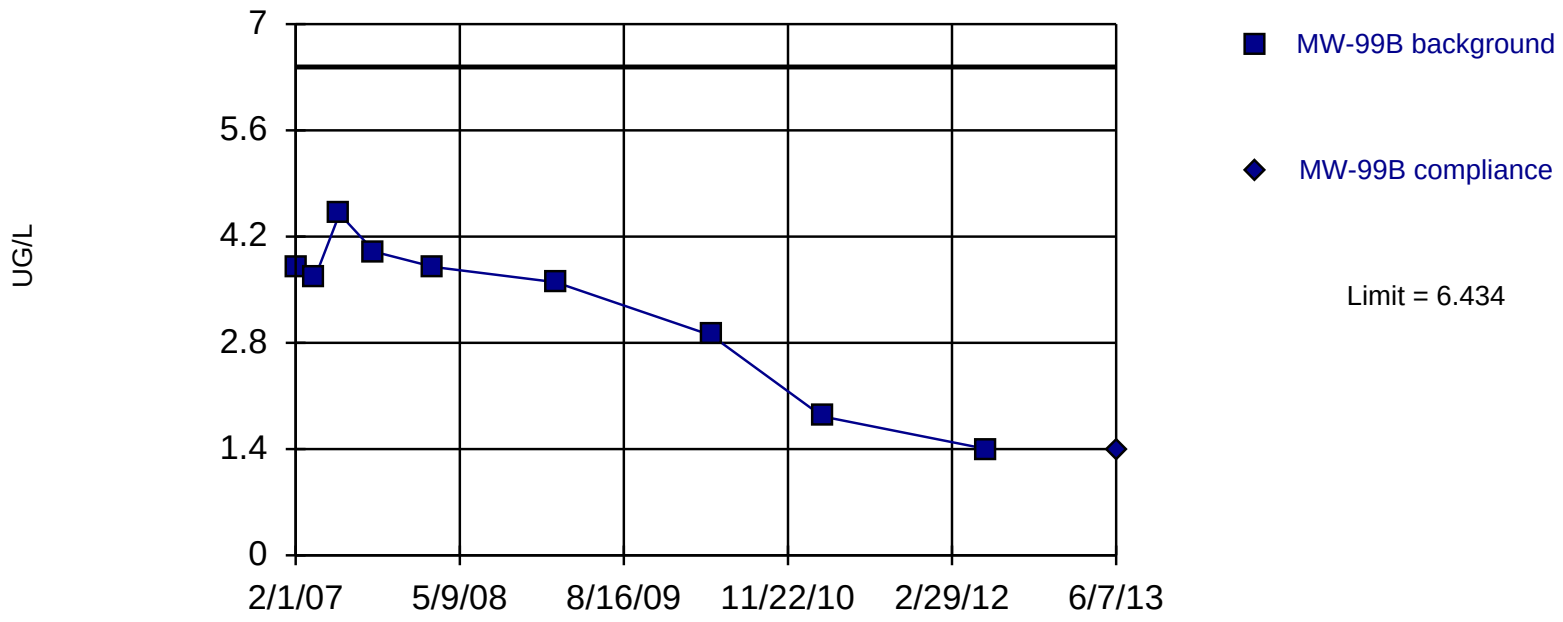
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



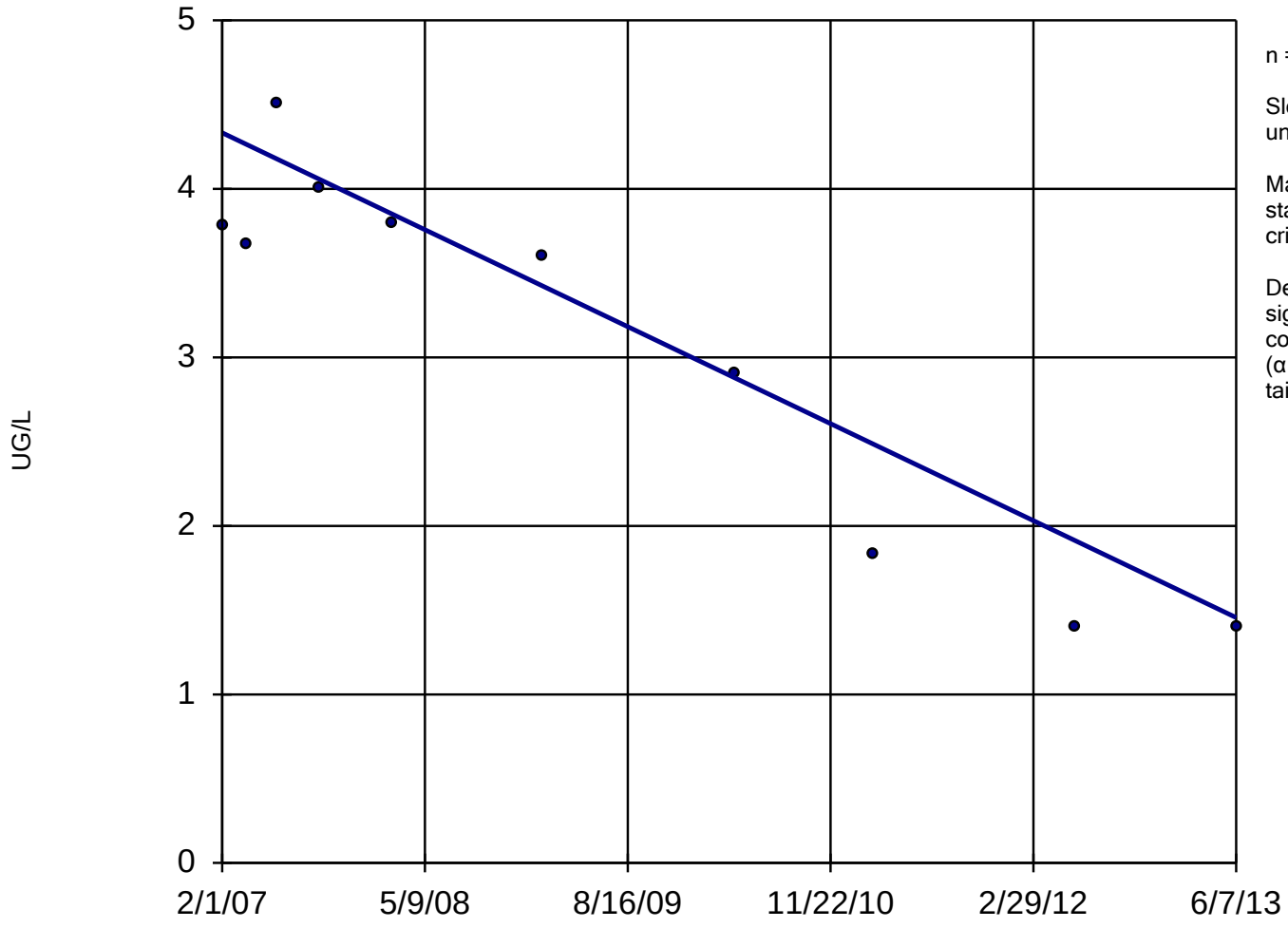
Background Data Summary: Mean=3.276, Std. Dev.=1.035, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8666, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-99B



n = 10

Slope = -0.453 units per year.

Mann-Kendall statistic = -32
critical = -27

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

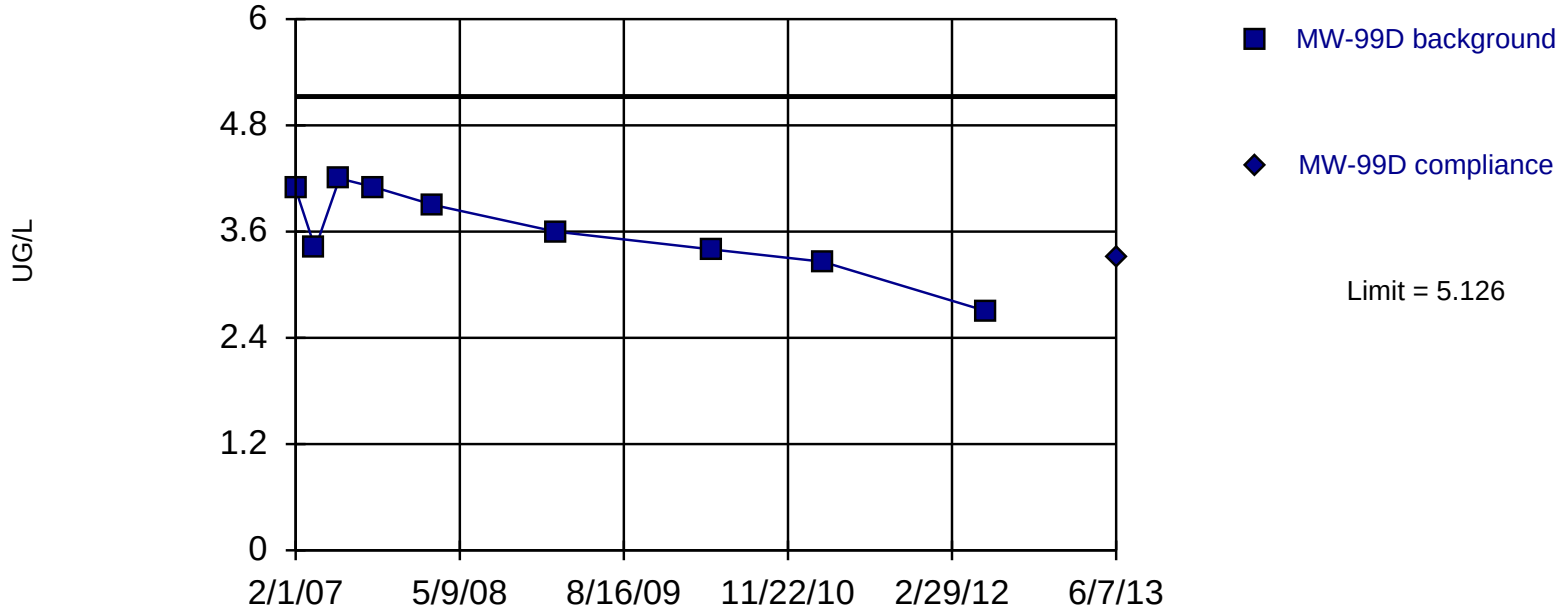
Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



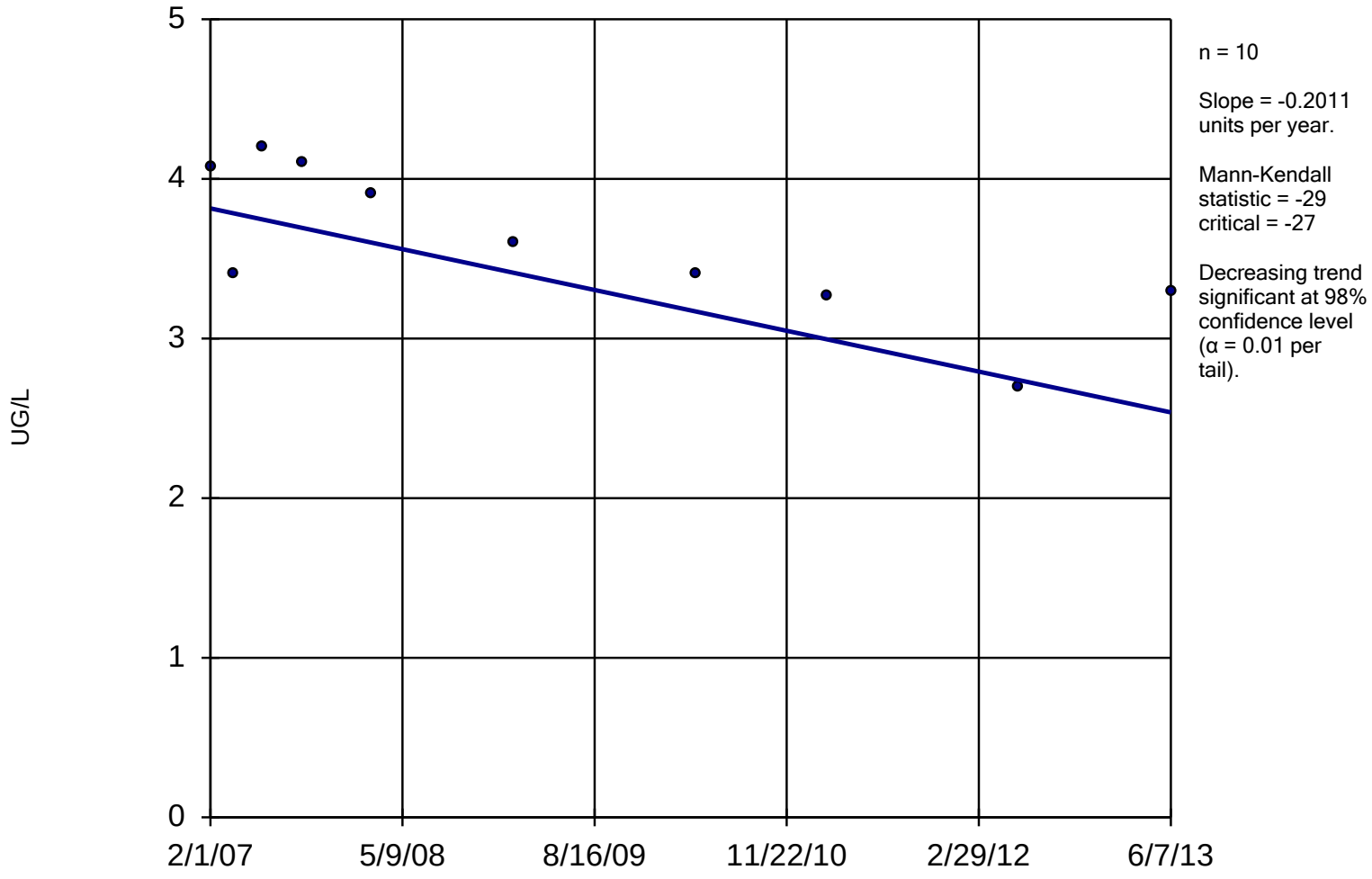
Background Data Summary: Mean=3.628, Std. Dev.=0.4906, n=9. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9278, critical = 0.829. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 2:22 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Sen's Slope Estimator

MW-99D



Constituent: RDX Analysis Run 1/28/2014 2:15 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_MW_Sanitas

Water Supply Well TCE Charts

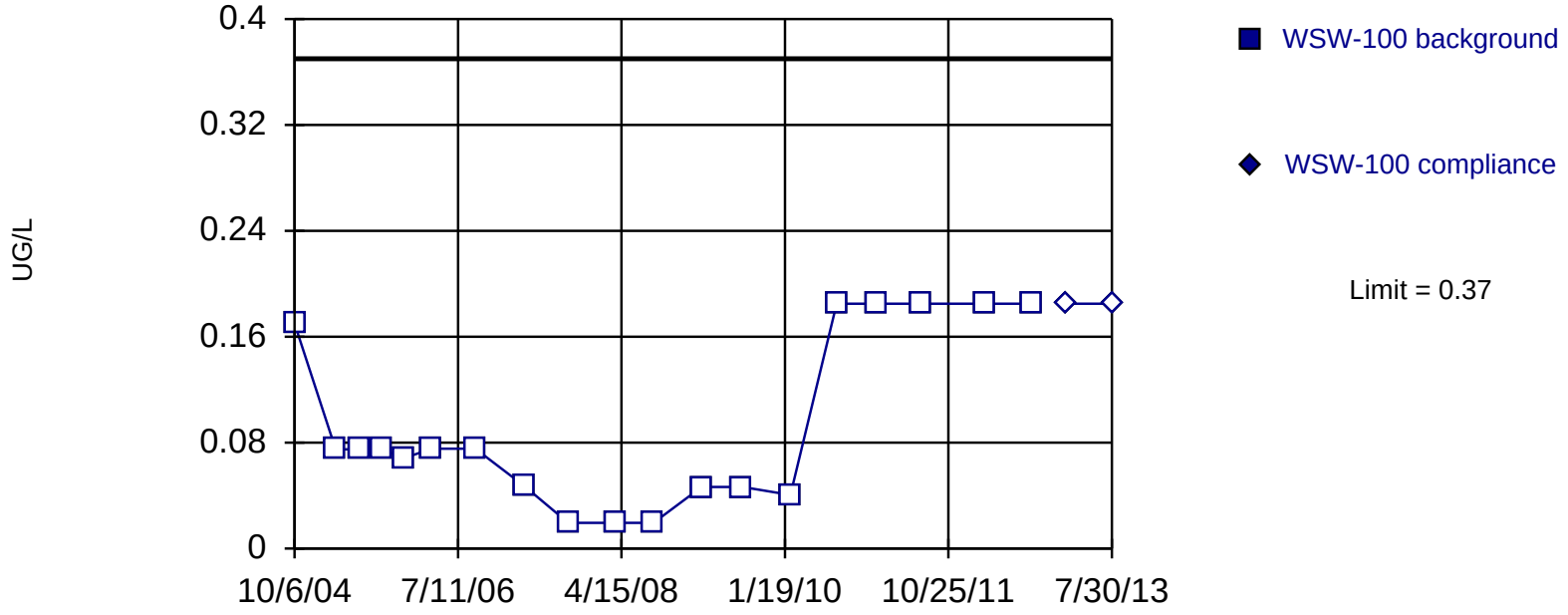
This page was intentionally left blank.

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 19) were censored; limit is most recent reporting limit. Report alpha = 0.05. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

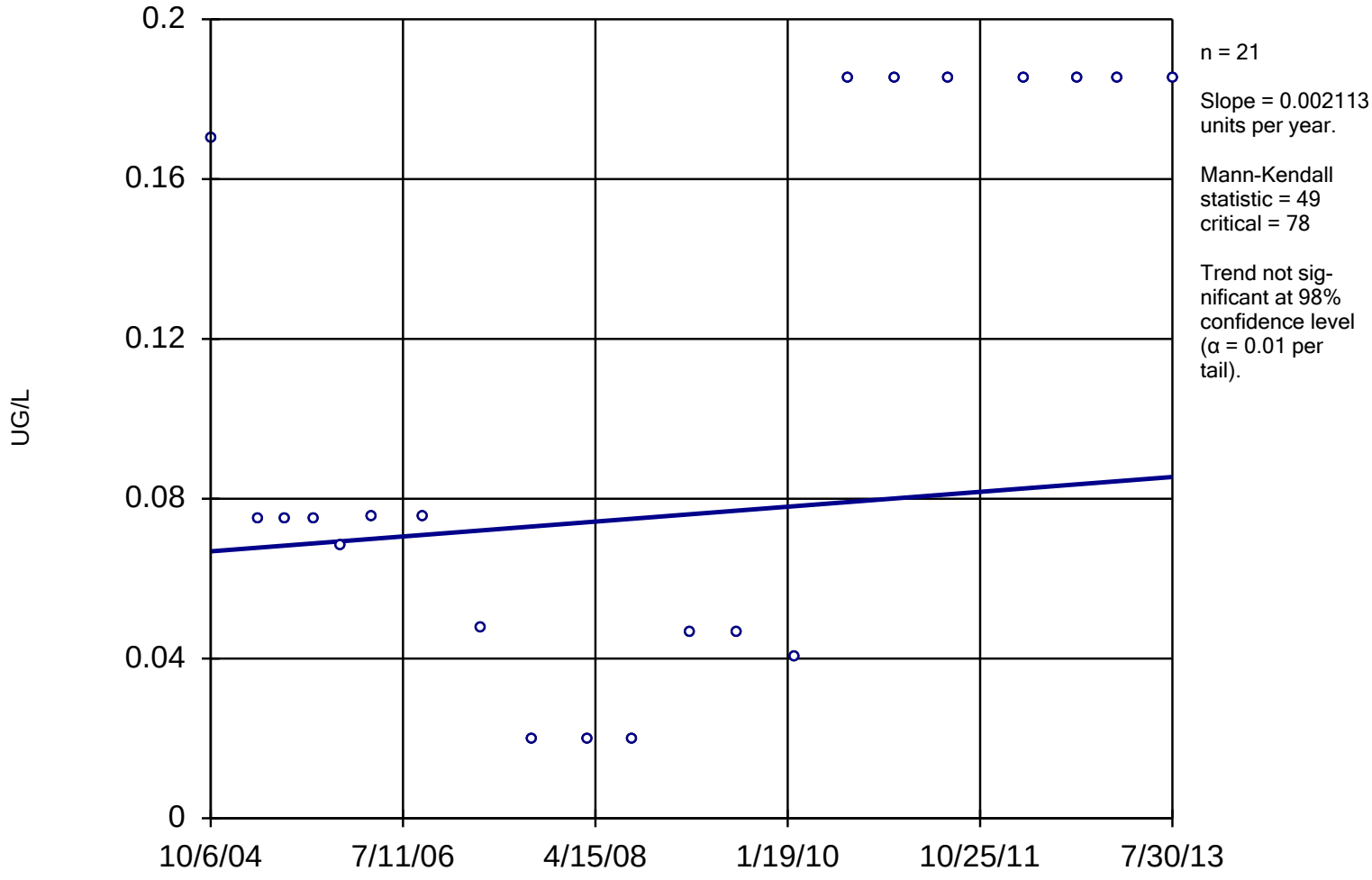
Constituent: TCE Analysis Run 1/28/2014 3:09 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-100



Constituent: TCE Analysis Run 1/31/2014 10:06 AM

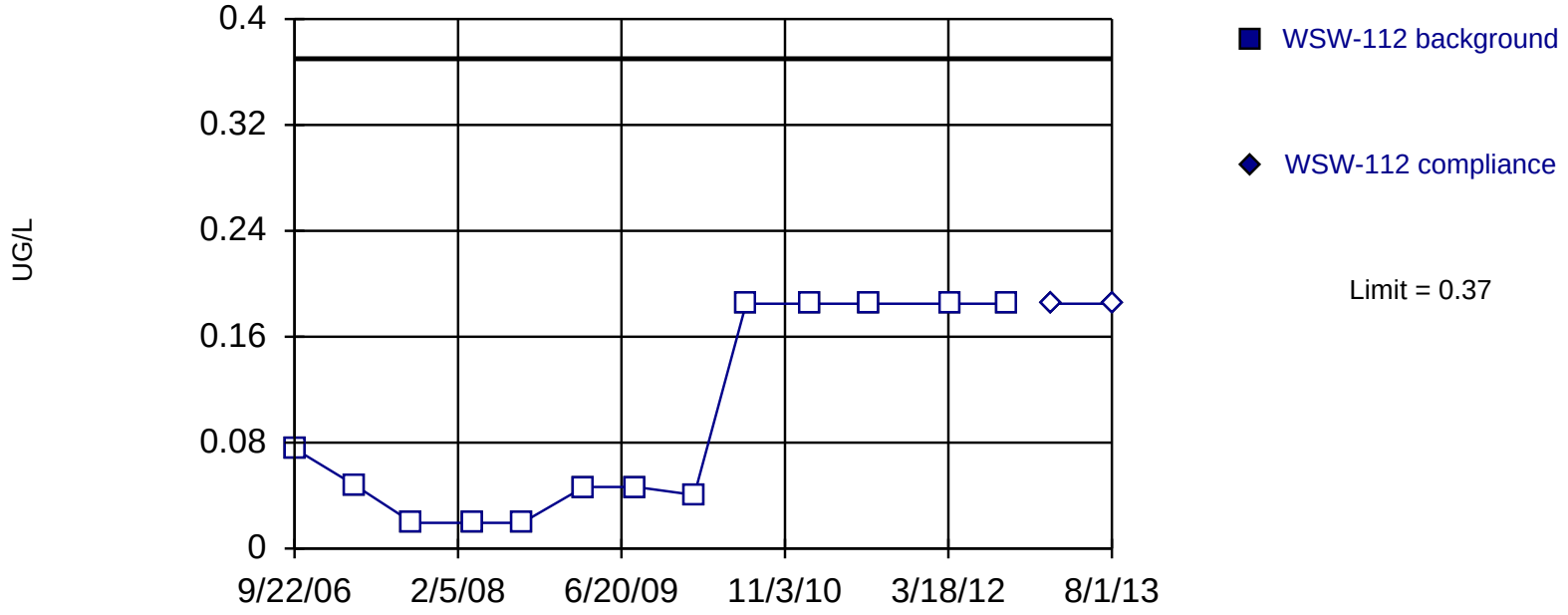
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 13) were censored; limit is most recent reporting limit. Report alpha = 0.07143. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

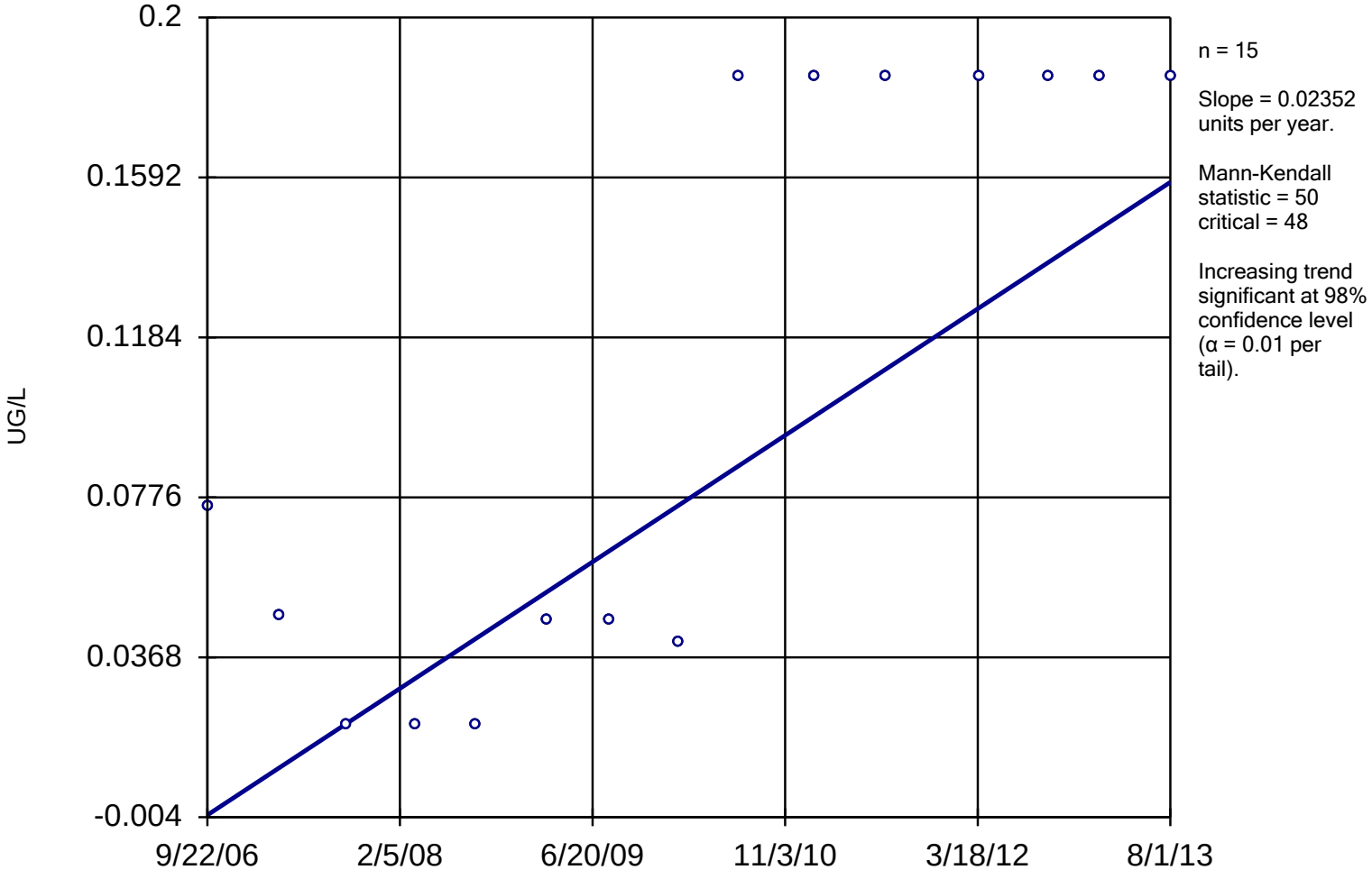
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-112



Constituent: TCE Analysis Run 1/31/2014 10:06 AM

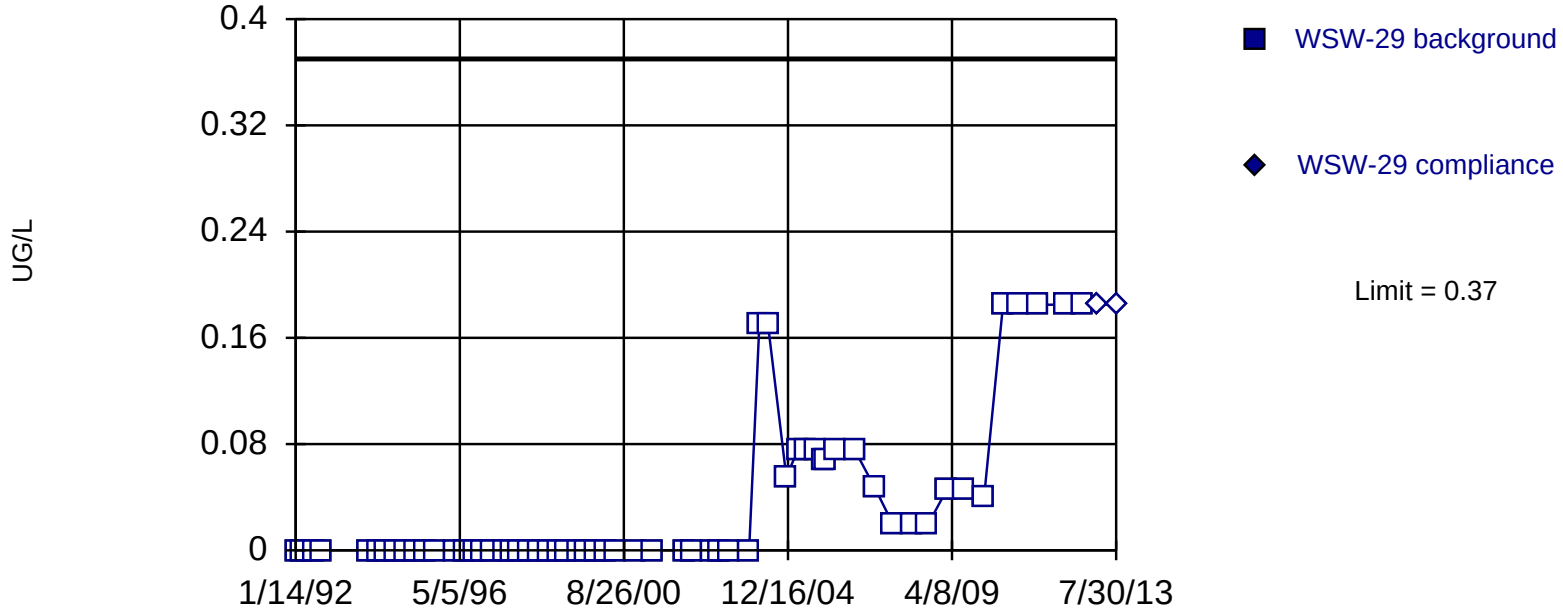
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 60) were censored; limit is most recent reporting limit. Report alpha = 0.01639. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

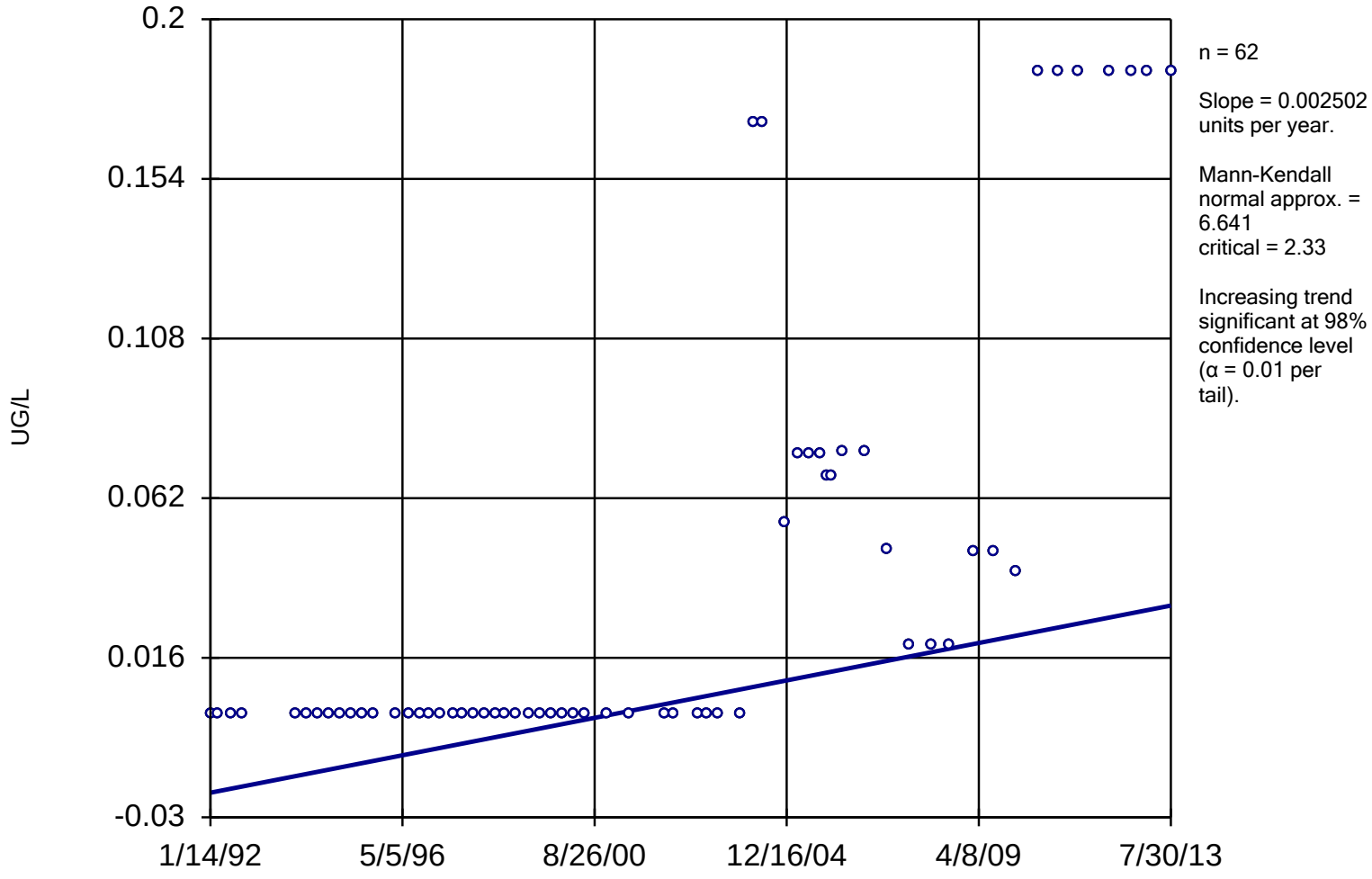
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-29



Constituent: TCE Analysis Run 1/31/2014 10:06 AM

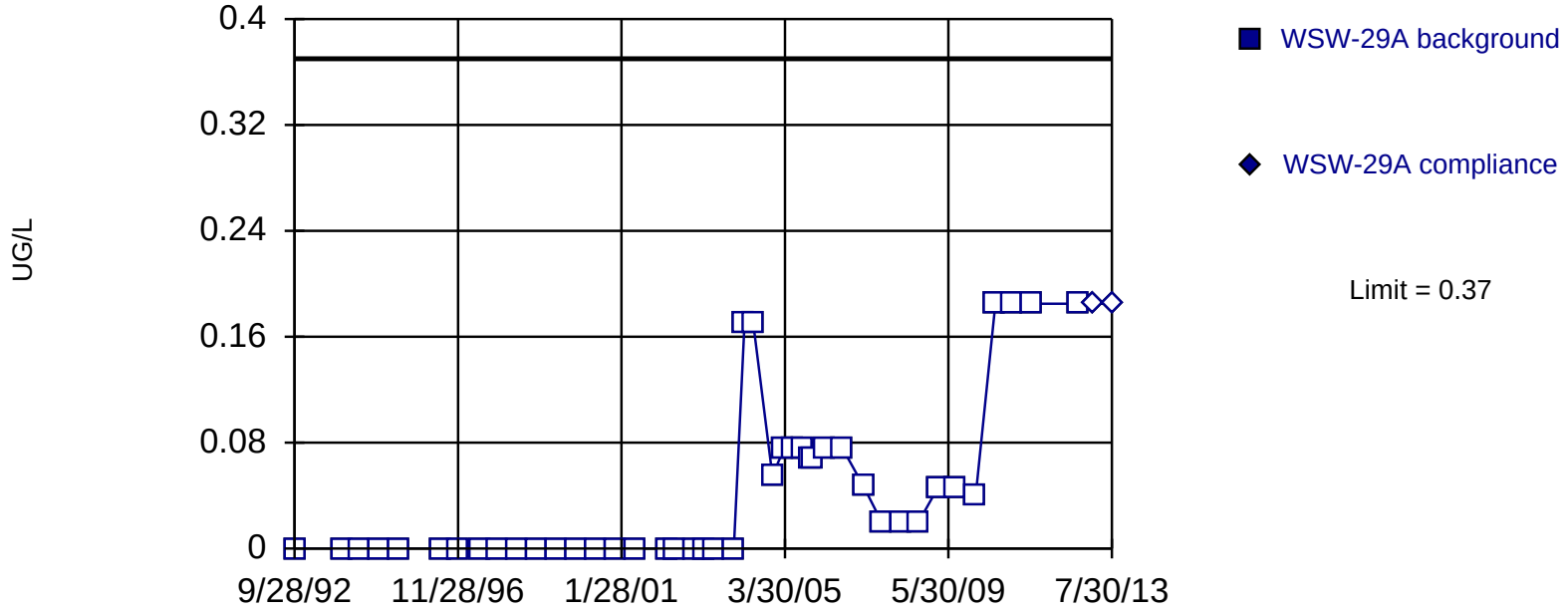
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 43) were censored; limit is most recent reporting limit. Report alpha = 0.02273. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

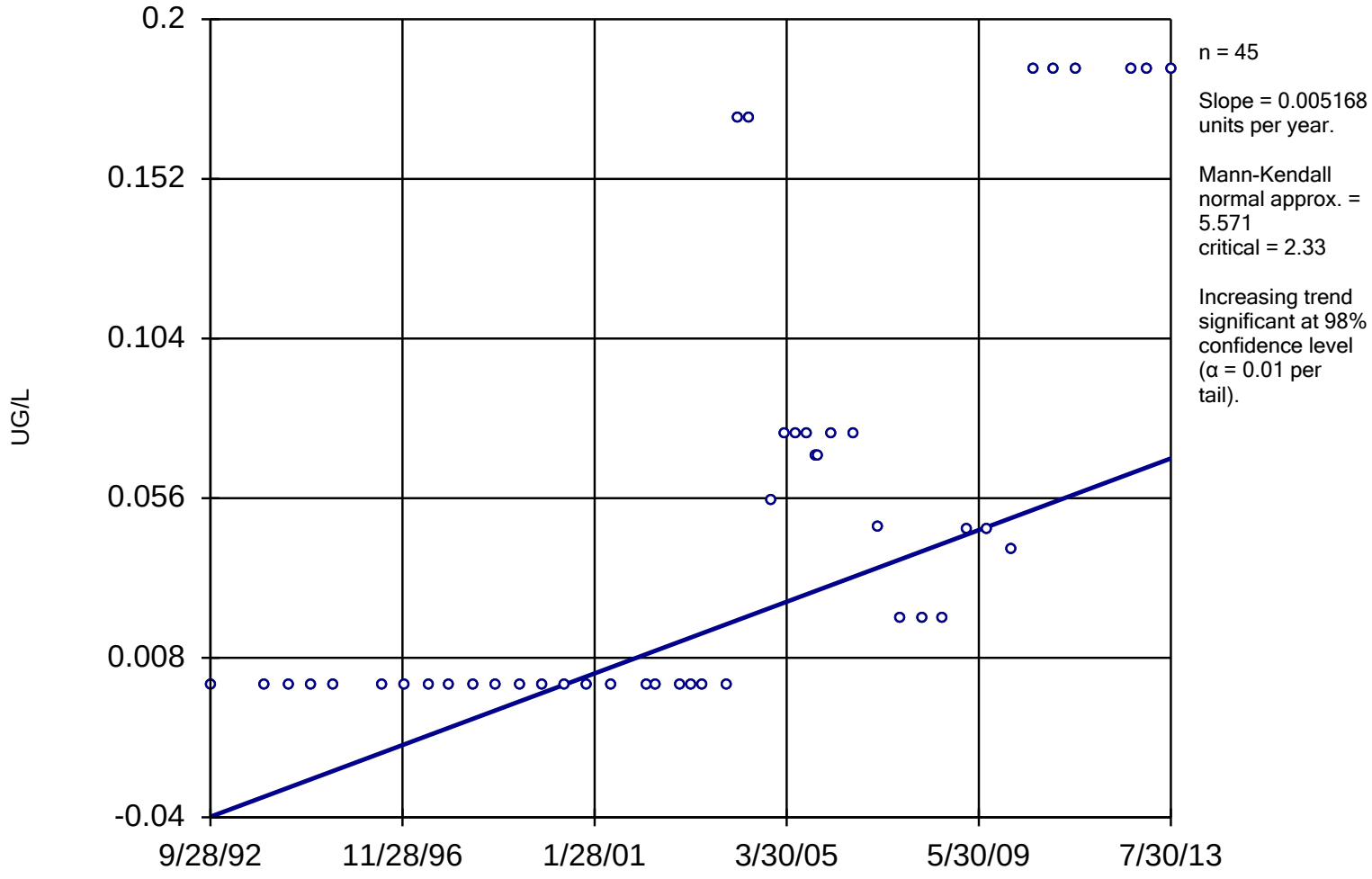
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-29A



Constituent: TCE Analysis Run 1/31/2014 10:06 AM

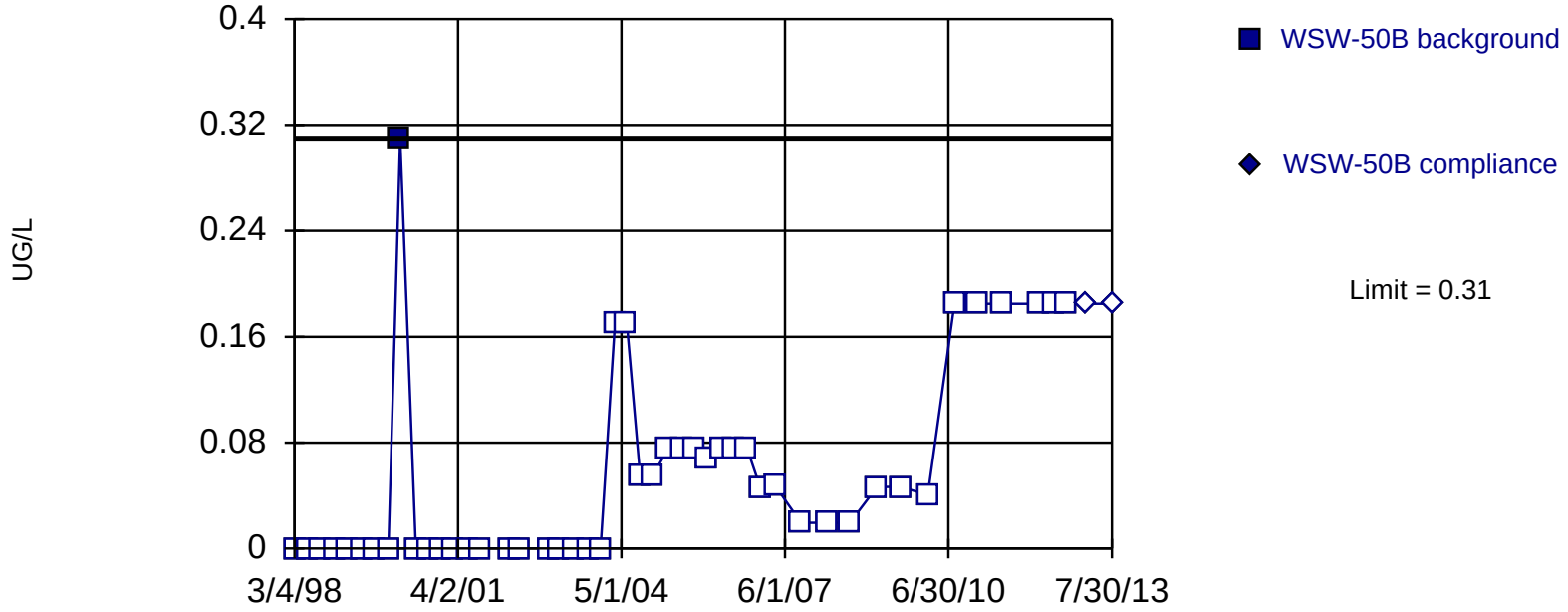
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 47 background values. 97.87% NDs. Report alpha = 0.02083. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

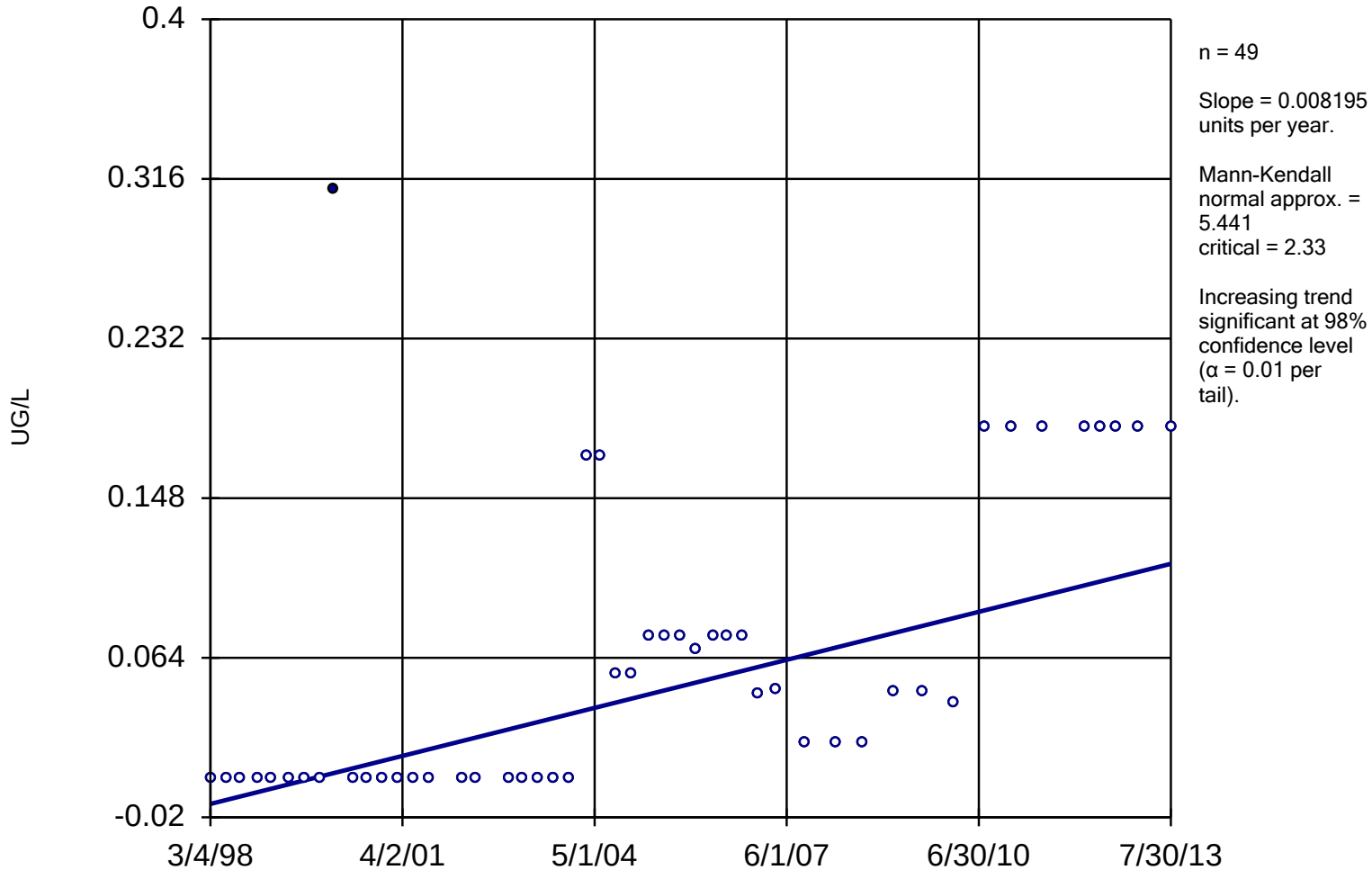
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-50B



Constituent: TCE Analysis Run 1/31/2014 10:06 AM

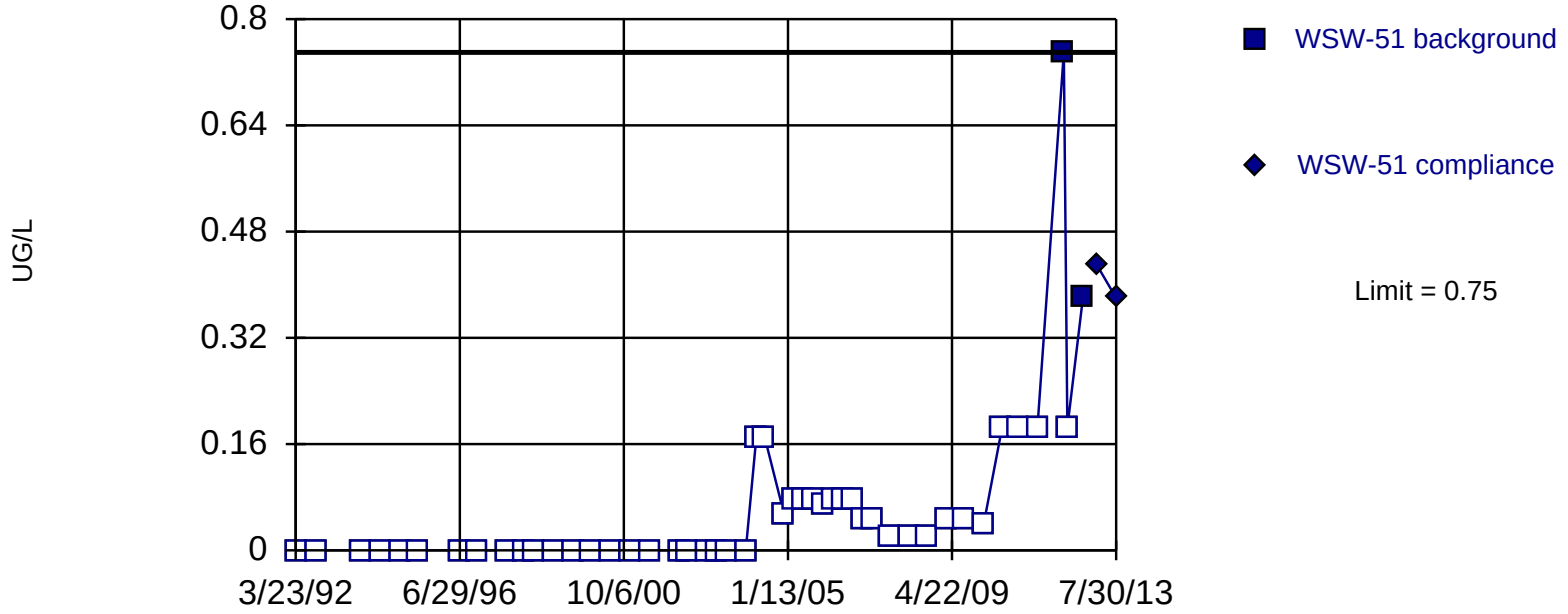
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 47 background values. 95.74% NDs. Report alpha = 0.02083. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

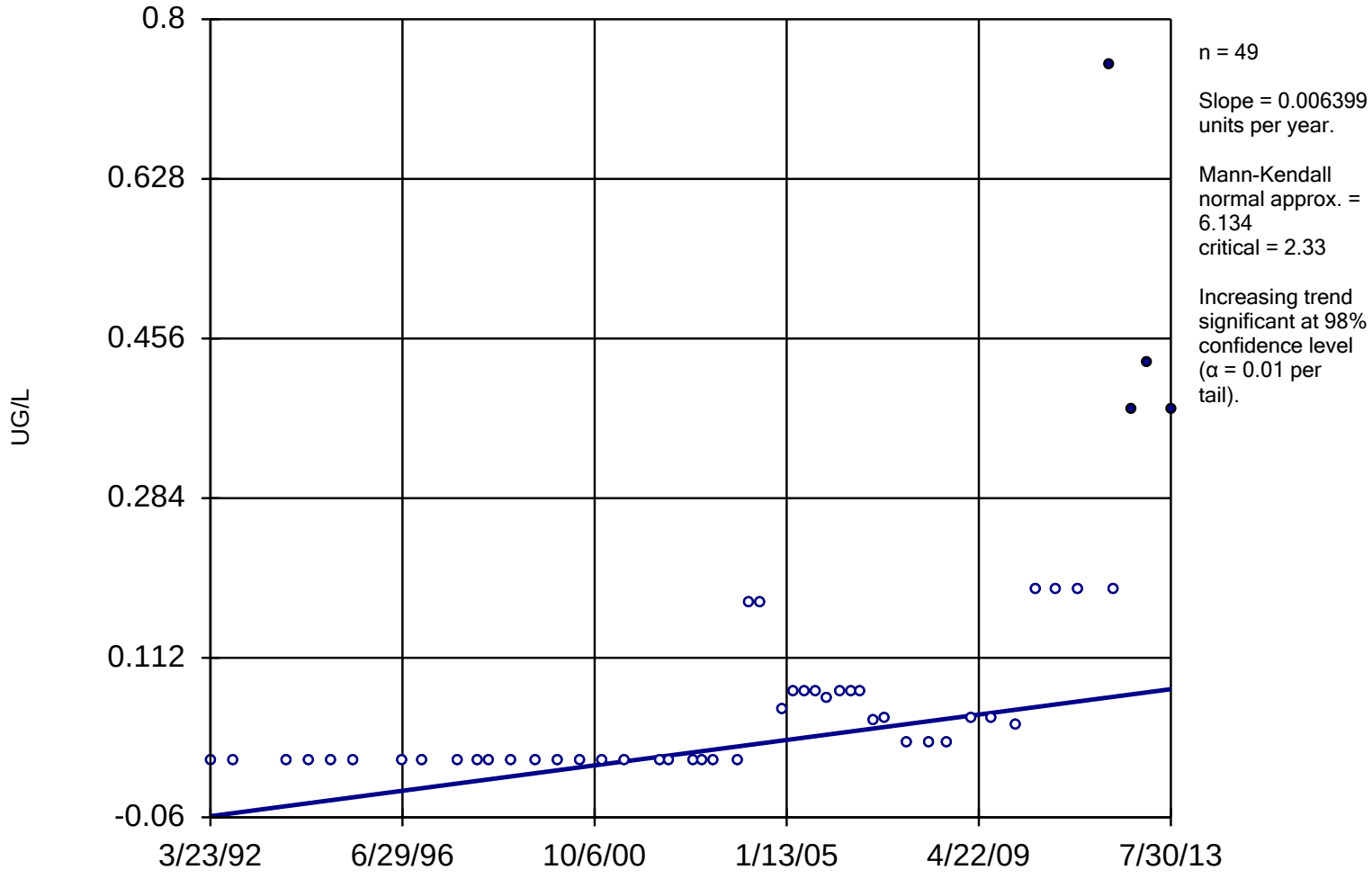
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-51



Constituent: TCE Analysis Run 1/31/2014 10:07 AM

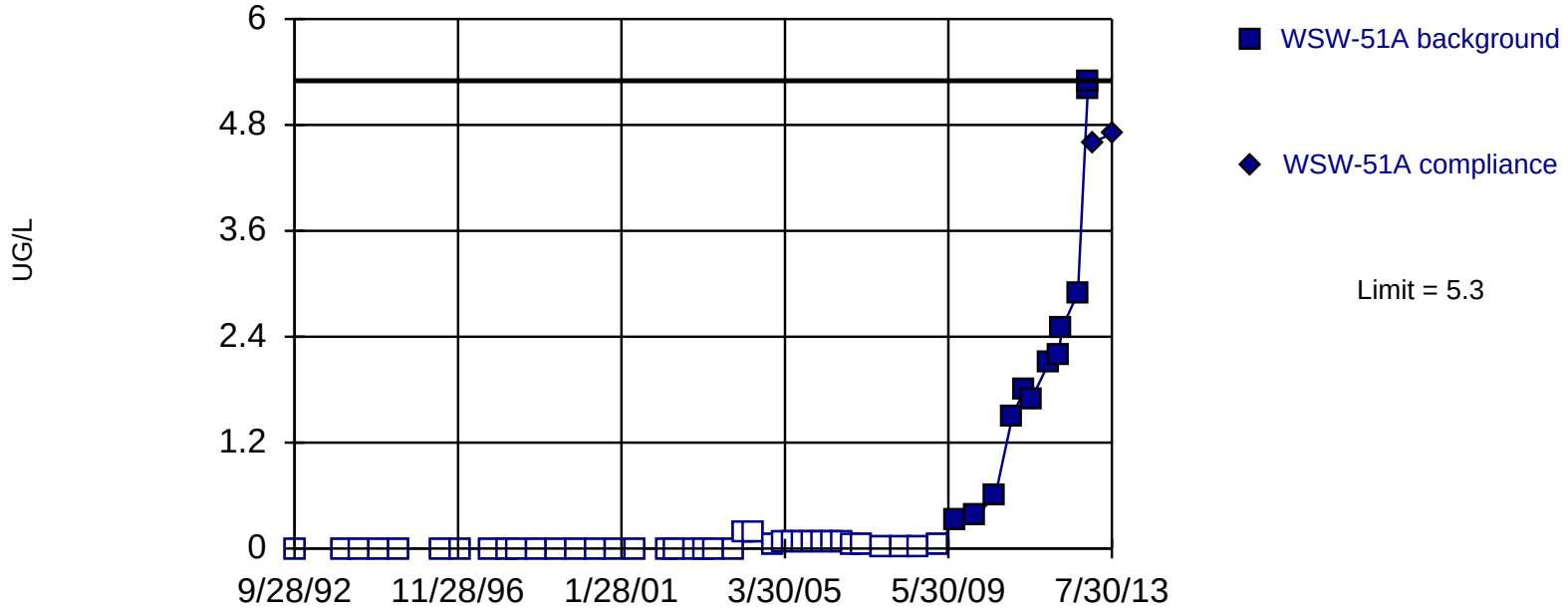
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 50 background values. 76% NDs. Report alpha = 0.01961. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

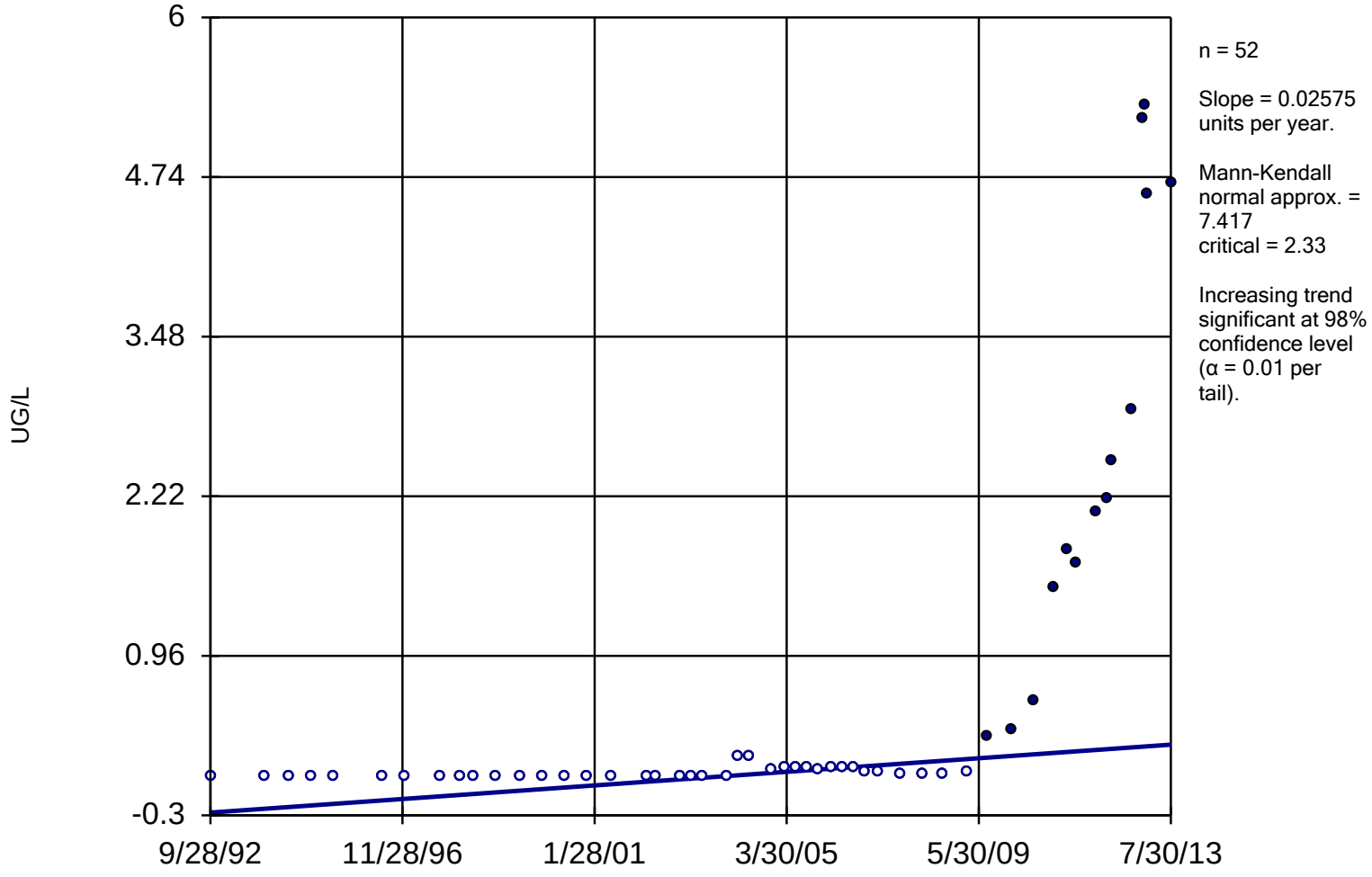
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-51A



Constituent: TCE Analysis Run 1/31/2014 10:07 AM

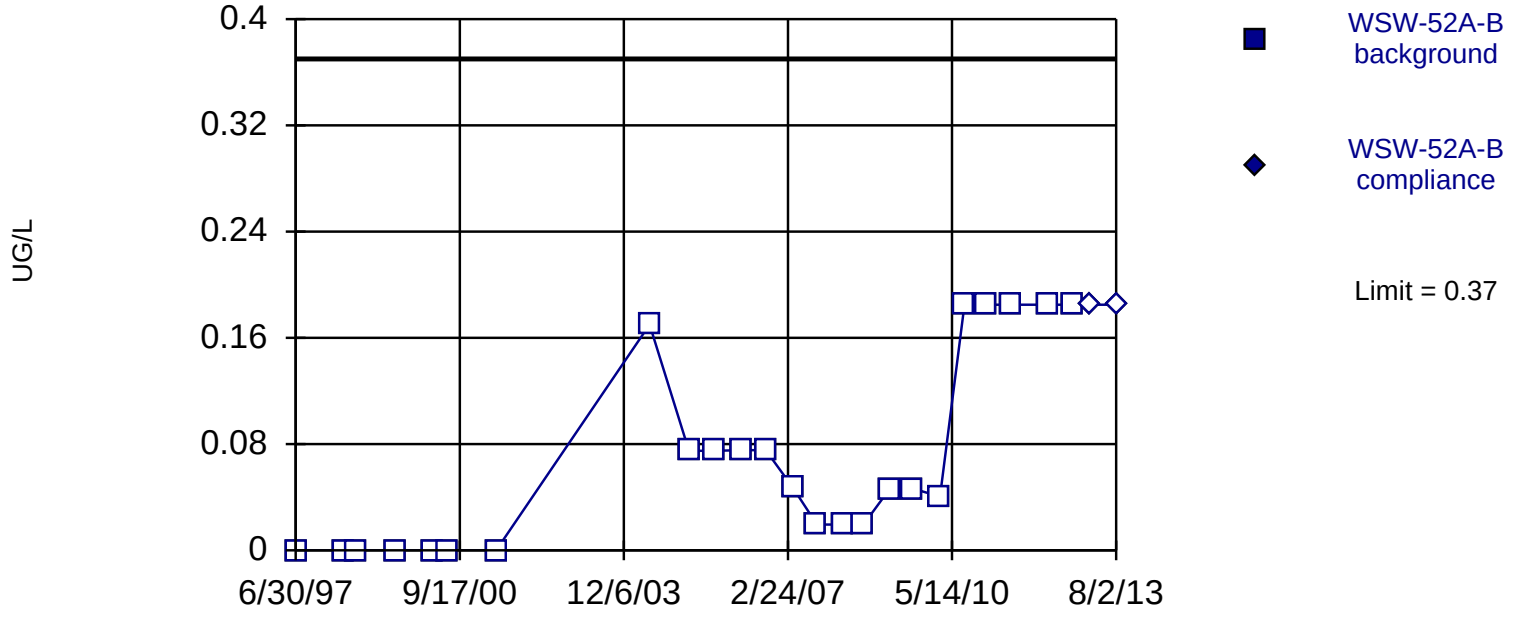
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 24) were censored; limit is most recent reporting limit. Report alpha = 0.04. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

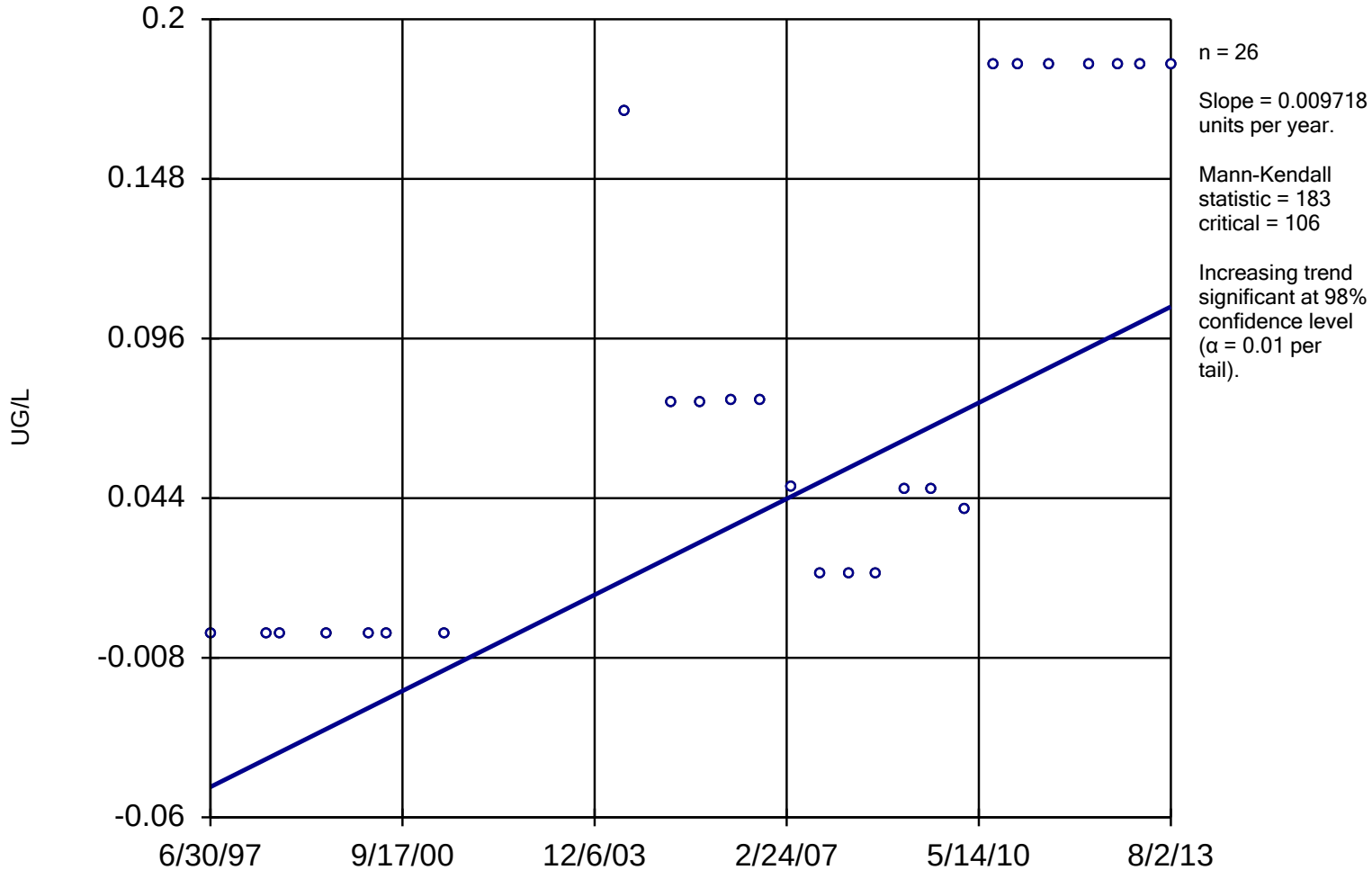
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-52A-B



Constituent: TCE Analysis Run 1/31/2014 10:07 AM

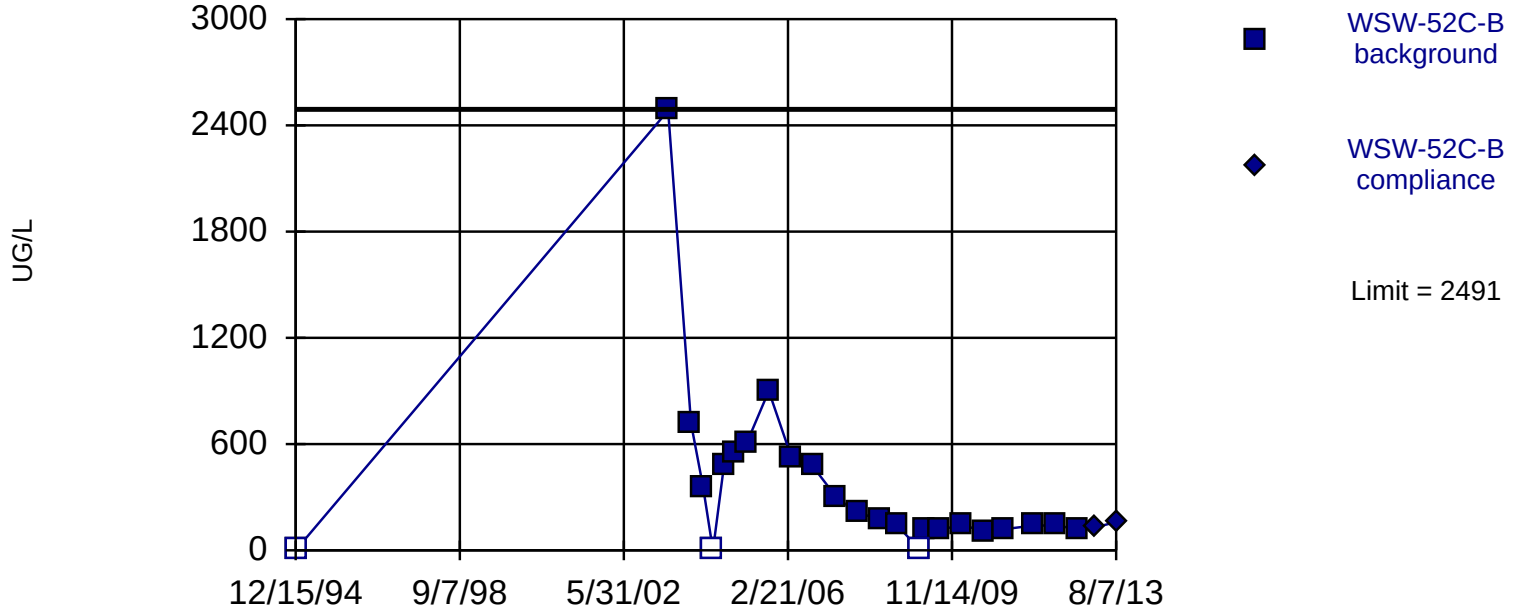
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube root transformation): Mean=6.037, Std. Dev.=2.947, n=24, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9234, critical = 0.916. Report alpha = 0.01. Most recent point compared to limit.

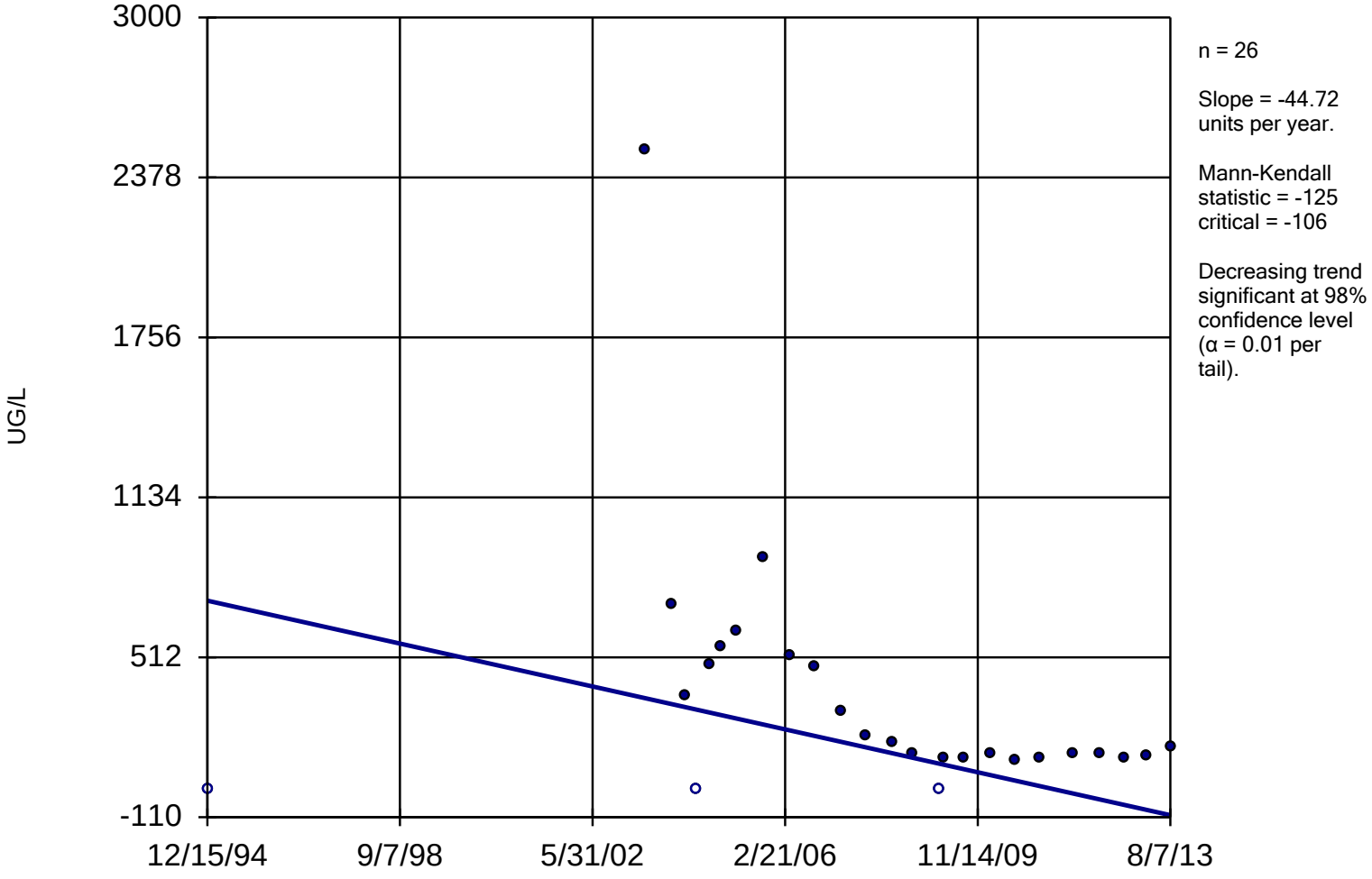
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-52C-B



Constituent: TCE Analysis Run 1/31/2014 10:07 AM

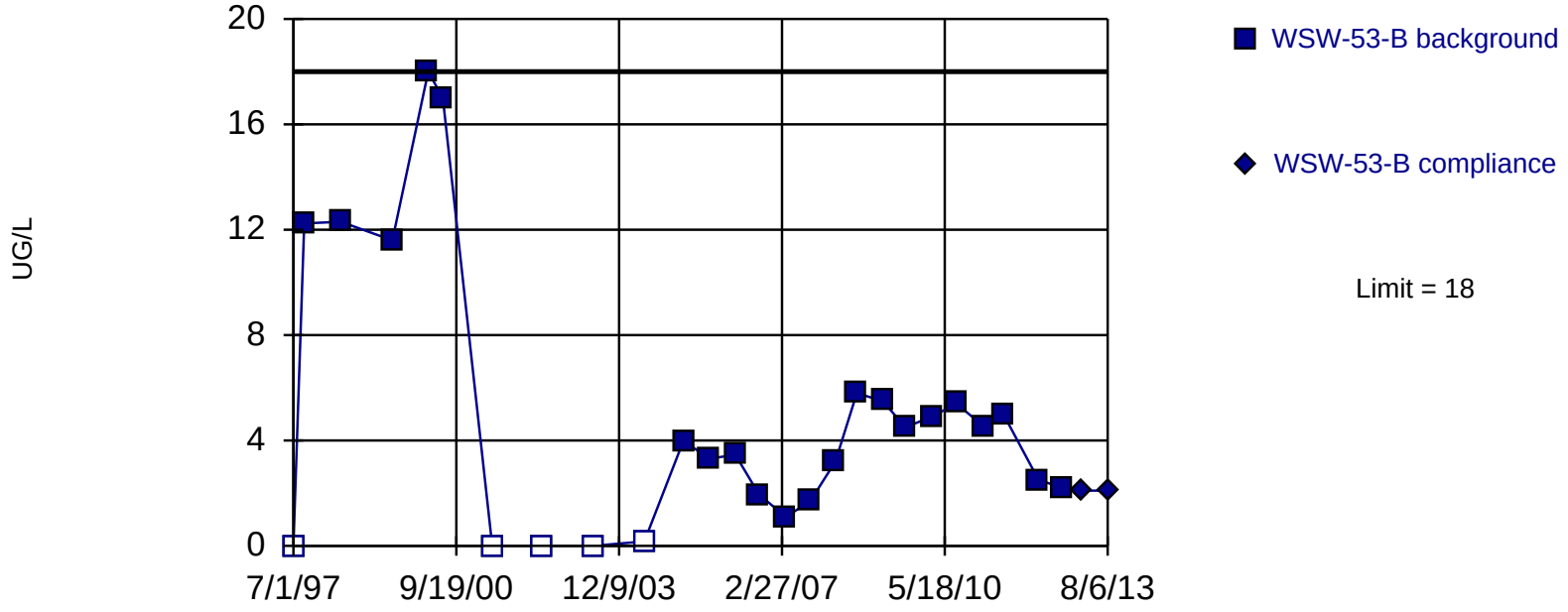
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the data required both a power transformation and Cohen's adjustment. Limit is highest of 26 background values. 19.23% NDs. Report alpha = 0.03704. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

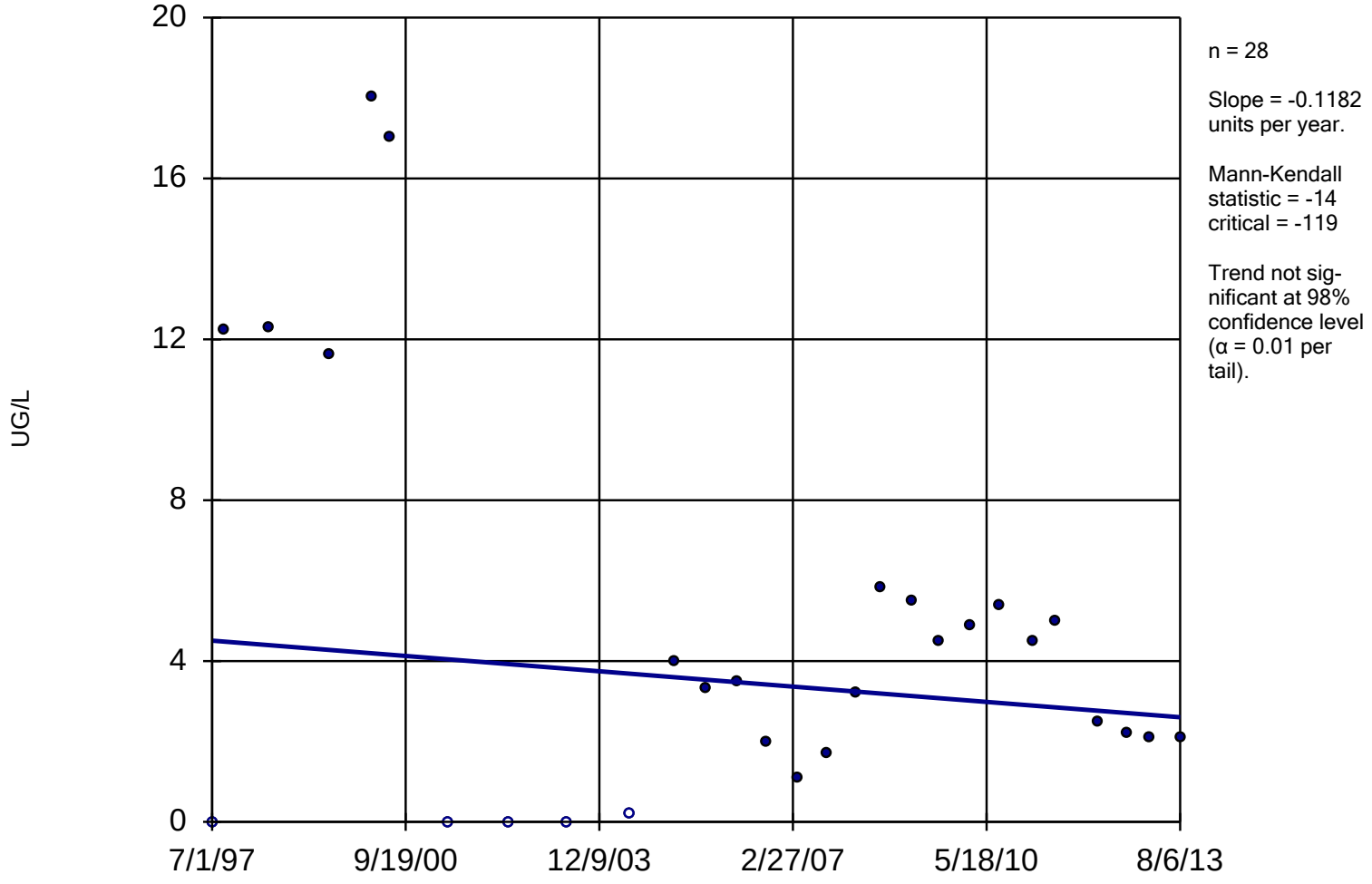
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-53-B



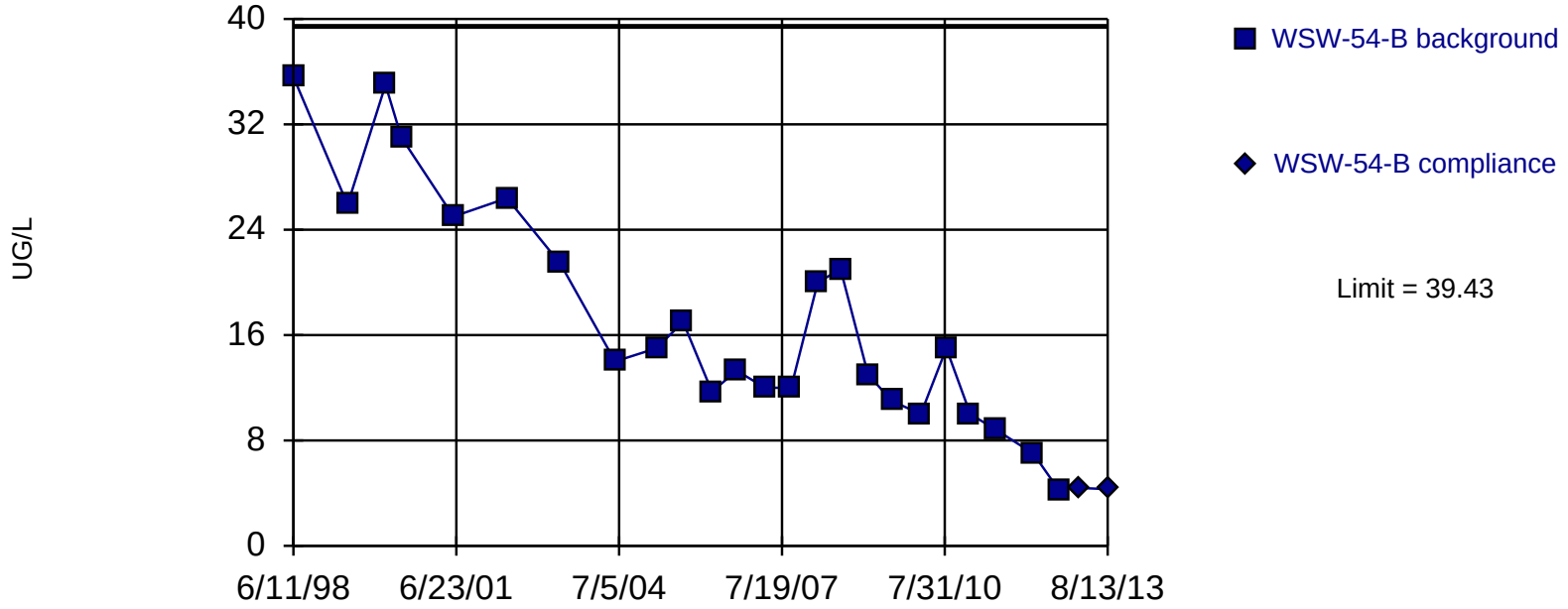
Constituent: TCE Analysis Run 1/31/2014 10:07 AM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



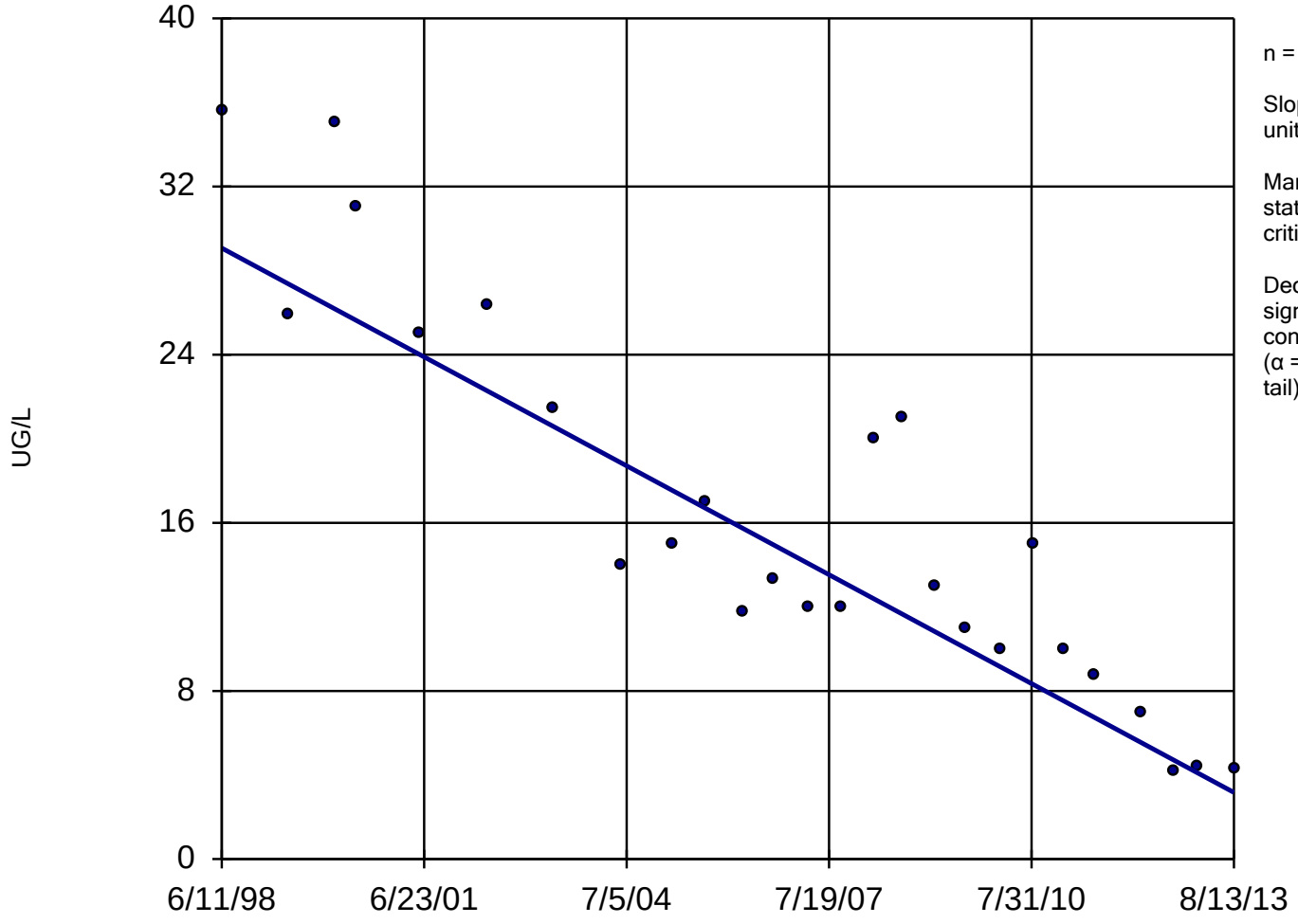
Background Data Summary: Mean=17.3, Std. Dev.=8.672, n=24. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9231, critical = 0.916. Report alpha = 0.01. Most recent point compared to limit.

Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sen's Slope Estimator

WSW-54-B



n = 26

Slope = -1.706 units per year.

Mann-Kendall statistic = -246
critical = -106

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: TCE Analysis Run 1/31/2014 10:07 AM

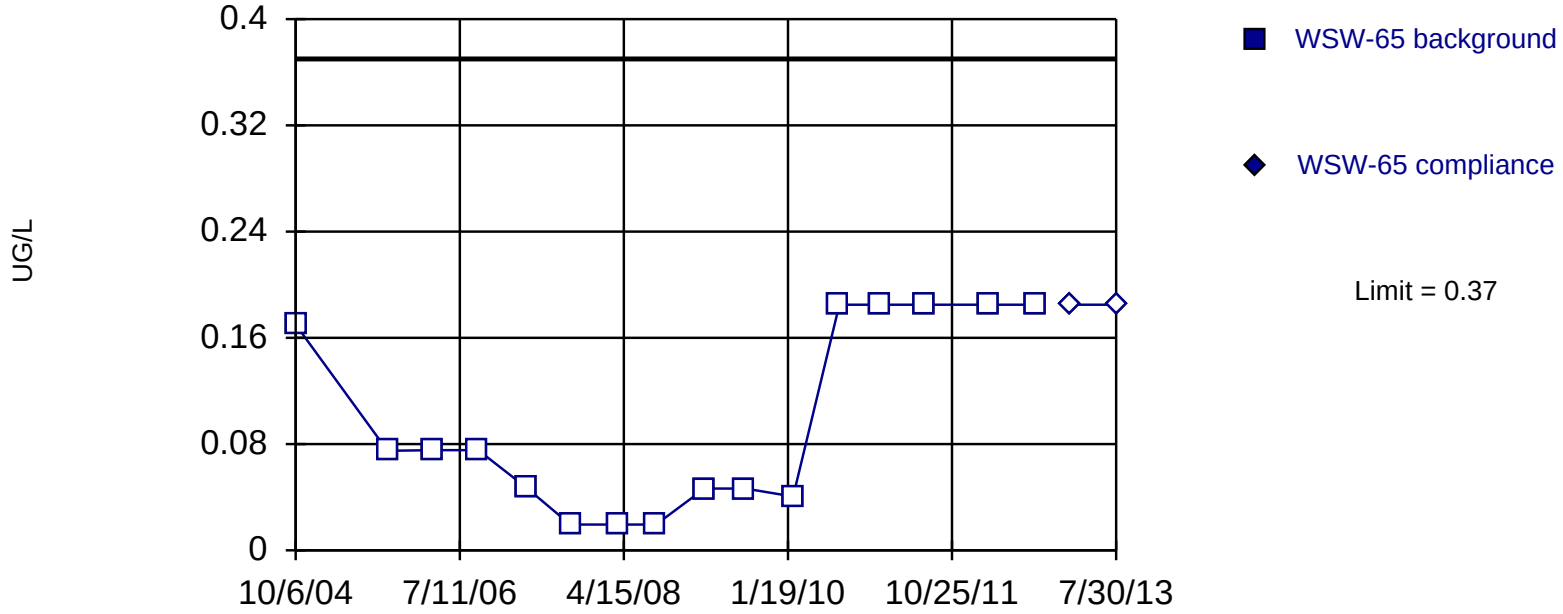
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 16) were censored; limit is most recent reporting limit. Report alpha = 0.05882. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

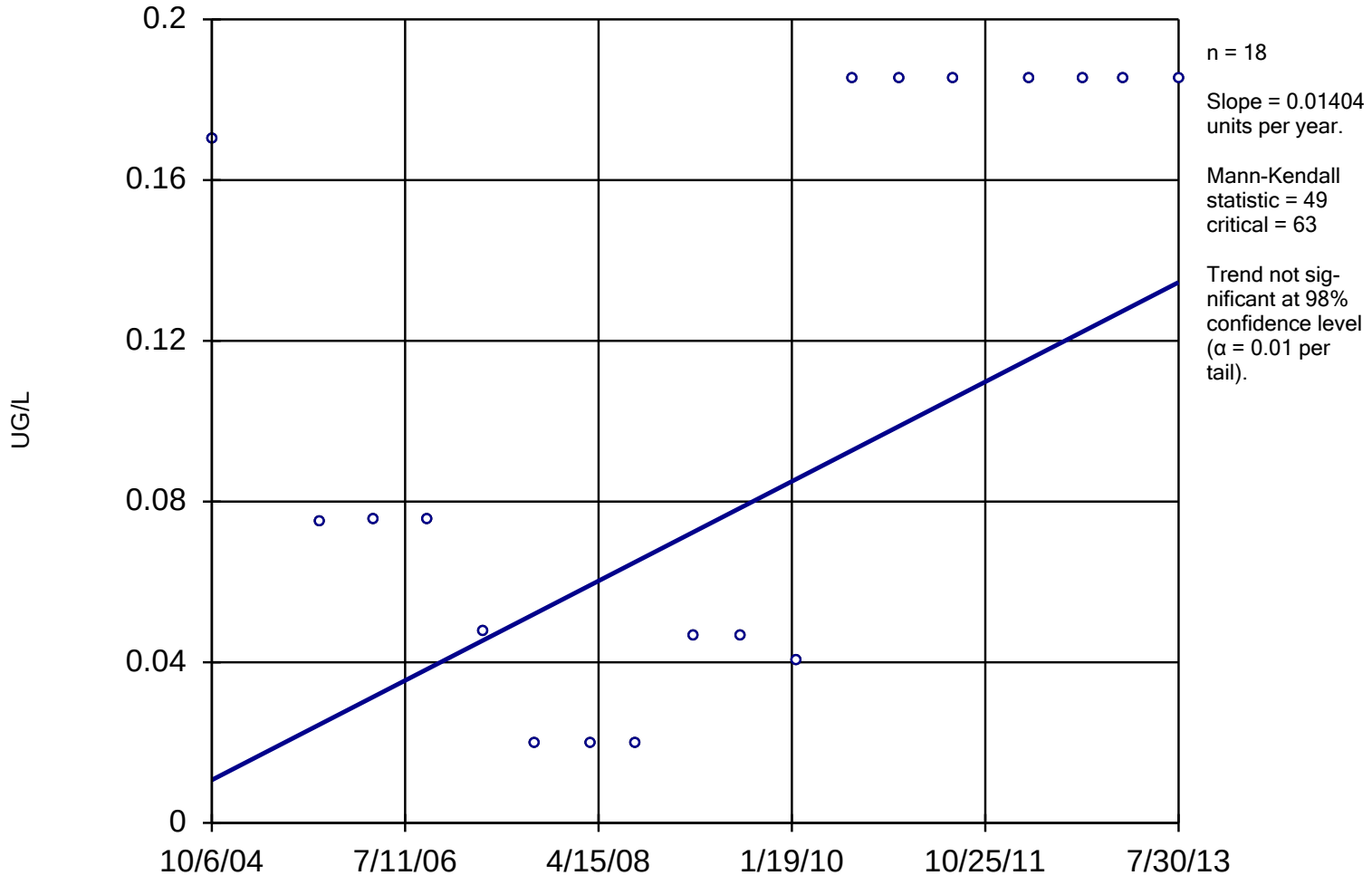
Constituent: TCE Analysis Run 1/28/2014 3:10 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-65



Constituent: TCE Analysis Run 1/31/2014 10:07 AM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Water Supply Well RDX Charts

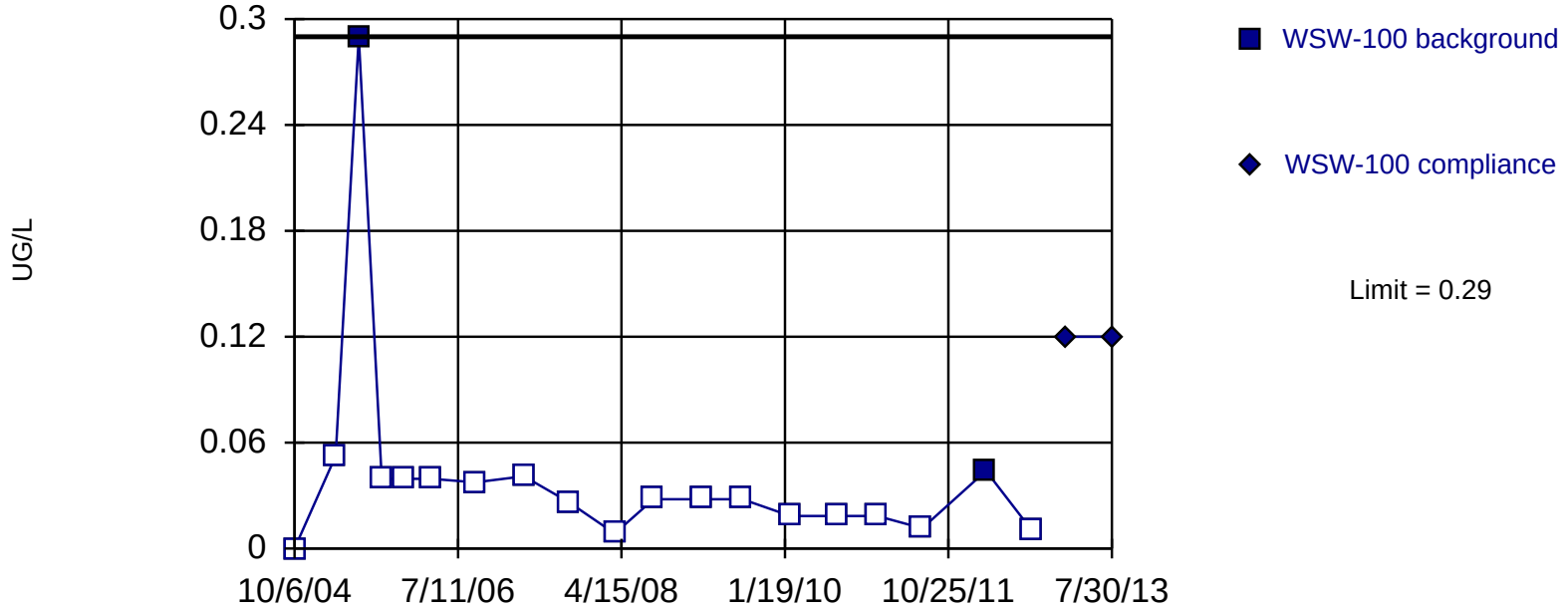
This page was intentionally left blank.

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 19 background values. 89.47% NDs. Report alpha = 0.05. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

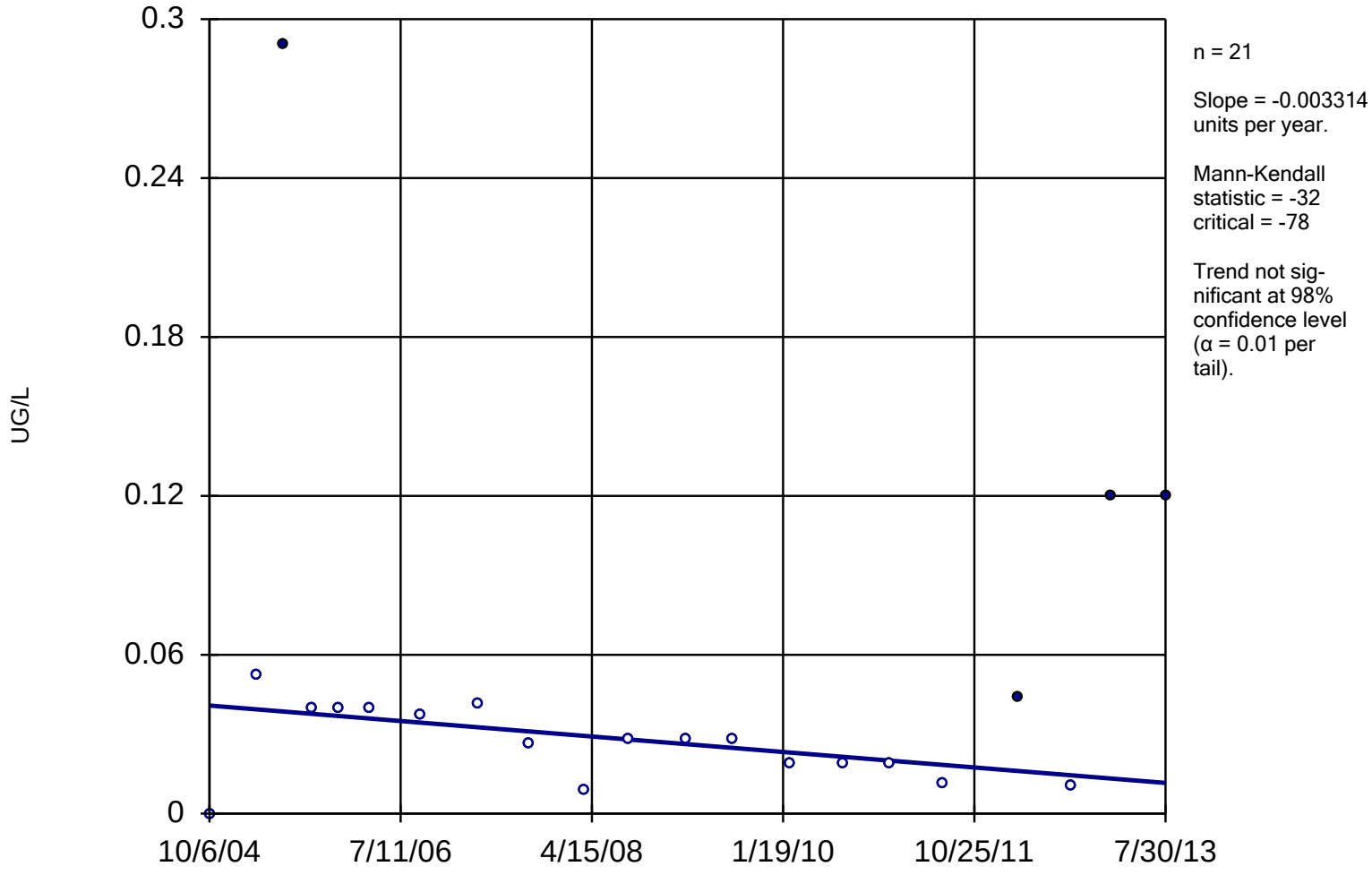
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-100



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

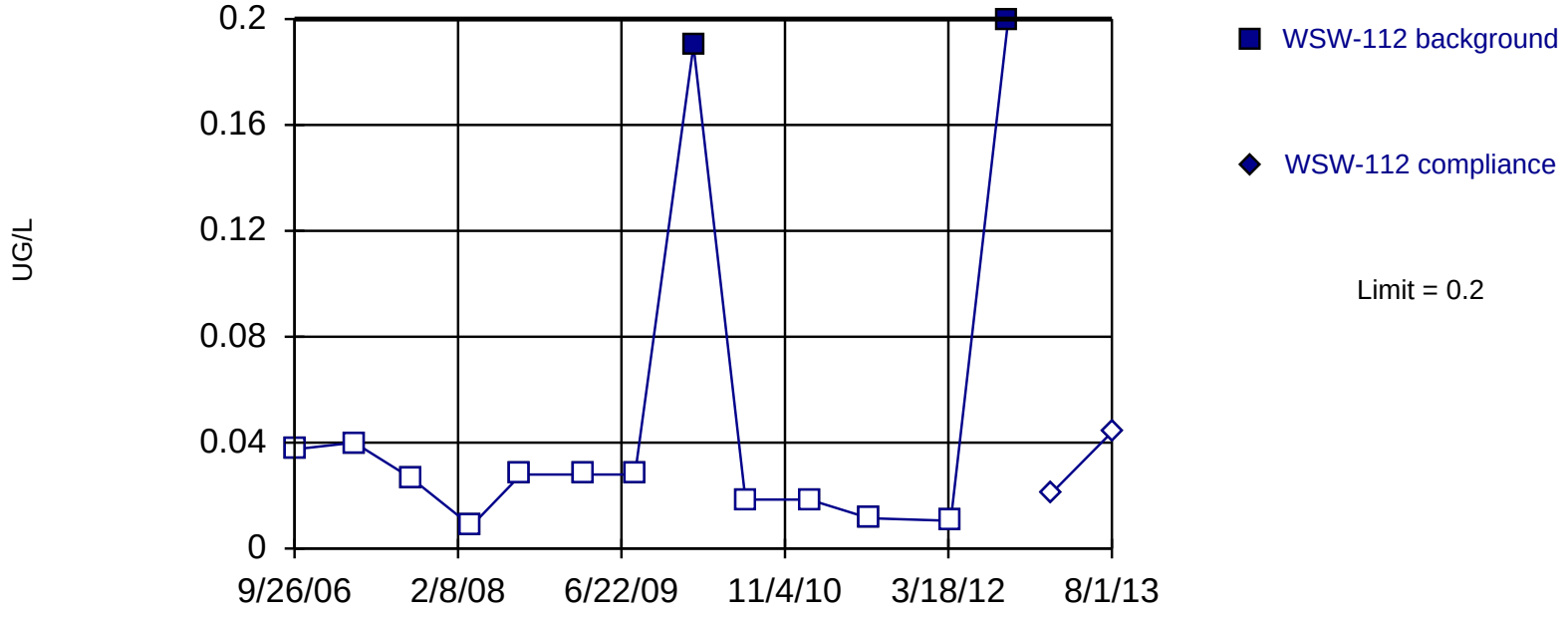
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 13 background values. 84.62% NDs. Report alpha = 0.07143. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

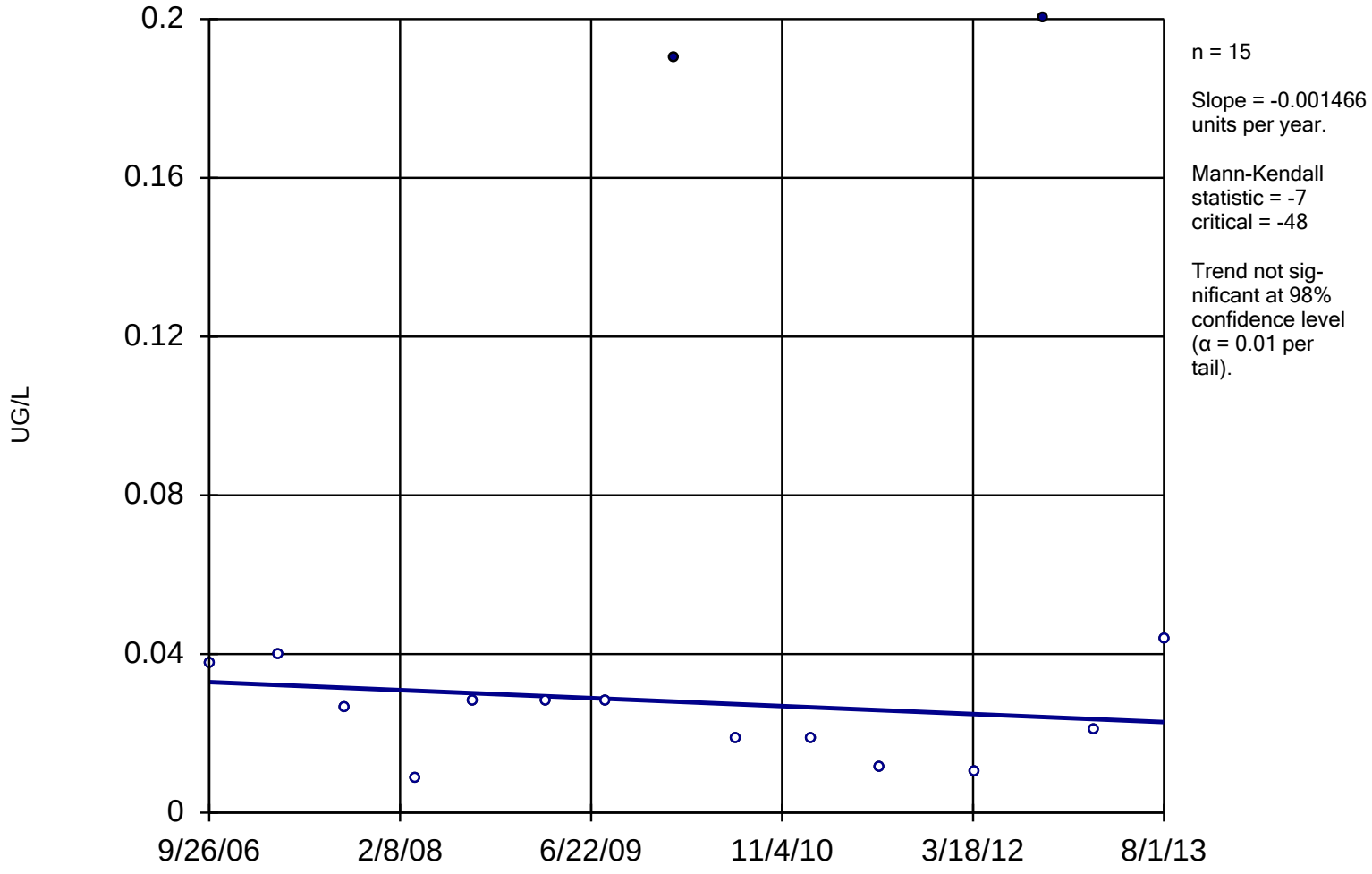
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-112



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

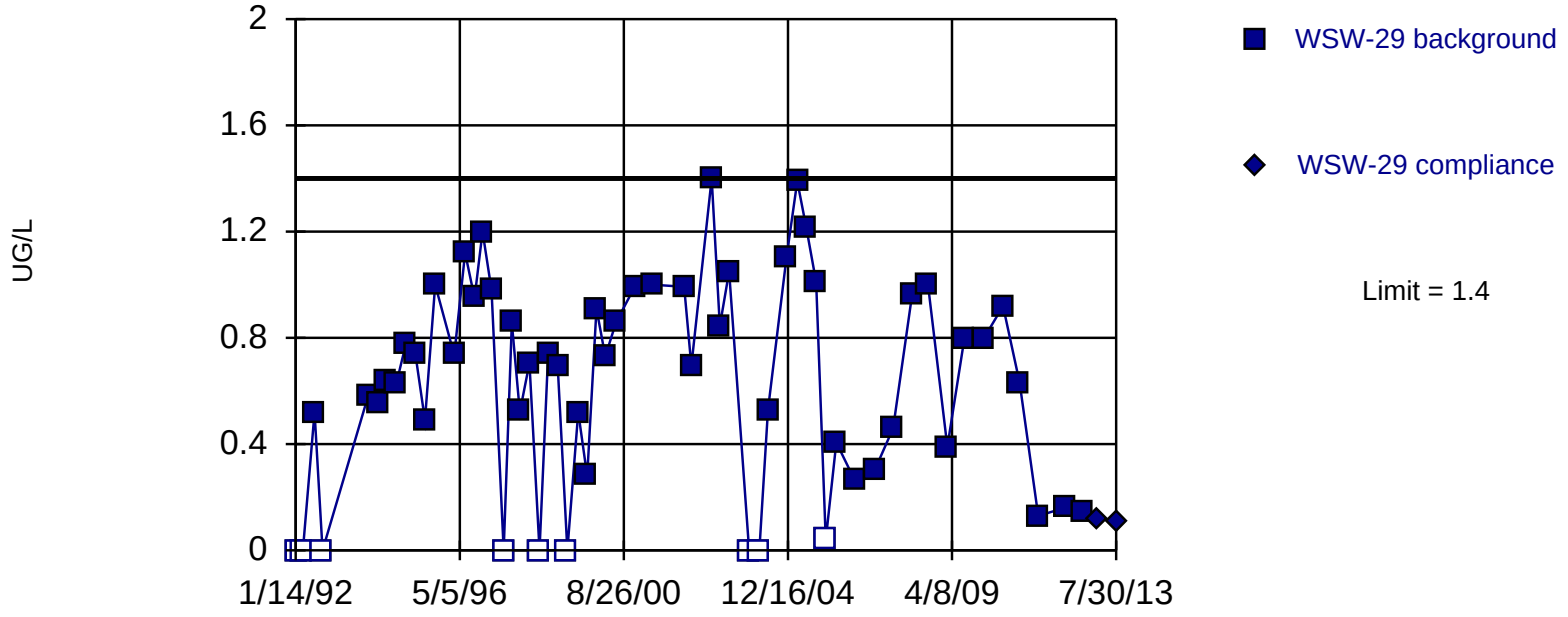
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 59 background values. 15.25% NDs. Report alpha = 0.01667. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

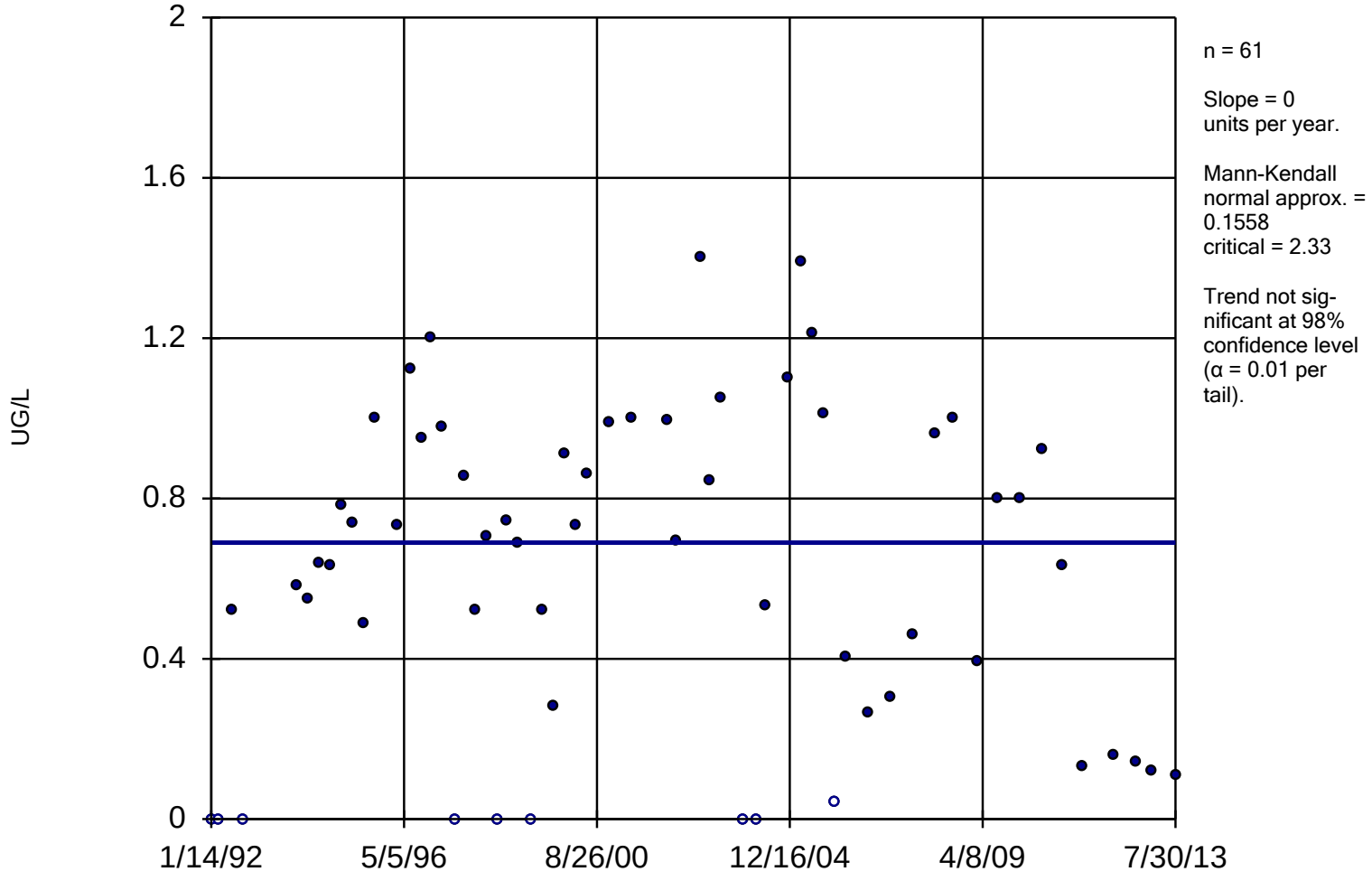
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-29



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

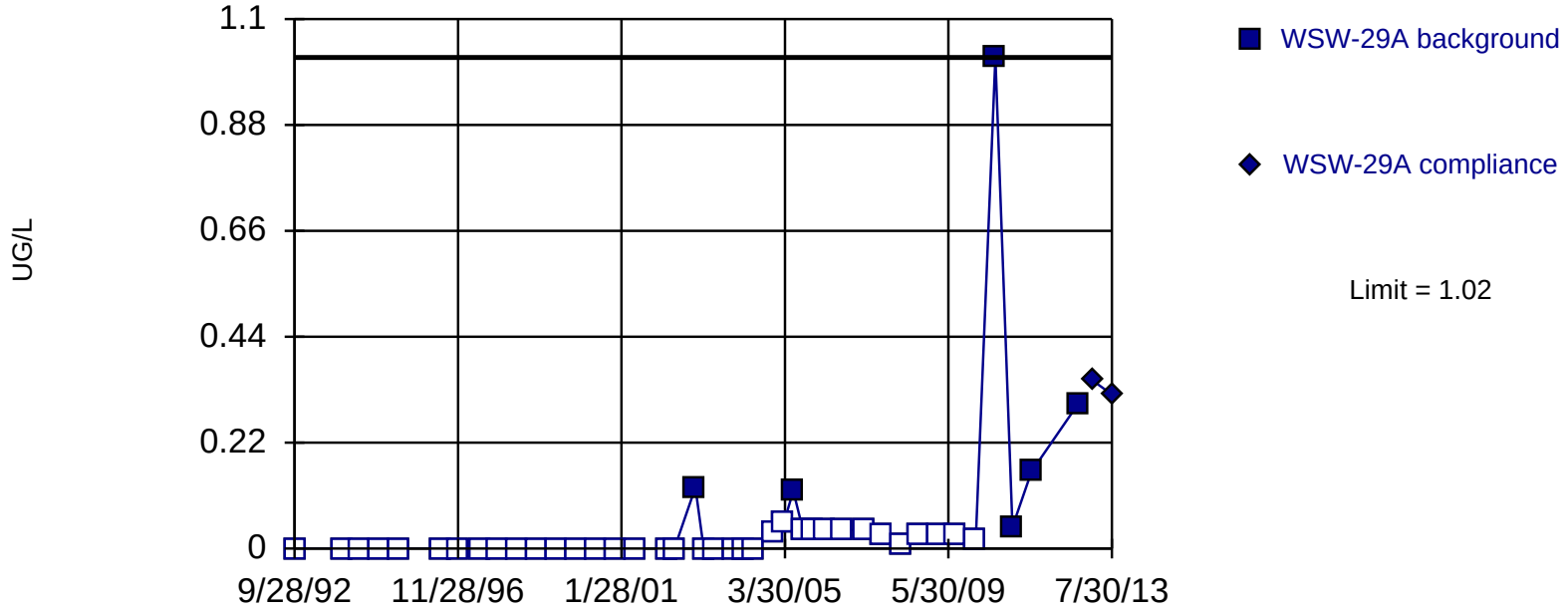
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 42 background values. 85.71% NDs. Report alpha = 0.02326. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

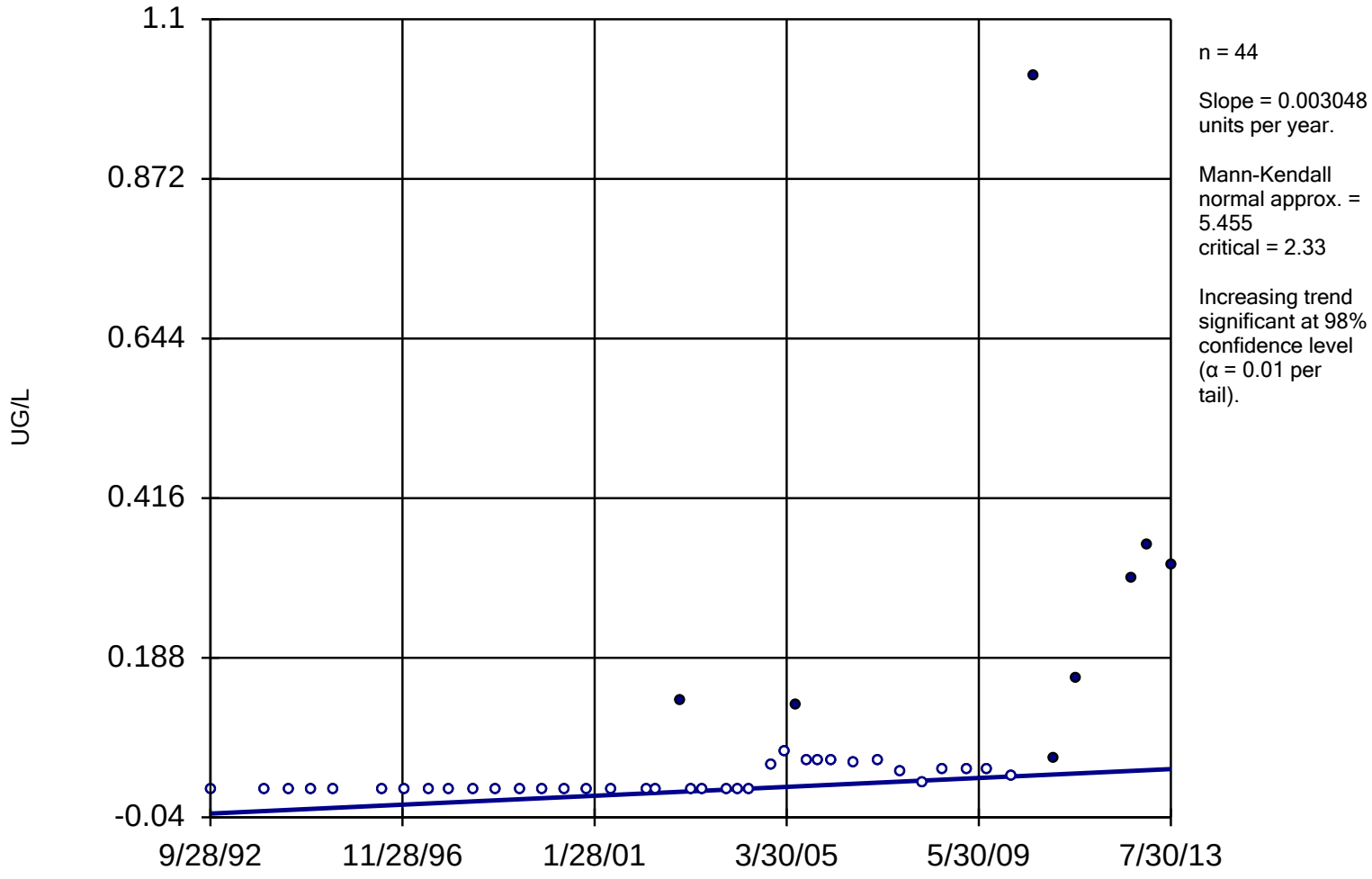
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-29A



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

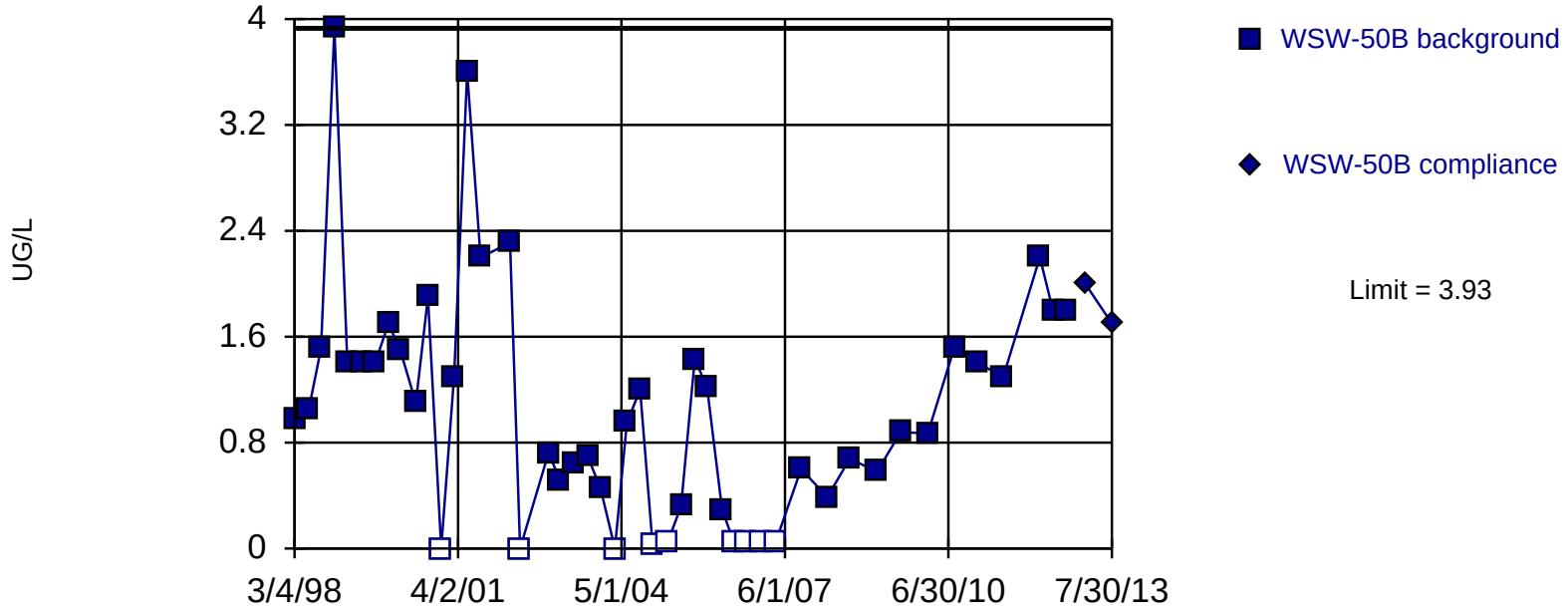
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the data required both a power transformation and Cohen's adjustment. Limit is highest of 47 background values. 19.15% NDs. Report alpha = 0.02083. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

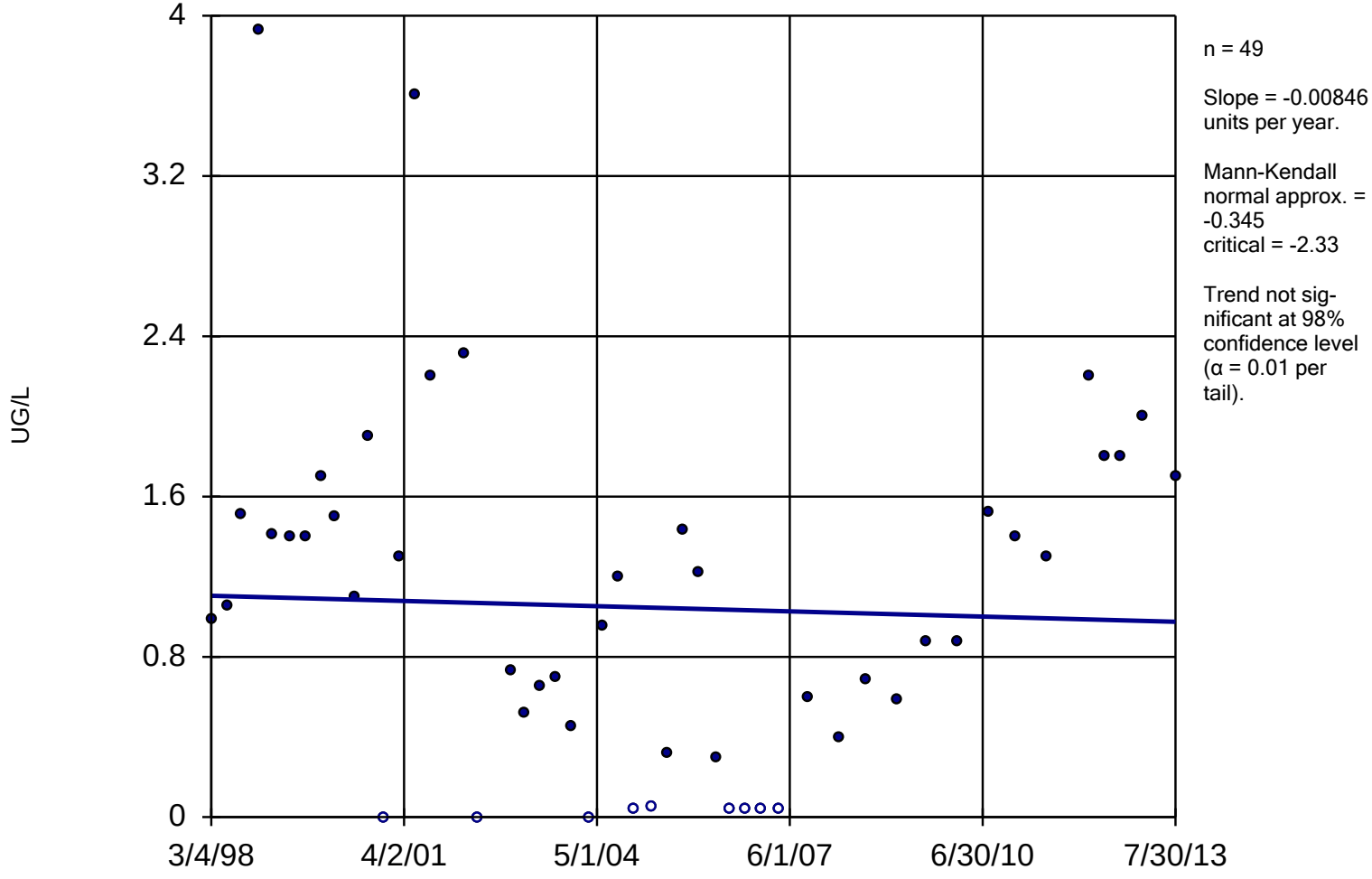
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-50B



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

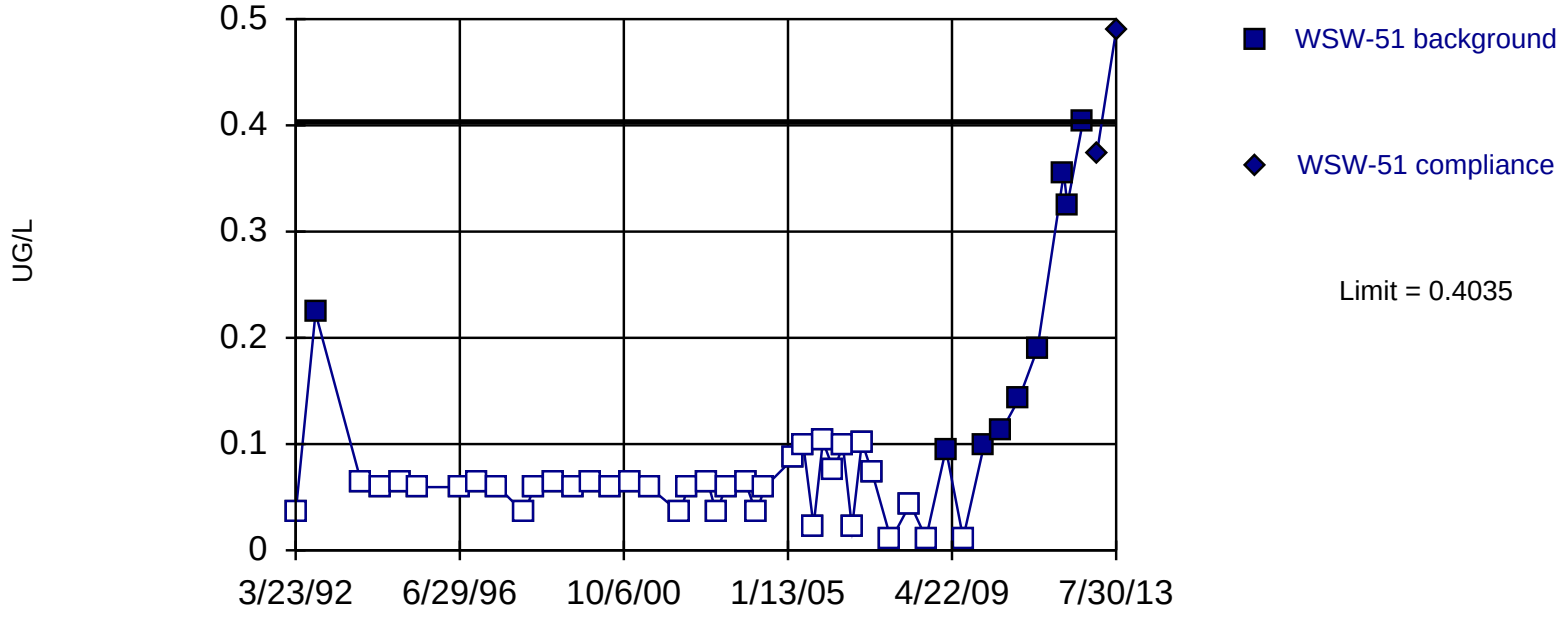
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 46 background values. 80.43% NDs. Report alpha = 0.02128. Most recent point compared to limit. Data were deseasonalized.

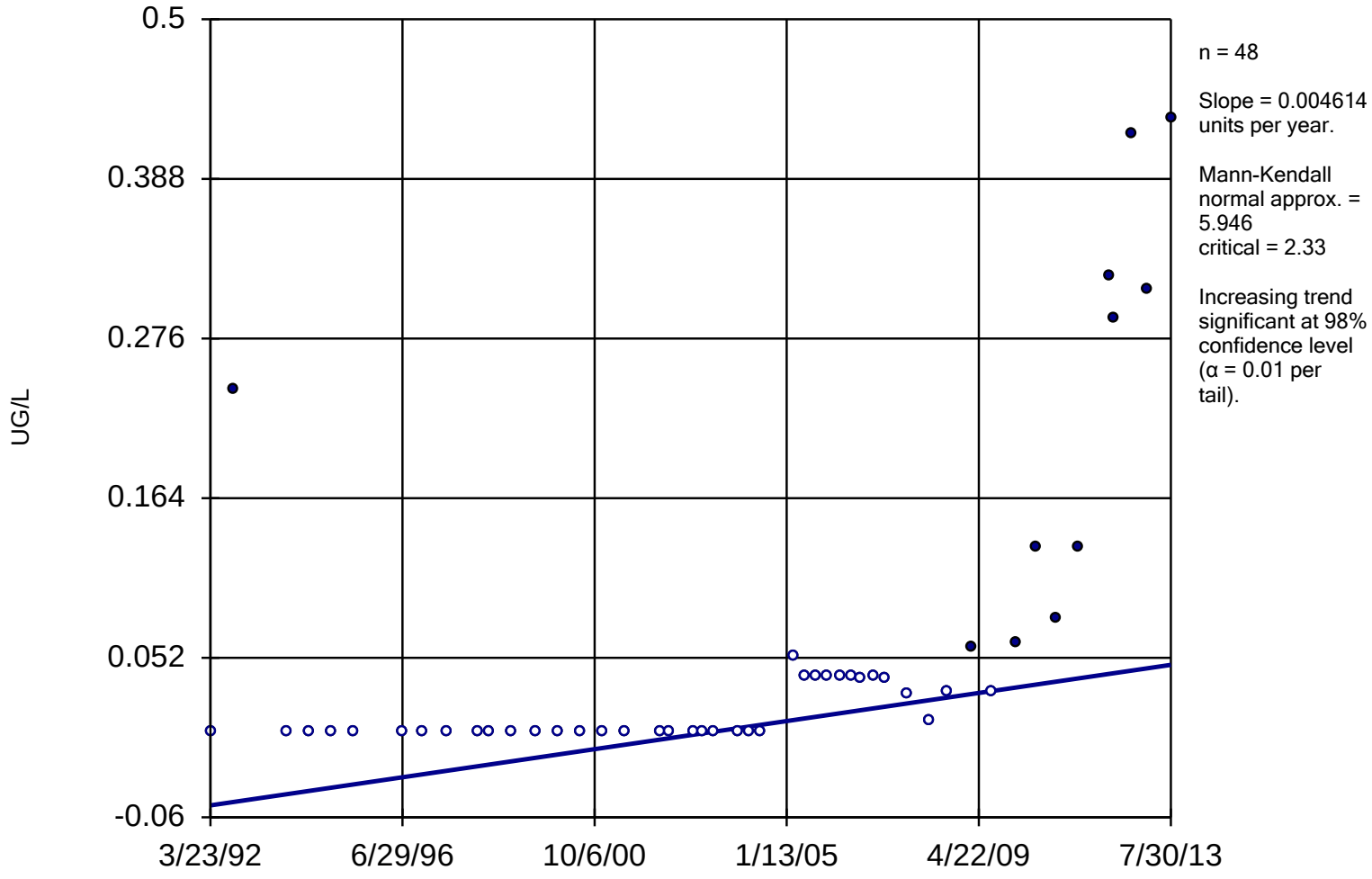
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-51



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

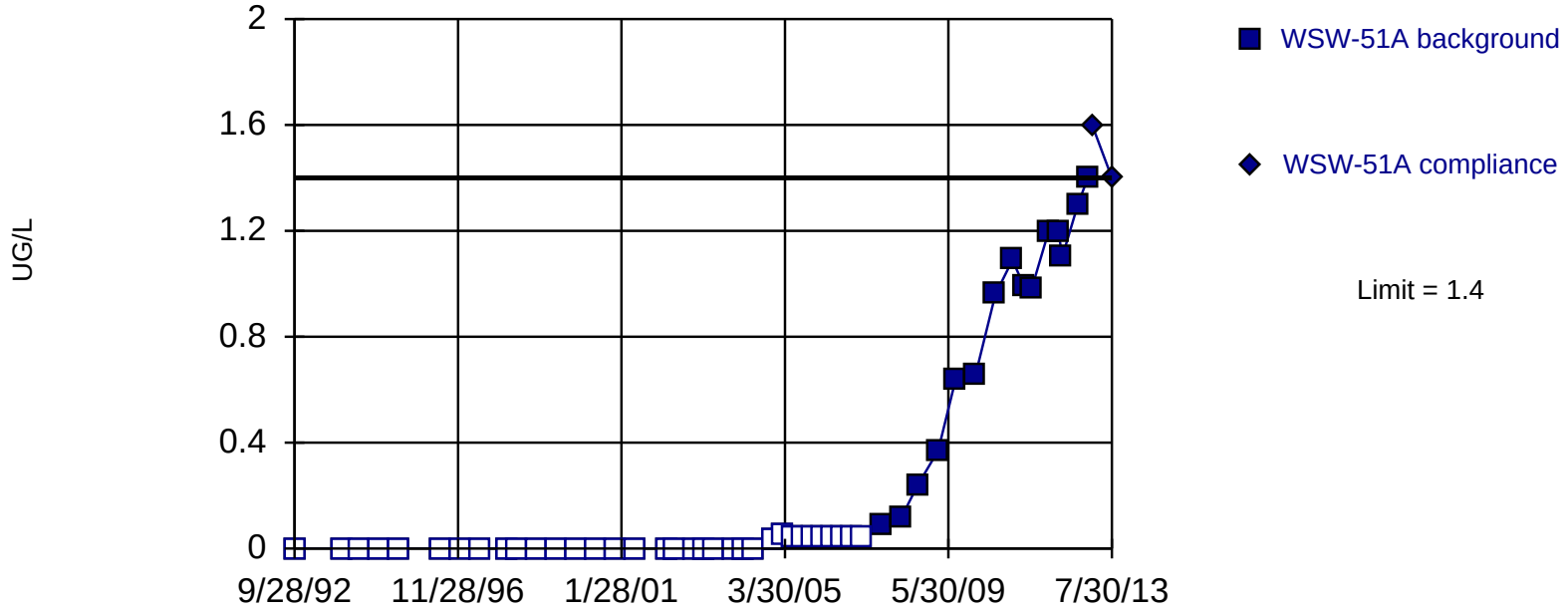
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 49 background values. 69.39% NDs. Report alpha = 0.02. Most recent point compared to limit. Seasonality was not detected with 95% confidence.

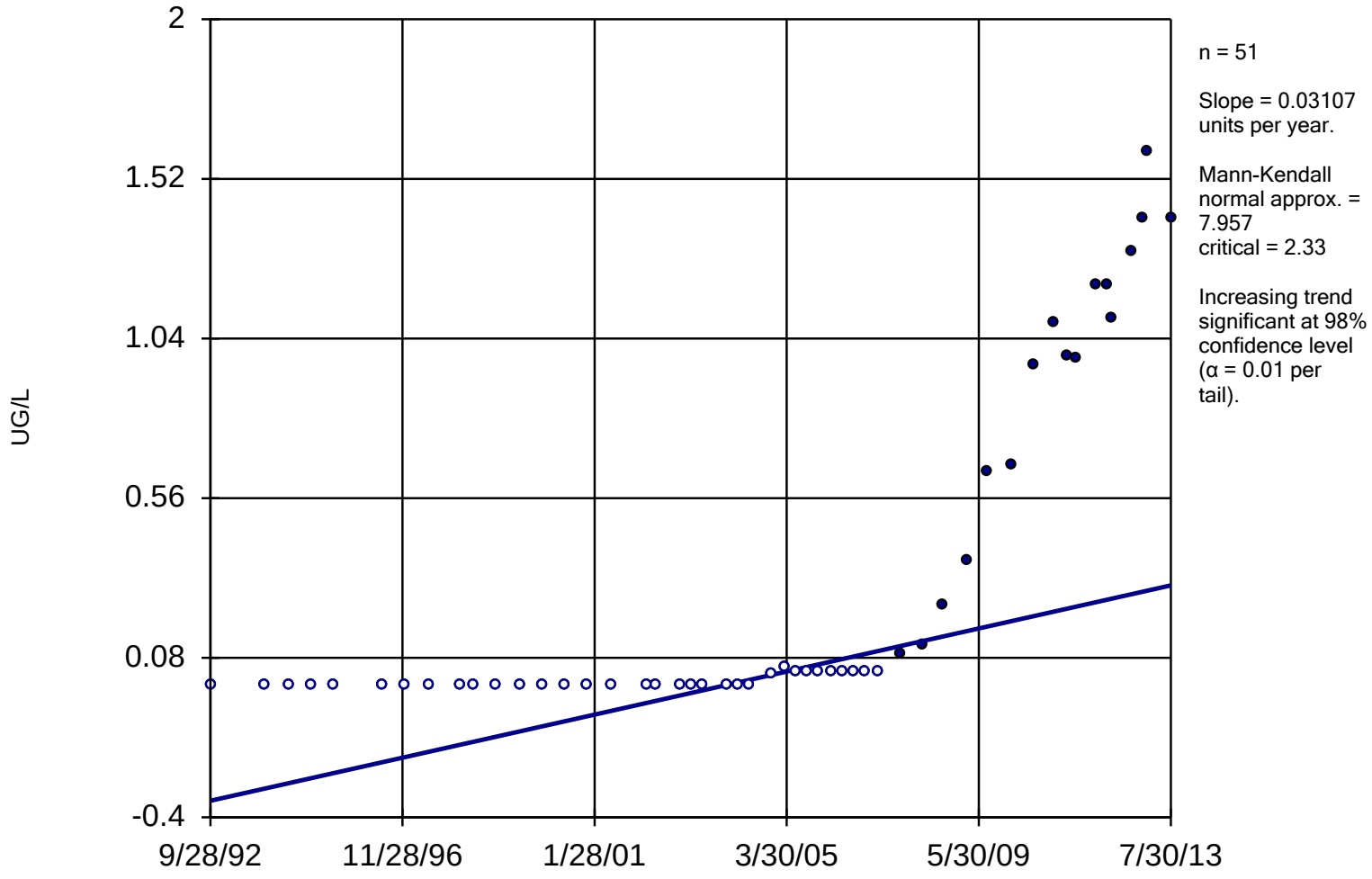
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-51A



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

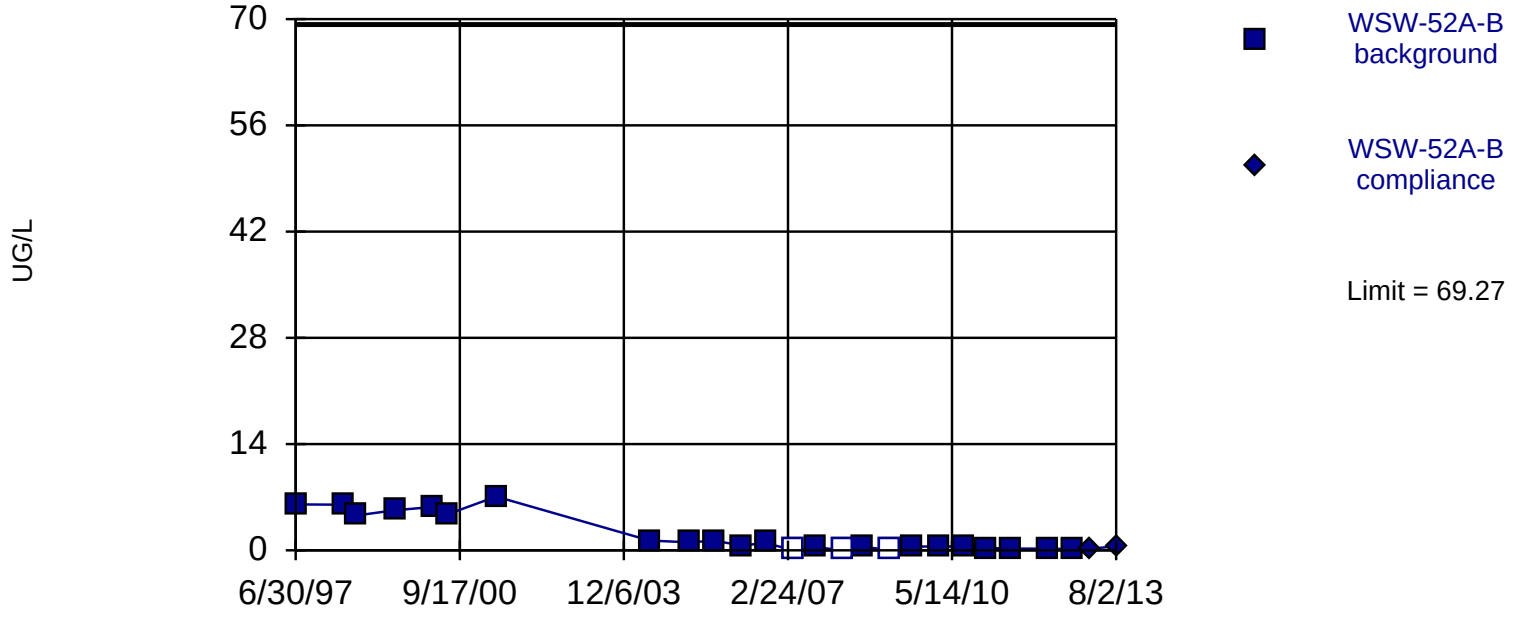
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=-0.3682, Std. Dev.=1.805, n=24, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9225, critical = 0.916. Report alpha = 0.01. Most recent point compared to limit.

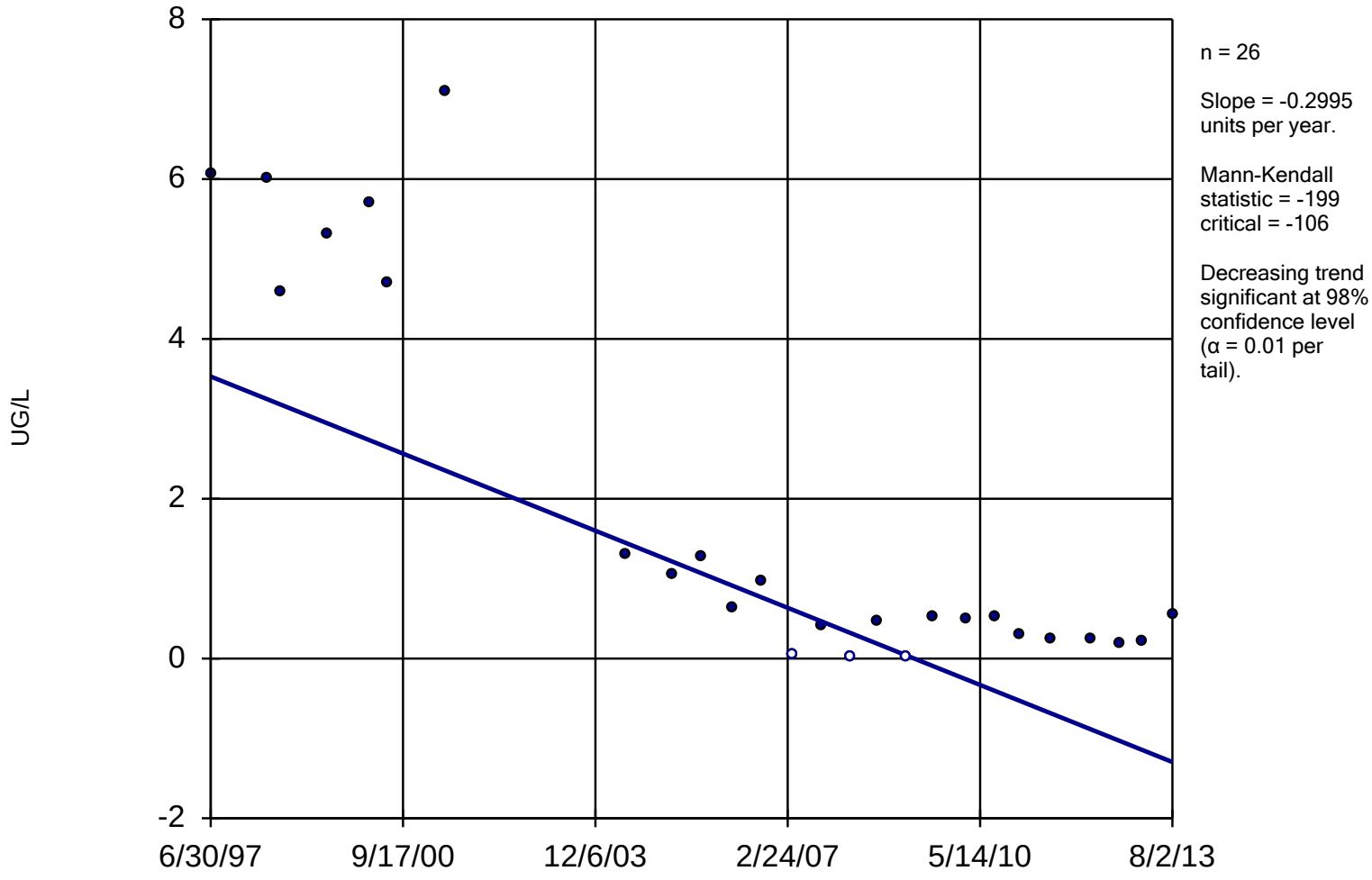
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-52A-B



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

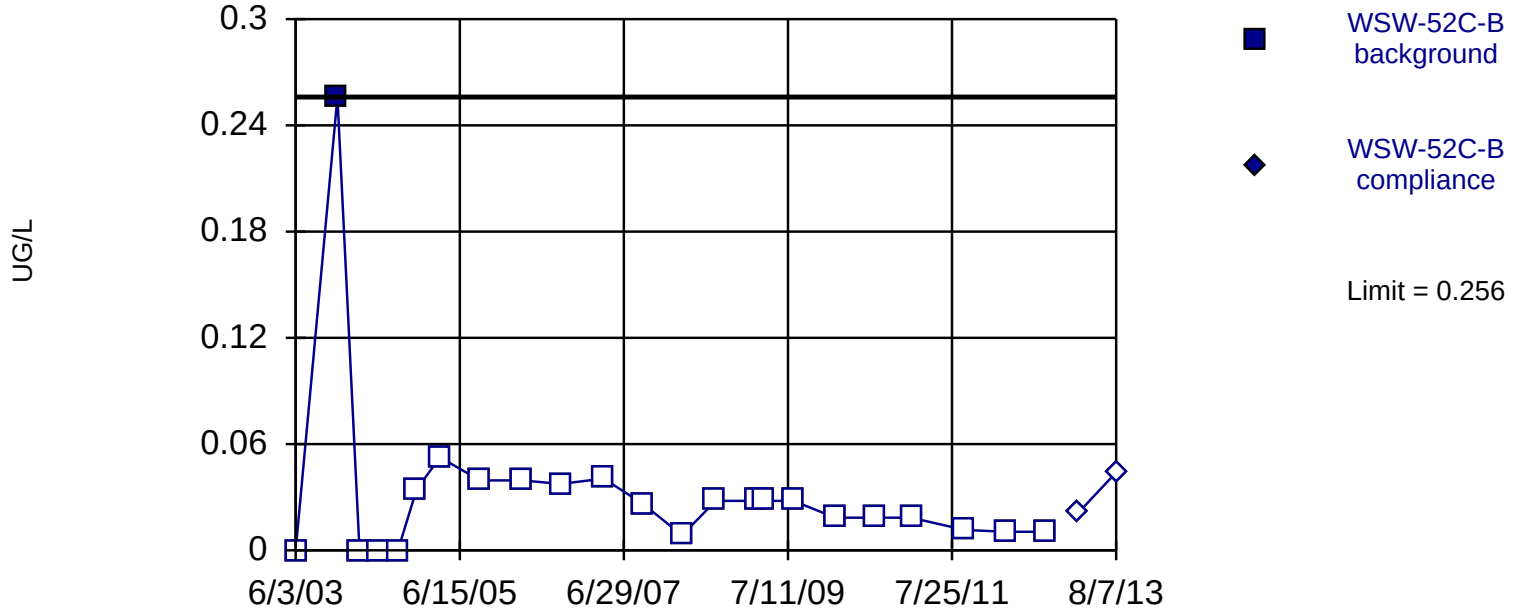
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 95.65% NDs. Report alpha = 0.04167. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

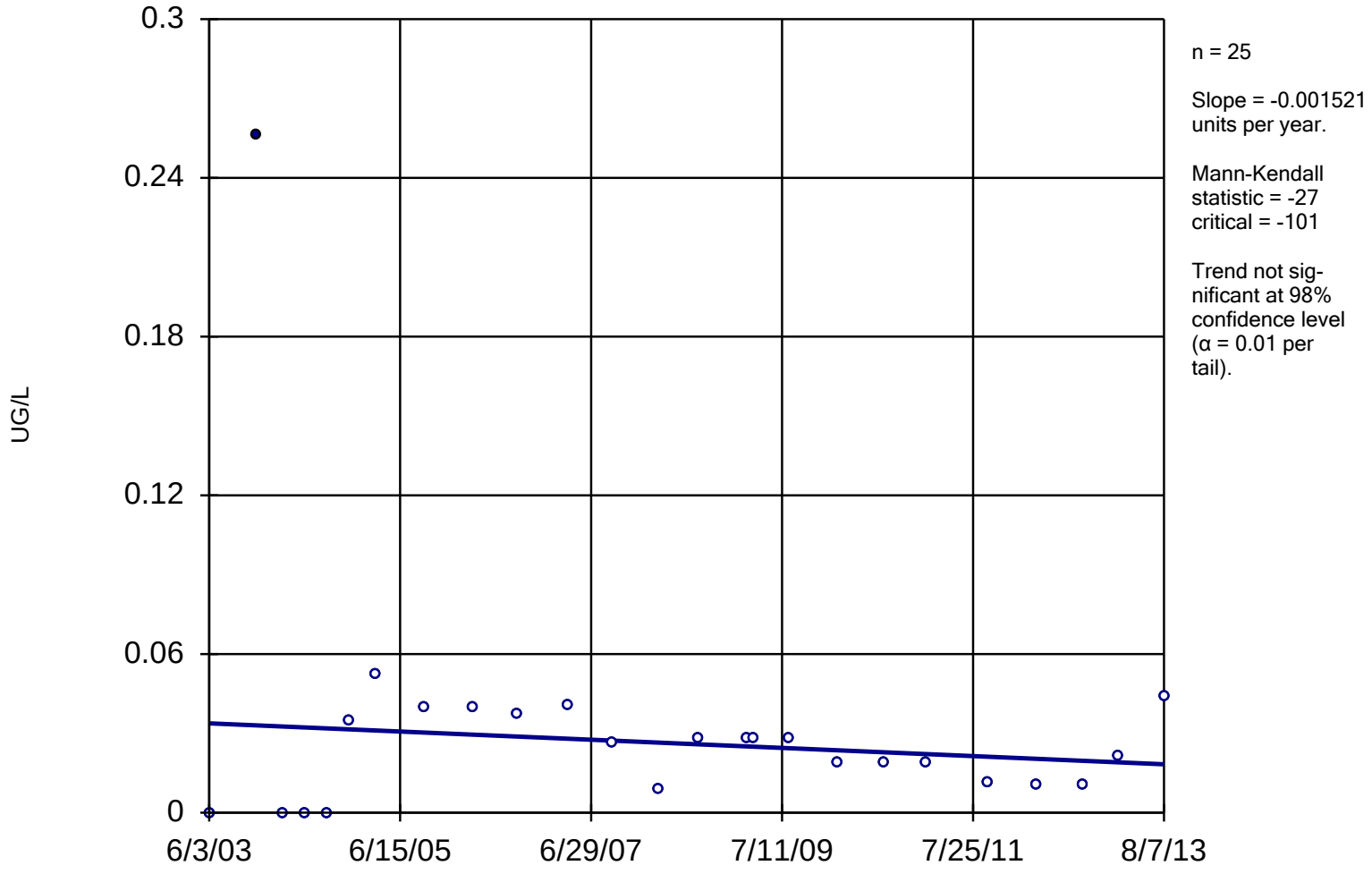
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-52C-B



Constituent: RDX Analysis Run 1/28/2014 3:08 PM

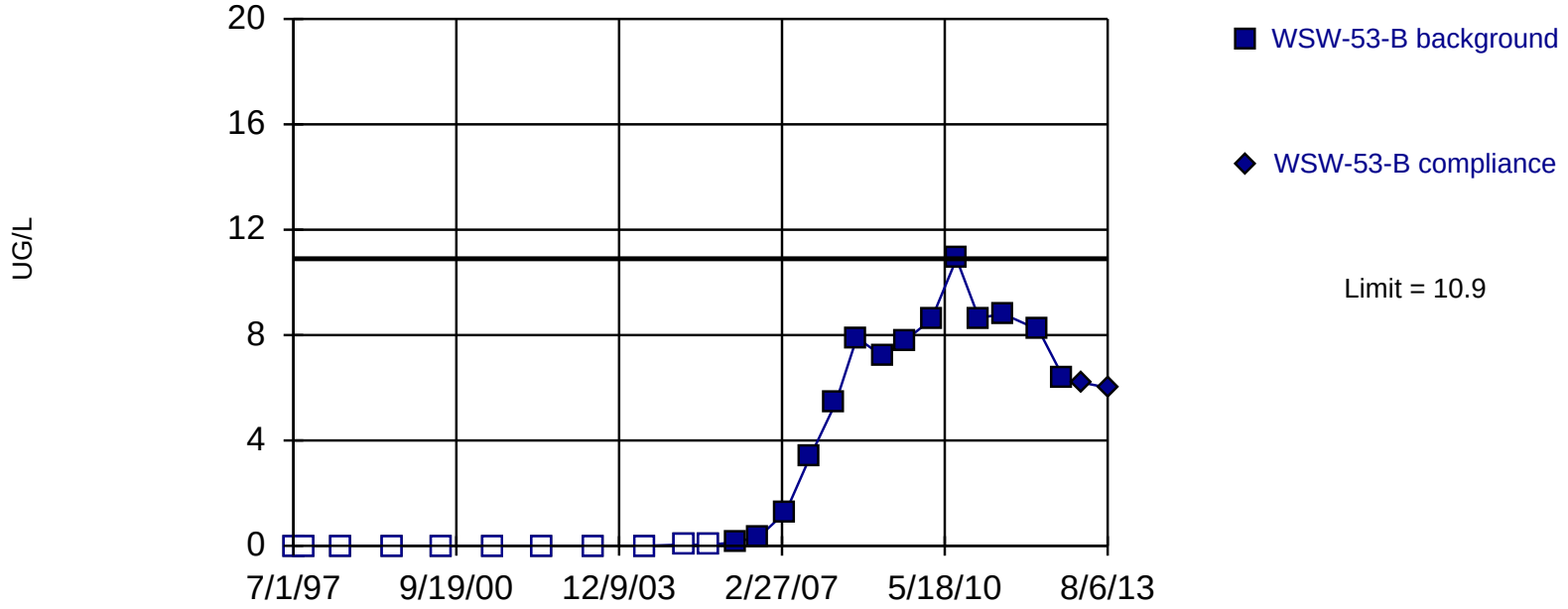
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

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 0.05 alpha level. Limit is highest of 25 background values. 44% NDs. Report alpha = 0.03846. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

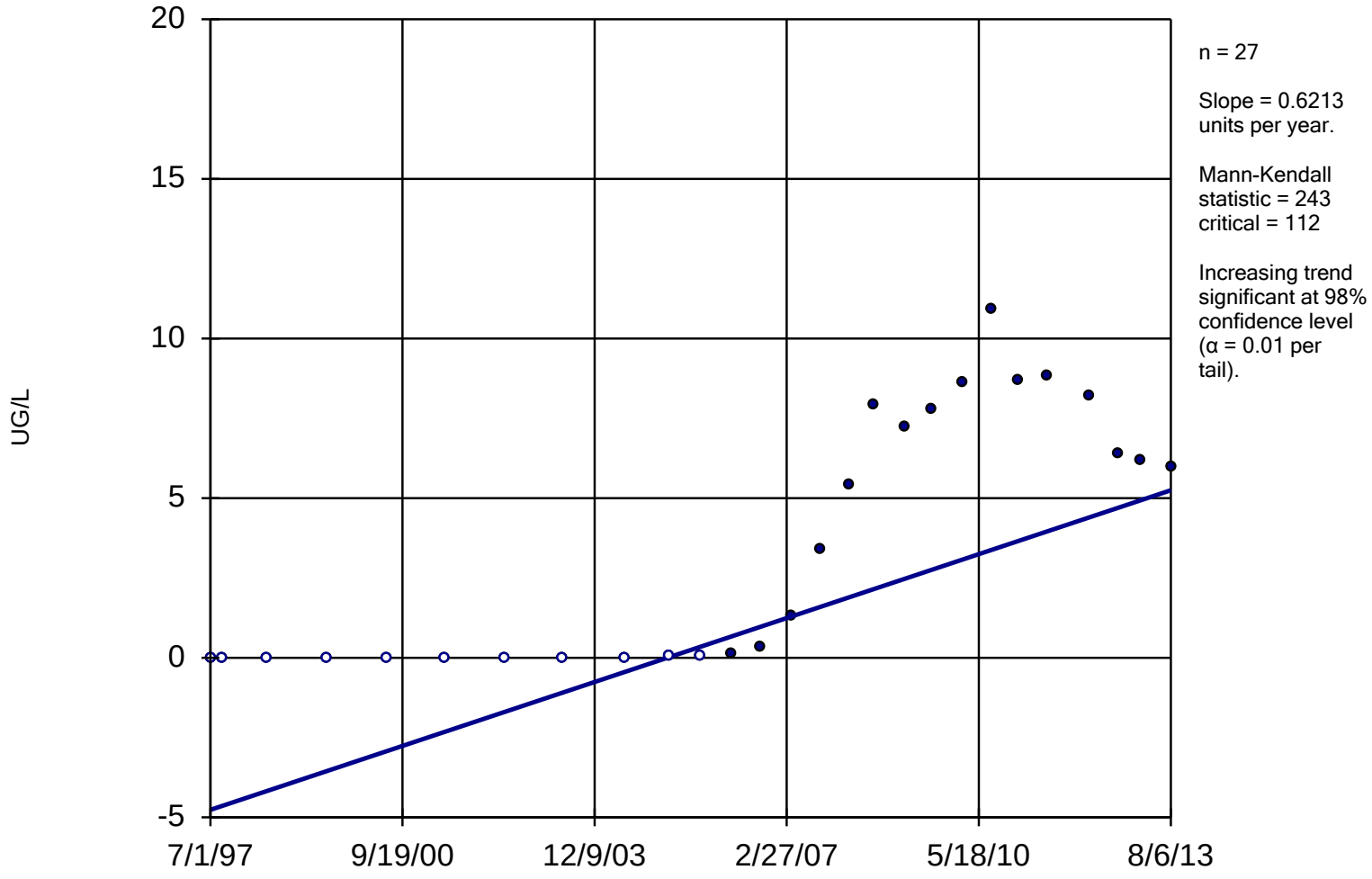
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-53-B



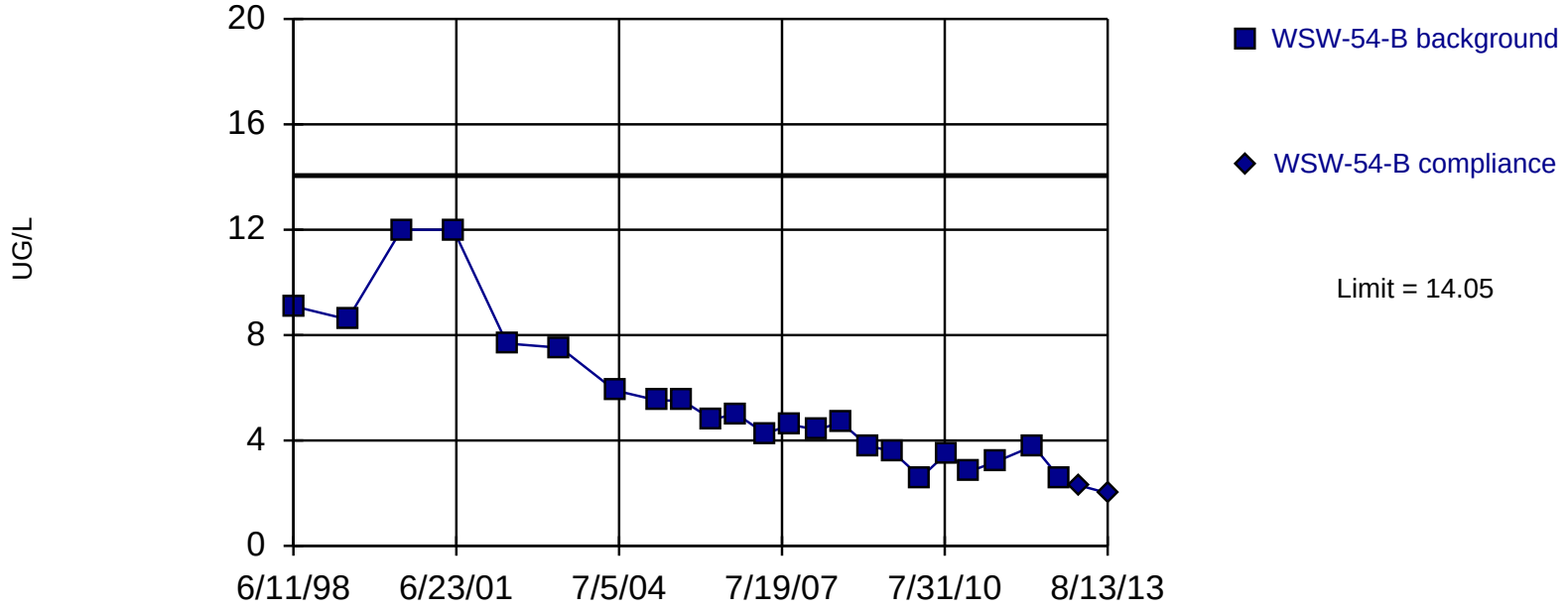
Constituent: RDX Analysis Run 1/28/2014 3:08 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Within Limit

Prediction Limit

Intrawell Parametric



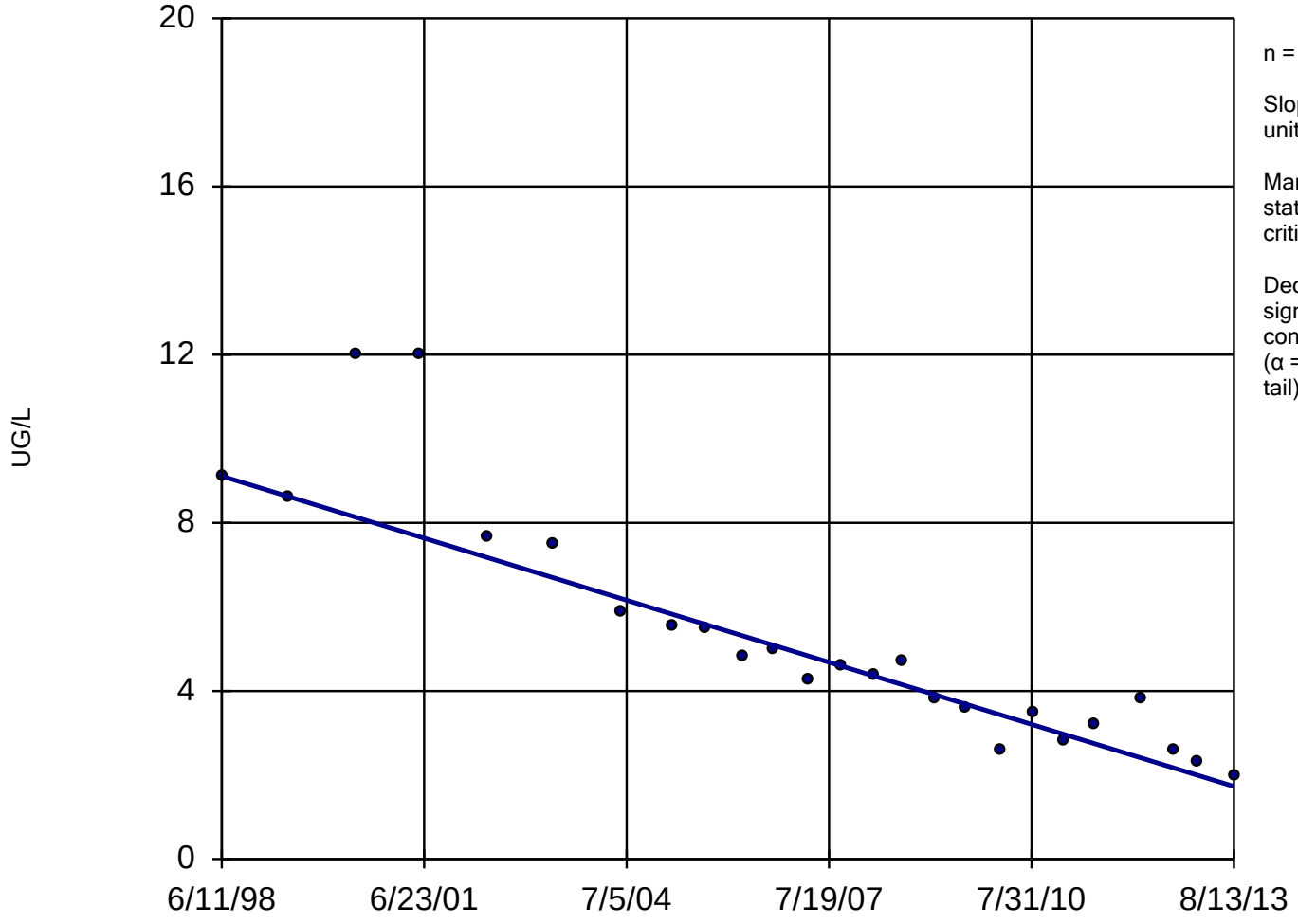
Background Data Summary (based on cube root transformation): Mean=1.73, Std. Dev.=0.2665, n=23. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.927, critical = 0.914. Report alpha = 0.01. Most recent point compared to limit.

Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sen's Slope Estimator

WSW-54-B



n = 25

Slope = -0.4861 units per year.

Mann-Kendall statistic = -259
critical = -101

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: RDX Analysis Run 1/28/2014 3:09 PM

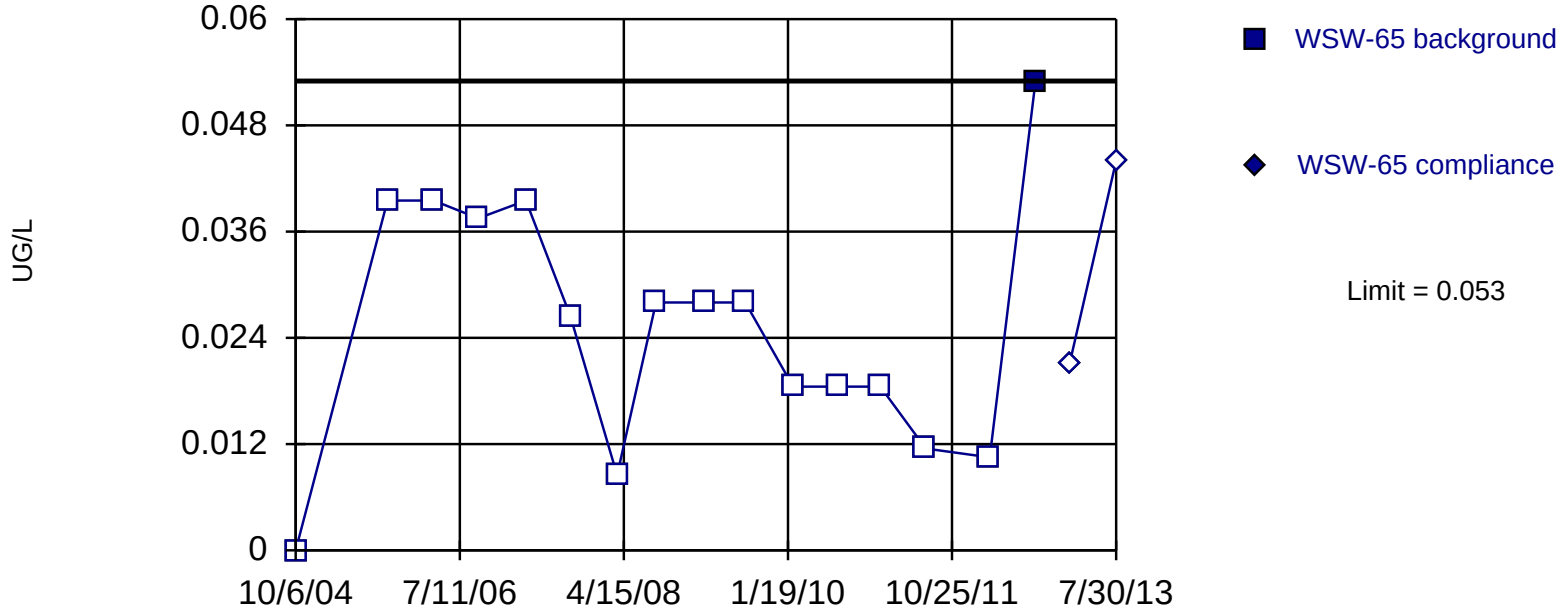
Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 93.75% NDs. Report alpha = 0.05882. Most recent point compared to limit. Insufficient data to test for seasonality: data were not deseasonalized.

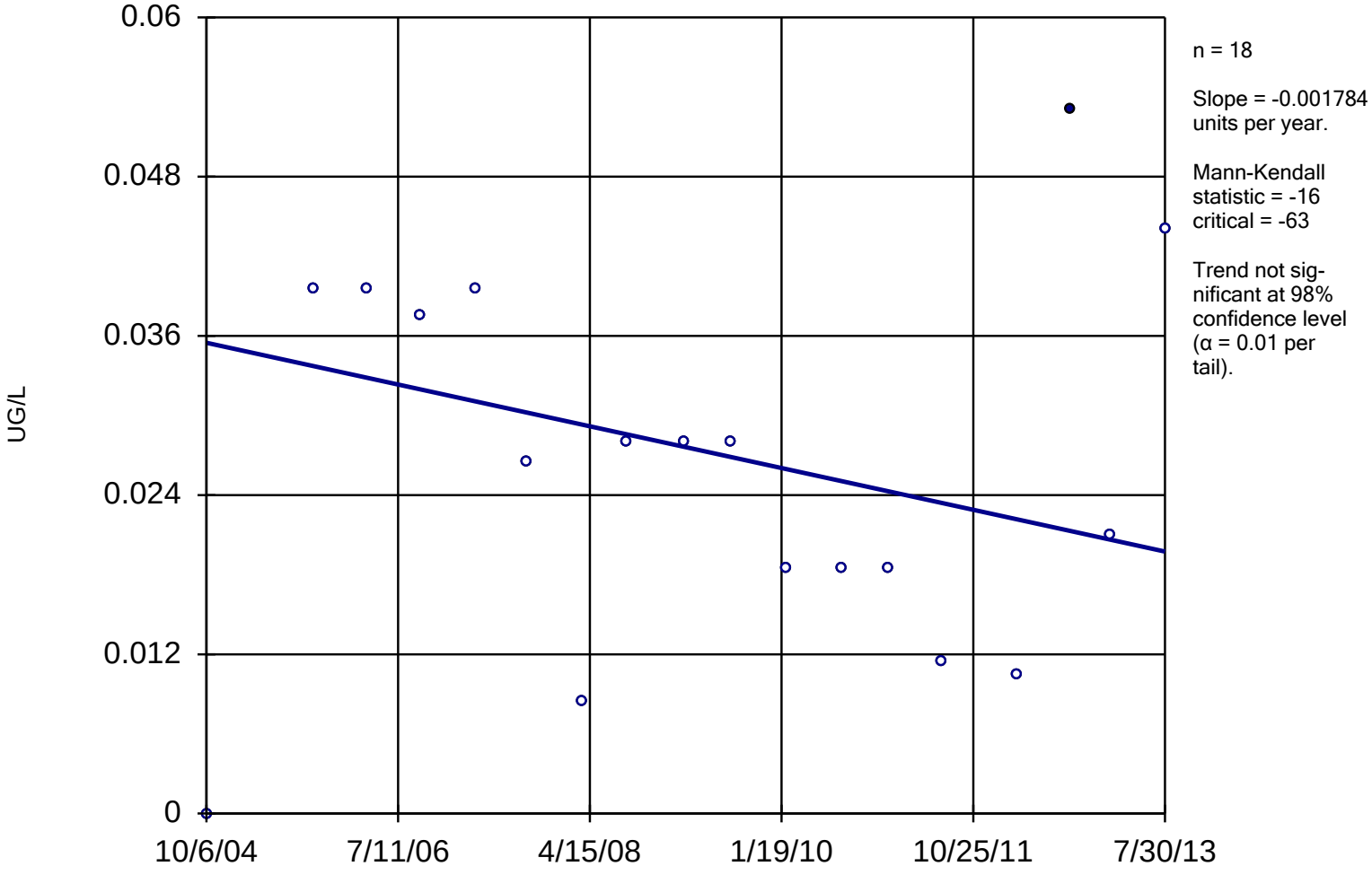
Constituent: RDX Analysis Run 1/28/2014 3:06 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

Sanitas™ v.9.4.31 Software licensed to HydroGeoLogic, Inc. EPA
Hollow symbols indicate censored values.

Sen's Slope Estimator

WSW-65



Constituent: RDX Analysis Run 1/28/2014 3:09 PM

Facility: Mead FNOP Client: HydroGeoLogic Data File: 2013_WSW_Sanitas

APPENDIX C

Summary of Results from the 2013 Monitoring Well Sampling Events

This page was intentionally left blank.

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-02A	Intermediate	Second Quarter 2013	ND	ND	0.062 J	0.16 J	ND	ND
MW-02B	Shallow	Second Quarter 2013	0.22 J	3.6	3.6	5.2	0.39 J	4.7
MW-03A	Intermediate	Second Quarter 2013	ND	ND	0.10 J	2.3	ND	ND
MW-03B	Shallow	Second Quarter 2013	ND	0.098 J	0.19 J	0.43	ND	ND
MW-04B	Shallow	First Quarter 2013	ND	ND	0.079 J	13.0	ND	ND
MW-08A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-08B	Shallow	Second Quarter 2013	ND	ND	ND	0.22 J	ND	ND
MW-100A	Intermediate	First Quarter 2013	ND	ND	ND	0.095 J	ND	ND
MW-100B	Shallow	First Quarter 2013	ND	ND	ND	0.10 J	ND	ND
MW-100D	Deep	First Quarter 2013	ND	ND	ND	0.082 J	ND	ND
MW-104A	Intermediate	Second Quarter 2013	ND	ND	ND	0.89	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.58	ND	ND
MW-104B	Shallow	Second Quarter 2013	ND	ND	ND	0.45	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.59	ND	ND
MW-104D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-104O	Overburden	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-104O	Overburden	Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-105A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-105B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-105O	Overburden	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-106A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-106B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-109A	Intermediate	Second Quarter 2013	ND	ND	0.13 J	4.3	ND	ND
MW-109B	Shallow	Second Quarter 2013	ND	ND	0.12 J	4.0	ND	ND
MW-11	Intermediate	Second Quarter 2013	ND	ND	ND	2.9	ND	ND
MW-110A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-111A	Intermediate	Second Quarter 2013	ND	ND	ND	0.23 J	ND	ND
MW-111B	Shallow	Second Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-112A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-112B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-113B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114D	Deep	First Quarter 2013	ND	ND	ND	0.073 J	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-116A	Intermediate	Third Quarter 2013	ND	0.082 J	ND	ND	ND	ND
MW-116B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-118A	Intermediate	First Quarter 2013	ND	ND	0.11 J	0.75	ND	ND
		Third Quarter 2013	ND	ND	0.40 J	0.59	ND	ND
MW-118B	Shallow	First Quarter 2013	ND	ND	0.11 J	0.79	ND	ND
		Third Quarter 2013	ND	ND	0.10 J	0.78	ND	ND
MW-119A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-119B	Shallow	Second Quarter 2013	ND	0.095 J	0.12 J	0.19 J	ND	ND
		Fourth Quarter 2013	ND	0.083 J	0.11 J	0.18 J	ND	ND
MW-120A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-120B	Shallow	Second Quarter 2013	ND	0.053 J	3.0 J	7.4	ND	ND
		Fourth Quarter 2013	ND	ND	6.0	6.8	0.059 J	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-120D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	0.12 J	ND	0.031 J	ND
MW-120E	Intermediate	Second Quarter 2013	ND	ND	0.64 J	8.5	ND	ND
		Fourth Quarter 2013	ND	ND	0.77 J	9.6	0.11 J	ND
MW-121A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-121B	Shallow	Second Quarter 2013	ND	ND	0.098 J	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-121E	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-122A	Intermediate	Second Quarter 2013	ND	ND	0.15 J	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-122B	Shallow	Second Quarter 2013	ND	ND	0.34 J	1.1	ND	ND
		Fourth Quarter 2013	ND	ND	0.58 J	1.3	ND	ND
MW-123A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-123B	Shallow	Second Quarter 2013	ND	ND	0.19 J	0.14 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-123B	Shallow	Fourth Quarter 2013	ND	ND	0.21 J	0.23 J	ND	ND
MW-124A	Intermediate	Second Quarter 2013	ND	ND	ND	2.3	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.49	ND	ND
MW-124B	Shallow	Second Quarter 2013	ND	ND	1.9 J	26.0	0.065 J	ND
		Fourth Quarter 2013	ND	0.050 J	1.6 J	19.0	0.054 J	ND
MW-124D	Deep	Second Quarter 2013	ND	ND	0.15 J	0.23 J	ND	0.073 J
		Fourth Quarter 2013	ND	ND	0.18 J	ND	ND	ND
MW-125A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	0.15 J	ND	ND	ND
MW-125B	Shallow	Second Quarter 2013	ND	ND	3.5 J	11.0	0.26 J	ND
		Fourth Quarter 2013	ND	ND	1.5	7.5 J	0.10 J	ND
MW-125D	Deep	Second Quarter 2013	ND	ND	0.15 J	ND	ND	0.26 J
		Fourth Quarter 2013	ND	ND	ND	0.11 J	ND	ND
MW-126A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-126B	Shallow	Second Quarter 2013	ND	0.15 J	12.0 J	19.0	0.73	0.63
MW-126D	Deep	Second Quarter 2013	ND	ND	0.12 J	ND	0.055 J	ND
MW-127A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-127B	Shallow	Second Quarter 2013	ND	0.57	0.33 J	0.31 J	0.49	3.0
MW-127E	Shallow	Second Quarter 2013	0.24 J	3.1 J	1.7 J	5.6 J	180 J	83.0 J
MW-128A	Intermediate	Second Quarter 2013	ND	ND	0.29 J	0.43 J	ND	ND
		Fourth Quarter 2013	ND	ND	0.16 J	0.18 J	ND	ND
MW-128B	Shallow	Second Quarter 2013	ND	ND	0.72	1.4	ND	ND
		Fourth Quarter 2013	ND	ND	0.64	1.7	ND	ND
MW-129A	Intermediate	Second Quarter 2013	ND	ND	0.055 J	0.26 J	ND	ND
MW-129B	Shallow	Second Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-129D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-130A	Intermediate	Second Quarter 2013	ND	ND	0.11 J	1.2	ND	ND
MW-130B	Shallow	Second Quarter 2013	ND	ND	0.054 J	0.38 J	ND	ND
MW-130D	Deep	Second Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-131A	Intermediate	Second Quarter 2013	ND	ND	0.63	3.0	ND	ND
		Fourth Quarter 2013	ND	ND	0.66	3.0	ND	ND
MW-131B	Shallow	Second Quarter 2013	ND	ND	0.15 J	0.81	ND	ND
		Fourth Quarter 2013	ND	ND	0.12 J	0.51	ND	ND
MW-131D	Deep	Second Quarter 2013	ND	ND	ND	0.19 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-131D	Deep	Fourth Quarter 2013	ND	ND	ND	0.31 J	ND	ND
MW-141A	Intermediate	Second Quarter 2013	ND	0.40 J	0.40 J	0.75	ND	ND
		Fourth Quarter 2013	ND	ND	0.11 J	ND	ND	ND
MW-141B	Shallow	Second Quarter 2013	ND	5.1	7.6 J	54.0	ND	ND
		Fourth Quarter 2013	ND	6.2	8.2	64.0	0.28 J	ND
MW-141E	Shallow	Second Quarter 2013	ND	0.34 J	3.3 J	15.0	ND	ND
		Fourth Quarter 2013	ND	0.31 J	4.2 J	23.0	ND	ND
MW-142A	Intermediate	Second Quarter 2013	ND	ND	ND	0.59	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.93	ND	ND
MW-142E	Intermediate	Second Quarter 2013	ND	ND	ND	ND	1.1 J	0.14 J
		Fourth Quarter 2013	ND	ND	ND	6.6 J	0.22 J	ND
MW-143B	Shallow	Second Quarter 2013	ND	0.37 J	2.0	16.0	ND	ND
MW-144A	Intermediate	Second Quarter 2013	ND	0.23 J	0.34 J	78.0	ND	ND
		Fourth Quarter 2013	ND	0.076 J	0.20 J	52.0	ND	ND
MW-144E	Intermediate	Second Quarter 2013	ND	1.7	1.1	92.0	0.11 J	ND
		Fourth Quarter 2013	ND	2.2	1.5	120	0.077 J	ND
MW-145A	Intermediate	Second Quarter 2013	ND	ND	0.074 J	25.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-145A	Intermediate	Fourth Quarter 2013	ND	ND	ND	5.5	ND	ND
MW-145B	Shallow	First Quarter 2013	ND	ND	0.56	24.0	ND	ND
		Second Quarter 2013	ND	ND	0.41	17.0	ND	ND
		Third Quarter 2013	ND	ND	1.2	61.0	ND	ND
MW-145E	Intermediate	Second Quarter 2013	ND	0.085 J	1.3	110	ND	ND
		Fourth Quarter 2013	ND	0.097 J	1.2	100	ND	ND
MW-146A	Intermediate	Second Quarter 2013	ND	0.060 J	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-146B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-147A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-147B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-147D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-148A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-148A	Intermediate	Second Quarter 2013	ND	ND	0.078 J	0.15 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.91	ND	ND
MW-148B	Shallow	Second Quarter 2013	ND	ND	3.3	36.0	ND	ND
MW-149A	Intermediate	Second Quarter 2013	ND	0.065 J	0.89	24.0	ND	ND
MW-150A	Intermediate	Second Quarter 2013	ND	ND	0.20 J	2.3	ND	ND
		Fourth Quarter 2013	ND	ND	0.14 J	1.5	ND	ND
MW-150B	Shallow	Second Quarter 2013	0.32 J	0.17 J	0.48	6.5	ND	ND
		Fourth Quarter 2013	ND	0.11 J	1.4	13.0	ND	ND
MW-151A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-151B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-152B	Shallow	Second Quarter 2013	ND	ND	0.053 J	1.3	ND	ND
MW-153A	Intermediate	Second Quarter 2013	ND	0.059 J	ND	ND	ND	ND
MW-153B	Shallow	Second Quarter 2013	ND	ND	ND	0.65	ND	ND
MW-154A	Intermediate	Second Quarter 2013	ND	0.079 J	0.18 J	5.3	ND	ND
MW-154B	Shallow	Second Quarter 2013	ND	ND	0.043 J	3.1	ND	ND
MW-155A	Intermediate	Second Quarter 2013	ND	ND	ND	0.14 J	ND	ND
MW-155B	Shallow	First Quarter 2013	ND	ND	ND	0.25 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-155B	Shallow	Second Quarter 2013	ND	ND	ND	0.18 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-155E	Intermediate	Second Quarter 2013	ND	ND	ND	0.31 J	ND	ND
MW-156A	Intermediate	Second Quarter 2013	ND	ND	0.097 J	0.41	ND	ND
MW-156B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-157A	Intermediate	Second Quarter 2013	ND	ND	0.059 J	1.7	ND	ND
		Fourth Quarter 2013	ND	ND	0.054 J	0.86	ND	ND
MW-157B	Shallow	Second Quarter 2013	ND	ND	ND	0.20 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.20 J	ND	ND
MW-158A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-159A	Intermediate	First Quarter 2013	ND	0.084 J	ND	ND	0.069 J	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-159B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-160A	Intermediate	First Quarter 2013	ND	ND	0.42 J	1.8	ND	ND
		Second Quarter 2013	ND	ND	0.38 J	1.6	ND	ND
		Third Quarter 2013	ND	ND	0.44 J	1.9	ND	ND
MW-160B	Shallow	First Quarter 2013	ND	ND	0.060 J	0.75 J	ND	ND
		Second Quarter 2013	ND	0.16 J	0.065 J	0.82	ND	ND
		Third Quarter 2013	ND	ND	0.076 J	0.65 J	ND	ND
MW-161A	Intermediate	First Quarter 2013	ND	ND	0.068 J	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-161B	Shallow	First Quarter 2013	0.14 J	ND	4.1 J	6.9	0.078 J	ND
		Second Quarter 2013	ND	ND	4.1 J	6.6	ND	ND
		Third Quarter 2013	ND	0.095 J	4.0 J	6.9	ND	ND
MW-162A	Intermediate	First Quarter 2013	ND	ND	0.58	63.0	ND	ND
		Second Quarter 2013	ND	ND	0.67	71.0	ND	ND
		Third Quarter 2013	ND	ND	0.61	72.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-163A	Intermediate	First Quarter 2013	ND	ND	0.46	13.0	ND	ND
		Second Quarter 2013	ND	ND	0.46	13.0	ND	ND
		Third Quarter 2013	ND	ND	0.52	15.0	ND	ND
MW-164A	Intermediate	First Quarter 2013	ND	ND	1.3	76.0	ND	ND
		Second Quarter 2013	ND	ND	1.3	78.0	ND	ND
		Third Quarter 2013	ND	ND	1.1	80.0	ND	ND
MW-165B	Shallow	First Quarter 2013	ND	ND	3.2	170	ND	ND
		Second Quarter 2013	ND	ND	3.2	170	ND	ND
		Third Quarter 2013	ND	ND	3.2	170	ND	ND
MW-166A	Intermediate	First Quarter 2013	ND	ND	0.49	68.0	ND	ND
		Second Quarter 2013	ND	ND	0.55	75.0	ND	ND
		Third Quarter 2013	ND	ND	0.56	76.0	ND	ND
MW-166B	Shallow	First Quarter 2013	ND	ND	ND	1.9	ND	ND
		Second Quarter 2013	ND	ND	ND	0.37 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-167A	Intermediate	First Quarter 2013	ND	ND	0.98	34.0	ND	ND
		Second Quarter 2013	ND	ND	0.94	34.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-167A	Intermediate	Third Quarter 2013	ND	ND	1.0	34.0	ND	ND
MW-167B	Shallow	First Quarter 2013	ND	ND	0.20 J	15.0	ND	ND
		Second Quarter 2013	ND	ND	0.23 J	16.0	ND	ND
		Third Quarter 2013	ND	ND	0.24 J	15.0	ND	ND
MW-168A	Intermediate	First Quarter 2013	ND	ND	0.067 J	7.3	ND	ND
		Second Quarter 2013	ND	ND	0.052 J	7.5	ND	ND
		Third Quarter 2013	ND	ND	0.064 J	7.7	ND	ND
MW-168B	Shallow	First Quarter 2013	ND	ND	ND	0.32 J	ND	ND
		Second Quarter 2013	ND	ND	ND	0.28 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-169A	Intermediate	First Quarter 2013	ND	ND	0.078 J	12.0	ND	ND
		Second Quarter 2013	ND	ND	0.071 J	12.0	ND	ND
		Third Quarter 2013	ND	ND	0.083 J	13.0	ND	ND
MW-169B	Shallow	First Quarter 2013	ND	ND	0.30 J	55.0	ND	ND
		Second Quarter 2013	ND	ND	0.28 J	49.0	ND	ND
		Third Quarter 2013	ND	ND	0.28 J	48.0	ND	ND
MW-170A	Intermediate	First Quarter 2013	ND	ND	ND	5.3	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-170A	Intermediate	Second Quarter 2013	ND	ND	ND	5.3	ND	ND
		Third Quarter 2013	ND	ND	ND	6.1	ND	ND
MW-171A	Intermediate	First Quarter 2013	0.53	0.89	1.2	68.0	ND	0.27 J
		Second Quarter 2013	0.58	0.84	1.1	62.0	0.033 J	0.49
		Third Quarter 2013	0.59	0.89	0.90	62.0	ND	0.56
MW-171B	Shallow	First Quarter 2013	3.1 J	5.2	3.1	89.0	ND	ND
		Second Quarter 2013	2.9	4.8	2.8	96.0	0.070 J	0.18 J
		Third Quarter 2013	3.8	5.8	3.0	84.0	ND	ND
MW-172A	Intermediate	First Quarter 2013	ND	ND	0.84	4.0	ND	ND
		Second Quarter 2013	ND	ND	0.68	3.2	ND	ND
		Third Quarter 2013	ND	ND	0.74	3.2	ND	ND
MW-172B	Shallow	First Quarter 2013	ND	ND	0.51	2.8	ND	ND
		Second Quarter 2013	ND	ND	0.38 J	2.1	ND	ND
		Third Quarter 2013	ND	ND	0.28 J	1.6	ND	ND
MW-173A	Intermediate	First Quarter 2013	ND	ND	0.71	7.0	ND	ND
		Second Quarter 2013	ND	ND	0.67	6.4	ND	ND
		Third Quarter 2013	ND	ND	0.68	6.6	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-174A	Intermediate	First Quarter 2013	ND	ND	0.055 J	0.16 J	ND	ND
		Second Quarter 2013	ND	ND	0.31 J	1.2	ND	ND
		Third Quarter 2013	ND	ND	0.20 J	0.72	ND	ND
MW-174B	Shallow	First Quarter 2013	ND	ND	0.32 J	1.2	ND	ND
		Second Quarter 2013	ND	ND	0.28 J	1.1	ND	ND
		Third Quarter 2013	ND	ND	0.25 J	1.0	ND	ND
MW-175A	Intermediate	First Quarter 2013	ND	0.47	2.1	8.7	ND	ND
		Second Quarter 2013	ND	0.49	2.2	8.2	ND	ND
		Third Quarter 2013	ND	0.53	2.2	8.6	ND	ND
MW-175B	Shallow	First Quarter 2013	ND	0.072 J	1.6	3.3	ND	ND
		Second Quarter 2013	ND	0.068 J	1.3	2.6	ND	ND
		Third Quarter 2013	ND	0.068 J	1.1	2.3	ND	ND
MW-176A	Intermediate	First Quarter 2013	ND	ND	0.048 J	0.69	ND	ND
		Second Quarter 2013	ND	ND	ND	0.42	ND	ND
		Third Quarter 2013	ND	ND	0.056 J	0.45	ND	ND
MW-176B	Shallow	First Quarter 2013	ND	ND	0.043 J	0.25 J	ND	ND
		Second Quarter 2013	ND	ND	ND	0.20 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-176B	Shallow	Third Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-178B	Shallow	First Quarter 2013	ND	ND	ND	1.3	ND	ND
		Second Quarter 2013	ND	ND	ND	1.5	ND	ND
		Third Quarter 2013	ND	ND	ND	1.9	ND	ND
MW-180A	Intermediate	Fourth Quarter 2013	ND	ND	0.45	56.0	ND	ND
MW-180E	Intermediate	Fourth Quarter 2013	ND	ND	0.22	33.0	ND	ND
MW-18A	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-18B	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-20A	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-20B	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-20C	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-21A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-21B	Shallow	Second Quarter 2013	ND	0.53	6.3	9.6	ND	ND
		Fourth Quarter 2013	ND	0.59	6.8	9.5	0.048 J	ND
MW-21D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-24A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-24B	Shallow	Second Quarter 2013	ND	0.27 J	3.5	15.0	ND	ND
		Fourth Quarter 2013	ND	0.26 J	3.4	14.0	ND	ND
MW-25A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-25B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-28A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-28B	Shallow	Second Quarter 2013	ND	ND	ND	0.92 J	ND	ND
MW-28D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-29A	Intermediate	Second Quarter 2013	ND	ND	ND	2.0	ND	ND
MW-29B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-31A	Intermediate	First Quarter 2013	ND	ND	0.045 J	ND	ND	ND
MW-31B	Shallow	First Quarter 2013	ND	ND	ND	1.5	ND	ND
MW-32A	Intermediate	Second Quarter 2013	ND	ND	0.22 J	6.8	ND	ND
MW-32B	Shallow	Second Quarter 2013	ND	ND	0.14 J	5.9	ND	ND
MW-32D	Deep	Second Quarter 2013	ND	ND	0.072 J	5.8	ND	ND
MW-33A	Intermediate	Second Quarter 2013	ND	ND	0.12 J	0.79	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-33B	Shallow	Second Quarter 2013	ND	ND	0.052 J	ND	ND	ND
MW-33D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-35A	Intermediate	First Quarter 2013	ND	ND	0.062 J	0.34 J	ND	ND
		Third Quarter 2013	ND	ND	0.086 J	0.56	ND	ND
MW-35B	Shallow	First Quarter 2013	ND	ND	0.044 J	0.084 J	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-35D	Deep	First Quarter 2013	ND	ND	0.040 J	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-38A	Intermediate	First Quarter 2013	ND	ND	ND	ND	0.17 J	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-38D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-42A	Intermediate	Second Quarter 2013	ND	ND	0.099 J	2.9	ND	ND
		Fourth Quarter 2013	ND	0.061 J	0.12 J	3.5	ND	ND
MW-42B	Shallow	Second Quarter 2013	ND	ND	ND	0.11 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-42D	Deep	Second Quarter 2013	ND	0.058 J	0.12 J	3.5	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-42D	Deep	Fourth Quarter 2013	ND	0.049 J	0.13 J	3.4	ND	ND
MW-43A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-43B	Shallow	Second Quarter 2013	ND	0.14 J	0.14 J	3.5	ND	ND
MW-43D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-44A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-44B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-44D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-53A	Intermediate	Fourth Quarter 2013	ND	ND	ND	0.41	ND	ND
MW-53B	Shallow	Fourth Quarter 2013	ND	ND	ND	10.0	ND	ND
MW-65A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-65B	Shallow	Second Quarter 2013	0.49	0.64	0.37 J	16.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-82A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-82B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-82D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-83A	Intermediate	First Quarter 2013	ND	ND	ND	0.21 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.29 J	ND	ND
MW-83B	Shallow	First Quarter 2013	ND	ND	ND	0.14 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.12 J	ND	ND
MW-83D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-84A	Intermediate	First Quarter 2013	ND	ND	ND	0.24 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.22 J	ND	ND
MW-84B	Shallow	First Quarter 2013	ND	ND	ND	0.13 J	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-84D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-85A	Intermediate	First Quarter 2013	ND	ND	ND	0.72	ND	ND
		Third Quarter 2013	ND	ND	ND	0.67	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-85B	Shallow	First Quarter 2013	ND	ND	0.10 J	1.1	ND	ND
		Third Quarter 2013	ND	ND	ND	1.0	ND	ND
MW-85D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-86A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-86B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-86D	Deep	First Quarter 2013	ND	ND	ND	0.59	ND	ND
MW-88A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-90A	Intermediate	Second Quarter 2013	ND	ND	ND	0.62	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.56	ND	ND
MW-90B	Shallow	Second Quarter 2013	ND	ND	0.067 J	0.13 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.16 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-90D	Deep	Second Quarter 2013	ND	0.51	0.88 J	0.26 J	0.047 J	0.14 J
		Fourth Quarter 2013	ND	ND	0.35 J	0.33 J	ND	ND
MW-95A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-95B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-95D	Deep	First Quarter 2013	ND	ND	ND	0.089 J	ND	ND
		Third Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-96A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-96B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-96D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-97A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-97B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-97D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-98A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-98B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-98D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Explosives								
Location	**Zone Designation**	**Event**	**2,4-DNT**	**2A-DNT**	**4A-DNT**	**RDX**	**TNB**	**TNT**
MW-99A	Intermediate	Second Quarter 2013	ND	ND	0.064 J	0.47	ND	ND
MW-99B	Shallow	Second Quarter 2013	ND	ND	0.088 J	1.4	ND	ND
MW-99D	Deep	Second Quarter 2013	ND	ND	0.10 J	3.3	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-02A	Intermediate	Second Quarter 2013	ND	ND	ND	140	ND	ND
MW-02B	Shallow	Second Quarter 2013	ND	37.0	ND	100	9.3	ND
MW-03A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-03B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-08A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-08B	Shallow	Second Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-09A	Intermediate	Second Quarter 2013	ND	0.54 J	ND	55.0	ND	ND
		Fourth Quarter 2013	ND	0.50 J	ND	64.0 J	ND	ND
MW-09B	Shallow	Second Quarter 2013	ND	ND	ND	38.0	ND	ND
		Fourth Quarter 2013	ND	0.21 J	ND	43.0	ND	ND
MW-09D	Deep	Second Quarter 2013	ND	ND	ND	480	ND	ND
		Fourth Quarter 2013	ND	ND	ND	320	ND	ND
MW-101A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-101B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-101D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-102A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-102B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-103A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-103B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-103D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-104A	Intermediate	Second Quarter 2013	ND	5.0 J	ND	320	ND	ND
MW-104B	Shallow	Second Quarter 2013	ND	2.9 J	ND	620	ND	ND
MW-104D	Deep	Second Quarter 2013	ND	ND	ND	0.28 J	ND	ND
MW-104O	Overburden	Second Quarter 2013	ND	1.0	ND	ND	ND	ND
MW-105A	Intermediate	Second Quarter 2013	ND	1.4	ND	28.0	ND	ND
		Fourth Quarter 2013	ND	1.5 J	ND	27.0 J	ND	ND
MW-105B	Shallow	Second Quarter 2013	ND	1.3	ND	23.0	ND	ND
		Fourth Quarter 2013	ND	1.7	ND	26.0	ND	ND
MW-105O	Overburden	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.15 J	ND	ND
MW-106A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-106B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-107A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-107D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-109A	Intermediate	Second Quarter 2013	ND	0.76 J	ND	17.0	ND	ND
MW-109B	Shallow	Second Quarter 2013	ND	0.69 J	ND	18.0	ND	ND
MW-110A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-110D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-111A	Intermediate	Second Quarter 2013	ND	ND	ND	6.6	ND	ND
MW-111B	Shallow	Second Quarter 2013	ND	ND	ND	7.4	ND	ND
MW-112A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds

Location	Zone Designation	Event	1,2-DCP	CIS-1,2-DCE	Methylene Chloride	TCE	TRANS-1,2-DCE	Vinyl Chloride
MW-112A	Intermediate	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-112B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-113D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-114D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-115B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-115D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-116D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-119A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-119A	Intermediate	Fourth Quarter 2013	ND	ND	ND	1.0 J	ND	ND
MW-119B	Shallow	Second Quarter 2013	ND	ND	ND	0.34 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.45 J	ND	ND
MW-120A	Intermediate	Second Quarter 2013	ND	200	ND	300	0.91 J	ND
		Fourth Quarter 2013	ND	230	ND	180	1.2 J	ND
MW-120B	Shallow	Second Quarter 2013	ND	5.4 J	3.0 J	6600	ND	ND
		Fourth Quarter 2013	ND	0.98 J	ND	690	ND	ND
MW-120D	Deep	Second Quarter 2013	ND	190	ND	11.0	1.0 J	ND
		Fourth Quarter 2013	ND	240	ND	15.0	1.3 J	ND
MW-120E	Intermediate	Second Quarter 2013	ND	24.0 J	ND	12000	ND	ND
		Fourth Quarter 2013	ND	15.0 J	ND	7600	ND	ND
MW-121A	Intermediate	Second Quarter 2013	ND	ND	ND	0.87 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.70 J	ND	ND
MW-121B	Shallow	Second Quarter 2013	ND	ND	ND	0.26 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-121E	Intermediate	Second Quarter 2013	ND	ND	ND	1.6	ND	ND
		Fourth Quarter 2013	ND	ND	ND	3.2	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-122A	Intermediate	Second Quarter 2013	ND	0.61 J	ND	60.0	ND	ND
		Fourth Quarter 2013	ND	7.7	ND	330	ND	ND
MW-122B	Shallow	Second Quarter 2013	ND	3.0 J	ND	790	ND	ND
		Fourth Quarter 2013	ND	3.7 J	ND	710	ND	ND
MW-123A	Intermediate	Second Quarter 2013	ND	0.48 J	ND	7.4	ND	ND
		Fourth Quarter 2013	ND	ND	ND	3.4	ND	ND
MW-123B	Shallow	Second Quarter 2013	ND	ND	ND	2.1	ND	ND
		Fourth Quarter 2013	ND	ND	ND	2.9	ND	ND
MW-124A	Intermediate	Second Quarter 2013	ND	20.0 J	ND	10000	ND	ND
		Fourth Quarter 2013	ND	23.0	ND	8400	ND	ND
MW-124B	Shallow	Second Quarter 2013	ND	21.0 J	ND	12000	ND	ND
		Fourth Quarter 2013	ND	29.0 J	ND	13000	ND	ND
MW-124D	Deep	Second Quarter 2013	ND	2.6 J	ND	500	ND	ND
		Fourth Quarter 2013	ND	3.0 J	ND	500	ND	ND
MW-125A	Intermediate	Second Quarter 2013	ND	3.0 J	ND	460	ND	ND
		Fourth Quarter 2013	ND	2.8 J	ND	470	ND	ND
MW-125B	Shallow	Second Quarter 2013	ND	4.2 J	ND	2500	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds

Location	Zone Designation	Event	1,2-DCP	CIS-1,2-DCE	Methylene Chloride	TCE	TRANS-1,2-DCE	Vinyl Chloride
MW-125B	Shallow	Fourth Quarter 2013	ND	5.9 J	ND	3800 J	ND	ND
MW-125D	Deep	Second Quarter 2013	ND	ND	ND	53.0	ND	ND
		Fourth Quarter 2013	ND	1.1 J	ND	91.0	ND	ND
MW-126A	Intermediate	Second Quarter 2013	ND	31.0 J	ND	5600	11.0 J	ND
MW-126B	Shallow	Second Quarter 2013	ND	7.6 J	ND	7500	2.4 J	ND
MW-126D	Deep	Second Quarter 2013	ND	280	ND	200	ND	ND
MW-127A	Intermediate	Second Quarter 2013	ND	3.7	ND	11.0	2.2	ND
MW-127B	Shallow	Second Quarter 2013	ND	10.0	ND	69.0	8.8	ND
MW-127E	Shallow	Second Quarter 2013	ND	ND	ND	11.0	ND	ND
MW-133A	Intermediate	Second Quarter 2013	ND	ND	ND	7.2	ND	ND
		Fourth Quarter 2013	ND	ND	ND	23.0	ND	ND
MW-133B	Shallow	Second Quarter 2013	ND	2.5 J	ND	290	ND	ND
		Fourth Quarter 2013	ND	3.6	ND	250	ND	ND
MW-133D	Deep	Second Quarter 2013	ND	0.26 J	ND	33.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	2.1	ND	ND
MW-134A	Intermediate	Second Quarter 2013	ND	1.4	ND	29.0	ND	ND
		Fourth Quarter 2013	ND	1.6	ND	61.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-134B	Shallow	Second Quarter 2013	ND	10.0	ND	210	ND	ND
		Fourth Quarter 2013	ND	11.0	ND	170	ND	ND
MW-134D	Deep	Second Quarter 2013	ND	0.49 J	ND	140	ND	ND
		Fourth Quarter 2013	ND	0.50 J	ND	78.0	ND	ND
MW-135A	Intermediate	Second Quarter 2013	ND	1.9 J	ND	130	ND	ND
		Fourth Quarter 2013	ND	1.6 J	ND	110	ND	ND
MW-135B	Shallow	Second Quarter 2013	ND	8.3	ND	210	ND	ND
		Fourth Quarter 2013	ND	8.2	ND	240 J	ND	ND
MW-135D	Deep	Second Quarter 2013	ND	3.7 J	ND	930	ND	ND
		Fourth Quarter 2013	ND	3.6 J	ND	660	ND	ND
MW-136A	Intermediate	Second Quarter 2013	ND	ND	ND	4.9	ND	ND
		Fourth Quarter 2013	ND	ND	ND	3.0	ND	ND
MW-136B	Shallow	Second Quarter 2013	ND	1.2	ND	53.0	ND	ND
		Fourth Quarter 2013	ND	3.7	ND	200	ND	ND
MW-136D	Deep	Second Quarter 2013	ND	ND	ND	140	ND	ND
		Fourth Quarter 2013	ND	1.9 J	ND	200	ND	ND
MW-136E	Shallow	Second Quarter 2013	ND	1.1 J	ND	89.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds

Location	Zone Designation	Event	1,2-DCP	CIS-1,2-DCE	Methylene Chloride	TCE	TRANS-1,2-DCE	Vinyl Chloride
MW-136E	Shallow	Fourth Quarter 2013	ND	0.83 J	ND	77.0	ND	ND
MW-137A	Intermediate	Second Quarter 2013	ND	1.9 J	ND	350	ND	ND
		Fourth Quarter 2013	ND	0.20 J	ND	20.0	ND	ND
MW-137B	Shallow	Second Quarter 2013	ND	ND	ND	17.0	ND	ND
		Fourth Quarter 2013	ND	4.5 J	ND	760	ND	ND
MW-137E	Shallow	Second Quarter 2013	ND	16.0	ND	4100	ND	ND
		Fourth Quarter 2013	ND	19.0	ND	4900	ND	ND
MW-138A	Intermediate	Second Quarter 2013	ND	ND	ND	4.9	ND	ND
MW-138B	Shallow	Second Quarter 2013	ND	15.0 J	ND	2700	ND	ND
		Fourth Quarter 2013	ND	17.0	ND	3200	ND	ND
MW-139A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-139B	Shallow	Second Quarter 2013	ND	1.4 J	ND	240	ND	ND
		Fourth Quarter 2013	ND	1.7 J	ND	300	ND	ND
MW-140A	Intermediate	Second Quarter 2013	ND	ND	ND	0.60 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.66 J	ND	ND
MW-140B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.15 J	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-140D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-140O	Overburden	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-141A	Intermediate	Second Quarter 2013	ND	850	ND	6600	ND	ND
		Fourth Quarter 2013	ND	630	ND	9100	4.7 J	ND
MW-141B	Shallow	Second Quarter 2013	ND	8.5 J	ND	5800	ND	ND
		Fourth Quarter 2013	ND	8.0 J	ND	5700	ND	ND
MW-141E	Shallow	Second Quarter 2013	ND	10.0 J	ND	5000	ND	ND
		Fourth Quarter 2013	ND	12.0	ND	6100	4.6 J	ND
MW-142A	Intermediate	Second Quarter 2013	ND	ND	ND	1900	ND	ND
		Fourth Quarter 2013	ND	1.2 J	ND	1400	ND	ND
MW-142E	Intermediate	Second Quarter 2013	ND	4.5	ND	54.0	ND	ND
		Fourth Quarter 2013	ND	20.0	ND	150	ND	ND
MW-143B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-148B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-149A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	0.96 J
MW-150A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-150A	Intermediate	Fourth Quarter 2013	ND	ND	ND	0.25 J	ND	ND
MW-150B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-151A	Intermediate	Second Quarter 2013	ND	1.0	ND	44.0	ND	ND
MW-151B	Shallow	Second Quarter 2013	ND	5.3	ND	1100	ND	ND
MW-152B	Shallow	Second Quarter 2013	ND	0.68 J	ND	9.3	ND	ND
MW-153A	Intermediate	Second Quarter 2013	ND	2.9 J	ND	710	ND	ND
MW-153B	Shallow	Second Quarter 2013	ND	1.6 J	ND	320	ND	ND
MW-154A	Intermediate	Second Quarter 2013	ND	1.1	ND	41.0	ND	ND
MW-154B	Shallow	Second Quarter 2013	ND	0.54 J	ND	18.0	ND	ND
MW-155A	Intermediate	Second Quarter 2013	ND	4.3 J	ND	910	ND	ND
		Fourth Quarter 2013	ND	4.0 J	ND	940	ND	ND
MW-155B	Shallow	First Quarter 2013	ND	0.73 J	ND	160	ND	ND
		Second Quarter 2013	ND	0.79 J	ND	150	ND	ND
		Third Quarter 2013	ND	0.54 J	ND	120	ND	ND
MW-155E	Intermediate	Second Quarter 2013	ND	2.1 J	ND	470	ND	ND
MW-156A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-156B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-157A	Intermediate	Second Quarter 2013	ND	ND	ND	37.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	20.0	ND	ND
MW-157B	Shallow	Second Quarter 2013	ND	ND	ND	0.65 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	1.4	ND	ND
MW-158A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-158D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-159A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	2.9
		Third Quarter 2013	ND	ND	ND	0.16 J	ND	0.77 J
MW-159B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-160A	Intermediate	First Quarter 2013	ND	4.5 J	ND	2100	ND	ND
		Second Quarter 2013	ND	2.4 J	ND	1200	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-160A	Intermediate	Third Quarter 2013	ND	3.0 J	ND	1400	ND	ND
MW-160B	Shallow	First Quarter 2013	ND	ND	ND	250	ND	ND
		Second Quarter 2013	ND	ND	ND	140	ND	ND
		Third Quarter 2013	ND	ND	ND	270	ND	ND
MW-161A	Intermediate	First Quarter 2013	ND	42.0	ND	9400	1.9 J	ND
		Second Quarter 2013	ND	40.0 J	ND	8800 J	ND	ND
		Third Quarter 2013	ND	38.0	ND	13000	2.1 J	ND
MW-161B	Shallow	First Quarter 2013	ND	16.0	ND	6900	2.1 J	ND
		Second Quarter 2013	ND	20.0 J	ND	7200	ND	ND
		Third Quarter 2013	ND	18.0	ND	7200	2.7 J	ND
MW-175A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-175B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-176A	Intermediate	First Quarter 2013	ND	2.6	ND	470	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	Zone Designation	Event	1,2-DCP	CIS-1,2-DCE	Methylene Chloride	TCE	TRANS-1,2-DCE	Vinyl Chloride
MW-176A	Intermediate	Second Quarter 2013	ND	3.2 J	ND	720	ND	ND
		Third Quarter 2013	ND	3.2 J	ND	810	ND	ND
MW-176B	Shallow	First Quarter 2013	ND	0.59 J	ND	130	ND	ND
		Second Quarter 2013	ND	ND	ND	120	ND	ND
		Third Quarter 2013	ND	ND	ND	100	ND	ND
MW-177A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-177B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-178B	Shallow	First Quarter 2013	ND	0.65 J	ND	30.0	ND	ND
		Second Quarter 2013	ND	0.90 J	ND	31.0	ND	ND
		Third Quarter 2013	ND	1.0	ND	39.0	ND	ND
MW-179A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-179B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-18A	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-18B	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-21A	Intermediate	Second Quarter 2013	ND	4.0	ND	6.7	5.0	ND
		Fourth Quarter 2013	ND	1.3	ND	11.0	1.4	ND
MW-21B	Shallow	Second Quarter 2013	ND	ND	ND	72.0	ND	ND
		Fourth Quarter 2013	ND	0.28 J	ND	84.0	ND	ND
MW-21D	Deep	Second Quarter 2013	ND	39.0	ND	24.0	22.0	ND
		Fourth Quarter 2013	ND	36.0	ND	70.0	13.0	ND
MW-24A	Intermediate	Second Quarter 2013	ND	130	ND	640	4.5 J	ND
		Fourth Quarter 2013	ND	380	ND	180	12.0	ND
MW-24B	Shallow	Second Quarter 2013	ND	ND	ND	27.0	ND	ND
		Fourth Quarter 2013	ND	0.54 J	ND	24.0	ND	ND
MW-25A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-25B	Shallow	Second Quarter 2013	ND	0.29 J	ND	23.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-31A	Intermediate	First Quarter 2013	ND	ND	ND	0.22 J	ND	ND
MW-31B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-32A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-32B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-32D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-38A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-38D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-40A	Intermediate	Second Quarter 2013	ND	ND	ND	1.8	ND	ND
MW-40B	Shallow	Second Quarter 2013	ND	0.57 J	ND	85.0	ND	ND
MW-42A	Intermediate	Second Quarter 2013	ND	ND	ND	96.0	ND	ND
		Fourth Quarter 2013	ND	0.51 J	ND	89.0	ND	ND
MW-42B	Shallow	Second Quarter 2013	ND	ND	ND	0.82 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-42D	Deep	Second Quarter 2013	ND	0.67 J	ND	120	ND	ND
		Fourth Quarter 2013	ND	0.31 J	ND	98.0	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-43A	Intermediate	Second Quarter 2013	ND	ND	ND	19.0	ND	ND
MW-43B	Shallow	Second Quarter 2013	ND	ND	ND	2.4	ND	ND
MW-43D	Deep	Second Quarter 2013	ND	ND	ND	11.0	ND	ND
MW-44A	Intermediate	Second Quarter 2013	ND	2.2 J	ND	150	ND	ND
		Fourth Quarter 2013	ND	2.7 J	ND	180	ND	ND
MW-44B	Shallow	Second Quarter 2013	ND	ND	ND	13.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	11.0	ND	ND
MW-44D	Deep	Second Quarter 2013	ND	ND	ND	19.0	ND	ND
		Fourth Quarter 2013	ND	ND	ND	22.0	ND	ND
MW-46A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-46D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-61A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-61B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-61D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-65A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
MW-72A	Intermediate	Second Quarter 2013	ND	ND	ND	3.3	ND	ND
MW-72B	Shallow	Second Quarter 2013	ND	6.3	ND	410	ND	ND
MW-78A	Intermediate	Second Quarter 2013	ND	ND	ND	0.68 J	ND	ND
MW-78B	Shallow	Second Quarter 2013	ND	2.9	ND	39.0	ND	ND
MW-80A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-80B	Shallow	First Quarter 2013	ND	ND	ND	1.4	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-80D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88A	Intermediate	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88B	Shallow	First Quarter 2013	ND	ND	ND	ND	ND	ND
		Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-88D	Deep	First Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-88D	Deep	Third Quarter 2013	ND	ND	ND	ND	ND	ND
MW-89A	Intermediate	Second Quarter 2013	ND	ND	ND	8.9	ND	ND
MW-89B	Shallow	Second Quarter 2013	ND	ND	ND	0.80 J	ND	ND
MW-89D	Deep	Second Quarter 2013	ND	ND	ND	1.3	ND	ND
MW-89E	Intermediate	Second Quarter 2013	ND	ND	ND	390	ND	ND
MW-90A	Intermediate	Second Quarter 2013	ND	ND	ND	550	ND	ND
		Fourth Quarter 2013	ND	ND	ND	360	ND	ND
MW-90B	Shallow	Second Quarter 2013	ND	ND	ND	52.0 J	ND	ND
		Fourth Quarter 2013	ND	ND	ND	120	ND	ND
MW-90D	Deep	Second Quarter 2013	ND	1.9 J	1.4 J	280	ND	ND
		Fourth Quarter 2013	ND	3.3 J	ND	260	3.5 J	ND
MW-91A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	0.16 J	ND	ND
MW-91B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND
MW-91D	Deep	Second Quarter 2013	ND	ND	ND	ND	ND	ND
		Fourth Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

Appendix C

All Results for Monitoring Well Sampling Events

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

Volatile Organic Compounds								
Location	**Zone Designation**	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-93A	Intermediate	Second Quarter 2013	ND	ND	ND	ND	ND	ND
MW-93B	Shallow	Second Quarter 2013	ND	ND	ND	ND	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

APPENDIX D

Quality Control Summary Report Fourth Quarter 2013 Groundwater Monitoring Program Sampling Events

This page was intentionally left blank.

Regional Office

1746 Cole Boulevard
Building 21, Suite 350
Lakewood, CO 80401

Phone: 303.298.7607
Fax: 303.298.7837

December 13, 2013

U.S. Army Corps of Engineers, Kansas City District
Attn: Jacqy Frazier
601 East 12th Street
Kansas City, MO 64106-2896

Re: Transmittal of the Final Quality Control Summary Report
Fourth Quarter 2013 Groundwater Monitoring Program Sampling Events
Former Nebraska Ordnance Plant, Mead, Nebraska
Contract No. W912DQ-08-D-0001, Task Order No. 0002

Dear Ms. Frazier:

ECC is hereby transmitting one electronic copy of the Final Quality Control Summary Report for the Fourth Quarter 2013 Groundwater Monitoring Program Sampling Events at the former Nebraska Ordnance Plant, Mead, Nebraska.

Please contact Mr. Brady Bigelow or me if you require additional information.

Sincerely,

John Ryder
Project Chemist
ECC

Enclosures
cc: Ms. Kristine Stein (USACE)
Mr. Jason L'Ecuyer (USACE)
Mr. Bradley Brink (USACE)
Mr. Kirk Boese (USACE)

Corporate Office

1240 Bayshore Highway
Burlingame, CA 94010

Phone: 650.347.1555
Fax: 650.347.8789
www.ecc.net

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE: December 13, 2013	TRANSMITTAL NO. 2013-103

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by contractor)

Attn: Jacqy Frazier USACE, Kansas City District 601 E. 12th St. Kansas City, MO 64106-2896	FROM: John Ryder ECC 1746 Cole Blvd, Bldg 21, Lakewood, CO 80401	CONTRACT NO. W912DQ-08-D-0001, Task Order 0002	CHECK ONE: __X__ THIS IS A NEW TRANSMITTAL ____ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SECTION NO. (cover only one section with each transmittal)	PROJECT TITLE AND LOCATION: Groundwater Monitoring Program, Former Nebraska Ordnance Plant, Mead, Nebraska		CHECK ONE: ___ FIO __X__ For Govt. Approval

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type, size, model number, etc.)* *b.*	MFG. OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction No. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*	FOR CONTRACTOR USE CODE *g.*	VARIATION *(See instruc. no. 6)* *h.*	FOR C E USE CODE *i.*
1	Quality Control Summary Report - Final		1 electronic					
	Fourth Quarter 2013 Groundwater Monitoring Program Sampling Events							

REMARKS
Kristine Stein (USACE)
Jason L'Ecuyer (USACE)
Bradley Brink (USACE)
Kirk Boese (USACE)
Mead Library

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.
John Ryder, Denver Operations Group

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

FINAL
QUALITY CONTROL SUMMARY REPORT
FOURTH QUARTER 2013

GROUNDWATER MONITORING PROGRAM
SAMPLING EVENTS

FORMER NEBRASKA ORDNANCE PLANT
MEAD, NEBRASKA

Prepared for

United States Army Corps of Engineers
Kansas City District

December 2013

This page intentionally left blank

Quality Control Summary Report
Fourth Quarter 2013 Groundwater Monitoring Program Sampling Events
Former Nebraska Ordnance Plant, Mead, Nebraska

1.0 INTRODUCTION

Monitoring well sampling was conducted September 12, 2013 through November 6, 2013 at the former Nebraska Ordnance Plant, near Mead, Nebraska. All sampling activities were performed in accordance with the *Site-Wide Work Plan, Revision 01, Support Services, Former Nebraska Ordnance Plant, Mead, Nebraska* (United States Army Corps of Engineers [USACE], 2013). This Quality Control Summary Report presents a summary of the chemical data quality review for the Fourth Quarter 2013 Groundwater Monitoring Program (GMP) sampling events.

TestAmerica of South Burlington, Vermont analyzed the samples for one or more of the following constituents:

- Volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Solid Waste (SW)-846 Method 8260B and
- Explosives by EPA SW-846 Method 8330.

Table 1-1 presents a complete list of the monitoring wells planned for sample collection, the corresponding sample identifications (IDs), and the requested analyses for the Fourth Quarter 2013 GMP sampling events.

The chain-of-custody and field notes are included as Appendices A and B, respectively. Appendix C presents an explanation of data validation qualifiers and drinking water standards. Appendix D contains a compact disc (CD) with all analytical data.

2.0 FIELD SAMPLING ACTIVITIES

The field sampling team collected samples for chemical analyses from 95 monitoring wells during the Fourth Quarter 2013 GMP sampling events. VOCs were sampled in 76 of the wells and 61 wells were sampled for explosives. The team also collected 12 field duplicate samples and four matrix spike (MS)/matrix spike duplicate (MSD) pairs with the monitoring well samples. Additionally, five trip blanks were included with the VOC sample shipments.

The sampling location monitoring well (MW)-140O was listed on the sampling schedule but was not collected as planned. The well was dry and a sample compliant with work plan requirements could not be obtained.

Table 2-1 summarizes the following information listed for the Fourth Quarter 2013 GMP sampling events:

- Field sample IDs;
- MS/MSD sample information;
- Quality control (QC) sample information;
- Dates of sample collection and sample receipt by the laboratory;
- Laboratory sample IDs;
- Laboratory sample delivery group numbers; and
- Requested analyses.

3.0 DATA QUALITY EVALUATION PROCEDURES

The following subsections present results of the data quality evaluation. This evaluation was performed in accordance with the *Mead Validation Guidelines*, (USACE, 2007). Qualifiers were assigned based on laboratory QC criteria. Data quality evaluation results are presented in Table 3-1, and the QC outliers for the explosives and VOCs analyses are presented in Table 3-2 and Table 3-3, respectively.

3.1 Sample Receipt at the Laboratory

The laboratories received all samples in good condition and within the recommended temperature range of 4 ± 2 degrees Celsius (°C) or just below 2° C, but not frozen.

3.2 Holding Times

The laboratories performed extractions and analyses of all samples within required method-specific holding times.

3.3 Tuning and Calibration

According to the *Mead Validation Guidelines* (USACE, 2007), tune and calibration information is assessed using the laboratory case-narrative or summary forms. The laboratory did not report any deviations for the calibration and tuning of pertinent instrumentation in the case narratives. The evaluation of the calibration summary forms indicated that all project criteria were met.

3.4 Laboratory Method Blanks

A laboratory method blank is an analyte-free matrix that is carried through the entire preparation and analysis sequence for the purpose of identifying potential contamination introduced during preparation and analysis. Method blanks were analyzed for each sample batch for all analyses.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), detections are qualified as non-detect (U) if the concentration in the sample is less than 5 times the concentration in the associated blank. For common laboratory contaminants, detections are qualified as non-detect

(U) if the concentration in the sample is less than 10 times the concentration in the associated blank. Sample results that are either non-detect (U), or greater than 5 or 10 times the blank result do not require qualification.

Methylene chloride and vinyl chloride were detected in several laboratory method blanks; however, no qualifications were required because these compounds were not detected in the associated samples. There were no other detections of target analytes in the laboratory method blanks.

3.5 Trip Blanks

A trip blank is an analyte-free matrix that accompanies samples through the sample collection and transportation process to identify potential VOC contamination. In accordance with the *Mead Validation Guidelines* (USACE, 2007), detections are qualified as non-detect (U) if the concentration in the sample is less than 5 times the concentration in the associated blank (10 times for common laboratory contaminants). Sample results that are either non-detect (U), or greater than 5 or 10 times the blank result do not require qualification.

No detections of VOC target compounds were found in the trip blanks.

3.6 Surrogates

Surrogates are compounds not normally found in the environment that are added (spiked) into samples prior to extraction (for extractable methods) or prior to analysis (for non-extractable methods). The percent recovery (% REC) of each surrogate is used to assess the success of the sample preparation process for an individual sample.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for associated analytes in the affected samples are J-coded for detects and UJ-coded for non-detects if the surrogate % RECs are below the laboratory QC limits, but greater than 10%. Non-detects are R-coded (rejected) if % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for associated analytes in the affected samples are J-coded for detects if the % RECs are greater than the QC limits. No action is required for non-detects.

One or more VOC surrogate %RECs were below the QC limits in three samples. Table 3-1 presents data quality evaluation results and associated qualified samples. Table 3-3 presents the VOC QC outliers and associated sample for the assigned qualifier.

3.7 Laboratory Control Sample / Laboratory Control Sample Duplicate

A laboratory control sample (LCS) consists of a matrix similar to that of the field sample which is spiked with known concentrations of analytes. The LCS % REC is a measure of the accuracy of the preparation and analytical methods. The laboratory control sample duplicate (LCSD) is a duplicate preparation and analysis of the LCS. The differences between the LCS and LCSD recoveries are used to calculate the relative percent differences (RPD), which is a measure of the

precision of the preparation and analytical methods. LCS was analyzed for each sample batch for all analyses.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the associated samples are J-coded for detects and UJ-coded for non-detects if the LCS % RECs are below the laboratory QC limits, but greater than 10%. Non-detects are R-coded if the % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the associated samples are J-coded for detects if the % RECs are greater than the QC limits. No action is required for non-detects. Additionally, results for the affected analyte in the associated samples are J-coded for detects and UJ-coded for non-detects if the RPD exceeds 30%.

All LCS %RECs were within laboratory QC limits.

3.8 Matrix Spike / Matrix Spike Duplicate

MS and MSD samples were analyzed for both VOCs and explosives. A field sample is split into three portions (original, MS, and MSD) and known amounts of analytes are added (spiked) into the MS and MSD portions of the sample. The analytical results of these two portions are compared to each other for reproducibility using the RPD. These results are also compared against the un-spiked portion of the sample for % REC of the spiked analytes. MS/MSD analyses were performed on the appropriate samples as listed on Table 2-1

In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the parent sample are J-coded for detects and UJ-coded for non-detects if the MS/MSD % RECs are below the laboratory QC limits, but greater than 10%. Non-detects are R-coded if % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the parent sample are J-coded for detects if the MS/MSD % RECs are greater than the QC limits. No action is required for non-detects. Additionally, results for the affected analyte in the associated parent samples are J-coded for detects and UJ-coded for non-detects if the RPD exceeds QC limits.

Two VOC %RECs were below the QC limit in the MS and one explosives %REC was above the QC limit in the MS. The sample results were qualified as estimated J. Table 3-1 presents data quality evaluation results and associated qualified samples. Table 3-3 presents the VOC QC outliers and associated sample for the assigned qualifier. All other % RECs and all RPDs were within QC limits.

3.9 Field Duplicates

Field duplicates provide information regarding the reproducibility of analytical results and account for error introduced from handling, shipping, preparing, and analyzing field samples.

The following field duplicate pairs were collected during the Fourth Quarter 2013 GMP sampling events:

- BMW-009-102013 / BMW-209-102013 (VOCs);
- BMW-044-102013 / BMW-244-102013 (VOCs);
- AMW-0104-102013 / AMW-2104-102013 (Explosives);
- AMW-0119-102013 / AMW-2119-102013 (VOCs and Explosives);
- AMW-0121-102013 / AMW-2121-102013 (VOCs and Explosives);
- AMW-0125-102013 / AMW-2125-102013 (VOCs and Explosives);
- BMW-0128-102013 / BMW-2128-102013 (Explosives);
- AMW-0131-102013 / AMW-2131-102013 (Explosives);
- AMW-0135-102013 / AMW-2135-102013 (VOCs);
- BMW-0138-102013 / BMW-2138-102013 (VOCs);
- AMW-0155-102013 / AMW-2155-102013 (VOCs); and
- AMW-0180-102013 / AMW-2180-102013 (Explosives).

The field duplicate precision criteria (RPD of < 50%) was met in all field duplicate pairs. Field duplicate results are considered acceptable when one result is not detected and the other result is detected below the limit of quantitation (LOQ) or if both results are less than the LOQ.

3.10 Dilutions and Re-analyses

Qualifiers assigned as a result of calibration range exceedance are not used in the calculation of analytical data completeness percentages if there are acceptable results from diluted sample analyses.

Forty three samples analyzed for volatiles required dilutions and 18 of those required further dilutions due to high concentrations of trichloroethene (TCE). Seven explosive samples required dilutions because the concentration of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) was above the calibration range.

According to the *Mead Validation Guidelines* (USACE, 2007) results exceeding the calibration range are not used for reporting or project decisions when acceptable results from dilutions are available. The dilution analyses which were within the instruments calibration range were used. Reporting limits were raised as appropriate. [Note: Only the appropriately diluted results were reported by the laboratory.]

3.11 Other Quality Control Parameters

All detected explosive results were confirmed on a second column. A column comparison between the detected explosive results was made using explosive identification summary forms. The validator confirmed all reported explosive detections for both columns and the inter-column RPDs.

Detected results with the inter-column RPDs exceeding 40% are qualified as estimated (J).

Table 3-1 presents data quality evaluation results and associated qualified samples. Table 3-2 presents the explosive QC outliers, which list the associated samples with all assigned qualifiers. These qualifiers were not used to determine analytical completeness or project completeness.

3.12 Laboratory Qualifiers

Analytes detected below the LOQ, but above the detection limit were quantified and results were assigned an estimated (J) qualifier by the laboratory. These qualifiers were carried over by the validator and were not used to determine analytical completeness or project completeness (Section 4.0).

4.0 OVERALL ASSESSMENT

The following subsections present the field completeness, analytical completeness, and project completeness determinations for the Fourth Quarter 2013 GMP sampling events.

4.1 Field Completeness

Field completeness for sample collection is assessed by comparing the number of samples collected to the number of samples planned for collection. Field completeness for the Fourth Quarter 2013 GMP sampling events was 98.8% for VOCs and 100% for explosives. The overall field completeness percentage is 99.3% for the Fourth Quarter 2013 GMP sampling events. All field completeness percentages exceed the field completeness goal of 95%. Section 2.0 presents the field sampling activities, including any deviations from planned sampling if applicable. Table 4-1 presents field completeness values for the monitoring well sampling event.

4.2 Analytical Completeness

Analytical completeness is calculated as both acceptable data completeness and quality data completeness.

Acceptable data is a measure of laboratory contract compliance. Acceptable data includes data that have not been rejected (R) or qualified as estimated (J or UJ). Qualified data are considered acceptable if corrective actions were taken by the laboratory. Acceptable data completeness percentages for VOCs is 96% and explosives is 99.8% which exceeds the acceptable data completeness goals for each analytical method of 90%. The overall acceptable data completeness percentage is 97.7% which exceeds the overall acceptable data completeness goal of 95%.

Quality data is a measure of the percentage of usable data points. Usable data points include all non-rejected data. Rejected data points with replacement data do not count against the quality data completeness. No data were rejected for the Fourth Quarter 2013 GMP sampling events based on analytical data evaluation. The quality data completeness percentage for both VOCs and explosives is 100%. Overall quality data completeness is therefore 100%, which exceeds the quality data completeness goal of 80%. Table 4-2 presents analytical data completeness.

4.3 Project Completeness

Project completeness combines sampling and analytical protocols to assess the project as a whole. Project completeness is assessed by comparing the percentage of samples/measurements that are determined to be usable to the total number of samples/measurements planned. Project completeness is calculated using field completeness and analytical completeness (quality data) percentages. The project completeness percentage of 99.7% exceeded the project completeness goal of 90%. Table 4-3 presents project completeness percentage.

5.0 CONCLUSIONS

Data are valid for use, as qualified. Overall field completeness is 99.3%, acceptable data completeness is 97.7%, and quality data completeness is 100%. The overall project completeness is 99.3% for the Fourth Quarter 2013 GMP sampling events.

Sample detections reported from dilutions due to calibration range exceedance do not affect analytical or project completeness. Detected results qualified as estimated for inter-column RPD exceedances do not affect analytical or project completeness.

6.0 REFERENCES

USACE, 2007 *Mead Validation Guidelines*.

USACE, 2013, *Site Wide Work Plan, Revision 01, Support Services, Former Nebraska Ordnance Plant, Mead, Nebraska*. April.

This page intentionally left blank

Tables

This page intentionally left blank

List of Acronyms for Tables

Term	Definition
µg/L	micrograms per liter
C-RPD	column relative percent difference
GC/MS	gas chromatography–mass spectrometry
HPLC	high-performance liquid chromatography
ID	identification/identifier
IS	Internal standard
J	estimated
Lab	laboratory
LCL	lower control limit
LCS	laboratory control sample
LWL	lower warning limit
MS/MSD	matrix spike/matrix spike duplicate
MS	mass-spectrometry
MW	monitoring well
QC	quality control
RL	reporting limit
RPD	relative percent difference
SDG	sample delivery group
Surr	surrogate
U	not detected at laboratory limit of detection
UCL	upper control limit
UJ	qualified as estimated and not detected at laboratory limit of detection

This page intentionally left blank

Table 1-1
Sample Locations, Sample IDs, and Analyses
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sampling Locations	Sample IDs	Analyses
MW-09A	AMW-009-102013	Volatiles
MW-09B	BMW-009-102013	Volatiles
MW-09D	DMW-009-102013	Volatiles
MW-104A	AMW-0104-102013	Explosives
MW-104B	BMW-0104-102013	Explosives
MW-104D	DMW-0104-102013	Explosives
MW-104O	OMW-0104-102013	Explosives
MW-105A	AMW-0105-102013	Explosives, Volatiles
MW-105B	BMW-0105-102013	Explosives, Volatiles
MW-105O	OMW-0105-102013	Explosives, Volatiles
MW-116A	AMW-0116-102013	Volatiles
MW-116B	BMW-0116-102013	Volatiles
MW-116D	DMW-0116-102013	Volatiles
MW-119A	AMW-0119-102013	Explosives, Volatiles
MW-119B	BMW-0119-102013	Explosives, Volatiles
MW-120A	AMW-0120-102013	Explosives, Volatiles
MW-120B	BMW-0120-102013	Explosives, Volatiles
MW-120D	DMW-0120-102013	Explosives, Volatiles
MW-120E	EMW-0120-102013	Explosives, Volatiles
MW-121A	AMW-0121-102013	Explosives, Volatiles
MW-121B	BMW-0121-102013	Explosives, Volatiles
MW-121E	EMW-0121-102013	Explosives, Volatiles
MW-122A	AMW-0122-102013	Explosives, Volatiles
MW-122B	BMW-0122-102013	Explosives, Volatiles
MW-123A	AMW-0123-102013	Explosives, Volatiles
MW-123B	BMW-0123-102013	Explosives, Volatiles
MW-124A	AMW-0124-102013	Explosives, Volatiles
MW-124B	BMW-0124-102013	Explosives, Volatiles
MW-124D	DMW-0124-102013	Explosives, Volatiles
MW-125A	AMW-0125-102013	Explosives, Volatiles
MW-125B	BMW-0125-102013	Explosives, Volatiles
MW-125D	DMW-0125-102013	Explosives, Volatiles
MW-128A	AMW-0128-102013	Explosives
MW-128B	BMW-0128-102013	Explosives
MW-131A	AMW-0131-102013	Explosives
MW-131B	BMW-0131-102013	Explosives
MW-131D	DMW-0131-102013	Explosives
MW-133A	AMW-0133-102013	Volatiles
MW-133B	BMW-0133-102013	Volatiles
MW-133D	DMW-0133-102013	Volatiles
MW-134A	AMW-0134-102013	Volatiles
MW-134B	BMW-0134-102013	Volatiles
MW-134D	DMW-0134-102013	Volatiles
MW-135A	AMW-0135-102013	Volatiles
MW-135B	BMW-0135-102013	Volatiles
MW-135D	DMW-0135-102013	Volatiles
MW-136A	AMW-0136-102013	Volatiles
MW-136B	BMW-0136-102013	Volatiles
MW-136D	DMW-0136-102013	Volatiles
MW-136E	EMW-0136-102013	Volatiles
MW-137A	AMW-0137-102013	Volatiles

Table 1-1
Sample Locations, Sample IDs, and Analyses
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sampling Locations	Sample IDs	Analyses
MW-137B	BMW-0137-102013	Volatiles
MW-137E	EMW-0137-102013	Volatiles
MW-138B	BMW-0138-102013	Volatiles
MW-139B	BMW-0139-102013	Volatiles
MW-140A	AMW-0140-102013	Volatiles
MW-140B	BMW-0140-102013	Volatiles
MW-140D	DMW-0140-102013	Volatiles
MW-141A	AMW-0141-102013	Explosives, Volatiles
MW-141B	BMW-0141-102013	Explosives, Volatiles
MW-141E	EMW-0141-102013	Explosives, Volatiles
MW-142A	AMW-0142-102013	Explosives, Volatiles
MW-142E	EMW-0142-102013	Explosives, Volatiles
MW-144A	AMW-0144-102013	Explosives
MW-144E	EMW-0144-102013	Explosives
MW-145A	AMW-0145-102013	Explosives
MW-145E	EMW-0145-102013	Explosives
MW-146A	AMW-0146-102013	Explosives
MW-146B	BMW-0146-102013	Explosives
MW-150A	AMW-0150-102013	Explosives, Volatiles
MW-150B	BMW-0150-102013	Explosives, Volatiles
MW-155A	AMW-0155-102013	Volatiles
MW-157A	AMW-0157-102013	Explosives, Volatiles
MW-157B	BMW-0157-102013	Explosives, Volatiles
MW-180A	AMW-0180-102013	Explosives
MW-180E	EMW-0180-102013	Explosives
MW-21A	AMW-021-102013	Explosives, Volatiles
MW-21B	BMW-021-102013	Explosives, Volatiles
MW-21D	DMW-021-102013	Explosives, Volatiles
MW-24A	AMW-024-102013	Explosives, Volatiles
MW-24B	BMW-024-102013	Explosives, Volatiles
MW-42A	AMW-042-102013	Explosives, Volatiles
MW-42B	BMW-042-102013	Explosives, Volatiles
MW-42D	DMW-042-102013	Explosives, Volatiles
MW-44A	AMW-044-102013	Volatiles
MW-44B	BMW-044-102013	Volatiles
MW-44D	DMW-044-102013	Volatiles
MW-53A	AMW-053-102013	Explosives
MW-53B	BMW-053-102013	Explosives
MW-90A	AMW-090-102013	Explosives, Volatiles
MW-90B	BMW-090-102013	Explosives, Volatiles
MW-90D	DMW-090-102013	Explosives, Volatiles
MW-91A	AMW-091-102013	Volatiles
MW-91B	BMW-091-102013	Volatiles
MW-91D	DMW-091-102013	Volatiles

Notes:

Volatiles	SW8260B	Volatile Organic Compounds by Capillary GC/MS
Explosives	SW8330	Nitroaromatics and Nitramines by HPLC

Table 2-1
Sample Collection Summary
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Field Samples	MS/MSD Samples	Field Duplicate Samples	Date Sampled	Date Received by Lab	Lab ID	SDG	Explosives	Volatiles
			Field Samples					
AMW-0180-102013			9/12/2013	9/13/2013	200-18411-1	18411	•	
		AMW-2180-102013	9/12/2013	9/13/2013	200-18411-2	18411	•	
EMW-0180-102013			9/12/2013	9/13/2013	200-18411-3	18411	•	
AMW-090-102013			10/16/2013	10/18/2013	200-19015-15	19015	•	•
BMW-090-102013			10/16/2013	10/18/2013	200-19015-16	19015	•	•
DMW-090-102013			10/16/2013	10/18/2013	200-19015-17	19015	•	•
AMW-091-102013			10/16/2013	10/18/2013	200-19015-18	19015		•
BMW-091-102013			10/16/2013	10/18/2013	200-19015-19	19015		•
DMW-091-102013			10/16/2013	10/18/2013	200-19015-20	19015		•
AMW-0142-102013			10/16/2013	10/18/2013	200-19015-13	19015	•	•
EMW-0142-102013			10/16/2013	10/18/2013	200-19015-14	19015	•	•
AMW-0122-102013			10/16/2013	10/18/2013	200-19015-9	19015	•	•
BMW-0122-102013			10/16/2013	10/18/2013	200-19015-10	19015	•	•
AMW-0119-102013			10/16/2013	10/18/2013	200-19015-2	19015	•	•
		AMW-2119-102013	10/16/2013	10/18/2013	200-19015-3	19015	•	•
BMW-0119-102013	BMW-0119-102013		10/16/2013	10/18/2013	200-19015-4	19015	•	•
AMW-0123-102013			10/16/2013	10/18/2013	200-19015-11	19015	•	•
BMW-0123-102013			10/16/2013	10/18/2013	200-19015-12	19015	•	•
AMW-0121-102013			10/16/2013	10/18/2013	200-19015-5	19015	•	•
		AMW-2121-102013	10/16/2013	10/18/2013	200-19015-6	19015	•	•
BMW-0121-102013	BMW-0121-102013		10/16/2013	10/18/2013	200-19015-7	19015	•	•
EMW-0121-102013			10/16/2013	10/18/2013	200-19015-8	19015	•	•
AMW-0120-102013			10/17/2013	10/19/2013	200-19040-2	19040	•	•
BMW-0120-102013			10/17/2013	10/19/2013	200-19040-3	19040	•	•
DMW-0120-102013			10/17/2013	10/19/2013	200-19040-4	19040	•	•
EMW-0120-102013			10/17/2013	10/19/2013	200-19040-5	19040	•	•
AMW-0125-102013			10/17/2013	10/19/2013	200-19040-9	19040	•	•
		AMW-2125-102013	10/17/2013	10/19/2013	200-19040-10	19040	•	•
BMW-0125-102013	BMW-0125-102013		10/17/2013	10/19/2013	200-19040-11	19040	•	•
DMW-0125-102013			10/17/2013	10/19/2013	200-19040-12	19040	•	•
AMW-024-102013			10/17/2013	10/19/2013	200-19040-44	19040	•	•
BMW-024-102013			10/17/2013	10/19/2013	200-19040-45	19040	•	•
AMW-0141-102013			10/17/2013	10/19/2013	200-19040-30	19040	•	•

Table 2-1
Sample Collection Summary
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Field Samples	MS/MSD Samples	Field Duplicate Samples	Date Sampled	Date Received by Lab	Lab ID	SDG	Explosives	Volatiles
BMW-0141-102013			10/17/2013	10/19/2013	200-19040-31	19040	•	•
EMW-0141-102013			10/17/2013	10/19/2013	200-19040-32	19040	•	•
AMW-0124-102013			10/17/2013	10/19/2013	200-19040-6	19040	•	•
BMW-0124-102013			10/17/2013	10/19/2013	200-19040-7	19040	•	•
DMW-0124-102013			10/17/2013	10/19/2013	200-19040-8	19040	•	•
AMW-021-102013			10/17/2013	10/19/2013	200-19040-41	19040	•	•
BMW-021-102013			10/17/2013	10/19/2013	200-19040-42	19040	•	•
DMW-021-102013			10/17/2013	10/19/2013	200-19040-43	19040	•	•
AMW-0144-102013			10/17/2013	10/19/2013	200-19040-33	19040	•	
EMW-0144-102013			10/17/2013	10/19/2013	200-19040-34	19040	•	
AMW-0145-102013			10/17/2013	10/19/2013	200-19040-35	19040	•	
EMW-0145-102013			10/17/2013	10/19/2013	200-19040-36	19040	•	
AMW-0146-102013			10/18/2013	10/19/2013	200-19040-37	19040	•	
BMW-0146-102013			10/18/2013	10/19/2013	200-19040-38	19040	•	
AMW-0150-102013			10/18/2013	10/19/2013	200-19040-39	19040	•	•
BMW-0150-102013			10/18/2013	10/19/2013	200-19040-40	19040	•	•
AMW-0131-102013			10/18/2013	10/19/2013	200-19040-16	19040	•	
		AMW-2131-102013	10/18/2013	10/19/2013	200-19040-17	19040	•	
BMW-0131-102013			10/18/2013	10/19/2013	200-19040-18	19040	•	
DMW-0131-102013			10/18/2013	10/19/2013	200-19040-19	19040	•	
AMW-0128-102013			10/18/2013	10/19/2013	200-19040-13	19040	•	
BMW-0128-102013			10/18/2013	10/19/2013	200-19040-14	19040	•	
		BMW-2128-102013	10/18/2013	10/19/2013	200-19040-15	19040	•	
BMW-0139-102013			10/18/2013	10/19/2013	200-19040-29	19040		•
BMW-0138-102013			10/18/2013	10/19/2013	200-19040-27	19040		•
		BMW-2138-102013	10/18/2013	10/19/2013	200-19040-28	19040		•
AMW-0136-102013			10/18/2013	10/19/2013	200-19040-20	19040		•
BMW-0136-102013			10/18/2013	10/19/2013	200-19040-21	19040		•
DMW-0136-102013			10/18/2013	10/19/2013	200-19040-22	19040		•
EMW-0136-102013			10/18/2013	10/19/2013	200-19040-23	19040		•
AMW-0137-102013			10/18/2013	10/19/2013	200-19040-24	19040		•
BMW-0137-102013			10/18/2013	10/19/2013	200-19040-25	19040		•
EMW-0137-102013			10/18/2013	10/19/2013	200-19040-26	19040		•
AMW-0135-102013			10/23/2013	10/25/2013	200-19114-20	19114		•

Table 2-1
Sample Collection Summary
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Field Samples	MS/MSD Samples	Field Duplicate Samples	Date Sampled	Date Received by Lab	Lab ID	SDG	Explosives	Volatiles
		AMW-2135-102013	10/23/2013	10/25/2013	200-19114-21	19114		•
BMW-0135-102013	BMW-0135-102013		10/23/2013	10/25/2013	200-19114-22	19114		•
DMW-0135-102013			10/23/2013	10/25/2013	200-19114-23	19114		•
AMW-0134-102013			10/23/2013	10/25/2013	200-19114-17	19114		•
BMW-0134-102013			10/23/2013	10/25/2013	200-19114-18	19114		•
DMW-0134-102013			10/23/2013	10/25/2013	200-19114-19	19114		•
AMW-053-102013			10/23/2013	10/25/2013	200-19114-28	19114	•	
BMW-053-102013			10/23/2013	10/25/2013	200-19114-29	19114	•	
AMW-0133-102013			10/23/2013	10/25/2013	200-19114-14	19114		•
BMW-0133-102013			10/23/2013	10/25/2013	200-19114-15	19114		•
DMW-0133-102013			10/23/2013	10/25/2013	200-19114-16	19114		•
AMW-009-102013			10/23/2013	10/25/2013	200-19114-2	19114		•
BMW-009-102013			10/23/2013	10/25/2013	200-19114-3	19114		•
		BMW-209-102013	10/23/2013	10/25/2013	200-19114-4	19114		•
DMW-009-102013			11/6/2013	11/7/2013	200-19348-2	19348		•
AMW-044-102013			10/23/2013	10/25/2013	200-19114-24	19114		•
BMW-044-102013			10/23/2013	10/25/2013	200-19114-25	19114		•
		BMW-244-102013	10/23/2013	10/25/2013	200-19114-26	19114		•
DMW-044-102013			10/23/2013	10/25/2013	200-19114-27	19114		•
AMW-0105-102013			10/23/2013	10/25/2013	200-19114-11	19114	•	•
BMW-0105-102013			10/23/2013	10/25/2013	200-19114-12	19114	•	•
OMW-0105-102013			10/23/2013	10/25/2013	200-19114-13	19114	•	•
AMW-0104-102013			10/23/2013	10/25/2013	200-19114-6	19114	•	
		AMW-2104-102013	10/23/2013	10/25/2013	200-19114-7	19114	•	
BMW-0104-102013			10/23/2013	10/25/2013	200-19114-8	19114	•	
DMW-0104-102013			10/23/2013	10/25/2013	200-19114-9	19114	•	
OMW-0104-102013			10/23/2013	10/25/2013	200-19114-10	19114	•	
AMW-0157-102013			10/24/2013	10/26/2013	200-19145-10	19145	•	•
BMW-0157-102013			10/24/2013	10/26/2013	200-19145-11	19145	•	•
AMW-042-102013			10/24/2013	10/26/2013	200-19145-12	19145	•	•
BMW-042-102013			10/24/2013	10/26/2013	200-19145-13	19145	•	•
DMW-042-102013			10/24/2013	10/26/2013	200-19145-14	19145	•	•
AMW-0155-102013			10/24/2013	10/26/2013	200-19145-8	19145		•
		AMW-2155-102013	10/24/2013	10/26/2013	200-19145-9	19145		•

Table 2-1
Sample Collection Summary
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Field Samples	MS/MSD Samples	Field Duplicate Samples	Date Sampled	Date Received by Lab	Lab ID	SDG	Explosives	Volatiles
AMW-0116-102013			10/24/2013	10/26/2013	200-19145-2	19145		•
BMW-0116-102013			10/24/2013	10/26/2013	200-19145-3	19145		•
DMW-0116-102013			10/24/2013	10/26/2013	200-19145-4	19145		•
AMW-0140-102013			10/24/2013	10/26/2013	200-19145-5	19145		•
BMW-0140-102013			10/24/2013	10/26/2013	200-19145-6	19145		•
DMW-0140-102013			10/24/2013	10/26/2013	200-19145-7	19145		•
Trip Blanks								
TRB-090-102013			10/16/2013	10/18/2013	200-19015-1	19015		•
TRB-0120-102013			10/17/2013	10/19/2013	200-19040-1	19040		•
TRB-0135-102013			10/23/2013	10/25/2013	200-19114-1	19114		•
TRB-0157-102013			10/24/2013	10/26/2013	200-19145-1	19145		•
TRB-209-102013			11/6/2013	11/7/2013	200-19348-1	19348		•

Notes:

Volatiles	SW8260B	Volatile Organic Compounds by Capillary GC/MS
Explosives	SW8330	Nitroaromatics and Nitramines by HPLC

• = Requested for the indicated analyses

Table 3-1
Data Quality Evaluation Results
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sample Identification	Date Sampled	SDG	Lab Number	Analysis	Parameter	Units	Lab Result	Data Review Qualifier	%REC	C_RPD	IS_Surr	RPD	Comments	Final Result
AMW-009-102013	10/23/2013	19114	200-19114-2	Volatiles	1,2-dichloropropane	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
AMW-009-102013	10/23/2013	19114	200-19114-2	Volatiles	cis-1,2-dichloroethene	µg/L	0.50	J			X		Surrogate recovery outside project limits.	0.50 J
AMW-009-102013	10/23/2013	19114	200-19114-2	Volatiles	methylene chloride	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
AMW-009-102013	10/23/2013	19114	200-19114-2	Volatiles	trans-1,2-dichloroethene	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
AMW-009-102013	10/23/2013	19114	200-19114-2	Volatiles	trichloroethene	µg/L	64	J			X		Surrogate recovery outside project limits.	64 J
AMW-009-102013	10/23/2013	19114	200-19114-2	Volatiles	vinyl choride	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
AMW-0105-102013	10/23/2013	19114	200-19114-11	Volatiles	1,2-dichloropropane	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
AMW-0105-102013	10/23/2013	19114	200-19114-11	Volatiles	cis-1,2-dichloroethene	µg/L	1.5	J			X		Surrogate recovery outside project limits.	1.5 J
AMW-0105-102013	10/23/2013	19114	200-19114-11	Volatiles	methylene chloride	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
AMW-0105-102013	10/23/2013	19114	200-19114-11	Volatiles	trans-1,2-dichloroethene	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
AMW-0105-102013	10/23/2013	19114	200-19114-11	Volatiles	trichloroethene	µg/L	27	J			X		Surrogate recovery outside project limits.	27 J
AMW-0105-102013	10/23/2013	19114	200-19114-11	Volatiles	vinyl choride	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
AMW-0125-102013	10/17/2013	19040	200-19040-9	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.12	J		X			Column RPD	0.12 J
AMW-0141-102013	10/17/2013	19040	200-19040-30	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.11	J		X			Column RPD	0.11 J
AMW-0144-102013	10/17/2013	19040	200-19040-33	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.076	J		X			Column RPD	0.076 J
AMW-0157-102013	10/24/2013	19145	200-19145-10	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.054	J		X			Column RPD	0.054 J
AMW-042-102013	10/24/2013	19145	200-19145-12	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.061	J		X			Column RPD	0.061 J
AMW-2125-102013	10/17/2013	19040	200-19040-10	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.15	J		X			Column RPD	0.15 J
BMW-009-102013	10/23/2013	19114	200-19114-3	Volatiles	1,2-dichloropropane	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
BMW-009-102013	10/23/2013	19114	200-19114-3	Volatiles	cis-1,2-dichloroethene	µg/L	0.21	J			X		Surrogate recovery outside project limits.	0.21 J
BMW-009-102013	10/23/2013	19114	200-19114-3	Volatiles	methylene chloride	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
BMW-009-102013	10/23/2013	19114	200-19114-3	Volatiles	trans-1,2-dichloroethene	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
BMW-009-102013	10/23/2013	19114	200-19114-3	Volatiles	trichloroethene	µg/L	43	J			X		Surrogate recovery outside project limits.	43 J
BMW-009-102013	10/23/2013	19114	200-19114-3	Volatiles	vinyl choride	µg/L	0.25	UJ			X		Surrogate recovery outside project limits.	0.25 UJ
BMW-0119-102013	10/16/2013	19015	200-19015-4	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.083	J		X			Column RPD	0.083 J
BMW-0122-102013	10/16/2013	19015	200-19015-10	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.58	J		X			Column RPD	0.58 J

Table 3-1
Data Quality Evaluation Results
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sample Identification	Date Sampled	SDG	Lab Number	Analysis	Parameter	Units	Lab Result	Data Review Qualifier	%REC	C_RPD	IS_Surr	RPD	Comments	Final Result
BMW-0124-102013	10/17/2013	19040	200-19040-7	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.050	J		X			Column RPD	0.050 J
BMW-0124-102013	10/17/2013	19040	200-19040-7	Explosives	4-amino-2,6-dinitrotoluene	µg/L	1.6	J		X			Column RPD	1.6 J
BMW-0125-102013	10/17/2013	19040	200-19040-11	Explosives	1,3,5-trinitrobenzene	µg/L	0.10	J		X			Column RPD	0.10 J
BMW-0125-102013	10/17/2013	19040	200-19040-11	Explosives	hexahydro-1,3,5-trinitro-1,3,5-triazine	µg/L	7.5	J	X				MS Recovery	7.5 J
BMW-0125-102013	10/17/2013	19040	200-19040-11	Volatiles	trichloroethene	µg/L	3800	J	X			X	MS Recovery,MS RPD	3800 J
BMW-0135-102013	10/23/2013	19114	200-19114-22	Volatiles	trichloroethene	µg/L	240	J	X				MS Recovery	240 J
BMW-0150-102013	10/18/2013	19040	200-19040-40	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.11	J		X			Column RPD	0.11 J
BMW-024-102013	10/17/2013	19040	200-19040-45	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.26	J		X			Column RPD	0.26 J
DMW-0120-102013	10/17/2013	19040	200-19040-4	Explosives	1,3,5-trinitrobenzene	µg/L	0.031	J		X			Column RPD	0.031 J
DMW-0125-102013	10/17/2013	19040	200-19040-12	Explosives	hexahydro-1,3,5-trinitro-1,3,5-triazine	µg/L	0.11	J		X			Column RPD	0.11 J
DMW-0131-102013	10/18/2013	19040	200-19040-19	Explosives	hexahydro-1,3,5-trinitro-1,3,5-triazine	µg/L	0.31	J		X			Column RPD	0.31 J
DMW-042-102013	10/24/2013	19145	200-19145-14	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.049	J		X			Column RPD	0.049 J
DMW-042-102013	10/24/2013	19145	200-19145-14	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.13	J		X			Column RPD	0.13 J
DMW-090-102013	10/16/2013	19015	200-19015-17	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.35	J		X			Column RPD	0.35 J
EMW-0120-102013	10/17/2013	19040	200-19040-5	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.77	J		X			Column RPD	0.77 J
EMW-0141-102013	10/17/2013	19040	200-19040-32	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.31	J		X			Column RPD	0.31 J
EMW-0141-102013	10/17/2013	19040	200-19040-32	Explosives	4-amino-2,6-dinitrotoluene	µg/L	4.2	J		X			Column RPD	4.2 J
EMW-0142-102013	10/16/2013	19015	200-19015-14	Explosives	1,3,5-trinitrobenzene	µg/L	0.22	J		X			Column RPD	0.22 J
EMW-0142-102013	10/16/2013	19015	200-19015-14	Explosives	hexahydro-1,3,5-trinitro-1,3,5-triazine	µg/L	6.6	J		X			Column RPD	6.6 J
EMW-0144-102013	10/17/2013	19040	200-19040-34	Explosives	1,3,5-trinitrobenzene	µg/L	0.077	J		X			Column RPD	0.077 J
EMW-0145-102013	10/17/2013	19040	200-19040-36	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.097	J		X			Column RPD	0.097 J

Note: The LOD values were used to display non detected lab results.

Reason for Qualification

%REC	LCS - low, LCS Recovery, MS - low, MS Recovery
C_RPD	Column RPD
IS_Surr	Internal standard, Surrogate recovery outside project limits.
RPD	Lab Replicate RPD, MS RPD, LCS RPD

Table 3-2
Explosives Quality Control Outliers
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sample ID(s) Requiring Qualification	SDG	Compound(s)	QC Outlier	QC Parameter Control Limit	QC Result
Confirmation Column Difference					
AMW-0125-102013	19040	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	85.7 RPD
AMW-0144-102013	19040	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	76.4 RPD
AMW-0157-102013	19145	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	82.6 RPD
AMW-042-102013	19145	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	94.4 RPD
AMW-2125-102013	19040	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	42.1 RPD
BMW-0119-102013	19015	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	73.8 RPD
BMW-0122-102013	19015	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	76.6 RPD
BMW-0124-102013	19040	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	190 RPD
BMW-0124-102013	19040	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	117 RPD
BMW-0150-102013	19040	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	95.2 RPD
BMW-024-102013	19040	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	55.6 RPD
DMW-042-102013	19145	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	118 RPD
DMW-042-102013	19145	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	84.4 RPD
DMW-090-102013	19015	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	96.3 RPD
EMW-0120-102013	19040	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	75.3 RPD
EMW-0142-102013	19015	1,3,5-Trinitrobenzene	Confirmation Column Difference exceeds UCL	< 40 RPD	104 RPD
EMW-0142-102013	19015	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine	Confirmation Column Difference exceeds UCL	< 40 RPD	157 RPD

Table 3-2
Explosives Quality Control Outliers
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sample ID(s) Requiring Qualification	SDG	Compound(s)	QC Outlier	QC Parameter Control Limit	QC Result
EMW-0144-102013	19040	1,3,5-Trinitrobenzene	Confirmation Column Difference exceeds UCL	< 40 RPD	67.8 RPD
EMW-0145-102013	19040	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	88.2 RPD
			MS Recovery		
BMW-0125-102013	19040	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine	Matrix Spike exceeds UCL	70 - 115 %	118 %

Table 3-3
Volatile Organic Compounds Quality Control Outliers
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sample ID(s) Requiring Qualification	SDG	Compound(s)	QC Outlier	QC Parameter Control Limit	QC Result
		MS Recovery			
BMW-0125-102013	19040	Trichloroethene	Matrix Spike < minimum LCL	80 - 120 %	0.91 %
BMW-0135-102013	19114	Trichloroethene	Matrix Spike < minimum LWL	80 - 120 %	78.8 %
MS RPD					
BMW-0125-102013	19040	Trichloroethene	MS RPD exceeds UCL	< 20 RPD	21.3 RPD
		Surrogate			
AMW-009-102013	19114	1,2-Dichloropropane	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	1,2-Dichloropropane	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	1,2-Dichloropropane	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	76.0 %
AMW-009-102013	19114	cis-1,2-Dichloroethene	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	cis-1,2-Dichloroethene	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	cis-1,2-Dichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	76.0 %
AMW-009-102013	19114	Methylene Chloride	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	Methylene Chloride	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	Methylene Chloride	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	76.0 %
AMW-009-102013	19114	trans-1,2-Dichloroethene	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	trans-1,2-Dichloroethene	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	trans-1,2-Dichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	76.0 %
AMW-009-102013	19114	Trichloroethene	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	Trichloroethene	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	Trichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	76.0 %
AMW-009-102013	19114	Vinyl Chloride	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	72.0 %
AMW-009-102013	19114	Vinyl Chloride	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	72.0 %

Table 3-3
Volatile Organic Compounds Quality Control Outliers
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sample ID(s) Requiring Qualification	SDG	Compound(s)	QC Outlier	QC Parameter Control Limit	QC Result
AMW-009-102013	19114	Vinyl Chloride	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	76.0 %
AMW-0105-102013	19114	1,2-Dichloropropane	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	1,2-Dichloropropane	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	1,2-Dichloropropane	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
AMW-0105-102013	19114	cis-1,2-Dichloroethene	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	cis-1,2-Dichloroethene	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	cis-1,2-Dichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
AMW-0105-102013	19114	Methylene Chloride	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	Methylene Chloride	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	Methylene Chloride	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
AMW-0105-102013	19114	trans-1,2-Dichloroethene	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	trans-1,2-Dichloroethene	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	trans-1,2-Dichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
AMW-0105-102013	19114	Trichloroethene	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	Trichloroethene	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	Trichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
AMW-0105-102013	19114	Vinyl Chloride	Surrogate < minimum LWL	1,2-Dichlorobenzene-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	Vinyl Chloride	Surrogate < minimum LWL	1,2-Dichloroethane-d4 80 - 115 %	76.0 %
AMW-0105-102013	19114	Vinyl Chloride	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
BMW-009-102013	19114	1,2-Dichloropropane	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
BMW-009-102013	19114	cis-1,2-Dichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
BMW-009-102013	19114	Methylene Chloride	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %

Table 3-3
Volatile Organic Compounds Quality Control Outliers
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Sample ID(s) Requiring Qualification	SDG	Compound(s)	QC Outlier	QC Parameter Control Limit	QC Result
BMW-009-102013	19114	trans-1,2-Dichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
BMW-009-102013	19114	Trichloroethene	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %
BMW-009-102013	19114	Vinyl Chloride	Surrogate < minimum LWL	Toluene-d8 85 - 120 %	80.0 %

This page intentionally left blank

Table 4-1
Field Completeness
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Analysis	Number of Samples Planned	Number of Samples Collected	Field Completeness
Explosives	68	68	100%
Volatiles	85	84	98.8%
Totals =	153	152	99.3%
Goal =			95%

Notes:

Number of Samples Planned includes field samples and field duplicate samples.

This page intentionally left blank

Table 4-2
Analytical Completeness
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Analysis	Total Number of Parameters	Acceptable Data	Acceptable Data Completeness	Acceptable Data Completeness Goals	Quality Data	Quality Data Completeness	Quality Data Completeness Goals
Explosives (Analyte Count - 6)	408	407	99.8%	90%	408	100%	80%
Volatiles (Analyte Count - 6)	504	484	96.0%	90%	504	100%	80%
Totals =	912	891	97.7%	95%	912	100%	80%

Notes:

Total number of parameters includes field samples (includes data points from dilutions and/or reanalyses to be used in place of original data) and field duplicates (does not include field blanks or trip blanks).
Acceptable data includes data that has not been rejected or qualified as estimated (J/UJ). Data points for which the required corrective actions were taken or do not require corrective action do not count against the acceptable data completeness goal calculation (i.e., results exceeding the calibration range that were reanalyzed at dilutions within the calibration range).
Quality data is defined as all non-rejected data.

This page intentionally left blank

Table 4-3
Project Completeness
Fourth Quarter 2013 Monitoring Well Sampling Event
Former Nebraska Ordnance Plant

Field	Analytical	Project Completeness
99.3%	100.0%	99.3%
Project Completeness Goal =		90%

Notes:

Analytical Completeness is the percentage of usable data (i.e. quality data completeness).
Project Completeness combines sampling and analytical protocols to assess the expectations of the project as a whole. Project completeness is determined by comparing the percentage of samples / measurements that are determined to be usable to the total number of samples / measurements planned.

This page intentionally left blank

Appendix A
Chain of Custody Records

This page intentionally left blank

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 5403
phone 802.660 1990 fax 802.660.1919

4th QTR MW Groundwater samples 2013

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: John Ryder	Site Contact: Toby Hinz	Date: 9-12-2013	COC No: 091213
ECC	Tel/Fax: (720) 232-6425	Lab Contact: Jim Madison	Carrier: FedEx	1 of 1 COCs
1746 Cole Blvd Building 21, Suite 350	Analysis Turnaround Time			Job No. 5447.002
Lakewood, CO 80401	Calendar (C) or Work Days (W) _____			
(303) 298-7607 Phone	TAT if different from Below _____			
(303) 298-7837 FAX	☐ 3 weeks			SDG No.
Project Name: FNOP 5447.002	☐ 2 weeks			
Site: Former NOP	☐ 1 week			
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	8330 - Explosives	Sample Specific Notes:
AMW-0180-102013	9/12/2013	1205	G	W	2	X	
AMW-2180-102013	9/12/2013	1205	G	W	2	X	
EMW-0180-102013	9/12/2013	1215	G	W	2	X	

200-18411 COC

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☑ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For _____ Months*

Special Instructions/QC Requirements & Comments:

Rush Per John Ryder Instructions
1600

Relinquished by:	Company:	Date/Time:	Received by	Company.	Date/Time.
Toby D Hinz	ECC	9-12-13	Fed-ex 7966 7393		5511
Relinquished by:	Company:	Date/Time:	Received by:	Company: TAL	Date/Time: 9/13/13 1000
Relinquished by.	Company.	Date/Time:	Received by:	Company:	Date/Time:

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 101613

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code: Please add WBS Code	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

200-19015 Chain of Custody

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace.
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

Analytical Test Method

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8260B/SW5030B/NONE-6 Compounds	SW8330/METHOD/NONE-Explosives - 6 Compounds	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
							1				
1	TRB-090-102013	WQ	10/16/2013	1000		X		FIELDQC	TB1	0.00	0.00
2	AMW-0119-102013	WG	10/16/2013	1325		X	X	MW-119A	N1	119.70	129.20
3	AMW-2119-102013	WG	10/16/2013	1325		X	X	MW-119A	FD1	119.70	129.20
4	BMW-0119-102013	WG	10/16/2013	1350		X	X	MW-119B	N1	74.00	83.50
5	BMW-0119-102013 MS	WG	10/16/2013	1350		X	X	MW-119B	MS1	74.00	83.50
6	BMW-0119-102013 MSD	WG	10/16/2013	1350		X	X	MW-119B	SD1	74.00	83.50
7	AMW-0121-102013	WG	10/16/2013	1530		X	X	MW-121A	N1	132.60	142.10
8	AMW-2121-102013	WG	10/16/2013	1530		X	X	MW-121A	FD1	132.60	142.10
9	BMW-0121-102013	WG	10/16/2013	1555		X	X	MW-121B	N1	75.70	85.20
10	BMW-0121-102013 MS	WG	10/16/2013	1555		X	X	MW-121B	MS1	75.70	85.20
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time	Shipping Date / Carrier / Airbill Number
J. Hin Z	10-17-13	1800	Fed-ex 7969 3731 9195			Fed-ex
			Steph Fowler TA-BUR	10/18/13	1025	
						Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 101613

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code: Please add WBS Code	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace.
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

Analytical Test Method

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8260B/SW5030B/NONE-6 Compounds	SW8330/METHOD/NONE-Explosives - 6 Compounds	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
							1				
11	BMW-0121-102013 MSD	WG	10/16/2013	1555		X	X	MW-121B	SD1	75.70	85.20
12	EMW-0121-102013	WG	10/16/2013	1620		X	X	MW-121E	N1	105.50	115.00
13	AMW-0122-102013	WG	10/16/2013	1240		X	X	MW-122A	N1	128.50	138.00
14	BMW-0122-102013	WG	10/16/2013	1255		X	X	MW-122B	N1	97.60	107.10
15	AMW-0123-102013	WG	10/16/2013	1440		X	X	MW-123A	N1	131.80	141.30
16	BMW-0123-102013	WG	10/16/2013	1455		X	X	MW-123B	N1	90.10	99.60
17	AMW-0142-102013	WG	10/16/2013	1200		X	X	MW-142A	N1	125.00	135.00
18	EMW-0142-102013	WG	10/16/2013	1215		X	X	MW-142E	N1	100.00	100.00
19	AMW-090-102013	WG	10/16/2013	1010		X	X	MW-90A	N1	112.20	123.40
20	BMW-090-102013	WG	10/16/2013	1025		X	X	MW-90B	N1	65.35	75.45
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
T. Hiz	10-17-13	1800	Fed-ex 7969 3731	9195	

Shipping Date / Carrier / Airbill Number

Fed-ex

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

10/18/13 1025

Alan Fouche ~~[illegible]~~ ~~[illegible]~~

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 101613

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code: Please add WBS Code	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace.
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degreas C

					Analytical Test Method	SW8260B/SW5030B/NONE-6 Compounds	SW8330/METHOD/NONE-Explosives - 6 Compounds				
Event: Fourth Quarter 2013							1				
	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
21	DMW-090-102013	WG	10/16/2013	1040		X	X	MW-90D	N1	130.20	135.20
22	AMW-091-102013	WG	10/16/2013	1110		X		MW-91A	N1	109.20	119.20
23	BMW-091-102013	WG	10/16/2013	1120		X		MW-91B	N1	67.60	77.60
24	DMW-091-102013	WG	10/16/2013	1130		X		MW-91D	N1	125.20	130.20
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	**Date**	**Time**	**Received by:** *(Signature)*	**Date**	**Time**
T. Hiz	10-17-13	1800	Fed-ex 7969 3731 9195		

Shipping Date / Carrier / Airbill Number

Fed-ex

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

10/18/13 1025

Stephen Fischer TAGLA

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 101713

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code: Please add WBS Code	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace.
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

					Analytical Test Method	SW8260B/SW5030B/NONE-6 Compounds	SW8330/METHOD/NONE-Explosives - 6 Compounds				
Event: Fourth Quarter 2013							1				
	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
1	TRB-0120-102013	WQ	10/17/2013	0825		X		FIELDQC	TB1	0.00	0.00
2	AMW-0120-102013	WG	10/17/2013	0825		X	X	MW-120A	N1	128.70	138.20
3	BMW-0120-102013	WG	10/17/2013	0840		X	X	MW-120B	N1	65.50	75.00
4	DMW-0120-102013	WG	10/17/2013	0855		X	X	MW-120D	N1	144.00	148.40
5	EMW-0120-102013	WG	10/17/2013	0910		X	X	MW-120E	N1	95.30	104.80
6	AMW-0124-102013	WG	10/17/2013	1250		X	X	MW-124A	N1	100.30	109.80
7	BMW-0124-102013	WG	10/17/2013	1310		X	X	MW-124B	N1	69.70	79.20
8	DMW-0124-102013	WG	10/17/2013	1325		X	X	MW-124D	N1	121.30	125.70
9	AMW-0125-102013	WG	10/17/2013	0945		X	X	MW-125A	N1	117.90	127.40
10	AMW-2125-102013	WG	10/17/2013	0945		X	X	MW-125A	FD1	117.90	127.40
Cooler # 1		**Turnaround Time:**									

200-19040 COC

Relinquished by: *(Signature)*	**Date**	**Time**	**Received by:** *(Signature)*	**Date**	**Time**
Toby A [illegible]	10-18-13	1800	[illegible] TABA	10/18/13	0900

Shipping Date / Carrier / Airbill Number
Fed-Ex 7969 5009 2017

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 101713

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code: Please add WBS Code	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

					Analytical Test Method	SW8260B/SW5030B/NONE-6 Compounds	SW8330/METHOD/NONE-Explosives - 6 Compounds				
Event: Fourth Quarter 2013							1				
	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
11	BMW-0125-102013	WG	10/17/2013	1005		X	X	MW-125B	N1	76.70	86.20
12	BMW-0125-102013 MS	WG	10/17/2013	1005		X	X	MW-125B	MS1	76.70	86.20
13	BMW-0125-102013 MSD	WG	10/17/2013	1005		X	X	MW-125B	SD1	76.70	86.20
14	DMW-0125-102013	WG	10/17/2013	1035		X	X	MW-125D	N1	134.40	138.80
15	AMW-0128-102013	WG	10/18/2013	1055			X	MW-128A	N1	96.20	106.20
16	BMW-0128-102013	WG	10/18/2013	1105			X	MW-128B	N1	79.50	90.10
17	BMW-2128-102013	WG	10/18/2013	1105			X	MW-128B	FD1	79.50	90.10
18	AMW-0131-102013	WG	10/18/2013	1005			X	MW-131A	N1	88.50	98.50
19	AMW-2131-102013	WG	10/18/2013	1005			X	MW-131A	FD1	88.50	98.50
20	BMW-0131-102013	WG	10/18/2013	1015			X	MW-131B	N1	70.50	80.50
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	**Date**	**Time**
Toby [illegible]	10-18-13	1800

Received by: *(Signature)*	**Date**	**Time**
[illegible] TABWA	10/18/13	~~[illegible]~~ 1010/13

Shipping Date / Carrier / Airbill Number
Fed-ex 7969 5009 2017

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 101713

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code: Please add WBS Code	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

					Analytical Test Method	SW8260B/SW5030B/NONE-6 Compounds	SW8330/METHOD/NONE-Explosives - 6 Compounds				
Event: Fourth Quarter 2013							1				
	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
21	DMW-0131-102013	WG	10/18/2013	1025			X	MW-131D	N1	102.00	107.00
22	AMW-0136-102013	WG	10/18/2013	1250		X		MW-136A	N1	99.50	109.00
23	BMW-0136-102013	WG	10/18/2013	1300		X		MW-136B	N1	65.00	74.50
24	DMW-0136-102013	WG	10/18/2013	1310		X		MW-136D	N1	120.00	124.40
25	EMW-0136-102013	WG	10/18/2013	1320		X		MW-136E	N1	40.50	60.00
26	AMW-0137-102013	WG	10/18/2013	1345		X		MW-137A	N1	93.20	102.70
27	BMW-0137-102013	WG	10/18/2013	1355		X		MW-137B	N1	62.60	72.10
28	EMW-0137-102013	WG	10/18/2013	1405		X		MW-137E	N1	42.35	62.05
29	BMW-0138-102013	WG	10/18/2013	1215		X		MW-138B	N1	64.49	73.99
30	BMW-2138-102013	WG	10/18/2013	1215		X		MW-138B	FD1	64.49	73.99
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
Toby A. [illegible]	10-18-13	1800	[illegible] FARIA	10/19/13	0145

Shipping Date / Carrier / Airbill Number
Fed-ex 7969 5009 2017

Recevied by Laboratory: *(Signature, Date, Time)* & condition

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 101713

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code: Please add WBS Code	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

					Analytical Test Method	SW8260B/SW5030B/NONE-6 Compounds	SW8330/METHOD/NONE-Explosives - 6 Compounds				
Event: Fourth Quarter 2013							1				
	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
31	BMW-0139-102013	WG	10/18/2013	1155		X		MW-139B	N1	71.33	81.20
32	AMW-0141-102013	WG	10/17/2013	1155		X	X	MW-141A	N1	115.00	145.00
33	BMW-0141-102013	WG	10/17/2013	1210		X	X	MW-141B	N1	60.00	60.00
34	EMW-0141-102013	WG	10/17/2013	1225		X	X	MW-141E	N1	90.00	90.00
35	AMW-0144-102013	WG	10/17/2013	1455		X	X	MW-144A	N1	101.00	105.00
36	EMW-0144-102013	WG	10/17/2013	1505		X	X	MW-144E	N1	85.00	85.00
37	AMW-0145-102013	WG	10/17/2013	1530		X	X	MW-145A	N1	95.70	96.00
38	EMW-0145-102013	WG	10/17/2013	1540		X	X	MW-145E	N1	82.00	82.00
39	AMW-0146-102013	WG	10/18/2013	0840			X	MW-146A	N1	97.00	125.00
40	BMW-0146-102013	WG	10/18/2013	0850			X	MW-146B	N1	77.00	77.00
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	Date	Time
Toby O. [illegible]	10-18-13	1800

Received by: *(Signature)*	Date	Time
[illegible]	10/19/13	0945

Shipping Date / Carrier / Airbill Number
Fed-Ex 7969 5009 2017

Recevied by Laboratory: *(Signature, Date, Time)* & condition

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 101713

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code: Please add WBS Code	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Analytical Test Method

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

	Event: Fourth Quarter 2013					SW8260B/SW5030B/NONE-6 Compounds	SW8330/METHOD/NONE-Explosives - 6 Compounds				
							1				
	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
41	AMW-0150-102013	WG	10/18/2013	0915		X	X	MW-150A	N1	90.00	90.00
42	BMW-0150-102013	WG	10/18/2013	0935		X	X	MW-150B	N1	75.00	75.00
43	AMW-021-102013	WG	10/17/2013	1355		X	X	MW-21A	N1	116.00	126.00
44	BMW-021-102013	WG	10/17/2013	1410		X	X	MW-21B	N1	66.00	76.00
45	DMW-021-102013	WG	10/17/2013	1425		X	X	MW-21D	N1	133.00	138.00
46	AMW-024-102013	WG	10/17/2013	1105		X	X	MW-24A	N1	111.50	121.50
47	BMW-024-102013	WG	10/17/2013	1120		X	X	MW-24B	N1	56.00	66.00
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
Toby A. [illegible]	10-18-13	1800	[illegible] TASUR	10/19/13	0945

Shipping Date / Carrier / Airbill Number

Fed-ex 7969 5009 2017

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 102313

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Analytical Test Method

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8260B - 6 Compounds	SW8330 - Explosives 6 Compounds	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
							1				
1	TRB-0135-102013	WQ	10/23/2013	0840		X		FIELDQC	TB1	0.00	0.00
2	AMW-009-102013	WG	10/23/2013	1205		X		MW-09A	N1	89.00	128.00
3	BMW-009-102013	WG	10/23/2013	1215		X		MW-09B	N1	46.30	85.30
4	BMW-209-102013	WG	10/23/2013	1215		X		MW-09B	FD1	46.30	85.30
5	DMW-009-102013	WG	10/23/2013	1230		X		MW-09D	N1	131.00	136.00
6	AMW-0104-102013	WG	10/23/2013	1510			X	MW-104A	N1	31.10	40.60
7	AMW-2104-102013	WG	10/23/2013	1510			X	MW-104A	FD1	31.10	40.60
8	BMW-0104-102013	WG	10/23/2013	1520			X	MW-104B	N1	15.10	24.60
9	DMW-0104-102013	WG	10/23/2013	1530			X	MW-104D	N1	44.60	49.10
10	OMW-0104-102013	WG	10/23/2013	1540			X	MW-104O	N1	5.30	7.30
Cooler # 1		**Turnaround Time:**									

200-19114 COC

Relinquished by: *(Signature)*	Date	Time
[illegible]	10-24-13	1700

Received by: *(Signature)*	Date	Time
[illegible]	10/25/13	0830

Shipping Date / Carrier / Airbill Number

Fed-ex 7969 9312 7441

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 102313

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Analytical Test Method

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3" 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2" 2 X 250 mL Amber Glass Bottles, 4 Degrees C

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8260B - 6 Compounds	SW8330 - Explosives 6 Compounds	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
							1				
11	AMW-0105-102013	WG	10/23/2013	1355		X	X	MW-105A	N1	30.17	39.67
12	BMW-0105-102013	WG	10/23/2013	1410		X	X	MW-105B	N1	14.75	24.25
13	OMW-0105-102013	WG	10/23/2013	1425		X	X	MW-105O	N1	5.00	6.60
14	AMW-0133-102013	WG	10/23/2013	1115		X		MW-133A	N1	96.50	106.50
15	BMW-0133-102013	WG	10/23/2013	1130		X		MW-133B	N1	66.00	76.00
16	DMW-0133-102013	WG	10/23/2013	1140		X		MW-133D	N1	111.00	117.00
17	AMW-0134-102013	WG	10/23/2013	0955		X		MW-134A	N1	103.00	113.00
18	BMW-0134-102013	WG	10/23/2013	1005		X		MW-134B	N1	68.00	78.00
19	DMW-0134-102013	WG	10/23/2013	1015		X		MW-134D	N1	123.00	127.00
20	AMW-0135-102013	WG	10/23/2013	0840		X		MW-135A	N1	99.70	109.70

Cooler # 1 **Turnaround Time:**

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
Toby R. [illegible]	10-24-13	1700	[illegible] D. Burr	10/25/13	0950

Shipping Date / Carrier / Airbill Number

Fed-ex 7969 9312 7441

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 102313

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Analytical Test Method

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8260B - 6 Compounds	SW8330 - Explosives 6 Compounds	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
							1				
21	AMW-2135-102013	WG	10/23/2013	0840		X		MW-135A	FD1	99.70	109.70
22	BMW-0135-102013	WG	10/23/2013	0910		X		MW-135B	N1	60.00	70.00
23	BMW-0135-102013 MS	WG	10/23/2013	0910		X		MW-135B	MS1	60.00	70.00
24	BMW-0135-102013 MSD	WG	10/23/2013	0910		X		MW-135B	SD1	60.00	70.00
25	DMW-0135-102013	WG	10/23/2013	0930		X		MW-135D	N1	117.00	122.00
26	AMW-044-102013	WG	10/23/2013	1305		X		MW-44A	N1	29.50	39.50
27	BMW-044-102013	WG	10/23/2013	1315		X		MW-44B	N1	16.00	26.00
28	BMW-244-102013	WG	10/23/2013	1315		X		MW-44B	FD1	16.00	26.00
29	DMW-044-102013	WG	10/23/2013	1330		X		MW-44D	N1	50.80	55.80
30	AMW-053-102013	WG	10/23/2013	1045			X	MW-53A	N1	87.00	97.00
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	Date	Time
Tiffany Dine	10-24-13	1800

Received by: *(Signature)*	Date	Time
[illegible]	10/25/13	0850

Shipping Date / Carrier / Airbill Number
Fed. ex 7969 9312 7441

Recevied by Laboratory: *(Signature, Date, Time)* & condition

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 102313

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Analytical Test Method

	SW8260B - 6 Compounds	SW8330 - Explosives 6 Compounds
Event: Fourth Quarter 2013		1

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3" 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2" 2 X 250 mL Amber Glass Bottles, 4 Degrees C

	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
31	BMW-053-102013	WG	10/23/2013	1055			X	MW-53B	N1	27.50	37.50
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	Date	Time
Toby A. [illegible]	10-24-13	1700

Received by: *(Signature)*	Date	Time
[illegible] TA-BUR	10/25/13	0950

Shipping Date / Carrier / Airbill Number
Fed-ex 7969 9312 7441

Recevied by Laboratory: *(Signature, Date, Time)* & condition

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 102413

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Analytical Test Method

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8260B - 6 Compounds	SW8330 - Explosives 6 Compounds	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
							1				
1	TRB-0157-102013	WQ	10/24/2013	0830		X		FIELDQC	TB1	0.00	0.00
2	AMW-0116-102013	WG	10/24/2013	1100		X		MW-116A	N1	37.50	42.50
3	BMW-0116-102013	WG	10/24/2013	1110		X		MW-116B	N1	27.00	32.00
4	DMW-0116-102013	WG	10/24/2013	1120		X		MW-116D	N1	47.98	53.50
5	AMW-0140-102013	WG	10/24/2013	1225		X		MW-140A	N1	37.00	46.50
6	BMW-0140-102013	WG	10/24/2013	1235		X		MW-140B	N1	13.00	22.50
7	DMW-0140-102013	WG	10/24/2013	1245		X		MW-140D	N1	57.10	61.50
8	AMW-0155-102013	WG	10/24/2013	1010		X		MW-155A	N1	99.00	99.00
9	AMW-2155-102013	WG	10/24/2013	1010		X		MW-155A	FD1	99.00	99.00
10	AMW-0157-102013	WG	10/24/2013	0830		X	X	MW-157A	N1	55.00	55.00
Cooler # 1		**Turnaround Time:**									

200-19145 COC

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
Toby D Hill	10-25-13	1500	[illegible]	10/26/13	1115

Shipping Date / Carrier / Airbill Number
Fed-ex 7970 0216 1367

Recevied by Laboratory: *(Signature, Date, Time)* & condition

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 102413

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., South Burlington, VT
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Analytical Test Method

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace,
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C

	Sample ID	Matrix	Date	Time	Samp Init.	SW8260B - 6 Compounds	SW8330 - Explosives 6 Compounds	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
	Event: Fourth Quarter 2013						1				
11	BMW-0157-102013	WG	10/24/2013	0850		X	X	MW-157B	N1	37.00	37.00
12	AMW-042-102013	WG	10/24/2013	0920		X	X	MW-42A	N1	86.00	96.00
13	BMW-042-102013	WG	10/24/2013	0935		X	X	MW-42B	N1	53.00	63.00
14	DMW-042-102013	WG	10/24/2013	0950		X	X	MW-42D	N1	103.20	108.20
Cooler # 1		**Turnaround Time:**									

Relinquished by: *(Signature)*	Date	Time
Toby Lin	10-25-13	1500

Received by: *(Signature)*	Date	Time
[illegible] TABOR	10/26/13	1115

Shipping Date / Carrier / Airbill Number
Fed-ex 7970-0216-1367

Recevied by Laboratory: *(Signature, Date, Time)* & condition

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 5403
phone 802.660.1990 fax 802.660.1919

Groundwater samples

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: John Ryder	Site Contact: Toby Hinz	Date: 11-6-13	COC No: 110613-1
ECC	Tel/Fax: (720) 232-6425	Lab Contact: Jim Madison	Carrier: FedEx	1 of 1 COCs
1746 Cole Blvd Building 21, Suite 350	Analysis Turnaround Time			Job No. 5447.002
Lakewood, CO 80401	Calendar (C) or Work Days (W) _____			
(303) 298-7607 Phone	TAT if different from Below _____			
(303) 298-7837 FAX	☐ 3 weeks			SDG No.
Project Name: FNOP 5447.002	☐ 2 weeks			
Site: Former NOP	☐ 1 week			
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	8260 - VOCs	8330 - Explosives	Sample Specific Notes:
TRB-209-102013	11/6/2013	0900	G	W	2	X		
DWM-009-102013	11/6/2013	0900	G	W	3	X		

200-19348 COC

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☑ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For _____ Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Toby R. Hinz	ECC	11-6-13	FedEx 7970 5287		6558
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
			[illegible]	TMBeck	11/7/13 915
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Appendix B
Field Forms

This page intentionally left blank

Location MEAD - FNOP Date 8/26/13

Project / Client STREAM GAUGING - DAG4/4

- JC-1 CONT'D
  - EAST SIDE ROAD
  - NORTH CULVERT ONLY MUD ON A SPLASH BLOCK/PAD
  - 5.5' TO MUD
  - EAST SIDE ROAD
  - SOUTH CULVERT FROM CENTER OF CULVERT - 4.75' TO ~~STANDWAT~~ STANDING WATER ONLY
- 1205 - JC-2
  - DRY AT 14.7' - NORTH SIDE
  - DRY BOTH SIDE BRIDGE
- 1215 - CC-1
  - STANDING WATER ONLY
  - NORTH SIDE BRIDGE DECK
  - 10.0' (LOTS OF MOSS/STAGNATED)
- 1225 - MUD CLEAR CREEK 1
  - 13.0' FROM NORTH SIDE AT BRIDGE DECK LEVEL
- 1233 - CC-3
  - 15.75 - NORTH SIDE BRIDGE

END - Dustin Quinkstand

Location Mead, Nebraska Date 9-12-13

Project / Client Mead FNOP / USACE

Sample new mw-180 wells

Toby D. Hinz (ECC)

1205 Amw-180-102013 + QC
mw-180A 4 EMPS / 8330
Amw-2180-102013

1215 mw-180E
Emw-0180-102013
2 EMPS / 8330

TH

Location Mead Date 10-16-13

Project / Client FNOP 4th Quarter Sampling

Ronnie Fiscus

0945 Left Treatment Plant after loading up material for water sampling

1000 TRB-090-102013 Voc-2

~~AMW-090-102013 WL+~~

1010 MW-90A WL-48.18

AMW-090-102013 Voc-3 Exp-2

1025 MW-90B WL-48.88

BMW-090-102013 Voc-3 Exp-2

1040 MW-90D WL-48.47

DMW-090-102013 Voc-3 Exp-2

1110 MW-91A WL-49.20

AMW-091-102013 Voc-3

1120 MW-91B WL-49.41

BMW-091-102013 Voc-3

1130 MW-91D WL-49.06

DMW-091-102013 Voc-3

1200 MW-142A WL-49.07

AMW-0142-102013 Voc-3 Exp-2

1215 MW-142E WL-48.85

EMW-0142-102013 Voc-3 Exp-2

1240 MW-122A WL-55.08

AMW-0122-102013 Voc-3 Exp-2

1255 MW-122B WL-55.86

BMW-0122-102013 Voc-3 Exp-2

Location Mead Date 10-16-13

Project / Client FNOP 4th Quarter Sampling

Ronnie Fiscus

1325 MW-119A WL-44.53

AMW-0119-102013 Voc-3 Exp-2

AMW-2119-102013 Voc-3 Exp-2

1350 MW-119B WL-44.55

BMW-0119-102013 Voc-3 Exp-2

BMW-0119-102013MS Voc-3 Exp-2

BMW-0119-102013MSD Voc-3 Exp-2

1440 MW-123A WL-55.11

AMW-0123-102013 Voc-3 Exp-2

1455 MW-123B WL-55.07

BMW-0123-102013 Voc-3 Exp-2

1530 MW-121A WL-55.66

AMW-0121-102013 Voc-3 Exp-2

AMW-2121-102013 Voc-3 Exp-2

1555 MW-121B WL-55.74

BMW-0121-102013 Voc-3 Exp-2

BMW-0121-102013MS Voc-3 Exp-2

BMW-0121-102013MSD Voc-3 Exp-2

1620 MW-121E WL-55.43

EMW-0121-102013 Voc-3 Exp-2

1700 Left Treatment Plant for the day.

RF

Location Mead Date 10-17-13

Project / Client FNOP 4th Quarter Sampling

Ronnie Fiscus

0730 Arrived at Treatment Plant
loaded material for water sampling
0825 MW-120A WL-53.26
AMW-0120-102013 Voc-3 Exp-2
0840 MW-120B WL-53.24
BMW-0120-102013 Voc-3 Exp-2
0855 MW-120D WL-53.75
DMW-0120-102013 Voc-3 Exp-2
0910 MW-120E WL-~~54~~53.40
EMW-0120-102013 Voc-3 Exp-2
0945 MW-125A WL-46.23
AMW-0125-102013 Voc-3 Exp-2
AMW-2125-102013 Voc-3 Exp-2
1005 MW-125B WL-46.46
BMW-0125-102013 Voc-3 Exp-2
BMW-0125-102013MS Voc-3 Exp-2
BMW-0125-102013MSD Voc-3 Exp-2
1035 MW-125D WL-45.98
DMW-0125-102013 Voc-3 Exp-2
1105 MW-24A WL-41.78
AMW-024-102013 Voc-3 Exp-2
1120 MW-24B WL-41.54
BMW-024-102013 Voc-3 Exp-2
1155 MW-141A WL-38.34
AMW-0141-102013 Voc-3 Exp-2

Location Mead Date 10-17-13

Project / Client FNOP 4th Quarter Sampling

Ronnie Fiscus

1210 MW-141B WL-38.32
BMW-0141-102013 Voc-3 Exp-2
1225 MW-141E WL-38.29
EMW-0141-102013 Voc-3 Exp-2
1250 MW-124A WL-43.03
AMW-0124-102013 Voc-3 Exp-2
1310 MW-124B WL-42.71
BMW-0124-102013 Voc-3 Exp-2
1325 MW-124D WL-43.36
DMW-0124-102013 Voc-3 Exp-2
1355 MW-21A WL-37.27
AMW-021-102013 Voc-3 Exp-2
1410 MW-21B WL-37.26
BMW-021-102013 Voc-3 Exp-2
1425 MW-21D WL-37.29
DMW-021-102013 Voc-3 Exp-2
1455 MW-144A WL-41.72
AMW-0144-102013 Exp-2
1505 MW-144E WL-42.05
EMW-0144-102013 Exp-2
1530 MW-145A WL-48.83
AMW-0145-102013 Exp-2
1540 MW-145E WL-48.98
EMW-0145-102013 Exp-2

Location Mead Date 10-18-13

Project / Client FNOP 4th Quarter Sampling

Ronnie Fiscus

0730 Loaded material supplys, bagged ice.
0815 Left Treatment Plant for water Sampling
0840 ~~MW~~ MW-146A WL-49.18
AMW-0146-102013 Exp-2
0850 MW-146-B WL-49.02
BMW-0146-102013 Exp-2
0915 MW-150A WL-49.68
AMW-0150-102013 Voc-3 Exp-2
0935 MW-150B WL-49.56
BMW-0150-102013 Voc-3 Exp-2
1005 MW-131A WL-57.30
AMW-0131-102013 Exp-2
AMW-2131-102013 Exp-2
1015 MW-131B WL-57.12
BMW-0131-102013 Exp-2
1025 MW-131D WL-57.26
DMW-0131-102013 Exp-2
1055 MW-128A WL-62.48
AMW-0128-102013 Exp-2
1105 MW-128B WL-62.50
BMW-0128-102013 Exp-2
BMW-2128-102013 Exp-2
1155 MW-139B WL-46.11
BMW-0139-102013 Voc-3

Location Mead Date 10-18-13

Project / Client FNOP 4th Quarter Sampling

Ronnie Fiscus

1215 MW-138B WL-45.16
BMW-0138-102013 Voc-3
BMW-2138-102013 Voc-3
1250 MW-136A WL-~~35.34~~ 45.34
AMW-0136-102013 Voc-3
1300 MW-136B WL-45.24
BMW-0136-102013 Voc-3
1310 MW-136D WL-44.96
DMW-0136-102013 Voc-3
1320 MW-136E WL-45.43
EMW-0136-102013 Voc-3
1345 MW-137A WL-38.54
AMW-0137-102013 Voc-3
1355 MW-137B WL-38.48
BMW-0137-102013 Voc-3
1405 MW-137E WL-38.57
EMW-0137-102013 Voc-3
1445 Return to Treatment Plant
1515 Left for the day.

RF

Location Mead FNP Date 9-26-13

Project / Client USACE / EN-09

Toby R Kim (ECC)

1340 Sample GP-T102-005-71

1400 GP-T102-005-61

Location Mead FNP Date 11-6-13

Project / Client 5447.002 / USACE

In. Well Sampling

Toby R Kim (ECC)

0900 Re-Sample of MW-09D

DMW-009-102013 3 vol's / 8260B

1600 Shipped Fed-ex

This page intentionally left blank

Appendix C
Reference Sheet
Data Validation Qualifiers
Drinking Water Standards

This page intentionally left blank

APPENDIX E

Quality Control Summary Report Fourth Quarter 2013

Water Supply Well Sampling Event

This page was intentionally left blank.

Regional Office

1746 Cole Boulevard
Building 21, Suite 350
Lakewood, CO 80401

Phone: 303.298.7607
Fax: 303.298.7837

December 9, 2013

U.S. Army Corps of Engineers, Kansas City District
Attn: Jacqy Frazier
601 East 12th Street
Kansas City, MO 64106-2896

Re: Transmittal of Final Quality Control Summary Report
Fourth Quarter 2013 Water Supply Well Sampling Event
Former Nebraska Ordnance Plant, Mead, Nebraska
Contract No. W912DQ-08-D-0001, Task Order No. 0002

Dear Ms. Frazier:

ECC is hereby transmitting one electronic copy of the Final Quality Control Summary Report for the Fourth Quarter 2013 Water Supply Well Sampling Event at the former Nebraska Ordnance Plant, Mead, Nebraska.

Please contact Mr. Brady Bigelow or me if you require additional information.

Sincerely,

John Ryder
Project Chemist
ECC

Enclosures
cc: Ms. Kristine Stein (USACE)
Mr. Jason L'Ecuyer (USACE)
Mr. Bradley Brink (USACE)
Mr. Kirk Boese (USACE)

Corporate Office

1240 Bayshore Highway
Burlingame, CA 94010

Phone: 650.347.1555
Fax: 650.347.8789
www.ecc.net

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE: December 9, 2013	TRANSMITTAL NO. 2013-100

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by contractor)

Attn: Jacqy Frazier USACE, Kansas City District 601 E. 12th St. Kansas City, MO 64106-2896	FROM: John Ryder ECC 1746 Cole Blvd, Bldg 21, Lakewood, CO 80401	CONTRACT NO. W912DQ-08-D-0001, Task Order 0002	CHECK ONE: __X__ THIS IS A NEW TRANSMITTAL ____ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SECTION NO. (cover only one section with each transmittal)	PROJECT TITLE AND LOCATION: Groundwater Monitoring Program, Former Nebraska Ordnance Plant, Mead, Nebraska		CHECK ONE: ___ FIO __X__ For Govt. Approval

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type, size, model number, etc.)* *b.*	MFG. OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction No. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*	FOR CONTRACTOR USE CODE *g.*	VARIATION *(See instruc. no. 6)* *h.*	FOR C E USE CODE *i.*
1	Quality Control Summary Report - Final		1 electronic					
	Fourth Quarter 2013 Water Supply Well Sampling Event							

REMARKS
Kristine Stein (USACE)
Jason L'Ecuyer (USACE)
Bradley Brink (USACE)
Kirk Boese (USACE)
Mead Library

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.
John Ryder, Denver Operations Group

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

FINAL
QUALITY CONTROL SUMMARY REPORT
FOURTH QUARTER 2013

WATER SUPPLY WELL PROGRAM SAMPLING EVENT

FORMER NEBRASKA ORDNANCE PLANT
MEAD, NEBRASKA

Prepared for

United States Army Corps of Engineers
Kansas City District

December 2013

This page intentionally left blank

1.0 INTRODUCTION

Water supply well sampling was conducted on November 6, 2013 at the former Nebraska Ordnance Plant, Mead, Nebraska. All sampling activities were performed in accordance with the *Site-Wide Work Plan, Revision 01, Support Services, Former Nebraska Ordnance Plant, Mead, Nebraska* (United States Army Corps of Engineers [USACE], 2013). This Quality Control Summary Report presents a summary of the chemical data quality review for the Fourth Quarter 2013 water supply well sampling event.

Samples were analyzed for the following constituents:

- Selected volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Drinking Water Method 524.2
- Selected explosives by EPA Method 8330

TestAmerica of South Burlington, Vermont performed the explosives analyses and TestAmerica of Savannah, Georgia performed the VOC analyses. Table 1-1 presents a list of the water supply wells planned for sample collection, the corresponding sample identification (ID) numbers, and the requested analyses for each sampled well. Appendix A includes associated chain of custody records. Appendix B presents an explanation of data validation qualifiers and drinking water standards and Appendix C contains a compact disk with analytical data package, including summary forms, and raw data, for the Fourth Quarter 2013 water supply well sampling event.

2.0 SAMPLING ACTIVITIES

The field sampling team collected samples for chemical analyses from one location during the Fourth Quarter 2013 water supply well sampling event. In addition, a field duplicate sample, a matrix spike (MS) / matrix spike duplicate (MSD) sample pair, and one trip blank were collected.

Table 2-1 provides the following information listed by date sampled and laboratory sample ID for ease of comparison to laboratory data packages and field notes:

- Field Sample IDs,
- MS/MSD sample information;
- Quality control (QC) split (Field Duplicate) sample information;
- Dates of sample collection and sample receipt by the laboratory;
- Laboratory Sample IDs;
- Laboratory sample delivery group numbers; and
- Requested analyses.

3.0 DATA QUALITY EVALUATION PROCEDURES

The following subsections present the data quality evaluation procedures performed in accordance with the *Mead Validation Guidelines*, (USACE, 2007). Both project specified limits and laboratory control limits were used to assess data quality.

There were no QC outliers for the VOC and explosives sample analyses and results qualifications were not required.

3.1 Sample Receipt at the Laboratory

All samples met the custodial possession and transfer requirements. The samples were received within the recommended temperature range of 4 ± 2 °C. Sample preservation was not indicated on the chain of custody; however, the case narrative stated that the samples were received properly preserved.

3.2 Holding Times

All extractions and analyses were performed within method-specific holding times.

3.3 Tuning and Calibration

According to the *Mead Validation Guidelines* (USACE, 2007), assessment of tune and calibration information is assessed using the laboratory case-narrative or summary forms. No deviations for the calibration and tuning of pertinent instrumentation were reported by the laboratory in the case narrative and evaluation of the calibration summary forms indicated that all project criteria were met.

3.4 Laboratory Method Blanks

A laboratory method blank is an analyte-free matrix that is carried through the entire preparation and analysis sequence for the purpose of identifying potential contamination introduced during preparation and analysis. Method blanks were analyzed for each sample batch for all analyses.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), detections are qualified as non-detect (U) if the concentration in the sample is less than 5 times the concentration in the associated blank. For common laboratory contaminants, detections are qualified as non-detect (U) if the concentration in the sample is less than 10 times the concentration in the associated blank. Sample results that are either non-detect (U), or greater than 5 or 10 times the blank result do not require qualification.

There were no detections of target analytes in the laboratory method blanks.

3.5 Trip Blanks

A trip blank is an analyte-free matrix that accompanies samples through the sample collection and transportation process to identify potential VOC contamination. In accordance with the *Mead Validation Guidelines*(USACE, 2007), detections are qualified as non-detect (U) if the concentration in the sample is less than 5 times the concentration in the associated blank (10 times for common laboratory contaminants). Sample results that are either non-detect (U), or greater than 5 times the blank result do not require qualification.

There were no detections of target analytes in the volatile trip blank.

3.6 Surrogates

Surrogates are compounds not normally found in the environment that are added (spiked) into samples prior to extraction (for extractable methods) or prior to analysis (for non-extractable methods). The percent recovery (% REC) of each surrogate is used to assess the success of the sample preparation process for an individual sample. Surrogates were analyzed for each sample batch for VOCs and explosives.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for associated analytes in the affected samples are J-coded for detects and UJ-coded for non-detects if the surrogate
% RECs are below the laboratory QC limits, but greater than 10%. Non-detects are R-coded if % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for associated analytes in the affected samples are J-coded for detects if the % RECs are greater than the QC limits. No action is required for non-detects.

All surrogate percent recoveries were within laboratory QC limits.

3.7 Laboratory Control Samples and Laboratory Control Sample Duplicates

A laboratory control sample (LCS) consists of a matrix, similar to that of the field sample, which is spiked with known concentrations of analytes. The LCS % REC is a measure of the accuracy of the preparation and analytical methods. The laboratory control sample duplicate (LCSD) is a duplicate preparation and analysis of the LCS. The differences between the LCS and LCSD recoveries are used to calculate the relative percent difference (RPD), which is a measure of the precision of the preparation and analytical methods. LCS samples were analyzed for each sample batch for all analyses.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the associated samples are J-coded for detects and UJ-coded for non-detects if the LCS % RECs are below the laboratory QC limits, but greater than 10%. Non-detects are R-coded if % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the associated samples are J-coded for detects if the % RECs are greater than the QC limits. No action is required for non-detects. Additionally, results for the affected analyte in the associated samples are J-coded for detects and UJ-coded for non-detects if the LCS/LCSD RPD exceeds 30%.

All LCS % RECs were within laboratory QC limits.

3.8 Matrix Spikes and Matrix Spike Duplicates

MS/MSD analyses measure method accuracy and precision for a project-specific matrix. A field sample is split into three portions (original, MS, and MSD) and known amounts of analytes are added (spiked) into the MS and MSD portions of the sample. The analytical results of these two

portions are compared to each other for reproducibility using the RPD. These results are also compared against the unspiked portion of the sample for % REC of the spiked analytes.

MS/MSD samples were analyzed for each sample delivery group for all analyses. MS/MSD results were provided for all analyses.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the parent sample are J-coded for detects and UJ-coded for non-detects if the MS/MSD % RECs are below the laboratory QC limits but greater than 10%. Non-detects are R-coded if % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the parent sample are J-coded for detects if the MS/MSD % RECs are greater than the QC limits. No action is required for non-detects.

All % RECs and RPDs were within laboratory QC limits.

3.9 Field Duplicates

Field duplicate analytical results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, preparing, and analyzing field samples. One field duplicate pair, 055-102013 / 255-102013, was collected this quarter and analyzed for both VOCs and explosives.

The field duplicate precision criteria (RPD of < 50%) was met in the duplicate pair. The VOC and explosive results were non-detects for the field duplicate samples. No sample qualifications were required based on field duplicate findings.

3.10 Dilutions and Re-analyses

No dilutions or re-analyses were required for this data set.

4.0 OVERALL ASSESSMENT

The following subsections present the field completeness, analytical completeness, and project completeness determinations for the Fourth Quarter 2013 water supply well sampling event.

4.1 Field Completeness

Field completeness for sample collection was assessed by comparing the number of samples properly collected to the number of samples planned for collection. Only one sample location was scheduled for VOC and explosive analysis sampling this quarter. This sample location, along with the appropriate QC samples, was collected as requested. Therefore, the field completeness for the VOCs and the field completeness for the explosives is 100%. The overall field completeness percentage is 100%, which exceeds the field completeness goal of 95%.

Section 2.0 presents the field sampling activities. Table 4-1 presents the field completeness.

4.2 Analytical Completeness

Acceptable data is a measure of laboratory contract compliance. Acceptable data includes data that has not been rejected or qualified as estimated (J). Qualified data is considered acceptable if no corrective actions by the laboratory are required or appropriate corrective actions were taken by the laboratory. The acceptable data completeness percentages for both the VOCs and explosives analyses are 100% which exceed the acceptable data completeness goals of 90% for each analytical method. Overall acceptable data completeness is 100%, which exceeds the overall acceptable data completeness goal of 95%.

Quality data is a measure of the percentage of usable data. Quality data includes all data except rejected data points, and does not include analyses for which replacement data points are available. Quality data completeness percentages for both the VOCs and explosives are 100%, as no sample results were rejected. These exceed the quality data completeness goals of 80% for each analytical method. Overall quality data completeness is also 100%, which exceeds the overall quality data completeness goal of 80%.

Table 4-2 presents acceptable and quality data completeness.

4.3 Project Completeness

Project completeness combines sampling and analytical protocols to assess the expectations of the project as a whole. Project completeness is determined by comparing the percentage of samples/measurements that are determined to be usable to the total number of samples/ measurements planned. Project completeness is calculated using the field completeness and analytical completeness (quality data) completeness percentages. Overall project completeness is 100%. The overall project completeness exceeds the project completeness goal of 90%.

Table 4-3 presents the project completeness percentages.

5.0 CONCLUSIONS

The data are acceptable. Overall quality data completeness is 100%. Overall acceptable data completeness is 100% and over all field completeness is 100%, both of which exceed project goals. The overall project completeness at 100% exceeds the project goal of 90%.

6.0 REFERENCES

USACE, 2007 *Mead Validation Guidelines*, (approved by the U.S. Army Corps of Engineers 2007)

USACE, 2013. *Site-Wide Work Plan, Revision 01, Support Services, Former Nebraska Ordnance Plant, Mead, Nebraska*. April.

This page intentionally left blank

Tables

This page intentionally left blank

List of Acronyms for Tables

Term	Definition
GC/MS	Gas chromatography–mass spectrometry
HPLC	high-performance liquid chromatography
ID	identification/identifier
Lab	laboratory
MS/MSD	matrix spike/matrix spike duplicate
SDG	sample delivery group
WSW	water supply well

This page intentionally left blank

Table 1-1
Sample Locations, Sample IDs, and Analyses
Fourth Quarter 2013 Water Supply Well Sampling Event
Former Nebraska Ordnance Plant

Sampling Locations	Sample IDs	Analyses
WSW-55	055-102013	Explosives, Volatiles

Notes:

Volatiles	E524.2	Volatile Organic Compounds by Purge & Trap Capillary Column GC/MS
Explosives	SW8330	Nitroaromatics and Nitramines by HPLC

This page intentionally left blank

Table 2-1
Sample Collection Summary
Fourth Quarter 2013 Water Supply Well Sampling Event
Former Nebraska Ordnance Plant

Field Samples	MS/MSD Samples	Field Duplicate Samples	Date Sampled	Date Received by Lab	Lab ID	SDG	Explosives	Volatiles
Field Samples								
055-102013	055-102013		11/6/2013	11/7/2013	200-19363-2	19363	•	•
		255-102013	11/6/2013	11/7/2013	200-19363-3	19363	•	•
Trip Blanks								
TRB-255-102013			11/6/2013	11/7/2013	200-19363-1	19363		•

Notes:

Volatiles	E524.2	Volatile Organic Compounds by Purge & Trap Capillary Column GC/MS
Explosives	SW8330	Nitroaromatics and Nitramines by HPLC

• = Requested for the indicated analyses

This page intentionally left blank

Table 4-1
Field Completeness
Fourth Quarter 2013 Water Supply Well Sampling Event
Former Nebraska Ordnance Plant, Mead, Nebraska

Analysis	Number of Samples Planned	Number of Samples Collected	Field Completeness
Explosives	2	2	100%
Volatiles	2	2	100%
Totals =	4	4	100%
Goal =			95%

Notes:
Number of Samples Planned includes field samples and field duplicate samples.

This page intentionally left blank

Table 4-2
Analytical Completeness
Fourth Quarter 2013 Water Supply Well Sampling Event
Former Nebraska Ordnance Plant, Mead, Nebraska

Analysis	Total Number of Parameters	Acceptable Data	Acceptable Data Completeness	Acceptable Data Completeness Goals	Quality Data	Quality Data Completeness	Quality Data Completeness Goals
Explosives (Analyte Count - 6)	12	12	100%	90%	12	100%	80%
Volatiles (Analyte Count - 6)	12	12	100%	90%	12	100%	80%
Totals =	24	24	100%	90%	24	100%	80%

Notes:

Total number of parameters includes field samples (includes data points from dilutions and/or reanalyses to be used in place of original data) and field duplicates (does not include field blanks or trip blanks).
Acceptable data includes data that has not been rejected or qualified as estimated (J/UJ). Data points for which the required corrective actions were taken or do not require corrective action do not count against the acceptable data completeness goal calculation (i.e., results exceeding the calibration range that were reanalyzed at dilutions within the calibration range).
Quality data is defined as all non-rejected data.

This page intentionally left blank

Table 4-3
Project Completeness
Fourth Quarter 2013 Water Supply Well Sampling Event
Former Nebraska Ordnance Plant, Mead, Nebraska

Field	Analytical	Project Completeness
100.0%	100.0%	100.0%
Project Completeness Goal =		90%

Notes:

Analytical Completeness is the percentage of usable data (i.e. quality data completeness).
Project Completeness combines sampling and analytical protocols to assess the expectations of the project as a whole. Project completeness is determined by comparing the percentage of samples / measurements that are determined to be usable to the total number of samples / measurements planned.

This page intentionally left blank

Appendix A
Chain of Custody Records

This page intentionally left blank

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 110613

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., ~~South Burlington, VT~~
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C
2	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace, HCL; 4 Degrees C

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8330 - Explosives 6 Compounds (1)	E524.2 - VOC DW (2)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
	[redacted]							FIELDQC	TB1	0.00	0.00
2	~~WSW~~-055-102013 MS	WG	11/6/2013	1000		X	[redacted]	WSW-55	MS1	0.00	0.00
3	~~WSW~~-055-102013	WG	11/6/2013	1000		X	[redacted]	WSW-55	N1	0.00	0.00
4	~~WSW~~-055-102013 MSD	WG	11/6/2013	1000		X	[redacted]	WSW-55	SD1	0.00	0.00
5	~~WSW~~-255-102013	WG	11/6/2013	1000		X	[redacted]	WSW-55	FD1	0.00	0.00

Cooler # 1 **Turnaround Time:**

200-19363 Chain of Custody

Relinquished by: *(Signature)*	Date	Time
Toby D [illegible]	11-6-13	1600

Received by: *(Signature)*	Date	Time
Steph Fowler [illegible]	11/7/13	915

Shipping Date / Carrier / Airbill Number
Fed-ex 7970 9293 3140

Recevied by Laboratory: *(Signature, Date, Time)* & condition

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 110613

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., ~~South Burlington, VT~~ Savannah, GA
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
~~WG~~	Ground Water
~~WQ~~	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C
2	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace, HCL; 4 Degrees C

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8330 - Explosives 6 Compounds (Analytical Test Method)	E524.2 - VOC DW (Analytical Test Method)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
						1	2				
1	TRB-255-102013	WQ	11/6/2013	1000			X	FIELDQC	TB1	0.00	0.00
2	~~WSW~~-055-102013 MS	WG	11/6/2013	1000			X	WSW-55	MS1	0.00	0.00
3	~~WSW~~-055-102013	WG	11/6/2013	1000			X	WSW-55	N1	0.00	0.00
4	~~WSW~~-055-102013 MSD	WG	11/6/2013	1000			X	WSW-55	SD1	0.00	0.00
5	~~WSW~~-255-102013	WG	11/6/2013	1000			X	WSW-55	FD1	0.00	0.00

Cooler # 1 **Turnaround Time:**

4.8°C

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
Toby [illegible]	11-6-13	1600	[illegible]	11/07/13	1001

Shipping Date / Carrier / Airbill Number: Fed-Ex 7970 9289 9125

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

Appendix B
Reference Sheet
Data Validation Qualifiers
Drinking Water Standards

This page intentionally left blank

Data Qualifiers and Drinking Water Standards Reference Sheet
Former Nebraska Ordnance Plant, Mead, Nebraska

Any qualifiers (i.e. U, J, or R) listed after a result are assigned during the data validation process. Data validation is a procedure which involves the review of quality control data provided by the laboratory. This review is followed by the assignment of data qualifiers (if necessary) which indicate the reliability of a result to the reader. Data validation is performed by a chemist employed outside of the laboratory or associated government installations to ensure accuracy in data reporting. A description of qualifiers is provided below.

No qualifier

- If a result has no assigned qualifier, the contaminant was detected, and the reader can be confident that the concentration is exact.

"U"

- A result followed by a "U" qualifier means that the contaminant was undetected, or not detected by the instrument.

"UJ"

- A result followed by a "UJ" qualifier means that the contaminant was not detected, but the associated detection level is not certain (estimated). For example, if a value is followed by a "UJ", the contaminant was not detected, but the associated detection level is in question. The detection level is in question because one or more of the laboratory quality control indicators do not meet acceptance criteria. The amount that the indicator fell outside of the criteria may be used as a rough estimate of how much the actual detection level differs from the stated one. Typically, this is a 10-30% difference.

"UR"

- A result followed by a "UR" qualifier means that the contaminant was not detected, but there is strong doubt that the associated detection level is accurate. For example, if a value is followed by a "UR", the contaminant was not detected, but the associated detection level is in strong doubt. The detection level is in doubt because results are unacceptable for a quality control indicator. In this case, the detection level cannot be estimated.

"J"

- A result followed by only a "J" qualifier means that the contaminant was detected, but there is some question that the stated concentration is exact. For example, if a result is "0.5 J", the contaminant was detected, but there is some question that the concentration is exactly 0.5. A "J" qualifier may be applied for two reasons: (1) the contaminant was detected below the reporting limit; or (2) the contaminant was detected, but one or more quality control indicators did not meet acceptance criteria. The reporting limit is equal to the concentration of the lowest standard used by the laboratory to calibrate the instrument. The reporting limit is the minimum concentration that can be stated with complete confidence.

“R”

- A result followed by only an “R” qualifier means that the contaminant was detected, but there is strong doubt that the concentration is exact. For example, if a result is “0.5 R”, the contaminant was detected, but there is strong doubt that the concentration is exactly 0.5. The concentration is in doubt because results are unacceptable for a quality control indicator. In this case, the detected concentration cannot be estimated. For comparison purposes, detected results are reported in the results letters with available Environmental Protection Agency drinking water standards. These standards include the maximum contaminant level (MCL) and various health advisories (HA). A description of the drinking water standards is provided below.

“MCL”

- The maximum contaminant level is the highest concentration of a contaminant that is allowed in drinking water. Maximum contaminant levels are enforceable Federal standards.

“HA”

- Health advisories provide estimates of acceptable drinking water concentrations for a chemical substance based on health effects information. Health advisories are not enforceable Federal standards, but serve as a technical guidance to assist Federal, State, and local officials.

Appendix C
Analytical Results on Compact Disc Summary Forms and Raw Data

ANALYTICAL REPORT

Job Number: 200-19363-1

SDG Number: 19363

Job Description: MEAD FNOP

For:
Environmental Chemical Corp.
1746 Cole Bouldevard
Building 21, Suite 350
Lakewood, CO 80401

Attention: Mr. John Ryder

Approved for release.
James W Madison
Senior Project Manager
11/25/2013 9:30 AM

James W Madison, Senior Project Manager
30 Community Drive, South Burlington, VT, 05403
(802)660-1990
jim.madison@testamericainc.com
11/25/2013

cc: Ms. Huison Chang
Toby Hinz
Ms. Dianne McNeill

The test results in this report relate only to sample(s) as received by the laboratory. These test results were derived under a quality system that adheres to the requirements of NELAC. Pursuant to NELAC, this report may not be produced in full without written approval from the laboratory

CASE NARRATIVE

Client: Environmental Chemical Corp.

Project: MEAD FNOP

Report Number: 200-19363-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 11/07/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.0 C.

DRINKING WATER VOLATILES (GC-MS)

Samples TRB-255-102013, 055-102013 and 255-102013 were analyzed for drinking water volatiles (GC-MS) in accordance with EPA Method 524.2. The samples were analyzed on 11/11/2013.

No difficulties were encountered during the volatiles analysis.

All quality control parameters were within the acceptance limits.

NITROAROMATICS AND NITRAMINES (HPLC)

Samples 055-102013 and 255-102013 were analyzed for Nitroaromatics and Nitramines (HPLC) in accordance with EPA SW-846 Method 8330B. The samples were prepared and analyzed on 11/11/2013.

No difficulties were encountered during the explosives analysis.

All quality control parameters were within the acceptance limits.

METHOD SUMMARY

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Nitroaromatics and Nitramines (HPLC)	TAL BUR	SW846 8330B	
Solid-Phase Extraction (Explosives)	TAL BUR		SW846 8330-Prep
Volatile Organic Compounds (GC/MS)	TAL SAV	EPA-DW 524.2	

Lab References:

TAL BUR = TestAmerica Burlington

TAL SAV = TestAmerica Savannah

Method References:

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Method	Analyst	Analyst ID
EPA-DW 524.2	Cowart, Judson	WJC
SW846 8330B	Robinson, Wallace B	WBR

SAMPLE SUMMARY

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
200-19363-1	TRB-255-102013	Water	11/06/2013 1000	11/07/2013 0915
200-19363-2	055-102013	Water	11/06/2013 1000	11/07/2013 0915
200-19363-2MS	055-102013	Water	11/06/2013 1000	11/07/2013 0915
200-19363-2MSD	055-102013	Water	11/06/2013 1000	11/07/2013 0915
200-19363-3	255-102013	Water	11/06/2013 1000	11/07/2013 0915

SAMPLE RESULTS

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Client Sample ID: **TRB-255-102013**

Lab Sample ID: 200-19363-1
Client Matrix: Water

Date Sampled: 11/06/2013 1000
Date Received: 11/07/2013 0915

524.2 Volatile Organic Compounds (GC/MS)

Analysis Method:	524.2	Analysis Batch:	680-302640	Instrument ID:	CMSU
	N/A	Prep Batch:	N/A	Lab File ID:	UK1109.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	11/11/2013 1704			Final Weight/Volume:	5 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	DL	LOQ
cis-1,2-Dichloroethene	0.37	U	0.37	0.50
trans-1,2-Dichloroethene	0.24	U	0.24	0.50
1,2-Dichloropropane	0.45	U	0.45	0.50
Methylene Chloride	0.36	U	0.36	0.50
Vinyl chloride	0.33	U	0.33	0.50
Trichloroethene	0.37	U	0.37	0.50

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichlorobenzene-d4	93		70 - 130
4-Bromofluorobenzene	90		70 - 130

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Client Sample ID: **055-102013**

Lab Sample ID: 200-19363-2
Client Matrix: Water

Date Sampled: 11/06/2013 1000
Date Received: 11/07/2013 0915

524.2 Volatile Organic Compounds (GC/MS)

Analysis Method:	524.2	Analysis Batch:	680-302640	Instrument ID:	CMSU
	N/A	Prep Batch:	N/A	Lab File ID:	UK1112.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	11/11/2013 1825			Final Weight/Volume:	5 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	DL	LOQ
cis-1,2-Dichloroethene	0.37	U	0.37	0.50
trans-1,2-Dichloroethene	0.24	U	0.24	0.50
1,2-Dichloropropane	0.45	U	0.45	0.50
Methylene Chloride	0.36	U	0.36	0.50
Vinyl chloride	0.33	U	0.33	0.50
Trichloroethene	0.37	U	0.37	0.50

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichlorobenzene-d4	92		70 - 130
4-Bromofluorobenzene	89		70 - 130

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Client Sample ID: **255-102013**

Lab Sample ID: 200-19363-3
Client Matrix: Water

Date Sampled: 11/06/2013 1000
Date Received: 11/07/2013 0915

524.2 Volatile Organic Compounds (GC/MS)

Analysis Method:	524.2	Analysis Batch:	680-302640	Instrument ID:	CMSU
	N/A	Prep Batch:	N/A	Lab File ID:	UK1113.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	11/11/2013 1852			Final Weight/Volume:	5 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	DL	LOQ
cis-1,2-Dichloroethene	0.37	U	0.37	0.50
trans-1,2-Dichloroethene	0.24	U	0.24	0.50
1,2-Dichloropropane	0.45	U	0.45	0.50
Methylene Chloride	0.36	U	0.36	0.50
Vinyl chloride	0.33	U	0.33	0.50
Trichloroethene	0.37	U	0.37	0.50

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichlorobenzene-d4	93		70 - 130
4-Bromofluorobenzene	88		70 - 130

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Client Sample ID: **055-102013**

Lab Sample ID: 200-19363-2
Client Matrix: Water

Date Sampled: 11/06/2013 1000
Date Received: 11/07/2013 0915

8330B Nitroaromatics and Nitramines (HPLC)

Analysis Method:	8330B	Analysis Batch:	200-64127	Instrument ID:	CH1488
Prep Method:	8330-Prep	Prep Batch:	200-64097	Initial Weight/Volume:	250 mL
Dilution:	1.0			Final Weight/Volume:	10000 uL
Analysis Date:	11/11/2013 2157			Injection Volume:	450 uL
Prep Date:	11/11/2013 1023			Result Type:	SECONDARY

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dinitrobenzene	96	M	70 - 115

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Client Sample ID: **055-102013**

Lab Sample ID: 200-19363-2
Client Matrix: Water

Date Sampled: 11/06/2013 1000
Date Received: 11/07/2013 0915

8330B Nitroaromatics and Nitramines (HPLC)

Analysis Method:	8330B	Analysis Batch:	200-64124	Instrument ID:	CH1208
Prep Method:	8330-Prep	Prep Batch:	200-64097	Initial Weight/Volume:	250 mL
Dilution:	1.0			Final Weight/Volume:	10000 uL
Analysis Date:	11/11/2013 2233			Injection Volume:	150 uL
Prep Date:	11/11/2013 1023			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	DL	LOQ
RDX	0.096	U	0.088	0.40
1,3,5-Trinitrobenzene	0.048	U	0.016	0.40
2,4,6-Trinitrotoluene	0.096	U	0.046	0.40
4-Amino-2,6-dinitrotoluene	0.048	U	0.044	0.40
2-Amino-4,6-dinitrotoluene	0.096	U M	0.042	0.40
2,4-Dinitrotoluene	0.096	U	0.092	0.40

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dinitrobenzene	91		70 - 115

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Client Sample ID: **255-102013**

Lab Sample ID: 200-19363-3
Client Matrix: Water

Date Sampled: 11/06/2013 1000
Date Received: 11/07/2013 0915

8330B Nitroaromatics and Nitramines (HPLC)

Analysis Method:	8330B	Analysis Batch:	200-64127	Instrument ID:	CH1488
Prep Method:	8330-Prep	Prep Batch:	200-64097	Initial Weight/Volume:	250 mL
Dilution:	1.0			Final Weight/Volume:	10000 uL
Analysis Date:	11/11/2013 2232			Injection Volume:	450 uL
Prep Date:	11/11/2013 1023			Result Type:	SECONDARY

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dinitrobenzene	90	M	70 - 115

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Client Sample ID: **255-102013**

Lab Sample ID: 200-19363-3
Client Matrix: Water

Date Sampled: 11/06/2013 1000
Date Received: 11/07/2013 0915

8330B Nitroaromatics and Nitramines (HPLC)

Analysis Method:	8330B	Analysis Batch:	200-64124	Instrument ID:	CH1208
Prep Method:	8330-Prep	Prep Batch:	200-64097	Initial Weight/Volume:	250 mL
Dilution:	1.0			Final Weight/Volume:	10000 uL
Analysis Date:	11/11/2013 2311			Injection Volume:	150 uL
Prep Date:	11/11/2013 1023			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	DL	LOQ
RDX	0.096	U	0.088	0.40
1,3,5-Trinitrobenzene	0.048	U	0.016	0.40
2,4,6-Trinitrotoluene	0.096	U	0.046	0.40
4-Amino-2,6-dinitrotoluene	0.048	U	0.044	0.40
2-Amino-4,6-dinitrotoluene	0.096	U M	0.042	0.40
2,4-Dinitrotoluene	0.096	U	0.092	0.40

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dinitrobenzene	87		70 - 115

DATA REPORTING QUALIFIERS

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Lab Section	Qualifier	Description
GC/MS VOA		
	U	Undetected at the Limit of Detection.
HPLC/IC		
	J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
	M	Manual integrated compound.
	U	Undetected at the Limit of Detection.

QUALITY CONTROL RESULTS

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:680-302640					
LCS 680-302640/3	Lab Control Sample	T	Water	524.2	
LCSD 680-302640/4	Lab Control Sample Duplicate	T	Water	524.2	
MB 680-302640/6	Method Blank	T	Water	524.2	
200-19363-1	TRB-255-102013	T	Water	524.2	
200-19363-2	055-102013	T	Water	524.2	
200-19363-3	255-102013	T	Water	524.2	
Analysis Batch:680-302805					
LCS 680-302805/3	Lab Control Sample	T	Water	524.2	
LCSD 680-302805/4	Lab Control Sample Duplicate	T	Water	524.2	
MB 680-302805/8	Method Blank	T	Water	524.2	
200-19363-2MS	Matrix Spike	T	Water	524.2	
200-19363-2MSD	Matrix Spike Duplicate	T	Water	524.2	

Report Basis
T = Total

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
HPLC/IC					
Prep Batch: 200-64097					
LCS 200-64097/2-A	Lab Control Sample	T	Water	8330-Prep	
MB 200-64097/1-A	Method Blank	T	Water	8330-Prep	
200-19363-2	055-102013	T	Water	8330-Prep	
200-19363-2MS	Matrix Spike	T	Water	8330-Prep	
200-19363-2MSD	Matrix Spike Duplicate	T	Water	8330-Prep	
200-19363-3	255-102013	T	Water	8330-Prep	
Analysis Batch:200-64124					
LCS 200-64097/2-A	Lab Control Sample	T	Water	8330B	200-64097
MB 200-64097/1-A	Method Blank	T	Water	8330B	200-64097
200-19363-2	055-102013	T	Water	8330B	200-64097
200-19363-2MS	Matrix Spike	T	Water	8330B	200-64097
200-19363-2MSD	Matrix Spike Duplicate	T	Water	8330B	200-64097
200-19363-3	255-102013	T	Water	8330B	200-64097
Analysis Batch:200-64127					
LCS 200-64097/2-A	Lab Control Sample	T	Water	8330B	200-64097
MB 200-64097/1-A	Method Blank	T	Water	8330B	200-64097
200-19363-2	055-102013	T	Water	8330B	200-64097
200-19363-2MS	Matrix Spike	T	Water	8330B	200-64097
200-19363-2MSD	Matrix Spike Duplicate	T	Water	8330B	200-64097
200-19363-3	255-102013	T	Water	8330B	200-64097

Report Basis
T = Total

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Surrogate Recovery Report

8330B Nitroaromatics and Nitramines (HPLC)

Client Matrix: Water

Lab Sample ID	Client Sample ID	12DNB1 %Rec	12DNB2 %Rec
200-19363-2	055-102013	91	
200-19363-2	055-102013		96M
200-19363-3	255-102013	87	
200-19363-3	255-102013		90M
MB 200-64097/1-A		82	
MB 200-64097/1-A			87
LCS 200-64097/2-A		98	
LCS 200-64097/2-A			101
200-19363-2 MS	055-102013 MS	100	
200-19363-2 MS	055-102013 MS		101
200-19363-2 MSD	055-102013 MSD	90	
200-19363-2 MSD	055-102013 MSD		92

Surrogate	Acceptance Limits
12DNB = 1,2-Dinitrobenzene	70-115

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Surrogate Recovery Report

524.2 Volatile Organic Compounds (GC/MS)

Client Matrix: Water

Lab Sample ID	Client Sample ID	DCZ %Rec	BFB %Rec
200-19363-1	TRB-255-102013	93	90
200-19363-2	055-102013	92	89
200-19363-3	255-102013	93	88
MB 680-302640/6		101	97
MB 680-302805/8		86	93
LCS 680-302640/3		105	102
LCS 680-302805/3		105	102
LCSD 680-302640/4		101	97
LCSD 680-302805/4		98	101
200-19363-2 MS	055-102013 MS	99	101
200-19363-2 MSD	055-102013 MSD	101	102

Surrogate	Acceptance Limits
DCZ = 1,2-Dichlorobenzene-d4	70-130
BFB = 4-Bromofluorobenzene	70-130

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Method Blank - Batch: 680-302640

Method: 524.2
Preparation: N/A

Lab Sample ID:	MB 680-302640/6	Analysis Batch:	680-302640	Instrument ID:	CMSU
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	UK1106q.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	11/11/2013 1543	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	DL	LOQ
cis-1,2-Dichloroethene	0.37	U	0.37	0.50
trans-1,2-Dichloroethene	0.24	U	0.24	0.50
1,2-Dichloropropane	0.45	U	0.45	0.50
Methylene Chloride	0.36	U	0.36	0.50
Vinyl chloride	0.33	U	0.33	0.50
Trichloroethene	0.37	U	0.37	0.50

Surrogate	% Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	101	70 - 130
4-Bromofluorobenzene	97	70 - 130

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-302640

Method: 524.2
Preparation: N/A

LCS Lab Sample ID:	LCS 680-302640/3	Analysis Batch:	680-302640	Instrument ID:	CMSU
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	UK1103q.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	11/11/2013 1421	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 680-302640/4	Analysis Batch:	680-302640	Instrument ID:	CMSU
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	UK1104q.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	11/11/2013 1449	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
cis-1,2-Dichloroethene	94	90	70 - 130	4	30		
trans-1,2-Dichloroethene	92	92	70 - 130	1	30		
1,2-Dichloropropane	93	89	70 - 130	5	30		
Methylene Chloride	92	88	70 - 130	4	30		
Vinyl chloride	113	111	70 - 130	2	30		
Trichloroethene	103	100	70 - 130	2	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	105	101	70 - 130
4-Bromofluorobenzene	102	97	70 - 130

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Method Blank - Batch: 680-302805

Method: 524.2
Preparation: N/A

Lab Sample ID:	MB 680-302805/8	Analysis Batch:	680-302805	Instrument ID:	CMSS
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	sk1208q.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	11/12/2013 1605	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	DL	LOQ
cis-1,2-Dichloroethene	0.37	U	0.37	0.50
trans-1,2-Dichloroethene	0.24	U	0.24	0.50
1,2-Dichloropropane	0.45	U	0.45	0.50
Methylene Chloride	0.36	U	0.36	0.50
Vinyl chloride	0.33	U	0.33	0.50
Trichloroethene	0.37	U	0.37	0.50

Surrogate	% Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	86	70 - 130
4-Bromofluorobenzene	93	70 - 130

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 680-302805

Method: 524.2
Preparation: N/A

LCS Lab Sample ID:	LCS 680-302805/3	Analysis Batch:	680-302805	Instrument ID:	CMSS
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	sk1203q.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	11/12/2013 1409	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 680-302805/4	Analysis Batch:	680-302805	Instrument ID:	CMSS
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	sk1204q.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	11/12/2013 1432	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
cis-1,2-Dichloroethene	103	100	70 - 130	3	30		
trans-1,2-Dichloroethene	93	97	70 - 130	3	30		
1,2-Dichloropropane	95	90	70 - 130	5	30		
Methylene Chloride	99	96	70 - 130	3	30		
Vinyl chloride	107	109	70 - 130	2	30		
Trichloroethene	95	93	70 - 130	2	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	105	98	70 - 130
4-Bromofluorobenzene	102	101	70 - 130

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 680-302805

Method: 524.2
Preparation: N/A

MS Lab Sample ID:	200-19363-2	Analysis Batch:	680-302805	Instrument ID:	CMSS
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	sk1229.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	11/13/2013 0010			Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	200-19363-2	Analysis Batch:	680-302805	Instrument ID:	CMSS
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	sk1230.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	11/13/2013 0033			Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
cis-1,2-Dichloroethene	94	94	70 - 130	0	30		
trans-1,2-Dichloroethene	91	92	70 - 130	0	30		
1,2-Dichloropropane	85	90	70 - 130	7	30		
Methylene Chloride	90	92	70 - 130	3	30		
Vinyl chloride	106	108	70 - 130	2	30		
Trichloroethene	90	93	70 - 130	4	30		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dichlorobenzene-d4	99	101	70 - 130
4-Bromofluorobenzene	101	102	70 - 130

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Surrogate	% Rec	Acceptance Limits
1,2-Dinitrobenzene	87	70 - 115

Method Blank - Batch: 200-64097

Method: 8330B
Preparation: 8330-Prep

Lab Sample ID:	MB 200-64097/1-A	Analysis Batch:	200-64124	Instrument ID:	CH1208
Client Matrix:	Water	Prep Batch:	200-64097	Lab File ID:	PAEGR003.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	500 mL
Analysis Date:	11/11/2013 1656	Units:	ug/L	Final Weight/Volume:	10000 uL
Prep Date:	11/11/2013 1023			Injection Volume:	150 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	DL	LOQ
RDX	0.048	U	0.044	0.20
1,3,5-Trinitrobenzene	0.024	U	0.0080	0.20
2,4,6-Trinitrotoluene	0.048	U	0.023	0.20
4-Amino-2,6-dinitrotoluene	0.024	U	0.022	0.20
2-Amino-4,6-dinitrotoluene	0.048	U M	0.021	0.20
2,4-Dinitrotoluene	0.048	U	0.046	0.20

Surrogate	% Rec	Acceptance Limits
1,2-Dinitrobenzene	82	70 - 115

Surrogate	% Rec	Acceptance Limits
1,2-Dinitrobenzene	101	70 - 115

Lab Control Sample - Batch: 200-64097

Method: 8330B
Preparation: 8330-Prep

Lab Sample ID:	LCS 200-64097/2-A	Analysis Batch:	200-64124	Instrument ID:	CH1208
Client Matrix:	Water	Prep Batch:	200-64097	Lab File ID:	PAEGR004.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	500 mL
Analysis Date:	11/11/2013 1733	Units:	ug/L	Final Weight/Volume:	10000 uL
Prep Date:	11/11/2013 1023			Injection Volume:	150 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
RDX	4.00	3.92	98	70 - 115	
1,3,5-Trinitrobenzene	4.00	3.87	97	65 - 110	
2,4,6-Trinitrotoluene	4.00	3.72	93	70 - 115	
4-Amino-2,6-dinitrotoluene	4.00	3.75	94	70 - 115	
2-Amino-4,6-dinitrotoluene	4.00	3.75	94	70 - 115	
2,4-Dinitrotoluene	4.00	3.83	96	70 - 115	J

Surrogate	% Rec	Acceptance Limits
1,2-Dinitrobenzene	98	70 - 115

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
Sdg Number: 19363

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dinitrobenzene	101	92	70 - 115

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 200-64097

Method: 8330B
Preparation: 8330-Prep

MS Lab Sample ID:	200-19363-2	Analysis Batch:	200-64124	Instrument ID:	CH1208
Client Matrix:	Water	Prep Batch:	200-64097	Lab File ID:	PAEGR014.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	250 mL
Analysis Date:	11/11/2013 2348			Final Weight/Volume:	10000 uL
Prep Date:	11/11/2013 1023			Injection Volume:	150 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	200-19363-2	Analysis Batch:	200-64124	Instrument ID:	CH1208
Client Matrix:	Water	Prep Batch:	200-64097	Lab File ID:	PAEGR015.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	250 mL
Analysis Date:	11/12/2013 0025			Final Weight/Volume:	10000 uL
Prep Date:	11/11/2013 1023			Injection Volume:	150 uL
Leach Date:	N/A			Column ID:	PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
RDX	100	99	70 - 115	1	20		
1,3,5-Trinitrobenzene	98	97	65 - 110	1	20		
2,4,6-Trinitrotoluene	97	92	70 - 115	5	20	M	
4-Amino-2,6-dinitrotoluene	99	99	70 - 115	1	20	M	M
2-Amino-4,6-dinitrotoluene	100	99	70 - 115	1	20	M	M
2,4-Dinitrotoluene	102	102	70 - 115	0	20	M J	M J

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dinitrobenzene	100	90	70 - 115

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 110613

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., ~~South Burlington, VT~~
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C
2	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace, HCL; 4 Degrees C

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8330 - Explosives 6 Compounds (1)	E524.2 - VOC DW (2)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
	[redacted]							FIELDQC	TB1	0.00	0.00
2	~~WSW~~-055-102013 MS	WG	11/6/2013	1000		X	[redacted]	WSW-55	MS1	0.00	0.00
3	~~WSW~~-055-102013	WG	11/6/2013	1000		X	[redacted]	WSW-55	N1	0.00	0.00
4	~~WSW~~-055-102013 MSD	WG	11/6/2013	1000		X	[redacted]	WSW-55	SD1	0.00	0.00
5	~~WSW~~-255-102013	WG	11/6/2013	1000		X	[redacted]	WSW-55	FD1	0.00	0.00

Cooler # 1 **Turnaround Time:**

200-19363 Chain of Custody

Relinquished by: *(Signature)*	Date	Time
Toby D [illegible]	11-6-13	1600

Received by: *(Signature)*	Date	Time
Steph Fowler TASUL	11/7/13	915

Shipping Date / Carrier / Airbill Number

Fed-ex 7970 9293 3140

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 110613

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., ~~South Burlington, VT~~ Savannah, GA
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Code	Matrix
~~WG~~	Ground Water
~~WQ~~	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C
2	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace, HCL; 4 Degrees C

Event: Fourth Quarter 2013

	Sample ID	Matrix	Date	Time	Samp Init.	SW8330 - Explosives 6 Compounds (1)	E524.2 - VOC DW (2)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
1	TRB-255-102013	WQ	11/6/2013	1000		[redacted]	X	FIELDQC	TB1	0.00	0.00
2	~~WSW~~-055-102013 MS	WG	11/6/2013	1000		[redacted]	X	WSW-55	MS1	0.00	0.00
3	~~WSW~~-055-102013	WG	11/6/2013	1000		[redacted]	X	WSW-55	N1	0.00	0.00
4	~~WSW~~-055-102013 MSD	WG	11/6/2013	1000		[redacted]	X	WSW-55	SD1	0.00	0.00
5	~~WSW~~-255-102013	WG	11/6/2013	1000		[redacted]	X	WSW-55	FD1	0.00	0.00

Cooler # 1 **Turnaround Time:**

4.8°C

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
Toby [illegible]	11-6-13	1600	[illegible]	11/07/13	1001

Shipping Date / Carrier / Airbill Number: Fed-Ex 7970 9289 9125

Recevied by Laboratory: *(Signature, Date, Time)* **& condition**

From: (402) 202-1645
TOBY D. HINZ
ECC
905 Co. Rd. 6

ASHLAND, NE 68003

Origin ID: LNKA

FedEx Express

J13201306280326

Ship Date: 06NOV13
ActWgt: 27.0 LB
CAD: 102725188/INET3430

Dims: 20 X 12 X 14 IN

Delivery Address Bar Code

Ref #
Invoice #
PO #
Dept #

SHIP TO: (802) 923-1028 BILL SENDER

Jim Madison
Test America
30 COMMUNITY DR STE 11

SOUTH BURLINGTON, VT 05403

RELEASE#: 3785346

THU - 07 NOV 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7970 9293 3640**

XH BTVA

05403
VT-US
BTV

51AG1/D5E6/1A9E

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

CHAIN-OF-CUSTODY RECORD

Environmental Chemical Corporation
John Ryder
1746 Cole Boulevard, Building 21, Suite 350, Lakewood, CO 80401
(303) 590-1157, add extension jryder@ecc.net

COC # 110613

Project Name: Former Nebraska Ordnance Plant	Laboratory: TestAmerica, Inc., ~~South Burlington, VT~~
Project Number: FNOP01	Point of contact: Jim Madison (802) 660-1990
WBS Code:	Ship to: 30 Community Drive, Suite 11, South Burlington, VT 05403

Comments:

Equipment:

Analytical Test Method

	SW8330 - Explosives 6 Compounds	E524.2 - VOC DW
Event: Fourth Quarter 2013	1	2

Code	Matrix
WG	Ground Water
WQ	WATER QUALITY CONTROL MATRIX

Code	Container/Preservative
1	2* 2 X 250 mL Amber Glass Bottles, 4 Degrees C
2	3* 3 X 40 mL glass VOC vials w/Teflon-lined septa cap with no headspace, HCL; 4 Degrees C

	Sample ID	Matrix	Date	Time	Samp Init.			Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom
	[redacted]							FIELDQC	TB1	0.00	0.00
2	~~WSW~~-055-102013 MS	WG	11/6/2013	1000		X		WSW-55	MS1	0.00	0.00
3	~~WSW~~-055-102013	WG	11/6/2013	1000		X		WSW-55	N1	0.00	0.00
4	~~WSW~~-055-102013 MSD	WG	11/6/2013	1000		X		WSW-55	SD1	0.00	0.00
5	~~WSW~~-255-102013	WG	11/6/2013	1000		X		WSW-55	FD1	0.00	0.00
Cooler # 1		**Turnaround Time:**									

200-19363 Chain of Custody

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
Toby D [illegible]	11-6-13	1600	Steph Fuchs [illegible]	11/7/13	915

Shipping Date / Carrier / Airbill Number
Fed-ex 7970 9293 3140

Recevied by Laboratory: *(Signature, Date, Time)* & condition

From: (402) 202-1645
TOBY D. HINZ
ECC
905 Co. Rd. 6

ASHLAND, NE 68003

Origin ID: LNKA

FedEx Express

J13201306280326

Ship Date: 06NOV13
ActWgt: 27.0 LB
CAD: 102725188/INET3430

Dims: 20 X 12 X 14 IN

Delivery Address Bar Code

SHIP TO: (802) 923-1028 BILL SENDER

Jim Madison
Test America
30 COMMUNITY DR STE 11

SOUTH BURLINGTON, VT 05403

Ref #
Invoice #
PO #
Dept #

RELEASE#: 3785346

THU - 07 NOV 10:30A
PRIORITY OVERNIGHT

TRK# 7970 9293 3640
0201

XH BTVA

05403
VT-US
BTV

51AG1/05E6/1A9E

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Login Sample Receipt Checklist

Client: Environmental Chemical Corp.

Job Number: 200-19363-1
SDG Number: 19363

Login Number: 19363
List Number: 1
Creator: Gagne, Eric M

List Source: TestAmerica Burlington

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	NO NUMBERS
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.0ºC. IR GUN ID 181. CF +0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX F

Quality Control Summary Report Fourth Quarter 2013 Operations and Maintenance Sampling Events

This page was intentionally left blank.

Regional Office

1746 Cole Boulevard
Building 21, Suite 350
Lakewood, CO 80401

Phone: 303.298.7607
Fax: 303.298.7837

December 26, 2013

U.S. Army Corps of Engineers, Kansas City District
Attn: Jacqy Frazier
601 East 12th Street
Kansas City, MO 64106-2896

Re: Transmittal of the Final Quality Control Summary Report
Fourth Quarter 2013 Operations and Maintenance Sampling Events
Former Nebraska Ordnance Plant, Mead, Nebraska
Contract No. W912DQ-08-D-0001, Task Order No. 0002

Dear Ms. Frazier:

ECC is hereby transmitting one electronic copy of the Final Quality Control Summary Report for the Fourth Quarter 2013 Operations and Maintenance Sampling Events at the former Nebraska Ordnance Plant, Mead, Nebraska.

Please contact Mr. Brady Bigelow or me if you require additional information.

Sincerely,

John Ryder
Project Chemist
ECC

Enclosures
cc: Ms. Kristine Stein (USACE)
Mr. Jason L'Ecuyer (USACE)
Mr. Bradley Brink (USACE)
Mr. Kirk Boese (USACE)

Corporate Office

1240 Bayshore Highway
Burlingame, CA 94010

Phone: 650.347.1555
Fax: 650.347.8789
www.ecc.net

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE: December 26, 2013]	TRANSMITTAL NO. 2013-109

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by contractor)

Attn: Jacqy Frazier USACE, Kansas City District 601 E. 12th St. Kansas City, MO 64106-2896	FROM: John Ryder ECC 1746 Cole Blvd, Bldg 21, Lakewood, CO 80401	CONTRACT NO. W912DQ-08-D-0001, Task Order 0002	CHECK ONE: __X__ THIS IS A NEW TRANSMITTAL ____ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SECTION NO. (cover only one section with each transmittal)	PROJECT TITLE AND LOCATION: Groundwater Monitoring Program, Former Nebraska Ordnance Plant, Mead, Nebraska		CHECK ONE: ___ FIO __X__ For Govt. Approval

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type, size, model number, etc.)* *b.*	MFG. OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction No. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*	FOR CONTRACTOR USE CODE *g.*	VARIATION *(See instruc. no. 6)* *h.*	FOR C E USE CODE *i.*
1	Quality Control Summary Report -Final		1 electronic					
	Fourth Quarter 2013 Operations and Maintenance Sampling Events							

REMARKS
Kristine Stein (USACE)
Jason L'Ecuyer (USACE)
Bradley Brink (USACE)
Kirk Boese (USACE)
Mead Library

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.
John Ryder, Denver Operations Group

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

FINAL
QUALITY CONTROL SUMMARY REPORT
FOURTH QUARTER 2013

OPERATIONS AND MAINTENANCE PROGRAM
SAMPLING EVENTS

FORMER NEBRASKA ORDNANCE PLANT
MEAD, NEBRASKA

Prepared for

United States Army Corps of Engineers
Kansas City District

December 2013

This page intentionally left blank

Quality Control Summary Report
Fourth Quarter 2013 Operations and Maintenance Sampling Events
Former Nebraska Ordnance Plant
Mead, Nebraska

1.0 INTRODUCTION

Sampling was conducted at the Main Groundwater Treatment Plant (GTP), Load Line (LL) 1 GTP, LL4 GTP, Groundwater Circulation Well (GCW) 1, and the Advanced Oxidation Process (AOP) GTP for the Operations and Maintenance (O&M) program at the former Nebraska Ordnance Plant, near Mead, Nebraska. Sampling activities were performed in accordance with the *Site Wide Work Plan, Revision 01, Support Services, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska* (United States Army Corps of Engineers [USACE], 2013). This Quality Control Summary Report is a summary of the chemical data quality review for the Fourth Quarter 2013 O&M monthly sampling events.

TestAmerica analyzed the samples for one or more of the following constituents:

- Volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Solid Waste (SW)-846 Method 8260B;
- Trichloroethene (TCE) by EPA Compendium Method Toxic Organic (TO)-15;
- Explosives by EPA SW-846 Method 8330; and
- Nitrate by SW-846 Method 9056.

TestAmerica of South Burlington, Vermont performed the VOCs and explosives analyses. TestAmerica of Denver, Colorado performed the nitrate analyses.

Table 1-1 lists the sample locations, the corresponding sample identifications (IDs), and the requested analyses for the Fourth Quarter 2013 O&M sampling event.

The chain-of-custody and field notes are included as Appendices A and B, respectively. Appendix C presents an explanation of data validation qualifiers and drinking water standards. Appendix D contains a compact disk with all analytical data.

2.0 FIELD SAMPLING ACTIVITIES

The field sampling team collected the following field samples during the Fourth Quarter 2013 O&M sampling events:

- One water sample from each of the following extraction wells (EW) and focused extraction wells (FEW): EW-1R, EW-4, EW-5, EW-7, EW-9, and FEW-14.
- One water sample from EW-12 and EW-17 during each month of this quarter.

- One influent and one effluent water sample from EW-4, EW-7, EW-9, and FEW-14 for the ultraviolet (UV) photolysis study in December 2013.
- One water sample from each of the following granular activated carbon (GAC) units during each month of this quarter: 310, 330, and 350.
- One influent and one effluent water sample from the Main GTP during each month of this quarter; and one influent and one effluent field duplicate sample in November 2013.
- One influent and one effluent water sample from GCW-1 in December 2013.
- One influent and one effluent water sample from the LL1 GTP during each month of this quarter; and one influent and one effluent field duplicate sample in November 2013.
- One effluent air sample from the LL1 GTP.
- One influent and one effluent water sample from the LL4 GTP in November and December 2013. Only the effluent water sample was collected in October 2013.
- One influent and one effluent water sample from the AOP GTP in October 2013. Only the effluent water sample was collected in December because the associated influent water sample was collected from EW-5.

A trip blank was included in each shipment that contained field samples scheduled for analysis of VOCs. The required frequency of collection for quality control (QC) samples (field duplicate and matrix spike/matrix spike duplicate [MS/MSD]) is 10% and 5%, respectively. Four QC field duplicate samples and MS/MSD samples for each parameter were collected for the Main GTP and LL1 GTP sampling events. Field duplicate samples were not collected for the AOP GTP, LL4 GTP, or LL1 air sampling events. The required field QC frequency was met overall for the Fourth Quarter 2013 O&M sampling events.

Table 2-1 summarizes the following data for the Fourth Quarter 2013 sampling events:

- Field sample IDs;
- MS/MSD sample information;
- QC (field duplicate) sample information;
- Dates of sample collection and sample receipt by the laboratory;
- Laboratory sample IDs;
- Laboratory sample delivery group numbers; and
- Requested analyses.

3.0 DATA QUALITY EVALUATION PROCEDURES

The following subsections present the results of the data quality evaluation. This evaluation was performed in accordance with *Mead Validation Guidelines* (USACE, 2007). Qualifiers were assigned based on project QC limits and laboratory QC criteria. The data quality evaluation results are presented in Table 3-1. The QC outliers are presented in Tables 3-2 and 3-3.

3.1 Sample Receipt at the Laboratory

The laboratory received all samples in good condition, with proper preservatives, and within the recommended temperature range of 4 ± 2 degrees Celsius (°C) or just below 2° C, but not frozen.

Several discrepancies were noted between sample IDs on the chain-of-custody records and the sample IDs on the sample container labels. The correct sample IDs were used in each cases.

Two trip blanks, one collected in October and the other collected in December 2013, were submitted with a same sample ID (TRB-LL1-2INF-102013). The sample ID for the trip blank collected in December sampling event was changed to TRB-LL1-2INF-122013 by the reviewer to allow differentiation of the samples.

3.2 Holding Times

The laboratory prepared and analyzed all samples within the required holding times.

3.3 Tuning and Calibration

The laboratory did not report any deviations for the calibration and tuning of instrumentations in the case narratives. The evaluation of the calibration summary forms indicated that all calibrations met the project criteria.

3.4 Laboratory Blanks

A laboratory method blank is an analyte-free matrix that is carried through the entire preparation and analysis sequence for the purpose of identifying potential contamination introduced during preparation and analysis. Method blanks were analyzed for each sample batch for all analyses.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), detections were qualified as non-detect (U) if the concentration in the sample was less than 5 times the concentration in the associated blank. For common laboratory contaminants, results were qualified as described above if the concentration in the sample was less than 10 times the concentration in the associated blank. Sample results that were either non-detect (U), or greater than 5 or 10 times the blank result did not require qualification.

Methylene chloride was detected in a method blank below the limit of quantitation (LOQ). Methylene chloride detections in the associated samples were qualified as (U). Table 3-1 presents data quality evaluation results and associated qualified samples. Table 3-3 presents the VOC QC outliers and associated samples for all assigned qualifiers.

3.5 Trip Blanks

A trip blank is an analyte-free matrix that accompanies samples through the sample collection and transportation process to identify potential VOC contamination. In accordance with the *Mead Validation Guidelines* (USACE, 2007), detections were qualified as non-detect (U) if the

concentration in the sample was less than 5 times the concentration in the associated blank. Sample results that were either non-detect (U), or greater than 5 times the blank result did not require qualification.

There were no detects for target analytes in the trip blanks.

3.6 Surrogates

Surrogates are compounds not normally found in the environment that are added (spiked) into samples prior to extraction (for extractable methods) and prior to analysis (for non-extractable methods). The percent recovery (% REC) of each surrogate is used to assess the success of the sample preparation process for an individual sample. Samples spiked with surrogate compounds were analyzed for VOCs and explosives.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for associated analytes in the affected samples are J-coded for detects and UJ-coded for non-detects if the surrogate % RECs are below the laboratory QC limits, but greater than 10%. Non-detects are R-coded if % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for associated analytes in the affected samples are J-coded for detects if the % RECs are greater than the QC limits. No action is required for non-detects.

The surrogate % REC in the VOC analysis was above the laboratory QC limit in one sample. Table 3-1 presents data quality evaluation results and the associated qualified sample. Table 3-3 presents the VOC QC outliers and associated samples for all assigned qualifiers. All other surrogate % RECs were within QC limits.

3.7 Laboratory Control Sample / Laboratory Control Sample Duplicate

A laboratory control sample (LCS) consists of a matrix, similar to that of the field sample, which is spiked with known concentrations of analytes. The LCS % REC is a measure of the accuracy of the preparation and analytical methods. The laboratory control sample duplicate (LCSD) is a duplicate preparation and analysis of the LCS. The differences between the LCS and LCSD recoveries are used to calculate the relative percent difference (RPD), which is a measure of the precision of the preparation and analytical methods. LCS samples were analyzed for each sample batch for all analyses. LCSD samples were requested for analysis with each analytical batch that did not contain an MS/MSD.

In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the associated samples are J-coded for detects and UJ-coded for non-detects if the LCS % RECs are below the laboratory QC limits, but greater than 10%. Non-detects are R-coded if % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the associated samples are J-coded for detects if the % RECs are greater than the QC limits. No action is required for non-detects. Additionally, results for the affected analyte in the associated samples are J-coded for detects and UJ-coded for non-detects if the RPD exceeds 30%.

All LCS % RECs were within laboratory QC limits.

3.8 Matrix Spike / Matrix Spike Duplicate Analyses

MS and MSD samples are analyzed for organic and inorganic analyses. A field sample is split into three portions (original, MS, and MSD) and known amounts of analytes are added (spiked) into the MS and MSD portions of the sample. The analytical results of these two portions are compared to each other for reproducibility using the RPD. These results are also compared against the un-spiked portion of the sample for % REC of the spiked analytes. MS/MSD samples were analyzed for anions, VOCs, and explosives.

For organic analyses:
In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the parent sample are J-coded for detects and UJ-coded for non-detects if the MS/MSD % RECs are below the laboratory QC limits, but greater than 10%. Non-detects are R-coded if % RECs are less than 10%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the parent sample are J-coded for detects if the MS/MSD % RECs are greater than the QC limits. No action is required for non-detects. Additionally, results for the affected analyte in the associated parent samples are J-coded for detects and UJ-coded for non-detects if the RPD exceeds the QC limit.

For inorganic analyses:
In accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the associated parent samples are J-coded for detects and UJ-coded for non-detects if the MS/MSD % RECs are below the laboratory limits, but greater than 30%. Non-detects are R-coded if % RECs are less than 30%. Also in accordance with the *Mead Validation Guidelines* (USACE, 2007), results for the affected analyte in the associated parent samples are J-coded for detects if the MS/MSD % RECs are greater than the laboratory QC limits. No action is required for non-detects. Additionally, results for the affected analyte in the associated parent samples are J-coded for detects and UJ-coded for non-detects if the RPD exceeds the laboratory QC limit.

All MS/MSD % RECs and RPDs were within QC limits.

3.9 Field Duplicate Results

Field duplicate results provide information on the ability to reproduce field sample results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. The team collected four field duplicate pairs during the Fourth Quarter 2013 monthly O&M sampling events. The field duplicate pairs are listed below:

- 5447-1113-INF-153 / 5447-1113-2INF-153 (Explosives and VOCs);
- 5447-1113-EFF-153 / 5447-1113-2EFF-153 (Nitrate);
- 5447-1113-LL1-INF-097 / 5447-1113-LL1-2INF-097 (Explosives, VOCs);
- 5447-1113-LL1-EFF-097 / 5447-1113-LL1-2EFF-097 (Nitrate);

All field duplicate pairs met the precision criteria. No qualification is required for the field duplicate findings.

Note: Field duplicate results are considered acceptable when one result is a non-detect and the other result is a detection at a concentration below the LOQ.

3.10 Dilutions and Reanalyses

Qualifiers assigned as a result of calibration range exceedances are not used in the calculation of analytical data completeness percentages if there are acceptable results from diluted sample analyses.

Eleven water samples for VOCs, one air sample for TCE, and three water samples for nitrates were analyzed at a dilution. Only the dilution analyses were reported for these samples. No qualifiers were assigned because acceptable results from diluted sample analyses were provided. According to the *Mead Validation Guidelines* (USACE, 2007) results exceeding the calibrations range are not used for reporting or project decisions when acceptable results from dilutions are available.

3.11 Other Quality Control Parameters

All detected explosive results were confirmed on a second column. A column comparison between the detected explosive results was made using explosive identification summary forms. The validator verified that the laboratory performed confirmation for all reported explosive detections and the reported inter-column RPDs.

Detected results with the inter-column RPDs exceeding 40% are qualified as estimated (J). Table 3-1 presents the data quality evaluation results and qualified samples. Table 3-2 presents the explosive QC outliers and associated samples for all assigned qualifiers. These qualifiers were not used to determine analytical completeness or project completeness in the Overall Assessment in Section 4.0.

3.12 Laboratory Qualifiers

The laboratory quantified and assigned an estimated (J) qualifier for analytes detected below the LOQ, but above the detection limit. These qualifiers were carried over at validation but were not used to determine analytical or project completeness in the Overall Assessment in Section 4.0.

4.0 OVERALL ASSESSMENT

The following subsections discuss the field completeness, analytical completeness, and project completeness determinations for the Fourth Quarter 2013 O&M sampling events. An evaluation of field, analytical, and project completeness is presented in Tables 4-1, 4-2, and 4-3.

4.1 Field Completeness

Field completeness is assessed by comparing the number of samples properly collected to the number of samples planned for collection. Field completeness is presented in Table 4-1 for the O&M sampling events.

Field completeness for the Fourth Quarter 2013 O&M sampling events was 100% for each analysis which exceeds the field completeness goal of 95%.

4.2 Analytical Completeness

Analytical completeness was calculated as both acceptable data completeness and quality data completeness. Analytical completeness is presented in Table 4-2. The overall acceptable data completeness percentage goal is 95% (90% for each method), and the overall quality data completeness percentage goal is 80%.

Acceptable data completeness is a measure of laboratory contract compliance. Acceptable data includes data that have not been rejected or qualified as estimated (J). Qualified data are considered acceptable if appropriate corrective actions were taken by the laboratory. Acceptable data completeness percentages for the O&M sampling events are as follows:

- Nitrate: 100%
- Explosives: 100%
- VOCs: 99.6%
- VOC-Air: 100%

The acceptable data completeness exceeds the 90% criteria for each of the individual methods. The overall acceptable data completeness is 99.8% which exceeds the 95% criteria.

Quality data is a measure of the percentage of usable data points. Usable data points include all non-rejected data. Rejected data points with replacement data do not count against the quality data completeness. No data were rejected for the Fourth Quarter 2013 O&M sampling events. The quality data completeness percentages for individual methods and overall quality data completeness percentage are 100% for the Fourth Quarter 2013 O&M sampling events.

4.3 Project Completeness

Project completeness combines sampling and analytical protocols to assess the expectations of the project as a whole. Project completeness is determined by comparing the percentage of samples/measurements that are determined to be usable to the total number of samples/ measurements planned. Project completeness is calculated using the field completeness and analytical completeness (quality data) completeness percentages.

The O&M project completeness percentage is 100%, which exceed the project completeness goal of 90%. Table 4-3 presents project completeness values.

5.0 CONCLUSIONS

No data points were qualified as rejected (R). Data are valid for use, as qualified. Overall field completeness is 100%. Overall quality data completeness is 100% which is above the quality data completeness goal of 80%. Project completeness is 100% which exceeds the project completeness goal of 90%.

A surrogate recovery outlier was present in one volatile analysis, which resulted in a qualification of a compound in one sample. Thirteen explosive results were qualified as estimated for inter-column RPDs exceedances. The qualifiers as a result of inter-column RPDs were not used to determine analytical completeness or project completeness.

6.0 REFERENCES

USACE, 2007, *Mead Validation Guidelines*, (approved by United States Army Corps of Engineers 2007).

USACE, 2013, *Site Wide Work Plan, Revision 01, Support Services, Operable Unit No. 2 (Groundwater), Former Nebraska Ordnance Plant, Mead, Nebraska*. April.

Tables

This page intentionally left blank

List of Acronyms for Tables

Term	Definition
µg/L	micrograms per liter
AOP	Advanced Oxidation Process
BLK	blank
C-RPD	column relative percent difference
EFF	effluent
EW	extraction well
FEW	focused extraction well
GC/MS	gas chromatography–mass spectrometry
GCW	groundwater circulation well
GTP	groundwater treatment plant
HPLC	high-performance liquid chromatography
ID	identification/identifier
INF	influent
IS	Internal standard
J	estimated
Lab	laboratory
LOD	limit of detection
LL	Load Line
M	manual integration
MDL	minimum detection limit
MS/MSD	matrix spike/matrix spike duplicate
MS	mass-spectrometry
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
Surr	surrogate
SW	solid waste
TO	toxic organic
U	not detected at laboratory limit of detection
UCL	upper control limit

This page intentionally left blank

Table 1-1
Sample Locations, Sample IDs, and Analyses
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Sampling Locations	Sample IDs	Analyses
AOP-EFF	5447-1013-AOP-EFF2-152	Explosives, Volatiles
AOP-EFF	5447-1213-AOP-EFF2-154	Explosives, Volatiles
AOP-INF	5447-1013-AOP-INF-152	Explosives, Volatiles
EW-12	5447-1013-LL1-EW12-096	Volatiles
EW-12	5447-1113-LL1-EW12-097	Volatiles
EW-12	5447-1213-EW12-098	Volatiles
EW-17	5447-1013-LL1-EW17-096	Volatiles
EW-17	5447-1113-LL1-EW17-097	Volatiles
EW-17	5447-1213-EW17-098	Volatiles
EW-1R	5447-1113-EW1R-153	Explosives, Volatiles
EW-4	5447-1113-EW04-153	Volatiles
EW-4	5447-1213-EW4-UV-EFF-154	Explosives
EW-4	5447-1213-EW4-UV-INF-154	Explosives
EW-5	5447-1213-EW5-INF-154	Explosives
EW-7	5447-1113-EW07-153	Volatiles
EW-7	5447-1213-EW7-UV-EFF-154	Explosives
EW-7	5447-1213-EW7-UV-INF-154	Explosives
EW-9	5447-1113-EW09-153	Volatiles
EW-9	5447-1213-EW9-UV-EFF-154	Explosives
EW-9	5447-1213-EW9-UV-INF-154	Explosives
FEW-14	5447-1113-EW14-153	Volatiles
FEW-14	5447-1213-EW14-UV-EFF-154	Explosives
FEW-14	5447-1213-EW14-UV-INF-154	Explosives
GCW1-EFF	GCW1-EFF-122013	Volatiles
GCW1-INF	GCW1-INF-122013	Volatiles
GTP-310	5447-1013-310-152	Explosives, Volatiles
GTP-310	5447-1113-310-153	Explosives, Volatiles
GTP-310	5447-1213-310-154	Explosives, Volatiles
GTP-330	5447-1013-330-152	Explosives, Volatiles
GTP-330	5447-1113-330-153	Explosives, Volatiles
GTP-330	5447-1213-330-154	Explosives, Volatiles
GTP-350	5447-1013-350-152	Explosives, Volatiles
GTP-350	5447-1113-350-153	Explosives, Volatiles
GTP-350	5447-1213-350-154	Explosives, Volatiles
GTP-EFF	5447-1013-EFF-152	Anions, Explosives, Volatiles
GTP-EFF	5447-1113-EFF-153	Anions, Explosives, Volatiles
GTP-EFF	5447-1213-EFF-154	Anions, Explosives, Volatiles
GTP-INF	5447-1013-INF-152	Explosives, Volatiles
GTP-INF	5447-1113-INF-153	Explosives, Volatiles
GTP-INF	5447-1213-INF-154	Explosives, Volatiles
LL1_AIR_EF	5447-1113-LL1-AIR-EFF-097	Volatiles-Air
LL1-EFF	5447-1013-LL1-EFF-096	Anions, Volatiles
LL1-EFF	5447-1113-LL1-EFF-097	Anions, Explosives, Volatiles
LL1-EFF	5447-1213-LL1-EFF-098	Anions, Volatiles
LL1-INF	5447-1013-LL1-INF-096	Volatiles
LL1-INF	5447-1113-LL1-INF-097	Explosives, Volatiles
LL1-INF	5447-1213-LL1-INF-098	Volatiles
LL4-EFF	5447-1013-LL4-EFF	Anions, Volatiles

Table 1-1
Sample Locations, Sample IDs, and Analyses
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Sampling Locations	Sample IDs	Analyses
LL4-EFF	5447-1113-LL4-EFF	Anions, Volatiles
LL4-EFF	5447-1213-LL4-EFF	Anions, Volatiles
LL4-INF	5447-1113-LL4-INF	Volatiles
LL4-INF	5447-1213-LL4-INF	Volatiles

Notes:

Volatiles	SW8260B	Volatile Organic Compounds by Capillary GC/MS
Explosives	SW8330	Nitroaromatics and Nitramines by HPLC
Anions	SW9056	Anion Chromatography
Volatiles-Air	TO15	Determination of Volatile Organic Compounds in Air Collected in Specially-Prepared Canisters and Analyzed by GC/MS

Table 2-1
Sample Collection Summary
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Field Samples	MS/MSD Samples	Field Duplicate Samples	Date Sampled	Date Received by Lab	Lab ID	SDG	Anions	Explosives	Volatiles	Volatiles-Air
Field Samples										
5447-1013-INF-152			10/2/2013	10/3/2013	200-18751-1	18751		•	•	
		5447-1113-2INF-153	11/18/2013	11/19/2013	200-19605-2	19605-1		•	•	
5447-1113-INF-153	5447-1113-INF-153		11/18/2013	11/19/2013	200-19605-1	19605-1		•	•	
5447-1213-INF-154			12/3/2013	12/4/2013	200-19840-1	19840		•	•	
5447-1013-310-152			10/2/2013	10/3/2013	200-18751-2	18751		•	•	
5447-1113-310-153			11/18/2013	11/19/2013	200-19605-3	19605-1		•	•	
5447-1213-310-154			12/3/2013	12/4/2013	200-19840-2	19840		•	•	
5447-1013-330-152			10/2/2013	10/3/2013	200-18751-3	18751		•	•	
5447-1113-330-153			11/18/2013	11/19/2013	200-19605-4	19605-1		•	•	
5447-1213-330-154			12/3/2013	12/4/2013	200-19840-3	19840		•	•	
5447-1013-350-152			10/2/2013	10/3/2013	200-18751-4	18751		•	•	
5447-1113-350-153			11/18/2013	11/19/2013	200-19605-5	19605-1		•	•	
5447-1213-350-154			12/3/2013	12/4/2013	200-19840-4	19840		•	•	
5447-1013-EFF-152			10/2/2013	10/3/2013	200-18751-5	18751	•	•	•	
		5447-1113-2EFF-153	11/18/2013	11/19/2013	200-19605-7	19605-1	•			
5447-1113-EFF-153	5447-1113-EFF-153		11/18/2013	11/19/2013	200-19605-6	19605-1	•	•	•	
5447-1213-EFF-154			12/3/2013	12/4/2013	200-19840-5	19840	•	•	•	
5447-1013-LL1-INF-096			10/2/2013	10/3/2013	200-18745-1	18745			•	
		5447-1113-LL1-2INF-097	11/18/2013	11/19/2013	200-19608-2	19608		•	•	
5447-1113-LL1-INF-097	5447-1113-LL1-INF-097		11/18/2013	11/19/2013	200-19608-1	19608		•	•	
5447-1213-LL1-INF-098			12/3/2013	12/4/2013	200-19842-1	19842			•	
5447-1013-LL1-EW12-096			10/2/2013	10/3/2013	200-18745-2	18745			•	
5447-1113-LL1-EW12-097			11/18/2013	11/19/2013	200-19608-3	19608			•	
5447-1213-EW12-098			12/3/2013	12/4/2013	200-19842-2	19842			•	
5447-1013-LL1-EW17-096			10/2/2013	10/3/2013	200-18745-3	18745			•	
5447-1113-LL1-EW17-097			11/18/2013	11/19/2013	200-19608-4	19608			•	
5447-1213-EW17-098			12/3/2013	12/4/2013	200-19842-3	19842			•	
5447-1013-LL1-EFF-096			10/2/2013	10/3/2013	200-18745-4	18745	•		•	
		5447-1113-LL1-2EFF-097	11/18/2013	11/19/2013	200-19608-6	19608	•			
5447-1113-LL1-EFF-097	5447-1113-LL1-EFF-097		11/18/2013	11/19/2013	200-19608-5	19608	•	•	•	
5447-1213-LL1-EFF-098			12/3/2013	12/4/2013	200-19842-4	19842	•		•	
5447-1013-AOP-INF-152			10/2/2013	10/3/2013	200-18751-6	18751		•	•	

Table 2-1
Sample Collection Summary
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Field Samples	MS/MSD Samples	Field Duplicate Samples	Date Sampled	Date Received by Lab	Lab ID	SDG	Anions	Explosives	Volatiles	Volatiles-Air
5447-1013-AOP-EFF2-152			10/2/2013	10/3/2013	200-18751-7	18751		•	•	
5447-1213-AOP-EFF2-154			12/3/2013	12/4/2013	200-19840-7	19840		•	•	
5447-1013-LL4-EFF			10/3/2013	10/4/2013	200-18768-1	18768	•		•	
5447-1113-LL4-EFF			11/18/2013	11/19/2013	200-19604-2	19604	•		•	
5447-1213-LL4-EFF			12/3/2013	12/4/2013	200-19843-2	19843	•		•	
5447-1113-EW1R-153			11/18/2013	11/19/2013	200-19605-8	19605-1		•	•	
5447-1113-EW14-153			11/18/2013	11/19/2013	200-19605-9	19605-1			•	
5447-1213-EW14-UV-INF-154			12/3/2013	12/4/2013	200-19840-16	19840		•		
5447-1213-EW14-UV-EFF-154			12/3/2013	12/4/2013	200-19840-17	19840		•		
5447-1113-EW04-153			11/18/2013	11/19/2013	200-19605-18	19605-1			•	
5447-1213-EW4-UV-INF-154			12/3/2013	12/4/2013	200-19840-10	19840		•		
5447-1213-EW4-UV-EFF-154			12/3/2013	12/4/2013	200-19840-11	19840		•		
5447-1113-EW07-153			11/18/2013	11/19/2013	200-19605-12	19605-1			•	
5447-1213-EW7-UV-INF-154			12/3/2013	12/4/2013	200-19840-12	19840		•		
5447-1213-EW7-UV-EFF-154			12/3/2013	12/4/2013	200-19840-13	19840		•		
5447-1113-EW09-153			11/18/2013	11/19/2013	200-19605-15	19605-1			•	
5447-1213-EW9-UV-INF-154			12/3/2013	12/4/2013	200-19840-14	19840		•		
5447-1213-EW9-UV-EFF-154			12/3/2013	12/4/2013	200-19840-15	19840		•		
5447-1113-LL4-INF			11/18/2013	11/19/2013	200-19604-1	19604			•	
5447-1213-LL4-INF			12/3/2013	12/4/2013	200-19843-1	19843			•	
5447-1113-LL1-AIR-EFF-097			11/18/2013	11/19/2013	200-19618-1	19618				•
GCW1-INF-122013			12/3/2013	12/4/2013	200-19840-8	19840			•	
GCW1-EFF-122013			12/3/2013	12/4/2013	200-19840-9	19840			•	
5447-1213-EW5-INF-154			12/3/2013	12/4/2013	200-19840-6	19840		•		
Trip Blanks										
TRB-2INF-102013			10/2/2013	10/3/2013	200-18751-8	18751			•	
TRB-LL1-2INF-102013			10/2/2013	10/3/2013	200-18745-5	18745			•	
TRB-LL4-2EFF-102013			10/3/2013	10/4/2013	200-18768-2	18768			•	
TRB-2INF-112013			11/18/2013	11/19/2013	200-19605-21	19605-1			•	
TRB-LL4-2INF-112013			11/18/2013	11/19/2013	200-19604-3	19604			•	
TRB-LL1-2INF-112013			11/18/2013	11/19/2013	200-19608-7	19608			•	

Table 2-1
Sample Collection Summary
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Field Samples	MS/MSD Samples	Field Duplicate Samples	Date Sampled	Date Received by Lab	Lab ID	SDG	Anions	Explosives	Volatiles	Volatiles-Air
TRB-2INF-122013			12/3/2013	12/4/2013	200-19840-18	19840			•	
TRB-LL1-2INF-122013			12/3/2013	12/4/2013	200-19842-5	19842			•	
TRB-LL4-2INF-122013			12/3/2013	12/4/2013	200-19843-3	19843			•	

Notes:

Volatiles	SW8260B	Volatile Organic Compounds by Capillary GC/MS
Explosives	SW8330	Nitroaromatics and Nitramines by HPLC
Anions	SW9056	Anion Chromatography
Volatiles-Air	TO15	Determination of Volatile Organic Compounds in Air Collected in Specially-Prepared Canisters and Analyzed by GC/MS

• = Requested for the indicated analyses

This page intentionally left blank

Table 3-1
Data Quality Evaluation Results
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Sample Identification	Date Sampled	SDG	Lab Number	Analysis	Parameter	Units	Lab Result	Data Review Qualifier	BLK	C_RPD	IS_Surr	Comments	Final Result
5447-1013-AOP-EFF2-152	10/2/2013	18751	200-18751-7	Explosives	2,4,6-trinitrotoluene	µg/L	0.090	J		X		Column RPD	0.090 J
5447-1013-AOP-INF-152	10/2/2013	18751	200-18751-6	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.039	J		X		Column RPD	0.039 J
5447-1013-AOP-INF-152	10/2/2013	18751	200-18751-6	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.90	J		X		Column RPD	0.90 J
5447-1013-LL1-EW12-096	10/2/2013	18745	200-18745-2	Volatiles	trichloroethene	µg/L	83	J			X	Surrogate recovery outside project limits.	83 J
5447-1013-LL1-EW17-096	10/2/2013	18745	200-18745-3	Volatiles	methylene chloride	µg/L	0.58	U	X			Lab Blank	0.58 U
5447-1013-LL1-INF-096	10/2/2013	18745	200-18745-1	Volatiles	methylene chloride	µg/L	0.68	U	X			Lab Blank	0.68 U
5447-1113-INF-153	11/18/2013	19605-1	200-19605-1	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.064	J		X		Column RPD	0.064 J
5447-1113-LL1-2INF-097	11/18/2013	19608	200-19608-2	Explosives	hexahydro-1,3,5-trinitro-1,3,5-triazine	µg/L	0.065	J		X		Column RPD	0.065 J
5447-1113-LL1-INF-097	11/18/2013	19608	200-19608-1	Explosives	hexahydro-1,3,5-trinitro-1,3,5-triazine	µg/L	0.087	J		X		Column RPD	0.087 J
5447-1213-AOP-EFF2-154	12/3/2013	19840	200-19840-7	Explosives	2,4,6-trinitrotoluene	µg/L	0.059 M	J		X		Column RPD	0.059 J
5447-1213-EW14-UV-EFF-154	12/3/2013	19840	200-19840-17	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.059 M	J		X		Column RPD	0.059 J
5447-1213-EW14-UV-INF-154	12/3/2013	19840	200-19840-16	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.033 M	J		X		Column RPD	0.033 J
5447-1213-EW5-INF-154	12/3/2013	19840	200-19840-6	Explosives	2-amino-4,6-dinitrotoluene	µg/L	0.038 M	J		X		Column RPD	0.038 J
5447-1213-EW5-INF-154	12/3/2013	19840	200-19840-6	Explosives	4-amino-2,6-dinitrotoluene	µg/L	1.2 M	J		X		Column RPD	1.2 J
5447-1213-EW7-UV-INF-154	12/3/2013	19840	200-19840-12	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.050 M	J		X		Column RPD	0.050 J
5447-1213-EW9-UV-EFF-154	12/3/2013	19840	200-19840-15	Explosives	4-amino-2,6-dinitrotoluene	µg/L	0.025 M	J		X		Column RPD	0.025 J

Note: The LOD values were used to display non detected lab results.

Reason for Qualification

BLK	Ambient Blank, Lab Blank, CCB, CCB - Neg, Trip Blank, Equipment Blank, Field Blank, Material Blank, Lab Blank - Neg
C_RPD	Column RPD
IS_Surr	Internal standard, Surrogate recovery outside project limits.

This page intentionally left blank

Table 3-2
Explosives Quality Control Outliers
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Sample ID(s) Requiring Qualification	SDG	Compound(s)	QC Outlier	QC Parameter Control Limit	QC Result
Confirmation Column Difference					
5447-1013-AOP-EFF2-152	18751	2,4,6-Trinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	90.3 RPD
5447-1013-AOP-INF-152	18751	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	184 RPD
5447-1013-AOP-INF-152	18751	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	112 RPD
5447-1113-INF-153	19605-1	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	43.9 RPD
5447-1113-LL1-2INF-097	19608	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine	Confirmation Column Difference exceeds UCL	< 40 RPD	40.5 RPD
5447-1113-LL1-INF-097	19608	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine	Confirmation Column Difference exceeds UCL	< 40 RPD	59.1 RPD
5447-1213-AOP-EFF2-154	19840	2,4,6-Trinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	74.4 RPD
5447-1213-EW14-UV-EFF-154	19840	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	68.2 RPD
5447-1213-EW14-UV-INF-154	19840	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	77.8 RPD
5447-1213-EW5-INF-154	19840	2-Amino-4,6-dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	173 RPD
5447-1213-EW5-INF-154	19840	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	90.9 RPD
5447-1213-EW7-UV-INF-154	19840	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	50.7 RPD
5447-1213-EW9-UV-EFF-154	19840	4-Amino-2,6-Dinitrotoluene	Confirmation Column Difference exceeds UCL	< 40 RPD	87.6 RPD

This page intentionally left blank

Table 3-3
Volatile Organic Compounds Quality Control Outliers
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Sample ID(s) Requiring Qualification	SDG	Compound(s)	QC Outlier	QC Parameter Control Limit	QC Result
Blank					
5447-1013-LL1-EW17-096	18745	Methylene Chloride	Lab Blank > MDL	< 0.21 µg/L	0.22 µg/L
5447-1013-LL1-INF-096	18745	Methylene Chloride	Lab Blank > MDL	< 0.21 µg/L	0.22 µg/L
Surrogate					
5447-1013-LL1-EW12-096	18745	Trichloroethene	Surrogate exceeds UCL	1,2-Dichlorobenzene-d4 80 - 115 %	116 %
5447-1013-LL1-EW12-096	18745	Trichloroethene	Surrogate exceeds UCL	1-Bromo-4-fluorobenzene (4-Bromofluorobenzene)	116 %

This page intentionally left blank

Table 4-1
Field Completeness
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant, Mead, Nebraska

Analysis	Number of Samples Planned	Number of Samples Collected	Field Completeness
Anions	11	11	100%
Explosives	32	32	100%
Volatiles	44	44	100%
Volatiles-Air	1	1	100%
Totals =	88	88	100%
Goal =			95%

Notes:

Number of Samples Planned includes field samples and field duplicate samples.

This page intentionally left blank

Table 4-2
Analytical Completeness
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant

Analysis	Total Number of Parameters	Acceptable Data	Acceptable Data Completeness	Acceptable Data Completeness Goals	Quality Data	Quality Data Completeness	Quality Data Completeness Goals
Anions (Analyte Count - 1)	11	11	100%	90%	11	100%	80%
Explosives (Analyte Count - 6)	192	192	100%	90%	192	100%	80%
Volatiles (Analyte Count - 6)	264	263	99.6%	90%	264	100%	80%
Volatiles-Air (Analyte Count - 1)	1	1	100%	90%	1	100%	80%
Totals =	468	467	99.8%	95%	468	100.0%	80%

Notes:

Total number of parameters includes field samples (includes data points from dilutions and/or reanalyses to be used in place of original data) and field duplicates (does not include field blanks or trip blanks).
Acceptable data includes data that has not been rejected or qualified as estimated (J/UJ). Data points for which the required corrective actions were taken or do not require corrective action do not count against the acceptable data completeness goal calculation (i.e., results exceeding the calibration range that were reanalyzed at dilutions within the calibration range).
Quality data is defined as all non-rejected data.

This page intentionally left blank

Table 4-3
Project Completeness
Fourth Quarter 2013 Operations and Maintenance Sampling Event
Former Nebraska Ordnance Plant, Mead, Nebraska

Field	Analytical	Project Completeness
100.0%	100.0%	100.0%
Project Completeness Goal =		90%

Notes:

Analytical Completeness is the percentage of usable data (i.e. quality data completeness).
Project Completeness combines sampling and analytical protocols to assess the expectations of the project as a whole. Project completeness is determined by comparing the percentage of samples / measurements that are determined to be usable to the total number of samples / measurements planned.

This page intentionally left blank

Appendix A
Chain of Custody Records

This page intentionally left blank

LL1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers[2]

ANALYSIS REQUESTED: VOC's 8260B; Explosives 8330

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	VOC's 8260B	Explosives 8330	Lab/Sample ID (Lab Use Only)
W	10/2/13	1102		X	5447-1013-LL1-INF-096					3		
W	10/2/13	1104		X	5447-1013-LL1-EW12-096					3		
W	10/2/13	1106		X	5447-1013-LL1-EW12-096					3		
W	10/2/13	1110		X	5447-1013-LL1-EFF-096					3		
W	10/2/13	1102		X	TRB-LL1-2INF-102013					2		

Last Item

200-18745 COC

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/2/13	1600	Fedex 8675 3614 9581	10/2/13	1600
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
			JABUR	10/3/13	945
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

LL1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers[2]

ANALYSIS REQUESTED: VOC's 8260B, Explosives 8330

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O		Lab/Sample ID (Lab Use Only)
W	10/2/13	1102		X	5447-1013-LL1-INF-096					3	
W	10/2/13	1104		X	5447-1013-LL1-EW12-096					3	
W	10/2/13	1106		X	5447-1013-LL1-EW12-096					3	
W	10/2/13	1110		X	5447-1013-LL1-EFF-096					3	
W	10/2/13	1102		X	TRB-LL1-2INF-102013					2	

Last Item

200-18745 COC

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/2/13	1600	Fedex 8675 3614 9581	10/2/13	1600
Relinquished by: (Signature)	Date	Time	Received by: (Signature) TABLR	Date	Time
				10/3/13	945
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule:

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

Mam

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers[2]

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	VOC's 8260B	Explosives 8330	Lab/Sample ID (Lab Use Only)
W	10/2/13	0955		X	5447-1013-Inf-152					3	2	
W	10/2/13	0958		X	5447-1013-310-152					3	2	
W	10/2/13	1002		X	5447-1013-330-152					3	2	
W	10/2/13	1006		X	5447-1013-350-152					3	2	
W	10/2/13	1013		X	5447-1013-Eff-152					3	2	
W	10/2/13	1136		X	5447-1013-AOP-Inf-152					3	2	
W	10/2/13	1144		X	5447-1013-AOP-Eff2-152					3	2	
W	10/2/13	0955		X	TRB-2INF-102013-					2		

Last Item

200-18751 COC

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/2/2013	1600	Fedex #867536149581	10/2/2013	1600
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
				10/3/13	945
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

LL4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Analysis Requested: VOC's 8260B

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Vincent Stollbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers[2]

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	Analysis Requested	Lab/Sample ID (Lab Use Only)
W	10/3/13	0811		X	5447-1013-LL4-Eff					3	
W	10/3/13	0811		X	ERB-LL4-2Eff-102013					2	

200-18768 COC

Last Flow

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/3/13	1630	FedEx	10/3/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature) TABUR	Date 10/4/13	Time 920
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

LL4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers²

ANALYSIS REQUESTED: VOC'S 8260B

Matrix¹	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	VOC'S 8260B	Lab/Sample ID (Lab Use Only)
W	11/18/13	1120		X	5447-1113-LL4-INF					3	
W	11/18/13	1125		X	5447-1113-LL4-EFF					3	
W	11/18/13	1120		X	TRB-1LL4-2INF-112013					2	

Last Item

200-19604 Chain of Custody

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	11/18/13	1630	Fedex 867536154889	11/18/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature) TABell	Date 11/19/13	Time 1020

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

¹Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
²Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-9234(1007)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

1 of 3

CHAIN OF CUSTODY RECORD

Report to:
Company: Ecc
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

ANALYSIS REQUESTED

200-19605 Chain of Custody

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers²

Matrix¹	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	8260B	Explosives 8330	Nitrates 55									Lab/Sample ID (Lab Use Only)
W	11/18/13	0845		X	5447-1113-INF-153					3	2										
W	11/18/13	0845		X	5447-1113-2INF-153					3	2										
W	11/18/13	0845		X	5447-1113-INF-MS					3	2										
W	11/18/13	0845		X	5447-1113-INF-MSD					3	2										
W	11/18/13	0850		X	5447-1113-310-153					3	2										
W	11/18/13	0900		X	5447-1113-330-153					3	2										
W	11/18/13	0907		X	5447-1113-350-153					3	2										
W	11/18/13	0915		X	5447-1113-EFF-153					3	2	J									Nitrates to Denver
W	11/18/13	0915		X	5447-1113-2EFF-153							"									Nitrates to Denver
W	11/18/13	0915		X	5447-1113-MS							"									Nitrates to Denver

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	11/18/2013	1630	Fed Ex 8675 3615 4559	11/18/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature) TAGUEL	Date 11/19/13	Time 1070

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

¹Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
²Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers[2]

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

ANALYSIS REQUESTED: VOCs 8260B; Explosives 8330; Nitrates

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	VOCs 8260B	Explosives 8330	Nitrates	Lab/Sample ID (Lab Use Only)
W	~~11/18/13~~	0915		X	5447-1113-EFF-MSD							1	Nitrates to Denver
W	11/18/13	1000		X	5447-1113-FWIR-153					3	2		
W	11/18/13	1010		X	5447-1113-FW14-153					3			
W	11/18/13	1010		X	5447-1113-FW14-UV-INF-153						2		7 Day TAT
W	11/18/13	1012		X	5447-1113-FW14-UV-EFF-153						2		7 Day TAT
W	11/18/13	1055		X	5447-1113-FW07-153					3			
W	11/18/13	1055		X	5447-1113-FW07-UV-INF-153						2		7 Day TAT
W	11/18/13	1100		X	5447-1113-FW07-UV-EFF-153						2		7 Day TAT
W	11/18/13	1107		X	5447-1113-FW09-153					3			
W	11/18/13	1107		X	5447-1113-FW09-UV-INF-153						2		7 Day TAT

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	11/18/13	1630	Fedex 367536154889	11/18/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature) TABUCL	Date 11/19/13	Time 1020

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-9234(1007)

Main Plant & EW

3 of 3

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	ANALYSIS REQUESTED: VOC's 8260B	Explosives 8330	Nitrates	Lab/Sample ID (Lab Use Only)
W	11/18/13	1110		X	5447-1113-EW09-WW-EFF-153						2		
W	11/18/13	1029		X	5447-1113-EW04-153					3			7 Day TAT
W	11/18/13	1029		X	5447-1113-EW04-WW-INF-153						2		
W	11/18/13	1031		X	5447-1113-EW04-WW-EFF-153						2		7 Day TAT
W	11/18/13	0445			TRB-2INF-112013					2			7 Day TAT

Last Item

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	1630	11/18/2013	FedEx 5615 3654 8859	11/18/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature) J Fabian	Date 11/19/13	Time 1020

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

LLI

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

ANALYSIS REQUESTE
200-19608 Chain of Custody

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers²

Matrix¹	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	VOC's 8260B	Explosives 8330	Lab/Sample ID (Lab Use Only)
W	11/18/13	1155		X	5447-1113-LLI-IWF-097					3	2	
W	11/18/13	1155		X	5447-1113-LLI-2IWF-097					3	2	
W	11/18/13	1155		X	5447-1113-LLI-IWF-MS					3	2	
W	11/18/13	1155		X	5447-1113-LLI-IWF-MSD					3	2	
W	11/18/13	1203		X	5447-1113-LLI-EW12-097					3	2	
W	11/18/13	1205		X	5447-1113-LLI-EW17-097					3	2	
W	11/18/13	1210		X	5447-1113-LLI-EFF-097					3	2	
W	11/18/13	1155		X	~~TRB-LLI-2IWF-112013~~						2	
W	~~11/18/13~~											
W	~~11/18/13~~											

trash

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	11/18/13	1630	Fedex 8675 3615 4889	11/18/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature) THGUCL	Date 11/19/13	Time 1020

Remarks

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule:

¹Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
²Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

LLI AIR

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: John Ryder	Samples Collected By: TT / VS
Company: ECC	Phone:	
Address: 1746 Cole Blvd Bld 2 / Suite 350	Email:	
City/State/Zip Lakewood Co 80401		
Phone: 303-298-7607	Site Contact: ~~[illegible]~~	
FAX: 303-298-7820	TA Contact: Vincent Stellhammer	
Project Name: FNOP Mead	**Analysis Turnaround Time**	
Site: 5447 002	Standard (Specify)	
PO #	Rush (Specify)	

1 of 1 COCs

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
5447-1113-LL-AIR-EFF-097	11/18/13	1215	1215	-28	0			1											
Last Item																			

Temperature (Fahrenheit)	Interior	Ambient
Start		
Stop		

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

200-19618 Chain of Custody

Special Instructions/QC Requirements & Comments:

Samples Shipped by:	Date/Time: 11/18/13 1630	Samples Received by: Fedex 8675 3615 4904
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time: 11/19/13 1020	Received by: TABOLL

Lab Use Only **Shipper Name:** **Opened by:** **Condition:**

Mawn

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: Ecc
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name

ANALYSIS REQUESTED: VOC's 8260B; Explosives 8330

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	VOC's 8260B	Explosives 8330	Lab/Sample ID (Lab Use Only)
W	12/3/13	0738		X	5447-1213-INF-154					3	2	
W	12/3/13	0743		X	5447-1213-310-154					3	2	
W	12/3/13	0746		X	5447-1213-330-154					3	2	
W	12/3/13	0749		X	5447-1213-350-154					3	2	
W	12/3/13	0753		X	5447-1213-EFF-154					3	2	
W	12/3/13	1021		X	5447-1213-EW5-INF-154						2	
W	12/3/13	1056		X	5447-1213-AOP-EFF2-154					3	2	
W	12/3/13	0920		X	GCW1-INF-122013					3		
W	12/3/13	0923		X	GCW1-EFF-122013					3		
W	12/3/13	1000		X	5447-1213-EW4-UV-INF-154						2	

200-19840 COC

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	12/3/2013	1630	Fedex # 867536154442	12/3/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date 12/4/13	Time 1015

Remarks: Rush Samples

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name

ANALYSIS REQUESTED: VOCs 8260B, Explosives 8330

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O		Lab/Sample ID (Lab Use Only)
W	12/3/13	0005		X	5447-1213-EW4-UV-EFF-154					2	
W	12/3/13	1030		X	5447-1213-EW7-UV-INF-154					2	
W	12/3/13	1035		X	5447-1213-EW7-UV-EFF-154					2	
W	12/3/13	1041		X	5447-1213-EW9-UV-INF-154					2	
W	12/3/13	1044		X	5447-1213-EW9-UV-EFF-154					2	
W	12/3/13	1012		X	5447-1213-EW14-UV-INF-154					2	
W	12/3/13	1015		X	5447-1213-EW14-UV-EFF-154					2	
W	12/3/13	0735		X	TRB2FNF-122013				2		

Last Item

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	12/3/13	1230	Fedex 867534154992	12/3/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature) Scott Z	12/4/13	1015

Remarks: Rush Samples

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

Main Plant

CHAIN OF CUSTODY RECORD

Report to:
Company: Ecc
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name

ANALYSIS REQUESTED: Without POSL

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	Lab/Sample ID (Lab Use Only)
W	12/3/13	0753		X	5447-1213-EPF-154				1	

Last Item

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	12/3/2013	1630	Fedex 868407627446	12/3/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
			Jas OOC	12/4/13	1015
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks: Rush Samples

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-5234(1007)

LL1

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:
Proj. No.
Project Name

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

ANALYSIS REQUESTED: VOCs 8260B

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O		Lab/Sample ID (Lab Use Only)
W	12/3/13	0850		X	5447-1213-LL1-INF-098					3	
W	12/3/13	0853		X	5447-1213-EW12-098					3	
W	12/3/13	0857		X	5447-1213-EW17-098					3	
W	12/3/13	0905		X	5447-1213-LL1-EFF-098					3	
W	12/3/13	0830		X	TRB-LL1-2INF-102013					2	

Last Item

200-19842 COC

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	12/3/13	1630	Fedex 867536154992	12/5/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature) Scott Tagral	Date 12/4/13	Time 1015

Remarks: Rush Samples

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

LL1 2.8 IR4 1214 50

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name
No/Type of Containers[2]

ANALYSIS REQUESTED: Nitrate 9056

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	Nitrate 9056	Lab/Sample ID (Lab Use Only)
W	12/3/13	0905		X	5447 4213-LL1-EFF-098					X	

Post Item

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	12/3/2013	1630	Fedex 868407627446	12/3/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
			[illegible]	12/4/13	1015
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks: Rush Samples

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule:

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

LL4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

CHAIN OF CUSTODY RECORD

Report to:
Company: ECC
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:

Proj. No.
Project Name

ANALYSIS REQUESTED: VOC's 8260B

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	VOC's 8260B	Lab/Sample ID (Lab Use Only)
W	12/3/13	0931		X	5447-1213-LL4-INF					3	
W	12/3/13	0935		X	5447-1213-LL4-EFF					3	
W	12/3/13	0931		X	TRB-LL4-2INF-122013					2	

Last Item

200-19843 COC

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	12/3/13	1630	Fedex 8275 3615 4992	12/3/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature) TASUEI	12/4/13	1015

Remarks: Rush Samples

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

TAL-8234(1007)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403 Tel: 802 660 1990

LL4

CHAIN OF CUSTODY RECORD

Report to:
Company: Ecc
Address: 1746 Cole Blvd. Building 21, Suite 350
Contact: John Ryder
Phone: 303-298-7607
Fax: 303-298-7837
Contract/ Quote:

Invoice to:
Company:
Address:
Contact:
Phone:
Fax:

Sampler's Name: Vincent Stallbaumer
Sampler's Signature:
Proj. No.
Project Name

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	Nitrate 9056	Lab/Sample ID (Lab Use Only)
W	12/3/13	09:35		X	5442-1213-LL4-EFF					1	

Analysis Requested

Rush Item

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	12/3/2013	1630	Fedex 868407627446	12/3/13	1630
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
				12/4/13	1015
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks: Rush Samples

Client's delivery of samples constitutes acceptance of TestAmerica terms and conditions contained in the Price Schedule:

TestAmerica Cannot accept verbal changes. Please Fax written changes to (802) 660-1919

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

TAL-8234(1007)

This page intentionally left blank

Appendix B
Field Notes

This page intentionally left blank

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer/Jesse Phillips
Leader: _____
Report: _____
Date: Oct 2, 2013
Client: _____
Contract No: 5447-002
Report No. 096
Site: Mead NOP

Description and Location of Work: Sampled LL1 Plant

Weather Information:
Sky: Clear
Temp. Max/Min: 56 degrees
Precipitation: None
Wind Speed/Direction: Calm
Humidity: 97%

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity	pH	Temp	Scond
0826	Sampled Influent 5447-1013-LL1-INF-96	7.29	15.04	543
	Influent samples – 3 – 40ml bottles –HCL – VOC'S			
0828	Sampled Effluent 5447-1013-LL1-EFF-96	8.12	13.2	545
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S			
	1 – 1Lt poly bottle – no preservative – Nitrates			
0822	Sampled EW-12 5447-1013-LL1-EW12-96	7.07	14.07	548
	Sampled Extraction well - – 3 – 40ml bottles –HCL – VOC'S			
0824	Sampled EW-17 5447-1013-LL1-EW17-96			
	Sampled Extraction well - – 3 – 40ml bottles –HCL – VOC'S	7.08	14.07	548

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0655 Calibrate pH and S cond meters

pH 7.0 = 6.9/7.0 S cond. 1358 = 1544/1409

Remarks: Water samples sent to Test America Burlington. Nitrates were sent to Test America Denver.

Total Hours Worked: 2

Prepared by: (Signature) (Print) Vincent Stallbaumer

Chain of Custody's on file at the plant.

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer / Jesse Phillips
Leader: _____
Report: _____
Date: October, 2013
Client: _____
Contract No: 5447-002
Report No. 152
Site: Mead NOP

Description and Location of Work: Sampled main plant

Weather Information:
Sky: Sunny
Temp. Max/Min: 61 degrees
Precipitation: None
Wind Speed/Direction: Calm
Humidity: 92%

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity		pH	Temp	Scond
0955	Sampled Influent	5447-0912-INF-152	7.02	15.3	618
	Influent samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				
0958	Sampled GAC Vessel 310 Lead	5447-0912-320-152	7.07	13.8	554
1002	Sampled GAC Vessel 330 Lead	5447-0912-340-152	7.06	13.4	559
1006	Sampled GAC Vessel 350 Lead	5447-0912-360-152	7.15	13.4	554
	All GAC Vessel samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				
1013	Sampled Effluent	5447-0912-EFF-152	7.13	13.1	582
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative - Explosives				
	1 – 500ml poly bottle – no preservative – Nitrates				
	1 – 500ml poly bottle – H2SO4 – Nitrates				
1136	Sampled Influent	5447-0913-AOP-INF-152	7.17	16.2	672
	Influent samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				
1144	Sampled Effluent	5447-0913-AOP-EFF2-152	7.06	17.8	673
	Influent samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				

0750	Sampled Influent	5447-092013-EW4-UV-INF4	7.13	15.5	653
	Influent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				
0754	Sampled Effluent	5447-092013-EW4-UV-EFF4	7.14	13.7	527
	Effluent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0655 Calibrate pH and S cond meters
pH 7.0 = 7.3/7.0 S cond. 1409 = 1382/1409

Remarks: Samples shipped to Test America Burlington fedex #867536149881
Nitrate samples shipped to Test America Denver fedex #867536149570

Total Hours Worked: 5

Prepared by: (Signature) (Print) Vincent Stallbaumer

Chain of Custody's on file at the plant.

Main Plant 1 of 2

Sample Event # 152 Oct 2013

Time

Calibrated pH + Scond Meters

0945 pH = 7.0 = 7.3/7.0 Scod = 1409 = 1382/1409

Sampled Plant Influent - 5447-1013-Inf-152
Sampled GAC 310 - 5447-1013-310-152
Sampled GAC 330 - 5447-1013-330-152
Sampled GAC 350 - 5447-1013-350-152
Sampled Plant Effluent - 5447-1013-Eff-152
Sampled AOP Influent - 5447-1013-AOP-INF-152
Sampled AOP Effluent - 5447-1013-AOP-Eff2-152
Sampled EWU Influent 5447-1013-
Sampled EWU Effluent 5447-1013-

Temp - 61° Skys - Clear

Humidity - 92% Wind - ~~Calm~~ SE

Sampling Event # 152 con't

	Time	PH	Scond	Temp	VOC's X	Exp X	Nitrates X
[illegible]	0955	7.02	618	15.3	3	2	
[illegible]	0958	7.07	554	13.8	3	2	
[illegible]	1002	7.06	554	13.4	3	2	
[illegible]0	1006	7.15	554	13.3	3	2	
[illegible]R	1013	7.13	582	13.1	3	2	~~X~~ 1
[illegible] Inf	1136	7.17	622	16.2	3	2	
[illegible] Eff2	1144	7.06	673	17.8	3	2	~~X~~
[illegible]04 INF	~~1136~~ 0750	7.13	553	15.5		2	
[illegible]04 Eff	0754	7.14	527	13.7		2	~~X~~ 1

[illegible]-2013

Shipped Samples Overnight to test America Burlingame via Fedex
867536149881

Shipped Nitrate Samples to test America Denver Via Fedex
867536149570

Sample Event #96

Calibrated PH + Conductivity Meter
PH = 7.0 = sCond = 1408 =

Sampled Plant Inf. - 5447-1013-LL1-Inf-096
Sampled EW-12 - 5447-1013-LL1-EW12-096
Sampled EW-17 - 5447-1013-LL1-EW17-096
Sampled Plant Eff - 5447-1013-LL1-Eff-096

	Time	PH	Scond	Temp	VOC's	Explosives	Nitrates
ID							
INF	1102	7.29	543	15.04	3		
EW-12	1104	7.07	553	14.08	3		
EW-17	1106	7.08	548	14.07	3		1
Eff	1110	8.12	545	13.2	3		

Temp - Humidity - Wind - Sky -

Shipped Samples to Test America
Burlington Via Fed ex
8675 3614 9581

Shipped Nitrate Samples to Test America Denver
Via Fed ex
#

10-3-2013 Sample Event

Calibrated PH & Scond Meter

PH = 7.0 = 6.9/7.0 Scond = 1409 1400/1408

Sampled Plant Eff 5447-1013-LL4-Eff

	Time	PH	Scon	Temp	VOCs	Exp.	Nitrates
Inf							
Eff	1520	8.23	687	13.4	3		4

Sample Plant Effluent 5447-1013-LL4-Eff

Samples Shipped to Test Americ Burlington via Fedex #
8675 3614 9559

~~Sample Sent~~
Sampled Nitrates and sent to test aweica Denver Via Fedex
8675 3614 9537

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer/Jesse Phillips
Leader: _____
Report: _____
Date: Oct 3, 2013
Client: _____
Contract No: 5447-002
Report No. 0
Site: Mead NOP

Description and Location of Work: Sampled LL4 Plant

Weather Information:
Sky: Clear
Temp. Max/Min: 56 degrees
Precipitation: None
Wind Speed/Direction: Calm
Humidity: 97%

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity	pH	Temp	Scond
1520	Sampled Effluent 5447-0913-LL4-EFF	8.23	13.4	687
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S			
	1 – 500 ml poly bottle – no preservative – Nitrates			

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0655 Calibrate pH and S cond meters
pH 7.0 = 6.9/7.0 S cond. 1389 = 1544/409

Remarks: Water samples sent to Test America Burlington. Nitrates were sent to Test America Denver.

Total Hours Worked: 2

Prepared by: (Signature) _____ (Print) Vincent Stallbaumer

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer / Jesse Phillips
Report: _____
Client: _____
Report No. 153

Leader: _____
Date: November 18, 2013
Contract No: 5447-002
Site: Mead NOP

Description and Location of Work: Sampled Extraction Wells

Weather Information:
Sky: Clear
Precipitation: None
Humidity: 74%

Temp. Max/Min: 41 degrees
Wind Speed/Direction: S @ 5 mph

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity		pH	Temp	Scond
1000	Sampled EW-1R	5447-1113-EW01-153	7.24	10.6	653
1029	Sampled EW-4	5447-1113-EW04-153	7.15	12.9	509
1029	Sampled EW-4UV INF	5447-1113-EW04-UV-INF-153	7.15	12.9	509
1031	Sampled EW-4UV EFF	5447-1113-EW04-UV-EFF-153	6.97	12.2	511
1055	Sampled EW-7	5447-1113-EW07-153	7.2	13.3	529
1055	Sampled EW-7 UV INF	5447-1113-EW07-UV-INF-153	7.2	13.3	529
1100	Sampled EW-7 UV EFF	5447-1113-EW-07-UV-EFF-153	7.12	12.6	550
1107	Sampled EW-9	5447-1113-EW09-153	7.1	12.6	467
1107	Sampled EW-9 UV INF	5447-1113-EW09-UV-INF-153	7.1	12.6	467
1110	Sampled EW-9 UV EFF	5447-1113-EW09-UV-EFF-153	7.0	12.4	462
1010	Sampled EW-14	5447-1113-EW14-153	7.3	11.6	498
1010	Sampled EW-14 UV INF	5447-1113-EW14-UV-INF-153	7.3	11.6	498
1012	Sampled EW-14 UV EFF	5447-1113-EW14-UV-EFF-153	7.3	13.4	502

All samples 3 – 40ml bottles –HCL – VOC'S
2 – 1Lt amber glass bottle – no preservative – Explosives

*SAMPLED EXTRACTION WELLS FOR VOC'S ONLY. SAMPLED EXTRACTION WELL UV SYSTEM INFUENT AND EFFLUENT FOR EXPLOSIVES ONLY.

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0725 – 0730 Calibrate pH and S cond meters

pH 7.0 = 7.0 /7.0 S cond. 1409 = 1409/1409

Remarks: Samples shipped to Test America Burlington FEDEX # 867536154889

Total Hours Worked: 4

Prepared by: (Signature) (Print) Vincent Stallbaumer

Chain of Custody's on file at the plant.

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer /Jesse Phillips
Report: _____
Client: _____
Report No. 153

Leader: _____
Date: November 18, 2013
Contract No: 5447-002
Site: Mead NOP

Description and Location of Work: Sampled main plant

Weather Information:
Sky: Clear
Precipitation: None
Humidity: 74%

Temp. Max/Min: 41 degrees
Wind Speed/Direction: South @ 5 mph

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity		pH	Temp	Scond
0845	Sampled Influent	5447-1113-INF-153	7.09	17.1	599
0845	Sampled Influent	5447-1113-2INF-153	7.09	17.1	599
0845	Sampled Influent	5447-1113-INF-MS	7.09	17.1	599
0845	Sampled Influent	5447-1113-INF-MSD	7.09	17.1	599
	Influent samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 1Lt amber glass bottle – no preservative – Explosives				
	QC/MS/MSD samples taken on VOC's and Explosives				
0856	Sampled GAC Vessel 320 Lead	5447-1113-320-153	7.01	12.1	612
0901	Sampled GAC Vessel 340 Lead	5447-1113-340-153	7.07	11.8	565
0907	Sampled GAC Vessel 360 Lead	5447-1113-360-153	7.08	11.7	597
	All GAC Vessel samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 1Lt amber glass bottle – no preservative – Explosives				
	QC/MS/MSD samples taken on VOC's and Explosives.				
0915	Sampled Effluent	5447-1113-EFF-153	7.09	11.7	593
0915	Sampled Effluent	5447-1113-2EFF-153	7.09	11.7	593
0915	Sampled Effluent	5447-1113-EFF-MS	7.09	11.7	593
0915	Sampled Effluent	5447-1113-EFF-MSD	7.09	11.7	593
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S				
	2 – 1Lt amber glass bottle – no preservative - Explosives				
	1 – 250ml poly bottle – no preservative – Nitrates				
	QC/MS/MSD nitrates only.				

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0730– 0735 Calibrate pH and S cond meters
pH 7.0 = 7.0 S cond. 1409 = 1409

Remarks: Samples shipped to Test America Burlington Fedex #867536154889
Nitrate samples shipped to Test America Denver Fedex #867536154890

Total Hours Worked: 7

Prepared by: (Signature) (Print) Vincent Stallbaumer

Chain of Custody's on file at the plant.

Sample Event #153

Time: Calibrated PH + Sound meter
PH = 7.0 = 7.0/10 Sound = 1409 = 1409/1000

Sampled Plant Influent 5447-1113-INF-153
Sampled Plant Influent 5447-1113-2INF-153
Sampled Plant Influent 5447-1113-INF-MS
Sampled Plant Influent 5447-1113-INF-MSD
Sampled GAC 310 5447-1113-310-153
Sampled GAC 330 5447-1113-330-153
Sampled GAC-350 5447-1113-350-153
Sampled Plant Effluent 5447-1113-Eff-153
Sampled Plant Effluent 5447-1113-2Eff-153
Sampled Plant Effluent 5447-1113-Eff-MS
Sampled Plant Effluent 5447-1113-EFF-MSD
Sampled EW1R 5447-1113-EW1R-153
Sampled EW04 5447-1113-EW04-153
Sampled EW04 INF 5447-1113-EW04-UV-INF-153
Sampled EW04 EFF 5447-1113-EW04-UV-EFF-153
Sampled EW07 5447-1113-EW07-153
Sampled EW07 INF 5447-1113-EW07-UV-INF-153
Sampled EW07 EFF 5447-1113-EW07-UV-EFF-153
Sampled EW09 5447-1113-EW09-153
Sampled EW09 INF-UV 5447-1113-EW09-UV-INF-153
Sampled EW09 Eff 5447-1113-EW09-UV-EFF-153
Sampled EW14 5447-1113-EW04-153
Sampled EW14 INF 5447-1113-EW04-UV-INF-153
Sampled EW14 EFF 5447-1113-EW04-UV-EFF-153

Temp	Humidity	winds	Sky's
41	74°	S S	Clear

Sample Event 153

	Time	PH	Sand	Temp	VOCs	Exp	Nitrates	
INF	0845	7.09	599	17.1	3	2		
2INF	0845	7.09	599	17.1	3	2		
INF MS	0845	7.09	599	17.1	3	2		
INF MSD	0845	7.09	598	17.1	3	2		
GAC 310	0856	7.01	612	12.4	3	2		
GAC 330	0901	7.07	565	12.1	3	2		
GAC 350	0907	7.08	597	11.8	3	2		
EFF	0915	7.09	593	11.7	3	2	1	
2EFF	0915	7.09	593	11.7			1	
EFF MS	0915	7.09	593	11.7			1	
EFF MSD	0915	7.09	593	11.7			1	
EWR	1000	7.24	553	10.6	3	2		
EW[illegible]	1010	7.30	498	11.6	3			
EW[illegible]INF	1010	7.30	498	11.6		2		
EW[illegible]EFF	1012	7.33	502	13.4		2		
EW07	1055	7.14	529	13.3	3			
EW07INF	1055	7.14	529	13.3		2		
EW07EFF	1100	7.12	550	12.6		2		
EW09	1107	7.06	467	12.6	3			
EW09INF	1107	7.06	467	12.6		2		
EW09EFF	1110	7.00	462	12.4		2		
EW04	1029	7.15	509	12.9	3			
EW04INF	1029	7.15	509	12.9		2		
EW04EFF	1031	6.97	511	12.2		2		

Shipped Samples via Fed ex # 8675 3615 4889
Shipped Nitrates via Fed ex # 8675 3615 4890

Sample Event #97

Time Calibrated PH & Scond meters
PH = 7.0 = Scond = 1409 =

Sampled Plant Influent 5447-1113-LLI-INF-097
Sampled Plant Influent 5447-1113-LLI-2INF-097
Sampled Plant Influent 5447-1113-LLI-INF-MS
Sampled Plant Influent 5447-1113-LLI-INF-MSD
Sampled EW-12 5447-1113-LLI-EW12-097
Sampled EW-17 5447-1113-LLI-EW-17-097
Sampled Plant Effluent 5447-1113-LLI-EFF-097
Sampled Plant Effluent 5447-1113-LLI-EFF-MS
Sampled Plant Effluent 5447-1113-LLI-2EFF-097
Sampled Plant Effluent 5447-1113-LLI-EFF-MSD
Sampled Air 5447-1113-LLI-AIR-EFF-097

ID	Time	PH	Scon	Temp	VOCs	Exp	Mth.	TCE
INF	1155	7.02	598	13.2	3	2		
INF	1155	7.02	598	13.2	3	2		
INF	1155	7.02	598	13.2	3	2		
INF	1155	7.02	598	13.2	3	2		
EW-12	1203	7.01	597	12.8	3	~~2~~		
EW-17	1205	7.00	586	12.6	3	~~2~~		
EFF	1210	7.32	591	12.1	3	2	1	
EFF	1210	7.32	591	12.1			1	
EFF	1210	7.32	591	12.1			1	
EFF	1210	7.39	591	12.1			1	
AIR	1215							1
	Time	PH	Scon	Temp	VOCs	Exp	Mth.	TCE

Temp - wind Humidity

Shipped Samples to test America via Fedex #867586154[illegible]

Sample Event 11/18/2013

Time

Calibrated PH + Sound Meter

PH=7.0 Sound=1408

Sampled Influent 5447-1113-LL4-INF

Sampled Effluent 5447-1113-LL4-EFF

Sample Event 11/18/2013 cont

63

ID	Time	PH	Sand	Temp	VOC	EVP	Nitrates
[illegible]	1120	7.2	622	12.8	3		
[illegible]F	1125	7.65	620	12.1	3		1

Temp 41° Humidity 79° Winds SE5 Skies Clear

Shipped samples Via Fedex #867536154889

Shipped Nitrates Via Fedex #867553614890

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer/Jesse Phillips
Leader: _____
Report: _____
Date: November 18, 2013.
Client: _____
Contract No: 5447-002.
Report No. 097.
Site: Mead NOP.

Description and Location of Work: Sampled LL1 Plant.

Weather Information:
Sky: Clear.
Temp. Max/Min: 41 degrees.
Precipitation: None.
Wind Speed/Direction: S @ 5.
Humidity: 74%.

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity		pH	Temp	Scond
1155	Sampled Influent	5447-1112-LL1-INF-097	7.2	13.2	598
1155	Sampled Influent	5447-1112-LL1-2INF-097	7.2	13.2	598
1155	Sampled Influent	5447-1112-LL1-INF-MS	7.2	13.2	598
1155	Sampled Influent	5447-1112-LL1-INF-MSD	7.2	13.2	598
	Influent samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				
1203	Sampled EW-12	5447-1013-LL1-EW12-97	7.01	12.8	597
	Sampled Extraction well - – 3 – 40ml bottles –HCL – VOC'S				
1205	Sampled EW-17	5447-1013-LL1-EW17-97			
	Sampled Extraction well - – 3 – 40ml bottles –HCL – VOC'S		7.00	12.6	586
1210	Sampled Effluent	5447-1112-LL1-Eff-097	7.32	12.1	591
1210	Sampled Effluent	5447-1112-LL1-2Eff-097	7.32	12.1	591
1210	Sampled Effluent	5447-1112-LL1-Eff-MS	7.32	12.1	591
1210	Sampled Effluent	5447-1112-LL1-Eff-MSD	7.32	12.1	591
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500ml amber glass bottle – no preservative - Explosives				
	1 – 250ml poly bottle – no preservative – Nitrates				
	QC and MS/MSD Nitrates only				

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0730– 0735 Calibrate pH and S cond meters

pH 7.0 =6.9/7.0 S cond. 1409 = 1358/1409

Remarks: Water samples sent to Test America Burlington. Nitrates were sent to Test America Denver.

Total Hours Worked: 6

Prepared by: (Signature) (Print) Vincent Stallbaumer

Chain of Custody's on file at the plant.

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer/Jesse Phillips
Leader: _____
Report: _____
Date: November 18, 2013
Client: _____
Contract No: 5447-002
Report No. 0
Site: Mead NOP

Description and Location of Work: Sampled LL4 Plant

Weather Information:
Sky: Clear
Temp. Max/Min: 41 degrees
Precipitation: None
Wind Speed/Direction: 5 @ south
Humidity: 74 %

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity	pH	Temp	Scond
1120	Sampled Influent 5447-1113-LL4-INF	7.2	12.8	622
	Influent sample – 3 – 40ml bottles –HCL – VOC'S			
1125	Sampled Effluent 5447-1113-LL4-EFF	7.65	12.1	620
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S			
	1 – 250 ml poly bottle – no preservative – Nitrates			

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0655 Calibrate pH and S cond meters
pH 7.0 = 6.9/7.0 S cond. 1389 = 1544/409

Remarks: Water samples sent to Test America Burlington. Nitrates were sent to Test America Denver.

Total Hours Worked: 2

Prepared by: (Signature)_____ (Print)_____Vincent Stallbaumer_____

Chain of Custody's on file at the plant.

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer / Jesse Phillips
Report: _____
Client: _____
Report No. 154.

Leader: _____
Date: December, 2013.
Contract No: 5447-002.
Site: Mead NOP.

Description and Location of Work: Sampled main plant.

Weather Information:
Sky: Clear.
Precipitation: None.
Humidity: 57%.

Temp. Max/Min: 31 degrees.
Wind Speed/Direction: Calm.

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity		pH	Temp	Scond
0738	Sampled Influent	5447-1213-INF-154	7.0	17.4	607
	Influent samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				
0743	Sampled GAC Vessel 310 Lead	5447-1213-320-154	7.2	17.3	617
0746	Sampled GAC Vessel 330 Lead	5447-1213-340-154	7.2	17.4	612
0749	Sampled GAC Vessel 350 Lead	5447-1213-360-154	7.1	17.1	604
	All GAC Vessel samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				
0753	Sampled Effluent	5447-1213-EFF-154	7.0	14.3	605
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative - Explosives				
	1 – 250ml poly bottle – no preservative – Nitrates				
1021	Sampled Influent	5447-1213-EW5-INF-154	6.9	13.7	688
	Influent samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				
1056	Sampled Effluent	5447-1213-AOP-EFF2-154	7.0	14.2	613
	Influent samples – 3 – 40ml bottles –HCL – VOC'S				
	2 – 500 ml amber glass bottle – no preservative – Explosives				

0920	Sampled Influent	GCW1-INF-122013	7.1	14.3	502
	Influent sample – 3 – 40ml bottles –HCL – VOC'S				
0923	Sampled Effluent	GCW1-EFF-122013	8.1	14.1	577
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S				
1000	Sampled Influent	5447-1213-EW4-UV-INF-154	6.8	13.2	519
	Influent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				
1005	Sampled Effluent	5447-1213-EW4-UV-EFF-154	6.9	13.8	505
	Effluent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				
1030	Sampled Influent	5447-1213-EW7-UV-INF-154	7.0	13.2	513
	Influent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				
1035	Sampled Effluent	5447-1213-EW7-UV-EFF-154	6.9	13.4	506
	Effluent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				
1041	Sampled Influent	5447-1213-EW9-UV-INF-154	7.0	13.2	508
	Influent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				
1044	Sampled Effluent	5447-1213-EW9-UV-EFF-154	7.0	13.5	505
	Effluent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				
1012	Sampled Influent	5447-1213-EW14-UV-INF-154	6.9	13.3	509
	Influent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				
1015	Sampled Effluent	5447-1213-EW14-UV-EFF-154	6.9	13.4	510
	Effluent sample - 2 – 500 ml amber glass bottle – no preservative - explosives				

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0735 Calibrate pH and S cond meters

pH 7.0 = 6.9/7.0 S cond. 1409 = 1423/1409

Remarks: Samples shipped to Test America Burlington fedex #867536154992

Nitrate samples shipped to Test America Denver fedex #868407677446

Total Hours Worked: 5

Prepared by: (Signature) _____ (Print) Vincent Stallbaumer

Chain of Custody's on file at the plant.

Sample Event #154

Time — Calibrated Ph + Cond Meters

0235 — Ph=7.0=6.9/7.0 — Cond=1409=1423/1409

Sampled Influent 5447-1213-INF-154
Sampled GAC 310 5447-1213-GAC-154
Sampled GAC 330 5447-1213-330-154
Sampled GAC 360 5447-1213-350-154
Sampled Effluent 5447-1213-EFF-154
Sampled EW5-INF 5447-1213-EW5-INF-154
Sampled AOP EFF 5447-1213-AOP-EFF2-154
Sampled GCW-1 INF GCW1-INF-122013
Sampled GCW-1 EFF GCW1-EFF-122013
Sampled EW4 Inf 5447-1213-EW4-UV-INF-154
Sampled EW4 Eff 5447-1213-EW4-UV-EFF-154
Sampled EW7 Inf 5447-1213-EW7-UV-INF-154
Sampled EW7 Eff 5447-1213-EW7-UV-EFF-154
Sampled EW9 Inf 5447-1213-EW9-UV-INF-154
Sampled EW9 Eff 5447-1213-EW9-UV-EFF-154
Sampled EW14 INF 5447-1213-EW14-UV-INF-154
Sample EW14 Eff 5447-1213-EW7-UV-EFF-154

Temp	Humidity	wind	Sky's
36	57°	Calm	Clear

Sample Event 1-1

	Time	PH	Scond	Temp	[illegible]	[illegible]	Nitrate
INF	0738	7.0	607	17.4	3	2	
310	0743	7.2	617	17.3	3	2	
330	0746	7.2	612	17.4	3	2	
350	0749	7.1	604	17.1	3	2	
EFF	0753	7.0	605	14.3	3	2	1
EW5 INF	1021	6.9	688	13.7	[illegible]	2	
AOP EFF2	1056	7.0	613	14.2	3	2	
GCW1 INF	0920	7.1	502	14.3	3		
GCW2 EFF	0923	8.1	517	14.1	3		
EW4 INF	1000	6.8	519	13.2		2	
EW4-EFF	1005	6.9	505	13.8		2	
EW7-INF	1030	7.0	513	13.2		2	
EW7-EFF	1035	6.9	506	13.4		2	
EW9-INF	1041	7.0	508	13.2		2	
EW9-EFF	1044	7.0	505	13.5		2	
EW14-INF	1012	6.9	509	13.3		2	
EW14-EFF	1015	6.9	510	13.4		2	

Shipped Fedex Via # 867536154992

Shipped Nitrates Fedex # [illegible]

Sample

Calibrated PH & Scond Meters

0735 PH = 7.0 = 6.9/7.0 Scond = 1409 1423/1409

Sampled Plant Influent 5447-1213-LL1-INF-098
Sampled EW-12 5447-1213-EW12-098
Sampled EW-17 5447-1213-EW17-098
Sampled Plant Eff 5447-1213-LL1-EFF-098

ID	Time	PH	Temp	Scond	VOC's	Eff	Nitrates
INF	0850	7.1	13.5	590	3		
EW-12	0853	7.0	13.3	592	3		
EW-17	0857	6.8	13.4	584	3		
Eff	0905	8.2	13.2	502	3		1

Temp - 36° Humidity 57% winds calm

Skies - Clear

Shipped Samples Fedex # 8675 3615 4992

Shipped Nitrates Fedex # 8684 0767 7446

Sample Event 12-3-2013

Time

0735 Calibrated PH + Sound Meters

PH = 7.0 = 6.9/7.0 Sound = 1409 ~ 1423/1409

Sampled Influent 5447-1213-LL4 INF
Sampled Effluent 5447-1213-LL4-EFF

ID	Time	PH	Sound	Temp	Bacteria	Explosion	Nitrates
INF	0931	7.0	621	12.9	3		
EFF	0935	7.5	635	12.1	3		1

Shipped Samples Fedex # 867536154992

Shipped Nitrates Fedex #868407677446

FIGURE 9-1
Environmental Chemical Corporation
1746 Cole Boulevard, Building 21, Suite 350
Lakewood, CO 80401

Daily Chemical Quality Control Report

Field Team: Vince Stallbaumer/Jesse Phillips
Report: _____
Client: _____
Report No. 096.

Leader: _____
Date: Dec.3, 2013.
Contract No: 5447-002.
Site: Mead NOP.

Description and Location of Work: Sampled LL1 Plant.

Weather Information:
Sky: Clear.
Precipitation: None.
Humidity: 57%.

Temp. Max/Min: 36 degrees.
Wind Speed/Direction: Calm.

Contractor/Subcontractor and Area of Responsibility:

Work Performed Today: Indicate location and description of work performed.

Time	Activity	pH	Temp	Scond
0850	Sampled Influent 5447-1213-LL1-INF-98	7.1	13.5	590
	Influent samples – 3 – 40ml bottles –HCL – VOC'S			
0905	Sampled Effluent 5447-1213-LL1-EFF-98	8.2	13.3	502
	Effluent sample – 3 – 40ml bottles –HCL – VOC'S			
	1 – 1Lt poly bottle – no preservative – Nitrates			
0853	Sampled EW-12 5447-1213-LL1-EW12-98	7.1	13.4	592
	Sampled Extraction well - – 3 – 40ml bottles –HCL – VOC'S			
0857	Sampled EW-17 5447-1213-LL1-EW17-98			
	Sampled Extraction well - – 3 – 40ml bottles –HCL – VOC'S	6.8	13.2	584

Field Instrument Measurements: pH, S cond., Temp (degree C)

Calibration: 0655 Calibrate pH and S cond meters

pH 7.0 = 6.9/7.0 S cond. 1358 = 1544/1409

Remarks: Water samples sent to Test America Burlington. Nitrates were sent to Test America Denver.

Total Hours Worked: 2

Prepared by: (Signature) (Print) Vincent Stallbaumer

Chain of Custody's on file at the plant.

This page intentionally left blank

Appendix C
Reference Sheet
Data Validation Qualifiers
Drinking Water Standards

This page intentionally left blank

APPENDIX G

2013 Data Quality Assessment Report

This page was intentionally left blank.

APPENDIX G
2013 DATA QUALITY ASSESSMENT
FORMER NEBRASKA ORDNANCE PLANT, MEAD, NEBRASKA

The project data quality objectives (DQOs) were determined using a series of planning steps as defined in the EPA *Guidance on Systematic Planning Using the Data Quality Objectives Process QA/G4* (EPA, 2006). The DQO development process is used to optimize the collection of data necessary to meet the applicable decision criteria. DQO assessment is specified in the *Site-Wide Work Plan, Support Services, Former Nebraska Ordnance Plant, Mead, Nebraska* (USACE, 2009b) and performed qualitatively and quantitatively through an examination of data quality indicators (DQIs). The DQIs are measurable attributes that are defined in terms of precision, bias (accuracy), representativeness, comparability, completeness, and sensitivity (formerly PARCCS) parameters. This DQI examination provides the following project information:

- Assesses whether project requirements are met;
- Identifies the limits of data usability; and
- Evaluates the data limitation in achieving program DQOs.

This section provides a description of each of the DQIs, and an assessment of the sample data with respect to project goals. Data validation was performed for 100 percent of the data in accordance with requirements of the *Mead Validation Guidelines* (USACE, 2007). Detailed information regarding various laboratory and field quality control (QC) data is located in the applicable 2013 Quality Control Summary Reports (QCSRs). Reasons for application of data qualifiers (flags) are described in the QCSRs.

CRITERIA FOR ASSESSMENT

The following text describes the criteria for DQI assessment of precision, bias, representativeness, completeness, comparability, and sensitivity for the 2013 sampling events. General assessments of representativeness, comparability, and sensitivity applicable to all 2013 event are also discussed. Precision, bias, and completeness assessments are provided in the subsections below by program type. Data qualified as rejected (R/UR) are detailed only if replacement data points were not generated.

Precision

Precision is defined as the agreement between duplicate results, and was evaluated by comparing matrix spike and matrix spike duplicate (MS/MSD) relative percent differences (RPDs), field duplicate RPDs, and laboratory control sample and laboratory control sample duplicate (LCS/LCSD) RPDs.

Bias

Bias (accuracy) is a measure of the agreement between an experimental determination and the true value of the parameter being measured. Surrogate recovery, MS/MSD sample recoveries, and LCS/LCSD recoveries are used to assess accuracy and evaluate matrix effects.

Representativeness

Representativeness is a qualitative measure of the degree to which sample data accurately and precisely represents a characteristic environmental condition. Representativeness is a subjective parameter and is used to evaluate the efficiency of the sampling plan design.

2013 Representativeness Assessment -

The representativeness of all 2013 data was quantitatively assessed by evaluating sample collection and analytical procedures described in the *Site-Wide Work Plan* (USACE, 2009b). There were no deviations from sampling or analytical procedures during 2013.

Completeness

Project completeness combines sampling and analytical protocols to assess the expectations of the project as a whole. Project completeness is determined by comparing the number of measurements that are judged to be usable to the total number of measurements planned or observed. The field completeness calculation involves comparison of the number of samples properly collected to the number of samples planned for collection. For the analytical data completeness, calculation involves comparison of the number of usable data points to the number of observed data points. Data qualified as estimated (J/UJ) are considered usable.

Comparability

Comparability is a qualitative measure designed to express the confidence with which one data point may be compared to another. Factors that affect comparability are sample collection and handling techniques, sample matrix, and analytical method. Comparability is limited by the other DQIs because datasets can be compared with confidence only when precision and accuracy are known.

2013 Comparability Assessment

Data from the 2013 sampling events are comparable with other data collected at the site because:

- Appropriate analytical methods outlined in the project work plans were used to analyze the samples;
- QC data as required by the *Site-Wide Work Plan* (USACE, 2009b) were provided; and
- Field samples were collected in accordance with project work plans.

Sensitivity

The term sensitivity is used to describe the project method detection limits and quantitation and/or reporting limits established to meet project-specific DQOs.

2013 Sensitivity Assessment –

No data were rejected due to unacceptable method detection limit (MDLs), Limit of Detection (LODs) or Limit of Quantitation (LOQs) issues. The LODs met the project action levels.

2013 MONITORING WELL SAMPLING EVENTS

The following subsections provide the DQI assessment for the 2013 monitoring well sampling events.

Precision

Field duplicates were collected at a rate greater than 1 per 10 field sample and results were overall acceptable with a few RPD outliers. Results were qualified (J/UJ) for LCS/LSCD RPD outlier values and MS/MSD RPD outliers. Results were qualified (J) for inter-column RPD values greater than 40 percent (explosives detections only). Matrix interference and method precision limitations had minimal impact on the data and no data were rejected (R/UR) due to RPD outlier values.

Bias

Results were qualified (J/UJ) for LCS/LSCD recovery outliers, (J/UJ) for MS/MSD recovery outliers, and (J/UJ) for surrogate outlier recoveries. Samples had an analyte qualified as non-detect (U) due to trip blank or laboratory method blank contamination. Matrix interference and method bias had minimal impact on the data. No data were rejected (R/UR) due to bias indicators.

Completeness

Project completeness was assessed for each sampling event by combining overall field completeness and the percentage of usable data for each of the 2013 events. Overall project completeness was calculated by averaging the project completeness percentages for each sampling event. The project completeness percentages for each sampling event and overall project completeness for the 2013 events met the project objectives. The 2013 project completeness results for the monitoring well program are presented in each of the quarterly QCSRs.

2013 WATER SUPPLY WELL SAMPLING EVENTS

The following subsections provide the DQI assessment for the 2013 water supply well sampling events.

Precision

Field duplicates were collected at a rate greater than one per 10 field sample and results were acceptable. No results were qualified (J/UJ) for LCS/LSCD RPD outlier values and MS/MSD RPD outliers. Results were qualified (J) for inter-column RPD values greater than 40 percent (explosives detections only). Matrix interference and method precision limitations had minimal impact on the data and no data were rejected (R/UR) due to RPD outlier values.

Bias

No results were qualified (J/UJ) for LCS/LSCD recovery outliers or (J/UJ) for MS/MSD recovery outliers. Results were qualified (J/UJ) for surrogate outlier recoveries. Matrix interference and method bias had minimal impact on the data. No data were rejected (R/UR) due to bias indicators.

Completeness

Project completeness was assessed for each sampling event by combining overall field completeness and the percentage of usable data for each of the 2013 water supply well sampling events. Overall project completeness was calculated by averaging the project completeness percentages for each event. The project completeness percentages for each sampling event and overall project completeness for the 2013 events met the project objectives. The 2013 project completeness results for the water supply well program are presented in each of the quarterly QCSRs.

References

U.S. Army Corps of Engineers (USACE), 2007. Mead Validation Guidelines. Prepared by ECC. February.

USACE, 2009. *Site-Wide Work Plan, Support Services, Former Nebraska Ordnance Plant, Mead, Nebraska*. Prepared by ECC. July.

U.S. Environmental Protection Agency (EPA). 2006. Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G4, EPA/240/B-06/001. February.

APPENDIX H

Process Flow Data for the Main Groundwater Treatment Plant

This page was intentionally left blank.

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		200			100			290		
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**
1/1/2013			973.809			527.613			1,634.122	
1/2/2013	0625	201	974.096	1067.0	99	527.755	1068.5	288	1,634.536	1075.6
1/3/2013	0630	201	974.385	1067.0	100	527.899	1068.4	291	1,634.957	1075.4
1/4/2013	0525	199	974.661	1066.9	99	528.035	1068.4	292	1,635.358	1075.4
1/5/2013										
1/6/2013										
1/7/2013	0625	199	975.538	1066.9	99	528.470	1068.4	291	1,636.628	1075.4
1/8/2013	0627	201	975.826	1067.0	100	528.613	1068.3	290	1,637.045	1075.4
1/9/2013	0705	200	976.123	1067.0	99	528.760	1068.3	288	1,637.472	1075.5
1/10/2013	0529	200	976.392	1067.0	100	528.894	1068.2	293	1,637.866	1075.2
1/11/2013	0620	201	976.691	1067.0	0	528.896	1089.8	295	1,638.304	1075.2
1/12/2013										
1/13/2013										
1/14/2013	0633	200	977.558	1067.0	100	529.319	1068.2	291	1,639.567	1075.2
1/15/2013	0615	200	977.843	1067.0	100	529.461	1068.2	292	1,639.981	1075.2
1/16/2013	0630	200	978.134	1067.0	100	529.607	1068.2	291	1,640.404	1075.2
1/17/2013	0627	199	978.422	1067.0	100	529.751	1068.2	290	1,640.822	1075.2
1/18/2013	0508	199	978.695	1067.0	100	529.886	1068.2	292	1,641.218	1075.2
1/19/2013										
1/20/2013										
1/21/2013										
1/22/2013	0635	200	979.866	1067.1	99	530.469	1068.2	290	1,642.916	1075.2
1/23/2013	0630	200	980.153	1067.1	100	530.611	1068.2	290	1,643.331	1075.2
1/24/2013	0637	199	980.442	1067.1	100	530.755	1068.2	289	1,643.749	1075.2
1/25/2013	0630	200	980.730	1067.1	100	530.898	1068.2	289	1,644.165	1075.2
1/26/2013										
1/27/2013										
1/28/2013	0630	201	981.595	1067.0	100	531.328	1068.2	290	1,645.418	1075.2
1/29/2013	0635	201	981.884	1067.1	100	531.472	1068.2	291	1,645.838	1075.2
1/30/2013	0655	200	982.176	1067.0	99	531.616	1068.2	289	1,646.261	1075.2
1/31/2013	0635	198	982.461	1067.1	99	531.758	1068.2	289	1,646.670	1075.2
		TOTAL	8.940		TOTAL	4.288		TOTAL	12.963	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **SHEET #1 GW WELLS 9,10,11,14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			EW-11			EW-14			EW-15		
		140			550			250			500		
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**ELEVATION**	**GPM**	**Totalizer**	**ELEVATION**	**GPM**	**Totalizer**	**ELEVATION**
1/1/2013	0:00		896.354			1,166.196			353.020			595.218	
1/2/2013	0625	139	896.553	1081.2	544	1,166.976	1094.7	188	353.291	1074.3	491	595.924	1117.8
1/3/2013	0630	138	896.754	1081.2	542	1,167.756	1094.7	252	353.647	1071.1	486	596.602	1118.0
1/4/2013	0525	140	896.947	1081.2	549	1,168.509	1094.5	251	353.993	1071.0	488	597.273	1117.8
1/5/2013	0:00												
1/6/2013	0:00												
1/7/2013	0625	140	897.561	1081.1	549	1,170.921	1094.3	249	335.088	1071.0	489	599.416	1117.8
1/8/2013	0627	140	897.762	1081.2	549	1,171.710	1094.3	248	355.446	1071.0	489	600.120	1117.8
1/9/2013	0705	139	897.970	1081.1	550	1,172.523	1094.2	248	355.814	1071.1	487	600.843	1117.8
1/10/2013	0529	140	898.158	1081.1	549	1,173.260	1094.2	252	356.153	1070.8	487	601.499	1117.8
1/11/2013	0620	141	898.367	1081.1	548	1,174.079	1094.2	252	356.528	1070.8	490	602.232	1117.8
1/12/2013	0:00												
1/13/2013	0:00												
1/14/2013	0633	140	898.974	1081.1	542	1,176.448	1094.7	251	357.615	1081.9	493	604.366	1117.5
1/15/2013	0615	140	899.172	1081.2	545	1,177.221	1094.2	257	357.974	1081.9	493	605.066	1117.5
1/16/2013	0630	140	899.376	1081.1	550	1,177.941	1094.1	258	358.347	1081.9	493	605.783	1117.5
1/17/2013	0627	140	899.577	1081.1	546	1,178.729	1094.1	253	358.712	1082.2	491	606.491	1117.5
1/18/2013	0508	140	899.767	1081.1	549	1,179.474	1094.1	256	359.058	1082.2	481	606.986	1118.0
1/19/2013	0:00												
1/20/2013	0:00												
1/21/2013	0:00												
1/22/2013	0635	140	900.583	1081.1	547	1,182.665	1094.1	260	360.566	1082.2	491	609.736	1117.5
1/23/2013	0630	140	900.782	1081.1	549	1,183.396	1094.1	256	360.934	1082.4	485	610.417	1117.8
1/24/2013	0637	139	900.983	1081.1	553	1,184.145	1093.9	252	361.298	1082.6	488	611.120	1117.7
1/25/2013	0630	140	901.184	1081.1	552	1,184.938	1093.9	253	361.662	1082.6	489	611.822	1117.7
1/26/2013	0:00												
1/27/2013	0:00												
1/28/2013	0630	139	901.788	1081.1	548	1,187.311	1093.9	245	362.736	1082.6	490	613.941	1117.5
1/29/2013	0635	140	901.990	1081.1	546	1,188.103	1093.9	245	363.091	1082.6	490	614.650	1117.5
1/30/2013	0655	139	902.194	1081.1	546	1,188.902	1093.9	232	363.439	1082.6	490	615.364	1117.5
1/31/2013	0635	139	902.392	1081.1	549	1,189.678	1093.9	251	363.796	1081.6	491	616.061	1117.5
		TOTAL	6.238		TOTAL	24.268		**TOTAL**	11.138		TOTAL	21.553	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		200			150			300		
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**
2/1/2013	0637	200	982.749	1067.0	100	531.901	1068.2	287	1,647.085	1075.3
2/2/2013										
2/3/2013										
2/4/2013	0538	198	983.603	1067.0	99	532.324	1068.2	288	1,648.317	1075.2
2/5/2013	0645	200	983.905	1067.0	100	532.473	1068.2	289	1,648.751	1075.2
2/6/2013	0635	201	984.192	1067.0	99	532.616	1068.3	289	1,649.164	1075.2
2/7/2013	0625	202	984.478	1067.1	100	532.758	1068.1	290	1,649.578	1075.1
2/8/2013	0623	201	984.766	1067.0	100	532.901	1068.1	289	1,649.994	1075.1
2/9/2013										
2/10/2013										
2/11/2013	0630	200	985.632	1067.5	100	533.332	1068.1	289	1,651.247	1075.1
2/12/2013	0525	199	985.908	1067.5	100	533.469	1068.2	287	1,651.644	1075.1
2/13/2013	0632	200	986.208	1067.4	100	533.618	1068.1	291	1,652.078	1075.1
2/14/2013	0630	198	986.496	1067.5	99	533.761	1068.1	290	1,652.496	1075.1
2/15/2013	0607	201	986.780	1067.5	99	533.903	1068.1	289	1,652.906	1075.1
2/16/2013										
2/17/2013										
2/18/2013										
2/19/2013	0630	200	987.938	1067.6	100	534.479	1068.1	288	1,654.579	1075.1
2/20/2013	0624	200	988.226	1067.5	100	534.621	1068.1	288	1,654.992	1075.1
2/21/2013	0552	200	988.508	1067.4	100	533.761	1068.1	289	1,655.398	1075.1
2/22/2013										
2/23/2013										
2/24/2013										
2/25/2013	0625	200	989.667	1067.5	99	535.338	1068.2	288	1,657.069	1075.1
2/26/2013	0630	199	989.956	1067.3	99	535.481	1068.1	289	1,657.484	1075.1
2/27/2013	0635	199	990.246	1067.5	100	535.625	1068.1	288	1,657.900	1075.1
2/28/2013	0632	200	990.534	1067.5	99	535.768	1068.1	287	1,658.316	1075.0

TOTAL 8.061 TOTAL 4.004 TOTAL 11.630

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **SHEET #1 GW WELLS 9,11,14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			EW-11			EW-14			EW-15		
		275			350			190					
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**ELEVATION**	**GPM**	**Totalizer**	**ELEVATION**	**GPM**	**Totalizer**	**ELEVATION**
2/1/2013	0637	139	902.592	1081.1	546	1,190.464	1093.9	251	364.158	1082.6	492	616.771	1117.5
2/2/2013	0:00												
2/3/2013	0:00												
2/4/2013	0538	139	903.187	1081.1	549	1,198.812	1093.7	251	365.230	1082.6	409	618.868	1117.5
2/5/2013	0645	139	903.397	1081.1	547	1,193.640	1093.7	251	365.609	1082.6	489	619.608	1117.5
2/6/2013	0635	139	903.596	1081.2	549	1,194.427	1093.8	250	365.968	1081.6	490	620.312	1117.5
2/7/2013	0625	140	903.786	1081.0	548	1,195.210	1093.8	250	366.326	1081.6	490	621.012	1117.5
2/8/2013	0623	139	903.997	1081.0	545	1,195.996	1093.8	249	366.684	1081.7	491	621.718	1117.3
2/9/2013	0:00												
2/10/2013	0:00												
2/11/2013	0630	139	904.603	1081.1	547	1,198.363	1093.9	249	367.767	1083.0	490	623.839	1117.4
2/12/2013	0525	140	904.795	1081.0	546	1,199.112	1093.9	249	368.109	1083.0	489	624.512	1117.6
2/13/2013	0632	140	905.004	1081.0	546	1,199.930	1094.0	250	368.484	1083.0	489	625.249	1117.6
2/14/2013	0630	140	905.205	1081.1	543	1,200.715	1094.0	249	368.843	1083.0	0	625.305	1130.0
2/15/2013	0607	139	905.403	1081.1	555	1,201.501	1093.6	248	369.196	1083.0	485	625.919	1118.1
2/16/2013	0:00												
2/17/2013	0:00												
2/18/2013	0:00												
2/19/2013	0630	139	906.211	1081.0	552	1,204.699	1093.6	248	370.634	1083.0	489	628.732	1117.6
2/20/2013	0624	139	906.410	1081.0	554	1,205.490	1093.6	248	370.990	1083.0	490	629.435	1117.4
2/21/2013	0552	140	906.607	1081.0	550	1,206.267	1093.6	247	371.339	1083.0	490	630.127	1117.4
2/22/2013	0:00												
2/23/2013	0:00												
2/24/2013	0:00												
2/25/2013	0625	140	907.415	1081.0	548	1,209.455	1093.7	265	372.796	1083.0	490	632.967	1117.4
2/26/2013	0630	140	907.616	1081.0	551	1,210.247	1093.6	268	373.180	1083.0	489	633.672	1117.4
2/27/2013	0635	139	907.818	1081.0	547	1,211.041	1093.6	269	373.570	1083.0	489	634.381	1117.4
2/28/2013	0632	139	908.018	1081.0	547	1,211.829	1093.6	253	373.93	1084.0	490	635.086	1117.4
		TOTAL	5.617		TOTAL	22.119		**TOTAL**	10.115		TOTAL	18.990	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		200			150			300		
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**
3/1/2013	0529	200	990.810	1067.6	99	535.905	1068.1	289	1,658.715	1074.9
3/2/2013										
3/3/2013										
3/4/2013	0628	199	991.687	1067.4	99	536.340	1068.1	289	1,659.986	1075.0
3/5/2013	0630	199	991.975	1067.6	100	536.483	1068.1	289	1,660.404	1074.9
3/6/2013	0632	200	992.264	1067.7	99	536.626	1068.1	289	1,660.821	1074.9
3/7/2013	0630	200	992.552	1067.5	100	536.769	1068.2	290	1,661.238	1074.9
3/8/2013	0524	200	992.828	1067.4	100	536.906	1067.9	290	1,661.636	1074.9
3/9/2013										
3/10/2013										
3/11/2013	0710	200	993.701	1067.5	101	537.343	1067.9	290	1,662.900	1074.9
3/12/2013	0635	199	993.983	1067.5	101	537.484	1067.9	288	1,663.306	1074.9
3/13/2013	0640	199	994.272	1067.5	100	537.628	1068.0	288	1,663.722	1074.9
3/14/2013	0532	200	994.548	1067.4	100	537.766	1067.9	289	1,664.119	1074.9
3/15/2013	0517	200	994.833	1067.4	100	537.909	1067.9	289	1,664.531	1074.9
3/16/2013										
3/17/2013										
3/18/2013	0647	200	995.716	1067.6	100	538.350	1067.9	288	1,665.805	1074.9
3/19/2013	0628	199	996.001	1067.2	100	538.492	1067.9	287	1,666.213	1074.9
3/20/2013	0549	201	996.281	1067.5	100	538.632	1067.9	288	1,666.616	1074.9
3/21/2013	0632	199	996.577	1067.5	100	538.780	1067.9	289	1,667.041	1074.9
3/22/2013	0618	200	996.865	1067.6	100	538.923	1068.0	288	1,667.454	1074.9
3/23/2013										
3/24/2013										
3/25/2013	0635	202	997.732	1067.6	100	539.356	1067.9	287	1,668.701	1074.9
3/26/2013	0624	200	998.018	1067.5	100	539.499	1067.9	289	1,169.112	1074.8
3/27/2013	0517	199	998.294	1067.5	100	539.636	1068.0	290	1,669.509	1074.8
3/28/2013	0526	200	998.584	1067.5	100	539.781	1067.9	289	1,169.927	1074.8
3/29/2013	0511	201	998.869	1067.5	101	539.923	1067.8	288	1,670.339	1074.8
3/30/2013										
3/31/2013										
		TOTAL	8.940		TOTAL	4.460		TOTAL	12.892	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **SHEET #1 GW WELLS 9,10,11,14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			EW-11			EW-14			EW-15		
		275			350			190					
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**ELEVATION**	**GPM**	**Totalizer**	**ELEVATION**	**GPM**	**Totalizer**	**ELEVATION**
3/1/2013	0529	139	908.209	1081.0	545	1,212.583	1093.6	247	374.273	1084.0	490	635.761	1117.3
3/2/2013	0:00												
3/3/2013	0:00												
3/4/2013	0628	139	908.819	1081.0	548	1,214.990	1093.6	249	375.353	1084.0	488	637.905	1117.4
3/5/2013	0630	139	909.019	1081.0	551	1,215.773	1093.5	245	375.709	1084.0	484	638.588	1117.6
3/6/2013	0632	139	909.019	1081.0	547	1,216.566	1093.5	243	376.061	1084.1	486	639.289	1117.4
3/7/2013	0630	139	909.418	1081.0	552	1,217.361	1093.5	245	376.413	1084.0	487	639.990	1117.4
3/8/2013	0524	138	909.609	1081.1	549	1,218.118	1093.4	242	376.749	1084.0	488	640.661	1117.3
3/9/2013	0:00												
3/10/2013	0:00												
3/11/2013	0710	139	910.215	1081.0	546	1,220.519	1093.4	250	377.849	1083.5	488	642.793	1117.3
3/12/2013	0635	139	910.412	1080.9	548	1,221.291	1093.4	250	378.202	1083.5	489	643.480	1117.3
3/13/2013	0640	138	910.612	1080.9	547	1,222.084	1093.5	248	378.561	1083.5	490	644.187	1117.3
3/14/2013	0532	139	910.804	1080.9	550	1,222.838	1093.4	249	378.902	1083.5	490	644.861	1117.3
3/15/2013	0517	140	911.003	1080.9	546	1,223.620	1093.4	249	379.258	1083.5	490	645.560	1117.3
3/16/2013	0:00												
3/17/2013	0:00												
3/18/2013	0647	139	911.618	1081.0	546	1,226.036	1093.4	251	380.359	1083.5	488	647.717	1117.3
3/19/2013	0628	139	911.816	1080.9	550	1,226.812	1093.4	249	380.714	1083.5	488	648.410	1117.3
3/20/2013	0549	138	912.010	1080.9	547	1,227.577	1093.5	250	381.063	1083.5	489	649.096	1117.3
3/21/2013	0632	140	912.216	1080.9	545	1,228.386	1093.4	250	381.432	1083.6	488	649.820	1117.3
3/22/2013	0618	139	912.416	1080.9	546	1,229.166	1093.4	251	381.791	1083.5	489	650.521	1117.3
3/23/2013	0:00												
3/24/2013	0:00												
3/25/2013	0635	139	913.021	1080.9	545	1,231.534	1093.4	250	382.877	1083.5	489	652.643	1117.1
3/26/2013	0624	140	913.220	1080.7	550	1,232.317	1093.2	249	383.233	1083.5	490	653.341	1117.1
3/27/2013	0517	141	913.413	1080.7	550	1,233.050	1093.2	249	383.575	1083.5	489	654.013	1117.1
3/28/2013	0526	140	913.617	1080.7	550	1,233.848	1093.3	249	383.937	1083.5	490	654.722	1117.1
3/29/2013	0511	140	913.817	1080.7	552	1,234.632	1093.3	248	384.292	1083.5	489	655.420	1117.1
3/30/2013	0:00												
3/31/2013	0:00												
		TOTAL	6.226		TOTAL	24.466		**TOTAL**	11.108		TOTAL	21.807	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		200			150			300		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation
4/1/2013	0629	199	999.750	1067.5	100	540.365	1068.0	287	1,671.607	1074.8
4/2/2013	0625	201	1000.038	1067.7	100	540.505	1067.9	288	1,672.021	1074.8
4/3/2013	0635	200	1000.325	1067.7	101	540.648	1067.9	289	1,672.435	1074.8
4/4/2013	0640	200	1000.614	1067.7	100	540.793	1067.9	289	1,672.852	1074.8
4/5/2013	0632	201	1000.886	1067.7	104	540.931	1067.9	294	1,673.245	1074.8
4/6/2013										
4/7/2013										
4/8/2013	0628	199	1,001.751	1067.7	103	541.377	1067.9	291	1,674.505	1074.8
4/9/2013	0629	202	1,002.041	1067.7	103	541.526	1068.0	289	1,674.926	1074.8
4/10/2013	0634	199	1,002.329	1067.9	103	541.674	1067.9	289	1,675.342	1074.8
4/11/2013	0720	199	1,002.626	1068.0	103	541.826	1067.9	290	1,675.771	1074.8
4/12/2013	0632	200	1,002.905	1068.0	102	541.969	1067.9	289	1,676.174	1074.8
4/13/2013										
4/14/2013										
4/15/2013	0635	201	1,003.771	1067.9	103	542.413	1067.9	287	1,677.423	1074.8
4/16/2013	0637	200	1,004.059	1067.9	103	542.560	1067.9	287	1,677.837	1074.8
4/17/2013	0633	200	1,004.347	1067.9	102	542.707	1067.9	289	1,678.252	1074.8
4/18/2013	0633	201	1004.635	1068.0	103	542.855	1067.9	289	1,678.667	1074.8
4/19/2013	0631	200	1004.924	1068.2	103	543.002	1067.9	288	1,679.082	1074.8
4/20/2013										
4/21/2013										
4/22/2013	0630	199	1005.788	1068.0	102	543.443	1067.9	288	1,680.322	1074.8
4/23/2013	0622	199	1006.075	1068.4	102	543.589	1067.9	287	1,680.733	1074.8
4/24/2013	0640	200	1006.367	1068.3	102	543.738	1067.9	287	1,681.151	1074.8
4/25/2013	0632	199	1006.654	1068.2	102	543.884	1067.9	287	1,681.562	1074.8
4/26/2013	0635	200	1006.943	1068.2	102	544.030	1067.9	287	1,681.975	1074.8
4/27/2013										
4/28/2013										
4/29/2013	0625	200	1007.807	1068.1	102	544.471	1067.9	287	1,683.212	1074.8
4/30/2013	0630	201	1008.096	1068.1	0	544.518	1090.6	287	1,683.627	1074.8
		TOTAL	8.620		TOTAL	4.294		TOTAL	12.417	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **SHEET #1 GW WELLS 9,10,11,14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			EW-11			EW-14			EW-15		
		275			350			190					
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**ELEVATION**	**GPM**	**Totalizer**	**ELEVATION**	**GPM**	**Totalizer**	**ELEVATION**
4/1/2013	0629	140	914.435	1080.7	548	1,237.049	1093.2	247	385.381	1083.5	488	657.568	1117.1
4/2/2013	0625	140	914.636	1080.7	550	1,237.813	1093.2	246	385.734	1083.5	489	658.271	1117.1
4/3/2013	0635	140	914.838	1080.7	551	1,238.558	1093.2	247	386.088	1083.6	489	658.981	1117.1
4/4/2013	0640	140	915.040	1080.7	551	1,239.352	1093.2	248	386.44	1083.5	488	659.686	1117.1
4/5/2013	0632	141	915.231	1080.7	554	1,240.093	1093.2	246	386.779	1083.6	488	660.385	1117.1
4/6/2013	0:00												
4/7/2013	0:00												
4/8/2013	0628	140	915.841	1080.8	550	1,242.470	1093.2	243	387.837	1083.5	485	662.489	1117.1
4/9/2013	0629	141	916.046	1080.7	555	1,243.214	1093.3	246	388.192	1083.6	0	663.160	1128.9
4/10/2013	0634	141	916.248	1080.7	549	1,244.006	1093.2	246	388.545	1083.5	481	663.846	1117.3
4/11/2013	0720	140	916.456	1080.7	0	1,244.325	1112.0	246	388.911	1083.5	483	664.563	1117.3
4/12/2013	0632	140	916.651	1080.7	558	1,245.013	1093.2	245	389.253	1083.5	484	665.234	1117.3
4/13/2013	0:00												
4/14/2013	0:00												
4/15/2013	0635	140	917.259	1080.7	559	1,247.246	1093.2	241	390.301	1083.5	478	666.998	1117.8
4/16/2013	0637	140	917.460	1080.7	558	1,248.014	1093.2	244	390.651	1083.5	479	667.518	1117.6
4/17/2013	0633	141	917.662	1080.7	556	1,248.794	1093.2	243	391.003	1083.5	481	668.209	1117.6
4/18/2013	0633	140	917.864	1080.7	553	1,249.592	1093.3	243	391.352	1083.5	483	668.904	1117.6
4/19/2013	0631	140	918.066	1080.7	553	1,250.387	1093.2	242	391.701	1083.5	485	669.601	1117.3
4/20/2013	0:00												
4/21/2013	0:00												
4/22/2013	0630	140	918.670	1080.7	547	1,252.763	1093.2	233	392.742	1083.5	487	671.704	1117.1
4/23/2013	0622	140	918.871	1080.7	547	1,253.550	1093.2	240	393.087	1083.0	488	672.403	1117.1
4/24/2013	0640	140	919.073	1080.7	547	1,254.348	1093.2	248	393.448	1082.5	488	673.115	1117.1
4/25/2013	0632	140	919.273	1080.7	549	1,255.122	1093.2	250	393.806	1082.4	488	673.814	1117.1
4/26/2013	0635	140	919.475	1080.7	551	1,255.910	1093.2	250	394.166	1082.4	487	674.517	1117.1
4/27/2013	0:00												
4/28/2013	0:00												
4/29/2013	0625	140	920.079	1080.7	548	1,258.235	1093.3	249	395.245	1082.4	485	676.614	1117.1
4/30/2013	0630	141	920.282	1080.8	549	1259.026	1093.2	249	395.605	1082.4	483	677.313	1117.1
		TOTAL	6.039		TOTAL	22.539		**TOTAL**	10.568		TOTAL	20.395	

COMMENTS:

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		200			150			300		
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**
5/1/2013	0652	202	1,008.370	1068.1	104	544.659	1067.9	288	1,684.024	1074.8
5/2/2013	0637	199	1,008.654	1068.1	103	544.804	1067.9	286	1,684.431	1074.8
5/3/2013	0613	201	1,008.938	1068.4	102	544.949	1067.9	288	1,684.838	1074.8
5/4/2013										
5/5/2013										
5/6/2013	0632	201	1,009.807	1068.3	102	545.392	1067.9	286	1,686.082	1074.8
5/7/2013	0630	201	1,010.095	1068.3	59	545.449	1078.3	289	1,686.498	1074.6
5/8/2013	0628	199	1,010.383	1068.3	103	545.585	1067.9	103	1,686.635	1085.5
5/9/2013	0632	199	1,010.672	1068.3	102	545.734	1067.9	298	1,687.030	1074.8
5/10/2013	0621	199	1,010.958	1068.3	103	545.880	1067.9	293	1,687.451	1074.8
5/11/2013										
5/12/2013										
5/13/2013	0603	200	1,011.799	1068.2	102	546.310	1067.9	292	1,688.675	1074.8
5/14/2013	0628	200	1,012.093	1068.2	103	546.461	1067.9	290	1,689.102	1074.8
5/15/2013	0630	199	1,012.381	1068.1	102	546.608	1067.9	290	1,689.519	1074.8
5/16/2013	0510	201	1,012.653	1068.1	103	546.747	1067.9	289	1,689.912	1074.8
5/17/2013	0630	0	1,012.701	1075.5	103	546.892	1067.9	290	1,690.326	1074.8
5/18/2013										
5/19/2013										
5/20/2013	0624	0	1,012.703	1075.6	102	547.333	1067.9	288	1,691.573	1074.8
5/21/2013	0510	0	1,012.704	1075.6	103	547.454	1067.9	293	1,691.917	1074.9
5/22/2013	0622	0	1,012.704	1075.6	103	547.608	1067.9	289	1,692.356	1074.8
5/23/2013	0551	0	1,012.704	1075.6	103	547.746	1068.0	289	1,692.745	1074.8
5/24/2013	0624	0	1,012.704	1075.6	102	547.897	1067.9	289	1,693.170	1074.8
5/25/2013										
5/26/2013										
5/27/2013										
5/28/2013	0630	0	1,012.704	1075.6	103	548.474	1067.9	288	1,694.803	1074.8
5/29/2013	0622	252	1,012.945	1067.5	103	548.616	1069.9	295	1,695.161	1074.8
5/30/2013	0521	250	1,013.306	1068.0	113	548.733	1065.3	293	1,695.589	1074.8
5/31/2013	0621	251	1,013.666	1067.9	102	548.879	1067.9	291	1,696.003	1074.8
		TOTAL	5.680		TOTAL	4.379		TOTAL	12.424	

COMMENTS: 5/7/13 run step test on EW-4. 5/8/13 EW-7 step test.

NEBRASKA ORDNANCE PLANT OU-2 GWTP **SHEET #1 GW WELLS 9,10,11,14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			EW-11			EW-14			EW-15		
DATE	TIME	275			350			190					
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION
5/1/2013	0652	139	920.474	1080.7	553	1,259.588	1093.2	251	395.949	1082.4	479	677.963	1117.3
5/2/2013	0637	139	920.672	1080.7	557	1,260.222	1093.2	249	396.304	1082.4	482	678.645	1117.1
5/3/2013	0613	140	920.870	1080.7	554	1,261.005	1093.3	249	396.657	1082.4	484	679.328	1117.1
5/4/2013	0:00												
5/5/2013	0:00												
5/6/2013	0632	140	921.478	1080.7	550	1,263.389	1093.3	249	397.739	1082.4	485	681.434	1116.9
5/7/2013	0630	140	921.679	1080.7	546	1,264.175	1093.2	250	398.098	1082.4	485	682.133	1116.9
5/8/2013	0628	140	921.880	1080.7	545	1,264.961	1093.2	250	398.457	1082.4	485	682.831	1116.9
5/9/2013	0632	98	921.945	1087.4	548	1,265.708	1093.2	249	398.817	1082.5	484	683.531	1117.1
5/10/2013	0621	141	922.149	1080.7	544	1,266.479	1093.2	94	398.93	1090.9	484	684.224	1116.9
5/11/2013	0:00												
5/12/2013	0:00												
5/13/2013	0603	140	922.739	1080.7	546	1,268.730	1093.2	0	399.765	1094.6	485	686.312	1116.9
5/14/2013	0628	140	922.945	1080.7	0	1,269.057	1111.9	256	400.08	1082.4	483	687.025	1116.9
5/15/2013	0630	140	923.146	1080.7	556	1,269.718	1093.3	253	400.446	1082.4	242	687.322	1123.8
5/16/2013	0510	140	923.337	1080.8	552	1,270.470	1093.3	253	400.789	1082.4	474	687.930	1117.6
5/17/2013	0630	140	923.537	1080.7	0	1,270.601	1112.2	251	401.149	1082.4	476	688.634	1117.3
5/18/2013	0:00												
5/19/2013	0:00												
5/20/2013	0624	140	924.142	1080.8	0	1,270.601	1112.9	250	402.237	1082.4	480	690.711	1117.1
5/21/2013	0510	140	924.306	1080.7	372	1,270.916	1100.4	253	402.531	1082.4	481	691.358	1117.1
5/22/2013	0622	140	924.518	1080.7	544	1,271.756	1094.2	251	402.912	1082.4	481	691.358	1116.9
5/23/2013	0551	139	924.706	1080.7	547	1,272.497	1093.9	250	403.249	1082.4	483	692.766	1116.9
5/24/2013	0624	139	924.911	1080.7	548	1,273.209	1093.9	249	403.617	1082.4	484	693.479	1116.8
5/25/2013	0:00												
5/26/2013	0:00												
5/27/2013	0:00												
5/28/2013	0630	140	925.699	1080.7	542	1,267.127	1093.9	250	405.026	1082.4	482	696.264	1116.9
5/29/2013	0622	140	925.889	1080.7	0	1,276.198	1112.5	249	405.372	1082.4	482	696.955	1116.9
5/30/2013	0521	141	926.092	1080.7	0	1,276.198	1112.8	249	405.732	1082.4	479	697.649	1117.1
5/31/2013	0621	140	926.293	1080.7				249	406.09	1082.4	479	698.339	1119.9
		TOTAL	6.034		TOTAL	17.250		**TOTAL**	10.432		TOTAL	20.925	

COMMENTS: 5/9/13 Ew-9 step test. 5/10/13 EW-14 step test. 5/15/13 Run step test on EW-15.

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

	EW-1R				EW-4			EW-7		
	200				150			300		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation
6/1/2013			1,014.050			549.038			1,696.448	
6/2/2013										
6/3/2013	0643	250	1,014.753	1067.5	101	549.320	1067.9	289	1,697.258	1074.8
6/4/2013	0629	250	1,015.109	1067.3	102	549.464	1067.9	286	1,697.669	1074.8
6/5/2013	0639	251	1,015.472	1067.3	101	549.611	1067.9	287	1,698.082	1074.8
6/6/2013	0634	248	1,015.831	1067.2	101	549.756	1067.9	292	1,698.504	1074.8
6/7/2013	0629	250	1,016.190	1067.1	101	549.901	1067.9	291	1,698.921	1074.6
6/8/2013										
6/9/2013										
6/10/2013	0643	249	1,017.275	1068.0	100	550.338	1067.9	290	1,700.179	1074.6
6/11/2013	0623	251	1,017.631	1067.8	100	550.481	1067.9	290	1,700.591	1074.7
6/12/2013	0633	251	1,017.994	1067.5	101	550.627	1067.9	290	1,701.010	1074.6
6/13/2013	0631	249	1,018.277	1067.4	101	550.772	1067.9	288	1,701.425	1074.6
6/14/2013	0626	250	1,018.636	1067.3	101	550.916	1062.9	289	1,701.840	1074.6
6/15/2013										
6/16/2013										
6/17/2013	0628	249	1,019.718	1067.5	101	551.351	1067.9	287	1,703.086	1074.6
6/18/2013	0629	251	1,020.079	1067.4	101	551.495	1067.9	291	1,703.506	1074.4
6/19/2013	0645	250	1,020.445	1067.3	100	551.642	1068.0	291	1,703.931	1074.4
6/20/2013	0624	250	1,020.799	1067.3	101	551.784	1067.9	291	1,074.343	1074.4
6/21/2013	0641	250	1,021.011	1067.3	101	511.930	1067.9			
6/22/2013										
6/23/2013										
6/24/2013	0631	249	1,022.061	1067.1	100	552.362	1067.9	290	1,706.018	1074.4
6/25/2013	0636	250	1,022.452	1067.4	101	552.506	1067.9	291	1,706.437	1074.4
6/26/2013	0623	249	1,022.810	1067.3	100	552.650	1068.0	290	1,706.852	1074.4
6/27/2013	0637	250	1,023.175	1067.2	101	552.796	1067.9	289	1,707.275	1074.4
6/28/2013	0635	250	1,023.533	1067.2	101	552.940	1067.9	290	1,707.689	1074.4
6/29/2013										
6/30/2013										

TOTAL	10.567	TOTAL	4.337	TOTAL	12.493

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **SHEET #1 GW WELLS 9,10,11,14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			EW-11			EW-14			EW-15		
DATE	TIME	275			350			190					
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION
6/1/2013	0:00		926.508			1,276.838			406.381			698.888	
6/2/2013	0:00												
6/3/2013	0643	139	926.899	1080.8	538	1,278.313	1094.4	249	407.081	1082.5	477	700.225	1117.1
6/4/2013	0629	139	927.098	1080.7	547	1,279.091	1094.0	249	407.436	1082.4	479	700.905	1117.1
6/5/2013	0639	138	927.300	1080.7	546	1,279.883	1094.0	248	407.797	1082.4	479	701.600	1116.9
6/6/2013	0634	139	927.499	1080.8	546	1,280.662	1094.1	248	408.154	1082.5	479	702.288	1116.9
6/7/2013	0629	139	927.699	1080.7	540	1,281.459	1094.0	248	408.51	1082.4	480	702.978	1116.9
6/8/2013	0:00												
6/9/2013	0:00												
6/10/2013	0643	139	928.304	1080.8	540	1,283.776	1093.8	248	409.587	1082.4	479	705.054	1116.9
6/11/2013	0623	139	928.501	1080.7	550	1,284.552	1093.6	248	409.939	1082.4	479	705.734	1116.9
6/12/2013	0633	139	928.703	1080.7	546	1,285.342	1093.6	247	410.298	1082.4	477	706.426	1116.9
6/13/2013	0631	139	928.902	1080.7	541	1,285.879	1093.9	247	410.654	1082.5	472	707.084	1117.3
6/14/2013	0626	140	929.103	1080.6	540	1,286.658	1093.9	247	411.009	1082.4	474	707.764	1117.1
6/15/2013	0:00												
6/16/2013	0:00												
6/17/2013	0628	139	929.707	1080.6	542	1,288.925	1093.7	248	412.085	1082.3	477	709.820	1117.1
6/18/2013	0629	139	929.908	1080.7	545	1,289.711	1093.5	249	412.445	1082.2	478	710.507	1116.9
6/19/2013	0645	139	930.112	1080.6	544	1,290.499	1093.5	250	412.811	1082.2	478	711.206	1116.9
6/20/2013	0624	139	930.309	1080.6	0	1,290.520	1112.4	249	413.164	1082.3	477	711.882	1116.9
6/21/2013	0641												
6/22/2013	0:00												
6/23/2013	0:00												
6/24/2013	0631	139	931.114	1080.6	542	1,293.276	1093.8	249	414.605	1082.2	478	714.634	1116.9
6/25/2013	0636	139	931.315	1080.6	565	1,293.402	1093.8	249	414.968	1082.2	477	715.330	1116.9
6/26/2013	0623	139	931.514	1080.6	549	1,294.144	1093.8	249	415.321	1082.2	476	716.004	1116.9
6/27/2013	0637	139	931.718	1080.6	547	1,294.946	1093.8	248	415.685	1082.2	477	716.701	1116.9
6/28/2013	0635	139	931.918	1080.6	542	1,295.722	1093.8	248	416.041	1082.2	476	717.375	1116.9
6/29/2013	0:00												
6/30/2013	0:00												

TOTAL	6.016	TOTAL	21.224	**TOTAL**	10.736	TOTAL	20.550

COMMENTS:

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		250			100			290		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation
7/1/2013	0645	252	1024.617	1067.0	101	553.375	1067.9	289	1708.941	1074.4
7/2/2013	0632	251	1,024.976	1066.9	101	553.671	1067.9	289	1,709.798	1074.4
7/3/2013	0812	251	1,026.058	1066.9	101	553.951	1067.9	289	1,709.798	1074.4
7/4/2013										
7/5/2013	0642	251	1,026.058	1066.9	101	553.951	1067.9	290	1,710.605	1074.4
7/6/2013										
7/7/2013										
7/8/2013	0624	251	1,027.135	1066.7	101	554.383	1067.9	289	1,711.848	1074.4
7/9/2013	0629	251	1,027.497	1066.7	100	554.529	1068.0	288	1,712.267	1074.4
7/10/2013	0638	251	1,027.859	1066.6	100	554.673	1067.9	288	1,712.683	1074.4
7/11/2013	0654	253	1,028.224	1065.3	0	554.710	1090.3	288	1,713.102	1074.4
7/12/2013	0608	249	1,028.572	1065.2	102	554.810	1067.9	288	1,713.503	1074.4
7/13/2013										
7/14/2013										
7/15/2013	0634	251	1,029.660	1066.6	101	555.250	1068.0	286	1,714.751	1074.5
7/16/2013	0633	250	1,030.020	1065.2	102	555.394	1067.9	287	1,715.164	1074.4
7/17/2013	0636	252	1,030.338	1066.4	101	555.540	1067.8	287	1,715.578	1074.4
7/18/2013	0640	248	1,030.743	1065.2	101	555.685	1067.9	287	1,715.992	1074.4
7/19/2013	0644	248	1,031.105	1065.0	101	555.831	1067.9	287	1,716.407	1074.4
7/20/2013										
7/21/2013										
7/22/2013	0848	249	1,032.228	1066.1	101	556.278	1067.9	287	1,717.681	1074.4
7/23/2013	0630	250	1,032.542	1065.9	101	556.408	1068.0	285	1,718.053	1074.4
7/24/2013	0611	252	1,032.899	1065.9	101	556.551	1067.9	286	1,718.461	1074.4
7/25/2013	0643	250	1,033.267	1065.9	100	556.699	1068.0	286	1,718.881	1074.4
7/26/2013	0755	250	1,033.645	1065.9	99	556.850	1067.9	286	1,719.314	1074.4
7/27/2013										
7/28/2013										
7/29/2013	0635	251	1,034.674	1064.3	100	557.135	1067.8	289	1,720.501	1074.4
7/30/2013	0651	251	1,035.039	1065.7	100	557.410	1067.9	288	1,720.921	1074.0
7/31/2013	0645	248	1,035.398	1065.8	101	557.554	1067.9	287	1,721.334	1074.4
		TOTAL	11.140		TOTAL	4.322		TOTAL	12.805	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **Table 1 - GW WELLS 9,10,11, 14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			AOP			FEW-14			FEW-15		
DATE	TIME	140			600			250			500		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION
7/1/2013	0645	139	932.524	1080.5	538	1,298.062	1093.8	248	417.117	1082.2	477	719.438	1116.8
7/2/2013	0632	140	932.723	1080.5	541	1,298.830	1093.6	249	417.422	1082.2	478	720.122	1116.8
7/3/2013	0812	141	933.991	1080.5	546	1,299.649	1093.4	250	417.855	1082.2	478	722.189	1116.8
7/4/2013	0:00												
7/5/2013	0642	141	933.331	1080.5	548	1,031.167	1093.4	248	418.551	1082.1	478	722.189	1116.8
7/6/2013	0:00												
7/7/2013	0:00												
7/8/2013	0624	140	933.936	1080.4	547	1,303.476	1093.4	254	419.624	1082.1	473	724.171	1116.9
7/9/2013	0629	141	934.139	1080.4	549	1,304.270	1093.3	248	419.986	1082.1	474	724.860	1116.9
7/10/2013	0638	141	934.338	1080.4	546	1,305.059	1093.3	248	420.346	1082.1	475	725.545	1116.8
7/11/2013	0654	140	934.542	1080.4	545	1,305.830	1093.3	248	420.707	1082.1	477	726.238	1116.8
7/12/2013	0608	140	934.758	1080.4	544	1,306.590	1093.3	248	421.054	1082.1	478	726.904	1116.8
7/13/2013	0:00												
7/14/2013	0:00												
7/15/2013	0634	140	935.347	1080.4	542	1,311.202	1093.3	247	422.134	1082.1	481	728.986	1116.6
7/16/2013	0633	140	935.548	1080.4	544	1,309.648	1093.4	248	422.491	1081.4	481	729.679	1116.6
7/17/2013	0636	139	935.750	1080.4	542	1,310.432	1093.3	248	422.85	1082.1	481	730.372	1116.6
7/18/2013	0640	140	935.952	1080.4	545	1,311.202	1093.3	248	423.208	1082.1	640	731.013	1116.8
7/19/2013	0644	140	936.155	1080.4	542	1,311.991	1093.3	248	423.568	1082.1	475	731.701	1116.8
7/20/2013	0:00												
7/21/2013	0:00												
7/22/2013	0848	139	936.901	1080.4	555	1,313.600	1093.2	247	424.669	1082.2	466	733.083	1117.3
7/23/2013	0630	139	937.083	1080.4	551	1,314.288	1093.2	247	424.99	1082.1	470	733.690	1117.1
7/24/2013	0611	141	937.216	1080.4	553	1,315.050	1093.2	246	425.342	1082.1	474	734.364	1116.9
7/25/2013	0643	141	937.422	1080.4	547	1,315.858	1093.2	247	425.705	1082.1	478	735.064	1116.8
7/26/2013	0755	140	937.634	1080.4	545	1,316.686	1093.2	246	426.077	1082.1	0	735.746	1128.4
7/27/2013	0:00												
7/28/2013	0:00												
7/29/2013	0635	0	937.699	1096.3	0	1,316.944	1111.7	247	427.226	1082.1	0	735.746	1128.4
7/30/2013	0651	240	937.929	1063.3	0	1,316.944	1111.7	247	427.453	1082.1	475	736.423	1116.6
7/31/2013	0645	240	938.279	1062.2	0	1,316.944	1111.7	247	427.807	1082.1	478	737.107	1117.1
		TOTAL	6.093		TOTAL	18.882		**TOTAL**	11.043		TOTAL	18.355	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		250			100			290		
Date	**Time**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**	**GPM**	**Totalizer**	**Elevation**
8/1/2013	0640	249	1,035.757	1065.6	100	557.697	1067.9	288	1,721.746	1074.4
8/2/2013	0642	249	1,036.118	1065.7	100	557.842	1068.0	289	1,722.161	1074.4
8/3/2013										
8/4/2013										
8/5/2013	0641	250	1,037.192	1065.6	100	558.273	1067.9	288	1,723.398	1074.4
8/6/2013	0631	249	1,037.550	1065.5	101	558.416	1067.9	288	1,723.808	1074.4
8/7/2013	0644	250	1,037.914	1065.5	100	558.561	1067.9	286	1,724.225	1074.4
8/8/2013	0635	247	1,038.273	1065.4	100	558.704	1067.9	287	1,724.636	1074.4
8/9/2013	0636	251	1,038.633	1065.2	101	558.847	1067.9	287	1,725.046	1074.4
8/10/2013										
8/11/2013										
8/12/2013	0655	248	1,039.719	1065.2	100	559.279	1067.9	286	1,726.286	1074.4
8/13/2013	0653	251	1,040.079	1064.0	99	559.422	1067.9	285	1,726.695	1074.4
8/14/2013	0604	202	1,040.367	1065.8	99	559.560	1067.9	285	1,727.091	1074.4
8/15/2013	0650	250	1,040.713	1065.2	99	559.707	1067.9	285	1,727.514	1074.4
8/16/2013	0642	249	1,041.079	1065.3	100	559.852	1067.9	284	1,727.930	1074.4
8/17/2013										
8/18/2013										
8/19/2013	0653	251	1,042.156	1064.0	99	560.278	1068.0	285	1,729.152	1074.3
8/20/2013	0624	199	1,042.439	1065.7	99	560.417	1067.9	286	1,729.553	1074.3
8/21/2013	0540	250	1,042.788	1064.9	98	560.556	1067.9	281	1,729.950	1074.5
8/22/2013	0543	251	1,043.150	1064.9	99	560.840	1067.9	284	1,730.360	1074.4
8/23/2013	0544	251	1,043.511	1064.7	98	561.268	1067.9	285	1,730.769	1074.3
8/24/2013										
8/25/2013										
8/26/2013	0528	248	1,044.601	1064.6	99	561.695	1067.9	282	1,732.000	1074.4
8/27/2013	0637	252	1,044.962	1064.5	99	561.410	1067.9	284	1,732.409	1074.4
8/28/2013	0631	249	1,045.332	1064.4	98	561.551	1067.9	286	1,732.797	1074.4
8/29/2013	0622	249	1,045.681	1064.4	98	561.692	1067.9	291	1,733.207	1074.1
8/30/2013	0627	250	1,046.042	1064.3	99	561.817	1067.9	289	1,733.624	1074.1
8/31/2013										
		TOTAL	10.719		TOTAL	4.396		TOTAL	12.686	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **Table 1 - GW WELLS 9,10,11, 14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			AOP			FEW-14			FEW-15		
DATE	TIME	140			600			250			500		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION
8/1/2013	0640	171	938.617	1062.3	0	1,316.944	1111.7	246	428.160	1082.1	479	737.793	1116.9
8/2/2013	0642	237	938.953	1062.8	0	1,316.944	1111.7	246	428.515	1082.1	480	738.485	1116.8
8/3/2013	0:00												
8/4/2013	0:00												
8/5/2013	0641	303	939.961	1062.8	546	1,318.346	1094.4	246	429.573	1082.1	0	739.305	1129.7
8/6/2013	0631	235	940.315	1062.8	538	1,319.118	1094.4	245	429.924	1082.1	0	739.305	1129.7
8/7/2013	0644	228	940.647	1062.8	534	1,319.891	1094.4	245	430.281	1082.1	0	739.305	1129.7
8/8/2013	0635	227	940.969	1064.8	532	1,320.658	1094.4	245	430.634	1082.0	0	739.305	1129.7
8/9/2013	0636	227	941.296	1064.8	540	1,321.436	1094.4	245	430.986	1082.1	0	739.305	1129.7
8/10/2013	0:00												
8/11/2013	0:00												
8/12/2013	0655	226	942.281	1064.8	0	1,322.332	1112.9	244	432.05	1082.1	479	740.577	1117.4
8/13/2013	0653	230	942.607	1064.8	0	1,322.332	1113.1	244	432.402	1082.1	479	741.271	1117.3
8/14/2013	0604	226	942.972	1064.8	0	1,322.332	1113.2	244	432.552	1082.1	483	741.938	1117.1
8/15/2013	0650	225	943.262	1064.8	0	1,322.332	1113.2	245	432.742	1082.1	483	742.655	1116.8
8/16/2013	0642	225	943.592	1064.8	0	1,322.332	1113.2	245	433.105	1082.1	482	743.360	1116.8
8/17/2013	0:00												
8/18/2013	0:00												
8/19/2013	0653	178	944.373	1075.1	0	1,322.332	1113.7	243	434.512	1082.1	481	745.436	1116.6
8/20/2013	0624	178	944.625	1075.0	0	1,322.332	1113.7	244	434.855	1082.1	481	746.114	1116.6
8/21/2013	0540	181	944.859	1075.2	0	1,322.332	1113.7	244	434.855	1082.1	481	746.788	1116.6
8/22/2013	0543	174	945.105	1075.5	0	1,322.332	1113.9	243	435.548	1082.1	480	747.481	1116.6
8/23/2013	0544	175	945.358	1075.5	0	1,322.332	1113.9	243	435.9	1082.1	480	748.174	1116.6
8/24/2013	0:00												
8/25/2013	0:00												
8/26/2013	0528	175	946.118	1075.6	0	1,322.332	1113.9	254	436.993	1082.1	479	750.261	1116.4
8/27/2013	0637	175	946.371	1075.5	0	1,322.332	1113.9	254	437.362	1082.1	478	750.955	1116.4
8/28/2013	0631	174	946.620	1075.5	0	1,322.332	1113.9	252	437.725	1082.2	478	751.638	1116.4
8/29/2013	0622	174	946.869	1075.6	0	1,322.332	1113.9	253	438.088	1082.2	477	752.324	1116.4
8/30/2013	0627	174	947.121	1075.5	536	1,323.078	1095.7	253	438.447	1082.1	478	753.014	1116.4
8/31/2013	0:00												
		TOTAL	8.991		TOTAL	7.610		**TOTAL**	10.997		TOTAL	16.582	

COMMENTS:

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW -1R			EW-4			EW-7		
		250			100			290		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation
9/1/2013	0623	0	1046.476	1073.2	99	562.093	1068.0	293	1,734.432	1074.1
9/2/2013										
9/3/2013	0627	0	1,046.476	1074.3	99	562.380	1067.9	290	1,735.272	1074.1
9/4/2013	0631	285	1,046.814	1063.3	100	562.522	1067.9	289	1,735.272	1074.1
9/5/2013	0629	286	1,047.226	1063.3	99	562.604	1067.9	288	1,736.102	1074.1
9/6/2013	0631	286	1,047.638	1063.2	99	562.807	1067.9	287	1,736.518	1074.2
9/7/2013										
9/8/2013										
9/9/2013	0640	285	1,048.875	1063.1	100	563.332	1067.9	288	1,737.761	1074.2
9/10/2013	0603	286	1,049.279	1063.1	98	563.371	1067.9	291	1,738.140	1074.1
9/11/2013	0700	149	1,049.347	1070.2	99	563.518	1067.9	289	1,738.574	1074.1
9/12/2013	0538	250	1,049.678	1064.9	99	563.652	1067.8	288	1,738.969	1074.1
9/13/2013	0655	250	1,050.055	1064.9	99	563.800	1067.9	288	1,739.403	1074.1
9/14/2013										
9/15/2013										
9/16/2013	0627	249	1,051.130	1065.0	98	564.220	1067.9	286	1,740.639	1074.2
9/17/2013	0625	200	1,051.490	1065.0	98	564.361	1067.9	286	1,741.052	1074.1
9/18/2013	0630	199	1,051.779	1067.0	98	564.502	1067.8	288	1,741.467	1074.1
9/19/2013	0644	202	1,052.070	1066.9	98	564.645	1067.8	288	1,741.887	1074.1
9/20/2013	0630	200	1,052.356	1067.0	98	564.785	1067.8	287	1,742.303	1074.1
9/21/2013										
9/22/2013										
9/23/2013	0647	201	1,053.225	1067.0	98	565.209	1067.8	287	1,743.540	1074.1
9/24/2013	0635	200	1,053.511	1066.9	98	565.348	1067.9	293	1,743.840	1074.1
9/25/2013	0615	200	1,053.796	1066.9	98	565.487	1067.9	291	1,744.260	1074.1
9/26/2013	0750	197	1,054.102	1066.9	98	565.636	1067.9	289	1,744.700	1074.1
9/27/2013	1258	201	1,054.542	1066.9	98	565.807	1067.9	288	1,745.200	1074.1
9/28/2013										
9/29/2013										
9/30/2013	0646	198	1,055.243	1066.9	97	566.191	1067.8	286	1,746.340	1074.1
		TOTAL	9.058		TOTAL	4.239		TOTAL	12.323	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **Table 1 - GW WELLS 9,10,11, 14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			AOP			FEW-14			FEW-15		
DATE	TIME	140			600			250			500		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION
9/1/2013	0623	175	947.608	1075.5	534	1324.554	1095.2	254	439.157	1082.1	474	754.375	1116.1
9/2/2013	0:00												
9/3/2013	0627	173	948.113	1075.5	531	1325.923	1095.2	252	439.891	1082.1	476	755.752	1116.4
9/4/2013	0631	173	948.362	1075.5	542	132.698	1094.6	252	440.253	1082.1	476	756.436	1116.3
9/5/2013	0629	173	948.612	1075.5	537	1,327.975	1094.6	251	440.614	1082.1	472	756.921	1116.6
9/6/2013	0631	173	948.863	1075.5	0	1,327.559	1111.5	251	440.979	1082.1	474	757.606	1116.4
9/7/2013	0:00												
9/8/2013	0:00												
9/9/2013	0640	173	949.613	1075.6	0	1,327.559	1111.5	252	442.067	1082.1	0.0	758.498	1128.9
9/10/2013	0603	173	949.839	1075.5	0	1,327.559	1111.5	252	442.397	1082.1	0.0	758.498	1116.4
9/11/2013	0700	173	950.098	1075.5	0	1,327.559	1111.5	252	442.775	1082.2	0.0	758.498	1116.4
9/12/2013	0538	173	950.335	1075.5	0	1,327.559	1111.5	254	443.083	1082.1	0.0	758.498	1116.4
9/13/2013	0655	173	950.597	1075.5	0	1,327.559	1111.5	253	443.464	1082.1	0.0	758.498	1116.4
9/14/2013	0:00												
9/15/2013	0:00												
9/16/2013	0627	173	951.340	1075.5	0	1,327.559	1111.5	251	444.547	1082.1	0.0	758.498	1116.4
9/17/2013	0625	173	951.589	1075.5	0	1,327.559	1111.5	251	444.909	1082.1	0.0	758.498	1116.4
9/18/2013	0630	173	951.839	1075.5	0	1,327.559	1111.5	251	445.272	1082.2	0.0	758.498	1116.4
9/19/2013	0644	172	952.091	1075.5	0	1,327.559	1111.5	251	445.272	1082.2	0.0	758.498	1116.4
9/20/2013	0630	172	952.341	1075.5	0	1,327.559	1111.5	249	445.978	1082.2	0.0	758.498	1116.4
9/21/2013	0:00												
9/22/2013	0:00												
9/23/2013	0647	173	953.085	1075.5	0	1,327.559	1111.5	249	447.018	1082.1	0.0	758.498	1116.4
9/24/2013	0635	173	953.332	1075.5	0	1,327.559	1111.5	246	447.372	1082.1	0.0	758.498	1116.4
9/25/2013	0615	173	953.577	1075.5	0	1,327.559	1111.5	243	447.719	1082.1	0.0	758.498	1116.4
9/26/2013	0750	172	953.841	1075.5	400	1,327.712	1101.4	249	448.09	1082.1	0.0	758.498	1116.4
9/27/2013	1258	171	954.144	1075.5	539	1,328.518	1095.9	241	448.509	1082.1	0.0	758.498	1116.4
9/28/2013	0:00												
9/29/2013	0:00												
9/30/2013	0646	172	954.822	1075.5	540	1,330.610	1095.4	240	449.459	1082.1	0.0	758.498	1129.7
		TOTAL	7.464		TOTAL	6.836		**TOTAL**	10.651		TOTAL	4.123	

COMMENTS:

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		200			100			290		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation
10/1/2013	0701	200	1,055.534	1066.9	97	566.332	1067.8	287	1,746.755	1074.1
10/2/2013	0650	199	1,055.844	1067.0	97	566.482	1067.8	286	1,747.198	1074.1
10/3/2013	0643	200	1,056.108	1067.2	97	566.750	1067.9	287	1,747.575	1074.1
10/4/2013	0640	200	1,056.395	1067.3	97	566.750	1067.8	290	1,747.930	1074.1
10/5/2013										
10/6/2013										
10/7/2013	0627	199	1,057.259	1067.3	98	567.171	1067.6	287	1,749.169	1074.1
10/8/2013	0631	200	1,057.547	1067.2	99	567.312	1067.6	286	1,749.581	1074.1
10/9/2013	0652	201	1,057.840	1067.2	98	567.455	1067.5	286	1,749.999	1074.1
10/10/2013	0629	203	1,058.123	1067.1	98	567.594	1067.5	285	1,750.403	1074.1
10/11/2013	0643	201	1,058.415	1067.3	98	567.736	1067.5	287	1,750.815	1074.1
10/12/2013										
10/13/2013										
10/14/2013	0639	200	1,059.279	1067.3	98	568.158	1067.5	285	1,752.048	1074.2
10/15/2013	0641	202	1,059.568	1067.3	97	568.298	1067.5	285	1,752.459	1074.1
10/16/2013	0648	200	1,059.850	1067.3	98	568.437	1067.5	286	1,752.863	1074.1
10/17/2013	0631	200	1,060.135	1067.4	99	568.577	1067.5	286	1,753.270	1074.1
10/18/2013	0641	198	1,060.426	1067.3	98	568.719	1067.5	283	1,754.085	1074.1
10/19/2013										
10/20/2013										
10/21/2013	0632	201	1,061.290	1067.5	99	569.133	1067.5	285	1,754.913	1074.2
10/22/2013	0700	199	1,061.158	1067.5	98	569.204	1067.5	286	1,755.325	1074.1
10/23/2013	0641	200	1,061.866	1067.5	98	569.275	1067.5	280	1,755.884	1074.1
10/24/2013	0541	201	1,062.142	1067.6	99	569.416	1067.5	285	1,756.125	1074.1
10/25/2013	0632	199	1,062.728	1068.0	99	569.829	1067.5	286	1,756.953	1074.1
10/26/2013										
10/27/2013										
10/28/2013	0536	201	1,063.296	1068.0	99	570.109	1067.5	285	1,757.759	1074.1
10/29/2013	0539	0	1,063.343	1074.5	0		1090.5	0		
10/30/2013	0700	0	1,063.343	1074.5	0	570.155	1090.5	0	1,757.834	1087.6
10/31/2013	0610	0	1,063.343	1074.5	0	570.155	1090.5	0	1,757.834	1087.6
		TOTAL	7.809		TOTAL	3.823		TOTAL	11.079	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **Table 1 - GW WELLS 9,10,11, 14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			AOP			FEW-14			FEW-15		
DATE	TIME	175			600			250			500		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION
10/1/2013	0701	172	955.072	1075.5	537	1,331.390	1095.4	240	449.808	1082.1	0	758.498	1129.7
10/2/2013	0650	172	955.338	1075.5	531	1,332.219	1095.4	241	450.174	1082.1	466	758.508	118.5
10/3/2013	0643	171	955.565	1075.5	532	1,332.922	1095.4	240	450.492	1082.1	461	759.121	1117.7
10/4/2013	0640	171	955.810	1075.5	529	1,333.680	1095.4	240	450.836	1082.1	464	759.777	1117.6
10/5/2013	0:00												
10/6/2013	0:00												
10/7/2013	0627	171	956.538	1075.5	530	1,335.598	1095.2	240	451.87	1082.2	472	761.799	1116.9
10/8/2013	0631	195	956.795	1075.5	536	1,336.731	1094.9	239	452.216	1082.1	471	762.48	1116.8
10/9/2013	0652	223	957.079	1075.8	530	1,337.512	1095.0	240	452.562	1082.1	468	763.167	1116.8
10/10/2013	0629	206	957.293	1075.8	532	1,338.265	1094.9	239	452.901	1082.1	464	763.826	1116.8
10/11/2013	0643	170	957.549	1075.8	531	1,339.038	1094.9	240	453.25	1082.1	0	763.856	1128.0
10/12/2013	0:00												
10/13/2013	0:00												
10/14/2013	0639	169	958.279	1075.8	525	1,341.324	1094.9	239	454.282	1082.1	0	763.856	1128.0
10/15/2013	0641	169	958.517	1075.8	534	1,342.080	1094.7	239	454.626	1082.1	0	763.856	1128.0
10/16/2013	0648	169	958.756	1075.8	531	1,342.830	1094.7	239	454.963	1082.1	0	763.856	1128.0
10/17/2013	0631	168	958.996	1075.8	535	1,343.589	1094.7	238	455.303	1082.2	464	764.471	1117.3
10/18/2013	0641	122	959.239	1075.8	532	1,344.365	1094.7	239	455.650	1082.1	465	765.15	1116.9
10/19/2013	0:00												
10/20/2013	0:00												
10/21/2013	0632	169	959.962	1075.8	531	1,346.575	1094.7	237	456.674	1082.1	465	767.046	1116.8
10/22/2013	0700	170	960.208	1075.7	555	1,347.035	1094.7				0	767.101	1127.4
10/23/2013	0641	169	960.541	1075.7	552	1,348.103	1094.6	237	457.018	1082.2	0	767.101	1127.4
10/24/2013	0541	169	960.684	1075.7	543	1,348.558	1094.5	236	457.482	1082.2	0	767.101	1127.4
10/25/2013	0632	169	961.174	1075.7	536	1,350.740	1094.6	235	457.602	1082.2	0	767.101	1127.4
10/26/2013	0:00												
10/27/2013	0:00												
10/28/2013	0536	171	961.648	1075.7	530	1,351.577	1094.6	324	459.017	1076.4	0	767.101	1127.4
10/29/2013	0539	0			0						0	767.101	1127.4
10/30/2013	0700	0	961.693	1092.7	0	1,351.717	1112.3	0	459.138	1094.1	0	767.101	1127.4
10/31/2013	0610	0	961.693	1092.7	0	1,351.717	1112.3	0	459.138	1094.1	0		1127.4
		TOTAL	6.621		TOTAL	20.327		**TOTAL**	9.330		TOTAL	8.643	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		200			100			290		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation
11/1/2013	0622	0	1,063.343	1074.5	0	570.155	1090.5	0	1,757.834	1087.6
11/2/2013										
11/3/2013										
11/4/2013	0637	0	1,063.343	1074.5	0	570.155	1090.9	0	1,757.834	1087.6
11/5/2013	0635	0	1,063.343	1074.5	0	570.155	1090.9	0	1,757.834	1087.6
11/6/2013	0645	0	1,063.343	1074.5	0	570.155	1091.0	0	1,757.834	1081.3
11/7/2013	0641	0	1,063.343	1074.5	0	570.155	1091.0	0	1,757.834	1081.3
11/8/2013	0645	0	1,063.343	1074.5	0	570.155	1091.0	0	1,757.834	1081.5
11/9/2013										
11/10/2013										
11/11/2013	0718	200	1,063.566	1075.4	104	570.403	1067.5	252	1,758.526	1091.0
11/12/2013										
11/13/2013	0700	199	1,063.841	1069.1	103	570.566	1067.6	250	1,758.875	1080.3
11/14/2013	0645	201	1,064.125	1069.6	102	570.711	1067.5	242	1,759.225	1079.3
11/15/2013	0640	199	1,064.371	1069.6	102	570.837	1067.5	252	1,759.539	1079.9
11/16/2013										
11/17/2013										
11/18/2013	0800	201	1,065.247	1069.0	100	571.279	1067.5	271	1,760.703	1078.3
11/19/2013	0635	201	1,065.579	1069.1	100	571.415	1067.5	280	1,761.056	1078.1
11/20/2013	0700	199	1,065.810	1069.1	101	571.560	1067.6	255	1,761.422	1078.1
11/21/2013	0639	200	1,066.091	1069.1	101	571.701	1067.5	264	1,761.814	1077.9
11/22/2013	0535	203	1,066.369	1068.9	100	571.840	1067.5	275	1,762.196	1077.8
11/23/2013										
11/24/2013										
11/25/2013	0658	200	1,067.253	1068.9	99	572.279	1067.5	273	1,763.400	1077.8
11/26/2013	0625	200	1,067.530	1069.4	99	572.416	1067.5	270	1,763.773	1077.9
11/27/2013										
11/28/2013										
11/29/2013										
11/30/2013	0730	199	1,068.541	1069.4	99	572.953	1067.5	292	1,765.160	1077.8
		TOTAL	5.383		TOTAL	2.890		TOTAL	7.577	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **Table 1 - GW WELLS 9,10,11, 14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			AOP			FEW-14			FEW-15		
DATE	TIME	175			600			250			500		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION
11/1/2013	0622	0	961.693	1092.7	0	1,351.717	1112.3	0	459.138	1094.1	0	767.141	1127.4
11/2/2013	0:00												
11/3/2013	0:00												
11/4/2013	0637	0	961.693	1092.7	0	1,351.717	1112.3	0	459.138	1094.1	0	767.141	1109.1
11/5/2013	0635	0	961.693	1092.7	0	1,351.717	1112.3	0	459.138	1094.1	0	767.141	1109.1
11/6/2013	0645	0	961.693	1092.7	0	1,351.717	1112.3	0	459.138	1094.1	0	767.141	1129.1
11/7/2013	0641	0	961.693	1092.7	0	1,351.717	1112.3	0	459.138	1094.1	0	767.141	1129.1
11/8/2013	0645	0	961.693	1092.7	0	1,351.717	1112.3	0	459.138	1094.1	0	767.141	1129.3
11/9/2013	0:00												
11/10/2013	0:00												
11/11/2013	0718	292	962.123	1075.3	289	1,352.177	1104.9	0	459.658	1082.1	0	767.141	1129.3
11/12/2013	0:00												
11/13/2013	0700	169	962.359	1075.3	0	1,352.404	1035.2		459.922	1082.1	0	767.141	1129.3
11/14/2013	0645	177	962.598	1074.5	0	1,352.404	1035.2		460.278	1082.1	229	767.393	1103.0
11/15/2013	0640	167	962.806	1074.5	149	1,352.450	1035.2		460.323	1082.1	228	767.677	1103.0
11/16/2013	0:00												
11/17/2013	0:00												
11/18/2013	0800	152	963.539	1075.1	198.0	1,352.656	1087.7	244.0	461.7	1082.2	227	768.288	1103.0
11/19/2013	0635	170	963.765	1075.5	219.0	1,352.948	1084.8	244.0	462.0	1082.2	227	768.596	1103.0
11/20/2013	0700	165	963.982	1075.3	241.0	1,353.261	1081.7	254.0	462.355	1081.8	226	768.911	1103.1
11/21/2013	0639	153	964.215	1075.4	252.0	1,353.613	1079.8	242.0	462.7	1082.2	226	769.229	1103.1
11/22/2013	0535	165	964.445	1075.3	256	1,353.972	1079.0	242.0	462.961	1082.1	0	769.287	1127.6
11/23/2013	0:00												
11/24/2013	0:00												
11/25/2013	0658	165	965.176	1075.4	257.0	1,355.113	1078.8	240.0	464.420	1082.1			
11/26/2013	0625	165	965.397	1075.4	257.0	1,355.469	1078.8	240.0	464.087	1082.1	0	769.287	1128.1
11/27/2013	0:00										0	769.287	1128.0
11/28/2013	0:00												
11/29/2013	0:00												
11/30/2013	0730	166	966.238	1075.0	0.0	1,356.452	1106.6	249.0	465.703	1081.7	228	770.354	1103.1
		TOTAL	4.699		TOTAL	4.735		**TOTAL**	6.787		TOTAL	3.423	

COMMENTS: FEW-11 and FEW-15 operated at a reduced flow rate due to packer installed in the well

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

		EW-1R			EW-4			EW-7		
		200			100			290		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation	GPM	Totalizer	Elevation
12/1/2013			1,068.726			573.045			1,765.411	
12/2/2013	0700	200	1,069.101	1069.4	99	573.231	1067.5	269	1,765.800	1077.9
12/3/2013	0625	200	1,069.285	1069.4	99	573.368	1067.5	275	1,766.176	1077.8
12/4/2013	0630	0	1,069.431	1076.6	100	573.505	1067.5	100	1,766.545	1085.0
12/5/2013	0640	199	1,069.723	1069.2	100	573.649	1067.5	0	1,766.686	1089.7
12/6/2013	0638	200	1,070.011	1069.2	99	573.791	1067.5	276	1,767.035	1077.9
12/7/2013										
12/8/2013										
12/9/2013	0640	200	1,070.871	1069.3	99	574.218	1067.5	270	1,768.208	1077.9
12/10/2013	0635	199	1,071.161	1069.1	99	574.361	1067.6	268	1,768.598	1077.8
12/11/2013	0655	200	1,071.451	1069.4	98	574.503	1067.5	266	1,768.985	1077.8
12/12/2013	0650	199	1,071.739	1069.4	99	574.645	1067.7	100	1,769.129	1086.0
12/13/2013	0700	201	1,072.028	1069.3	98	547.788	1067.6	291	1,769.493	1077.5
12/14/2013										
12/15/2013										
12/16/2013	0633	200	1,072.353	1069.6	99	575.054	1067.5	280	1,770.474	1077.5
12/17/2013	0635	201	1,072.643	1069.4	99	575.198	1067.6	275	1,770.785	1077.5
12/18/2013	0626	199	1,072.924	1069.4	100	575.336	1067.5	275	1,771.259	1077.5
12/19/2013	0630	199	1,073.213	1069.5	100	575.479	1067.6	273	1,771.656	1077.5
12/20/2013	0710	200	1,073.510	1069.5	99	575.626	1067.5	270	1,772.059	1077.6
12/21/2013										
12/22/2013										
12/23/2013	0646	201	1,074.347	1072.8	99	576.038	1067.5	270	1,773.198	1077.5
12/24/2013	0644	199	1,074.635	1070.9	98	576.179	1067.5	271	1,773.587	1077.5
12/25/2013										
12/26/2013	0630	200	1,075.210	1070.6	98	576.461	1067.5	269	1,774.361	1077.5
12/27/2013	0700	201	1,075.505	1070.0	98	576.605	1067.5	267	1,774.758	1077.5
12/28/2013										
12/29/2013										
12/30/2013	0634	202	1,076.363	1076.3	98	577.025	1067.6		1,775.910	1077.5
12/31/2013	0650	199	1,076.540	1068.3	98	577.166	1067.5		1,776.296	1077.6
		TOTAL	8.248		TOTAL	4.277		TOTAL	11.311	

COMMENTS: _____

NEBRASKA ORDNANCE PLANT OU-2 GWTP **Table 1 - GW WELLS 9,10,11, 14**

Gallons multiplied by 1,000,000 on Totalizer

		EW-9			AOP			FEW-14			FEW-15		
DATE	TIME	175			600			250			500		
Date	Time	GPM	Totalizer	Elevation	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION	GPM	Totalizer	ELEVATION
12/1/2013	0:00		966.392			1,356.452			465.925			770.564	
12/2/2013	0700	162	966.706	1075.4	0	1,356.452	1106.9	240	466.38	1082.2	228	770.893	1081.4
12/3/2013	0625	172	966.861	1075.4	258	1,356.725	1109.9	247	466.709	1081.9	228	770.995	1081.4
12/4/2013	0630	0	966.982	1095.4	259	1,357.074	1078.9	0	467.034	1093.8	231	771.533	1103.0
12/5/2013	0640	170	967.206	1074.3	255	1,357.446	1078.8	0	467.359	1093.8	228	771.864	1103.0
12/6/2013	0638	166	967.426	1075.5	257	1,357.446	1078.8	238	467.704	10813.9	227	772.192	1103.0
12/7/2013	0:00												
12/8/2013	0:00												
12/9/2013	0640	166	968.142	1075.3	0	1,357.894	1106.3	239	468.735	1082.1	0	772.287	1103.0
12/10/2013	0635	166	968.383	1075.3	0	1,357.894	1106.3	239	469.082	1082.1	0	772.287	1128.1
12/11/2013	0655	165	968.622	1075.3	0	1,357.894	1106.3	238	469.428	1082.1	0	772.287	1128.1
12/12/2013	0650	165	968.812	1075.3	0	1,357.894	1106.3	237	469.772	1082.1	0	772.287	1128.1
12/13/2013	0700	118	968.965	1075.4	0	1,357.894	1106.3	238	470.114	1082.1	0	772.287	1128.1
12/14/2013	0:00												
12/15/2013	0:00												
12/16/2013	0633	169	969.678	1075.0	258	1,357.894	1108.0	238	471.129	1082.1	236	772.917	1136.6
12/17/2013	0635	168	969.922	1075.0	0	1,357.894	1116.2	237	471.472	1082.1	0	772.998	1142.2
12/18/2013	0626	168	970.158	1075.1	0	1,357.894	1116.4	238	471.805	1082.1	0	772.998	1142.6
12/19/2013	0630	168	970.401	1075.1	252	1,357.894	1108.5	237	472.147	1082.1	472	773.449	1130.3
12/20/2013	0710	167	970.650	1075.0	291	1,357.894	1107.1	236	472.498	1082.1	483	774.156	1129.6
12/21/2013	0:00												
12/22/2013	0:00												
12/23/2013	0646	167	971.352	1075.0	286	1,361.023	1107.1	236	473.49	1082.1	498	776.145	1128.6
12/24/2013	0644	168	971.593	1075.0	323	1,361.486	1105.9	237	473.831	1082.1	500	776.864	1128.4
12/25/2013	0:00												
12/26/2013	0630	167	972.074	1075.0	357	1,362.509	1104.6	237	474.509	1082.1	501	778.300	1128.3
12/27/2013	0700	166	972.321	1075.0	0	1,362.599	1115.9	236	474.857	1082.1	499	779.039	1128.1
12/28/2013	0:00												
12/29/2013	0:00												
12/30/2013	0634	167	973.038	1075.0	455	1,364.359	1101.4	236	475.87	1082.1	495	781.169	1128.1
12/31/2013	0650	167	973.280	1075.0	513	1,365.057	1099.6	235	476.207	1082.1	495	781.887	1128.1
		TOTAL	7.172		TOTAL	9.365		**TOTAL**	10.675		TOTAL	12.114	

COMMENTS: _____

APPENDIX I

Monthly and Annual Flow Summary for the Main Groundwater Treatment Plant

This page was intentionally left blank.

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons are multiplied by 1,000,000

Influent Flow	January Total Flow	February Total Flow	March Total Flow	April Total Flow	May Total Flow	June Total Flow	July Total Flow	August Total Flow	September Total Flow	October Total Flow	November Total Flow	December Total Flow
EW-1R	8.940	8.061	8.940	8.620	5.680	10.567	11.140	10.719	9.058	7.809	5.383	8.248
EW-2	-	-	-	-	-	-	-	-	-	-	-	-
EW-3	0.461	-	-	-	-	-	-	-	-	-	-	-
EW-4	4.288	4.004	4.460	4.294	4.379	4.337	4.322	4.396	4.239	3.823	2.890	4.277
EW-5	-	-	-	-	-	-	-	-	-	-	-	-
EW-6	0.074	-	-	-	-	-	-	-	-	-	-	-
EW-7	12.963	11.630	12.892	12.417	12.424	12.493	12.805	12.686	12.323	11.079	7.577	11.311
EW-8	-	-	-	-	-	-	-	-	-	-	-	-
EW-9	6.238	5.617	6.226	6.039	6.034	6.016	6.093	8.991	7.464	6.621	4.699	7.172
EW-10	-	-	-	-	-	-	-	-	-	-	-	-
FEW-11	24.268	22.119	24.466	22.539	17.250	21.224	18.882	7.610	6.836	20.327	4.735	9.365
FEW-14	11.138	10.115	11.108	10.568	10.432	10.736	11.043	10.997	10.651	9.330	6.787	10.675
FEW-15	21.553	18.990	21.807	20.395	20.925	20.550	18.355	16.582	4.123	8.643	3.423	12.114
EW-16	0.153	-	-	-	-	-	-	-	-	-	-	-
Total Flow:	90.076	80.536	89.899	84.872	77.124	85.923	82.640	71.981	54.694	67.632	35.494	63.162
Effluent Flow	Gallons are multiplied by 1,000,000											
Wahoo Creek:	29.810	26.700	29.180	26.910	25.110	39.060	49.140	37.530	36.100	38.580	28.060	33.380
LL4 Wahoo Creek:	22.631	18.693	22.415	21.071	21.463	22.259	17.544	17.401	3.868	8.939	All flow to Main GTP	10.470
Clear Creek:	38.030	34.300	38.250	36.890	30.550	26.140	14.980	18.610	15.150	20.820	7.550	19.270
Total Discharge:	90.471	79.693	89.845	84.871	77.123	87.459	81.664	73.541	55.118	68.339	35.610	63.120
Summary	Gallons are multiplied by 1,000,000											
Total Influent:	90.076	80.536	89.899	84.872	77.124	85.923	82.640	71.981	54.694	67.632	35.494	63.162
Total Effluent:	90.471	79.693	89.845	84.871	77.123	87.459	81.664	73.541	55.118	68.339	35.610	63.120
Total Effluent-LL4	67.840	61.000	67.430	63.800	55.660	65.200	64.120	56.140	51.250	59.400	35.610	52.650
Average Daily Influent Flow:	2.906	2.876	2.900	2.829	2.488	2.864	2.666	2.322	1.823	2.182	1.183	2.037
Average Daily Effluent Flow:	2.918	2.846	2.898	2.829	2.488	2.915	2.634	2.372	1.837	2.204	1.187	2.036
Year to Date	Gallons are multiplied by 1,000,000											
Total Flows												
Influent:	884.0											
Effluent:	886.9											
Effluent-LL4	700.1											
Startup to Date	Gallons are multiplied by 1,000,000											
Total Flows												
Influent:	13,284											
Effluent:	12,925											
Effluent-LL4	12,277											

APPENDIX J

2013 Main Groundwater Treatment Plant Sludge Profile

This page was intentionally left blank.

NON-HAZARDOUS WAM APPROVAL FORM

Requested Management Facility: Pheasant Point Landfill

Profile Number PP473007 Waste Approval Expiration Date 07/23/2016

APPROVAL DETAILS

Approval Decision ☑ Approved ☐ Not Approved Profile Renewal ☑ Yes ☐ No

Management Method: Direct Landfill

Generator Name: US Army Corps of Engineers

Management Facility Precautions, Special Handling Procedures or Limitation on approval:

- Shall not contain free liquid
- Shipment must be scheduled into disposal facility
- Approval Number must accompany each shipment
- Waste Manifest or applicable shipping document must accompany load
- Drums must have removable lids and shall not contain free liquids
- Analysis provided shall be representative of all material shipped under this non-hazardous waste profile
- Shall notify WM disposal location of changes associated with original waste generating process prior to shipment

Additional Conditions:

Waste must be scheduled at least 24 hours in advance by calling 402-238-3461.

WM Authorization Name: Joe Kash Title: Waste Approval Manager

WM Authorization Signature: Date: 07/30/2013

Agency Authorization (if Required): Date:

©2013 Waste Management. Inc.

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☐YES ☒NO

Profile Number: WMI 473007

☐Hazardous ☒Non-Hazardous ☐TSCA

Renewal Date: / /

A. Waste Generator Information

1. Generator Name: US Army Corps of Engineers
2. SIC Code:
3. Facility Street Address: 905 County Road 6
4. Phone: (402) 944-2964
5. Facility City: Ashland
6. State/Province: NE
7. Zip/Postal Code: 68003
8. Generator USEPA/Federal ID #:
9. County:
10. State/Province ID #:
11. Customer Name:
12. Customer Phone: ( )
13. Customer Contact:
14. Customer Fax:
15. Billing Address ☒Same as above

B. Waste Stream Information

1. **Description**
   a. Name of Waste: Backwash Residue
   b. Process Generating Waste: Carbon column Backwashing

c. Color	d. Strong odor (describe):	e. Physical state @ 70°F	f. Layers	g. Free liquid range
		☒Solid ☐Liquid ☐Gas ☐Sludge ☐Other	☒Single Layer ☐Multi-layer	to %
				h. pH: Range 6.5 to 7.5

i. Liquid Flash Point: ☐<73°F ☐73-99°F ☐100-139°F ☐140-199°F ☒≥ 200°F ☐Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Barium	3.59 ppm – 0.000036%		
Reactive Cyanide	0.5 ppm – 0.000005%		
Carbon fines, sand, silt	99.999959%		

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. ☐Oxidizer ☐Pyrophoric ☐Explosive ☐Radioactive ☐Carcinogen ☐Infectious ☐Shock Sensitive ☐Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j)..... ☐YES ☒NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j)..... ☐YES ☒NO

n. Does the waste represented by this profile contain asbestos?..... ☐YES ☒NO
   If yes..... ☐friable ☐non-friable

o. Does the waste represented by this profile contain benzene?..... ☐YES ☒NO
   If yes, concentration _____ ppm
   Is the waste subject to the benzene waste operations NESHAP?..... ☐YES ☒NO

p. Is the waste subject to RCRA Subpart CC controls?..... ☐YES ☒NO
   If yes, volatile organic concentration _____ ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances?..... ☐YES ☒NO

r. Does the waste contain debris? (list in Section B.1.j)..... ☐YES ☒NO

2. **Quantity of Waste**
   Estimated Annual Volume _____ ☐Tons ☐Yards ☐Drums ☐Other (specify) _____

3. **Shipping Information**
   a. Packaging:
   ☐Bulk Solid; Type/Size: _____ ☐Bulk Liquid; Type/Size: _____
   ☒Drum; Type; Size: 55-gallon drums ☐Other: _____
   b. Shipping Frequency: Units _____ Per: ☐Month ☐Quarter ☐Year ☐One time ☐Other _____
   c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f)..... ☐YES ☒NO

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

d. Reportable Quantity (lbs.;kgs.): _____ e. Hazard Class/ID #: _____

f. USDOT Shipping Name: _____

g. Personal Protective Equipment Requirements: None

h. Transporter/Transfer Station: _____

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2. ☐YES ☒NO
   a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) _____
   b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (if yes, list in Section B.1.j) ☐YES ☐NO
   c. Does this waste contain debris? (if yes, list size and type in Chemical Composition - B.1.) ☐YES ☐NO

2. Is this a state hazardous waste? ☐YES ☒NO
   Identify **ALL** state hazardous waste codes _____

3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☐YES ☒NO
   If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up, provide relevant documentation.

4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐YES ☒NO

5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761? (if yes, list in Chemical Composition - B.1.j) ☐YES ☒NO
   a. If yes, were the PCBs imported into the U.S.? ☐YES ☐NO

6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒YES ☐NO

7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒YES ☐NO

☐Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WM to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: _____ Title: _____

Name (Type or Print): _____ Company Name: _____ Date: _____

☐Check if additional information is attached. Indicate the number of attached pages _____

D. WM Management's Decision — FOR WM USE ONLY

1. Management Method ☐Landfill ☐Non-hazardous Solidification ☐Bioremediation ☐Incineration ☐Hazardous Stabilization ☐Other (Specify) _____
2. Proposed Ultimate Management Facility: _____
3. Precautions, Special Handling Procedures, or Limitation on Approval: _____

4. Waste Form _____ 5. Source _____ 6. System Type _____

Special Waste Decision ☐Approved ☐Disapproved

Salesperson's Signature: _____ Date: _____

Division Approval Signature (Optional): _____ Date: _____

Special Waste Approvals Person Signature: Date:

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Instructions

Information on this form is used to determine if the waste may be transported, treated, stored or disposed in a legal, safe, and environmentally sound manner. This information will be maintained in strict confidence. Answers must be provided for sections A, B, and C and must be printed in ink or typed. A response of "NONE" or NA" (not applicable) can be made if appropriate. If additional space is needed, indicate on the form that additional information is attached, and attach the information to Generator's Waste Profile Sheet. If you have questions concerning this form, please contact the Contractor's sales representative.

A. Waste Generator Information

1. **Generator Name** - Enter the name of the facility where the waste is generated.
2. **SIC Code** - Enter the four digit Standard Industrial Classification Code for the facility where the waste is generated.
3. **Facility Street Address** - Enter the street address (not P.O. Box) of the facility where the waste is generated.
4. **Phone** - Enter Generator's area code and phone number.
5. **Facility City** - Enter the city where the waste is generated.
6. **State/Province** - Enter the state or province where the waste is generated.
7. **Zip/Postal Code** - Enter the generating facility's zip or postal code.
8. **Generator USEPA/Federal ID #** - Enter the identification number issued by the USEPA, Canadian, or Mexican Federal Agency to the facility generating the waste (if applicable).
9. **County** - Enter the county where the waste is generated.
10. **State/Province ID #** - Enter the identification number issued by the state or province to the facility generating the waste (if applicable).
11. **Customer Name** - Entity that the Contractor is directly working with regarding the represented waste stream. If the same as the Generator, mark "Same as Above".
12. **Customer Phone** - Enter technical contact's area code and telephone number.
13. **Customer Contact** - Enter the name of the person who can answer technical questions about the waste.
14. **Customer Fax** - Area code and facsimile number for the customer.
15. **Billing Address** - Address where bill for services should be sent.

B. Waste Stream Information

1.a. **Name of Waste** - Enter a name generally descriptive of this waste (e.g., paint sludge, fluorescent bulbs).

1.b. **Process Generating Waste** - Describe the process generating the waste in detail. List the specific process/operation or source that generates the waste (e.g., incineration of municipal refuse, asbestos removal, wastewater treatment, building maintenance).

At a minimum, the Generator should answer the following questions in determining the process generating the waste.

- What chemicals are stored and/or used at the facility?
- Is the waste generated from the production/manufacturing of any of the following industries: wood preservation; inorganic pigments; organic pigments; pesticides; explosives; petroleum refining; iron and steel, copper, lead or zinc production?
- Is the waste a result from degreasing, solvent parts cleaning, recovery/reclaiming of solvents (bottoms), wastewater treatment (sludges), or electroplating?

1.c. **Color** - Describe the color of the waste (e.g., blue, transparent, varies).

1.d. **Strong odor** - DO NOT SMELL THE WASTE! If the waste has a known odor, then describe (e.g., acrid, pungent, solvent, sweet).

1.e. **Physical state @ 70°F** - If the four boxes provided do not apply, a descriptive phrase may be entered after "Other" (e.g., multi-phase).

1.f. **Layers** - Single Layer means the waste is homogenous. Multi-layer means the waste is comprised of two or more layers (e.g., oil/water/sludge).

1.g. **Free liquid range** - Range (in percent by volume) of free liquids in the waste.

1.h. **pH Range** - Indicate the pH range.

1.i. **Liquid Flash Point** - Indicate the flash point obtained using the appropriate test method.

1.j. **Chemical Composition** - List all organic and/or inorganic components of the waste using chemical names. If trade names are used, attach Material Safety Data Sheets or other documents that adequately describe the composition of the waste. For each component, estimate the range (in percent) in which the component is present.

1.k. Check all that apply.

1.l. Identify any element, chemical compound, or mixture in concentration of 0.1 percent or greater that is considered a carcinogen or potential carcinogen pursuant to OSHA.

1.m. Indicate if the waste contains any dioxins (list in Section B.1.j).

1.n. Indicate if the waste contains asbestos. Indicate if the asbestos is friable.

1.o. Indicate if the waste contains benzene, the level in ppm, and whether it is subject to the benzene NESHAP.

1.p. Indicate if the waste is subject to RCRA Subpart CC control. In addition, indicate the volatile organic concentration, if known, in parts per million weight.

1.q. Indicate if the waste contains any Class I or Class II ozone-depleting controlled substances.

1.r. Indicate if the waste contains debris (list size and type in B.1.j).

2. **Quantity of Waste** - Approximate volume in tons, yards, or other (e.g., drums, gallons) that will be received by the ultimate management facility. This volume amount is not intended for use in complying with state and/or permit restrictions.

3.a. **Packaging** - Choose the appropriate option or "other" along with a description.

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

3.b. **Shipping Frequency** - Choose the appropriate option or "other" along with a description.
3.c. **Is this a U.S. Department of Transportation (USDOT) hazardous material?** - Choose the appropriate response: yes or no.
3.d. **Reportable Quantity (lbs.; kgs.)** - If the answer to 3.c. is yes, enter the Reportable Quantity (RQ) established by 40 CFR 302.4 or equivalent Canadian or Mexican regulation for this waste. Indicate the appropriate units for the RQ.
3.e. **Hazard Class/ID #** - If the answer to 3.c. is yes, indicate the proper USDOT hazard class and identification number.
3.f. **USDOT Shipping Name** - IF the answer to 3.c. is yes, enter the proper USDOT shipping name for the waste.
3.g. **Personal Protective Equipment Requirements** - All personal protective equipment necessary to safely manage the waste stream.
3.h. **Transporter/Transfer Station** - Transporter and/or transfer station name.

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

Indicate the appropriate response to questions/statements 1, 2, 3, 4, 5, 6, and 7. By signing this Generator's Waste Profile Sheet, the Generator certifies the responses are true and accurate with respect to the waste stream(s) listed.

Certification Signature - Signature of an authorized employee of the Generator or authorized representative of the generator.
Title - Enter Employee's title.
Name - Type or Print Employee's name.
Company Name - Company employing the person certifying the Generator's Waste Profile Sheet.
Date - Enter the date this Generator's Waste Profile Sheet is signed.

D. WM Management's Decision — FOR WM USE ONLY

To be completed by WM.

This page was intentionally left blank.

APPENDIX K

Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant

This page was intentionally left blank.

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:	**EW-12**				***FEW-17 installed in May 2013**			**LL1 Influent Flow**	**LL1 Influent Flow**	**LL1 Sump Level**	**Discharge Pump Computer**	
Pump Set Points:	**330**											
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
1/1/2013	0:00		1055.416					0	1055.416			1057.236
1/2/2013	0625	307	1055.856	1039.78				307	1055.856	65	307	1057.678
1/3/2013	0630	307	1056.296	1040.08				307	1056.296	65	310	1058.121
1/4/2013	0525	310	1056.721	1038.91				310	1056.721	65	313	1058.548
1/5/2013	0:00											
1/6/2013	0:00											
1/7/2013	0625	310	1058.076	1039.60				310	1058.076	65	310	1059.911
1/8/2013	0627	310	1058.521	1038.92				310	1058.521	65	310	1060.359
1/9/2013	0705	310	1058.980	1038.76				310	1058.980	65	313	1060.820
1/10/2013	0529	310	1059.395	1038.99				310	1059.395	65	310	1061.237
1/11/2013	0620	0	1059.396	1101.23				0	1059.396	90	0	1061.239
1/12/2013	0:00											
1/13/2013	0:00											
1/14/2013	0633	309	1060.691	1038.97				309	1060.691	65	311	1062.542
1/15/2013	0615	310	1061.129	1038.90				310	1061.129	65	312	1062.983
1/16/2013	0630	310	1061.579	1039.02				310	1061.579	65	312	1063.436
1/17/2013	0627	310	1062.024	1038.76				310	1062.024	65	313	1063.884
1/18/2013	0508	310	1062.445	1038.63				310	1062.445	65	313	1064.308
1/19/2013	0:00											
1/20/2013	0:00											
1/21/2013	0:00											
1/22/2013	0635	310	1064.254	1038.68				310	1064.254	66	311	1066.129
1/23/2013	0630	310	1064.697	1038.47				310	1064.697	65	313	1066.575
1/24/2013	0637	310	1065.144	1038.39				310	1065.144	65	313	1067.025
1/25/2013	0630	310	1065.588	1038.56				310	1065.588	65	314	1067.472
1/26/2013	0:00											
1/27/2013	0:00											
1/28/2013	0630	310	1066.924	1038.56				310	1066.924	65	313	1068.817
1/29/2013	0635	310	1067.371	1038.78				310	1067.371	65	314	1069.266
1/30/2013	0655	310	1067.822	1038.35				310	1067.822	67	331	1069.720
1/31/2013	0635	310	1068.261	1038.47				310	1068.261	65	309	1070.162
		TOTAL	**13.291**		**TOTAL**	**-**		**TOTAL**	**13.291**		**TOTAL**	**13.375**

COMMENTS: _____

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:	**EW-12**				***FEW-17 installed in May 2013**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:	**330**											
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
2/1/2013	0637	309	1068.707	1038.61				309	1068.707	66	317	1070.611
2/2/2013	0:00											
2/3/2013	0:00											
2/4/2013	0538	310	1070.025	1038.40				310	1070.025	65	309	1071.937
2/5/2013	0645	310	1070.491	1038.19				310	1070.491	65	311	1072.406
2/6/2013	0635	310	1070.931	1038.36				310	1070.931	65	311	1072.849
2/7/2013	0625	310	1071.373	1038.54				310	1071.373	66	318	1073.294
2/8/2013	0623	310	1071.817	1038.12				310	1071.817	65	314	1073.741
2/9/2013	0:00											
2/10/2013	0:00											
2/11/2013	0630	310	1073.137	1038.08				310	1073.137	65	319	1075.070
2/12/2013	0525	311	1073.561	1038.04				311	1073.561	65	312	1075.497
2/13/2013	0632	311	1074.027	1037.89				311	1074.027	65	310	1075.963
2/14/2013	0630	310	1074.472	1037.91				310	1074.472	65	313	1076.414
2/15/2013	0607	310	1074.910	1037.83				310	1074.910	65	311	1076.856
2/16/2013	0:00											
2/17/2013	0:00											
2/18/2013	0:00											
2/19/2013	0630	310	1076.699	1037.97				310	1076.699	66	324	1078.657
2/20/2013	0624	310	1077.142	1037.85				310	1077.142	65	312	1079.103
2/21/2013	0552	310	1077.578	1037.89				310	1077.578	65	311	1079.541
2/22/2013	0:00											
2/23/2013	0:00											
2/24/2013	0:00											
2/25/2013	0625	309	1079.370	1037.53				309	1079.370	65	311	1081.346
2/26/2013	0630	310	1079.815	1037.53				310	1079.815	65	316	1081.794
2/27/2013	0635	310	1080.263	1037.67				310	1080.263	66	325	1082.246
2/28/2013	0632	310	1080.708	1037.49				310	1080.708	65	310	1082.693
		TOTAL	**12.426**		**TOTAL**	**-**		**TOTAL**	**12.426**		**TOTAL**	**12.511**

COMMENTS:

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**						**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**330**			***FEW-17 installed in May 2013**							
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
3/1/2013	0529	310	1,081.134	1037.46				310	1081.134	65	311	1,083.122
3/2/2013	0:00											
3/3/2013	0:00											
3/4/2013	0628	310	1082.488	1037.61				310	1082.488	65	314	1084.486
3/5/2013	0630	310	1082.933	1037.40				310	1082.933	65	311	1084.934
3/6/2013	0632	310	1083.380	1037.46				310	1083.380	65	311	1085.384
3/7/2013	0630	310	1083.825	1036.97				310	1083.825	65	312	1085.832
3/8/2013	0524	0	1083.908	1101.09					1083.908	82	0	1085.916
3/9/2013	0:00											
3/10/2013	0:00											
3/11/2013	0710	309	1085.028	1037.58				309	1085.028	65	310	1087.220
3/12/2013	0635	310	1085.637	1037.41				310	1085.637	65	311	1087.657
3/13/2013	0640	310	1086.084	1037.34				310	1086.084	65	312	1088.107
3/14/2013	0532	310	1086.508	1037.11				310	1086.508	66	312	1088.534
3/15/2013	0517	310	1086.949	1036.95				310	1086.949	66	313	1088.978
3/16/2013	0:00											
3/17/2013	0:00											
3/18/2013	0647	310	1088.313	1037.03				310	1088.313	65	314	1090.352
3/19/2013	0628	310	1088.752	1037.46				310	1088.752	65	312	1090.794
3/20/2013	0549	309	1089.186	1036.96				309	1089.186	65	312	1091.230
3/21/2013	0632	310	1089.641	1036.84				310	1089.641	65	310	1091.692
3/22/2013	0618	0	1089.722	1101.19				0	1089.722	89	0	1091.771
3/23/2013	0:00											
3/24/2013	0:00											
3/25/2013	0635	310	1090.955	1037.32				310	1090.955	64	296	1093.011
3/26/2013	0624	310	1091.395	1037.22				310	1091.395	65	311	1093.454
3/27/2013	0517	310	1091.820	1037.18				310	1091.820	65	313	1093.882
3/28/2013	0526	310	1092.268	1037.14				310	1092.268	65	312	1094.332
3/29/2013	0511	305	1092.693	1038.59				305	1092.693	65	307	1094.761
3/30/2013	0:00											
3/31/2013	0:00											
		TOTAL	**12.899**		**TOTAL**	**-**		**TOTAL**	**12.899**		**TOTAL**	**12.988**

COMMENTS: 3/7/13 off for blower repair.

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:	**EW-12**				***FEW-17 installed in May 2013**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:	**330**											
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
4/1/2013	0629	305	1094.032	1038.58				305	1094.032	65	306	1096.110
4/2/2013	0625	305	1094.469	1038.24				305	1094.469	65	308	1096.550
4/3/2013	0635	305	1094.911	1038.01				305	1094.911	65	308	1096.995
4/4/2013	0640	305	1095.349	1038.29				305	1095.349	65	308	1097.436
4/5/2013	0632	306	1095.786	1038.13				306	1095.786	65	308	1097.876
4/6/2013	0:00											
4/7/2013	0:00											
4/8/2013	0628	305	1097.100	1037.91				305	1097.100	65	306	1099.199
4/9/2013	0629	305	1097.541	1038.03				305	1097.541	65	301	1099.643
4/10/2013	0634	305	1097.978	1038.19				305	1097.978	65	307	1100.076
4/11/2013	0720	270	1098.365	1047.37				270	1098.365	66	276	1100.462
4/12/2013	0632	280	1098.738	1044.97				280	1098.738	65	280	1100.836
4/13/2013	0:00											
4/14/2013	0:00											
4/15/2013	0635	300	1100.032	1039.34				300	1100.032	66	302	1102.139
4/16/2013	0637	270	1100.346	1047.34				270	1100.346	65	270	1102.482
4/17/2013	0633	300	1100.773	1039.26				300	1100.773	65	303	1102.913
4/18/2013	0633	300	1101.203	1038.96				300	1101.203	65	305	1103.346
4/19/2013	0631	300	1101.635	1040.04				300	1101.635	65	301	1103.779
4/20/2013	0:00											
4/21/2013	0:00											
4/22/2013	0630	300	1102.927	1039.05				300	1102.927	65	304	1105.080
4/23/2013	0622	300	1103.355	1040.13				300	1103.355	65	297	1105.511
4/24/2013	0640	300	1103.791	1040.03				300	1103.791	65	301	1105.950
4/25/2013	0632	300	1104.220	1039.54				300	1104.220	65	303	1106.381
4/26/2013	0635	301	1104.651	1039.44				301	1104.651	65	302	1106.815
4/27/2013	0:00											
4/28/2013	0:00											
4/29/2013	0625	0	1105.620	1101.26				0	1105.620	53	0	1107.790
4/30/2013	0630	300	1106.007	1039.61				300	1106.007	66	302	1108.179
		TOTAL	**12.384**		**TOTAL**	**-**		**TOTAL**	**12.384**		**TOTAL**	**12.480**

COMMENTS: 4/28/13 System shut down so it was left down for step test on 4/29/13.

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**			**FEW-17**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**330**			**330**							
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
5/1/2013	0652	250	1,106.416	1051.49				250	1106.416	65	241	1,108.590
5/2/2013	0637	269	1106.798	1046.84				269	1106.798	65	279	1108.975
5/3/2013	0613	270	1107.148	1046.83				270	1107.148	67	280	1109.327
5/4/2013	0:00											
5/5/2013	0:00											
5/6/2013	0632	270	1108.318	1046.50				270	1108.318	66	270	1101.502
5/7/2013	0630	270	1108.705	1046.77				270	1108.705	66	271	1110.892
5/8/2013	0628	270	1109.094	1046.91				270	1109.094	66	271	1111.283
5/9/2013	0632	270	1109.481	1046.59				270	1109.481	67	274	1111.673
5/10/2013	0621	270	1109.866	1046.65				270	1109.866	66	271	1112.060
5/11/2013	0:00											
5/12/2013	0:00											
5/13/2013	0603	270	1111.025	1046.62				270	1111.025	66	270	1113.225
5/14/2013	0628	270	1111.421	1046.36				270	1111.421	66	271	1113.624
5/15/2013	0630	271	1111.793	1034.97				271	1111.793	67	336	1114.014
5/16/2013	0510	271	1112.159	1046.43	0	0.047	1046.43	271	1112.206	66	272	1114.408
5/17/2013	0630	270	1112.569	1046.58	0	0.047	1099.56	270	1112.616	66	272	1114.821
5/18/2013	0:00											
5/19/2013	0:00											
5/20/2013	0624	0	1112.702	1101.64	0	0.157	1099.22	0	1112.8584	92	0	1115.064
5/21/2013	0510	0	1112.702	1101.61	350	0.513	1065.46	350	1113.2155	65	325	1115.433
5/22/2013	0622	0	1112.702	1101.49	350	1.044	1065.15	350	1113.7458	66	350	1115.957
5/23/2013	0551	0	1112.702	1101.44	350	1.533	1064.11	350	1114.2347	66	349	1116.445
5/24/2013	0624	0	1112.702	1101.44	350	2.047	1064.01	350	1114.7491	66	350	1116.959
5/25/2013	0:00											
5/26/2013	0:00											
5/27/2013	0:00											
5/28/2013	0630	0	1112.702	1101.78	350	4.059	1062.04	350	1116.761	66	351	1118.970
5/29/2013	0622	0	1112.702	1101.72	350	4.559	1062.40	350	1117.261	66 #	349	1119.470
5/30/2013	0521	0	1112.702	1102.19	350	5.063	1063.32	350	1117.7645	66	350	1119.974
5/31/2013	0621	0	1112.702	1102.23	350	5.565	1062.34	350	1118.2665	67	349	1120.476
		TOTAL	**6.286**		**TOTAL**	**6.099**		**TOTAL**	**11.851**		**TOTAL**	**12.423**

COMMENTS:

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**			**FEW-17**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**330**			**330**							
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
6/1/2013	0:00					6.099						1121.013
6/2/2013	0:00											
6/3/2013	0:00	0	1112.702	1101.9	350	7.082	1062.7	350	1,119.784	66	249	1122.111
6/4/2013	0:00	0	1112.702	1101.9	350	7.574	1062.6	350	1,120.276	67	350	1122.483
6/5/2013	0:00	0	1112.702	1102.0	0	7.574	1090.1	0	1,120.276	62	0	1122.483
6/6/2013	0:00	0	1112.702	1102.0	0	7.574	1090.1	0	1,120.276	62	0	1122.483
6/7/2013	0:00	0	1112.702	1102.0	0	7.574	1090.1	0	1,120.276	62	0	1122.483
6/8/2013	0:00											
6/9/2013	0:00											
6/10/2013	0:00	275	1113.287	1047.0	0	7.574	1097.2	275	1,120.861	67	285	1123.072
6/11/2013	0:00	275	1113.676	1047.0	0	7.574	1097.5	275	1,121.250	66	277	1123.464
6/12/2013	0:00	275	1114.074	1047.3	326	7.987	1069.1	600	1,122.061	66	602	1124.278
6/13/2013	0:00	275	1114.469	1046.4	325	8.453	1067.8	601	1,122.922	66	601	1125.141
6/14/2013	0:00	275	1114.863	1046.8	325	8.919	1067.5	600	1,123.782	66	604	1126.003
6/15/2013	0:00											
6/16/2013	0:00											
6/17/2013	0:00	275	1116.048	1046.4	325	10.320	1065.1	600	1,126.368	66	608	1128.598
6/18/2013	0:00	275	1116.405	1046.8	325	10.740	1068.9	599 #	1,127.146	66 #	605	1129.378
6/19/2013	0:00	275	1116.806	1045.9	325	11.215	1069.0	600	1,128.021	66	607	1130.234
6/20/2013	0:00	275	1117.194	1046.1	325	11.673	1070.6	600	1,128.867	66	602	1131.103
6/21/2013	0:00	278	1117.593	1044.9	325	12.145	1070.2	600	1,129.739	66	578	1131.976
6/22/2013	0:00											
6/23/2013	0:00											
6/24/2013	0:00	275	1118.774	1045.5	325	13.543	1070.4	601	1,132.317	66	601	1134.561
6/25/2013	0:00	275	1119.173	1046.4	325	14.015	1069.6	600	1,133.189	66	601	1135.433
6/26/2013	0:00	275	1119.561	1045.7	325	14.474	1067.4	600	1,134.036	66	600	1136.281
6/27/2013	0:00	275	1119.962	1045.7	325	14.948	1069.7	600	1,134.910	66	602	1137.158
6/28/2013	0:00	275	1120.354	1046.1	325	15.412	1067.4	600	1,135.766	66	601	1138.016
6/29/2013	0:00											
6/30/2013	0:00											
		TOTAL	**1,121.540**		**TOTAL**	**10.716**		**TOTAL**	**1,138.356**		**TOTAL**	**19.595**

COMMENTS: _____

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**			**FEW-17**			**LL1 Influent Flow**		**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**275**			**325**								
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**		**Totalizer**	**Percent**	**GPM**	**Totalizer**
7/1/2013	0645	275	1121.5	1045.3	325	16.8	1068.2	600		1,138.4	66	602	1140.6
7/2/2013	0632	275	1121.9	1037.4	325	17.3	1068.8	598		1,139.2	67	619	1141.5
7/3/2013	0812	275	1122.4	1046.3	325	17.8	1064.8	600		1,140.1	66	598	1142.4
7/4/2013	0:00												
7/5/2013	0642	275	1123.1	1046.1	325	18.7	1070.0	600		1,141.8	66	602	1144.0
7/6/2013	0:00												
7/7/2013	0:00												
7/8/2013	0624	275	1124.3	1044.7	326	20.1	1067.6	600		1,144.4	66	600	1146.6
7/9/2013	0629	275	1124.7	1044.7	325	20.5	1069.4	600		1,145.2	66	599	1147.5
7/10/2013	0638	275	1125.1	1045.0	325	21.0	1069.1	600		1,146.1	66	603	1148.4
7/11/2013	0654	275	1125.5	1045.0	325	21.5	1066.3	600		1,147.0	66	602	1149.2
7/12/2013	0608	275	1125.9	1044.7	325	21.9	1067.5	600		1,147.8	66	599	1150.1
7/13/2013	0:00												
7/14/2013	0:00												
7/15/2013	0634	275	1127.1	1044.9	325	23.3	1068.5	600	#	1,150.4	66	600	1152.7
7/16/2013	0633	275	1127.5	1045.2	325	23.8	1076.7	600		1,153.5	66	601	1153.6
7/17/2013	0636	275	1127.8	1044.5	325	24.3	1066.8	600		1,152.1	66	606	1154.4
7/18/2013	0640	274	1128.2	1044.3	325	24.7	1069.2	600		1,152.9	66	601	1155.3
7/19/2013	0644	275	1128.7	1044.3	325	25.2	1067.7	600		1,154.0	66	601	1156.1
7/20/2013	0:00												
7/21/2013	0:00												
7/22/2013	0848	275	1129.4	1044.7	325	26.1	1069.3	600		1,155.6	66	600	1157.9
7/23/2013	0630	275	1129.8	1044.5	325	26.5	1073.5	600		1,156.3	66	601	1158.7
7/24/2013	0611	275	1130.2	1044.5	325	27.0	1070.9	600		1,157.2	66	601	1159.5
7/25/2013	0643	275	1130.6	1043.9	325	27.5	1066.6	600		1,158.1	66	600	1160.4
7/26/2013	0755	275	1131.0	1044.5	324	28.0	1069.6	600		1,159.0	66	600	1161.3
7/27/2013	0:00												
7/28/2013	0:00												
7/29/2013	0635	275	1132.2	1043.8	325	29.4	1070.9	600		1,161.5	66	600	1163.8
7/30/2013	0651	275	1132.6	1043.5	325	29.8	1066.3	600		1,162.4	66	600	1164.7
7/31/2013	0645	275	1133.0	1043.4	325	30.3	1067.7	600		1,163.2	66	601	1165.6
		TOTAL	**11.806**		**TOTAL**	**13.935**		**TOTAL**		**25.675**		**TOTAL**	**25.830**

COMMENTS: _____

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**			**FEW-17**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**275**			**325**							
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
8/1/2013	0:00	275	1133.3	1043.3	325	30.75	1068.2	600	1,164.0	66	601	1166.437
8/2/2013	0:00	275	1133.7		325	31.2	1067.0	600	1,165.0	66	601	1167.3
8/3/2013	0:00											
8/4/2013	0:00											
8/5/2013	0:00	275	1134.9	1043.2	325	32.6	1071.2	600	1,167.5	66	601	1169.9
8/6/2013	0:00	275	1135.3	1043.2	325	33.1	1068.1	600	1,168.4	66	600	1170.7
8/7/2013	0:00	275	1135.7	1043.2	325	35.6	1065.4	600	1,169.3	66	600	1171.6
8/8/2013	0:00	275	1136.1	1042.7	325	34.0	1065.8	600	1,170.1	66	604	1172.5
8/9/2013	0:00	275	1136.5	1043.1	325	34.5	1067.8	600	1,173.3	66	603	1173.3
8/10/2013	0:00											
8/11/2013	0:00											
8/12/2013	0:00	275	1137.7	1042.9	325	35.9	1070.8	600	1,173.6	66	606	1175.9
8/13/2013	0:00	275	1138.1	1042.6	325	36.4	1066.5	600	1,174.5	66	602	1176.8
8/14/2013	0:00	275	1138.5	1042.6	325	36.8	1065.5	600	1,175.3	66	606	1177.6
8/15/2013	0:00	275	1138.9	1043.1	325	37.3	1067.7	600	1,176.2	66	600	1178.5
8/16/2013	0:00	275	1139.3	1042.4	325	37.8	1069.1	600	1,177.0	66	601	1179.4
8/17/2013	0:00											
8/18/2013	0:00											
8/19/2013	0653	275	1140.4	1042.5	325	39.1	1065.9	600	1,179.6	66	601	1182.0
8/20/2013	0624	275	1140.8	1042.5	325	40.0	1068.4	600	1,180.4	66	601	1183.0
8/21/2013	0540	275	1141.1	1042.3	325	40.1	1066.4	600	1,181.3	66	602	1183.6
8/22/2013	0543	275	1141.6	1041.8	325	40.5	1066.3	600	1,182.1	66	600	1184.5
8/23/2013	0544	275	1142.0	1042.7	326	41.0	1068.8	601	1,183.0	66	601	1185.4
8/24/2013	0:00											
8/25/2013	0:00											
8/26/2013	0528	275	1143.2	1042.3	325	42.4	1068.3	600	1,185.6	66	606	1188.0
8/27/2013	0637	275	1143.6	1041.6	325	42.9	1069.6	600	1,186.5	66	603	1188.9
8/28/2013	0631	275	1144.4	1041.6	325	43.3	1070.0	600	1,187.3	66	600	1189.7
8/29/2013		275	1144.4	1041.7	325	43.8	1065.6	600	1,188.2	66	600	1190.6
8/30/2013		275	1144.8	1041.2	326	44.3	1068.6	600	1,189.1	66	600	1191.5
8/31/2013	0:00											
		TOTAL	**12.218**		**TOTAL**	**14.446**		**TOTAL**	**26.729**		**TOTAL**	**26.723**

COMMENTS:

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**			**FEW-17**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**275**			**325**							
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
9/1/2013	0623	275	1145.6	1041.8	325	45.2	1071.1	600	1,190.8	66	600	1193.2
9/2/2013												
9/3/2013	0627	275	1146.4	1041.4	325	46.1	1069.2	600	1,192.5	66	600	1194.9
9/4/2013	0631	275	1146.8	1041.2	325	46.6	1070.0	600	1,195.8	66	600	1195.4
9/5/2013	0629	275	1147.1	1041.7	325	47.1	1067.8	600	1,194.2	66	602	1196.6
9/6/2013	0631	275	1147.5	1040.4	325	47.5	1072.4	600	1,197.5	66	601	1197.5
9/7/2013												
9/8/2013												
9/9/2013	0640	274	1148.7	1041.0	325	48.9	1069.3	601	1,197.6	66	600	1200.0
9/10/2013	0603	275	1149.1	1041.7	325	49.3	1070.1	601	1,198.4	66	596	1200.8
9/11/2013	0700	275	1149.5	1041.0	325	49.8	1069.3	600	1,199.3	66	601	1201.7
9/12/2013	0538	275	1149.9	1041.5	325	50.3	1065.0	600	1,200.0	66	599	1203.4
9/13/2013	0655	275	1150.3	1041.6	325	50.7	1070.2	600	1,201.0	66	599	1203.4
9/14/2013												
9/15/2013												
9/16/2013	0627	275	1151.5	1040.8	325	52.1	1068.1	600	1,203.6	66	600	1206.0
9/17/2013	0625	275	1151.9	1040.6	325	52.6	1068.9	600	1,204.4	67	599	1206.9
9/18/2013	0630	275	1152.3	1040.6	325	53.0	1064.7	600	1,205.3	66	600	1207.7
9/19/2013	0644	274	1152.6	1040.5	325	53.5	1068.5	600	1,206.2	66	605	1208.6
9/20/2013	0630	275	1153.0	1041.2	325	54.0	1066.8	601	1,207.0	66	602	1209.5
9/21/2013												
9/22/2013												
9/23/2013	0647	275	1154.2	1040.2	325	55.3	1068.2	600	1,209.6	66	602	1212.1
9/24/2013	0635	275	1154.6	1040.5	325	55.8	1069.0	600	1,210.5	66	600	1212.9
9/25/2013	0615	275	1155.0	1039.9	324	56.3	1070.1	600	1,211.3	66	602	1213.8
9/26/2013	0750	275	1155.4	1040.4	325	56.8	1067.3	600	1,212.2	66	603	1214.7
9/27/2013	1258	275	1155.9	1039.8	325	57.4	1070.5	599	1,213.3	65	599	1215.7
9/28/2013												
9/29/2013												
9/30/2013	0646	275	1157.0	1090.2	325	58.7	1067.3	600	1,215.7	66	600	1218.1
		TOTAL	**11.829**		**TOTAL**	**13.929**		**TOTAL**	**25.757**		**TOTAL**	**25.792**

COMMENTS: _____

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**			**FEW-17**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**275**			**325**							
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
10/1/2013	0701	275	1157.4	1046.2	325	59.1	1066.7	600	1,216.5	66	599	1218.952
10/2/2013	0650	276	1157.8	1039.9	325	59.6	1068.4	600	1,217.4	66	604	1219.9
10/3/2013	0643	275	1158.2	1040.2	324	60.1	1066.4	599	1,218.2	66	599	1220.7
10/4/2013	0640	275	1158.6	1040.1	325	60.5	1069.5	600	1,219.1	66	603	1221.5
10/5/2013	0:00											
10/6/2013	0:00											
10/7/2013	0627	275	1159.8	1039.8	325	61.9	1068.2	600	1,221.7	66	600	1224.1
10/8/2013	0631	275	1160.2	1040.4	325	62.4	1068.3	600	1,222.5	65	600	1225.0
10/9/2013	0652	275	1160.6	1039.9	325	62.9	1068.9	600	1,223.4	66	600	1225.9
10/10/2013	0629	275	1160.9	1040.3	325	63.3	1068.0	600	1,224.3	66	600	1226.7
10/11/2013	0643	275	1161.3	1040.3	325	63.8	1064.9	600	1,225.1	66	600	1227.6
10/12/2013	0:00											
10/13/2013	0:00											
10/14/2013	0639	274	1162.5	1039.7	325	65.2	1067.7	600	1,227.7	67	583	1220.2
10/15/2013	0641	275	1162.9	1039.8	325	65.7	1068.3	601	1,228.6	66	601	1231.0
10/16/2013	0648	275	1163.3	1039.7	325	66.1	1068.1	600	1,229.4	66	601	1231.9
10/17/2013	0631	275	1163.7	1039.7	325	66.6	1068.8	600	1,230.3	66	601	1232.7
10/18/2013	0641	275	1164.1	1039.7	325	67.1	1070.8	600	1,231.2	66	601	1233.6
10/19/2013	0:00											
10/20/2013	0:00											
10/21/2013	0632	275	1165.3	1040.1	325	68.4	1068.3	600	1,233.7	66	601	1236.1
10/22/2013	0700	275	1165.7	1039.8	325	68.9	1068.2	600	1,234.5	66	601	1236.9
10/23/2013	0641	275	1166.2	1040.2	325	69.5	1067.8	600	1,235.7	66	601	1238.2
10/24/2013	0541	275	1166.4	1039.6	325	69.8	1067.8	600	1,236.2	67	600	1238.7
10/25/2013	0632	275	1167.2	1040.2	325	70.5	1076.6	575	1,237.7	67	589	1240.2
10/26/2013	0:00											
10/27/2013	0:00											
10/28/2013	0536	275	1168.0	1039.8	325	73.0	1070.8	600	1,239.3	66	600	1241.7
10/29/2013	0539											
10/30/2013	0700	275	1168.8	1040.0	325	72.3	1072.3	601	1,241.1	66	601	1244.3
10/31/2013	0610											
		TOTAL	**12.151**		**TOTAL**	**14.044**		**TOTAL**	**26.196**		**TOTAL**	**26.238**

COMMENTS:

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**			**FEW-17**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**275**			**325**							
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
11/1/2013	0622	275	1169.5	1039.2	325	73.2	1067.6	600	1,242.7	66	601	1245.190
11/2/2013	0:00											
11/3/2013	0:00											
11/4/2013	0637	275	1170.8		325	74.6	1068.5	600	1,245.4	66	602	1247.8
11/5/2013	0635	275	1171.2		325	75.7	1068.0	600	1,246.2	67	601	1248.7
11/6/2013	0645	275	1171.6		325	75.6	1069.4	600	1,247.1	66	599	1249.6
11/7/2013	0641	275	1171.9		325	76.0	1068.6	600	1,247.9	66	601	1250.4
11/8/2013	0645	275	1172.3		325	76.5	1070.8	599	1,248.8	66	603	1251.3
11/9/2013	0:00											
11/10/2013	0:00											
11/11/2013	0718	275	1173.5		325	77.9	1066.2	599	1,251.4	67	604	1253.9
11/12/2013	0:00											
11/13/2013	0700	275	1174.3		325	78.8	1068.4	600	1,253.1	66	600	1255.6
11/14/2013	0645	275	1174.7		325	79.3	1068.3	600	1,254.0	66	600	1256.5
11/15/2013	0640	275	1175.1		325	79.7	1064.6	601	1,254.9	66	602	1257.4
11/16/2013												
11/17/2013	0:00											
11/18/2013	0800	275	1176.3		325	81.2	1069.8	600	1,257.5	66	600	1259.4
11/19/2013	0635	275	1176.7		325	81.6	1067.3	600	1,258.3	66	601	1260.8
11/20/2013	0700	275	1177.1		325	82.1	1069.6	600	1,259.2	66	602	1261.7
11/21/2013	0639	275	1177.5		325	82.5	1071.2	601	1,260.0	66	602	1262.5
11/22/2013	0535	275	1177.9		325	83.0	1069.3	600	1,260.8	66	603	1263.4
11/23/2013	0:00											
11/24/2013	0:00											
11/25/2013	0658	275	1179.1		325	84.4	1071.4	600	1,263.5	66	604	1266.0
11/26/2013	0625	275	1179.4		325	84.9	1070.3	600	1,264.3	67	601	1266.8
11/27/2013	0:00											
11/28/2013	0:00											
11/29/2013	0:00											
11/30/2013	0730	275	1181.1		325	86.8	1069.1	600	1,267.8	67	600	1270.4
		TOTAL	**11.863**		**TOTAL**	**14.018**		**TOTAL**	**25.880**		**TOTAL**	**25.928**

COMMENTS: _____

Appendix K
Monthly Flow Summary for Load Line 1 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer

LL1 Wells:		**EW-12**			**FEW-17**			**LL1 Influent Flow**	**LL1 Influent Flow**	**Sump Level**	**Discharge Pump Computer**	
Pump Set Points:		**275**			**325**							
DATE	**TIME**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Elevation (ft amsl)**	**GPM**	**Totalizer**	**Percent**	**GPM**	**Totalizer**
12/1/2013	0:00		1181.4	1038.9		87.2	1068.4		1,268.6			1271.118
12/2/2013	0:00	275	1181.9	1038.7	325	87.7	1069.4	600	1,269.5	66	601	1272.0
12/3/2013	0:00	275	118.2	1038.2	325	88.1	1069.6	601	1,270.3	67	600	1272.9
12/4/2013	0:00	275	1182.6	1037.8	325	88.6	1067.5	600	1,271.2	67	602	1273.7
12/5/2013	0:00	275	1183.0	1037.8	325	89.1	1067.5	600	1,272.1	66	600	1274.6
12/6/2013	0:00	275	1183.4		325	89.5	1067.5	600	1,273.0	66	602	1275.5
12/7/2013	0:00											
12/8/2013	0:00											
12/9/2013	0:00	275	1184.6	1038.7	325	90.9	1067.1	600	1,275.6	67	600	1278.1
12/10/2013	0:00	275	1184.5	1038.7	325	91.4	1069.1	600	1,276.4	66	605	1278.9
12/11/2013	0:00	275	1184.5	1038.3	325	91.9	1067.9	600	1,277.3	66	600	1279.8
12/12/2013	0:00	275	1185.8	1038.8	325	92.3	1069.9	600	1,278.1	66	600	1280.1
12/13/2013	0:00	275	1186.2	1037.8	325	92.8	1068.1	600	1,278.1	66	602	1281.5
12/14/2013	0:00											
12/15/2013	0:00											
12/16/2013	0:00	275	1187.3	1038.3	325	94.2	1068.6	600	1,281.5	66	609	1284.1
12/17/2013	0:00	275	1187.7	1038.5	325	94.7	1064.2	600	1,282.4	66	601	1284.9
12/18/2013	0:00	275	1188.1	1038.2	325	95.1	1066.7	600	1,283.3	66	602	1285.8
12/19/2013	0:00	275	1188.5	1037.9	325	95.6	1064.6	600	1,284.1	66	600	1286.7
12/20/2013	0:00	275	1188.9	1037.8	325	96.1	1067.9	600	1,285.0	66	601	1287.6
12/21/2013	0:00											
12/22/2013	0:00											
12/23/2013	0:00	275	1190.1	1038.0	325	97.5	1067.6	600	1,287.6	67	600	1290.1
12/24/2013	0:00	275	1190.5	1038.0	325	97.9	1069.5	600	1,288.4	67	604	1291.0
12/25/2013	0:00											
12/26/2013	0:00	275	1191.3	1038.0	325	98.9	1068.5	600	1,292.7	66	600	1292.7
12/27/2013	0:00	275	1191.7	1038.0	325	99.3	1069.8	600	1,293.0	66	600	1293.6
12/28/2013	0:00											
12/29/2013	0:00											
12/30/2013	0:00	275	1192.9	1038.0	325	100.7	1065.2	600	1,293.6	66	601	1296.1
12/31/2013	0:00	275	1193.2	1037.3	325	101.2	1070.2	600	1,294.5	67	607	1297.1
		TOTAL	**12.297**		**TOTAL**	**14.501**		**TOTAL**	**26.808**		**TOTAL**	**26.843**

COMMENTS: _____

APPENDIX L

Monthly Flow Summary for Advanced Oxidation Process Groundwater Treatment Plant

This page was intentionally left blank.

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
01/02/2013	06:25		30.6	29.1	519.905	26.4	35634	17.488	55.3	91.2	174	-124.3	6.3	10.1
01/03/2013	06:30		33.1	27.4	520.051	26.5	35658	17.488	55.3	91.3	174.3	-123.1	6.4	10.1
01/04/2013	06:00	556	33.7	25.8	530	26.8	35682.6	18	55.3	91.3	174.6	-124.6	6.3	10.3
01/06/2013	06:00	551	33.3	22.4	526	26.6	35731.3	17	55.3	91.4	174.9	-122.5	6.3	10.3
01/08/2013	06:00	548	33.5	19	526	27	35780	18	55.3	91.5	174.7	-123.1	6.3	10.2
01/09/2013	06:00	550	33.8	17.4	527	26.6	35804.5	18	55.3	91.2	174.2	-123.4	6.4	10.2
01/10/2013	06:00	548	33.9	39.2	526	26.6	35828.8	17	55.3	91.4	174.9	-123.1	6.3	10.2
01/12/2013	06:00	545	33.6	35.8	524	26.6	35877.5	17	55.5	91.4	174.1	-117.4	6.5	10.1
01/17/2013	06:00	546	33.9	27.7	525	26.7	35996.8	21	55.7	91.5	174.2	-118	6.4	10.1
01/18/2013	06:00	546	34	26	524	26.7	36021.2	21	55.6	91.6	174.8	-119.6	6.4	10.3
01/19/2013	06:00	549	33.4	24.4	525	26.8	36045.3	20	55.6	91.6	174.5	-119.6	6.4	10.3
01/20/2013	05:54		33.1	22.7	524.593	26.9	36069.6	20.788	55.7	91.6	174.5	-119.9	6.4	10.3
01/22/2013	06:00	544	33.8	19.3	523	26.7	36118.4	20	55.7	91.6	174.6	-121.3	6.3	10.3
01/24/2013	07:09		33.2	40.8	531.234	26.7	36165	20.948	55.1	91	174.6	-124.2	5.8	10.3
01/26/2013	06:00	549	33.5	37.6	527	26.9	36212.7	21	55.2	91.3	174.3	-124.9	5.8	10.1
01/29/2013	07:14		33.5	32.5	524.837	26.7	36287	19.426	55.2	91.3	174.5	-124.5	5.8	10.2
01/30/2013	06:00	547	33.5	30.9	526	26.6	36310.2	20	55.3	91.1	174.7	-123.5	5.9	10.4
01/31/2013	06:00	546	33.6	29.2	523	26.6	36334.5	20	55.2	91.2	174.1	-124.5	5.8	10.1

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
02/03/2013	08:44		33.5	24	527.571	26.7	36410.4	20.201	55.3	91.3	174	-124.4	5.9	10.3
02/04/2013	06:00	547	33.5	22.5	527	26.9	36432	20	55.3	91.5	174.3	-123.6	5.9	10.3
02/06/2013	06:00	548	33.4	19.2	527	26.6	36480.7	20	55.4	91.4	174.3	-123.5	5.8	10.3
02/08/2013	06:00	545	33.6	38.5	524	26.7	36529.5	20	55.3	91.5	174.8	-123.8	5.9	10.4
02/09/2013	06:00	546	33.7	36.9	526	26.8	36553.9	19	55.3	91.9	174.3	-125.1	5.9	10.2
02/10/2013	06:00	550	33.5	35.2	526	26.8	36578.3	19	55.4	91.7	174.6	-124.4	6	10.3
02/11/2013	07:40		33.7	33.4	523.714	26.5	36604.3	20.636	55.4	91.7	173.9	-123.9	6	10.2
02/12/2013	06:00	545	33.4	31.8	523	26.6	36627	19	55.3	91.7	174.1	-124.1	5.9	10.1
02/13/2013	05:29		33.5	30.2	523.762	26.8	36650.7	19.514	55.4	91.8	174.3	-124.1	6.1	10.3
02/15/2013	05:00		33.4	26.9	531.575	27	36698.9	19.548	55.4	91.8	174.7	-124.4	6	10.3
02/16/2013	06:07		33.5	25.1	531.917	26.9	36724.4	20.136	55.4	91.8	174.5	-125	6	10.2
02/17/2013	06:00	552	33	23.5	530	27.1	36748.7	20	55.5	91.8	174.4	-124	6	10.2
02/18/2013	06:00	552	33.3	21.8	530	27.1	36773.1	20	55.5	91.7	174.4	-123	6.1	10.2
02/19/2013	06:00	551	33.4	20.1	529	26.8	36797.5	19	55.4	91.8	174.4	-125.3	6	10.2
02/20/2013	06:46		33.7	18.4	529.525	27.1	36822.5	19.262	55.3	91.7	174.6	-126.2	6	10.3
02/22/2013	06:00	549	33.3	38.9	528	27	36870.6	19	55.4	91.8	175.3	-125.2	6.1	10.3
02/24/2013	08:46		32.8	35.4	526.644	26.9	36922.1	19.751	55.4	91.7	174.7	-124.7	6.1	10.4
02/25/2013	07:48		0	0	0	0	0	0	0	0	0	0	0	0
02/26/2013	06:00	549	33.5	32.2	526	26.9	36968.1	19	55.4	91.8	174.9	-125.1	6	10.1
02/27/2013	06:08		32.9	30.5	525.813	26.9	36992.6	18.873	55.4	91.8	174.4	-125.2	6	10.3

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
03/01/2013	07:13		33.3	27.1	528.06	26.9	37042.4	19.064	55.4	91.8	174.4	-125.5	6.1	10.2
03/04/2013	06:00	550	33.3	22.1	526	27	37114.3	18	55.4	91.8	174.9	-125.1	6	10.1
03/05/2013	05:00		33.6	20.6	528.499	27.4	37137.3	19.712	55.5	91.8	174.5	-125.4	6.1	10.3
03/06/2013	06:00	551	33.5	18.8	526	27	37162.7	18	55.5	91.7	174.2	-126.3	6.2	10.2
03/07/2013	06:48		34	40.9	528.89	26.9	37187.9	19.323	55.5	91.9	174.4	-125.9	6.2	10.2
03/08/2013	06:00	548	33.4	39.3	528	27.1	37211.5	20	55.5	91.9	174.7	-124.9	6.2	10.3
03/09/2013	06:00	550	33.3	37.6	529	27.4	37235.8	20	55.6	91.7	174.8	-124.5	6.1	10.3
03/10/2013	06:00	550	33.6	36	529	27.2	37259.3	19	55.5	92	174.4	-125	6.2	10.2
03/12/2013	06:00	548	33.5	32.6	527	26.9	37307.9	19	55.6	91.7	174.6	-126.6	6.1	10.3
03/17/2013	06:00	546	33.4	24.2	525	27	37429.8	19	55.6	91.8	174.5	-126.4	6.1	10.2
03/18/2013	06:00	544	33.6	22.6	525	27	37454.2	19	55.6	92	174.7	-126.6	6	10.3
03/19/2013	06:00	544	33.6	20.9	524	26.8	37478.5	19	55.6	91.7	174.5	-126.6	6	10.2
03/22/2013	06:00	547	33.5	39	523	27.1	37551.7	19	55.7	91.7	174.4	-125.6	6.1	10.2
03/23/2013	06:01		33.5	37.4	524.104	27.1	37576	20.201	55.6	91.7	174.8	-126.5	6	10.3
03/26/2013	06:00	552	33.5	32.3	528	27	37649.2	20	55.3	91.8	174.4	-129.6	6	10.3
03/28/2013	07:42		33.4	29	527.083	27.2	37698.8	19.113	56	91.6	174.6	-122.2	6.3	10.2
03/30/2013	06:00	548	32.7	25.8	527	27.2	37745.8	20	56.5	91.6	175.4	-112.9	6.6	10.2
03/31/2013	06:00	546	33.3	24.2	526	26.9	37770.2	19	56.5	91.6	175.2	-112.9	6.6	10.2

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
04/04/2013	06:00	550	33.1	40.7	526	27.4	37865.1	19	55	91.8	173.9	-143.7	5.9	10.3
04/06/2013	06:00	549	33.4	37.5	529	26.9	37912.3	20	56.2	91.7	174.6	-120.1	6.5	10.3
04/08/2013	06:00	546	34.4	34.2	525	26.9	37961.1	19	56.6	91.7	174.8	-114.2	6.6	10.3
04/09/2013	06:00	0	0	32.6	0	13.7	37984.3	0	57.6	91.6	42.4	-130.1	0.2	0.1
04/10/2013	06:00	549	32.7	31	525	27	38008.1	19	55.3	91.7	174.6	-141.5	5.8	10.2
04/11/2013	07:28		0	30.3	0	8.9	38018.4	0.111	73	44.6	9.3	-88.2	0.2	0
04/12/2013	06:00	560	33.2	28.9	537	27.4	38038.4	19	56.2	88.9	175	-116.2	6.7	10.4
04/17/2013	06:00	556	33.8	21.1	532	27	38153.4	20	55.9	91.6	174.4	-122.6	6.3	10.2
04/18/2013	06:00	551	33	19.4	529	26.8	38177.7	19	55.8	91.6	174.5	-124.2	6.2	10.2
04/19/2013	06:00	552	33.5	17.7	528	26.9	38202.2	19	55.9	91.6	174.3	-124.7	6.3	10.3
04/22/2013	06:00	547	33.7	34.4	526	26.8	38275.3	19	55.9	91.7	174.6	-124.7	6.4	10.3
04/26/2013	06:00	549	33.8	27.8	525	27	38372.1	18	56.4	92.1	174.8	-124.4	6.8	10.3
04/30/2013	06:00	546	33.7	21.2	523	27	38468.1	19	56.5	91.8	174.5	-121.9	6.5	10.2

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
05/04/2013	06:00	549	33.5	40.7	524	26.5	38552.8	19	56	92.9	169.2	-117.2	5.7	10.3
05/06/2013	06:00	550	33.4	37.3	523	26.6	38601.5	18	56	92.9	163.8	-118.1	5.7	10.3
05/08/2013	06:00	546	33.3	33.9	521	26.6	38650.3	18	55.8	92.9	176.6	-127.5	5.7	10.1
05/09/2013	06:00	550	33.4	32.4	520	27.5	38673.3	19	56.1	93.1	166.6	-119.2	5.7	10.2
05/10/2013	06:00	546	33.5	30.7	522	27.2	38697.3	18	55.5	92.7	177.2	-131.7	5.8	10.1
05/12/2013	06:00	543	33.2	27.4	520	26.4	38744.1	18	54.6	91.6	184.1	-148.5	5.9	10.3
05/17/2013	06:00	0	0	37.4	0	1.8	38827.7	0	69.8	92.9	88.9	-116.1	0.2	0
05/18/2013	06:00	0	0	37.4	0	1.5	38827.7	0	66.6	92.8	90	-119	0.2	0
05/19/2013	06:00	0	0	37.4	0	1.5	38827.7	0	65.1	92.5	88.9	-120.1	0.2	0
05/22/2013	06:00	542	33.4	34.5	520	24.7	38869.4	20	55.6	92.4	181.3	-135.9	5.9	10.3
05/26/2013	06:00	544	33.5	28.3	521	25.4	38957	21	56.4	92.8	173.9	-123	5.9	10.1
05/30/2013	06:00	0	0	-4.4	0	-5	39007.5	0	15.1	-6.1	3.7	-158.8	0.2	0
05/31/2013	06:00	0	0	41.1	0	10	39008	0	57.9	91.3	47.6	-68	0.2	0

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
06/04/2013	06:00	546	33.4	34.8	523	27.1	39097.6	21	57	92.2	182.4	-113.4	6	10.4
06/06/2013	06:00	540	33.6	31.5	517	26.9	39146.4	21	56.7	91.8	178.9	-121.1	6.1	10.3
06/08/2013	06:00	538	33.5	28.1	514	26.7	39195.1	19	56.3	91.9	183.3	-119.3	6	10.1
06/09/2013	06:00	535	33.4	26.4	511	26.8	39219.5	19	56.4	92.2	182.6	-117.8	5.9	10.3
06/10/2013	06:00	541	33.6	24.8	517	26.8	39243.9	21	56.2	91.9	177.9	-122.3	6.1	10.2
06/12/2013	06:00	544	33.6	21.5	520	26.9	39292.6	21	56.9	92.4	171.6	-109.2	6.1	10.2
06/17/2013	06:00	544	33.2	33.9	520	26.6	39404	20	56.6	92.1	177.9	-116.6	5.8	10.3
06/18/2013	06:00	544	33.8	32.2	520	26.9	39428.3	20	56.6	92.2	170.1	-117.6	5.9	10.3
06/19/2013	06:00	547	33.2	30.5	522	26.9	39452.3	19	56.6	92.1	168.1	-117.4	5.8	10.3
06/22/2013	06:00	547	33.7	27.8	522	27	39491.3	21	57.2	92.1	181.4	-112.2	6.2	10.1
06/26/2013	06:00	552	34.1	22.6	524	26.9	39566.5	21	57.7	92.4	175.3	-108.5	6.2	10.3
06/30/2013	06:00	540	33.3	34.4	512	26.8	39663.8	20	56.5	91.8	186.7	-124.1	6	10.2

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
07/04/2013	06:00	548	34.1	27.5	521	27.3	39759.9	20	56.7	91.8	182.9	-124.1	6.4	10.2
07/06/2013	06:00	551	33.7	24.2	525	27.2	39807.5	20	57.2	92	175.2	-113.4	6.3	10.2
07/08/2013	06:00	543	33.7	20.8	517	26.9	39856.2	21	57.6	92.6	171.1	-108.6	6.2	10.2
07/09/2013	06:00	547	33.4	19.2	518	27	39880.6	21	57.7	92.5	174.1	-109.8	6.4	10.1
07/10/2013	06:00	544	33.3	17.5	518	26.8	39905	19	57.4	92.1	174.6	-113.5	6.5	10.3
07/12/2013	06:00	547	33.7	37.6	518	27.1	39952.7	20	57.4	92.2	186.2	-114.3	6.6	10.4
07/17/2013	06:00	543	33.5	29.4	515	26.7	40071.7	20	57.6	92.1	183.8	-116.6	6.8	10.2
07/18/2013	06:00	549	33.3	27.7	520	27.1	40095.5	21	58	92	187	-113	7	10.2
07/19/2013	06:00	546	33.6	26	518	27.3	40119.9	19	58.1	92.2	183.8	-110.3	6.9	10.3
07/21/2013	05:48		0	24.1	0	10.7	40146.9	0.122	69.9	92.2	91	-109	0.1	0
07/22/2013	06:00	558	33.5	22.7	529	27.1	40167.1	19	57.8	92	192.2	-115.2	6.7	10.3
07/26/2013	06:00	548	33.2	39.9	519	27	40262.7	19	57.5	92.1	186.9	-119.6	6.8	10.2
07/30/2013	06:00	0	0	39.2	0	13.4	40272.4	0	70.2	93.1	89.3	-107.9	0.1	0.1
07/31/2013	06:00	0	0	39.2	0	13.4	40272.4	0	70.2	93.1	89.3	-107.9	0.1	0.1

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
08/04/2013	06:00	521	33.4	37.9	499	26.2	40291.3	20	56.5	91.3	190	-120.3	6.5	10.2
08/06/2013	06:00	540	33.6	34.4	513	26.8	40340.1	20	56.9	91.5	178	-115.4	6.5	10.4
08/08/2013	06:00	533	33.4	39.7	504	26.9	40388.5	20	57.3	91.3	186.5	-119.6	6.5	10.3
08/09/2013	06:00	542	33.5	38	512	27	40412.9	19	58	91.5	185.7	-122.1	6.3	10.5
08/10/2013	06:00	540	33.5	36.2	508	26.6	40437.3	20	55.9	90.8	190.2	-127.3	6.5	10.2
08/12/2013	06:00	0	0	35.9	0	7.9	40441.6	0	80.4	92.8	87.4	-96.2	0.1	0
08/14/2013	05:01				0	7.9	40441.6	0.122	80.4	92.8	87.4	-96.2	0.1	0
08/17/2013	06:00	0	0	35.9	0	7.9	40441.6	0	80.4	92.8	87.4	-96.2	0.1	0
08/18/2013	06:00	0	0	35.9	0	7.9	40441.6	0	80.4	92.8	87.4	-96.2	0.1	0
08/19/2013	06:00	0	0	35.9	0	7.9	40441.6	0	80.4	92.8	87.4	-96.2	0.1	0
08/22/2013	06:00	0	0	35.9	0	7.9	40441.6	0	80.4	92.8	87.4	-96.2	0.1	0
08/26/2013	06:00	0	0	35.9	0	7.9	40441.6	0	80.4	92.8	87.4	-96.2	0.1	0
08/30/2013	06:00	533	33.3	34.3	508	26.8	40464.5	20	57.7	92.1	179.6	-105	8.3	10.2
08/31/2013	06:00	532	33.5	32.6	504	26.9	40488.5	21	58.6	92.3	179.7	-105.8	7.9	10.2

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
09/04/2013	06:00	545	33.4	26.2	514	27.2	40578.6	20	58	92.3	179.9	-112.3	7.7	10.3
09/06/2013	06:00	0	0	24.2	22	16.3	40606.2	0	58.6	92.4	-2.9	-109.6	0.2	0.1
09/08/2013	06:00	0	0	-4.4	0	-5	40606.2	0	15.1	-6.1	-2.4	-158.8	0.1	0
09/09/2013	06:00	0	0	-4.4	0	-5	40606.2	0	15.1	-6.1	-2.4	-158.8	0.1	0
09/10/2013	06:00	0	0	-4.4	0	-5	40606.2	0	15.1	-6.1	-2.4	-158.8	0.1	0
09/12/2013	06:00	0	0	-4.4	0	-5	40606.2	0	15.1	-6.1	-2.4	-158.8	0.1	0
09/17/2013	06:00	0	0	-4.4	0	-5	40606.2	0	15.1	-6.1	-2.4	-158.8	0.1	0
09/18/2013	06:00	0	0	-4.4	0	-5	40606.2	0	15.1	-6.1	-2.4	-158.8	0.1	0
09/19/2013	06:00	0	0	-4.4	0	-5	40606.2	0	15.1	-6.1	-2.4	-158.8	0.1	0
09/22/2013	06:00	0	0	-4.4	0	-5	40606.2	0	15.1	-6.1	-2.4	-158.8	0.1	0
09/26/2013	06:00	336	33.4	41.1	355	23.8	40612	21	61.7	91.7	159.7	-94	6.7	10.2
09/30/2013	06:00	541	33.5	33.8	515	26.9	40708.6	21	57.4	91.8	179.9	-111	7.6	10.2

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
10/04/2013	06:00	533	33.4	38.1	504	26.6	40806.1	20	62.6	91.7	179.8	-113.2	7.9	10.2
10/06/2013	06:00	526	33.5	34.2	504	26.6	40854.9	21	55.2	90.5	179.9	-130.3	7.4	10.2
10/08/2013	06:00	535	33.4	30.4	507	26.7	40903.6	20	55.5	91	179.4	-125	7.5	10.2
10/09/2013	06:00	533	33.5	28.5	505	26.8	40928	20	55.5	91.1	179.9	-124.1	7.5	10.3
10/10/2013	06:00	530	33.6	26.6	505	26.5	40952.4	21	55.6	91.4	179.7	-121.9	7.5	10.2
10/12/2013	06:00	530	33.6	22.8	502	26.4	41001.1	20	55.3	90.6	179.7	-130	7.4	10.2
10/17/2013	06:00	535	33.7	37.6	507	26.6	41122.1	20	54.9	90	179.8	-139.4	7.5	10.2
10/18/2013	06:00	535	33.5	35.7	505	26.7	41146.5	20	54.9	90.1	179.6	-138.3	7.4	10.2
10/19/2013	06:00	533	33.8	33.7	504	26.5	41170.8	20	54.8	89.9	179.5	-142.7	7.4	10.2
10/22/2013	06:00	0	0	28.9	0	12.3	41231.8	0	50.3	90.2	-2.4	-70.8	0.2	0
10/26/2013	06:00	534	33.4	21.6	508	26.9	41326.5	20	55.4	91.3	179.6	-120.1	7.5	10.3
10/29/2013	08:38		0	17.5			41379.2		63.6	91.3	-2.4	-53.7	0.2	0.5
10/30/2013	06:00	0	0	17.5	0	1.5	41379.2	0	64	91.3	-2.4	-52.8	0.2	0
10/31/2013	06:00	0	0	41.5	0	1.5	41379.2	0	47.3	89.5	-2.3	-69.7	0.2	0

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
11/04/2013	06:00	0	0	41.5	0	1.6	41379.2	0	57.4	90.6	-2.3	-61.5	0.2	0
11/06/2013	06:00	0	0	41.5	0	1.5	41379.2	0	71.4	91.9	-2.4	-45.6	0.2	0
11/08/2013	06:00	0	0	41.5	0	1.3	41379.2	0	71.9	91.7	-2.5	-48.6	0.2	0
11/09/2013	06:00	275	33.5	40.3	270	23.6	41393.5	20	55	91.7	139.7	-88.3	5.9	10.2
11/10/2013	06:00	0	0	39.8	0	13.7	41399.3	0	67	91.6	-2.4	-53.7	0.2	0
11/12/2013	06:00	0	0	38.7	0	16.9	41413.2	0	59.1	91.7	-2.5	-106	0.2	0
11/17/2013	06:00	0	0	41.3	0	24.9	41429.9	0	61.6	91.6	-2.6	-99.4	0.2	0
11/18/2013	06:00	0	0	40.8	0	19.8	41436.7	0	58.9	91.4	-2.6	-97.1	0.2	0
11/19/2013	06:00	217	33.4	38.9	214	19.9	41460.6	20	57.1	91.7	139.6	-109.8	6.1	10.2
11/22/2013	06:00	258	33.2	33.1	275	25.6	41532.6	20	57.6	91.6	154.6	-115	6.5	10.1
11/26/2013	06:00	256	33.3	25.3	252	21	41630.1	19	53.6	89.4	154.6	-140	6.6	10.2
11/30/2013	06:00	0	0	36.8	0	9.8	41695.3	0	66.6	91.3	-2.5	-58.5	0.2	0

NEBRASKA ORDNANCE PLANT OU-2 GWTP

Table 10 - AOP

DATE	TIME	FEW-11	H2O2	TANK LEVEL	FEED	WATER		COOLING WATER FLOW	COOLING WATER TEMP	PSA CONC.	PSA FLOW	PSA DEW POINT	OZONE GENERATOR POWER	OZONE GENERATOR CONC
		GPM	MLM	INCHES	GPM	PSI	RUN_HOURS	GPM	DEGREES F	PERCENT	SLM	DEGREES F	KW	PERCENT
12/04/2013	06:00	260	33.4	33.5	254	19.9	41735.6	20	53.4	91.6	154.7	-111.1	0.2	8.4
12/06/2013	06:00	255	33.5	29.6	250	20.6	41783.9	20	54.9	91.2	154.8	-121.3	5.5	10.2
12/08/2013	06:00	0	0	29.1	0	13.9	41789.9	0	60.3	90.9	-2.6	-99.6	0.2	0.1
12/09/2013	06:00	0	0	29.1	0	13.9	41789.9	0	60.3	90.9	-2.6	-99.6	0.2	0.1
12/10/2013	06:00	0	0	29.1	0	13.9	41789.9	0	60.3	90.9	-2.6	-99.6	0.2	0.1
12/12/2013	06:00	0	33.8	41.8	7	15.4	41795.7	19	64.5	91.5	6	-109	0.2	0.1
12/17/2013	06:00	0	0	35.9	0	14.1	41868.4	0	59	91	-2.6	-122.8	0.2	0.2
12/18/2013	06:00	0	0	35.9	0	11.2	41868.4	0	62.2	90.8	-2.5	-72.3	0.2	0
12/19/2013	06:00	257	33.5	34.6	253	20.9	41884.7	19	54.3	91	179.7	-117	7.3	10.2
12/22/2013	06:00	288	33.3	29.1	283	21.3	41952.8	20	56.1	91	179.8	-123.6	7.4	10.2
12/26/2013	06:00	357	33.3	21.2	352	22.2	42050.3	19	60.6	91.1	179.6	-126.5	7.7	10.3
12/30/2013	06:00	426	33.5	15.4	417	21.5	42123.5	20	55.5	91.6	179.7	-122.3	7.5	10.2
12/31/2013	06:00	499	33.4	36.9	492	25.4	42147.2	20	56.8	91.6	179.6	-121.9	7.5	10.2

DATE	COMMENTS

APPENDIX M

Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant

This page was intentionally left blank.

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
1/1/2013	0:00		595.223				488.382		124.450
1/2/2013	0625	491	595.930	57.00	57	511	489.074	0	124.486
1/3/2013	0630	485	596.605	57.20	57	508	489.771	0	124.486
1/4/2013	0525	488	597.274	57.10	57	491	490.462	0	124.486
1/5/2013	0:00								
1/6/2013	0:00								
1/7/2013	0625	489	599.419	57.00	57	504	492.673	0	124.486
1/8/2013	0627	489	600.123	57.00	57	510	493.399	0	124.486
1/9/2013	0705	488	600.846	57.00	57	499	494.145	0	124.486
1/10/2013	0529	493	601.501	56.90	58	494	494.819	0	124.486
1/11/2013	0620	491	602.234	57.00	58	509	495.575	0	124.486
1/12/2013	0:00								
1/13/2013	0:00								
1/14/2013	0633	493	604.369	56.80	57	510	497.776	0	124.486
1/15/2013	0615	494	605.068	56.80	57	512	498.496	0	124.486
1/16/2013	0630	493	605.785	58.60	57	507	499.236	0	124.486
1/17/2013	0627	491	606.493	56.80	57	509	499.965	0	124.486
1/18/2013	0508	481	606.988	57.30	57	497	500.093	0	124.486
1/19/2013	0:00								
1/20/2013	0:00								
1/21/2013	0:00								
1/22/2013	0635	491	609.739	56.80	57	513	502.927	0	124.486
1/23/2013	0630	485	601.413	57.00	57	500	503.624	0	124.486
1/24/2013	0637	488	611.123	56.90	57	506	504.349	0	124.486
1/25/2013	0630	489	611.825	56.90	57	507	505.720	0	124.486
1/26/2013	0:00								
1/27/2013	0:00								
1/28/2013	0630	490	613.944	56.80	57	507	507.174	0	124.566
1/29/2013	0635	490	614.652	56.80	57	508	507.904	0	124.566
1/30/2013	0655	490	615.367	56.80	57	503	508.641	0	124.566
1/31/2013	0635	491	616.064	56.70	57	506	509.359	0	124.566
		TOTAL	**21.551**			**TOTAL**	**22.515**		**0.116**

COMMENTS: _____

Both pumps
TOTAL **22.631**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
2/1/2013	0637	492	616.774	56.70	57	507	510.897	0	124.566
2/2/2013	0:00								
2/3/2013	0:00								
2/4/2013	0538	491	618.870	56.70	58	512	512.250	0	124.566
2/5/2013	0645	490	619.610	56.70	58	508	513.131	0	124.566
2/6/2013	0635	490	620.314	56.70	57	509	513.738	0	124.566
2/7/2013	0625	490	621.015	56.70	57	504	514.460	0	124.566
2/8/2013	0623	491	621.719	56.60	57	505	515.186	0	124.566
2/9/2013	0:00								
2/10/2013	0:00								
2/11/2013	0630	489	623.843	56.70	57	0	515.365	494	126.535
2/12/2013	0525	489	624.514	56.60	57	0	515.365	493	127.212
2/13/2013	0632	489	625.252	56.70	57	0	515.365	496	127.957
2/14/2013	0630	0	625.305	69.20	56	0	515.365	0	128.013
2/15/2013	0607	484	625.921	57.20	57	495	515.997	0	128.013
2/16/2013	0:00								
2/17/2013	0:00								
2/18/2013	0:00								
2/19/2013	0630	489	628.734	56.70	57	510	518.895	0	128.013
2/20/2013	0624	491	629.437	56.60	57	501	519.622	0	128.013
2/21/2013	0552	491	630.1	56.6	57	513	520.335	0	128.013
2/22/2013	0:00								
2/23/2013	0:00								
2/24/2013	0:00								
2/25/2013	0625	490	632.969	56.60	57	508	523.264	0	128.014
2/26/2013	0630	489	633.674	56.60	57	509	523.991	0	128.014
2/27/2013	0635	489	634.383	56.60	57	503	524.722	0	128.014
2/28/2013	0632	490	635.088	56.50	57	509	525.447	0	128.014
		TOTAL	**18.988**			**TOTAL**	**15.246**		**3.447**

COMMENTS:

Both pumps
TOTAL **18.693**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
3/1/2013	0529	490	635.762	56.50	57	508	526.143	0	128.014
3/2/2013	0:00								
3/3/2013	0:00								
3/4/2013	0628	488	637.907	56.60	57	505	528.342	0	128.025
3/5/2013	0630	484	638.591	56.70	57	506	529.461	0	128.025
3/6/2013	0632	486	639.291	56.60	57	504	529.768	0	128.025
3/7/2013	0630	488	639.993	56.60	57	508	530.491	0	128.025
3/8/2013	0524	488	640.663	56.60	57	503	531.181	0	128.025
3/9/2013	0:00								
3/10/2013	0:00								
3/11/2013	0710	488	642.795	56.50	58	505	533.379	0	128.026
3/12/2013	0635	488	643.481	56.50	57	507	534.859	0	128.255
3/13/2013	0640	490	644.190	56.40	57	507	534.816	0	128.026
3/14/2013	0532	490	644.862	56.40	57	522	535.509	0	128.026
3/15/2013	0517	489	645.561	56.40	57	508	536.229	0	128.026
3/16/2013	0:00								
3/17/2013	0:00								
3/18/2013	0647	488	647.718	56.40	57	506	538.452	0	128.026
3/19/2013	0628	488	648.412	56.40	57	505	539.167	0	128.026
3/20/2013	0549	490	649.097	56.40	58	512	539.873	0	128.026
3/21/2013	0632	489	649.823	56.40	57	507	540.622	0	128.026
3/22/2013	0618	489	650.523	56.40	57	505	541.343	0	128.026
3/23/2013	0:00								
3/24/2013	0:00								
3/25/2013	0635	489	652.645	56.30	57	0	541.526	493	129.987
3/26/2013	0624	489	653.343	56.30	57	0	541.526	494	130.690
3/27/2013	0517	490	654.015	56.30	57	507	542.040	0	130.865
3/28/2013	0526	489	654.724	56.30	57	505	542.771	0	130.865
3/29/2013	0511	489	655.421	56.30	57	507	543.490	0	130.865
3/30/2013	0:00								
3/31/2013	0:00								
		TOTAL	**21.809**			**TOTAL**	**19.564**		**2.851**

COMMENTS:

Both pumps
TOTAL **22.415**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
4/1/2013	0629	489	657.571	56.30	57	507	545.706	0	130.865
4/2/2013	0625	489	658.273	56.30	57	503	546.430	0	130.865
4/3/2013	0635	490	658.984	56.20	57	509	547.163	0	130.865
4/4/2013	0640	489	659.688	56.20	58	506	547.887	0	130.865
4/5/2013	0632	488	660.390	56.20	57	499	548.612	0	130.865
4/6/2013	0:00								
4/7/2013	0:00								
4/8/2013	0628	486	662.492	56.30	57	0	548.683	494	132.918
4/9/2013	0629	0	663.160	68.10	60	0	549.173	0	133.112
4/10/2013	0634	481	663.849	56.50	57	0	549.173	487	133.808
4/11/2013	0720	482	664.568	56.40	57	0	549.173	487	134.534
4/12/2013	0632	483	665.236	56.40	57	0	549.173	489	135.208
4/13/2013	0:00								
4/14/2013	0:00								
4/15/2013	0635	477	667.006	57.00	57	526	550.909	0	135.295
4/16/2013	0637	479	677.523	56.80	57	500	551.599	0	135.295
4/17/2013	0633	481	668.221	56.70	59	490	552.280	0	135.295
4/18/2013	0633	483	668.906	56.50	58	499	552.996	0	135.295
4/19/2013	0631	485	669.603	56.40	57	498	553.716	0	135.295
4/20/2013	0:00								
4/21/2013	0:00								
4/22/2013	0630	487	671.706	56.20	57	509	555.887	0	135.295
4/23/2013	0622	488	672.404	56.20	57	506	556.607	0	135.295
4/24/2013	0640	488	673.118	56.20	57	506	557.343	0	135.295
4/25/2013	0632	488	673.816	56.20	57	510	558.645	0	135.295
4/26/2013	0635	487	674.519	56.20	57	508	558.789	0	135.295
4/27/2013	0:00								
4/28/2013	0:00								
4/29/2013	0625	484	676.616	56.20	57	505	560.955	0	135.295
4/30/2013	0630	483	677.316	56.20	57	495	561.676	0	135.295
		TOTAL	**20.396**			**TOTAL**	**16.641**		**4.430**

COMMENTS: _____

Both pumps
TOTAL **21.071**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
5/1/2013	0652	478	677.967	56.40	57	496	562.347	0	135.295
5/2/2013	0637	481	678.649	56.30	58	495	563.514	0	135.295
5/3/2013	0613	484	679.329	56.20	57	503	563.753	0	135.295
5/4/2013	0:00								
5/5/2013	0:00								
5/6/2013	0632	485	681.437	56.10	57	0	563.795	488	137.381
5/7/2013	0630	486	682.135	56.10	57	0	563.795	492	138.086
5/8/2013	0628	485	682.836	56.10	58	0	563.795	492	138.794
5/9/2013	0632	484	683.532	56.10	57	0	563.795	488	139.497
5/10/2013	0621	484	684.224	56.10	57	0	563.795	490	140.196
5/11/2013	0:00								
5/12/2013	0:00								
5/13/2013	0603	485	686.314	56.10	57	502	565.850	0	140.295
5/14/2013	0628	483	687.026	56.10	58	502	566.584	0	140.295
5/15/2013	0630	239	687.322	63.10	53	195	566.891	0	140.295
5/16/2013	0510	474	687.932	56.70	57	491	567.512	0	140.295
5/17/2013	0630	477	688.636	56.50	57	490	568.244	0	140.295
5/18/2013	0:00								
5/19/2013	0:00								
5/20/2013	0624	480	690.716	56.30	58	500	570.388	0	140.295
5/21/2013	0510	480	691.359	56.20	57	495	571.051	0	140.295
5/22/2013	0622	482	692.092	56.10	57	500	571.807	0	140.295
5/23/2013	0551	483	692.768	56.10	57	494	572.504	0	140.295
5/24/2013	0624	485	693.481	56.00	57	497	573.240	0	140.295
5/25/2013	0:00								
5/26/2013	0:00								
5/27/2013	0:00								
5/28/2013	0630	482	696.267	56.10	57	497	576.115	0	140.295
5/29/2013	0622	481	696.957	56.10	57	504	576.828	0	140.295
5/30/2013	0521	479	697.651	56.20	57	498	577.543	0	140.295
5/31/2013	0621	480	698.341	56.10	58	496	578.254	0	140.295
		TOTAL	**20.374**			**TOTAL**	**15.973**		**5.490**

COMMENTS: _____

Both pumps
TOTAL **21.463**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
6/1/2013	0:00						578.320		140.785
6/2/2013	0:00								
6/3/2013	0643								
6/4/2013	0629	477	700.228	56.20	58	0	578.320	485	142.137
6/5/2013	0639	478	700.907	56.20	57	0	578.320	482	142.824
6/6/2013	0634	479	702.290	56.10	59	0	578.320	482	144.221
6/7/2013	0629	480	702.980	56.10	57	0	578.320	488	144.918
6/8/2013	0:00								
6/9/2013	0:00								
6/10/2013	0643	478	705.057	56.10	57	493	580.455	0	144.927
6/11/2013	0623	477	706.428	56.10	57	496	581.870	0	144.927
6/12/2013	0633	477	706.428	56.10	57	492	582.549	0	144.927
6/13/2013	0631	473	707.086	56.40	57	492	582.549	0	144.927
6/14/2013	0626	473	707.766	56.30	57	486	583.251	0	144.927
6/15/2013	0:00								
6/16/2013	0:00								
6/17/2013	0628	477	709.821	56.20	57	497	585.372	0	144.927
6/18/2013	0629	477	710.509	56.10	58	499	586.805	0	144.927
6/19/2013	0645	478	711.208	56.10	57	495	586.801	0	144.927
6/20/2013	0624	478	711.883	56.10	57	491	587.497	0	144.927
6/21/2013	0641	477	712.579	56.10	57	494	588.213	0	144.927
6/22/2013	0:00								
6/23/2013	0:00								
6/24/2013	0631	478	714.636	56.10	57	0	588.332	477	146.890
6/25/2013	0636	477	715.332	56.10	57	0	588.332	485	147.593
6/26/2013	0623	477	716.006	56.10	57	0	588.332	478	148.275
6/27/2013	0637	477	716.704	56.00	57	495	588.845	0	148.478
6/28/2013	0635	475	717.377	56.10	57	0	589.463	481	148.962
6/29/2013	0:00								
6/30/2013	0:00								
		TOTAL	**719.441**			**TOTAL**	**13.557**		**8.702**

COMMENTS: _____

Both pumps
TOTAL **22.259**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
7/1/2013	0645	477	719.441	56.10	57	487	591.877	0	149.487
7/2/2013	0632	478	720.125	56.00	58	494	591.794	0	149.487
7/3/2013	0812	478	720.864	56.00	57	503	592.557	0	149.488
7/4/2013	0:00								
7/5/2013	0642	477	722.192	56.00	57	491	593.928	0	149.489
7/6/2013	0:00								
7/7/2013	0:00								
7/8/2013	0624	473	724.173	56.10	57	0	594.489	464	150.502
7/9/2013	0629	474	724.868	56.10	57	0	594.489	483	151.205
7/10/2013	0638	476	725.556	56.00	57	0	594.489	477	151.901
7/11/2013	0654	477	726.248	56.00	57	0	594.489	480	152.599
7/12/2013	0608	478	726.910	55.90	57	0	594.489	482	153.268
7/13/2013	0:00								
7/14/2013	0:00								
7/15/2013	0634	480	728.989	55.80	57	498	595.861	0	154.238
7/16/2013	0633	481	729.688	55.80	57	490	596.575	0	154.238
7/17/2013	0636	482	730.380	55.80	57	499	597.275	0	154.238
7/18/2013	0640	474	731.618	56.00	57	491	597.942	0	154.238
7/19/2013	0644	475	731.718	56.00	57	490	598.664	0	154.238
7/20/2013	0:00								
7/21/2013	0:00								
7/22/2013	0848	467	733.088	56.50	57	0	598.726	474	155.350
7/23/2013	0630	470	733.692	56.30	57	0	598.726	479	155.981
7/24/2013	0611	474	734.367	56.40	57	0	598.726	479	156.645
7/25/2013	0643	477	735.072	55.90	57	0	598.726	482	157.358
7/26/2013	0755	0	735.746	67.60	57	0	598.726	0	158.419
7/27/2013	0:00								
7/28/2013	0:00								
7/29/2013	0635	0	735.746	67.60	57	0	598.726	0	158.419
7/30/2013	0651	476	736.426	56.60	57	0	598.726	481	158.729
7/31/2013	0645	478	737.110	56.30	57	0	598.726	486	159.422
		TOTAL	**18.358**			**TOTAL**	**6.849**		**10.695**

COMMENTS: _____

Both pumps
TOTAL **17.544**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
8/1/2013	0640	479	737.799	56.10	57	0	598.726	486	160.182
8/2/2013	0642	481	738.489	56.00	57	0	598.726	487	160.819
8/3/2013	0:00								
8/4/2013	0:00								
8/5/2013	0641	0	739.305		68.8	0	599.400	0	160.985
8/6/2013	0631	0	739.305		61	0	599.400	0	160.985
8/7/2013	0644	0	739.305		62	0	599.400	0	160.985
8/8/2013	0635	0	739.305		61	0	599.400	0	160.985
8/9/2013	0636	0	739.305		61	0	599.400	0	160.985
8/10/2013	0:00								
8/11/2013	0:00								
8/12/2013	0655	478	740.580	56.60	57	496	600.718	0	160.986
8/13/2013	0653	480	741.276	56.40	57	499	601.439	0	160.986
8/14/2013	0604	483	741.942	56.20	57	497	602.867	0	160.986
8/15/2013	0650	483	742.658	56.00	57	500	602.867	0	160.986
8/16/2013	0642	482	743.363	56.00	57	502	603.596	0	160.986
8/17/2013	0:00								
8/18/2013	0:00								
8/19/2013	0653	482	745.439	55.80	57	0	603.688	488	162.968
8/20/2013	0624	480	746.119	55.80	57	500	604.348	0	163.042
8/21/2013	0540	480	746.790	55.80	57	497	605.423	0	163.422
8/22/2013	0543	480	747.482	55.70	57	498	605.759	0	163.422
8/23/2013	0544	480	748.176	55.70	58	499	606.476	0	163.422
8/24/2013	0:00								
8/25/2013	0:00								
8/26/2013	0528	479	750.266	55.70	57	500	608.635	0	163.422
8/27/2013	0637	478	750.957	55.60	57	497	609.349	0	163.422
8/28/2013	0631	478	751.640	55.60	57	497	610.541	0	163.422
8/29/2013	0622	478	752.327	55.60	57	496	610.764	0	163.422
8/30/2013	0627	477	753.017	55.60	58	494	611.477	0	163.422
8/31/2013	0:00								
		TOTAL	**16.579**			**TOTAL**	**14.160**		**3.241**

COMMENTS: _____

Both pumps
TOTAL **17.401**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
9/1/2013	0623	473	754.378	55.60	58	490	612.886	0	163.423
9/2/2013	0:00								
9/3/2013	0627	476	755.758	55.60	57	493	614.312	0	163.423
9/4/2013	0631	476	756.439	55.50	57	494	615.159	0	163.423
9/5/2013	0629	471	756.924	55.70	57	492	615.518	0	163.423
9/6/2013	0631	474	757.611	55.60	57	492	616.229	0	163.423
9/7/2013	0:00								
9/8/2013	0:00								
9/9/2013	0640	0	758.498	68.10	61	0	616.406	0	163.771
9/10/2013	0603	0	758.498	68.10	61	0	616.406	0	163.771
9/11/2013	0700	0	758.498	68.10	61	0	616.406	0	163.771
9/12/2013	0538	0	758.498	68.10	61	0	616.406	0	163.771
9/13/2013	0655	0	758.498	68.10	61	0	616.406	0	163.771
9/14/2013	0:00								
9/15/2013	0:00								
9/16/2013	0627	0	758.498	68.10	61	0	616.406	0	163.771
9/17/2013	0625	0	758.498	68.10	61	0	616.406	0	163.771
9/18/2013	0630	0	758.498	68.10	61	0	616.406	0	163.771
9/19/2013	0644	0	758.498	68.10	61	0	616.406	0	163.771
9/20/2013	0630	0	758.498	68.10	61	0	616.406	0	163.771
9/21/2013	0:00								
9/22/2013	0:00								
9/23/2013	0647	0	758.498	68.10	61	0	616.406	0	163.771
9/24/2013	0635	0	758.498	68.10	61	0	616.406	0	163.771
9/25/2013	0615	0	758.498	68.10	61	0	616.406	0	163.771
9/26/2013	0750	0	758.498	68.10	61	0	616.406	0	163.771
9/27/2013	1258	0	758.498	68.10	61	0	616.406	0	163.771
9/28/2013	0:00								
9/29/2013	0:00								
9/30/2013	0646		758.498	68.10		0	616.406	0	163.771
		TOTAL	**4.120**			**TOTAL**	**3.520**		**0.348**

COMMENTS: _____

Both pumps
TOTAL **3.868**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
10/1/2013	0701	0	758.498	68.10	61	0	616.406	0	163.771
10/2/2013	0650	466	758.512	58.00	56	488	616.417	0	163.771
10/3/2013	0643	461	759.130	57.20	57	478	617.757	0	163.771
10/4/2013	0640	464	759.780	56.80	57	483	617.731	0	163.771
10/5/2013	0:00								
10/6/2013	0:00								
10/7/2013	0627	472	761.802	56.10	57	494	619.825	0	163.771
10/8/2013	0631	471	762.483	56.00	57	489	620.580	0	163.771
10/9/2013	0652	468	763.173	56.00	57	487	621.244	0	163.771
10/10/2013	0629	465	763.829	56.00	57	483	621.925	0	163.771
10/11/2013	0643	0	763.856	67.20	56	0	621.943	0	163.771
10/12/2013	0:00								
10/13/2013	0:00								
10/14/2013	0639	0	763.856	67.20	56	0	621.943	0	163.771
10/15/2013	0641	0	763.856	67.20	59	0	621.943	0	163.771
10/16/2013	0648	0	763.856	67.20	59	0	621.943	0	163.771
10/17/2013	0631	465	764.474	56.40	57	483	622.592	0	163.771
10/18/2013	0641	466	765.154	56.10	58	482	623.296	0	163.771
10/19/2013	0:00								
10/20/2013	0:00								
10/21/2013	0632	469	767.049	55.60	58	0	624.828	467	164.192
10/22/2013	0700	0	767.101	66.60	53	0	624.828	0	164.247
10/23/2013	0641	0	767.101	66.60	52	0	624.828	0	164.247
10/24/2013	0541	0	767.101	66.60	52	0	624.828	0	164.247
10/25/2013	0632	0	767.101	66.60	52	0	624.828	0	164.247
10/26/2013	0:00								
10/27/2013	0:00								
10/28/2013	0536	0	767.101	66.60	54	0	624.828	0	164.247
10/29/2013	0539	0	767.101	66.60	54	0	624.828	0	164.247
10/30/2013	0700	0	767.101	66.60	52	0	624.828	0	164.247
10/31/2013	0610	0	767.101	66.60	54	0	624.828	0	164.247
		TOTAL	**8.643**			**TOTAL**	**8.422**		**0.517**

COMMENTS: _____

Both pumps
TOTAL **8.939**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
11/1/2013	0622	0	767.141	66.60	52	0	624.828	0	164.288
11/2/2013	0:00								
11/3/2013	0:00								
11/4/2013	0637	0	767.141		52	0	624.828	0	164.288
11/5/2013	0635	0	767.141		52	0	624.828	0	164.288
11/6/2013	0645	0	767.141		53	0	624.828	0	164.288
11/7/2013	0641	0	767.141		53	0	624.828	0	164.288
11/8/2013	0645	0	767.141		49	0	624.828	0	164.288
11/9/2013	0:00								
11/10/2013	0:00								
11/11/2013	0718	0	767.141		54	0	624.828	0	164.288
11/12/2013	0:00								
11/13/2013	0700	0	767.141		54	0	624.828	0	164.288
11/14/2013	0645	228	767.394		56	285	625.089	0	164.288
11/15/2013	0640	228	767.681		52	285	625.369	0	164.288
11/16/2013									
11/17/2013	0:00								
11/18/2013	0800	227	768.291		56	285	625.980	0	164.288
11/19/2013	0635	226	768.597		54	275	626.286	0	164.288
11/20/2013	0700	226	768.912		55	223	626.600	0	164.288
11/21/2013	0639	226	769.230		58	263	626.918	0	164.288
11/22/2013	0535	0	769.287		47	0	626.977	0	164.288
11/23/2013	0:00								
11/24/2013	0:00								
11/25/2013	0658	0	769.287		59	0	626.177	0	164.288
11/26/2013	0625	0	769.287		59	0	626.177	0	164.288
11/27/2013	0:00								
11/28/2013	0:00								
11/29/2013	0:00								
11/30/2013	0730	229	770.355		54	0	628.437	0	164.288
		TOTAL	**3.505**			**TOTAL**	**3.609**		**0.000**

COMMENTS: FEW-15 Operated at a reduced flow rate due to packer installed in the well

Both pumps
TOTAL **3.609**

Appendix M
Monthly Flow Summary for Load Line 4 Groundwater Treatment Plant
Former Nebraska Ordnance Plant, Mead, Nebraska

NEBRASKA ORDNANCE PLANT OU-2 GWTP
Gallons multiplied by 1,000,000 on Totalizer
FEW-15: Setpoint at 500 gpm

DATE	TIME	FEW-15 Flow GPM	FEW-15 Totalizer MG	FEW-15 Depth to Water feet	LL4 Sump Level Percent	Discharge Pump Flow GPM	Discharge Pump Totalizer MG	Wahoo Creek Flow GPM	Wahoo Creek Totalizer MG
12/1/2013	0:00		770.646	22.10			628.437		164.288
12/2/2013	0700	228	771.000	22.10	57	331	628.690	0	164.288
12/3/2013	0625	228	771.307	22.10	55	284	628.995	0	164.288
12/4/2013	0630	230	771.534	22.10	55	306	629.221	0	164.288
12/5/2013	0640	227	771.865	22.20	51	210	628.548	0	164.288
12/6/2013	0638	227	772.193	22.20	57	269	629.875	0	164.288
12/7/2013	0:00								
12/8/2013	0:00								
12/9/2013	0640	0	772.287	47.20	47	0	629.970	0	164.288
12/10/2013	0635	0	772.287	47.30	85	0	629.970	0	164.288
12/11/2013	0655	0	772.287	47.30	90	0	629.970	0	164.288
12/12/2013	0650	0	772.287	47.30	87	0	629.970	0	164.288
12/13/2013	0700	0	772.287	47.30	88	0	629.970	0	164.288
12/14/2013	0:00								
12/15/2013	0:00								
12/16/2013	0633	235	772.919	55.80	54	0	629.993	290	164.3
12/17/2013	0635	0	772.998	61.50	53	0	629.993	0	165.0
12/18/2013	0626	0	772.998	61.70	51	0	629.993	0	165.0
12/19/2013	0630	473	773.451	49.40	58	491	630.458	0	165.0
12/20/2013	0710	483	774.161	48.80	57	498	631.193	0	165.0
12/21/2013	0:00								
12/22/2013	0:00								
12/23/2013	0646	488	776.147	47.80	57	519	633.251	0	165.0
12/24/2013	0644	501	776.867	47.60	58	534	633.996	0	165.0
12/25/2013	0:00								
12/26/2013	0630	501	778.304	47.40	57	522	635.484	0	165.0
12/27/2013	0700	499	779.041	47.40	57	520	636.247	0	165.0
12/28/2013	0:00								
12/29/2013	0:00								
12/30/2013	0634	496	781.172	47.30	57	515	638.452	0	165.0
12/31/2013	0650	494	781.891	47.10	57	513	639.197	0	165.0
		TOTAL	**10.891**			**TOTAL**	**12.026**		**0.696**

COMMENTS: _____

Both pumps
TOTAL **12.722**

FEW = focused extraction well GPM = gallons per minute MG = million gallons

APPENDIX N

Groundwater Circulation Well GCW-01 Operational Data

This page was intentionally left blank.

Appendix N
Groundwater Circulation Well GCW-01 Operational Data
Former Nebraska Ordnance Plant, Mead, Nebraska

DATE	TIME	FLOW RATE (GPM)	TOTALIZER (GALLONS)	VACUUM (INCHES OF H2O)	AIRFLOW (INCHES OF H2O)	LINE HOUR METER	COMMENTS
1/4/2013	1115	21.79	125,290,370	2.0	0.21	3402.9	Resarted system
1/10/2013	1136	23.52	125,419,408	2.0	0.17	3547.3	
1/18/2013	1325	23.60	125,591,843	2.0	0	3740.2	
1/24/2013	1010	22.93	125,717,300	2.0	0.23	3881.9	
2/1/2013	1001	22.68	125,887,243	2.0	0.17	4073.7	
2/5/2013	1215	23.73	125,974,131	2.0	0.16	4171.6	
2/6/2013	1107	23.12	125,994,425	2.0	0.15	4194.7	
2/8/2013	1201	22.70	126,037,911	2.0	0.02	4243.7	
2/12/2013	1105	22.92	126,143,431	2.0	0.19	4362.8	
2/15/2013	1121	23.45	126,186,106	2.0	0.19	4411.1	
2/21/2013	0838	23.20	126,310,601	2.0	0.08	4552.3	
2/26/2013	0915	22.57	126,416,894	2.0	0.21	4672.6	
2/28/2013	1104	23.20	126,439,757	2.0	0.19	4698.8	Air up packer
2/28/2013	0830	23.54	126,458,642	2.0	0.09	4720.2	Sampled
3/4/2013	1209	23.19	126,546,576	2.0	0.20	4819.8	
3/6/2013	1310	23.66	126,589,673	2.0	0.21	4868.8	
3/12/2013	1226	21.16	126,715,610	2.0	0.18	5011.1	
3/14/2013	0927	21.06	126,754,966	2.0	0.21	5055.8	
3/19/2013	1330	23.77	126,865,249	2.0	0.19	5180.2	
3/20/2013	1223	23.19	126,885,427	2.0	0.19	5203.1	
3/21/2013	1142	23.89	126,905,939	2.0	0.18	5226.1	
3/25/2013	1055	22.85	126,989,257	2.0	0.19	5321.4	
3/27/2013	1020	23.82	127,031,149	2.0	0.20	5369.0	
3/29/2013	1122	24.01	127,074,440	2.0	0.19	5418.0	
4/4/2013	1322	24.14	127,202,797	2.0	0.15	5564.0	
4/5/2013	1205	23.58	127,222,601	2.0	0.17	5586.3	
4/10/2013	1302	23.14	127,330,104	2.0	0.16	5707.7	
4/12/2013	1222	23.51	127,371,772	2.0	0.19	5755.0	
4/19/2013	1223	23.96	127,519,761	2.0	0.17	5293.0	
4/22/2013	1056	23.32	127,581,691	2.0	0.16	5993.7	
4/25/2013	1210	21.47	127,646,006	2.0	0.18	6066.9	
4/29/2013	1150	23.60	127,730,414	2.0	0.17	6162.7	
5/7/2013	1307	24.13	127,900,066	2.0	0.21	6355.1	
5/10/2013	1137	24.14	127,962,085	2.0	0.08	6426.2	
5/21/2013	1001	20.08	128,193,562	2.0	0.04	6688.6	Mowed
5/28/2013	1052	20.12	128,363,124	2.0	0.13	6880.6	
6/3/2013	0715	22.86	128,466,281	2.0	0.80	6997.9	Aired packer and sampled.
6/12/2013	1135	23.83	128,683,988	2.0	0.12	7242.9	
6/18/2013	0934	23.14	128,788,551	2.0	0.16	7360.4	Mowed
6/26/2013	1150	22.82	128,960,791	2.0	0.16	7554.4	
7/1/2013	1155	24.34	129,013,454	2.0	0.12	7561.3	Sampled Well, reset for well low level and lowered flow.
7/3/2013	1445	19.51	129,034,000	2.0	0.14	7586.2	System down for power bump restarted.
7/8/2013	1247	18.87	129,141,615	2.0	0.12	7704.2	
7/16/2013	1150	18.48	129,315,272	2.0	0.11	7894.3	
7/19/2013	1247	19.64	129,382,297	2.0	0.11	7968.2	
7/23/2013	1350	18.46	129,400,779	2.0	0.13	7988.2	
7/24/2013	1243	19.27	129,421,871	2.0	0.13	8011.4	
7/25/2013	1200	18.13	129,443,469	2.0	0.13	8034.9	
7/30/2013	1130	17.75	129,551,900	2.0	0.13	8154.3	
8/1/2013	1000	18.17	129,594,692	2.1	0.12	8200.9	
8/2/2013	1010	19.56	129,617,284	2.1	0.13	8224.9	
8/6/2013	0845	18.68	129,704,869	2.1	0.13	8319.6	
8/9/2013	1012	18.86	129,773,020	2.1	0.15	8393.0	

Appendix N
Groundwater Circulation Well GCW-01 Operational Data
Former Nebraska Ordnance Plant, Mead, Nebraska

DATE	TIME	FLOW RATE (GPM)	TOTALIZER (GALLONS)	VACUUM (INCHES OF H2O)	AIRFLOW (INCHES OF H2O)	LINE HOUR METER	COMMENTS
8/13/2013	0919	17.84	129,860,895	2.1	0.14	8488.1	
8/16/2013	0824	18.41	129,925,641	2.1	0.12	8559.2	
8/20/2013	0805	19.35	130,014,453	2.1	0.17	8654.9	
8/22/2013	1136	18.19	130,062,877	2.1	0.16	8706.0	
8/27/2013	1055	17.86	130,171,831	2.1	0.17	8892.7	
8/29/2013	0815	18.46	130,242,317	2.0	0.11	8946.0	
9/5/2013	0825	18.77	130,312,566	2.0	0.15	8969.4	
9/10/2013	0905	19.72	130,363,731	2.0	0.25	9022.6	
10/13/2013	1315	16.15	130,862,550	2.0	17.00		
10/16/2013	1140	19.37	131,170,924	2.0	17.00		
10/18/2013	1345	16.90	131,217,465	2.0	17.00		
11/1/2013	0830	19.74	131,238,828	2.0	0.15	99632.0	Reset system
11/5/2013	1230	18.49	131,330,392	2.0	0.15	10064.3	
11/12/2013	1430	18.06	131,498,990	2.0	0.17	10257.1	
11/20/2013	1042	19.27	131,645,193	2.0	0.05	10422.5	blew out VAC line
11/22/2013	0800	18.83	131,683,611	2.0	0.07	10467.8	blew out VAC line iced up
11/30/2013	1130	18.78	131,847,464	2.0	0.15	1063.1	blew out VAC line iced up
12/5/2013	1315	20.30	131,926,961	2.0	0.00	10153.9	water lines frozen, turned on heaters in pit
12/10/2013	1150	18.91	132,221,790	2.0	0.43	11026.8	
12/19/2013	1130	19.82	132,273,167	2.0	0.23	11082.7	
12/20/2013	1300	19.25	132,297,639	2.0	0.15	11205.3	
12/26/2013	1330	19.25	132,431,724	2.0	0.16	11254.2	

APPENDIX O

Analytical Results Summary for Monitoring Wells Surrounding Groundwater Circulation Well GCW-01

This page was intentionally left blank.

Analytical Results Summary for Monitoring Wells Surrounding Groundwater Circulation

All Results for the Monitoring Well Program

Groundwater Monitoring Program

Former Nebraska Ordnance Plant, Mead, Nebraska

		Volatile Organic Compounds					
Location	**Event**	**1,2-DCP**	**CIS-1,2-DCE**	**Methylene Chloride**	**TCE**	**TRANS-1,2-DCE**	**Vinyl Chloride**
MW-40A	Second Quarter 2013	ND	ND	ND	1.8	ND	ND
MW-40B	Second Quarter 2013	ND	0.57 J	ND	85.0	ND	ND
MW-72A	Second Quarter 2013	ND	ND	ND	3.3	ND	ND
MW-72B	Second Quarter 2013	ND	6.3	ND	410	ND	ND

Notes:

Indicates results exceeding Final Target Groundwater Cleanup Goals.

All results in µg/L = micrograms per liter

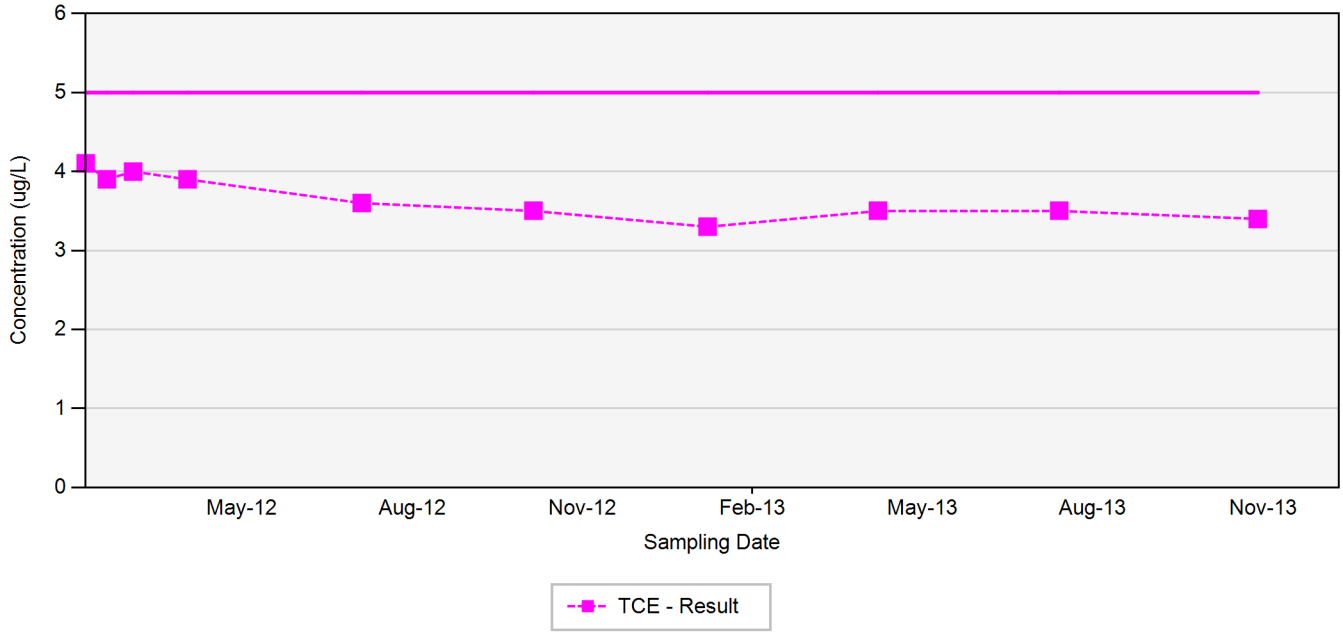
This page was intentionally left blank.

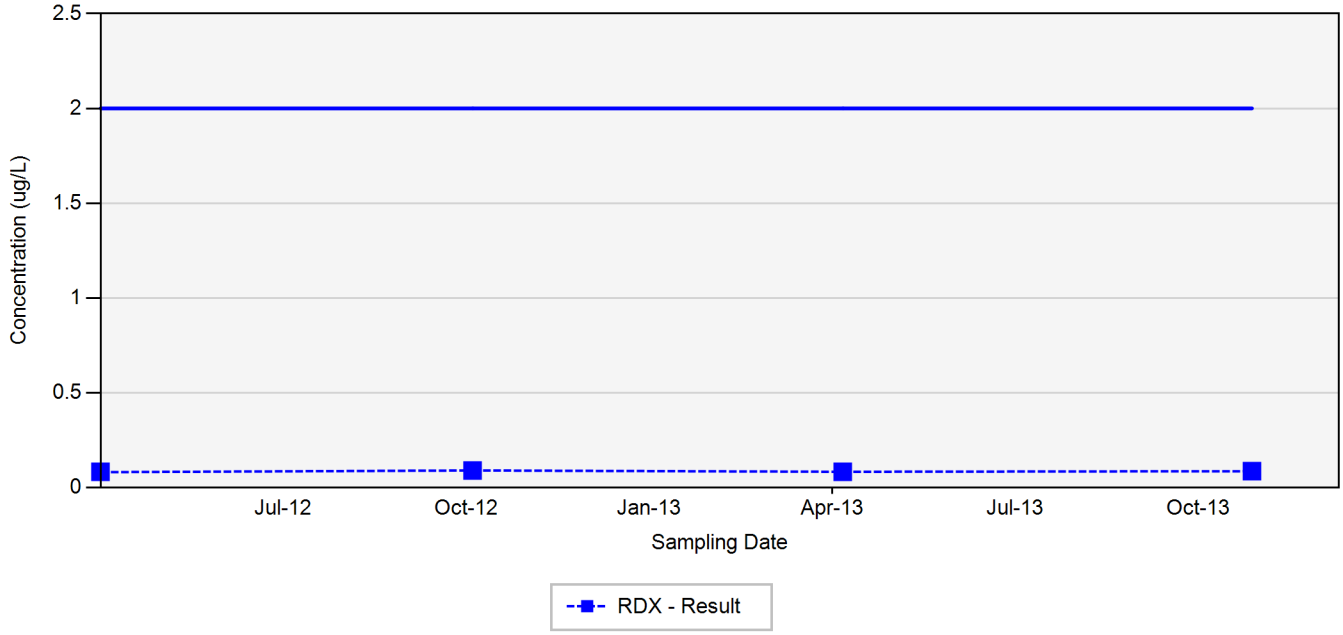
APPENDIX P

Concentration Trend Charts for Extraction Wells

This page was intentionally left blank.

Appendix P
Concentration Trend Charts for Extraction Wells
EW-1R



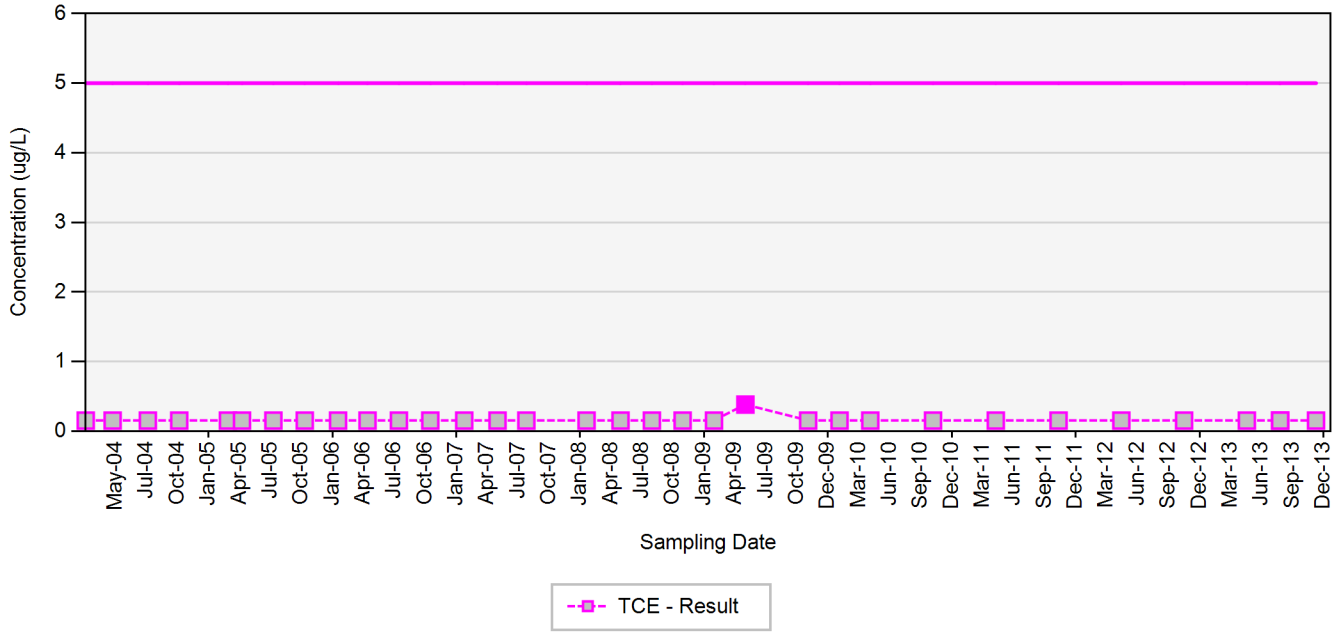


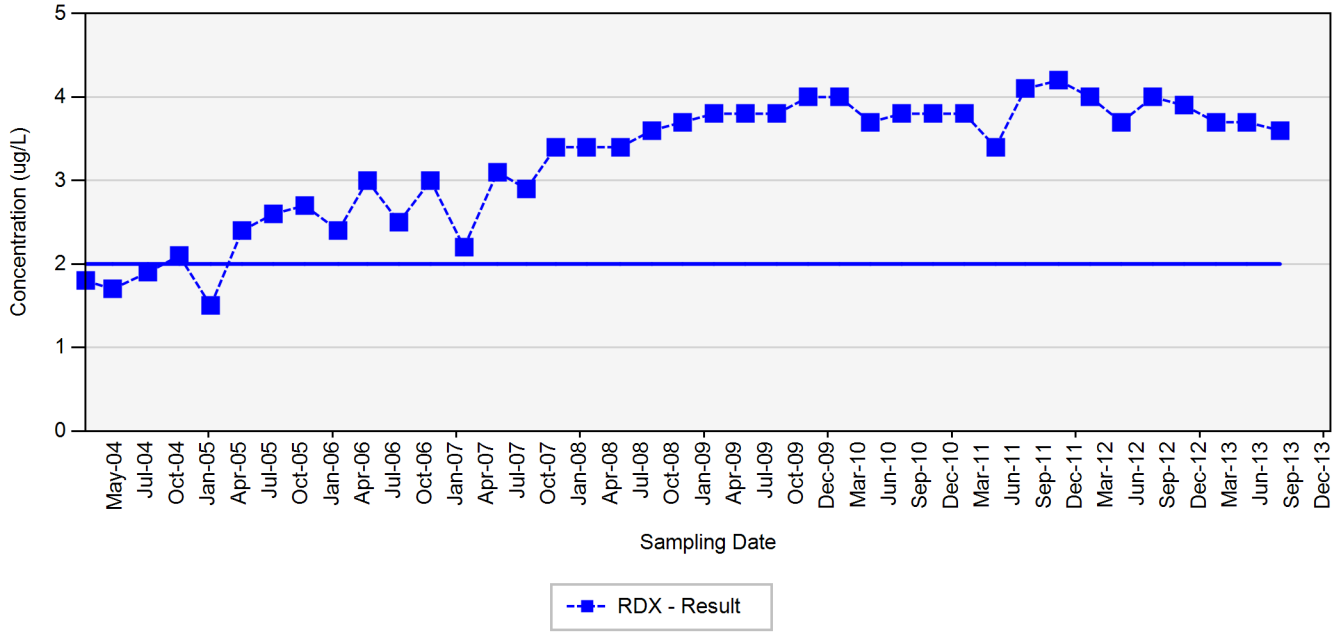
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.

ug/L: micrograms per liter

Appendix P
Concentration Trend Charts for Extraction Wells
EW-4





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

- In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
- Ultraviolet treatment system installed at EW-4 in July 2013. RDX samples from August 2013 to December 2013 shown on EW-4_UVINF trend chart.

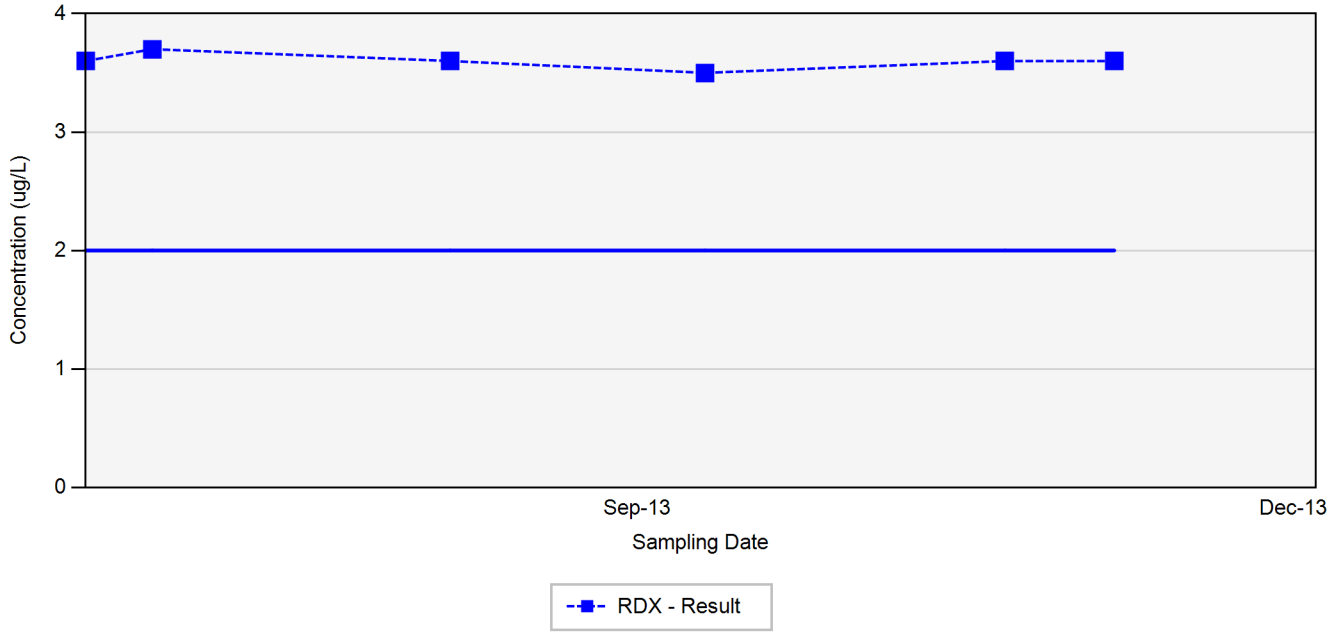
ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P

Concentration Trend Charts for Extraction Wells

EW-4_UVINF

No Data Available

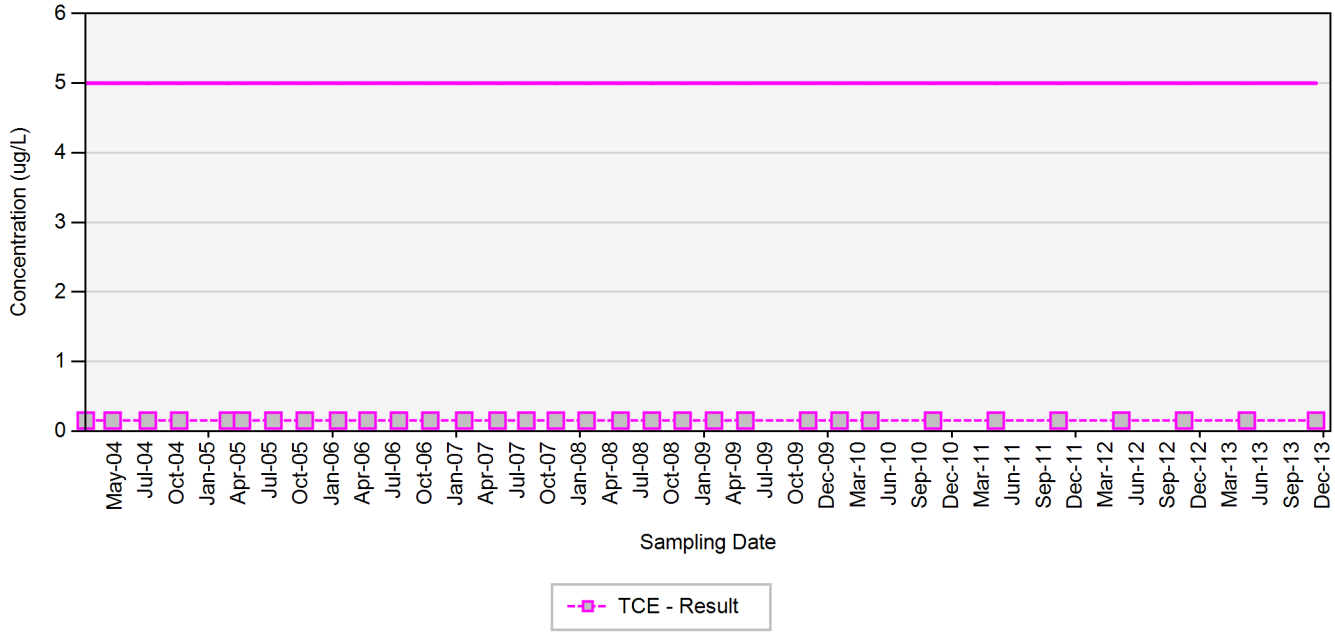


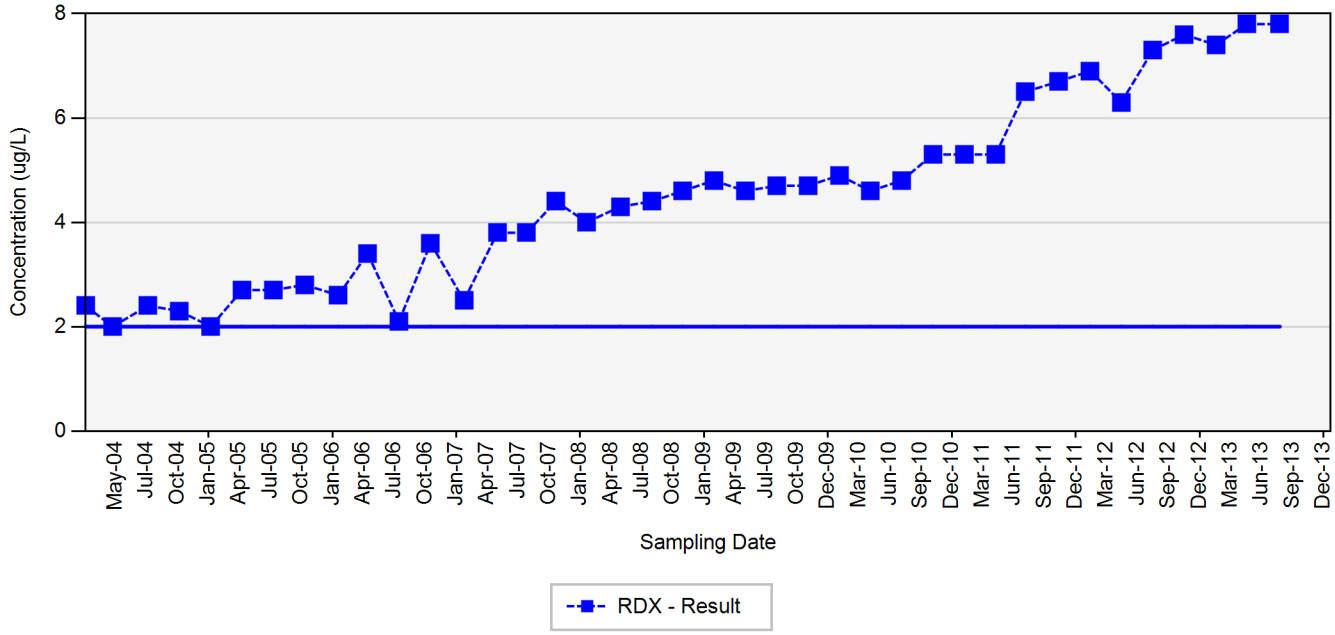
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system installed in July 2013 at EW-4. TCE results provided in EW-4 trend chart.

ug/L: micrograms per liter

Appendix P
Concentration Trend Charts for Extraction Wells
EW-7





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system installed at EW-7 in October 2013. RDX results from October to December 2013 presented on EW-7_UVINF chart.

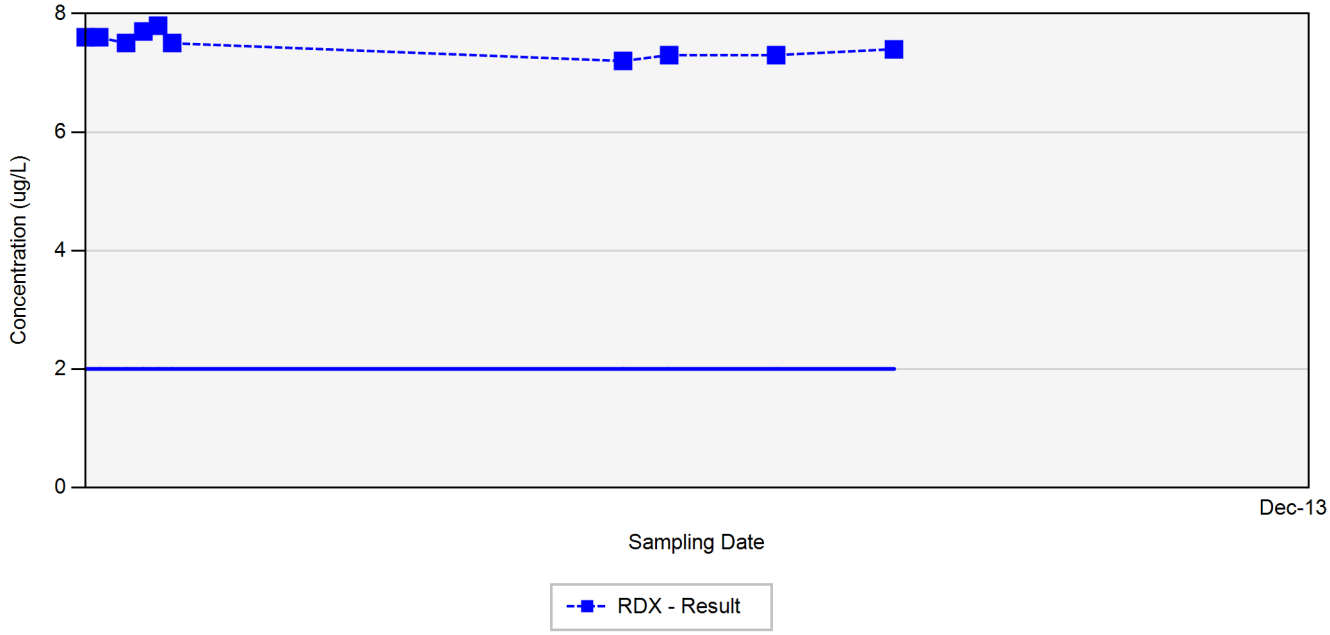
ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P

Concentration Trend Charts for Extraction Wells

EW-7_UVINF

No Data Available

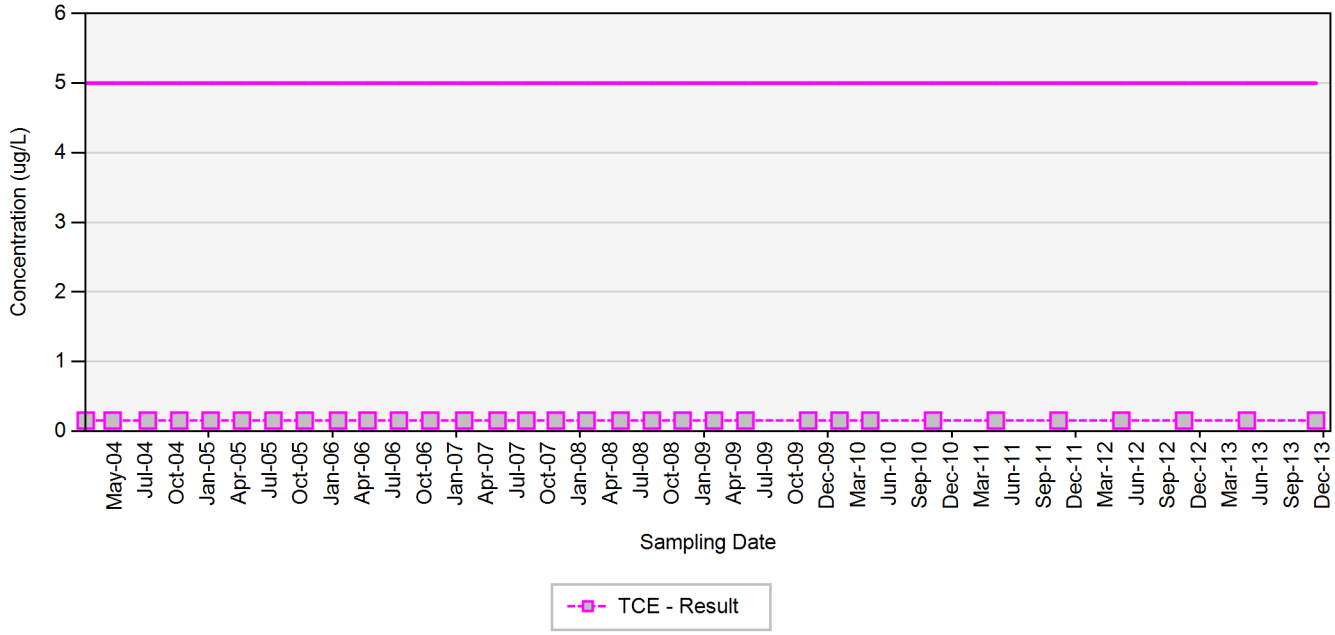


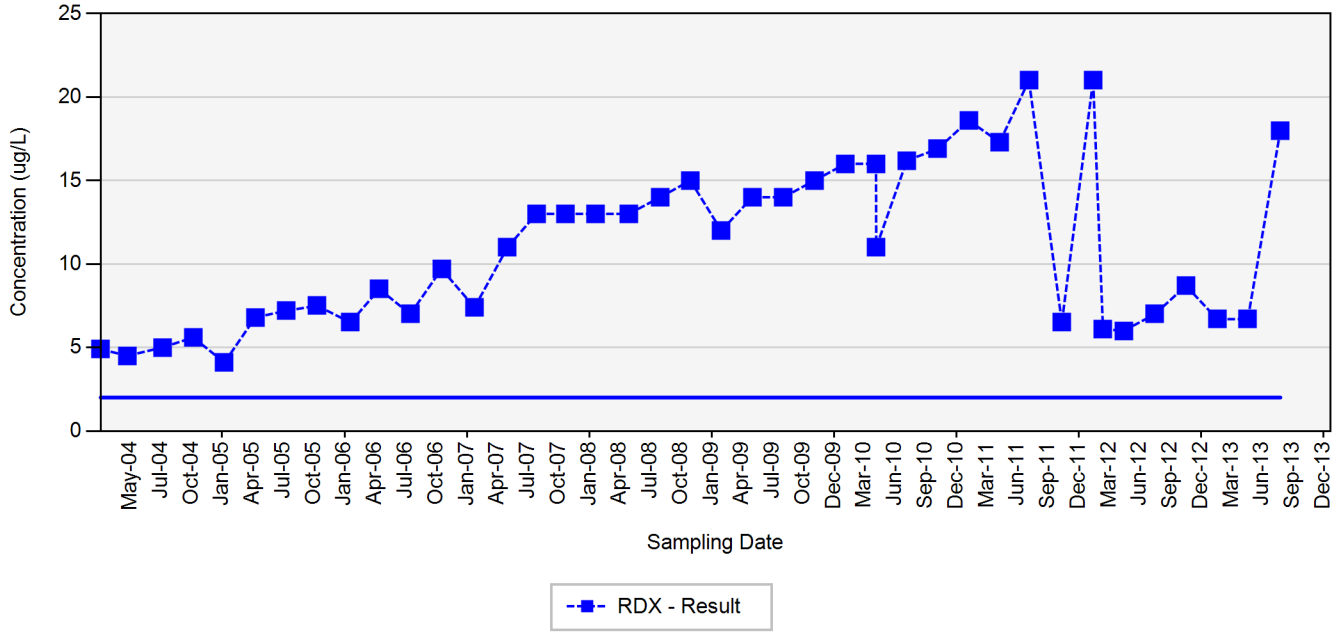
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system installed at EW-7 in October 2013. TCE results shown on EW-7 trend chart.

ug/L: micrograms per liter

Appendix P
Concentration Trend Charts for Extraction Wells
EW-9





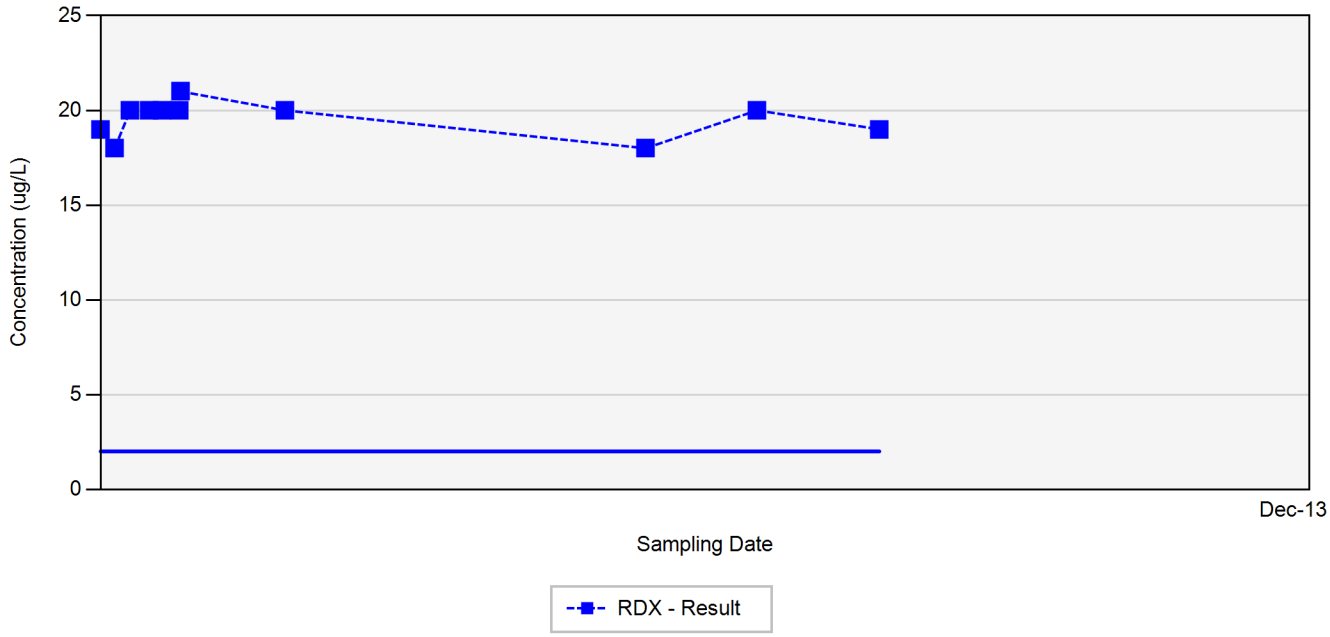
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system installed at EW-9 in October 2013. RDX results from October to December 2013 presented on EW-9_UVINF chart.

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells
EW-9_UVINF

No Data Available

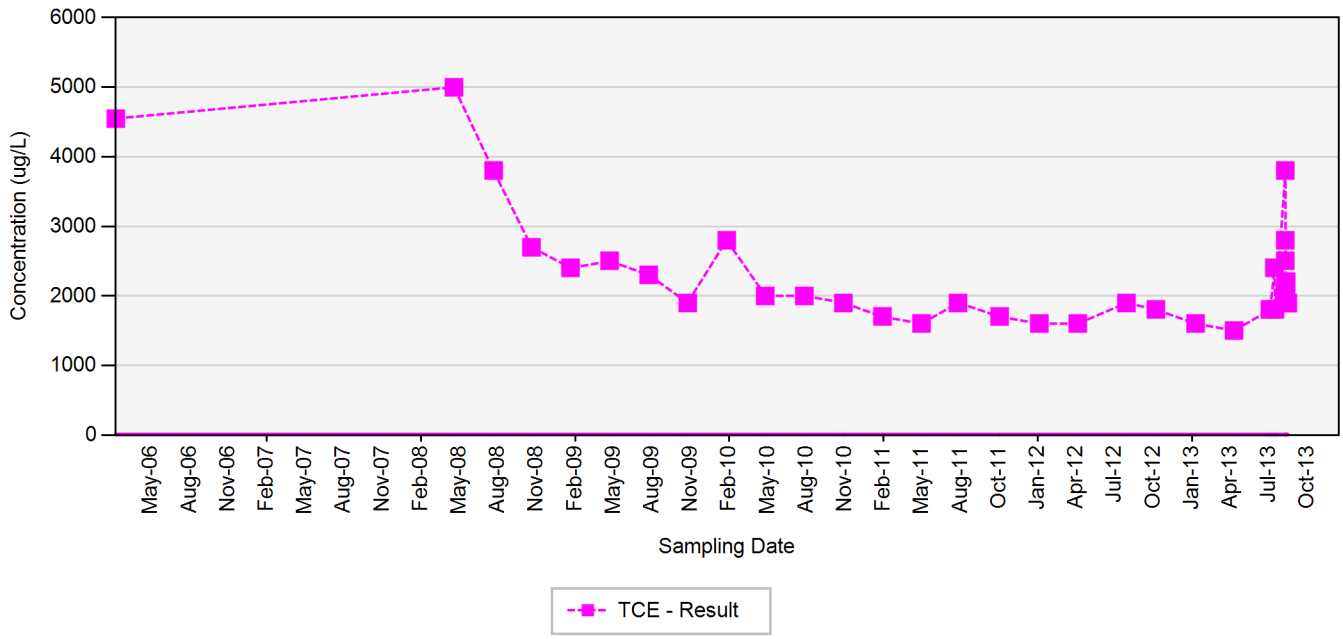


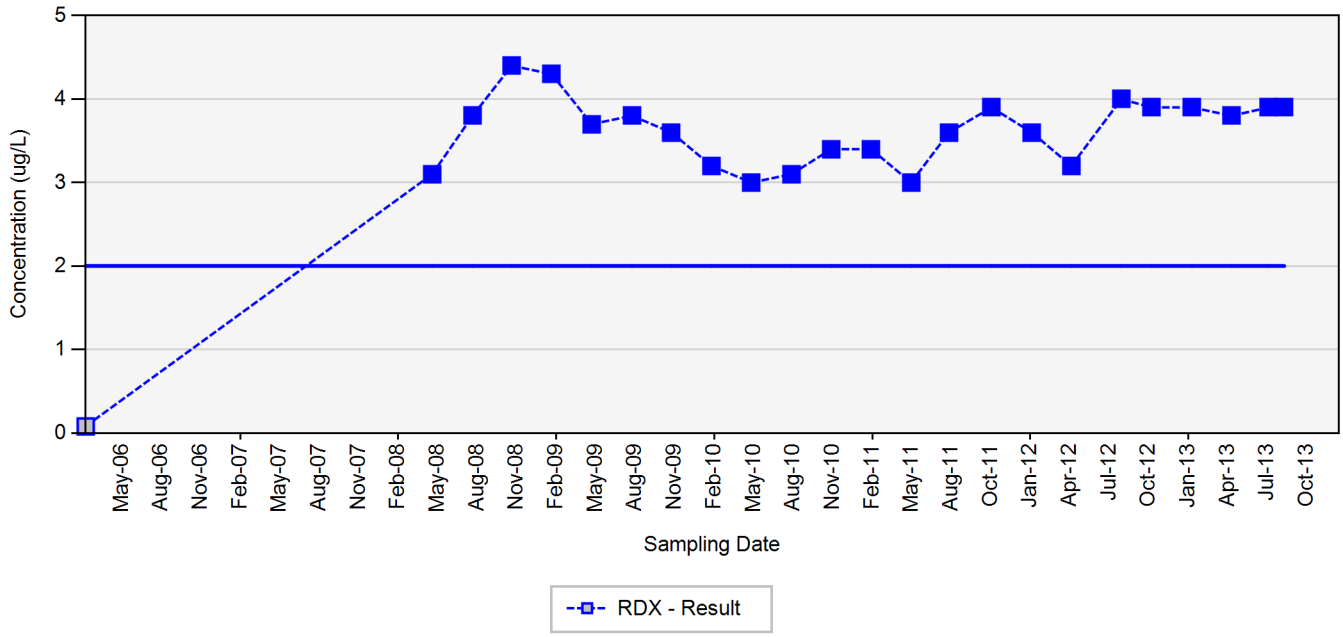
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system installed at EW-7 in October 2013. TCE results presented on EW-9 trend chart.

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells
FEW-11

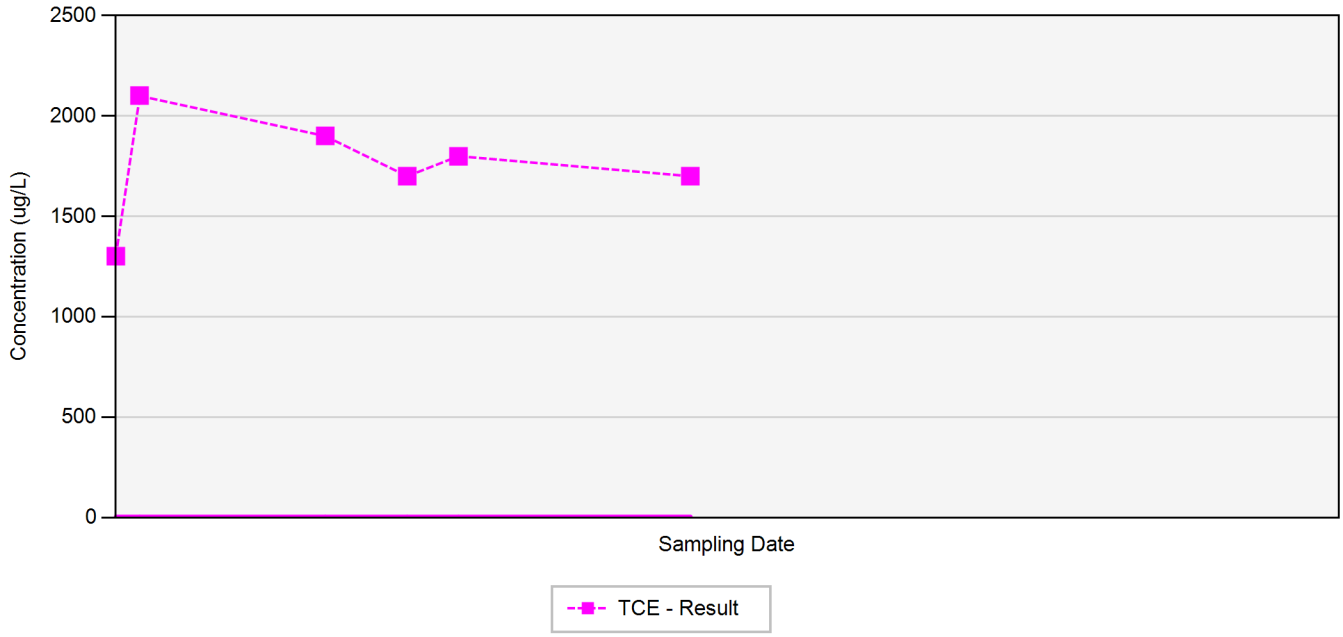


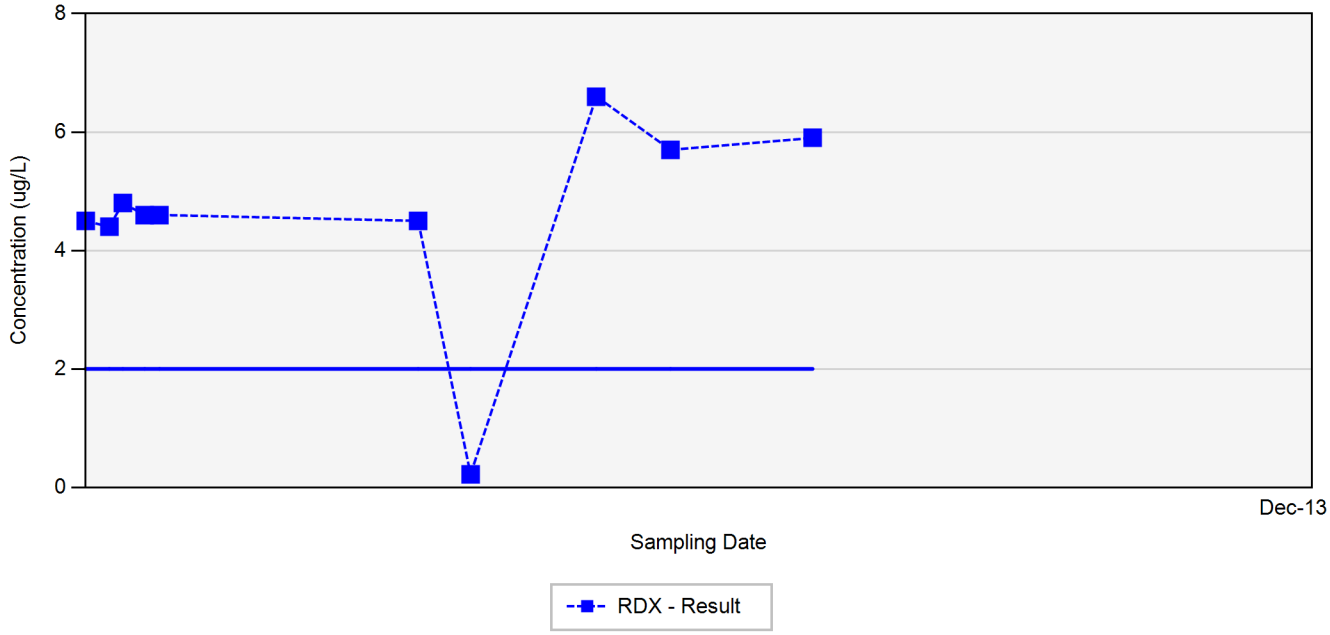


TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system installed at FEW-11 in October 2013. RDX results from October to December 2013 presented on FEW-11_UVINF.
ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells
FEW-11_UVINF



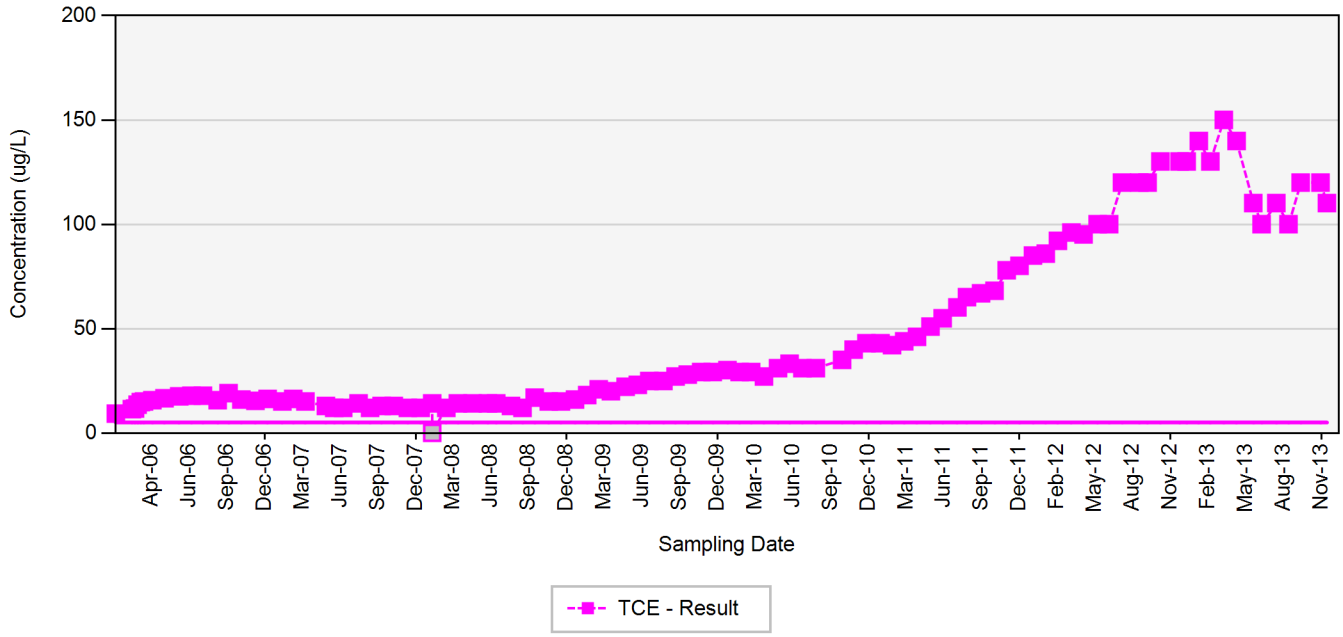


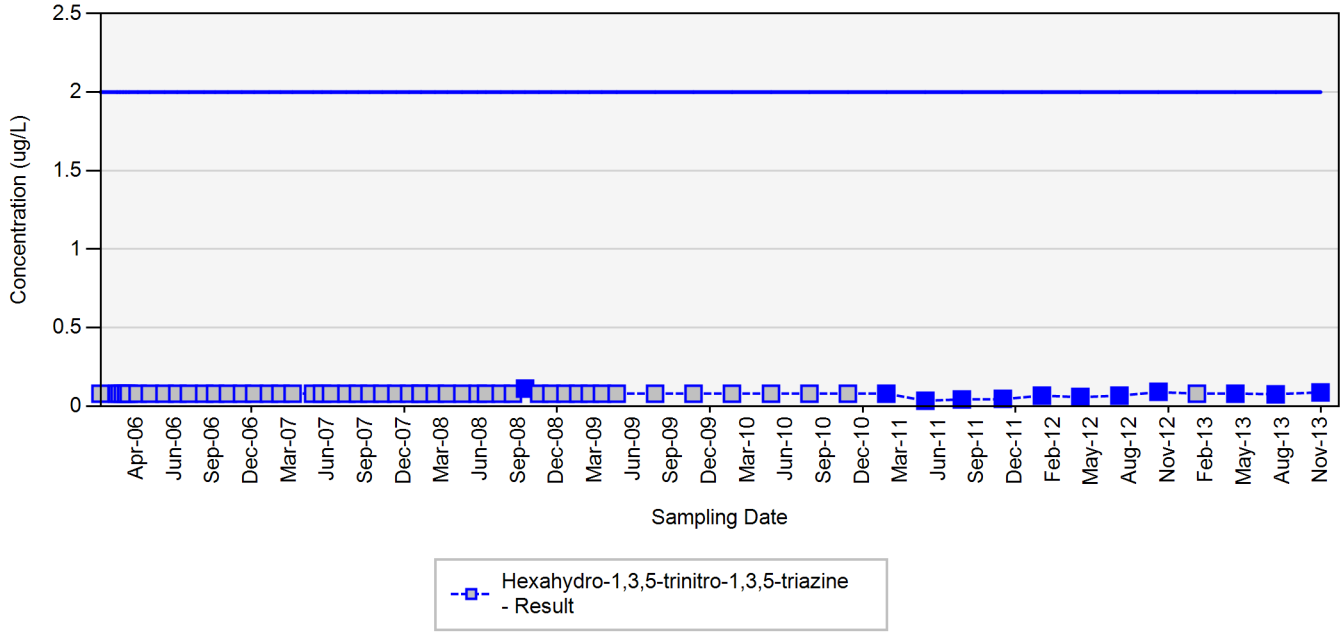
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system installed at FEW-11 in October 2013.

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells
LL1-INF (EW-12)





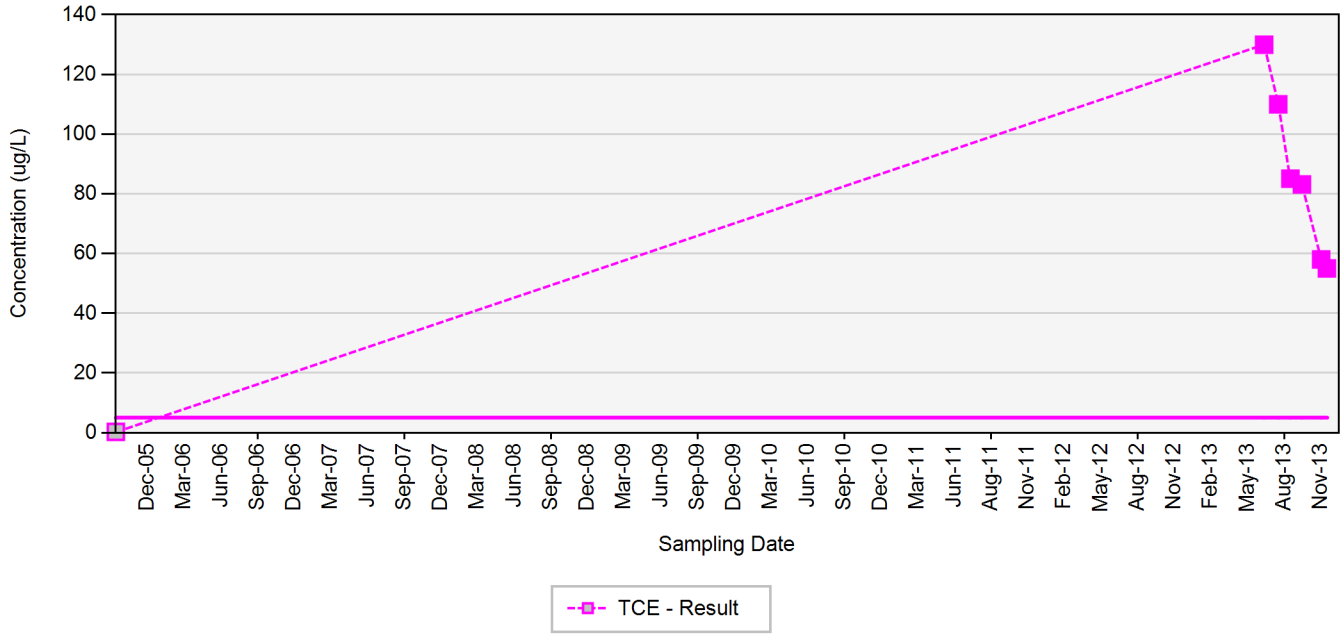
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

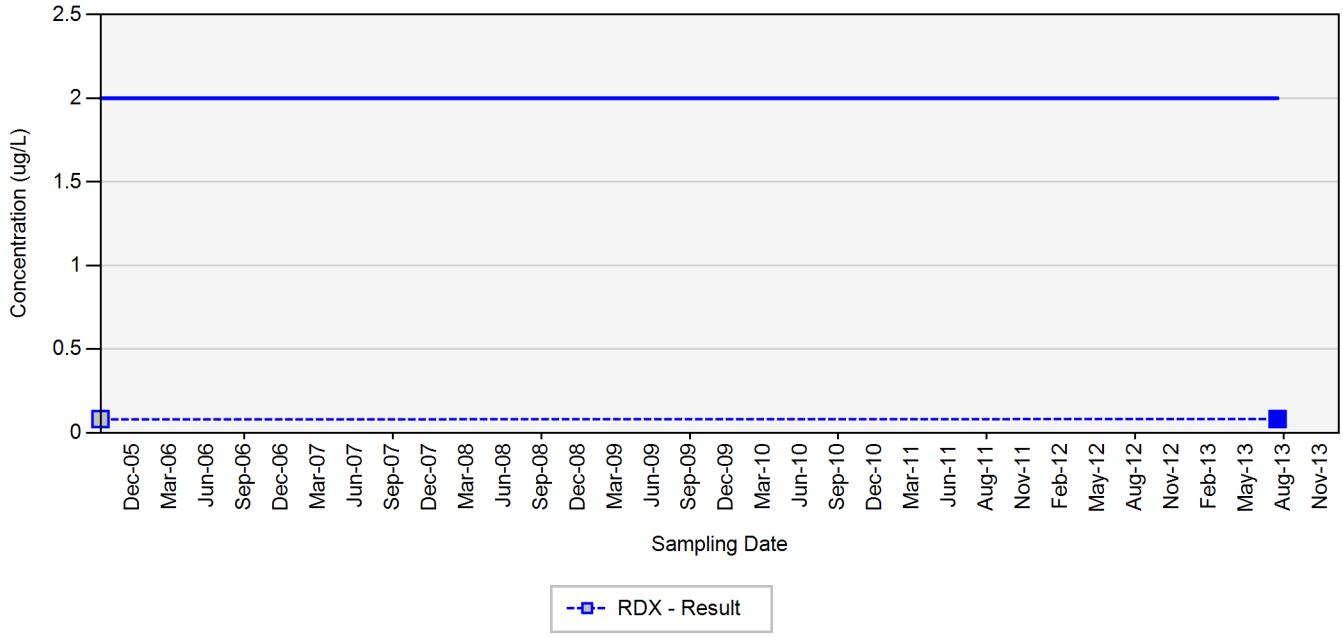
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Influent to Load Line 1 groundwater treatment plant (LL1 GTP) was sourced only from EW-12 before May 2013. In May 2013, EW-17 was installed and the source influent to LL1 GTP was a combination of the flows from EW-12 and EW-17.

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells

EW-12



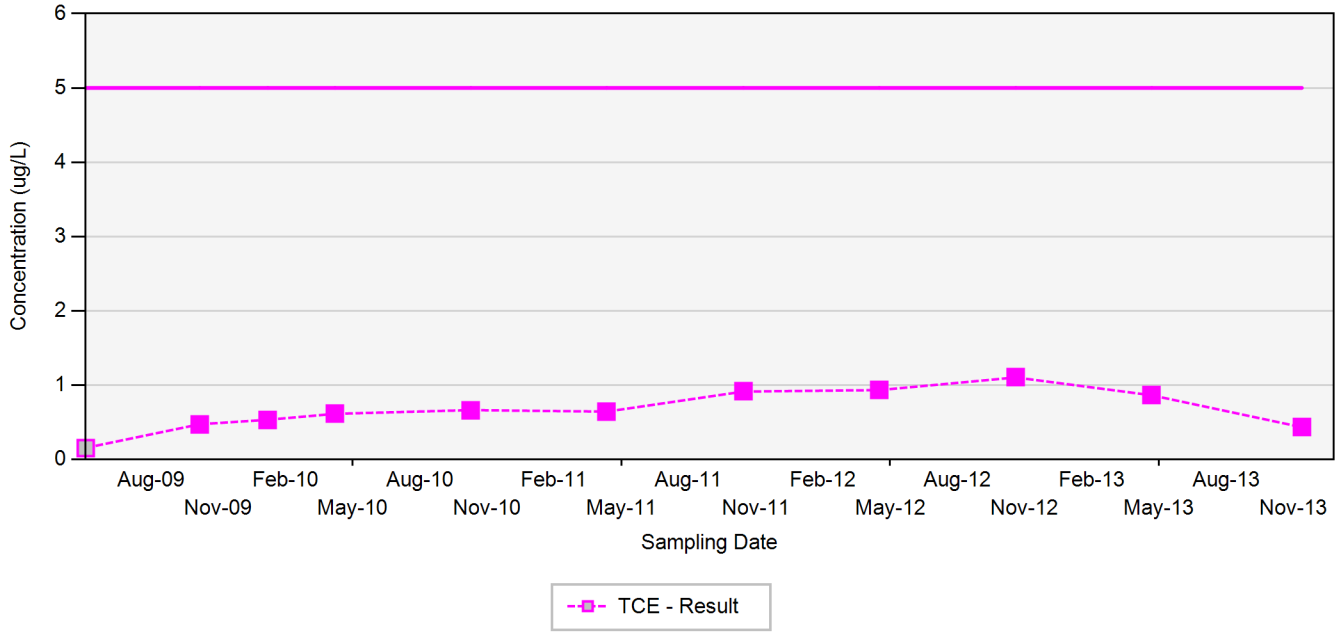


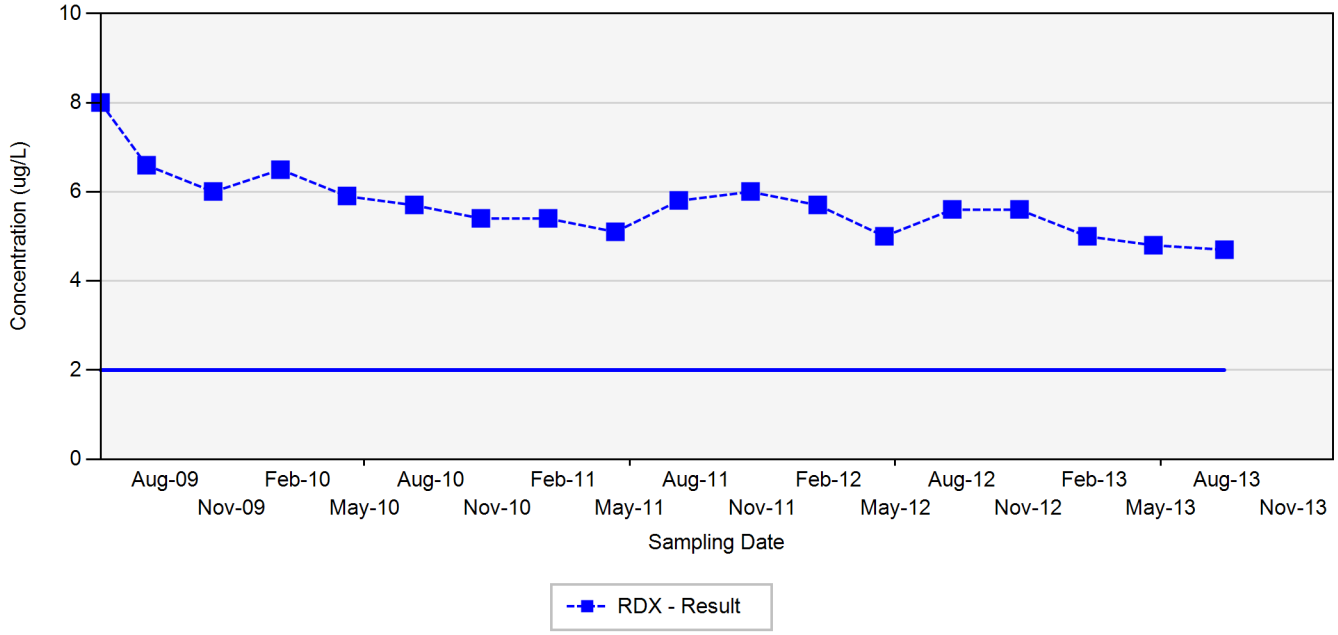
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Influent to Load Line 1 groundwater treatment plant (LL1 GTP) was sourced only from EW-12 before May 2013. In May 2013, EW-17 was installed and the source influent to LL1 GTP was a combination of the flows from EW-12 and EW-17.

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells
FEW-14





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

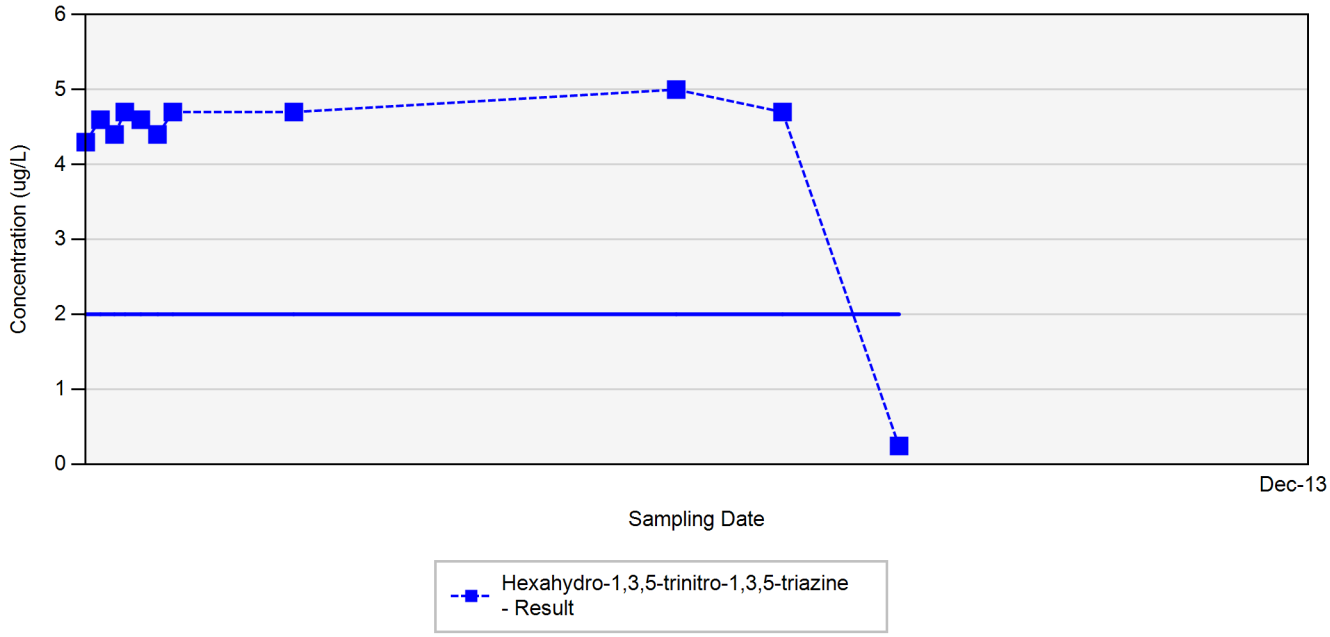
In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system was installed at FEW-14 in October 2013. RDX results from October to December 2013 are presented as FEW-14_UNVINF chart.

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells

FEW-14_UVINF

No Data Available

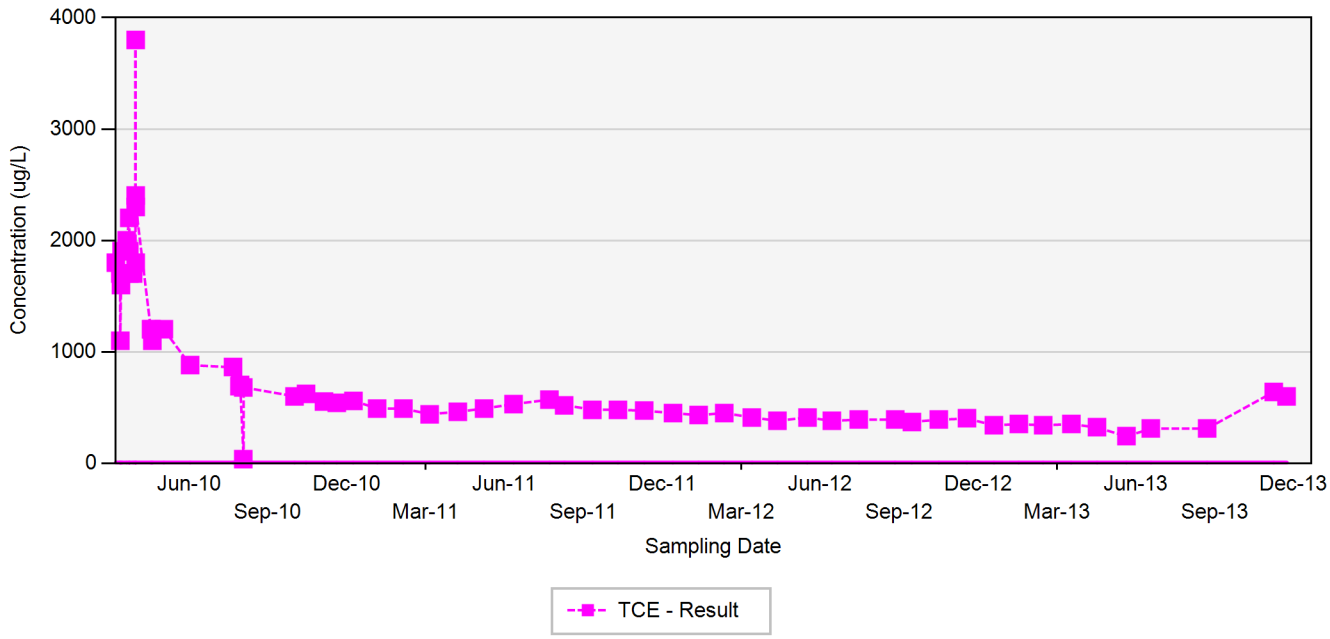


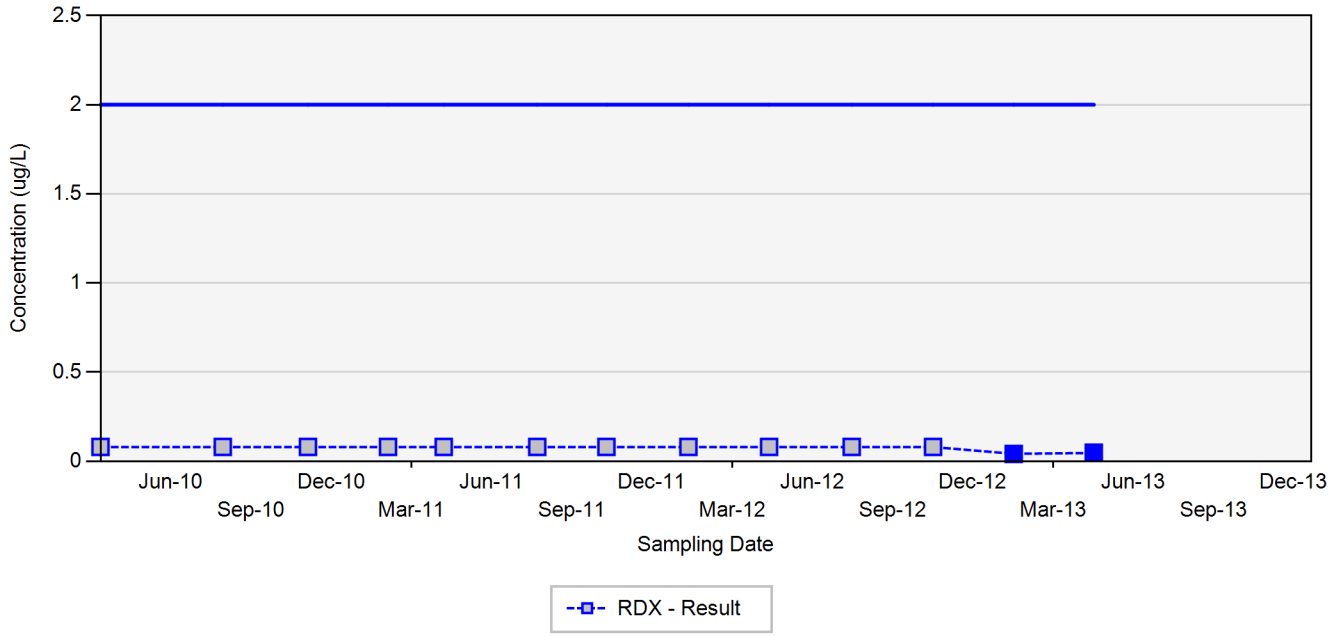
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Ultraviolet treatment system installed at FEW-14 in October 2013.

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells
FEW-15 (LL4-INF)



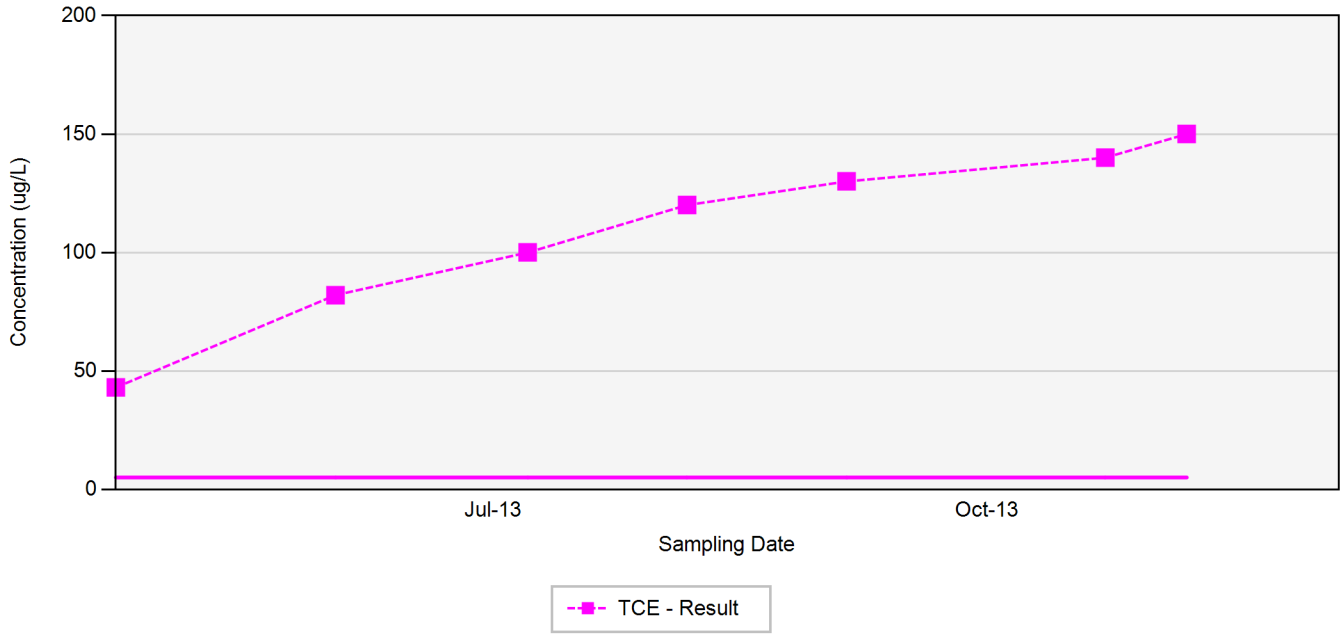


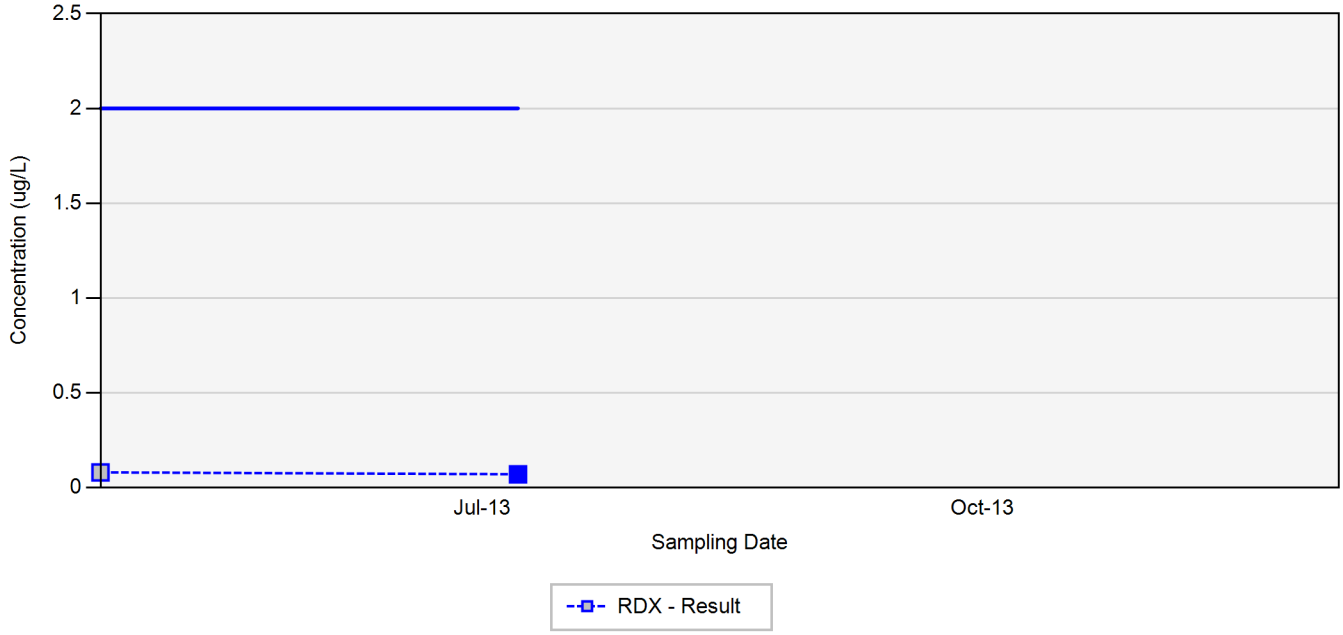
TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
Influent to the Load Line 4 GTP is from FEW-15.

ug/L: micrograms per liter
Silver markers indicate non-detected results

Appendix P
Concentration Trend Charts for Extraction Wells
EW-17





TCE - trichloroethene
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
Final Target Groundwater Cleanup Goal for TCE is 5 ug/L.
Final Target Groundwater Cleanup Goal for RDX is 2 ug/L.

In the event that both a normal sample and a field duplicate were collected, the higher of the two results will be displayed on the chart.
FEW-17 installed in May 2013.

ug/L: micrograms per liter
Silver markers indicate non-detected results

This page was intentionally left blank.